WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

TIMBER NOTICE OF SALE

***SALE NAME**: SMUGGLER VRH & RMZ* ***AGREEMENT NO**: 30-099053*

AUCTION: November 17, 2020 starting at 10:00 a.m., South Puget Sound Region Office, Enumclaw, WA **COUNTY:** Thurston

SALE LOCATION: Sale located approximately 13 miles west of Olympia.

PRODUCTS SOLD AND SALE AREA: All timber, except leave trees bounded out by yellow leave tree area tags, snags, and down timber existing more than 5 years from the day of sale, bounded by the following: white Timber Sale Boundary tags, blue Special Management Unit Boundary tags, and timber type change marked with pink flagging in Unit #1; white Timber Sale Boundary tags, blue Special Management Unit Boundary tags, timber type change marked with pink flagging, and the B-8700 Road in Unit #2; white Timber Sale Boundary tags, timber type change marked with pink flagging, property line marked with Carsonite posts, an underground utility ROW marked with pink flagging, and the B-8900 and B-8910 roads in Unit #3;

All timber as described in Schedule A bounded by the following: white Timber Sale Boundary tags and blue Special Management Unit Boundary tags in RMZ Hardwood Conversion Units #4, #5, and #6;

All timber bounded by orange right of way tags in Unit #7, except that title to the timber within the right of way boundary tags is not conveyed to the Purchaser unless the associated B-8706 Ext. Road is actually constructed.

All forest products above located on part(s) of Sections 26 and 34 all in Township 18 North, Range 3 West, W.M., containing 181 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 DBH	Ring Count	Total MBF	MBF by Grade 1P	2P	3P	SM	1S	2S	3S	4S	UT
Douglas fir	24.9	8	7,072			158	1,470		4,498	762	139	45
Maple	18.3		512					74	172	79	69	118
Red alder	17.6		487					71	203	81	89	43
Hemlock	14.2		174						100	21	31	22
Red cedar	21.4		126							112	14	
Sale Total			8,371									

MINIMUM BID: $4,273,000.00 **BID METHOD:** Sealed Bids

PERFORMANCE SECURITY: $100,000.00 **SALE TYPE:** Lump Sum

EXPIRATION DATE: October 31, 2022 **ALLOCATION:** Export Restricted

BID DEPOSIT: $427,300.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised price.

HARVEST METHOD: Harvesting activities are estimated to be 28 percent cable and 72 percent ground based harvest. Cable and cable-tethered equipment is allowed on all slopes. Non-tethered, self-leveling tracked equipment is limited to sustained slopes of 55 percent or less. Ground based equipment is limited to tracked equipment and 6-wheeled rubber tired skidders with over-the-tire tracks spanning both sets of rear tires on sustained slopes that are 45 percent or less. Rubber tired skidders not allowed. Yarding may be restricted during wet weather if rutting becomes excessive, per clause H-017.

ROADS: 44.98 stations of optional construction. 8.14 stations of optional reconstruction. 447.77 stations of required prehaul maintenance. 56.60 stations of optional prehaul maintenance. 19.93 stations of abandonment, if constructed. Purchaser maintenance on the B-8000 (from B-8500 junction to end of road), B-8700, B-8706, B-8706A, B-8706 Ext., B-8708, B-8790, B-8900, B-8910, and M01 roads. Designated maintenance on all other roads used.

Rock for this proposal may be obtained from the State owned Delphi Quarry and Perry Creek Quarry, as well as from the existing stockpiles at the Perry Creek Quarry, at no cost to the Purchaser or any commercial rock source at the Purchaser's expense.

All road work activities will not be permitted from November 1 to April 30, nor on weekends or State recognized holidays, unless authority to do so is granted, in writing, by the Contract Administrator. If permission is granted to operate from November 1 to April 30, a maintenance plan is required per Road Plan clause 1-26.

The hauling of forest products will not be permitted from November 1 to April 30, nor on weekends or State recognized holidays, unless authorized in writing by the Contract Administrator. If permission is granted to operate from November 1 to April 30, preventative measures may be required to protect water, soil, roads, and other forest assets.

ACREAGE DETERMINATION

CRUISE METHOD: Unit acreage was determined by traversing boundaries by GPS in all units, and length times width was used to determine existing road acres in Unit #3. GPS data files are available at DNR's website for timber sale auction packets. See cruise narrative for cruise method.

FEES: $142,307.00 is due on day of sale. $9.00 per MBF is due upon removal. These are in addition to the bid price.

SPECIAL REMARKS: See map for gate locations. Gate keys may be obtained by contacting the South Puget Sound Region office at (360) 825-1631 or by contacting the Tumwater work center at (360) 791-5980.

Within all harvest units, Purchaser shall cut all hardwood stems 2 inches DBH or greater, or 6 feet tall or greater, leaving a stump no more than 12 inches in height.

Williams Pipeline must be notified at least one week in advance of when work will occur within two tree lengths of the pipeline in Unit #3.

Gas pipeline within Unit #3 may require construction of an equipment crossing to cross the pipeline. Williams Pipeline must be contacted prior to constructing the crossing

structure, and they must be onsite when the equipment crossing is constructed and at the initial equipment crossing of the pipeline.

No timber shall be felled onto, no timber shall be decked on, and no equipment shall park on the gas pipeline right-of-way.

All harvesting and road work for the M01 road (including construction, timber haul, and abandonment) must be completed before August 20, 2022, per previously approved FPA # 2418781.

Areas requiring additional slope protection measures, such as Tailhold Restriction Areas, non-tradeable leave tree areas, and Slope Mitigation Area, are addressed in clauses H-140 (f) and H-141 (b).

Unit #3 will require a yarding corridor across a Type 4 RMZ- see Schedule Z for requirements.

Units #4, #5, and #6 are riparian management zone hardwood conversion units. All hardwood trees except 2 bigleaf maple per acre will be cut in these units. No conifer are to be cut in these units. An onsite pre-work must occur before harvesting can begin. See Schedule A.

Designated haul roads have been designed for the transport of poles 60 feet in length or less. If poles greater than 60 feet in length are desired to be removed, a haul plan must be submitted to and approved by Contract Administrator that details desired haul route, additional reconstruction needs, and mitigation for damage. All additional work shall be at Purchaser's expense.

All cut timber from Unit #8 ROW will be decked but not removed from the unit.

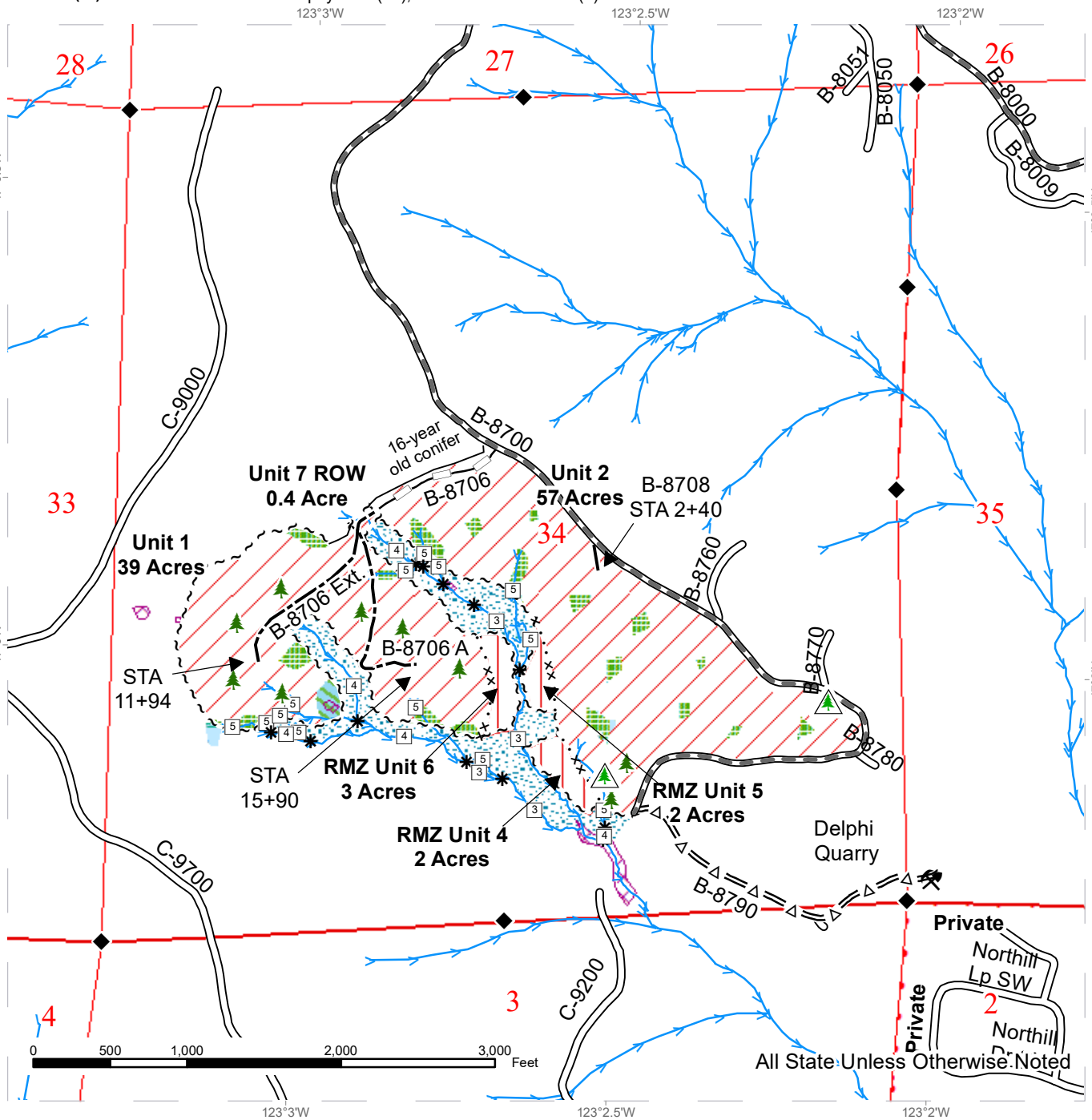
There are residual yellow and blue painted trees from a previous sale in Units #1, #2, and #3. Yellow and blue painted trees are take trees, unless located within tagged leave tree area clumps.

For the safety of the public, please remove from roads and trails all string from string boxes used during appraising or cruising this sale.

TIMBER SALE MAP

SALE NAME: SMUGGLER VRH RMZ
AGREEMENT #: 30-099053
TOWNSHIP(S): T18R3W
TRUST(S): Forest Board Repayment (42), State Forest Transfer (1)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 200-1400



Variable Retention Harvest	Sale Boundary Tags	Streams
Riparian Restoration	Special Mgmt Area	Stream Type
Tailhold Restriction Area	Right of Way Tags	Stream Type Break
Leave Tree Area	Timber Type Change	Survey Monument
Riparian Mgt Zone	Existing Roads	Leave Tree Area <1/4-acre
Forested Wetland	Required Pre-Haul Maintenance	Non-Tradeable Leave Trees
Non-Tradeable Leave Tree Area	Optional Pre-Haul Maintenance	Rock Pit
	Optional Construction	
	Optional Reconstruction	

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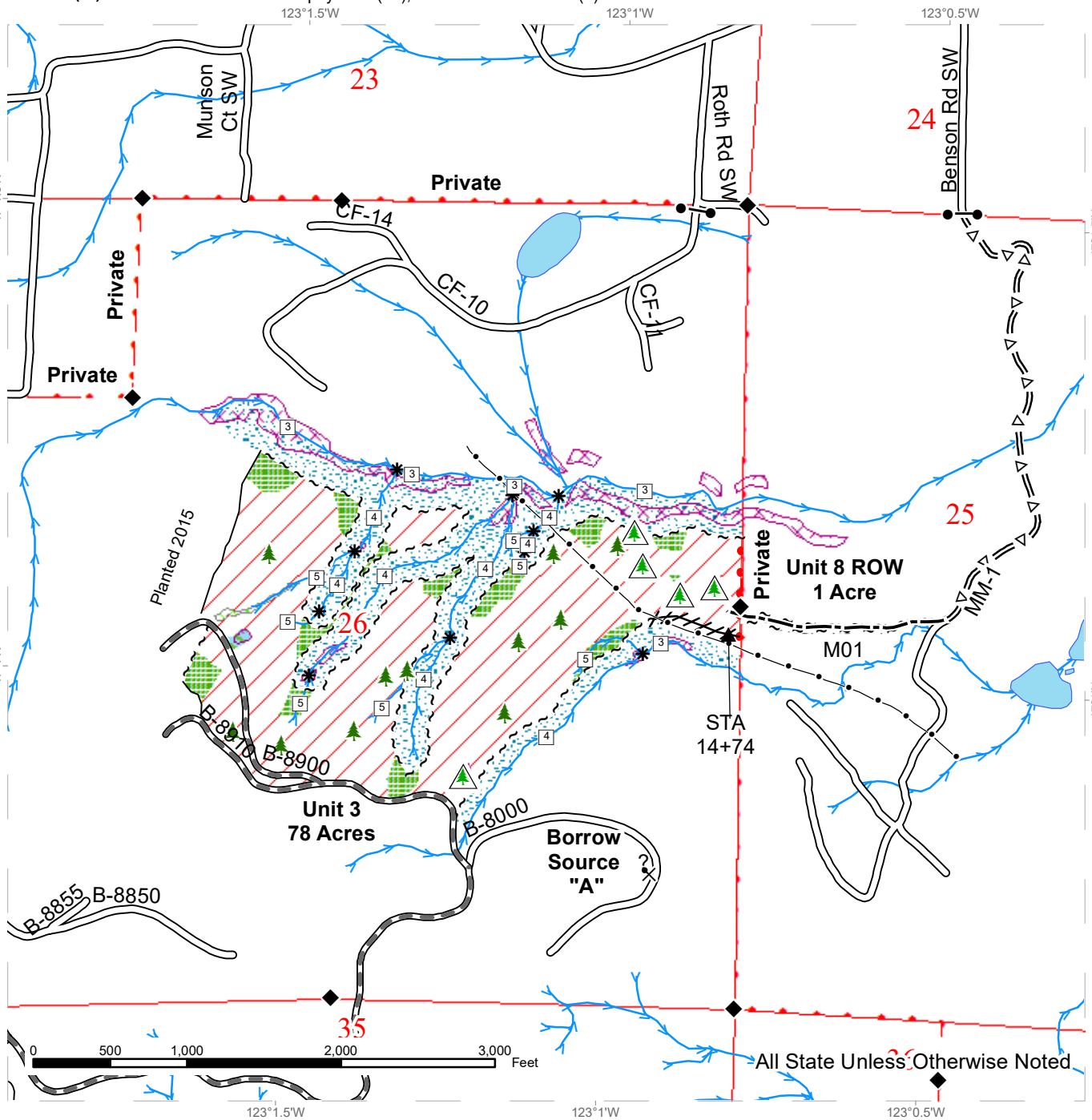

Variable Retention Harvest	Sale Boundary Tags	Streams
Tailhold Restriction Area	Right of Way Tags	Stream Type
Leave Tree Area	Property Line	Stream Type Break
Riparian Mgt Zone	Flag Line	Survey Monument
Forested Wetland	Timber Type Change	Gate (Master H957)
Non-Tradeable Leave Tree Area	Existing Roads	Leave Tree Area <1/4-acre
Slope Mitigation Area	Required Pre-Haul Maintenance	Non-Tradeable Leave Trees
Pipeline	Optional Pre-Haul Maintenance	Potential Rock Source
	Optional Construction	

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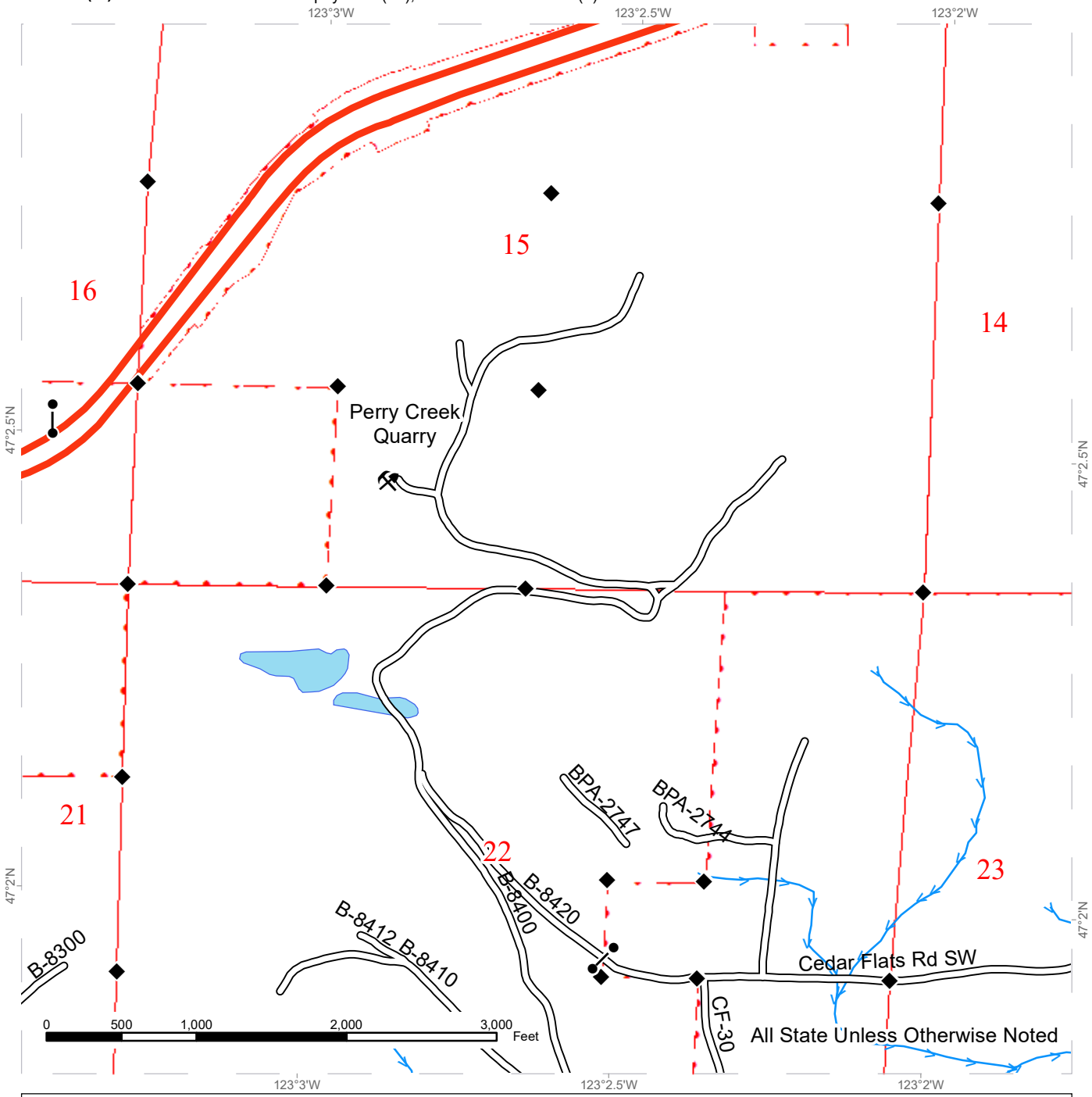

Existing Roads
Streams
Stream Type
Stream Type Break
Survey Monument
Rock Pit

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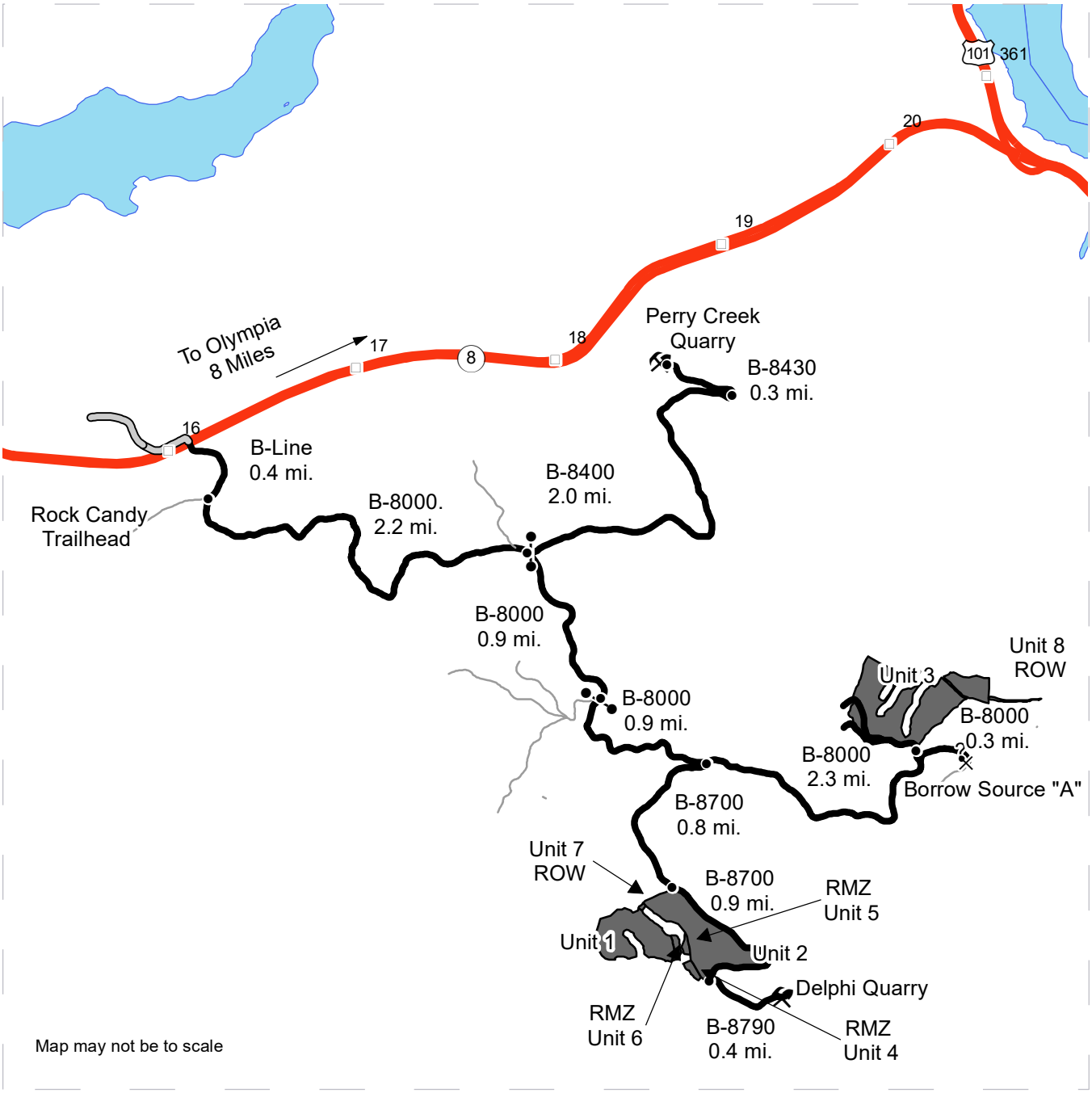
DRIVING MAP

SALE NAME: SMUGGLER VRH RMZ
AGREEMENT#: 30-099053
TOWNSHIP(S): T18R3W
TRUST(S): Forest Board Repayment (42), State Forest Transfer (1)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 200-1400



Timber Sale Unit
Haul Route
Other Road
Highway
Milepost Markers
Distance Indicator
Gate (Master H957)
Potential Rock Source
Rock Pit

DRIVING DIRECTIONS:

From State Route 8 (milepost 16.1), turn south onto the B-Line (Rock Candy Mountain RD SW) and follow for 0.4 miles. Turn north (left) onto the B-8000 junction for an additional 2.2 miles to the B-8400 junction. Continue on the B-8000 for 0.9 miles. Stay left on the B-8000 for another 0.9 miles to the B-8700 junction.
Turn south (right) and continue 0.8 miles to units 1, 2, 4-7. From the B-8000 and the B-8700 junction stay straight on the B-8000 for another 2.3 miles to Unit 3.
Perry Creek Quarry: On the B-8000 and the B-8400 Junction, keep east (left) and continue on the B-8400 for 2.0 miles. Turn onto the B-8430 for 0.4 miles. Turn west (left) onto the B-8431 for 0.1 miles.

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STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

BILL OF SALE AND CONTRACT FOR FOREST PRODUCTS

Export Restricted Lump Sum AGREEMENT NO. 30-099053

SALE NAME: SMUGGLER VRH & RMZ

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-011 Right to Remove Forest Products and Contract Area

Purchaser was the successful bidder on November 17, 2020 and the sale was confirmed on _____. The State, as owner, agrees to sell to Purchaser, and Purchaser agrees to purchase as much of the following forest products as can be cut and removed during the term of this contract: All timber, except leave trees bounded out by yellow leave tree area tags, snags, and down timber existing more than 5 years from the day of sale, bounded by the following: white Timber Sale Boundary tags, blue Special Management Unit Boundary tags, and timber type change marked with pink flagging in Unit #1; white Timber Sale Boundary tags, blue Special Management Unit Boundary tags, timber type change marked with pink flagging, and the B-8700 Road in Unit #2; white Timber Sale Boundary tags, timber type change marked with pink flagging, property line marked with Carsonite posts, an underground utility ROW marked with pink flagging, and the B-8900 and B-8910 roads in Unit #3;

All timber as described in Schedule A bounded by the following: white Timber Sale Boundary tags and blue Special Management Unit Boundary tags in RMZ Hardwood Conversion Units #4, #5, and #6;

All timber bounded by orange right of way tags in Unit #7, except that title to the timber within the right of way boundary tags is not conveyed to the Purchaser unless the associated B-8706 Ext. Road is actually constructed.

All forest products above located on approximately 181 acres on part(s) of Sections 26, and 34 all in Township 18 North, Range 3 West W.M. in Thurston County(s) as designated on the sale area and as shown on the attached timber sale map.

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
A	Hardwood Conversion Units 4, 5, and 6 Requirements
Z	Unit #3 Cable Corridor Requirements

G-031 Contract Term

Purchaser shall complete all work required by this contract prior to October 31, 2022.

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-051 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 total contract price.

   For the second extension, not to exceed 1 year, payment of at least 90 percent of the total contract price.

   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 total contract price.

   All payments, except the initial deposit, will be deducted from the total contract price to determine the unpaid portion of the contract.

e. Payment of $894.00 per acre per annum for the acres on which an operating release has not been issued in Units #1-#3, and #7. Payment of $128.00 per acre per annum for the acres on which an operating release has not been issued within Units #4, #5, and #6.

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-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-091 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, the added forest products become a part of this contract. The State shall determine the volume added and shall calculate the increase to the total contract price using the rates set forth in clause G-101, G-102, or G-103. If the sale area is reduced, the State shall determine the volume to be reduced. The State shall calculate the reduction to the total contract price using the rates set forth in clause G-101, G-102, or G-103.

G-101 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 the Scribner log scale volume, as defined by the Northwest Log Rules Advisory Group, shall be determined by the Contract Administrator. Added forest products shall be paid for at the following contract payment rates per Mbf Scribner log scale.

The pricing schedule has not been set for the sale.

G-106 Adding Naturally Damaged Forest Products

Any forest products not designated for removal that are seriously damaged by disease, insects or wind, or that may contribute seriously to the spread of insect or disease damage may be added to this sale by the State's Contract Administrator. Additions must be in unlogged areas of the sale and added volume shall not exceed an amount equal to 10 percent of the original advertised volume. Added forest products become a

part of this contract and shall be paid for at the rate set forth in clause G-101, G-102 or G-103.

G-111 Title and Risk of Loss

Title to the forest products under this contract passes to the Purchaser after they are removed from the sale area, if adequate advance payment or payment security has been provided to the State under this contract. Purchaser bears all risk of loss of, or damage to, and has an insurable interest in, the forest products described in this contract from the time the sale is confirmed under RCW 79.15.120. Breach of this contract shall have no effect on this provision.

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 Enumclaw, 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 Operation

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; the B-Line, B-8000, B-8400, B-8700, B-8706, B-8706A, B-8706 Ext., B-8708, B-8790, B-8900, B-8910, M01, and MM-1 roads. 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-380 Road Easement and Road Use Permit Requirements

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

Road Use Permit #55-100478 entered into between the State of Washington Department of Natural Resources and Manke Timber Co Inc., dated March 31, 2020.

G-396 Public Hauling Permit

The hauling of forest products, rock or equipment may require a state, county, or city hauling permit. Purchaser is responsible for obtaining any necessary permit and any costs associated with extra maintenance or repair levied by the permitting agency. Purchaser must provide the Contract Administrator with a copy of the executed permit.

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:

Lease, including the terms and provisions thereof,
For: Brush Harvesting
In Favor of: Product Evergreen
Disclosed by Application No.: 35-100901
Granted: 7/1/2020
Expires: 6/30/2023

Lease, including the terms and provisions thereof,
For: Land Use License
In Favor of: Washington Department of Fish & Wildlife
Disclosed by Application No.: 60-095576
Granted: 5/2/2017
Expires: 6/30/2022

Easement, including the terms and provisions thereof,
For: Gas Pipeline
In Favor of: Pacific Northwest Pipeline Corporation
Disclosed by Application No.: 50-004738
Granted: 5/20/1958
Expires: Indefinite

Easement, including the terms and provisions thereof,
For: Gas Pipeline
In Favor of: Northwest Pipeline Corporation
Disclosed by Application No.: 50-073640
Granted: 3/13/2003
Expires: 3/12/2033

Lease, including the terms and provisions thereof,
For: Minor Forest Products
In Favor of: DNR- South Puget Sound Region
Disclosed by Application No.: 35-SPSTC01
Granted: 1/1/2015
Expires: Indefinite

Lease, including the terms and provisions thereof,
For: Land Use License
In Favor of: The Mountaineers
Disclosed by Application No.: 60-WS1023
Granted: 2/15/2019
Expires: 12/31/2028

Special Notations

- Located within the Medicine Creek Treaty area. Intergovernmental agreements for vehicle access with Squaxin Island Tribe (92-095269), Puyallup Tribe (92-095272), Muckleshoot Tribe (92-095267), and Nisqually Indian Tribe (92-097198).
- *Option for a twenty year extension to March 12 2053.

Section P: Payments and Securities

P-011 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 Clause P-020, 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-020 Payment for Forest Products

Purchaser agrees to pay the total, lump sum contract price of $217,646.00. The total contract price consists of a $0.00 contract bid price plus $217,646.00 in fees. Fees collected shall be retained by the state unless the contract is adjusted via the G-066 clause. Purchaser shall be liable for the entire purchase price, and will not be entitled to any refunds or offsets unless expressly stated in this contract.

THE PURCHASE PRICE SHALL NOT BE AFFECTED BY ANY FACTORS, INCLUDING: the amount of forest products actually present within the contract area,

the actual acreage covered by the contract area, the amount or volume of forest products actually cut or removed by purchaser, whether it becomes physically impossible or uneconomic to remove the forest products, and whether the subject forest products have been lost or damaged by fire or any other cause. The only situations Purchaser may not be liable for the full purchase price are governed by clause G-066, concerning governmental regulatory actions taken during the term of the contract.

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-050 Billing Procedure

The State will compute and forward to Purchaser statements of charges provided for in the contract. Purchaser shall deliver payment to the State on or before the date shown on the billing statement.

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 $100,000.00. 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 H: Harvesting Operations

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 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 or 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 324 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 144 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 'Trespass and Unauthorized Activity' clause. Purchaser is required to leave all cut or damaged reserve trees on site.

H-015 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. Skid trails will not exceed 12 feet in width, including rub trees.

b. Skid trails shall not cover more than 10 percent of the total acreage on one unit.

c. Skid trail location will be pre-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. 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 12 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-035 Fall Trees Into Sale Area

Trees shall be felled into the sale area unless otherwise approved by the Contract Administrator.

H-040 Purchaser Harvest Plan

Purchaser shall, as part of the plan of operations, prepare an acceptable harvest plan for Units #3, 4, 5, 6, and 8. The plan shall address the falling, yarding operations, and logging debris, 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-051 Branding and Painting

Purchaser shall provide a State of Washington registered log brand, acceptable to the State, unless the State agrees to furnish the brand. 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-080 Snags Not to be Felled

Snags not required to be felled for safety reasons may be left standing. Snags felled for safety reasons shall not be removed and must remain where felled.

H-120 Harvesting Equipment

Forest products sold under this contract shall be harvested and removed using cable, cable-tethered, or tracked ground based equipment. Cable and cable-tethered equipment is allowed on all slopes. Non-tethered, self-leveling tracked equipment is limited to sustained slopes of 55 percent or less. Ground based equipment is limited to tracked equipment and 6-wheeled rubber tired skidders with over-the-tire tracks spanning both sets of rear tires on sustained slopes that are 45 percent or less. Rubber tired skidders not allowed. 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. Full suspension is required for yarding activities over the Type 4 streams associated with Unit #3 (See Schedule Z).

H-126 Tailholds on State Land

If Purchaser tailholds on State land, methods to minimize damage to live trees outside the sale area shall be employed and must be approved in writing by the Contract Administrator.

H-130 Hauling Schedule

The hauling of forest products will not be permitted from November 1 to April 30, nor on weekends or State recognized holidays, unless authorized in writing by the Contract Administrator.

H-140 Special Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

a. Equipment limitation zones are required within 30 feet of Type 5 streams.

b. Crossings of Type 5 streams may be allowed at locations approved in writing by the Contract Administrator. Purchaser shall place a culvert or log puncheon at crossing locations (when water is present) to protect the stream bank and prevent sedimentation. All materials placed in and/or over the stream at these crossings shall be removed immediately upon completion of yarding on that skid trail.

c. Any and all operations associated with this sale may be temporarily suspended when, in the opinion of the Contract Administrator, there is the potential for delivery to typed water.

d. No equipment shall operate or trees felled or damaged outside the timber sale boundary, except for cable corridors in Unit #3. Refer to Schedule Z for cable corridor requirements.

e. Purchaser shall take measures throughout operations to control soil erosion, water channelization, and prevent sediment delivery to streams or wetlands. Methods may include construction of water bars, “sweeping” with logs, silt traps, or other measures on skid trails, yarding corridors and haul roads.

f. The area marked as Slope Mitigation Area in Unit #3 on the Logging Plan and Timber Sale Maps may have timber cut and yarded through it. Steps to minimize disturbance to this area, including obtaining at least lead-end suspension, and minimizing impact to the feature must be implemented. Water bars, slash placement, or other best management practices may be requested

by the Contract Administrator once yarding in the corridors through this feature is complete.

g. Designated haul roads have been designed to allow for the transport of poles 60 feet in length or less. If the Purchaser chooses to remove poles greater than 60 feet in length, a haul plan must be submitted in writing to the Contract Administrator, which details the desired haul route, additional reconstruction needs, and mitigation for damage, which is a result of hauling oversize material. If approved in writing by the Contract Administrator, all work shall be at the Purchaser's expense.

h. The Purchaser shall notify all employees and contractors working on this sale that any danger tree marked or unmarked may be felled. Any marked danger tree will be replaced with a suitable tree of similar size and species as approved by the Contract Administrator.

i. To facilitate proper reforestation in areas of high slash concentrations, purchaser shall, in concurrence with ground based yarding, clear plantable spots at 11.5 foot by 11.5 foot spacing.

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. Purchaser shall leave 2 down logs per acre. A log is defined as having a minimum diameter of 12 inches on the small end of the log and a minimum length of 20 feet or at least 100 board feet.

b. Areas restricting operations due to protection of potentially unstable slopes are located within and outside the sale boundary.

- Locations inside the sale boundary are identified as Non-Tradeable Leave Trees marked with yellow Leave Tree Area tags as shown on the Timber Sale and Logging Plan Maps inside which no trees may be used as tailholds and no equipment may operate within, nor logs yarded through or over.
- Locations outside the sale boundary are identified as Tailhold Restriction Areas on the Logging Plan and Timber Sales Maps. Trees within these areas shall not be used as tailholds.

c. Any timber harvest or road work within two tree lengths of the Northwest Gas Pipeline right-of-way will require at least one week advanced notice to the Williams Northwest Pipeline. The contact person is Kevin Scrivner (425) 305-9531. This includes any cables near the right-of-way.

d. Purchaser and logging contractor must contact Kevin Scrivner (425) 305-9531 from Williams Northwest Pipeline before building any pipeline crossings in Unit #3. He must be onsite when they are building the crossings, and to observe equipment crossing the pipeline.

e. Falling timber onto, decking timber on, or parking equipment on the Williams Northwest Pipeline is not permitted.

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

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.

H-230 Tops and Limbs Outside the Sale Boundary

Tops and limbs outside the sale boundary as a result of Purchaser's operation shall be removed concurrently with the yarding operation unless otherwise directed by the Contract Administrator.

H-250 Additional Falling Requirements

Within all harvest units, all hardwood stems 2 inches DBH or greater, or 6 feet tall or greater, shall be felled. The remaining stump shall be no more than 12 inches in height. Areas of young or immature timber may be excluded from this requirement by the Contract Administrator.

Section C: Construction and Maintenance

C-040 Road Plan

Road construction and associated work provisions of the Road Plan for this sale, dated 2/28/2020 are hereby made a part of this contract.

C-050 Purchaser Road Maintenance and Repair

Purchaser shall perform work at their own expense on the B-8000 (from B-8500 junction to end of road), B-8700, B-8706, B-8706A, B-8706 Ext., B-8708, B-8790, B-8900, B-8910, and M01 roads. All work shall be completed to the specifications detailed in the Road Plan.

C-060 Designated Road Maintainer

If required by the State, Purchaser shall perform maintenance and replacement work as directed by the Contract Administrator on all other roads used not covered in clause C-050. Purchaser shall furnish a statement in a form satisfactory to the State showing the costs incurred while performing this work. Costs shall be based on the rates set forth in the equipment rate schedule on file at the Region office or Engineering Division in

Olympia. The State shall reimburse Purchaser for said costs within 30 days of receipt and approval of the statement.

C-080 Landing Locations Approved Prior to Construction

Landings shall be marked by Purchaser and approved by the Contract Administrator prior to construction.

C-090 Landing Location

Landings shall be built 50 feet off the B-8700 road(s).

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-100 Stream Cleanout

Slash or debris which enters Type 5 streams in all units and Type 4 stream in Unit #3 as a result of operations under this contract and which is identified by the Contract Administrator shall be removed and deposited in a stable position. Removal of slash or debris shall be accomplished in a manner that avoids damage to the natural stream bed and bank vegetation.

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 (DOE). 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 (contact information below).
-National Response Center (contact information below).
-Appropriate Department of Ecology (DOE) regional office (contact information below).
-DNR Contract Administrator

DOE - Northwest Region: 1-425-649-7000
(Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom counties)

DOE - Southwest Region: 1-360-407-6300
(Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, and Wahkiakum counties)

DOE - Central Region: 1-509-575-2490
(Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, and Yakima counties)

DOE - Eastern Region: 1-509-329-3400
(Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman counties)

Department of Emergency Management 24-hour Number: 1-800-258-5990

National Response Center: 1-800-424-8802

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-013 Liquidated Damages or Failure to Perform

The following clauses provide for payments by Purchaser to the State for breaches of the terms of this contract other than failure to perform. These payments are agreed to

as liquidated damages and not as penalties. They are reasonable estimates of anticipated harm to the State, which will be 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.

Clause P-020 governs Purchaser's liability in the event Purchaser fails to perform any of the contract requirements other than the below liquidated damage clauses without written approval by the State. Purchaser's failure to pay for all or part of the forest products sold in this contract prior to expiration of the contract term results in substantial injury to the State. Therefore, Purchaser agrees to pay the State the full lump sum contract price in P-020 in the event of failure to perform.

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 $1,000.00 per tree for all damaged trees in Units #4, #5, and #6.

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 Units #1, #2, and #3.

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	_____ Scott Sargent South Puget Sound Region Manager
_____ Print Name	
Date: _____ Address:	Date: _____

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 A
Hardwood Conversion Units 4, 5, and 6 Requirements

A. All hardwood species shall be felled and removed EXCEPT 2 bigleaf maple per acre shall be left per unit. No conifer species shall be felled or removed.

B. Purchaser shall select 2 bigleaf maple per acre per hardwood conversion unit to remain standing. Contract Administrator must approve these trees in writing before harvest can begin.

C. An onsite pre-work meeting specific to Units #4, #5 & #6 will be required before any activity begins. Any cutter that is to work in these units will be required to attend the meeting.

D. All persons involved in the manual or mechanical felling of timber, including fallers, cutters, and operator, must have in their possession a copy of the Cutting Card for Riparian Forest Restoration Strategy during periods of active felling and yarding operations.

E. A skid trail will not exceed 12 feet in width, including the rub trees.

F. All skid trails will be marked and approved in writing by the Contract Administrator before logging.

G. All snags felled for safety reasons must remain on-site and shall be left as close as possible to their original location.

H. Logging damage to advanced regeneration is to be avoided where operationally feasible.

I. A 30-foot Equipment Exclusion Zone (EEZ) from the Timber Sale Boundary tags is to be observed throughout the unit (no heavy equipment shall operate within 30 feet of the Timber Sale Boundary tags).

Schedule Z
Unit #3 Cable Corridor Requirements

For Type 4 Streams/RMZ

A. Location of corridors must be marked by the Purchaser and approved in writing by the Contract Administrator prior to operations beginning.

B. Cable corridors must be kept to a minimum in quantity and maximum of 12 feet in width, including the rub trees.

C. Excessive soil damage is not permitted in the corridor. Excessive soil damage within the corridor will be as defined per the Contract Clause H-017.

D. If sedimentation of any typed water occurs as the result of yarding activities, operations shall cease and the source of sedimentation shall be controlled using established erosion control methods. When the sedimentation source has been eliminated work may resume.

E. No timber shall be yarded across Type 4 waters except where the logs will not materially damage stream banks and channels.

F. Full suspension will be required over the Type 4 stream during yarding activities.

G. Corridors shall be water barred at the completion of yarding, if required by the Contract Administrator.

H. When changing tailholds over typed waters, the lines shall be moved over and around leave trees and riparian vegetation prior to re-tightening. Tailholds shall be of sufficient height to minimize damage to vegetation.

I. If corridor trees within a RMZ must be felled, any trees felled shall remain where they fall. Corridor trees within 30 feet of the Type 4 waters shall not be cut.

J. Damage to surrounding timber in the RMZ outside of the cable corridor shall be avoided.

K. Large woody material embedded in the bank or streambed shall be left undisturbed and intact.

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

WASHINGTON STATE DEPARTMENT OF NATURAL RESOURCES

FOREST EXCISE TAX ROAD SUMMARY SHEET

Region: South Puget Sound

Timber Sale Name: Smuggler VRH RMZ

Application Number: 30- 099053

EXCISE TAX APPLICABLE ACTIVITIES

Construction: 2,505 **linear feet** 1,040 of this is optional construction on Manke land.
Road to be constructed (optional and required) but not abandoned

Reconstruction: 814 **linear feet**
Road to be reconstructed (optional and required) but not abandoned

Abandonment: 0 **linear feet**
Abandonment of existing roads not reconstructed under the contract

Decommission: 0 **linear feet**
Road to be made undriveable but not officially abandoned.

Pre-Haul Maintenance: 50,437 **linear feet** 3,400 of this is optional Pre-Haul on Manke land.
Existing road to receive maintenance work (optional and required) prior to haul

EXCISE TAX EXEMPT ACTIVITIES

Temporary Construction: 1993 **linear feet** 335 feet of this is on Manke land.
Roads to be constructed (optional and required) and then abandoned

Temporary Reconstruction: 0 **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 contact. 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: **Smuggler VRH RMZ**	Region: **South Puget Sound**
Agreement #: **30-099053**	District: **Black Hills**
Contact Forester: **Brody Coval**	Phone/ Location: **(253) 293-0264** Ext: /
Alternate Contact: **Andy Ritter**	Phone/ Location: **(360)-791-5980** Ext: /

Type of Sale (lump sum, mbf scale, tonnage scale or contract harvest): lump sum
Required or Optional removal of utility as pulp:
Evaluated for RFRS Implementation?: Yes – See RMZ Units
Percentage cable (specify downhill vs uphill): 28% uphill
Percentage ground based: 72%
Species Onsite: ☒RC, ☒DF, ☒WH, ☒RA, ☐BC, ☒BLM, ☐NF, ☐SF, ☐SS, ☒ Other:(Please List)
Grand Fir, Yew

UNIT ACREAGES* AND METHOD OF DETERMINATION:

Unit # Harvest R/W or RMZ WMZ	Legal Description Sec/Twp/Rng	Grant	Gross Traversed Acres	Deductions from Gross Acres (No harvest acres) RMZ/ WMZ Acres	Leave Tree Acres	Existing Road Acres	Other Acres (describe)	Net Harvest Acres	Acreage Determination (List method, dimensions and error of closure if applicable)
1	Sec 34/ T 18N/ R 03 W	01	42.5	0	3.3	0	0	39.2	GPS
2	Sec 34/ T 18N/ R 03 W	01	60.1	0	3.5	0	0	56.6	GPS
3	Sec 26/ T 18N/ R 03 W	01, 42	90.8	0	10.2	1.7	0.9 (Pipeline ROW)	78.0	GPS, B-8900 (1500' x 50')
4 RMZ	Sec 34/ T 18N/ R 03 W	01	2.3	0	0	0	0	2.3	GPS
5 RMZ	Sec 34/ T 18N/ R 03 W	01	1.6	0	0	0	0	1.6	GPS
6 RMZ	Sec 34/ T 18N/ R 03 W	01	2.5	0	0	0	0	2.5	GPS
7 ROW	Sec 34/ T 18N/ R 03 W	01	0.4	0	0	0	0	0.4	GPS
8 ROW	Sec 25/ T 18N/ R 03 W	N/A	1.2	0	0	0	0	1.2	GPS
TOTAL ACRES			201.4	0	17.0	1.7	0.9	181.8	

HARVEST PLAN AND SPECIAL CONDITIONS:

Unit #	Harvest Prescription: (Mark leave, take, paint color, tags, flagging etc.)	Special Management areas:	Other conditions (# leave trees, etc.)
1	Variable Retention Harvest: Boundaries are marked with white "Timber Sale Boundary" tags, blue "Special Management Unit Boundary" tags, and pink flagging. Clumped leave trees are marked with yellow "Leave Tree Area" tags, and pink flagging.	N/A	8 leave trees per acre.

2	Variable Retention Harvest: Boundaries are marked with white “Timber Sale Boundary” tags, blue “Special Management Unit Boundary” tags, and pink flagging. Clumped leave trees are marked with yellow “Leave Tree Area” tags, and pink flagging.	N/A	8 leave trees per acre.
3	Variable Retention Harvest: Boundaries are marked with white “Timber Sale Boundary” tags, and pink flagging. Clumped leave trees are marked with yellow “Leave Tree Area” tags, and pink flagging.	N/A	8 leave trees per acre.
4 RMZ	RMZ Hardwood Conversion Units are marked with white “Timber Sale Boundary” tags blue “Special Management Unit Boundary” tags and pink flagging.	Hardwood Conversion Unit	All conifer trees will be left as well as two maple per acre (not marked in field).
5 RMZ	RMZ Hardwood Conversion Units are marked with white “Timber Sale Boundary” tags blue “Special Management Unit Boundary” tags and pink flagging.	Hardwood Conversion Unit	All conifer trees will be left as well as two maple per acre (not marked in field).
6 RMZ	RMZ Hardwood Conversion Units are marked with white “Timber Sale Boundary” tags blue “Special Management Unit Boundary” tags and pink flagging.	Hardwood Conversion Unit	All conifer trees will be left as well as two maple per acre (not marked in field).
7 ROW	Right-of-Way Unit marked with orange “Right-of-Way Boundary” tags and orange flagging.	Right-of-Way Unit	
8 ROW	Right-of-Way Unit marked with orange “Right-of-Way Boundary” tags and orange flagging	Right-of-Way Unit	

OTHER PRE-CRUISE INFORMATION:

Unit #	Estimated Volume	Access information (Gates, locks, etc.)	Photos, traverse maps required
1	See Cruise	Gate at B-8000/B-8500 Intersection: (Master-957)	Traverse map with contours, roads, and leave trees. Photo (Scale 1” to 400’).
2	See Cruise	Gate at B-8000/B-8500 Intersection: (Master-957)	Traverse map with contours, roads, and leave trees. Photo (Scale 1” to 400’).
3	See Cruise	Gate at B-8000/B-8500 Intersection: (Master-957)	Traverse map with contours, roads, and leave trees. Photo (Scale 1” to 400’).
4 RMZ	See Cruise	Gate at B-8000/B-8500 Intersection: (Master-957)	Traverse map with contours, roads, and leave trees. Photo (Scale 1” to 400’).
5 RMZ	See Cruise	Gate at B-8000/B-8500 Intersection: (Master-957)	Traverse map with contours, roads, and leave trees. Photo (Scale 1” to 400’).
6 RMZ	See Cruise	Gate at B-8000/B-8500 Intersection: (Master-957)	Traverse map with contours, roads, and leave trees. Photo (Scale 1” to 400’).

7 ROW	See Cruise	Gate at B-8000/B-8500 Intersection: (Master-957)	Traverse map with contours, roads, and leave trees. Photo (Scale 1" to 400').
8 ROW	See Cruise	Manke gate at end of Benson Rd. (inquire with Manke Timber)	Traverse map with contours, roads, and leave trees. Photo (Scale 1" to 400').

REMARKS:

Units 1 through 3 are VRH harvests. All units except for Unit 3 are ground based. Unit 3 is approximately 62% cable. Portions of Unit 3 were previously thinned, and blue and yellow paint is present throughout those units. Units 4-6 are RMZ Hardwood Conversion and have shared boundaries with the adjacent VRH units. All conifers and two maple per acre will be left in RMZ units. A portion of Unit 2 has a large amount of high-quality oversized conifers. Poles are present in Units 1-3.

The timber consists of western hemlock, Douglas-fir, western redcedar, red alder, and bigleaf maple.

Prepared By: Brody Coval **Date: 09/24/2019**	**Title: Forester 2**	**CC:**

Revised 2/23/2007 (PSLD)

Timber Sale Cruise Report
Smuggler VRH RMZ

Sale Name: SMUGGLER VRH RMZ

Sale Type: LUMP SUM

Region: SO PUGET

District: BLACK HILLS

Lead Cruiser: DPClark

Other Cruisers:KJBailey

Cruise Narrative:
Smuggler is a large timber sale of large wood located in the north side of the Capitol Forest only minutes from the highway. The sale consists of 1 large sub-unit, 2 medium sized sub-units, 3 small sub-units, 1 small ROW on DNR land, and 1 small ROW on private land. Stand structure and species is varied and will be described unit by unit. Average ring count for DF at 8/inch on outer 1/3 dia.
Units 1 and 2: Stand age generally ranges from 75 to 90 years old. Unit 1 also has a patch of 120 year old DF in the NW corner. Timber type is a mosaic varying from pure DF to patches of hardwoods. Species composition dominated by DF, seconded by MA, has a healthy stock of RA, scattered WH, and a small compliment of RC. There are a few root rot mortality pockets. Schwienitzii butt rot is present in the stand, and Red Ring Rot conks decorate the occasional bole. Very little storm damage is present. Defect from bad form is limited. Boles are straight, clean, and high quality. There are a few pole quality trees present, as well as a few peelers, and a lot of Special Mill. The RA in the stand is straight and tall. MA quality varies.
Unit 3: This is a large stand of 90 year old DF that was cable thinned approximately 25 years ago. The secondary species is MA, there are a few pockets of RA, and a few scattered WH and RC. There are a few root rot mortality pockets and a few areas with Schwienitzii, otherwise stand is healthy. No stem decay conks observed. Logging damage is minimal. A few RA are starting to blow down, otherwise very little storm damage. DF log quality is mostly high. Trees are straight and clean. There are a few poles in the NE corner of stand in an area that was not thinned. MA log quality is more varied.
Note: Unit 3 has an underground pipeline running through NE corner of stand.
Units 4, 5, and 6: These 3 small units are dominated by hardwoods. The RA is over ripe but there are still a lot of good pieces to harvest. The MA, while still vigorous, is quite varied in log quality. The few conifers in these stands are to be left as leave trees.
ROW7: This is a small, mixed patch of mature edge trees with high defect.
ROW8: This is approximately a 1/4 mile ROW through 30 year old DF plantation on private land owned by Manke Timber. The volume in this ROW is not represented in the cruise report.

Timber Sale Notice Volume (MBF)

				MBF Volume by Grade							
Sp	QMD	Rings/In	Age	All	Peeler	Spec Mill	1 Saw	2 Saw	3 Saw	4 Saw	Utility
DF	24.9	8		7,071.7	158.1	1,470.1		4,498.8	761.5	138.5	44.9
MA	18.3			511.7			74.3	171.5	78.6	69.3	118.0
RA	17.6			487.6			71.0	203.0	81.1	89.2	43.3
WH	14.2			173.5				99.6	21.2	31.1	21.6
RC	21.4			126.5					112.3	14.2	
ALL	21.4			8,370.9	158.1	1,470.1	145.1	4,972.8	1,054.8	342.4	227.7

Timber Sale Notice Weight (tons)

	Tons by Grade							
Sp	All	Peeler	Spec Mill	1 Saw	2 Saw	3 Saw	4 Saw	Utility
DF	41,755.2	737.7	7,970.5		25,299.1	6,120.4	1,292.1	335.5
MA	4,156.2			479.2	1,337.9	656.6	647.3	1,035.1
RA	3,753.6			450.0	1,462.8	584.1	904.0	352.6
WH	1,523.2				683.4	219.5	423.4	196.8
RC	941.8					743.0	198.8	
ALL	52,130.0	737.7	7,970.5	929.2	28,783.3	8,323.6	3,465.7	1,919.9

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 (%)
226.5	3.8	200.0	2.6	46,444	4.6

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
SMUGGLER U1	B2C: VR, 2 BAF (46.94, 27.78 for some species) Measure/Count Plots, Sighting Ht = 16 ft	39.2	42.5	39	19	0
SMUGGLER U2	B2C: VR, 2 BAF (54.44, 27.78 for some species) Measure/Count Plots, Sighting Ht = 16 ft	56.6	60.1	57	28	2
SMUGGLER U3	B1C: VR, 1 BAF (33.61) Measure/ Count Plots, Sighting Ht = 16 ft	78.0	89.9	77	25	4
SMUGGLER U4 RMZ HDWD	B1C: VR, 1 BAF (27.78) Measure/ Count Plots, Sighting Ht = 16 ft	2.3	2.3	7	5	0
SMUGGLER U5 RMZ HDWD	B1C: VR, 1 BAF (27.78) Measure/ Count Plots, Sighting Ht = 16 ft	1.6	1.6	7	4	0
SMUGGLER U6 RMZ HDWD	B1C: VR, 1 BAF (27.78) Measure/ Count Plots, Sighting Ht = 16 ft	2.5	2.5	5	4	0
SMUGGLER U7 ROW	ST: Strip/Percent Sample (1 tree expansion)	0.4	0.4	1	1	0
All		180.6	199.3	193	86	6

Timber Sale Log Grade x Sort Summary

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	Domestic	16.5	37.0	5,919	2.3	6,283.5	1,069.0
DF	LIVE	2 SAW	HQ-A	20.1	40.0	635	0.0	618.4	114.7
DF	LIVE	2 SAW	HQ-B	18.1	40.0	18,356	0.7	18,397.1	3,315.1
DF	LIVE	3 PEELER	HQ-A	30.1	40.0	875	0.0	737.7	158.1
DF	LIVE	3 SAW	Domestic	9.5	34.0	2,950	2.0	4,491.6	532.8
DF	LIVE	3 SAW	HQ-B	10.2	39.0	1,266	0.4	1,628.7	228.7
DF	LIVE	4 SAW	Domestic	6.1	30.0	767	3.1	1,292.1	138.5
DF	LIVE	CULL	Cull	7.5	5.0	0	100.0	0.0	0.0
DF	LIVE	SPECIAL MILL	HQ-A	19.8	40.0	8,140	0.2	7,970.5	1,470.0
DF	LIVE	UTILITY	Pulp	9.0	31.0	248	7.8	335.4	44.8
MA	LIVE	1 SAW	Domestic	18.5	32.0	411	10.5	479.2	74.2
MA	LIVE	2 SAW	Domestic	14.2	33.0	949	9.5	1,338.0	171.5
MA	LIVE	3 SAW	Domestic	11.5	29.0	436	11.0	656.6	78.7
MA	LIVE	4 SAW	Domestic	7.9	27.0	384	6.5	647.3	69.3
MA	LIVE	CULL	Cull	10.2	13.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	Pulp	9.0	25.0	654	21.6	1,035.0	118.1
RA	LIVE	1 SAW	Domestic	16.8	32.0	393	4.8	450.0	70.9
RA	LIVE	2 SAW	Domestic	13.2	34.0	1,124	3.6	1,462.9	203.0
RA	LIVE	3 SAW	Domestic	10.7	35.0	449	7.0	584.1	81.1
RA	LIVE	4 SAW	Domestic	7.7	34.0	494	6.3	904.1	89.2
RA	LIVE	CULL	Cull	7.0	13.0	0	100.0	0.0	0.0
RA	LIVE	UTILITY	Pulp	6.7	25.0	240	8.4	352.6	43.3
RC	LIVE	3 SAW	Domestic	12.9	35.0	622	5.7	743.0	112.3
RC	LIVE	4 SAW	Domestic	5.3	32.0	79	9.7	198.8	14.3
RC	LIVE	CULL	Cull	16.1	8.0	0	100.0	0.0	0.0
WH	LIVE	2 SAW	Domestic	16.9	38.0	551	0.0	683.5	99.6
WH	LIVE	3 SAW	Domestic	9.3	37.0	117	1.2	219.5	21.2
WH	LIVE	4 SAW	Domestic	5.2	34.0	172	3.2	423.4	31.1
WH	LIVE	CULL	Cull	8.6	6.0	0	100.0	0.0	0.0
WH	LIVE	UTILITY	Pulp	6.8	20.0	120	0.0	196.8	21.6

Timber Sale Log Grade x Diameter Bin Summary

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 11	LIVE	4 SAW	6.1	30.0	767	3.1	1,292.1	138.5
DF	5 - 11	LIVE	CULL	6.6	5.0	0	100.0	0.0	0.0
DF	5 - 11	LIVE	UTILITY	8.5	30.0	169	0.0	248.5	30.6

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 11	LIVE	3 SAW	9.6	35.0	4,216	1.5	6,120.4	761.5
DF	12 - 15	LIVE	UTILITY	12.0	38.0	1	0.0	1.4	0.2
DF	12 - 15	LIVE	CULL	13.2	7.0	0	100.0	0.0	0.0
DF	12 - 15	LIVE	2 SAW	13.8	38.0	5,309	1.0	6,426.9	958.8
DF	16 - 19	LIVE	2 SAW	17.6	39.0	5,670	1.4	5,907.2	1,024.0
DF	16 - 19	LIVE	SPECIAL MILL	17.7	40.0	2,841	0.4	2,981.3	513.1
DF	16 - 19	LIVE	UTILITY	18.2	33.0	4	8.3	5.3	0.8
DF	16 - 19	LIVE	CULL	18.4	10.0	0	100.0	0.0	0.0
DF	20+	LIVE	SPECIAL MILL	22.3	40.0	5,298	0.1	4,989.2	956.9
DF	20+	LIVE	2 SAW	24.1	39.0	13,931	1.0	12,964.9	2,515.9
DF	20+	LIVE	CULL	25.3	10.0	0	100.0	0.0	0.0
DF	20+	LIVE	3 PEELER	30.1	40.0	875	0.0	737.7	158.1
DF	20+	LIVE	UTILITY	39.0	30.0	73	22.0	80.2	13.2
MA	5 - 11	LIVE	CULL	6.8	20.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	UTILITY	7.4	27.0	231	0.3	349.0	41.7
MA	5 - 11	LIVE	4 SAW	7.9	27.0	384	6.5	647.3	69.3
MA	5 - 11	LIVE	3 SAW	11.0	29.0	436	11.0	656.6	78.7
MA	12 - 15	LIVE	UTILITY	13.9	25.0	231	24.6	394.6	41.8
MA	12 - 15	LIVE	2 SAW	14.1	34.0	949	9.5	1,338.0	171.5
MA	12 - 15	LIVE	CULL	14.3	11.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	1 SAW	17.3	31.0	279	6.0	326.4	50.4
MA	16 - 19	LIVE	CULL	18.1	7.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	UTILITY	18.5	31.0	119	46.1	232.2	21.6
MA	20+	LIVE	1 SAW	22.5	24.0	132	18.6	152.8	23.8
MA	20+	LIVE	UTILITY	22.5	18.0	72	3.2	59.2	13.1
MA	20+	LIVE	CULL	22.8	4.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	UTILITY	5.9	24.0	138	0.4	210.5	25.0
RA	5 - 11	LIVE	CULL	6.5	15.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	4 SAW	7.6	34.0	494	6.3	904.1	89.2
RA	5 - 11	LIVE	3 SAW	10.7	35.0	449	7.0	584.1	81.1
RA	12 - 15	LIVE	UTILITY	13.2	30.0	101	17.5	142.1	18.3
RA	12 - 15	LIVE	2 SAW	13.3	34.0	1,124	3.6	1,462.9	203.0
RA	16 - 19	LIVE	1 SAW	16.6	32.0	393	4.8	450.0	70.9
RA	16 - 19	LIVE	CULL	19.0	5.0	0	100.0	0.0	0.0
RA	20+	LIVE	CULL	20.7	10.0	0	100.0	0.0	0.0
RC	5 - 11	LIVE	4 SAW	5.5	31.0	79	9.7	198.8	14.3
RC	5 - 11	LIVE	CULL	8.1	6.0	0	100.0	0.0	0.0
RC	5 - 11	LIVE	3 SAW	8.7	33.0	73	4.5	118.0	13.2

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
RC	12 - 15	LIVE	CULL	13.5	7.0	0	100.0	0.0	0.0
RC	12 - 15	LIVE	3 SAW	14.7	36.0	131	6.6	180.0	23.7
RC	16 - 19	LIVE	3 SAW	17.1	33.0	129	9.4	165.9	23.3
RC	16 - 19	LIVE	CULL	17.1	8.0	0	100.0	0.0	0.0
RC	20+	LIVE	3 SAW	24.9	39.0	289	3.9	279.2	52.2
RC	20+	LIVE	CULL	32.3	7.0	0	100.0	0.0	0.0
WH	5 - 11	LIVE	4 SAW	5.3	34.0	172	3.2	423.4	31.1
WH	5 - 11	LIVE	UTILITY	6.6	20.0	120	0.0	196.8	21.6
WH	5 - 11	LIVE	CULL	7.5	6.0	0	100.0	0.0	0.0
WH	5 - 11	LIVE	3 SAW	9.5	35.0	117	1.2	219.5	21.2
WH	12 - 15	LIVE	2 SAW	14.4	39.0	128	0.0	175.2	23.1
WH	12 - 15	LIVE	CULL	14.7	4.0	0	100.0	0.0	0.0
WH	16 - 19	LIVE	2 SAW	17.2	38.0	151	0.0	200.7	27.2
WH	20+	LIVE	2 SAW	22.9	38.0	273	0.0	307.6	49.2

Timber Sale Log Sort x Diameter Bin Summary

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 11	LIVE	Cull	6.6	5.0	0	100.0	0.0	0.0
DF	5 - 11	LIVE	Domestic	8.0	32.0	3,717	2.2	5,783.7	671.3
DF	5 - 11	LIVE	Pulp	8.5	30.0	169	0.0	248.5	30.6
DF	5 - 11	LIVE	HQ-B	10.1	39.0	1,266	0.4	1,628.7	228.7
DF	12 - 15	LIVE	Pulp	12.0	38.0	1	0.0	1.4	0.2
DF	12 - 15	LIVE	Cull	13.2	7.0	0	100.0	0.0	0.0
DF	12 - 15	LIVE	Domestic	13.8	36.0	1,791	2.2	2,254.7	323.4
DF	12 - 15	LIVE	HQ-B	13.8	40.0	3,518	0.3	4,172.2	635.4
DF	16 - 19	LIVE	Domestic	17.5	38.0	1,910	1.8	2,043.3	345.0
DF	16 - 19	LIVE	HQ-B	17.6	39.0	3,638	1.2	3,736.2	657.0
DF	16 - 19	LIVE	HQ-A	17.7	40.0	2,963	0.3	3,109.0	535.1
DF	16 - 19	LIVE	Pulp	18.2	33.0	4	8.3	5.3	0.8
DF	16 - 19	LIVE	Cull	18.4	10.0	0	100.0	0.0	0.0
DF	20+	LIVE	HQ-A	22.8	40.0	6,687	0.1	6,217.7	1,207.7
DF	20+	LIVE	Domestic	23.4	37.0	2,218	2.9	1,985.5	400.6
DF	20+	LIVE	HQ-B	24.5	39.0	11,200	0.7	10,488.7	2,022.6
DF	20+	LIVE	Cull	25.3	10.0	0	100.0	0.0	0.0
DF	20+	LIVE	Pulp	39.0	30.0	73	22.0	80.2	13.2
MA	5 - 11	LIVE	Cull	6.8	20.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	Pulp	7.4	27.0	231	0.3	349.0	41.7

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	5 - 11	LIVE	Domestic	9.2	28.0	820	9.0	1,303.9	148.0
MA	12 - 15	LIVE	Pulp	13.9	25.0	231	24.6	394.6	41.8
MA	12 - 15	LIVE	Domestic	14.1	34.0	949	9.5	1,338.0	171.5
MA	12 - 15	LIVE	Cull	14.3	11.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	Domestic	17.3	31.0	279	6.0	326.4	50.4
MA	16 - 19	LIVE	Cull	18.1	7.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	Pulp	18.5	31.0	119	46.1	232.2	21.6
MA	20+	LIVE	Domestic	22.5	24.0	132	18.6	152.8	23.8
MA	20+	LIVE	Pulp	22.5	18.0	72	3.2	59.2	13.1
MA	20+	LIVE	Cull	22.8	4.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	Pulp	5.9	24.0	138	0.4	210.5	25.0
RA	5 - 11	LIVE	Cull	6.5	15.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	Domestic	8.6	34.0	943	6.6	1,488.1	170.4
RA	12 - 15	LIVE	Pulp	13.2	30.0	101	17.5	142.1	18.3
RA	12 - 15	LIVE	Domestic	13.3	34.0	1,124	3.6	1,462.9	203.0
RA	16 - 19	LIVE	Domestic	16.6	32.0	393	4.8	450.0	70.9
RA	16 - 19	LIVE	Cull	19.0	5.0	0	100.0	0.0	0.0
RA	20+	LIVE	Cull	20.7	10.0	0	100.0	0.0	0.0
RC	5 - 11	LIVE	Domestic	6.4	32.0	152	7.3	316.8	27.5
RC	5 - 11	LIVE	Cull	8.1	6.0	0	100.0	0.0	0.0
RC	12 - 15	LIVE	Cull	13.5	7.0	0	100.0	0.0	0.0
RC	12 - 15	LIVE	Domestic	14.7	36.0	131	6.6	180.0	23.7
RC	16 - 19	LIVE	Cull	17.1	8.0	0	100.0	0.0	0.0
RC	16 - 19	LIVE	Domestic	17.1	33.0	129	9.4	165.9	23.3
RC	20+	LIVE	Domestic	24.9	39.0	289	3.9	279.2	52.2
RC	20+	LIVE	Cull	32.3	7.0	0	100.0	0.0	0.0
WH	5 - 11	LIVE	Domestic	6.3	34.0	289	2.4	642.9	52.3
WH	5 - 11	LIVE	Pulp	6.6	20.0	120	0.0	196.8	21.6
WH	5 - 11	LIVE	Cull	7.5	6.0	0	100.0	0.0	0.0
WH	12 - 15	LIVE	Domestic	14.4	39.0	128	0.0	175.2	23.1
WH	12 - 15	LIVE	Cull	14.7	4.0	0	100.0	0.0	0.0
WH	16 - 19	LIVE	Domestic	17.2	38.0	151	0.0	200.7	27.2
WH	20+	LIVE	Domestic	22.9	38.0	273	0.0	307.6	49.2

Cruise Unit Report
SMUGGLER U1

Unit Sale Notice Volume (MBF): SMUGGLER U1

				MBF Volume by Grade							
Sp	QMD	Rings/In	Age	All	Peeler	Spec Mill	1 Saw	2 Saw	3 Saw	4 Saw	Utility
DF	27.9			2,454.9	158.1	380.7		1,699.2	185.1	14.0	17.8
RA	17.9			239.5			35.7	108.1	43.7	27.8	24.2
WH	14.0			145.5				88.2	11.4	28.8	17.1
RC	19.2			67.0					59.2	7.8	
MA	17.0			54.4			18.9	17.7		2.2	15.7
ALL	21.7			2,961.4	158.1	380.7	54.6	1,913.1	299.4	80.7	74.8

Unit Sale Notice Weight (tons): SMUGGLER U1

	Tons by Grade							
Sp	All	Peeler	Spec Mill	1 Saw	2 Saw	3 Saw	4 Saw	Utility
DF	13,442.7	737.7	1,953.1		9,030.6	1,482.8	115.3	123.2
RA	1,790.9			222.4	758.0	308.3	291.0	211.2
WH	1,239.7				591.2	99.9	392.6	156.0
RC	456.9					354.2	102.7	
MA	370.8			112.3	115.6		16.3	126.6
ALL	17,301.0	737.7	1,953.1	334.7	10,495.4	2,245.1	918.0	616.9

Unit Cruise Design: SMUGGLER U1

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (46.94, 27.78 for some species) Measure/Count Plots, Sighting Ht = 16 ft	39.2	42.5	39	19	0

Unit Cruise Summary: SMUGGLER U1

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	53	137	3.5	0
RA	20	43	1.1	0
WH	7	17	0.4	0
RC	7	14	0.4	0
MA	9	12	0.3	0
ALL	96	223	5.7	0

Unit Cruise Statistics (Cut + Leave Trees): SMUGGLER U1

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	218.6	75.1	12.0	286.5	31.6	4.3	62,624	81.5	12.8
RA	40.6	158.2	25.3	150.5	23.9	5.3	6,110	160.0	25.9
WH	29.9	179.4	28.7	124.3	66.8	25.3	3,712	191.4	38.2
RC	16.9	196.5	31.5	101.2	73.9	27.9	1,710	210.0	42.1
MA	12.0	270.0	43.2	115.8	24.1	8.0	1,389	271.1	44.0
ALL	317.9	41.8	6.7	237.6	45.7	4.7	75,545	62.0	8.2

Unit Summary: SMUGGLER U1

Sp	Status	Rx	N	D	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	LIVE	CUT	52	ALL	28.1	106	145	61,275	2.5	49.7	213.9	40.3	13,153.1	2,402.0
DF	LIVE	POLE	1	ALL	22.0	123	158	1,349	2.5	1.8	4.7	1.0	289.6	52.9
MA	LIVE	CUT	9	ALL	17.0	60	73	1,389	20.1	7.6	12.0	2.9	370.8	54.5
RA	LIVE	CUT	20	ALL	17.9	84	104	6,110	11.2	23.2	40.6	9.6	1,790.9	239.5
RC	LIVE	CUT	7	ALL	19.2	46	57	1,710	18.8	8.4	16.9	3.9	456.9	67.0
WH	LIVE	CUT	7	ALL	14.0	51	62	3,712	2.9	27.9	29.9	8.0	1,239.7	145.5
ALL	LIVE	CUT	95	ALL	22.2	81	106	74,196	4.1	116.8	313.3	64.7	17,011.4	2,908.5
ALL	LIVE	POLE	1	ALL	22.0	123	158	1,349	2.5	1.8	4.7	1.0	289.6	52.9
ALL	ALL	ALL	96	ALL	22.2	82	107	75,545	4.1	118.6	318.0	65.7	17,301.0	2,961.4

Unit Stand Table: SMUGGLER U1

Sp	D	Status	Rx	N	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	12	LIVE	CUT	1	12.0	65	81	478	0.0	5.4	4.3	1.2	145.4	18.8
DF	16	LIVE	CUT	2	15.5	69	86	857	3.1	6.1	8.0	2.0	291.4	33.6
DF	18	LIVE	CUT	2	18.0	78	107	1,215	1.8	4.3	7.7	1.8	337.3	47.6
DF	20	LIVE	CUT	2	19.0	104	133	1,523	1.1	3.9	7.8	1.8	419.6	59.7
DF	22	LIVE	CUT	1	21.0	120	154	1,873	0.0	3.1	7.6	1.7	468.1	73.4
DF	26	LIVE	CUT	2	25.0	105	135	1,607	1.7	2.4	8.0	1.6	428.5	63.0
DF	28	LIVE	CUT	1	28.0	138	178	1,243	0.0	0.9	3.7	0.7	257.5	48.7
DF	30	LIVE	CUT	4	29.8	125	161	5,380	1.2	4.0	19.5	3.6	1,228.7	210.9
DF	32	LIVE	CUT	8	31.8	114	216	8,600	1.0	5.7	31.2	5.5	1,866.7	337.1
DF	34	LIVE	CUT	7	33.2	135	174	9,913	0.1	5.1	30.7	5.3	2,054.9	388.6
DF	36	LIVE	CUT	3	35.7	112	152	3,228	0.8	1.7	11.9	2.0	693.3	126.5
DF	38	LIVE	CUT	2	38.0	134	173	2,541	0.7	1.0	7.9	1.3	527.3	99.6
DF	40	LIVE	CUT	4	39.2	135	175	5,077	1.6	1.9	15.6	2.5	1,042.6	199.0

Sp	D	Status	Rx	N	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	42	LIVE	CUT	3	41.3	136	175	3,966	1.1	1.2	11.6	1.8	779.4	155.5
DF	44	LIVE	CUT	2	43.0	151	195	2,976	0.6	0.7	7.5	1.1	563.4	116.7
DF	46	LIVE	CUT	1	45.0	148	192	1,474	0.0	0.3	3.8	0.6	278.4	57.8
DF	48	LIVE	CUT	2	47.5	147	190	1,941	33.1	0.6	7.7	1.1	375.9	76.1
DF	50	LIVE	CUT	3	49.7	145	188	4,300	0.1	0.9	11.5	1.6	826.3	168.5
DF	58	LIVE	CUT	1	58.0	150	194	1,530	1.2	0.2	4.0	0.5	288.0	60.0
DF	66	LIVE	CUT	1	66.0	155	201	1,554	4.9	0.2	4.1	0.5	280.3	60.9
DF	22	LIVE	POLE	1	22.0	123	158	1,349	0.0	1.8	4.7	1.0	289.6	52.9
MA	10	LIVE	CUT	1	9.0	50	60	125	0.0	3.4	1.5	0.5	38.4	4.9
MA	14	LIVE	CUT	1	13.0	50	60	110	10.5	1.4	1.3	0.4	31.1	4.3
MA	20	LIVE	CUT	2	20.0	77	95	311	19.8	1.2	2.6	0.6	87.0	12.2
MA	24	LIVE	CUT	1	24.0	83	103	132	46.2	0.4	1.4	0.3	45.2	5.2
MA	26	LIVE	CUT	1	25.0	75	93	192	16.0	0.4	1.3	0.3	40.9	7.5
MA	28	LIVE	CUT	1	28.0	87	109	187	32.9	0.3	1.3	0.2	32.3	7.3
MA	30	LIVE	CUT	1	29.0	60	73	139	4.6	0.3	1.3	0.2	44.7	5.4
MA	32	LIVE	CUT	1	31.0	70	86	193	4.4	0.3	1.3	0.2	51.1	7.6
RA	12	LIVE	CUT	1	12.0	60	73	58	69.1	2.3	1.8	0.5	15.0	2.3
RA	14	LIVE	CUT	1	14.0	65	80	204	16.7	1.7	1.8	0.5	57.0	8.0
RA	16	LIVE	CUT	3	15.6	86	108	805	11.7	4.1	5.5	1.4	242.1	31.5
RA	18	LIVE	CUT	3	17.6	88	110	825	4.9	3.2	5.5	1.3	264.2	32.3
RA	20	LIVE	CUT	6	19.1	88	110	2,349	7.9	7.4	14.7	3.4	698.9	92.1
RA	22	LIVE	CUT	4	21.0	91	114	1,272	10.2	3.1	7.4	1.6	337.2	49.9
RA	24	LIVE	CUT	1	23.0	86	107	306	3.3	0.7	1.9	0.4	87.9	12.0
RA	26	LIVE	CUT	1	25.0	86	107	292	7.7	0.6	1.9	0.4	88.6	11.5
RC	12	LIVE	CUT	1	11.0	36	43	106	6.3	3.5	2.3	0.7	41.1	4.2
RC	14	LIVE	CUT	1	14.0	30	35	39	37.9	2.2	2.3	0.6	33.2	1.5
RC	18	LIVE	CUT	1	18.0	50	61	54	63.4	1.3	2.3	0.5	28.4	2.1
RC	28	LIVE	CUT	1	27.0	80	102	261	8.3	0.6	2.3	0.4	83.5	10.2
RC	36	LIVE	CUT	1	35.0	100	129	390	15.0	0.3	2.0	0.3	70.6	15.3
RC	38	LIVE	CUT	1	38.0	108	139	432	23.0	0.3	2.3	0.4	66.4	16.9
RC	50	LIVE	CUT	1	49.0	100	128	428	7.0	0.3	3.3	0.5	133.7	16.8
WH	10	LIVE	CUT	1	10.0	45	54	314	2.7	8.4	4.6	1.4	139.8	12.3
WH	12	LIVE	CUT	2	11.0	47	57	674	2.1	13.7	9.0	2.7	280.4	26.4
WH	16	LIVE	CUT	1	16.0	48	58	146	40.3	3.3	4.6	1.1	113.4	5.7
WH	24	LIVE	CUT	1	23.0	90	113	736	0.0	1.3	3.8	0.8	216.7	28.8
WH	32	LIVE	CUT	1	31.0	96	121	903	0.0	0.8	4.0	0.7	240.9	35.4
WH	34	LIVE	CUT	1	33.0	100	126	939	0.0	0.7	3.9	0.7	248.7	36.8

Unit Log Grade Summary: SMUGGLER U1

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	19.0	38.0	43,346	0.7	9,030.6	1,699.2
DF	LIVE	3 PEELER	30.1	40.0	4,033	0.0	737.7	158.1
DF	LIVE	3 SAW	9.2	37.0	4,723	0.2	1,482.8	185.1
DF	LIVE	4 SAW	5.9	19.0	358	0.0	115.3	14.0
DF	LIVE	CULL	9.0	5.0	0	100.0	0.0	0.0
DF	LIVE	SPECIAL MILL	22.1	40.0	9,711	0.2	1,953.1	380.7
DF	LIVE	UTILITY	9.0	26.0	453	15.1	123.2	17.8
MA	LIVE	1 SAW	19.3	30.0	481	3.1	112.3	18.9
MA	LIVE	2 SAW	14.7	26.0	451	12.4	115.6	17.7
MA	LIVE	4 SAW	7.3	24.0	56	0.0	16.3	2.2
MA	LIVE	CULL	13.0	8.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	7.8	29.0	401	0.0	126.6	15.7
RA	LIVE	1 SAW	16.4	34.0	912	5.1	222.4	35.7
RA	LIVE	2 SAW	13.5	37.0	2,757	3.6	758.0	108.1
RA	LIVE	3 SAW	10.8	34.0	1,114	5.7	308.3	43.7
RA	LIVE	4 SAW	7.4	37.0	710	7.5	291.0	27.8
RA	LIVE	CULL	6.8	13.0	0	100.0	0.0	0.0
RA	LIVE	UTILITY	7.3	27.0	617	14.0	211.2	24.2
RC	LIVE	3 SAW	16.6	35.0	1,510	3.5	354.2	59.2
RC	LIVE	4 SAW	5.2	31.0	200	13.5	102.7	7.8
RC	LIVE	CULL	18.5	9.0	0	100.0	0.0	0.0
WH	LIVE	2 SAW	18.6	37.0	2,250	0.0	591.2	88.2
WH	LIVE	3 SAW	10.9	26.0	291	0.0	99.9	11.4
WH	LIVE	4 SAW	5.3	34.0	735	3.1	392.6	28.8
WH	LIVE	CULL	14.7	4.0	0	100.0	0.0	0.0
WH	LIVE	UTILITY	6.2	22.0	436	0.0	156.0	17.1

Unit Log Sort Summary: SMUGGLER U1

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	Cull	9.0	5.0	0	100.0	0.0	0.0
DF	LIVE	Domestic	11.3	32.0	15,794	0.5	3,857.6	619.1
DF	LIVE	HQ-A	23.5	40.0	13,744	0.1	2,690.8	538.8
DF	LIVE	HQ-B	18.4	39.0	32,632	0.7	6,771.1	1,279.2
DF	LIVE	Pulp	9.0	26.0	453	15.1	123.2	17.8
MA	LIVE	Cull	13.0	8.0	0	100.0	0.0	0.0
MA	LIVE	Domestic	13.6	27.0	988	7.4	244.2	38.7

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	LIVE	Pulp	7.8	29.0	401	0.0	126.6	15.7
RA	LIVE	Cull	6.8	13.0	0	100.0	0.0	0.0
RA	LIVE	Domestic	11.1	36.0	5,493	4.8	1,579.7	215.3
RA	LIVE	Pulp	7.3	27.0	617	14.0	211.2	24.2
RC	LIVE	Cull	18.5	9.0	0	100.0	0.0	0.0
RC	LIVE	Domestic	8.9	32.0	1,710	4.8	456.9	67.0
WH	LIVE	Cull	14.7	4.0	0	100.0	0.0	0.0
WH	LIVE	Domestic	7.9	34.0	3,276	0.7	1,083.7	128.4
WH	LIVE	Pulp	6.2	22.0	436	0.0	156.0	17.1

Unit Log Grade x Sort Summary: SMUGGLER U1

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	Domestic	16.9	35.0	12,191	0.6	2,707.0	477.9
DF	LIVE	2 SAW	HQ-B	20.4	39.0	31,154	0.7	6,323.6	1,221.3
DF	LIVE	3 PEELER	HQ-A	30.1	40.0	4,033	0.0	737.7	158.1
DF	LIVE	3 SAW	Domestic	8.9	36.0	3,245	0.4	1,035.2	127.2
DF	LIVE	3 SAW	HQ-B	10.1	40.0	1,478	0.0	447.6	57.9
DF	LIVE	4 SAW	Domestic	5.9	19.0	358	0.0	115.3	14.0
DF	LIVE	CULL	Cull	9.0	5.0	0	100.0	0.0	0.0
DF	LIVE	SPECIAL MILL	HQ-A	22.1	40.0	9,711	0.2	1,953.1	380.7
DF	LIVE	UTILITY	Pulp	9.0	26.0	453	15.1	123.2	17.8
MA	LIVE	1 SAW	Domestic	19.3	30.0	481	3.1	112.3	18.9
MA	LIVE	2 SAW	Domestic	14.7	26.0	451	12.4	115.6	17.7
MA	LIVE	4 SAW	Domestic	7.3	24.0	56	0.0	16.3	2.2
MA	LIVE	CULL	Cull	13.0	8.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	Pulp	7.8	29.0	401	0.0	126.6	15.7
RA	LIVE	1 SAW	Domestic	16.4	34.0	912	5.1	222.4	35.7
RA	LIVE	2 SAW	Domestic	13.5	37.0	2,757	3.6	758.0	108.1
RA	LIVE	3 SAW	Domestic	10.8	34.0	1,114	5.7	308.3	43.7
RA	LIVE	4 SAW	Domestic	7.4	37.0	710	7.5	291.0	27.8
RA	LIVE	CULL	Cull	6.8	13.0	0	100.0	0.0	0.0
RA	LIVE	UTILITY	Pulp	7.3	27.0	617	14.0	211.2	24.2
RC	LIVE	3 SAW	Domestic	16.6	35.0	1,510	3.5	354.2	59.2
RC	LIVE	4 SAW	Domestic	5.2	31.0	200	13.5	102.7	7.8
RC	LIVE	CULL	Cull	18.5	9.0	0	100.0	0.0	0.0
WH	LIVE	2 SAW	Domestic	18.6	37.0	2,250	0.0	591.2	88.2
WH	LIVE	3 SAW	Domestic	10.9	26.0	291	0.0	99.9	11.4

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
WH	LIVE	4 SAW	Domestic	5.3	34.0	735	3.1	392.6	28.8
WH	LIVE	CULL	Cull	14.7	4.0	0	100.0	0.0	0.0
WH	LIVE	UTILITY	Pulp	6.2	22.0	436	0.0	156.0	17.1

Unit Log Grade x Diameter Bin Summary: SMUGGLER U1

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 11	LIVE	4 SAW	5.9	19.0	358	0.0	115.3	14.0
DF	5 - 11	LIVE	UTILITY	6.7	26.0	131	0.0	49.1	5.1
DF	5 - 11	LIVE	CULL	7.4	3.0	0	100.0	0.0	0.0
DF	5 - 11	LIVE	3 SAW	9.2	37.0	4,723	0.2	1,482.8	185.1
DF	12 - 15	LIVE	CULL	13.3	10.0	0	100.0	0.0	0.0
DF	12 - 15	LIVE	2 SAW	13.8	37.0	6,585	0.4	1,737.9	258.1
DF	16 - 19	LIVE	CULL	16.0	1.0	0	100.0	0.0	0.0
DF	16 - 19	LIVE	SPECIAL MILL	16.9	40.0	1,108	0.0	260.5	43.4
DF	16 - 19	LIVE	2 SAW	17.8	38.0	7,602	0.6	1,653.9	298.0
DF	20+	LIVE	SPECIAL MILL	23.6	40.0	8,604	0.2	1,692.6	337.3
DF	20+	LIVE	2 SAW	24.9	38.0	29,160	0.8	5,638.8	1,143.1
DF	20+	LIVE	3 PEELER	30.1	40.0	4,033	0.0	737.7	158.1
DF	20+	LIVE	CULL	34.6	30.0	0	100.0	0.0	0.0
DF	20+	LIVE	UTILITY	50.9	20.0	322	20.0	74.1	12.6
MA	5 - 11	LIVE	CULL	6.2	11.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	UTILITY	7.1	30.0	320	0.0	114.2	12.5
MA	5 - 11	LIVE	4 SAW	7.3	24.0	56	0.0	16.3	2.2
MA	12 - 15	LIVE	CULL	14.2	10.0	0	100.0	0.0	0.0
MA	12 - 15	LIVE	2 SAW	14.7	26.0	451	12.4	115.6	17.7
MA	16 - 19	LIVE	1 SAW	17.3	33.0	215	3.0	55.5	8.4
MA	16 - 19	LIVE	CULL	18.7	4.0	0	100.0	0.0	0.0
MA	20+	LIVE	UTILITY	20.0	12.0	81	0.0	12.4	3.2
MA	20+	LIVE	1 SAW	21.4	27.0	266	3.2	56.8	10.4
MA	20+	LIVE	CULL	23.3	4.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	UTILITY	5.9	26.0	327	0.7	114.4	12.8
RA	5 - 11	LIVE	CULL	6.8	13.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	4 SAW	7.4	37.0	710	7.5	291.0	27.8
RA	5 - 11	LIVE	3 SAW	10.8	34.0	1,114	5.7	308.3	43.7
RA	12 - 15	LIVE	UTILITY	13.1	30.0	290	25.4	96.8	11.4
RA	12 - 15	LIVE	2 SAW	13.5	37.0	2,757	3.6	758.0	108.1
RA	16 - 19	LIVE	1 SAW	16.4	34.0	912	5.1	222.4	35.7

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
RC	5 - 11	LIVE	4 SAW	5.2	31.0	200	13.5	102.7	7.8
RC	5 - 11	LIVE	3 SAW	9.1	33.0	77	0.0	25.4	3.0
RC	5 - 11	LIVE	CULL	11.2	12.0	0	100.0	0.0	0.0
RC	12 - 15	LIVE	3 SAW	13.7	29.0	128	0.0	27.7	5.0
RC	12 - 15	LIVE	CULL	14.4	10.0	0	100.0	0.0	0.0
RC	16 - 19	LIVE	3 SAW	17.5	38.0	468	4.8	113.1	18.4
RC	16 - 19	LIVE	CULL	17.5	8.0	0	100.0	0.0	0.0
RC	20+	LIVE	3 SAW	25.0	37.0	837	3.7	188.0	32.8
RC	20+	LIVE	CULL	32.1	6.0	0	100.0	0.0	0.0
WH	5 - 11	LIVE	4 SAW	5.3	34.0	735	3.1	392.6	28.8
WH	5 - 11	LIVE	UTILITY	6.2	22.0	436	0.0	156.0	17.1
WH	5 - 11	LIVE	3 SAW	10.9	26.0	291	0.0	99.9	11.4
WH	12 - 15	LIVE	CULL	14.7	4.0	0	100.0	0.0	0.0
WH	12 - 15	LIVE	2 SAW	15.7	38.0	503	0.0	147.6	19.7
WH	16 - 19	LIVE	2 SAW	16.9	36.0	490	0.0	136.0	19.2
WH	20+	LIVE	2 SAW	22.9	38.0	1,256	0.0	307.6	49.2

Unit Log Sort x Diameter Bin Summary: SMUGGLER U1

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 11	LIVE	Pulp	6.7	26.0	131	0.0	49.1	5.1
DF	5 - 11	LIVE	Cull	7.4	3.0	0	100.0	0.0	0.0
DF	5 - 11	LIVE	Domestic	7.9	31.0	3,603	0.3	1,150.5	141.2
DF	5 - 11	LIVE	HQ-B	10.1	40.0	1,478	0.0	447.6	57.9
DF	12 - 15	LIVE	Cull	13.3	10.0	0	100.0	0.0	0.0
DF	12 - 15	LIVE	Domestic	13.7	34.0	3,262	0.8	923.0	127.9
DF	12 - 15	LIVE	HQ-B	13.9	40.0	3,323	0.0	815.0	130.3
DF	16 - 19	LIVE	Cull	16.0	1.0	0	100.0	0.0	0.0
DF	16 - 19	LIVE	HQ-A	16.9	40.0	1,108	0.0	260.5	43.4
DF	16 - 19	LIVE	Domestic	17.4	36.0	3,066	0.5	701.1	120.2
DF	16 - 19	LIVE	HQ-B	18.1	38.0	4,535	0.6	952.8	177.8
DF	20+	LIVE	Domestic	23.9	36.0	5,864	0.5	1,083.0	229.9
DF	20+	LIVE	HQ-A	25.0	40.0	12,637	0.1	2,430.4	495.4
DF	20+	LIVE	HQ-B	25.2	39.0	23,296	0.8	4,555.8	913.2
DF	20+	LIVE	Cull	34.6	30.0	0	100.0	0.0	0.0
DF	20+	LIVE	Pulp	50.9	20.0	322	20.0	74.1	12.6
MA	5 - 11	LIVE	Cull	6.2	11.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	Pulp	7.1	30.0	320	0.0	114.2	12.5

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	5 - 11	LIVE	Domestic	7.3	24.0	56	0.0	16.3	2.2
MA	12 - 15	LIVE	Cull	14.2	10.0	0	100.0	0.0	0.0
MA	12 - 15	LIVE	Domestic	14.7	26.0	451	12.4	115.6	17.7
MA	16 - 19	LIVE	Domestic	17.3	33.0	215	3.0	55.5	8.4
MA	16 - 19	LIVE	Cull	18.7	4.0	0	100.0	0.0	0.0
MA	20+	LIVE	Pulp	20.0	12.0	81	0.0	12.4	3.2
MA	20+	LIVE	Domestic	21.4	27.0	266	3.2	56.8	10.4
MA	20+	LIVE	Cull	23.3	4.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	Pulp	5.9	26.0	327	0.7	114.4	12.8
RA	5 - 11	LIVE	Cull	6.8	13.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	Domestic	8.9	36.0	1,824	6.4	599.3	71.5
RA	12 - 15	LIVE	Pulp	13.1	30.0	290	25.4	96.8	11.4
RA	12 - 15	LIVE	Domestic	13.5	37.0	2,757	3.6	758.0	108.1
RA	16 - 19	LIVE	Domestic	16.4	34.0	912	5.1	222.4	35.7
RC	5 - 11	LIVE	Domestic	5.6	31.0	277	10.1	128.1	10.8
RC	5 - 11	LIVE	Cull	11.2	12.0	0	100.0	0.0	0.0
RC	12 - 15	LIVE	Domestic	13.7	29.0	128	0.0	27.7	5.0
RC	12 - 15	LIVE	Cull	14.4	10.0	0	100.0	0.0	0.0
RC	16 - 19	LIVE	Cull	17.5	8.0	0	100.0	0.0	0.0
RC	16 - 19	LIVE	Domestic	17.5	38.0	468	4.8	113.1	18.4
RC	20+	LIVE	Domestic	25.0	37.0	837	3.7	188.0	32.8
RC	20+	LIVE	Cull	32.1	6.0	0	100.0	0.0	0.0
WH	5 - 11	LIVE	Domestic	6.0	33.0	1,026	2.2	492.5	40.2
WH	5 - 11	LIVE	Pulp	6.2	22.0	436	0.0	156.0	17.1
WH	12 - 15	LIVE	Cull	14.7	4.0	0	100.0	0.0	0.0
WH	12 - 15	LIVE	Domestic	15.7	38.0	503	0.0	147.6	19.7
WH	16 - 19	LIVE	Domestic	16.9	36.0	490	0.0	136.0	19.2
WH	20+	LIVE	Domestic	22.9	38.0	1,256	0.0	307.6	49.2

Cruise Unit Report
SMUGGLER U2

Unit Sale Notice Volume (MBF): SMUGGLER U2

				MBF Volume by Grade						
Sp	QMD	Rings/In	Age	All	Spec Mill	1 Saw	2 Saw	3 Saw	4 Saw	Utility
DF	24.3			2,532.6	447.5		1,769.4	244.8	51.2	19.7
RA	17.5			166.2		24.7	62.3	21.6	42.1	15.5
MA	19.7			151.5		34.8	57.4	23.6	12.6	23.1
RC	24.2			49.0				44.7	4.3	
WH	11.0			2.3					2.3	
ALL	22.5			2,901.5	447.5	59.4	1,889.1	334.7	112.5	58.3

Unit Sale Notice Weight (tons): SMUGGLER U2

	Tons by Grade						
Sp	All	Spec Mill	1 Saw	2 Saw	3 Saw	4 Saw	Utility
DF	15,431.3	2,454.4		10,244.5	2,047.5	535.4	149.5
RA	1,301.2		164.1	463.0	167.1	402.7	104.2
MA	1,245.4		255.7	477.5	214.2	136.6	161.5
RC	373.0				324.0	49.0	
WH	30.8					30.8	
ALL	18,381.7	2,454.4	419.8	11,185.1	2,752.8	1,154.5	415.1

Unit Cruise Design: SMUGGLER U2

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B2C: VR, 2 BAF (54.44, 27.78 for some species) Measure/Count Plots, Sighting Ht = 16 ft	56.6	60.1	57	28	2

Unit Cruise Summary: SMUGGLER U2

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	70	152	2.7	0
RA	17	32	0.6	0
MA	17	41	0.7	0
RC	10	12	0.2	0
WH	1	1	0.0	0
ALL	115	238	4.2	0

Unit Cruise Statistics (Cut + Leave Trees): SMUGGLER U2

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	196.0	79.3	10.5	228.3	24.7	2.9	44,746	83.1	10.9
RA	21.8	189.5	25.1	134.4	16.2	3.9	2,936	190.2	25.4
MA	30.4	160.3	21.2	88.1	28.8	7.0	2,676	162.9	22.4
RC	11.1	382.5	50.7	77.8	61.1	19.3	866	387.4	54.2
WH	0.8	755.0	100.0	50.0	0.0	0.0	40	755.0	100.0
ALL	260.2	51.9	6.9	197.0	40.3	3.8	51,264	65.7	7.8

Unit Summary: SMUGGLER U2

Sp	Status	Rx	N	D	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	LIVE	CUT	63	ALL	24.5	88	121	41,615	1.8	55.7	182.3	36.8	14,351.7	2,355.4
DF	LIVE	POLE	7	ALL	23.0	112	144	3,130	1.8	4.8	13.7	2.9	1,079.6	177.2
MA	LIVE	CUT	17	ALL	19.7	64	78	2,676	26.8	14.4	30.4	6.8	1,245.4	151.5
RA	LIVE	CUT	17	ALL	17.5	77	98	2,936	6.7	13.1	21.8	5.2	1,301.2	166.2
RC	LIVE	CUT	10	ALL	24.2	57	70	866	25.8	3.5	11.1	2.3	373.0	49.0
WH	LIVE	CUT	1	ALL	11.0	41	48	40	5.7	1.2	0.8	0.2	30.8	2.3
ALL	LIVE	CUT	108	ALL	22.7	81	108	48,133	4.4	87.9	246.4	51.3	17,302.1	2,724.4
ALL	LIVE	POLE	7	ALL	23.0	112	144	3,130	1.8	4.8	13.7	2.9	1,079.6	177.2
ALL	ALL	ALL	115	ALL	22.7	82	109	51,263	4.3	92.7	260.1	54.2	18,381.7	2,901.6

Unit Stand Table: SMUGGLER U2

Sp	D	Status	Rx	N	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	12	LIVE	CUT	3	11.3	61	76	791	7.2	13.0	9.1	2.7	427.5	44.8
DF	14	LIVE	CUT	1	14.0	31	95	191	14.7	3.3	3.5	0.9	106.9	10.8
DF	16	LIVE	CUT	2	16.0	78	98	764	7.0	4.3	6.0	1.5	342.6	43.3
DF	18	LIVE	CUT	2	18.0	61	107	743	4.3	3.0	5.4	1.3	300.4	42.1
DF	20	LIVE	CUT	2	19.0	79	117	875	5.4	2.9	5.8	1.3	365.2	49.5
DF	24	LIVE	CUT	5	23.8	103	131	2,751	4.2	4.6	14.2	2.9	1,057.9	155.7
DF	26	LIVE	CUT	4	25.5	118	151	2,666	3.4	3.2	11.2	2.2	977.9	150.9
DF	28	LIVE	CUT	5	27.8	107	140	3,328	0.6	3.3	13.9	2.6	1,141.0	188.4
DF	30	LIVE	CUT	8	29.7	115	148	5,732	0.4	4.8	23.0	4.2	1,962.3	324.4
DF	32	LIVE	CUT	4	31.7	118	152	3,063	0.0	2.0	11.3	2.0	986.0	173.4
DF	34	LIVE	CUT	10	33.5	117	150	7,467	1.3	4.7	28.9	5.0	2,473.9	422.7
DF	36	LIVE	CUT	5	35.4	115	147	3,712	1.9	2.1	14.6	2.5	1,226.1	210.1
DF	38	LIVE	CUT	7	37.7	112	189	5,731	1.9	2.7	20.6	3.4	1,776.8	324.4

Sp	D	Status	Rx	N	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	40	LIVE	CUT	3	39.3	111	142	2,267	1.6	1.1	8.9	1.4	711.9	128.3
DF	42	LIVE	CUT	2	41.0	115	148	1,531	0.4	0.6	5.9	0.9	495.4	86.6
DF	18	LIVE	POLE	1	18.0	104	133	346	0.0	0.9	1.6	0.4	121.3	19.6
DF	22	LIVE	POLE	2	22.0	111	142	766	0.0	1.4	3.6	0.8	272.0	43.4
DF	24	LIVE	POLE	1	23.0	115	147	370	0.0	0.6	1.7	0.3	135.4	20.9
DF	26	LIVE	POLE	2	25.0	115	147	1,174	1.6	1.5	5.1	1.0	404.4	66.4
DF	28	LIVE	POLE	1	28.0	125	161	474	0.2	0.4	1.7	0.3	146.5	26.8
MA	10	LIVE	CUT	1	10.0	40	47	82	33.3	3.1	1.7	0.5	32.8	4.6
MA	16	LIVE	CUT	1	15.0	72	89	155	22.6	1.5	1.8	0.5	78.6	8.8
MA	18	LIVE	CUT	1	18.0	75	93	104	54.4	0.9	1.6	0.4	42.7	5.9
MA	20	LIVE	CUT	4	20.0	69	86	644	21.7	3.3	7.2	1.6	312.2	36.4
MA	22	LIVE	CUT	1	21.0	58	71	150	7.0	0.8	1.9	0.4	92.5	8.5
MA	24	LIVE	CUT	6	23.5	73	90	1,071	24.4	3.6	10.7	2.2	453.3	60.6
MA	26	LIVE	CUT	2	26.0	73	90	353	24.6	1.0	3.6	0.7	156.1	20.0
MA	38	LIVE	CUT	1	38.0	62	76	118	49.3	0.2	1.8	0.3	77.1	6.7
RA	14	LIVE	CUT	3	13.7	85	106	700	10.5	4.5	4.6	1.3	310.4	39.6
RA	16	LIVE	CUT	1	16.0	54	107	179	4.4	0.8	1.2	0.3	63.8	10.1
RA	18	LIVE	CUT	5	17.4	75	93	757	6.5	3.7	6.1	1.5	345.9	42.9
RA	20	LIVE	CUT	3	19.0	71	87	451	2.2	1.9	3.7	0.9	210.7	25.5
RA	22	LIVE	CUT	2	21.5	79	98	332	6.4	1.0	2.4	0.5	151.0	18.8
RA	24	LIVE	CUT	1	23.0	70	87	142	0.9	0.4	1.3	0.3	72.3	8.0
RA	26	LIVE	CUT	1	26.0	76	94	172	5.2	0.3	1.3	0.2	77.7	9.7
RA	28	LIVE	CUT	1	28.0	86	107	202	14.3	0.3	1.2	0.2	69.5	11.5
RC	16	LIVE	CUT	1	15.0	40	48	31	48.3	0.9	1.1	0.3	19.2	1.8
RC	18	LIVE	CUT	1	17.0	48	59	31	54.5	0.7	1.1	0.3	20.9	1.8
RC	22	LIVE	CUT	1	22.0	87	111	134	1.3	0.3	0.9	0.2	51.7	7.6
RC	24	LIVE	CUT	1	24.0	74	94	114	4.4	0.3	0.8	0.2	44.0	6.4
RC	26	LIVE	CUT	1	26.0	45	55	23	68.9	0.4	1.5	0.3	17.8	1.3
RC	30	LIVE	CUT	2	29.0	63	79	163	22.5	0.6	2.6	0.5	112.1	9.3
RC	40	LIVE	CUT	1	39.0	82	104	112	31.6	0.1	1.0	0.2	32.5	6.3
RC	46	LIVE	CUT	1	46.0	85	108	124	30.6	0.1	1.0	0.1	36.7	7.0
RC	50	LIVE	CUT	1	50.0	88	113	133	29.1	0.1	1.0	0.1	38.1	7.5
WH	12	LIVE	CUT	1	11.0	41	48	40	5.7	1.2	0.8	0.2	30.8	2.3

Unit Log Grade Summary: SMUGGLER U2

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	17.7	39.0	31,262	1.3	10,244.5	1,769.4

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	3 SAW	9.7	33.0	4,325	2.3	2,047.5	244.8
DF	LIVE	4 SAW	6.1	31.0	905	7.3	535.4	51.2
DF	LIVE	CULL	8.0	5.0	0	100.0	0.0	0.0
DF	LIVE	SPECIAL MILL	19.4	40.0	7,906	0.0	2,454.4	447.5
DF	LIVE	UTILITY	10.0	28.0	347	0.0	149.5	19.7
MA	LIVE	1 SAW	18.0	33.0	614	17.1	255.7	34.8
MA	LIVE	2 SAW	13.5	38.0	1,014	4.7	477.5	57.4
MA	LIVE	3 SAW	11.4	31.0	416	7.3	214.2	23.6
MA	LIVE	4 SAW	7.5	28.0	223	6.9	136.6	12.6
MA	LIVE	CULL	13.0	12.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	7.6	21.0	408	0.0	161.5	23.1
RA	LIVE	1 SAW	17.3	36.0	436	5.6	164.1	24.7
RA	LIVE	2 SAW	13.1	33.0	1,100	2.8	463.0	62.3
RA	LIVE	3 SAW	10.3	40.0	382	11.2	167.1	21.6
RA	LIVE	4 SAW	7.7	33.0	743	5.2	402.7	42.1
RA	LIVE	CULL	6.6	10.0	0	100.0	0.0	0.0
RA	LIVE	UTILITY	7.0	21.0	275	0.0	104.2	15.5
RC	LIVE	3 SAW	12.5	35.0	789	7.5	324.0	44.7
RC	LIVE	4 SAW	5.4	32.0	77	0.0	49.0	4.3
RC	LIVE	CULL	15.4	7.0	0	100.0	0.0	0.0
WH	LIVE	4 SAW	5.1	33.0	40	5.7	30.8	2.3

Unit Log Sort Summary: SMUGGLER U2

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	Cull	8.0	5.0	0	100.0	0.0	0.0
DF	LIVE	Domestic	10.2	33.0	12,362	3.1	4,934.8	699.7
DF	LIVE	HQ-A	19.5	40.0	9,160	0.0	2,841.5	518.4
DF	LIVE	HQ-B	16.9	40.0	22,876	0.8	7,505.5	1,294.8
DF	LIVE	Pulp	10.0	28.0	347	0.0	149.5	19.7
MA	LIVE	Cull	13.0	12.0	0	100.0	0.0	0.0
MA	LIVE	Domestic	11.6	33.0	2,268	9.1	1,083.9	128.4
MA	LIVE	Pulp	7.6	21.0	408	0.0	161.5	23.1
RA	LIVE	Cull	6.6	10.0	0	100.0	0.0	0.0
RA	LIVE	Domestic	9.9	34.0	2,661	5.2	1,197.0	150.6
RA	LIVE	Pulp	7.0	21.0	275	0.0	104.2	15.5
RC	LIVE	Cull	15.4	7.0	0	100.0	0.0	0.0
RC	LIVE	Domestic	9.7	34.0	866	6.9	373.0	49.0

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
WH	LIVE	Domestic	5.1	33.0	40	5.7	30.8	2.3

Unit Log Grade x Sort Summary: SMUGGLER U2

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	Domestic	16.5	38.0	7,901	2.9	2,652.9	447.2
DF	LIVE	2 SAW	HQ-A	19.5	40.0	1,254	0.0	387.1	71.0
DF	LIVE	2 SAW	HQ-B	18.2	40.0	22,106	0.8	7,204.5	1,251.2
DF	LIVE	3 SAW	Domestic	9.8	33.0	3,556	2.5	1,746.5	201.3
DF	LIVE	3 SAW	HQ-B	9.2	38.0	770	1.2	301.0	43.6
DF	LIVE	4 SAW	Domestic	6.1	31.0	905	7.3	535.4	51.2
DF	LIVE	CULL	Cull	8.0	5.0	0	100.0	0.0	0.0
DF	LIVE	SPECIAL MILL	HQ-A	19.4	40.0	7,906	0.0	2,454.4	447.5
DF	LIVE	UTILITY	Pulp	10.0	28.0	347	0.0	149.5	19.7
MA	LIVE	1 SAW	Domestic	18.0	33.0	614	17.1	255.7	34.8
MA	LIVE	2 SAW	Domestic	13.5	38.0	1,014	4.7	477.5	57.4
MA	LIVE	3 SAW	Domestic	11.4	31.0	416	7.3	214.2	23.6
MA	LIVE	4 SAW	Domestic	7.5	28.0	223	6.9	136.6	12.6
MA	LIVE	CULL	Cull	13.0	12.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	Pulp	7.6	21.0	408	0.0	161.5	23.1
RA	LIVE	1 SAW	Domestic	17.3	36.0	436	5.6	164.1	24.7
RA	LIVE	2 SAW	Domestic	13.1	33.0	1,100	2.8	463.0	62.3
RA	LIVE	3 SAW	Domestic	10.3	40.0	382	11.2	167.1	21.6
RA	LIVE	4 SAW	Domestic	7.7	33.0	743	5.2	402.7	42.1
RA	LIVE	CULL	Cull	6.6	10.0	0	100.0	0.0	0.0
RA	LIVE	UTILITY	Pulp	7.0	21.0	275	0.0	104.2	15.5
RC	LIVE	3 SAW	Domestic	12.5	35.0	789	7.5	324.0	44.7
RC	LIVE	4 SAW	Domestic	5.4	32.0	77	0.0	49.0	4.3
RC	LIVE	CULL	Cull	15.4	7.0	0	100.0	0.0	0.0
WH	LIVE	4 SAW	Domestic	5.1	33.0	40	5.7	30.8	2.3

Unit Log Grade x Diameter Bin Summary: SMUGGLER U2

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 11	LIVE	4 SAW	6.1	31.0	905	7.3	535.4	51.2
DF	5 - 11	LIVE	CULL	6.8	5.0	0	100.0	0.0	0.0
DF	5 - 11	LIVE	3 SAW	9.7	33.0	4,325	2.3	2,047.5	244.8
DF	5 - 11	LIVE	UTILITY	10.0	28.0	347	0.0	149.5	19.7
DF	12 - 15	LIVE	CULL	13.4	4.0	0	100.0	0.0	0.0

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	12 - 15	LIVE	2 SAW	13.7	39.0	6,444	1.4	2,486.3	364.7
DF	16 - 19	LIVE	2 SAW	17.4	39.0	6,948	1.5	2,324.2	393.2
DF	16 - 19	LIVE	SPECIAL MILL	18.2	40.0	3,964	0.0	1,269.9	224.3
DF	16 - 19	LIVE	CULL	19.9	4.0	0	100.0	0.0	0.0
DF	20+	LIVE	SPECIAL MILL	21.3	40.0	3,942	0.0	1,184.5	223.1
DF	20+	LIVE	CULL	21.5	2.0	0	100.0	0.0	0.0
DF	20+	LIVE	2 SAW	23.6	40.0	17,870	1.2	5,434.0	1,011.4
MA	5 - 11	LIVE	UTILITY	5.9	22.0	203	0.0	102.5	11.5
MA	5 - 11	LIVE	4 SAW	7.5	28.0	223	6.9	136.6	12.6
MA	5 - 11	LIVE	CULL	7.8	19.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	3 SAW	11.4	31.0	416	7.3	214.2	23.6
MA	12 - 15	LIVE	2 SAW	13.5	38.0	1,014	4.7	477.5	57.4
MA	12 - 15	LIVE	UTILITY	13.8	16.0	205	0.0	58.9	11.6
MA	12 - 15	LIVE	CULL	14.3	5.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	1 SAW	16.7	34.0	526	6.9	201.6	29.8
MA	16 - 19	LIVE	CULL	18.0	7.0	0	100.0	0.0	0.0
MA	20+	LIVE	CULL	22.9	3.0	0	100.0	0.0	0.0
MA	20+	LIVE	1 SAW	26.8	24.0	88	50.0	54.1	5.0
RA	5 - 11	LIVE	CULL	5.9	10.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	UTILITY	6.2	20.0	153	0.0	59.0	8.6
RA	5 - 11	LIVE	4 SAW	7.7	33.0	743	5.2	402.7	42.1
RA	5 - 11	LIVE	3 SAW	10.3	40.0	382	11.2	167.1	21.6
RA	12 - 15	LIVE	2 SAW	13.1	33.0	1,100	2.8	463.0	62.3
RA	12 - 15	LIVE	UTILITY	13.5	30.0	122	0.0	45.2	6.9
RA	16 - 19	LIVE	1 SAW	17.3	36.0	436	5.6	164.1	24.7
RA	16 - 19	LIVE	CULL	18.8	4.0	0	100.0	0.0	0.0
RC	5 - 11	LIVE	4 SAW	5.4	32.0	77	0.0	49.0	4.3
RC	5 - 11	LIVE	CULL	6.9	4.0	0	100.0	0.0	0.0
RC	5 - 11	LIVE	3 SAW	7.5	34.0	107	0.0	60.0	6.1
RC	12 - 15	LIVE	CULL	13.2	7.0	0	100.0	0.0	0.0
RC	12 - 15	LIVE	3 SAW	14.9	36.0	303	8.4	138.7	17.1
RC	16 - 19	LIVE	3 SAW	16.1	30.0	68	26.7	45.4	3.9
RC	16 - 19	LIVE	CULL	17.5	10.0	0	100.0	0.0	0.0
RC	20+	LIVE	3 SAW	24.1	40.0	312	3.5	80.0	17.6
RC	20+	LIVE	CULL	35.0	9.0	0	100.0	0.0	0.0
WH	5 - 11	LIVE	4 SAW	5.1	33.0	40	5.7	30.8	2.3

Unit Log Sort x Diameter Bin Summary: SMUGGLER U2

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 11	LIVE	Cull	6.8	5.0	0	100.0	0.0	0.0
DF	5 - 11	LIVE	Domestic	8.2	32.0	4,461	3.5	2,281.9	252.5
DF	5 - 11	LIVE	HQ-B	9.2	38.0	770	1.2	301.0	43.6
DF	5 - 11	LIVE	Pulp	10.0	28.0	347	0.0	149.5	19.7
DF	12 - 15	LIVE	Cull	13.4	4.0	0	100.0	0.0	0.0
DF	12 - 15	LIVE	HQ-B	13.5	40.0	4,088	0.4	1,576.9	231.4
DF	12 - 15	LIVE	Domestic	13.9	37.0	2,356	3.1	909.4	133.3
DF	16 - 19	LIVE	HQ-B	17.4	40.0	3,772	1.4	1,259.4	213.5
DF	16 - 19	LIVE	Domestic	17.5	38.0	2,787	1.8	937.1	157.7
DF	16 - 19	LIVE	HQ-A	18.1	40.0	4,353	0.0	1,397.6	246.4
DF	16 - 19	LIVE	Cull	19.9	4.0	0	100.0	0.0	0.0
DF	20+	LIVE	HQ-A	21.3	40.0	4,807	0.0	1,443.9	272.1
DF	20+	LIVE	Cull	21.5	2.0	0	100.0	0.0	0.0
DF	20+	LIVE	Domestic	22.6	40.0	2,759	3.8	806.3	156.1
DF	20+	LIVE	HQ-B	24.0	40.0	14,246	0.7	4,368.3	806.3
MA	5 - 11	LIVE	Pulp	5.9	22.0	203	0.0	102.5	11.5
MA	5 - 11	LIVE	Cull	7.8	19.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	Domestic	9.1	30.0	640	7.1	350.8	36.2
MA	12 - 15	LIVE	Domestic	13.5	38.0	1,014	4.7	477.5	57.4
MA	12 - 15	LIVE	Pulp	13.8	16.0	205	0.0	58.9	11.6
MA	12 - 15	LIVE	Cull	14.3	5.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	Domestic	16.7	34.0	526	6.9	201.6	29.8
MA	16 - 19	LIVE	Cull	18.0	7.0	0	100.0	0.0	0.0
MA	20+	LIVE	Cull	22.9	3.0	0	100.0	0.0	0.0
MA	20+	LIVE	Domestic	26.8	24.0	88	50.0	54.1	5.0
RA	5 - 11	LIVE	Cull	5.9	10.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	Pulp	6.2	20.0	153	0.0	59.0	8.6
RA	5 - 11	LIVE	Domestic	8.2	34.0	1,125	7.3	569.8	63.7
RA	12 - 15	LIVE	Domestic	13.1	33.0	1,100	2.8	463.0	62.3
RA	12 - 15	LIVE	Pulp	13.5	30.0	122	0.0	45.2	6.9
RA	16 - 19	LIVE	Domestic	17.3	36.0	436	5.6	164.1	24.7
RA	16 - 19	LIVE	Cull	18.8	4.0	0	100.0	0.0	0.0
RC	5 - 11	LIVE	Domestic	6.3	33.0	184	0.0	109.0	10.4
RC	5 - 11	LIVE	Cull	6.9	4.0	0	100.0	0.0	0.0
RC	12 - 15	LIVE	Cull	13.2	7.0	0	100.0	0.0	0.0
RC	12 - 15	LIVE	Domestic	14.9	36.0	303	8.4	138.7	17.1
RC	16 - 19	LIVE	Domestic	16.1	30.0	68	26.7	45.4	3.9

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
RC	16 - 19	LIVE	Cull	17.5	10.0	0	100.0	0.0	0.0
RC	20+	LIVE	Domestic	24.1	40.0	312	3.5	80.0	17.6
RC	20+	LIVE	Cull	35.0	9.0	0	100.0	0.0	0.0
WH	5 - 11	LIVE	Domestic	5.1	33.0	40	5.7	30.8	2.3

Cruise Unit Report
SMUGGLER U3

Unit Sale Notice Volume (MBF): SMUGGLER U3

				MBF Volume by Grade						
Sp	QMD	Rings/In	Age	All	Spec Mill	1 Saw	2 Saw	3 Saw	4 Saw	Utility
DF	22.0			2,081.9	641.9		1,029.7	331.3	73.3	5.8
MA	16.5			224.2			73.1	49.7	52.8	48.5
RA	16.6			47.5		6.5	16.7	6.2	14.7	3.5
WH	15.4			25.7			11.4	9.8		4.5
RC	16.4			5.9				4.1	1.8	
ALL	19.8			2,385.2	641.9	6.5	1,130.9	401.0	142.6	62.3

Unit Sale Notice Weight (tons): SMUGGLER U3

	Tons by Grade						
Sp	All	Spec Mill	1 Saw	2 Saw	3 Saw	4 Saw	Utility
DF	12,862.7	3,563.0		6,020.8	2,587.6	641.4	50.0
MA	2,002.4			580.1	404.7	477.0	540.5
RA	410.3		39.9	126.3	41.9	165.6	36.6
WH	252.7			92.2	119.6		40.8
RC	76.2				32.6	43.6	
ALL	15,604.3	3,563.0	39.9	6,819.5	3,186.5	1,327.5	668.0

Unit Cruise Design: SMUGGLER U3

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (33.61) Measure/Count Plots, Sighting Ht = 16 ft	78.0	89.9	77	25	4

Unit Cruise Summary: SMUGGLER U3

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	62	207	2.7	0
MA	9	50	0.6	0
RA	7	10	0.1	0
WH	4	5	0.1	0
RC	2	2	0.0	0
ALL	84	274	3.6	0

Unit Cruise Statistics (Cut + Leave Trees): SMUGGLER U3

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	117.4	71.0	8.1	227.4	27.6	3.5	26,691	76.1	8.8
MA	32.1	205.7	23.4	89.5	37.3	12.4	2,874	209.1	26.5
RA	6.3	440.7	50.2	97.4	39.3	14.8	609	442.4	52.4
WH	3.3	520.5	59.3	99.0	54.3	27.2	329	523.3	65.2
RC	1.7	625.0	71.2	44.4	72.9	51.6	76	629.2	87.9
ALL	160.8	56.6	6.5	190.2	44.0	4.8	30,580	71.7	8.0

Unit Summary: SMUGGLER U3

Sp	Status	Rx	N	D	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	LIVE	CUT	59	ALL	22.2	97	123	26,052	2.6	42.6	114.6	24.3	12,554.5	2,032.0
DF	LIVE	POLE	3	ALL	17.7	96	122	639	2.6	1.6	2.8	0.7	308.2	49.9
MA	LIVE	CUT	9	ALL	17.1	37	49	2,874	29.3	20.1	32.1	7.8	2,002.4	224.2
RA	LIVE	CUT	7	ALL	16.6	64	80	609	14.8	4.2	6.3	1.5	410.3	47.5
RC	LIVE	CUT	2	ALL	16.4	35	58	76	13.4	1.2	1.7	0.4	76.2	6.0
WH	LIVE	CUT	4	ALL	15.4	57	67	329	5.9	2.6	3.3	0.8	252.7	25.7
ALL	LIVE	CUT	81	ALL	20.2	75	96	29,940	6.3	70.7	158.0	34.8	15,296.1	2,335.4
ALL	LIVE	POLE	3	ALL	17.7	96	122	639	2.6	1.6	2.8	0.7	308.2	49.9
ALL	ALL	ALL	84	ALL	20.2	76	97	30,579	6.3	72.3	160.8	35.5	15,604.3	2,385.3

Unit Stand Table: SMUGGLER U3

Sp	D	Status	Rx	N	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	10	LIVE	CUT	2	9.0	60	75	325	6.5	7.7	3.4	1.1	186.4	25.4
DF	14	LIVE	CUT	1	14.0	87	110	236	5.6	1.6	1.7	0.5	157.6	18.4
DF	16	LIVE	CUT	6	15.7	86	109	1,557	8.5	8.0	10.6	2.7	924.2	121.5
DF	18	LIVE	CUT	2	18.0	96	111	576	0.7	2.0	3.5	0.8	318.4	44.9
DF	20	LIVE	CUT	2	19.5	102	130	688	0.0	1.7	3.5	0.8	368.0	53.6
DF	22	LIVE	CUT	3	22.0	102	130	1,097	0.0	2.0	5.3	1.1	555.9	85.6
DF	24	LIVE	CUT	6	23.3	107	137	2,184	2.1	3.5	10.5	2.2	1,134.2	170.4
DF	26	LIVE	CUT	8	25.3	106	136	3,520	7.1	5.3	18.3	3.6	1,885.0	274.6
DF	28	LIVE	CUT	7	27.6	120	153	3,779	0.6	3.4	14.2	2.7	1,703.3	294.7
DF	30	LIVE	CUT	4	29.5	121	156	1,890	0.3	1.5	7.2	1.3	864.3	147.4
DF	32	LIVE	CUT	6	31.4	130	168	3,635	1.6	2.3	12.4	2.2	1,584.6	283.5
DF	34	LIVE	CUT	7	33.6	118	152	3,330	2.9	2.1	12.8	2.2	1,509.1	259.8
DF	36	LIVE	CUT	2	35.5	121	155	1,018	0.1	0.5	3.7	0.6	442.8	79.4

Sp	D	Status	Rx	N	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	38	LIVE	CUT	3	37.5	128	164	2,217	0.7	1.0	7.4	1.2	920.7	172.9
DF	14	LIVE	POLE	1	14.0	85	108	161	0.0	0.9	1.0	0.3	91.4	12.6
DF	22	LIVE	POLE	2	21.5	109	140	478	0.0	0.7	1.8	0.4	216.8	37.3
MA	12	LIVE	CUT	2	11.5	51	62	215	36.0	5.7	4.1	1.2	176.6	16.8
MA	16	LIVE	CUT	1	16.0	80	100	209	26.1	1.4	2.0	0.5	129.0	16.3
MA	18	LIVE	CUT	2	17.9	9	10	1,410	29.3	9.1	15.9	3.8	972.6	110.0
MA	20	LIVE	CUT	2	20.0	80	99	503	16.1	1.8	4.0	0.9	283.3	39.2
MA	22	LIVE	CUT	1	21.0	36	91	92	50.0	0.9	2.1	0.5	118.0	7.2
MA	24	LIVE	CUT	1	24.0	85	106	243	26.7	0.7	2.1	0.4	164.2	19.0
MA	26	LIVE	CUT	1	26.0	70	104	202	40.3	0.5	2.0	0.4	158.7	15.8
RA	14	LIVE	CUT	2	14.0	59	72	110	34.2	1.7	1.8	0.5	87.5	8.6
RA	16	LIVE	CUT	1	15.0	62	87	103	5.6	0.7	0.8	0.2	62.1	8.1
RA	18	LIVE	CUT	2	18.0	66	81	177	7.2	1.0	1.8	0.4	135.7	13.8
RA	20	LIVE	CUT	1	20.0	60	74	85	7.9	0.4	0.9	0.2	62.2	6.6
RA	22	LIVE	CUT	1	22.0	88	110	133	14.8	0.3	0.9	0.2	62.7	10.4
RC	16	LIVE	CUT	1	16.0	37	44	23	14.3	0.7	1.0	0.2	43.6	1.8
RC	18	LIVE	CUT	1	17.0	33	79	53	13.1	0.4	0.7	0.2	32.6	4.1
WH	12	LIVE	CUT	1	12.0	47	56	58	5.4	1.1	0.8	0.2	40.8	4.5
WH	14	LIVE	CUT	1	14.0	62	62	55	13.9	0.8	0.8	0.2	62.0	4.3
WH	18	LIVE	CUT	1	18.0	60	74	71	11.0	0.5	0.8	0.2	57.6	5.5
WH	26	LIVE	CUT	1	26.0	82	128	146	0.0	0.2	0.8	0.2	92.2	11.4

Unit Log Grade Summary: SMUGGLER U3

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	16.6	39.0	13,201	1.5	6,020.8	1,029.7
DF	LIVE	3 SAW	9.8	36.0	4,247	1.6	2,587.6	331.3
DF	LIVE	4 SAW	6.1	32.0	939	0.6	641.4	73.3
DF	LIVE	CULL	6.9	5.0	0	100.0	0.0	0.0
DF	LIVE	SPECIAL MILL	19.5	40.0	8,229	0.3	3,563.0	641.9
DF	LIVE	UTILITY	6.6	40.0	74	0.0	50.0	5.8
MA	LIVE	2 SAW	14.9	31.0	938	12.1	580.1	73.1
MA	LIVE	3 SAW	11.5	28.0	637	12.7	404.7	49.7
MA	LIVE	4 SAW	8.0	27.0	677	6.6	477.0	52.8
MA	LIVE	CULL	7.3	15.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	14.0	30.0	622	38.7	540.5	48.5
RA	LIVE	1 SAW	16.6	24.0	83	0.0	39.9	6.5
RA	LIVE	2 SAW	13.0	32.0	214	4.5	126.3	16.7

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
RA	LIVE	3 SAW	11.1	30.0	79	6.4	41.9	6.2
RA	LIVE	4 SAW	7.7	34.0	189	5.7	165.6	14.7
RA	LIVE	CULL	7.6	15.0	0	100.0	0.0	0.0
RA	LIVE	UTILITY	5.4	30.0	45	0.0	36.6	3.5
RC	LIVE	3 SAW	10.6	32.0	53	13.1	32.6	4.1
RC	LIVE	4 SAW	5.3	33.0	23	14.3	43.6	1.8
WH	LIVE	2 SAW	14.9	40.0	146	0.0	92.2	11.4
WH	LIVE	3 SAW	8.8	40.0	125	2.5	119.6	9.8
WH	LIVE	CULL	7.5	6.0	0	100.0	0.0	0.0
WH	LIVE	UTILITY	7.2	18.0	58	0.0	40.8	4.5

Unit Log Sort Summary: SMUGGLER U3

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	Cull	6.9	5.0	0	100.0	0.0	0.0
DF	LIVE	Domestic	8.6	34.0	5,394	3.4	3,269.2	420.8
DF	LIVE	HQ-A	19.6	40.0	8,789	0.3	3,794.4	685.6
DF	LIVE	HQ-B	14.9	40.0	12,433	0.7	5,749.1	969.8
DF	LIVE	Pulp	6.6	40.0	74	0.0	50.0	5.8
MA	LIVE	Cull	7.3	15.0	0	100.0	0.0	0.0
MA	LIVE	Domestic	10.1	28.0	2,252	10.7	1,461.9	175.7
MA	LIVE	Pulp	14.0	30.0	622	38.7	540.5	48.5
RA	LIVE	Cull	7.6	15.0	0	100.0	0.0	0.0
RA	LIVE	Domestic	10.0	33.0	564	4.5	373.7	44.0
RA	LIVE	Pulp	5.4	30.0	45	0.0	36.6	3.5
RC	LIVE	Domestic	7.4	33.0	76	13.5	76.2	5.9
WH	LIVE	Cull	7.5	6.0	0	100.0	0.0	0.0
WH	LIVE	Domestic	10.4	40.0	271	1.2	211.9	21.1
WH	LIVE	Pulp	7.2	18.0	58	0.0	40.8	4.5

Unit Log Grade x Sort Summary: SMUGGLER U3

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	Domestic	15.6	37.0	1,839	6.2	920.5	143.4
DF	LIVE	2 SAW	HQ-A	21.5	40.0	560	0.0	231.3	43.7
DF	LIVE	2 SAW	HQ-B	16.6	40.0	10,803	0.7	4,869.0	842.6
DF	LIVE	3 SAW	Domestic	9.4	35.0	2,617	2.4	1,707.4	204.1
DF	LIVE	3 SAW	HQ-B	10.7	40.0	1,631	0.4	880.2	127.2
DF	LIVE	4 SAW	Domestic	6.1	32.0	939	0.6	641.4	73.3

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	CULL	Cull	6.9	5.0	0	100.0	0.0	0.0
DF	LIVE	SPECIAL MILL	HQ-A	19.5	40.0	8,229	0.3	3,563.0	641.9
DF	LIVE	UTILITY	Pulp	6.6	40.0	74	0.0	50.0	5.8
MA	LIVE	2 SAW	Domestic	14.9	31.0	938	12.1	580.1	73.1
MA	LIVE	3 SAW	Domestic	11.5	28.0	637	12.7	404.7	49.7
MA	LIVE	4 SAW	Domestic	8.0	27.0	677	6.6	477.0	52.8
MA	LIVE	CULL	Cull	7.3	15.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	Pulp	14.0	30.0	622	38.7	540.5	48.5
RA	LIVE	1 SAW	Domestic	16.6	24.0	83	0.0	39.9	6.5
RA	LIVE	2 SAW	Domestic	13.0	32.0	214	4.5	126.3	16.7
RA	LIVE	3 SAW	Domestic	11.1	30.0	79	6.4	41.9	6.2
RA	LIVE	4 SAW	Domestic	7.7	34.0	189	5.7	165.6	14.7
RA	LIVE	CULL	Cull	7.6	15.0	0	100.0	0.0	0.0
RA	LIVE	UTILITY	Pulp	5.4	30.0	45	0.0	36.6	3.5
RC	LIVE	3 SAW	Domestic	10.6	32.0	53	13.1	32.6	4.1
RC	LIVE	4 SAW	Domestic	5.3	33.0	23	14.3	43.6	1.8
WH	LIVE	2 SAW	Domestic	14.9	40.0	146	0.0	92.2	11.4
WH	LIVE	3 SAW	Domestic	8.8	40.0	125	2.5	119.6	9.8
WH	LIVE	CULL	Cull	7.5	6.0	0	100.0	0.0	0.0
WH	LIVE	UTILITY	Pulp	7.2	18.0	58	0.0	40.8	4.5

Unit Log Grade x Diameter Bin Summary: SMUGGLER U3

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 11	LIVE	CULL	6.0	5.0	0	100.0	0.0	0.0
DF	5 - 11	LIVE	4 SAW	6.1	32.0	939	0.6	641.4	73.3
DF	5 - 11	LIVE	UTILITY	6.6	40.0	74	0.0	50.0	5.8
DF	5 - 11	LIVE	3 SAW	9.8	36.0	4,247	1.6	2,587.6	331.3
DF	12 - 15	LIVE	CULL	13.0	8.0	0	100.0	0.0	0.0
DF	12 - 15	LIVE	2 SAW	13.9	39.0	4,307	0.9	2,202.7	336.0
DF	16 - 19	LIVE	SPECIAL MILL	17.3	39.0	3,145	0.7	1,451.0	245.3
DF	16 - 19	LIVE	2 SAW	17.6	39.0	4,260	1.9	1,925.9	332.3
DF	16 - 19	LIVE	CULL	18.1	16.0	0	100.0	0.0	0.0
DF	20+	LIVE	SPECIAL MILL	21.8	40.0	5,084	0.0	2,112.1	396.5
DF	20+	LIVE	2 SAW	23.5	39.0	4,634	1.6	1,892.2	361.4
MA	5 - 11	LIVE	CULL	6.1	17.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	4 SAW	8.0	27.0	677	6.6	477.0	52.8
MA	5 - 11	LIVE	3 SAW	11.5	28.0	637	12.7	404.7	49.7

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	5 - 11	LIVE	UTILITY	11.6	20.0	98	0.0	48.7	7.6
MA	12 - 15	LIVE	UTILITY	13.5	32.0	295	35.7	282.7	23.0
MA	12 - 15	LIVE	CULL	13.9	4.0	0	100.0	0.0	0.0
MA	12 - 15	LIVE	2 SAW	14.9	31.0	938	12.1	580.1	73.1
MA	16 - 19	LIVE	UTILITY	18.0	36.0	229	50.0	209.2	17.9
RA	5 - 11	LIVE	UTILITY	5.4	30.0	45	0.0	36.6	3.5
RA	5 - 11	LIVE	CULL	7.6	15.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	4 SAW	7.7	34.0	189	5.7	165.6	14.7
RA	5 - 11	LIVE	3 SAW	11.1	30.0	79	6.4	41.9	6.2
RA	12 - 15	LIVE	2 SAW	13.0	32.0	214	4.5	126.3	16.7
RA	16 - 19	LIVE	1 SAW	16.6	24.0	83	0.0	39.9	6.5
RC	5 - 11	LIVE	4 SAW	5.3	33.0	23	14.3	43.6	1.8
RC	5 - 11	LIVE	3 SAW	10.6	32.0	53	13.1	32.6	4.1
WH	5 - 11	LIVE	UTILITY	7.2	18.0	58	0.0	40.8	4.5
WH	5 - 11	LIVE	CULL	7.5	6.0	0	100.0	0.0	0.0
WH	5 - 11	LIVE	3 SAW	8.8	40.0	125	2.5	119.6	9.8
WH	12 - 15	LIVE	2 SAW	12.0	40.0	43	0.0	27.6	3.4
WH	16 - 19	LIVE	2 SAW	17.7	40.0	102	0.0	64.6	8.0

Unit Log Sort x Diameter Bin Summary: SMUGGLER U3

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 11	LIVE	Cull	6.0	5.0	0	100.0	0.0	0.0
DF	5 - 11	LIVE	Pulp	6.6	40.0	74	0.0	50.0	5.8
DF	5 - 11	LIVE	Domestic	7.8	33.0	3,556	1.9	2,348.7	277.4
DF	5 - 11	LIVE	HQ-B	10.7	40.0	1,631	0.4	880.2	127.2
DF	12 - 15	LIVE	Cull	13.0	8.0	0	100.0	0.0	0.0
DF	12 - 15	LIVE	Domestic	13.7	36.0	798	3.0	422.3	62.2
DF	12 - 15	LIVE	HQ-B	14.0	40.0	3,510	0.4	1,780.4	273.8
DF	16 - 19	LIVE	HQ-A	17.3	39.0	3,145	0.7	1,451.0	245.3
DF	16 - 19	LIVE	Domestic	17.5	40.0	853	3.9	402.0	66.6
DF	16 - 19	LIVE	HQ-B	17.6	39.0	3,407	1.4	1,524.0	265.7
DF	16 - 19	LIVE	Cull	18.1	16.0	0	100.0	0.0	0.0
DF	20+	LIVE	HQ-A	21.8	40.0	5,644	0.0	2,343.4	440.2
DF	20+	LIVE	HQ-B	23.7	40.0	3,886	0.4	1,564.6	303.1
DF	20+	LIVE	Domestic	25.9	32.0	188	25.1	96.2	14.6
MA	5 - 11	LIVE	Cull	6.1	17.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	Domestic	9.1	28.0	1,315	9.6	881.7	102.5

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	5 - 11	LIVE	Pulp	11.6	20.0	98	0.0	48.7	7.6
MA	12 - 15	LIVE	Pulp	13.5	32.0	295	35.7	282.7	23.0
MA	12 - 15	LIVE	Cull	13.9	4.0	0	100.0	0.0	0.0
MA	12 - 15	LIVE	Domestic	14.9	31.0	938	12.1	580.1	73.1
MA	16 - 19	LIVE	Pulp	18.0	36.0	229	50.0	209.2	17.9
RA	5 - 11	LIVE	Pulp	5.4	30.0	45	0.0	36.6	3.5
RA	5 - 11	LIVE	Cull	7.6	15.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	Domestic	8.3	34.0	268	5.9	207.5	20.9
RA	12 - 15	LIVE	Domestic	13.0	32.0	214	4.5	126.3	16.7
RA	16 - 19	LIVE	Domestic	16.6	24.0	83	0.0	39.9	6.5
RC	5 - 11	LIVE	Domestic	7.4	33.0	76	13.5	76.2	5.9
WH	5 - 11	LIVE	Pulp	7.2	18.0	58	0.0	40.8	4.5
WH	5 - 11	LIVE	Cull	7.5	6.0	0	100.0	0.0	0.0
WH	5 - 11	LIVE	Domestic	8.8	40.0	125	2.5	119.6	9.8
WH	12 - 15	LIVE	Domestic	12.0	40.0	43	0.0	27.6	3.4
WH	16 - 19	LIVE	Domestic	17.7	40.0	102	0.0	64.6	8.0

Cruise Unit Report
SMUGGLER U4 RMZ HDWD

Unit Sale Notice Volume (MBF): SMUGGLER U4 RMZ HDWD

				MBF Volume by Grade					
Sp	QMD	Rings/In	Age	All	1 Saw	2 Saw	3 Saw	4 Saw	Utility
MA	20.4			29.8	3.9	15.0	1.7	1.4	7.8
RA	14.9			4.8			4.0	0.8	
RC	30.1			4.6			4.3	0.3	
ALL	20.1			39.2	3.9	15.0	10.0	2.5	7.8

Unit Sale Notice Weight (tons): SMUGGLER U4 RMZ HDWD

	Tons by Grade					
Sp	All	1 Saw	2 Saw	3 Saw	4 Saw	Utility
MA	192.1	21.9	102.9	12.4	13.3	41.5
RA	36.6			28.5	8.1	
RC	35.7			32.2	3.5	
ALL	264.4	21.9	102.9	73.1	25.0	41.5

Unit Cruise Design: SMUGGLER U4 RMZ HDWD

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (27.78) Measure/Count Plots, Sighting Ht = 16 ft	2.3	2.3	7	5	0

Unit Cruise Summary: SMUGGLER U4 RMZ HDWD

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF		4	2.0	0
MA	9	22	3.1	0
RC	3	5	0.7	0
RA	3	3	0.4	0
ALL	15	34	4.9	0

Unit Cruise Statistics (Cut + Leave Trees): SMUGGLER U4 RMZ HDWD

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	76.0	10.9	7.7						

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 (%)
MA	127.4	74.2	28.0	101.7	25.8	8.6	12,957	78.5	29.3
RC	32.3	211.3	79.9	102.7	33.2	19.2	3,317	213.9	82.1
RA	15.7	183.6	69.4	132.2	26.5	15.3	2,080	185.5	71.1
ALL	197.2	38.3	14.5	104.6	28.5	7.4	20,626	47.8	16.3

Unit Summary: SMUGGLER U4 RMZ HDWD

Sp	Status	Rx	N	D	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	LIVE	LEA	4	ALL	11.7	50	71			29.1	21.7	6.3		
MA	LIVE	CUT	9	ALL	19.5	40	53	12,957	27.5	61.4	127.4	28.9	192.1	29.8
RA	LIVE	CUT	3	ALL	14.9	81	100	2,080	16.1	13.0	15.7	4.1	36.6	4.8
RC	LIVE	CUT	3	ALL	30.1	65	82	2,010	15.0	4.0	19.6	3.6	35.7	4.6
RC	LIVE	LEA	1	ALL	16.6	30	26	1,307	15.0	8.5	12.7	3.1	23.2	3.0
ALL	LIVE	LEA	5	ALL	13.0	45	61	1,307	15.0	37.6	34.4	9.4	23.2	3.0
ALL	LIVE	CUT	15	ALL	19.5	48	62	17,047	25.0	78.4	162.7	36.6	264.4	39.2
ALL	ALL	ALL	20	ALL	17.7	47	62	18,354	24.4	116.0	197.1	46.0	287.6	42.2

Unit Stand Table: SMUGGLER U4 RMZ HDWD

Sp	D	Status	Rx	N	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	10	LIVE	LEA	2	9.5	44	53			22.7	11.2	3.6		
DF	16	LIVE	LEA	1	15.0	55	140			4.1	5.0	1.3		
DF	20	LIVE	LEA	1	20.0	95	121			2.5	5.5	1.2		
MA	14	LIVE	CUT	2	14.0	39	62	1,052	6.4	12.7	13.6	3.6	20.1	2.4
MA	18	LIVE	CUT	1	18.0			4,389	27.5	23.8	42.1	9.9	65.1	10.1
MA	22	LIVE	CUT	3	21.2	80	99	3,471	35.0	14.7	35.9	7.8	55.6	8.0
MA	24	LIVE	CUT	2	23.7	80	99	2,078	39.8	7.1	21.8	4.5	29.5	4.8
MA	28	LIVE	CUT	1	28.0	75	93	968	13.3	1.6	7.0	1.3	10.0	2.2
MA	32	LIVE	CUT	1	31.0	88	110	999	29.5	1.3	7.0	1.3	11.8	2.3
RA	14	LIVE	CUT	1	14.0	70	86	486	31.7	4.9	5.2	1.4	7.8	1.1
RA	16	LIVE	CUT	2	15.5	87	109	1,594	9.8	8.0	10.5	2.7	28.8	3.7
RC	26	LIVE	CUT	1	26.0	60	75	544	19.6	1.8	6.5	1.3	9.7	1.3
RC	28	LIVE	CUT	1	28.0	60	75	538	9.0	1.5	6.5	1.2	11.5	1.2
RC	42	LIVE	CUT	1	42.0	90	115	927	15.5	0.7	6.5	1.0	14.6	2.1
RC	16	LIVE	LEA	1	15.0	35	42	295	0.0	5.3	6.5	1.7	8.8	0.7
RC	20	LIVE	LEA	1	19.0	22		1,012	15.0	3.1	6.2	1.4	14.4	2.3

Unit Log Grade Summary: SMUGGLER U4 RMZ HDWD

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	LIVE	1 SAW	19.5	21.0	1,685	9.0	21.9	3.9
MA	LIVE	2 SAW	14.1	34.0	6,535	7.7	102.9	15.0
MA	LIVE	3 SAW	10.0	23.0	755	8.6	12.4	1.7
MA	LIVE	4 SAW	9.9	28.0	599	6.0	13.3	1.4
MA	LIVE	CULL	12.7	21.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	11.9	19.0	3,383	5.5	41.5	7.8
RA	LIVE	3 SAW	10.7	36.0	1,728	6.6	28.5	4.0
RA	LIVE	4 SAW	6.8	35.0	352	3.4	8.1	0.8
RA	LIVE	CULL	5.1	19.0	0	100.0	0.0	0.0
RC	LIVE	3 SAW	17.4	35.0	1,884	9.6	32.2	4.3
RC	LIVE	4 SAW	8.0	23.0	126	0.0	3.5	0.3
RC	LIVE	CULL	17.4	4.0	0	100.0	0.0	0.0

Unit Log Sort Summary: SMUGGLER U4 RMZ HDWD

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	LIVE	Cull	12.7	21.0	0	100.0	0.0	0.0
MA	LIVE	Domestic	13.3	30.0	9,574	7.9	150.6	22.0
MA	LIVE	Pulp	11.9	19.0	3,383	5.5	41.5	7.8
RA	LIVE	Cull	5.1	19.0	0	100.0	0.0	0.0
RA	LIVE	Domestic	9.2	36.0	2,080	6.0	36.6	4.8
RC	LIVE	Cull	17.4	4.0	0	100.0	0.0	0.0
RC	LIVE	Domestic	13.5	30.0	2,010	9.1	35.7	4.6

Unit Log Grade x Sort Summary: SMUGGLER U4 RMZ HDWD

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	LIVE	1 SAW	Domestic	19.5	21.0	1,685	9.0	21.9	3.9
MA	LIVE	2 SAW	Domestic	14.1	34.0	6,535	7.7	102.9	15.0
MA	LIVE	3 SAW	Domestic	10.0	23.0	755	8.6	12.4	1.7
MA	LIVE	4 SAW	Domestic	9.9	28.0	599	6.0	13.3	1.4
MA	LIVE	CULL	Cull	12.7	21.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	Pulp	11.9	19.0	3,383	5.5	41.5	7.8
RA	LIVE	3 SAW	Domestic	10.7	36.0	1,728	6.6	28.5	4.0
RA	LIVE	4 SAW	Domestic	6.8	35.0	352	3.4	8.1	0.8
RA	LIVE	CULL	Cull	5.1	19.0	0	100.0	0.0	0.0
RC	LIVE	3 SAW	Domestic	17.4	35.0	1,884	9.6	32.2	4.3
RC	LIVE	4 SAW	Domestic	8.0	23.0	126	0.0	3.5	0.3

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
RC	LIVE	CULL	Cull	17.4	4.0	0	100.0	0.0	0.0

Unit Log Grade x Diameter Bin Summary: SMUGGLER U4 RMZ HDWD

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	5 - 11	LIVE	CULL	7.2	33.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	UTILITY	8.3	18.0	745	0.0	11.8	1.7
MA	5 - 11	LIVE	4 SAW	9.9	28.0	599	6.0	13.3	1.4
MA	5 - 11	LIVE	3 SAW	10.0	23.0	755	8.6	12.4	1.7
MA	12 - 15	LIVE	UTILITY	14.0	20.0	516	0.0	5.9	1.2
MA	12 - 15	LIVE	2 SAW	14.1	34.0	6,535	7.7	102.9	15.0
MA	16 - 19	LIVE	1 SAW	17.7	24.0	833	16.6	12.7	1.9
MA	16 - 19	LIVE	CULL	18.3	6.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	UTILITY	19.4	16.0	612	0.0	5.9	1.4
MA	20+	LIVE	CULL	21.6	6.0	0	100.0	0.0	0.0
MA	20+	LIVE	1 SAW	22.0	16.0	852	0.0	9.2	2.0
MA	20+	LIVE	UTILITY	22.0	20.0	1,510	11.5	17.9	3.5
RA	5 - 11	LIVE	CULL	5.1	19.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	4 SAW	6.8	35.0	352	3.4	8.1	0.8
RA	5 - 11	LIVE	3 SAW	10.7	36.0	1,728	6.6	28.5	4.0
RC	5 - 11	LIVE	4 SAW	8.0	23.0	126	0.0	3.5	0.3
RC	12 - 15	LIVE	CULL	12.5	2.0	0	100.0	0.0	0.0
RC	12 - 15	LIVE	3 SAW	14.7	40.0	652	7.6	13.6	1.5
RC	16 - 19	LIVE	CULL	16.2	4.0	0	100.0	0.0	0.0
RC	16 - 19	LIVE	3 SAW	17.3	26.0	468	11.7	7.4	1.1
RC	20+	LIVE	CULL	25.5	4.0	0	100.0	0.0	0.0
RC	20+	LIVE	3 SAW	26.6	40.0	763	10.0	11.3	1.8

Unit Log Sort x Diameter Bin Summary: SMUGGLER U4 RMZ HDWD

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	5 - 11	LIVE	Cull	7.2	33.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	Pulp	8.3	18.0	745	0.0	11.8	1.7
MA	5 - 11	LIVE	Domestic	10.0	25.0	1,354	7.5	25.8	3.1
MA	12 - 15	LIVE	Pulp	14.0	20.0	516	0.0	5.9	1.2
MA	12 - 15	LIVE	Domestic	14.1	34.0	6,535	7.7	102.9	15.0
MA	16 - 19	LIVE	Domestic	17.7	24.0	833	16.6	12.7	1.9
MA	16 - 19	LIVE	Cull	18.3	6.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	Pulp	19.4	16.0	612	0.0	5.9	1.4

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	20+	LIVE	Cull	21.6	6.0	0	100.0	0.0	0.0
MA	20+	LIVE	Domestic	22.0	16.0	852	0.0	9.2	2.0
MA	20+	LIVE	Pulp	22.0	20.0	1,510	11.5	17.9	3.5
RA	5 - 11	LIVE	Cull	5.1	19.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	Domestic	9.2	36.0	2,080	6.0	36.6	4.8
RC	5 - 11	LIVE	Domestic	8.0	23.0	126	0.0	3.5	0.3
RC	12 - 15	LIVE	Cull	12.5	2.0	0	100.0	0.0	0.0
RC	12 - 15	LIVE	Domestic	14.7	40.0	652	7.6	13.6	1.5
RC	16 - 19	LIVE	Cull	16.2	4.0	0	100.0	0.0	0.0
RC	16 - 19	LIVE	Domestic	17.3	26.0	468	11.7	7.4	1.1
RC	20+	LIVE	Cull	25.5	4.0	0	100.0	0.0	0.0
RC	20+	LIVE	Domestic	26.6	40.0	763	10.0	11.3	1.8

Cruise Unit Report
SMUGGLER U5 RMZ HDWD

Unit Sale Notice Volume (MBF): SMUGGLER U5 RMZ HDWD

				MBF Volume by Grade					
Sp	QMD	Rings/In	Age	All	1 Saw	2 Saw	3 Saw	4 Saw	Utility
RA	18.6			17.6	3.7	9.5	2.7	1.7	
MA	21.7			10.9	1.0	1.5	1.6		6.8
ALL	20.0			28.5	4.6	11.0	4.4	1.7	6.8

Unit Sale Notice Weight (tons): SMUGGLER U5 RMZ HDWD

	Tons by Grade					
Sp	All	1 Saw	2 Saw	3 Saw	4 Saw	Utility
RA	127.6	21.1	71.4	19.3	15.8	
MA	81.6	5.3	11.1	10.6		54.6
ALL	209.2	26.4	82.5	29.9	15.8	54.6

Unit Cruise Design: SMUGGLER U5 RMZ HDWD

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (27.78) Measure/Count Plots, Sighting Ht = 16 ft	1.6	1.6	7	4	0

Unit Cruise Summary: SMUGGLER U5 RMZ HDWD

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF		3	1.5	0
RA	7	15	2.1	0
MA	6	12	1.7	0
ALL	13	30	4.3	0

Unit Cruise Statistics (Cut + Leave Trees): SMUGGLER U5 RMZ HDWD

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	59.1	47.2	33.4						
RA	79.4	42.1	15.9	138.5	19.1	7.2	10,997	46.2	17.5
MA	69.9	79.9	30.2	97.7	48.3	19.7	6,830	93.3	36.1
ALL	166.2	35.7	13.5	119.4	34.8	9.7	19,842	49.9	16.6

Unit Summary: SMUGGLER U5 RMZ HDWD

Sp	Status	Rx	N	D	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	LIVE	LEA	3	ALL	18.0	72	90			9.6	16.9	4.0		
MA	LIVE	CUT	6	ALL	21.7	71	88	6,830	28.7	27.2	69.9	15.0	81.6	10.9
RA	LIVE	CUT	7	ALL	18.6	85	106	10,997	18.0	42.1	79.4	18.4	127.6	17.6
ALL	LIVE	LEA	3	ALL	18.0	72	90			9.6	16.9	4.0		
ALL	LIVE	CUT	13	ALL	19.9	80	99	17,827	22.5	69.3	149.3	33.4	209.2	28.5
ALL	ALL	ALL	16	ALL	19.7	79	98	17,827	22.5	78.9	166.2	37.4	209.2	28.5

Unit Stand Table: SMUGGLER U5 RMZ HDWD

Sp	D	Status	Rx	N	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	16	LIVE	LEA	1	16.0	70	88			4.0	5.6	1.4		
DF	18	LIVE	LEA	1	18.0	75	94			3.1	5.5	1.3		
DF	22	LIVE	LEA	1	21.0	70	88			2.4	5.8	1.3		
MA	18	LIVE	CUT	1	18.0	72	89	2,453	8.6	9.3	16.5	3.9	23.3	3.9
MA	20	LIVE	CUT	1	20.0	70	86	929	17.0	3.8	8.2	1.8	11.1	1.5
MA	22	LIVE	CUT	1	21.0	67	83	457	79.6	7.4	17.7	3.9	6.7	0.7
MA	26	LIVE	CUT	1	26.0	75	93	639	49.8	2.9	10.6	2.1	18.6	1.0
MA	28	LIVE	CUT	2	28.0	75	93	2,353	16.4	3.9	16.9	3.2	21.9	3.8
RA	16	LIVE	CUT	1	16.0	80	99	1,441	4.1	7.0	9.8	2.5	18.2	2.3
RA	18	LIVE	CUT	3	17.3	82	102	3,475	19.1	18.0	29.5	7.1	45.0	5.6
RA	20	LIVE	CUT	1	20.0	90	113	1,550	18.1	4.6	10.1	2.3	16.9	2.5
RA	22	LIVE	CUT	2	21.0	91	114	4,531	19.2	12.5	30.0	6.5	47.5	7.2

Unit Log Grade Summary: SMUGGLER U5 RMZ HDWD

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	LIVE	1 SAW	18.4	26.0	602	15.6	5.3	1.0
MA	LIVE	2 SAW	13.0	40.0	929	5.0	11.1	1.5
MA	LIVE	3 SAW	10.1	30.0	1,027	2.8	10.6	1.6
MA	LIVE	CULL	8.5	22.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	13.2	26.0	4,273	12.9	54.6	6.8
RA	LIVE	1 SAW	16.1	30.0	2,289	3.3	21.1	3.7
RA	LIVE	2 SAW	13.3	33.0	5,950	6.3	71.4	9.5
RA	LIVE	3 SAW	11.3	36.0	1,711	3.9	19.3	2.7
RA	LIVE	4 SAW	7.7	33.0	1,047	8.7	15.8	1.7
RA	LIVE	CULL	7.0	23.0	0	100.0	0.0	0.0

Unit Log Sort Summary: SMUGGLER U5 RMZ HDWD

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	LIVE	Cull	8.5	22.0	0	100.0	0.0	0.0
MA	LIVE	Domestic	11.9	32.0	2,557	6.9	27.0	4.1
MA	LIVE	Pulp	13.2	26.0	4,273	12.9	54.6	6.8
RA	LIVE	Cull	7.0	23.0	0	100.0	0.0	0.0
RA	LIVE	Domestic	11.8	33.0	10,997	5.6	127.6	17.6

Unit Log Grade x Sort Summary: SMUGGLER U5 RMZ HDWD

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	LIVE	1 SAW	Domestic	18.4	26.0	602	15.6	5.3	1.0
MA	LIVE	2 SAW	Domestic	13.0	40.0	929	5.0	11.1	1.5
MA	LIVE	3 SAW	Domestic	10.1	30.0	1,027	2.8	10.6	1.6
MA	LIVE	CULL	Cull	8.5	22.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	Pulp	13.2	26.0	4,273	12.9	54.6	6.8
RA	LIVE	1 SAW	Domestic	16.1	30.0	2,289	3.3	21.1	3.7
RA	LIVE	2 SAW	Domestic	13.3	33.0	5,950	6.3	71.4	9.5
RA	LIVE	3 SAW	Domestic	11.3	36.0	1,711	3.9	19.3	2.7
RA	LIVE	4 SAW	Domestic	7.7	33.0	1,047	8.7	15.8	1.7
RA	LIVE	CULL	Cull	7.0	23.0	0	100.0	0.0	0.0

Unit Log Grade x Diameter Bin Summary: SMUGGLER U5 RMZ HDWD

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	5 - 11	LIVE	CULL	6.7	20.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	UTILITY	9.1	27.0	549	14.0	10.1	0.9
MA	5 - 11	LIVE	3 SAW	10.1	30.0	1,027	2.8	10.6	1.6
MA	12 - 15	LIVE	2 SAW	13.0	40.0	929	5.0	11.1	1.5
MA	12 - 15	LIVE	UTILITY	14.4	25.0	1,973	21.6	27.9	3.2
MA	12 - 15	LIVE	CULL	14.5	30.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	UTILITY	18.2	40.0	1,150	0.0	12.0	1.8
MA	16 - 19	LIVE	1 SAW	18.4	26.0	602	15.6	5.3	1.0
MA	20+	LIVE	UTILITY	22.8	14.0	602	0.0	4.5	1.0
RA	5 - 11	LIVE	CULL	7.0	23.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	4 SAW	7.7	33.0	1,047	8.7	15.8	1.7
RA	5 - 11	LIVE	3 SAW	11.3	36.0	1,711	3.9	19.3	2.7
RA	12 - 15	LIVE	2 SAW	13.3	33.0	5,950	6.3	71.4	9.5
RA	16 - 19	LIVE	1 SAW	16.1	30.0	2,289	3.3	21.1	3.7

Unit Log Sort x Diameter Bin Summary: SMUGGLER U5 RMZ HDWD

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	5 - 11	LIVE	Cull	6.7	20.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	Pulp	9.1	27.0	549	14.0	10.1	0.9
MA	5 - 11	LIVE	Domestic	10.1	30.0	1,027	2.8	10.6	1.6
MA	12 - 15	LIVE	Domestic	13.0	40.0	929	5.0	11.1	1.5
MA	12 - 15	LIVE	Pulp	14.4	25.0	1,973	21.6	27.9	3.2
MA	12 - 15	LIVE	Cull	14.5	30.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	Pulp	18.2	40.0	1,150	0.0	12.0	1.8
MA	16 - 19	LIVE	Domestic	18.4	26.0	602	15.6	5.3	1.0
MA	20+	LIVE	Pulp	22.8	14.0	602	0.0	4.5	1.0
RA	5 - 11	LIVE	Cull	7.0	23.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	Domestic	9.0	34.0	2,758	5.8	35.1	4.4
RA	12 - 15	LIVE	Domestic	13.3	33.0	5,950	6.3	71.4	9.5
RA	16 - 19	LIVE	Domestic	16.1	30.0	2,289	3.3	21.1	3.7

Cruise Unit Report
SMUGGLER U6 RMZ HDWD

Unit Sale Notice Volume (MBF): SMUGGLER U6 RMZ HDWD

				MBF Volume by Grade					
Sp	QMD	Rings/In	Age	All	1 Saw	2 Saw	3 Saw	4 Saw	Utility
MA	22.2			40.1	15.7	6.5	2.0	0.3	15.6
RA	16.5			10.5		5.6	2.9	1.9	
ALL	20.1			50.5	15.7	12.1	5.0	2.2	15.6

Unit Sale Notice Weight (tons): SMUGGLER U6 RMZ HDWD

	Tons by Grade					
Sp	All	1 Saw	2 Saw	3 Saw	4 Saw	Utility
MA	255.5	84.0	48.2	14.7	4.1	104.5
RA	75.5		38.5	19.0	18.0	
ALL	331.0	84.0	86.7	33.7	22.1	104.5

Unit Cruise Design: SMUGGLER U6 RMZ HDWD

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
B1C: VR, 1 BAF (27.78) Measure/Count Plots, Sighting Ht = 16 ft	2.5	2.5	5	4	0

Unit Cruise Summary: SMUGGLER U6 RMZ HDWD

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF		2	1.0	0
MA	11	16	3.2	0
RA	4	4	0.8	0
ALL	15	22	4.4	0

Unit Cruise Statistics (Cut + Leave Trees): SMUGGLER U6 RMZ HDWD

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	39.4	3.4	2.4						
MA	121.7	80.6	36.1	131.6	27.0	8.1	16,024	85.0	37.0
RA	29.7	163.5	73.1	141.1	9.2	4.6	4,191	163.8	73.3
ALL	167.2	25.8	11.5	133.5	23.2	6.0	22,318	34.7	13.0

Unit Summary: SMUGGLER U6 RMZ HDWD

Sp	Status	Rx	N	D	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	LIVE	LEA	2	ALL	15.1	56	69			12.7	15.8	4.1		
MA	LIVE	CUT	11	ALL	22.2	76	95	16,024	22.6	45.3	121.7	25.8	255.5	40.1
RA	LIVE	CUT	4	ALL	16.5	80	99	4,191	11.6	20.0	29.7	7.3	75.5	10.5
ALL	LIVE	LEA	2	ALL	15.1	56	69			12.7	15.8	4.1		
ALL	LIVE	CUT	15	ALL	20.6	77	96	20,215	20.5	65.3	151.4	33.1	331.0	50.6
ALL	ALL	ALL	17	ALL	19.8	74	92	20,215	20.5	78.0	167.2	37.2	331.0	50.6

Unit Stand Table: SMUGGLER U6 RMZ HDWD

Sp	D	Status	Rx	N	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	14	LIVE	LEA	1	13.0	45	55			8.8	8.1	2.2		
DF	20	LIVE	LEA	1	19.0	80	101			3.9	7.7	1.8		
MA	18	LIVE	CUT	2	17.0	68	84	2,116	25.9	14.0	22.1	5.4	42.3	5.3
MA	20	LIVE	CUT	1	19.0	72	89	1,458	0.0	5.5	10.9	2.5	26.9	3.6
MA	22	LIVE	CUT	2	21.5	74	92	2,454	29.5	8.9	22.4	4.8	47.1	6.1
MA	24	LIVE	CUT	3	23.6	86	108	4,636	23.9	10.9	33.3	6.8	70.2	11.6
MA	30	LIVE	CUT	2	29.5	86	107	3,189	26.7	4.7	22.1	4.1	44.6	8.0
MA	38	LIVE	CUT	1	38.0	86	107	2,171	12.4	1.4	10.9	1.8	24.4	5.4
RA	14	LIVE	CUT	1	14.0	76	94	995	11.0	6.9	7.3	2.0	17.5	2.5
RA	18	LIVE	CUT	3	17.7	82	102	3,196	11.8	13.2	22.4	5.3	58.0	8.0

Unit Log Grade Summary: SMUGGLER U6 RMZ HDWD

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	LIVE	1 SAW	18.9	29.0	6,283	2.1	84.0	15.7
MA	LIVE	2 SAW	14.0	37.0	2,581	14.4	48.2	6.5
MA	LIVE	3 SAW	11.3	32.0	813	18.8	14.7	2.0
MA	LIVE	4 SAW	6.7	23.0	105	24.1	4.1	0.3
MA	LIVE	CULL	12.9	14.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	10.5	34.0	6,242	0.0	104.5	15.6
RA	LIVE	2 SAW	13.1	31.0	2,247	3.1	38.5	5.6
RA	LIVE	3 SAW	10.3	30.0	1,177	0.0	19.0	2.9
RA	LIVE	4 SAW	8.2	29.0	766	14.0	18.0	1.9
RA	LIVE	CULL	5.5	16.0	0	100.0	0.0	0.0

Unit Log Sort Summary: SMUGGLER U6 RMZ HDWD

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	LIVE	Cull	12.9	14.0	0	100.0	0.0	0.0
MA	LIVE	Domestic	14.6	31.0	9,782	7.5	151.0	24.5
MA	LIVE	Pulp	10.5	34.0	6,242	0.0	104.5	15.6
RA	LIVE	Cull	5.5	16.0	0	100.0	0.0	0.0
RA	LIVE	Domestic	10.4	30.0	4,191	4.5	75.5	10.5

Unit Log Grade x Sort Summary: SMUGGLER U6 RMZ HDWD

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	LIVE	1 SAW	Domestic	18.9	29.0	6,283	2.1	84.0	15.7
MA	LIVE	2 SAW	Domestic	14.0	37.0	2,581	14.4	48.2	6.5
MA	LIVE	3 SAW	Domestic	11.3	32.0	813	18.8	14.7	2.0
MA	LIVE	4 SAW	Domestic	6.7	23.0	105	24.1	4.1	0.3
MA	LIVE	CULL	Cull	12.9	14.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	Pulp	10.5	34.0	6,242	0.0	104.5	15.6
RA	LIVE	2 SAW	Domestic	13.1	31.0	2,247	3.1	38.5	5.6
RA	LIVE	3 SAW	Domestic	10.3	30.0	1,177	0.0	19.0	2.9
RA	LIVE	4 SAW	Domestic	8.2	29.0	766	14.0	18.0	1.9
RA	LIVE	CULL	Cull	5.5	16.0	0	100.0	0.0	0.0

Unit Log Grade x Diameter Bin Summary: SMUGGLER U6 RMZ HDWD

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	5 - 11	LIVE	4 SAW	6.7	23.0	105	24.1	4.1	0.3
MA	5 - 11	LIVE	CULL	7.4	18.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	UTILITY	8.5	35.0	2,931	0.0	61.0	7.3
MA	5 - 11	LIVE	3 SAW	11.3	32.0	813	18.8	14.7	2.0
MA	12 - 15	LIVE	UTILITY	13.4	34.0	1,140	0.0	19.1	2.9
MA	12 - 15	LIVE	2 SAW	14.0	37.0	2,581	14.4	48.2	6.5
MA	12 - 15	LIVE	CULL	14.7	16.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	1 SAW	17.4	31.0	3,707	2.2	51.2	9.3
MA	16 - 19	LIVE	CULL	17.6	11.0	0	100.0	0.0	0.0
MA	20+	LIVE	1 SAW	22.5	27.0	2,575	1.9	32.8	6.4
MA	20+	LIVE	CULL	23.3	4.0	0	100.0	0.0	0.0
MA	20+	LIVE	UTILITY	26.0	25.0	2,171	0.0	24.4	5.4
RA	5 - 11	LIVE	CULL	5.5	16.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	4 SAW	8.2	29.0	766	14.0	18.0	1.9

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
RA	5 - 11	LIVE	3 SAW	10.3	30.0	1,177	0.0	19.0	2.9
RA	12 - 15	LIVE	2 SAW	13.1	31.0	2,247	3.1	38.5	5.6

Unit Log Sort x Diameter Bin Summary: SMUGGLER U6 RMZ HDWD

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
MA	5 - 11	LIVE	Cull	7.4	18.0	0	100.0	0.0	0.0
MA	5 - 11	LIVE	Pulp	8.5	35.0	2,931	0.0	61.0	7.3
MA	5 - 11	LIVE	Domestic	9.4	28.0	918	19.4	18.8	2.3
MA	12 - 15	LIVE	Pulp	13.4	34.0	1,140	0.0	19.1	2.9
MA	12 - 15	LIVE	Domestic	14.0	37.0	2,581	14.4	48.2	6.5
MA	12 - 15	LIVE	Cull	14.7	16.0	0	100.0	0.0	0.0
MA	16 - 19	LIVE	Domestic	17.4	31.0	3,707	2.2	51.2	9.3
MA	16 - 19	LIVE	Cull	17.6	11.0	0	100.0	0.0	0.0
MA	20+	LIVE	Domestic	22.5	27.0	2,575	1.9	32.8	6.4
MA	20+	LIVE	Cull	23.3	4.0	0	100.0	0.0	0.0
MA	20+	LIVE	Pulp	26.0	25.0	2,171	0.0	24.4	5.4
RA	5 - 11	LIVE	Cull	5.5	16.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	Domestic	9.1	29.0	1,944	6.0	37.0	4.9
RA	12 - 15	LIVE	Domestic	13.1	31.0	2,247	3.1	38.5	5.6

Cruise Unit Report
SMUGGLER U7 ROW

Unit Sale Notice Volume (MBF): SMUGGLER U7 ROW

				MBF Volume by Grade					
Sp	QMD	Rings/In	Age	All	1 Saw	2 Saw	3 Saw	4 Saw	Utility
DF	30.5			2.3		0.5	0.3		1.6
RA	22.3			1.5	0.4	0.8		0.2	0.1
MA	25.4			0.8		0.3			0.5
ALL	25.9			4.6	0.4	1.6	0.3	0.2	2.1

Unit Sale Notice Weight (tons): SMUGGLER U7 ROW

	Tons by Grade					
Sp	All	1 Saw	2 Saw	3 Saw	4 Saw	Utility
DF	18.5		3.2	2.5		12.8
RA	11.5	2.5	5.6		2.8	0.6
MA	8.4		2.5			5.9
ALL	38.4	2.5	11.2	2.5	2.8	19.3

Unit Cruise Design: SMUGGLER U7 ROW

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
ST: Strip/Percent Sample (1 tree expansion)	0.4	0.4	1	1	0

Unit Cruise Summary: SMUGGLER U7 ROW

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	3	3	3.0	0
RA	4	4	4.0	0
MA	3	3	3.0	0
ALL	10	10	10.0	0

Unit Cruise Statistics (Cut + Leave Trees): SMUGGLER U7 ROW

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	38.0	0.0	0.0	148.8	25.6	14.8	5,652	25.6	14.8
RA	27.2	0.0	0.0	137.4	12.5	6.3	3,737	12.5	6.3

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 (%)
MA	26.4	0.0	0.0	77.5	49.7	28.7	2,044	49.7	28.7
ALL	91.6	0.0	0.0	124.9	33.6	10.6	11,433	33.6	10.6

Unit Summary: SMUGGLER U7 ROW

Sp	Status	Rx	N	D	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	LIVE	CUT	3	ALL	30.5	92	122	5,652	22.6	7.5	38.0	6.9	18.5	2.3
MA	LIVE	CUT	3	ALL	25.4	80	99	2,044	52.6	7.5	26.4	5.2	8.4	0.8
RA	LIVE	CUT	4	ALL	22.3	88	109	3,737	22.0	10.0	27.2	5.8	11.5	1.5
ALL	LIVE	CUT	10	ALL	25.9	87	110	11,433	30.3	25.0	91.6	17.9	38.4	4.6
ALL	ALL	ALL	10	ALL	25.9	87	110	11,433	30.3	25.0	91.6	17.9	38.4	4.6

Unit Stand Table: SMUGGLER U7 ROW

Sp	D	Status	Rx	N	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	24	LIVE	CUT	1	24.0	76	96	779	22.8	2.5	7.9	1.6	2.8	0.3
DF	30	LIVE	CUT	1	29.0	80	117	1,862	0.0	2.5	11.5	2.1	5.0	0.7
DF	38	LIVE	CUT	1	37.0	120	154	3,011	37.0	2.5	18.7	3.1	10.7	1.2
MA	24	LIVE	CUT	1	23.0	80	100	927	16.8	2.5	7.2	1.5	3.3	0.4
MA	26	LIVE	CUT	1	26.0	80	99	524	67.5	2.5	9.2	1.8	2.5	0.2
MA	28	LIVE	CUT	1	27.0	80	99	593	68.1	2.5	10.0	1.9	2.6	0.2
RA	20	LIVE	CUT	1	19.0	80	100	584	7.8	2.5	4.9	1.1	2.3	0.2
RA	24	LIVE	CUT	3	23.3	90	112	3,153	25.5	7.5	22.3	4.6	9.2	1.3

Unit Log Grade Summary: SMUGGLER U7 ROW

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	19.9	40.0	1,137	20.0	3.2	0.5
DF	LIVE	3 SAW	10.6	39.0	640	4.3	2.5	0.3
DF	LIVE	CULL	7.3	7.0	0	100.0	0.0	0.0
DF	LIVE	UTILITY	18.6	36.0	3,875	30.0	12.8	1.6
MA	LIVE	2 SAW	15.2	40.0	748	20.0	2.5	0.3
MA	LIVE	CULL	11.6	24.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	15.1	33.0	1,296	46.3	5.9	0.5
RA	LIVE	1 SAW	16.4	40.0	891	10.0	2.5	0.4
RA	LIVE	2 SAW	14.5	40.0	2,104	6.2	5.6	0.8
RA	LIVE	4 SAW	8.4	38.0	594	9.1	2.8	0.2
RA	LIVE	CULL	16.0	9.0	0	100.0	0.0	0.0

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
RA	LIVE	UTILITY	6.2	38.0	148	0.0	0.6	0.1

Unit Log Sort Summary: SMUGGLER U7 ROW

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	Cull	7.3	7.0	0	100.0	0.0	0.0
DF	LIVE	Domestic	13.7	39.0	1,777	15.0	5.7	0.7
DF	LIVE	Pulp	18.6	36.0	3,875	30.0	12.8	1.6
MA	LIVE	Cull	11.6	24.0	0	100.0	0.0	0.0
MA	LIVE	Domestic	15.2	40.0	748	20.0	2.5	0.3
MA	LIVE	Pulp	15.1	33.0	1,296	46.3	5.9	0.5
RA	LIVE	Cull	16.0	9.0	0	100.0	0.0	0.0
RA	LIVE	Domestic	12.2	39.0	3,589	7.6	10.9	1.4
RA	LIVE	Pulp	6.2	38.0	148	0.0	0.6	0.1

Unit Log Grade x Sort Summary: SMUGGLER U7 ROW

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	2 SAW	Domestic	19.9	40.0	1,137	20.0	3.2	0.5
DF	LIVE	3 SAW	Domestic	10.6	39.0	640	4.3	2.5	0.3
DF	LIVE	CULL	Cull	7.3	7.0	0	100.0	0.0	0.0
DF	LIVE	UTILITY	Pulp	18.6	36.0	3,875	30.0	12.8	1.6
MA	LIVE	2 SAW	Domestic	15.2	40.0	748	20.0	2.5	0.3
MA	LIVE	CULL	Cull	11.6	24.0	0	100.0	0.0	0.0
MA	LIVE	UTILITY	Pulp	15.1	33.0	1,296	46.3	5.9	0.5
RA	LIVE	1 SAW	Domestic	16.4	40.0	891	10.0	2.5	0.4
RA	LIVE	2 SAW	Domestic	14.5	40.0	2,104	6.2	5.6	0.8
RA	LIVE	4 SAW	Domestic	8.4	38.0	594	9.1	2.8	0.2
RA	LIVE	CULL	Cull	16.0	9.0	0	100.0	0.0	0.0
RA	LIVE	UTILITY	Pulp	6.2	38.0	148	0.0	0.6	0.1

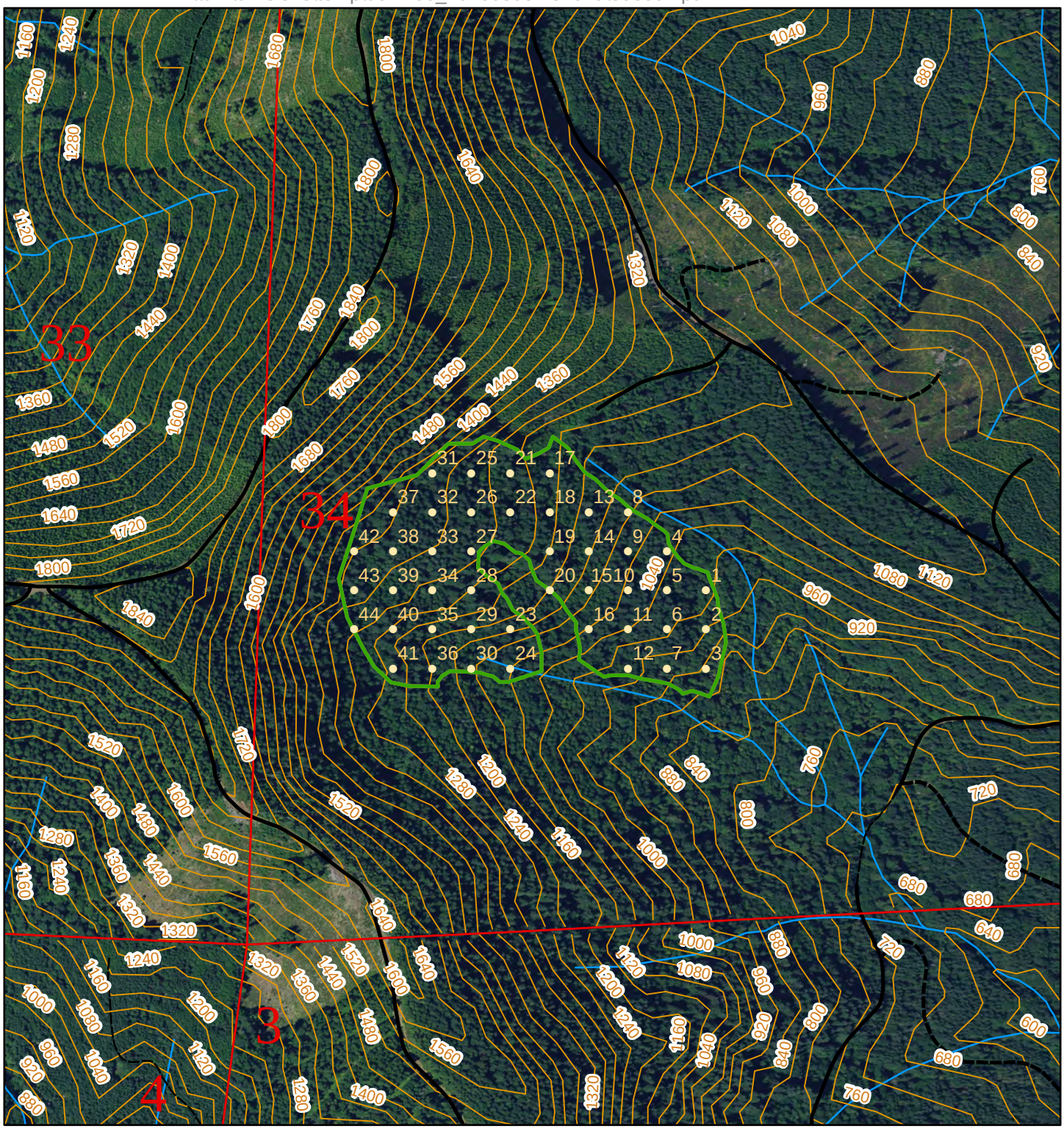
Unit Log Grade x Diameter Bin Summary: SMUGGLER U7 ROW

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 11	LIVE	CULL	7.3	7.0	0	100.0	0.0	0.0
DF	5 - 11	LIVE	3 SAW	10.6	39.0	640	4.3	2.5	0.3
DF	12 - 15	LIVE	UTILITY	12.0	38.0	441	0.0	1.4	0.2
DF	16 - 19	LIVE	UTILITY	18.2	33.0	1,954	8.3	5.3	0.8
DF	16 - 19	LIVE	2 SAW	19.9	40.0	1,137	20.0	3.2	0.5

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	20+	LIVE	UTILITY	26.1	40.0	1,481	50.0	6.1	0.6
MA	5 - 11	LIVE	UTILITY	7.3	38.0	179	0.0	0.8	0.1
MA	5 - 11	LIVE	CULL	8.4	23.0	0	100.0	0.0	0.0
MA	12 - 15	LIVE	CULL	14.8	24.0	0	100.0	0.0	0.0
MA	12 - 15	LIVE	2 SAW	15.2	40.0	748	20.0	2.5	0.3
MA	16 - 19	LIVE	UTILITY	19.1	30.0	1,117	50.1	5.1	0.4
RA	5 - 11	LIVE	UTILITY	6.2	38.0	148	0.0	0.6	0.1
RA	5 - 11	LIVE	CULL	7.6	7.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	4 SAW	8.4	38.0	594	9.1	2.8	0.2
RA	12 - 15	LIVE	2 SAW	14.5	40.0	2,104	6.2	5.6	0.8
RA	16 - 19	LIVE	1 SAW	16.4	40.0	891	10.0	2.5	0.4
RA	16 - 19	LIVE	CULL	19.8	10.0	0	100.0	0.0	0.0
RA	20+	LIVE	CULL	20.7	10.0	0	100.0	0.0	0.0

Unit Log Sort x Diameter Bin Summary: SMUGGLER U7 ROW

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 11	LIVE	Cull	7.3	7.0	0	100.0	0.0	0.0
DF	5 - 11	LIVE	Domestic	10.6	39.0	640	4.3	2.5	0.3
DF	12 - 15	LIVE	Pulp	12.0	38.0	441	0.0	1.4	0.2
DF	16 - 19	LIVE	Pulp	18.2	33.0	1,954	8.3	5.3	0.8
DF	16 - 19	LIVE	Domestic	19.9	40.0	1,137	20.0	3.2	0.5
DF	20+	LIVE	Pulp	26.1	40.0	1,481	50.0	6.1	0.6
MA	5 - 11	LIVE	Pulp	7.3	38.0	179	0.0	0.8	0.1
MA	5 - 11	LIVE	Cull	8.4	23.0	0	100.0	0.0	0.0
MA	12 - 15	LIVE	Cull	14.8	24.0	0	100.0	0.0	0.0
MA	12 - 15	LIVE	Domestic	15.2	40.0	748	20.0	2.5	0.3
MA	16 - 19	LIVE	Pulp	19.1	30.0	1,117	50.1	5.1	0.4
RA	5 - 11	LIVE	Pulp	6.2	38.0	148	0.0	0.6	0.1
RA	5 - 11	LIVE	Cull	7.6	7.0	0	100.0	0.0	0.0
RA	5 - 11	LIVE	Domestic	8.4	38.0	594	9.1	2.8	0.2
RA	12 - 15	LIVE	Domestic	14.5	40.0	2,104	6.2	5.6	0.8
RA	16 - 19	LIVE	Domestic	16.4	40.0	891	10.0	2.5	0.4
RA	16 - 19	LIVE	Cull	19.8	10.0	0	100.0	0.0	0.0
RA	20+	LIVE	Cull	20.7	10.0	0	100.0	0.0	0.0



FMA POLYGON AND SAMPLE POINT INFORMATION

FMA_NM:	SMUGGLER U1	Township:	T18R03W
FMA_ID:	305597	DNR Region:	SO PUGET
Acres:	42	Total Sample Points:	44
County:	THURSTON	Spacing Between Points:	Width: 208 Height: 208
Imagery:	2017 Orthophoto (1-ft Color) [HXIP]	Point Rotation Degrees:	0

N

0 260 520 1,040 1,560 2,080 Feet

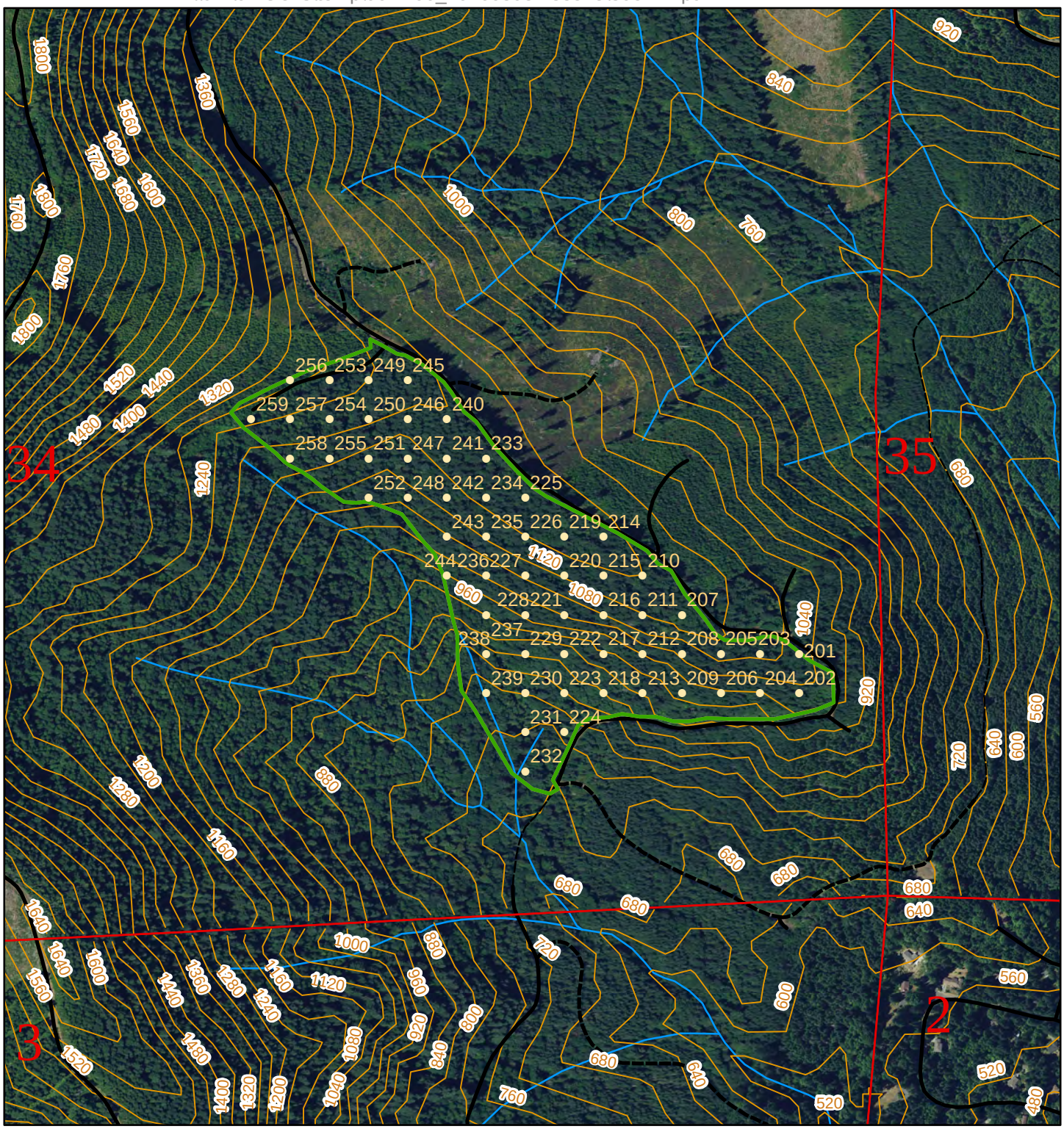
Scale 1:9,000

Legend

- Sample Points
- FMA polys
- Public Land Survey Sections
- Contours 40-foot

Washington State Department of Natural Resources
Hilary Franz, Commissioner of Public Lands

Mar 03, 2020 01:27 PM



FMA POLYGON AND SAMPLE POINT INFORMATION

FMA_NM:	SMUGGLER U2	Township:	T18R03W
FMA_ID:	305717	DNR Region:	SO PUGET
Acres:	60	Total Sample Points:	59
County:	THURSTON	Spacing Between Points:	Width: 208 Height: 208
Imagery:	2017 Orthophoto (1-ft Color) [HXIP]	Point Rotation Degrees:	0

N

0 260 520 1,040 1,560 2,080 Feet

Scale 1:9,000

Legend

- Sample Points
- FMA polys
- Public Land Survey Sections
- Contours 40-foot

Washington State Department of Natural Resources
Hilary Franz, Commissioner of Public Lands

Mar 03, 2020 01:36 PM

FMA POLYGON AND SAMPLE POINT INFORMATION

FMA_NM:	SMUGGLER U3	Township:	T18R03W
FMA_ID:	305718	DNR Region:	SO PUGET
Acres:	acres	Total Sample Points:	90
County:	THURSTON	Spacing Between Points:	Width: 208 Height: 208
Imagery:	2017 Orthophoto (1-ft Color) [HXIP]	Point Rotation Degrees:	0

N

0 260 520 1,040 1,560 2,080 Feet

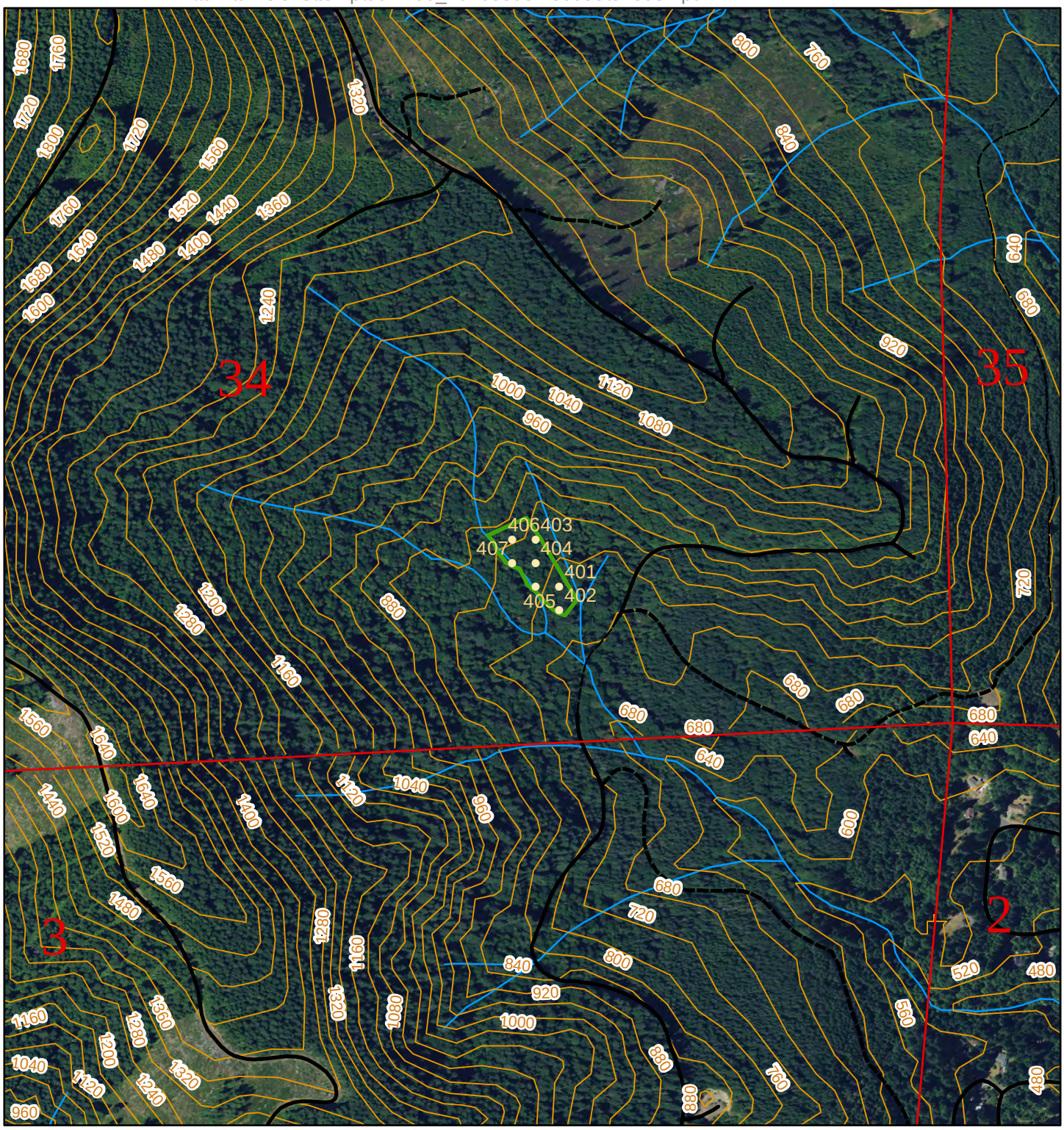
Scale 1:9,000

Legend

- Sample Points
- FMA polys
- Public Land Survey Sections
- Contours 40-foot

Washington State Department of Natural Resources
Hilary Franz, Commissioner of Public Lands

Mar 03, 2020 01:46 PM



FMA POLYGON AND SAMPLE POINT INFORMATION

FMA_NM:	SMUGGLER U4 RMZ HDWD	Township:	T18R03W
FMA_ID:	315984	DNR Region:	SO PUGET
Acres:	2	Total Sample Points:	7
County:	THURSTON	Spacing Between Points:	125
Imagery:	2017 Orthophoto (1-ft Color) [HXIP]	Point Rotation Degrees:	0

N

0 260 520 1,040 1,560 2,080 Feet

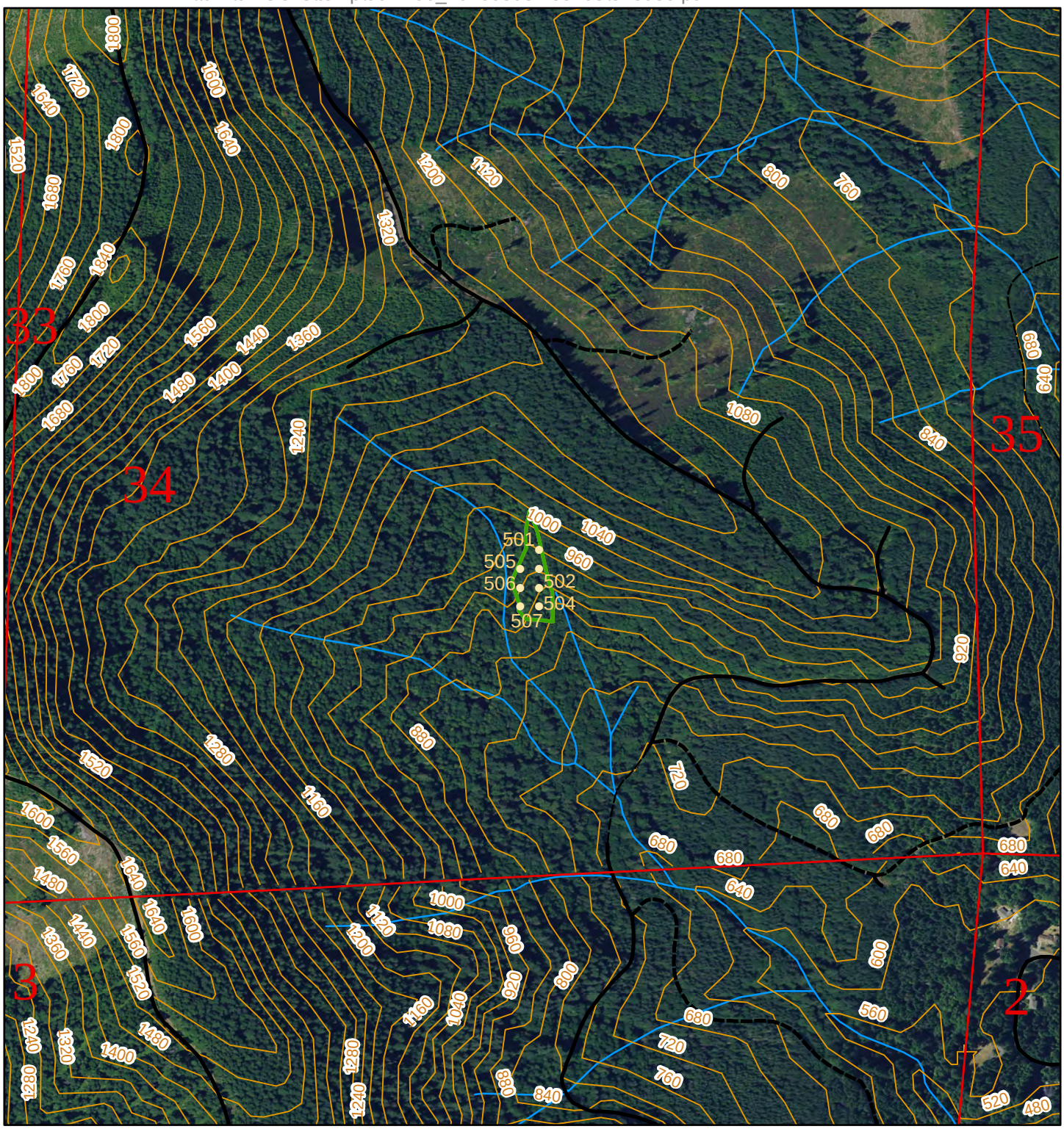
Scale 1:9,000

Legend

- Sample Points
- FMA polys
- Public Land Survey Sections
- Contours 40-foot

Washington State Department of Natural Resources
Hilary Franz, Commissioner of Public Lands

Mar 03, 2020 01:52 PM



FMA POLYGON AND SAMPLE POINT INFORMATION

FMA_NM:	SMUGGLER U5 RMZ HDWD	Township:	T18R03W
FMA_ID:	315986	DNR Region:	SO PUGET
Acres:	2	Total Sample Points:	7
County:	THURSTON	Spacing Between Points:	100
Imagery:	2017 Orthophoto (1-ft Color) [HXIP]	Point Rotation Degrees:	0

N

0 260 520 1,040 1,560 2,080 Feet

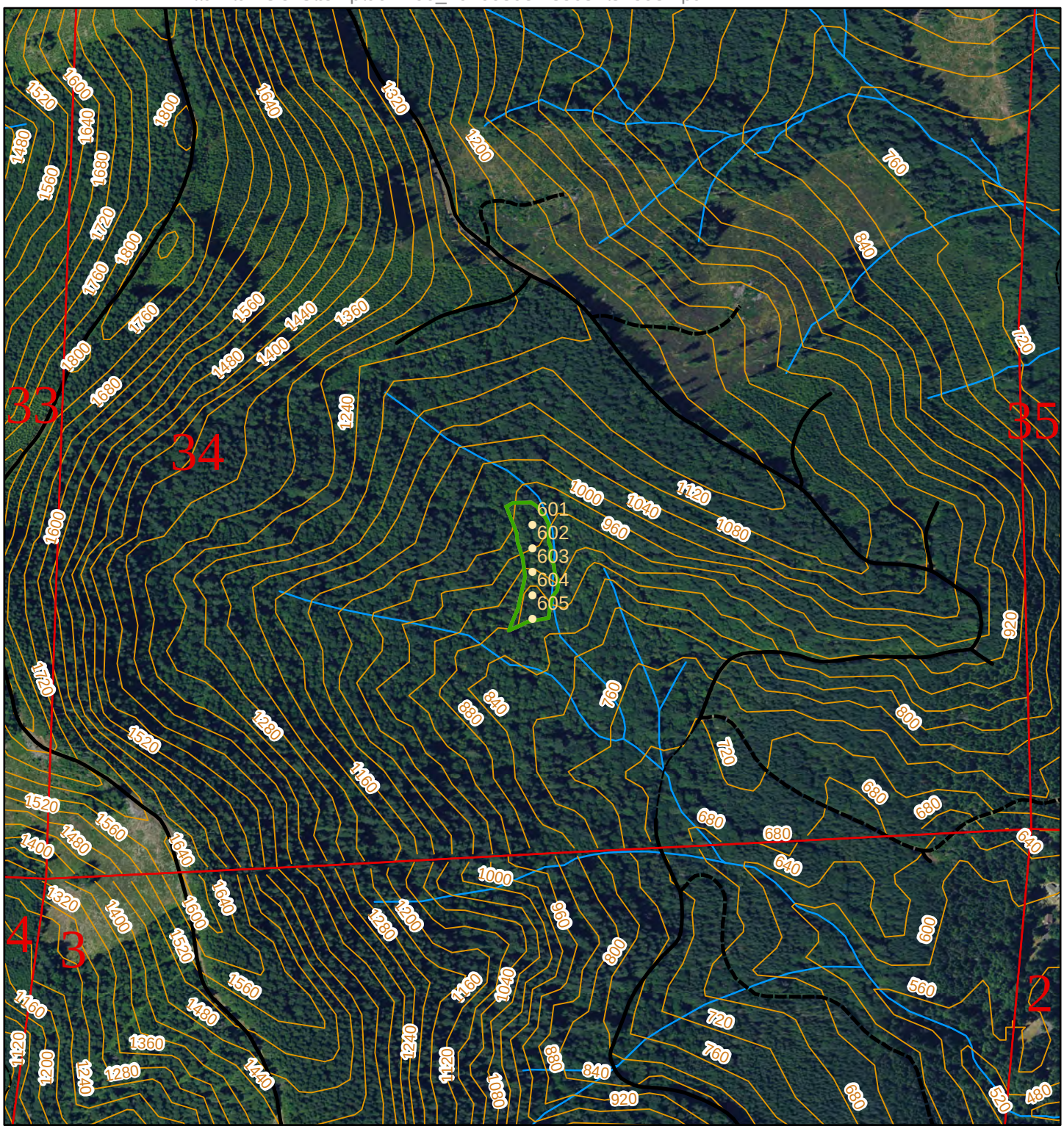
Scale 1:9,000

Legend

- Sample Points
- FMA polys
- Public Land Survey Sections
- Contours 40-foot

Washington State Department of Natural Resources
Hilary Franz, Commissioner of Public Lands

Mar 03, 2020 01:55 PM



FMA POLYGON AND SAMPLE POINT INFORMATION

FMA_NM:	SMUGGLER U6 RMZ HDWD	Township:	T18R03W
FMA_ID:	315987	DNR Region:	SO PUGET
Acres:	2	Total Sample Points:	5
County:	THURSTON	Spacing Between Points:	125
Imagery:	2017 Orthophoto (1-ft Color) [HXIP]	Point Rotation Degrees:	0

N

0 260 520 1,040 1,560 2,080 Feet

Scale 1:9,000

Legend

- Sample Points
- FMA polys
- Public Land Survey Sections
- Contours 40-foot

Washington State Department of Natural Resources
Hilary Franz, Commissioner of Public Lands

Mar 03, 2020 01:58 PM

Timber Sale Cruise Report
Manke ROW

Sale Name:

Sale Type: LUMP SUM

Region:

District:

Lead Cruiser: DPClark

Other Cruisers:

This ROW Unit 8 timber is to be cut and decked (not removed as part of the Smuggler Timber Sale. This cruise is provided for harvest cost estimation only.

Cruise Narrative: This unit is part of the Smuggler timber sale as ROW8, is located on private ground, and owned by Manke Timber. The timber type is managed DF approximately 30 years old. Stand health is vigorous, and defect and damage are light. ROW8 was cruised using an ITS method.

Timber Sale Notice Volume (MBF)

				MBF Volume by Grade			
Sp	QMD	Rings/In	Age	All	3 Saw	4 Saw	Utility
DF	12.7			18.9	12.8	6.1	
RA	9.9			0.2			0.1
ALL	12.7			19.0	12.8	6.1	0.1

Timber Sale Notice Weight (tons)

	Tons by Grade			
Sp	All	3 Saw	4 Saw	Utility
DF	161.4	110.6	50.5	0.3
RA	1.1		0.3	0.8
ALL	162.5	110.6	50.8	1.1

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 (%)
160.0	0.0	99.2	5.1	15,859	5.1

Timber Sale Unit Cruise Design

Unit	Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
ROW8	ST: Strip/Percent Sample (1 tree expansion)	1.2		1	1	0
All		1.2		1	1	0

Timber Sale Log Grade x Diameter Bin Summary

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 7	LIVE	UTILITY	5.0	30.0	25	0.0	0.3	0.0
DF	5 - 7	LIVE	4 SAW	5.1	32.0	5,043	3.0	50.5	6.1
DF	5 - 7	LIVE	CULL	5.2	17.0	0	100.0	0.0	0.0
DF	5 - 7	LIVE	3 SAW	7.1	39.0	1,704	2.3	17.7	2.0
DF	8 - 11	LIVE	3 SAW	9.6	40.0	8,962	2.7	92.9	10.8
DF	12 - 15	LIVE	CULL	13.1	14.0	0	100.0	0.0	0.0
RA	5 - 7	LIVE	UTILITY	5.0	23.0	56	0.0	0.4	0.1
RA	5 - 7	LIVE	4 SAW	6.7	30.0	26	8.1	0.3	0.0
RA	8 - 11	LIVE	UTILITY	8.6	30.0	44	0.0	0.4	0.1

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	5.0	30.0	25	0.0	0.3	0.0
DF	5 - 7	LIVE	Cull	5.2	17.0	0	100.0	0.0	0.0
DF	5 - 7	LIVE	Domestic	5.4	33.0	6,746	2.8	68.2	8.1
DF	8 - 11	LIVE	Domestic	9.6	40.0	8,962	2.7	92.9	10.8
DF	12 - 15	LIVE	Cull	13.1	14.0	0	100.0	0.0	0.0
RA	5 - 7	LIVE	Pulp	5.0	23.0	56	0.0	0.4	0.1
RA	5 - 7	LIVE	Domestic	6.7	30.0	26	8.1	0.3	0.0
RA	8 - 11	LIVE	Pulp	8.6	30.0	44	0.0	0.4	0.1

Timber Sale Distribution of Volume by County and Timber Trust by Sale Unit

No data were provided for this table.

Timber Sale Distribution of Volume by County and Timber Trust for the Timber Sale

No data were provided for this table.

Cruise Unit Report
ROW8

Unit Sale Notice Volume (MBF): ROW8

				MBF Volume by Grade			
Sp	QMD	Rings/In	Age	All	3 Saw	4 Saw	Utility
DF	12.7			18.9	12.8	6.1	0.0
RA	9.9			0.2		0.0	0.1
ALL	12.7			19.0	12.8	6.1	0.1

Unit Sale Notice Weight (tons): ROW8

	Tons by Grade			
Sp	All	3 Saw	4 Saw	Utility
DF	161.4	110.6	50.5	0.3
RA	1.1		0.3	0.8
ALL	162.5	110.6	50.8	1.1

Unit Cruise Design: ROW8

Design	Cruise Acres	FMA Acres	N Plots	N Cruise Plots	N Void Plots
ST: Strip/Percent Sample (1 tree expansion)	1.2		1	1	0

Unit Cruise Summary: ROW8

Sp	Cruised Trees	All Trees	Trees/Plot	Ring-Count Trees
DF	14	217	217.0	0
RA	3	3	3.0	0
ALL	17	220	220.0	0

Unit Cruise Statistics (Cut + Leave Trees): ROW8

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	158.6	0.0	0.0	99.2	22.2	5.9	15,733	22.2	5.9
RA	1.3	0.0	0.0	95.7	18.1	10.5	126	18.1	10.5
ALL	160.0	0.0	0.0	99.2	21.0	5.1	15,859	21.0	5.1

Unit Summary: ROW8

Sp	Status	Rx	N	D	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	LIVE	CUT	14	ALL	12.7	59	89	15,733	7.9	180.3	158.6	44.5	161.4	18.9
RA	LIVE	CUT	3	ALL	9.9	44	73	126	1.9	2.5	1.3	0.4	1.1	0.2
ALL	LIVE	CUT	17	ALL	12.7	59	89	15,859	7.8	182.8	159.9	44.9	162.5	19.1
ALL	ALL	ALL	17	ALL	12.7	59	89	15,859	7.8	182.8	159.9	44.9	162.5	19.1

Unit Stand Table: ROW8

Sp	D	Status	Rx	N	QMD	BL	THT	BF Net	Defect %	TPA	BA	RD	Tons	MBF Net
DF	8	LIVE	CUT	2	7.5	25	72	660	0.0	28.1	8.7	3.2	4.9	0.8
DF	10	LIVE	CUT	3	9.3	44	78	1,611	0.0	42.5	20.2	6.6	16.4	1.9
DF	12	LIVE	CUT	2	11.5	61	91	1,994	12.2	28.2	20.4	6.0	19.9	2.4
DF	14	LIVE	CUT	1	13.0	69	95	1,519	1.7	14.2	13.1	3.6	14.6	1.8
DF	16	LIVE	CUT	3	15.7	77	100	6,286	4.2	42.4	56.8	14.3	66.8	7.5
DF	18	LIVE	CUT	3	17.0	81	101	3,662	19.5	24.9	39.5	9.6	38.9	4.4
RA	8	LIVE	CUT	1	7.0	21	56	16	0.0	0.8	0.2	0.1	0.1	0.0
RA	10	LIVE	CUT	1	10.0	49	77	40	5.5	0.8	0.4	0.1	0.4	0.0
RA	12	LIVE	CUT	1	12.0	63	85	69	0.0	0.8	0.6	0.2	0.6	0.1

Unit Log Grade Summary: ROW8

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	3 SAW	8.9	40.0	10,666	2.6	110.6	12.8
DF	LIVE	4 SAW	5.1	32.0	5,043	3.0	50.5	6.1
DF	LIVE	CULL	8.5	16.0	0	100.0	0.0	0.0
DF	LIVE	UTILITY	5.0	30.0	25	0.0	0.3	0.0
RA	LIVE	4 SAW	6.7	30.0	26	8.1	0.3	0.0
RA	LIVE	UTILITY	5.9	25.0	100	0.0	0.8	0.1

Unit Log Sort Summary: ROW8

Sp	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	Cull	8.5	16.0	0	100.0	0.0	0.0
DF	LIVE	Domestic	6.7	35.0	15,708	2.7	161.1	18.8
DF	LIVE	Pulp	5.0	30.0	25	0.0	0.3	0.0
RA	LIVE	Domestic	6.7	30.0	26	8.1	0.3	0.0
RA	LIVE	Pulp	5.9	25.0	100	0.0	0.8	0.1

Unit Log Grade x Sort Summary: ROW8

Sp	Status	Grade	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	LIVE	3 SAW	Domestic	8.9	40.0	10,666	2.6	110.6	12.8
DF	LIVE	4 SAW	Domestic	5.1	32.0	5,043	3.0	50.5	6.1
DF	LIVE	CULL	Cull	8.5	16.0	0	100.0	0.0	0.0
DF	LIVE	UTILITY	Pulp	5.0	30.0	25	0.0	0.3	0.0
RA	LIVE	4 SAW	Domestic	6.7	30.0	26	8.1	0.3	0.0
RA	LIVE	UTILITY	Pulp	5.9	25.0	100	0.0	0.8	0.1

Unit Log Grade x Diameter Bin Summary: ROW8

Sp	Bin	Status	Grade	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 7	LIVE	UTILITY	5.0	30.0	25	0.0	0.3	0.0
DF	5 - 7	LIVE	4 SAW	5.1	32.0	5,043	3.0	50.5	6.1
DF	5 - 7	LIVE	CULL	5.2	17.0	0	100.0	0.0	0.0
DF	5 - 7	LIVE	3 SAW	7.1	39.0	1,704	2.3	17.7	2.0
DF	8 - 11	LIVE	3 SAW	9.6	40.0	8,962	2.7	92.9	10.8
DF	12 - 15	LIVE	CULL	13.1	14.0	0	100.0	0.0	0.0
RA	5 - 7	LIVE	UTILITY	5.0	23.0	56	0.0	0.4	0.1
RA	5 - 7	LIVE	4 SAW	6.7	30.0	26	8.1	0.3	0.0
RA	8 - 11	LIVE	UTILITY	8.6	30.0	44	0.0	0.4	0.1

Unit Log Sort x Diameter Bin Summary: ROW8

Sp	Bin	Status	Sort	Dia	Len	BF Net	Defect %	Tons	MBF Net
DF	5 - 7	LIVE	Pulp	5.0	30.0	25	0.0	0.3	0.0
DF	5 - 7	LIVE	Cull	5.2	17.0	0	100.0	0.0	0.0
DF	5 - 7	LIVE	Domestic	5.4	33.0	6,746	2.8	68.2	8.1
DF	8 - 11	LIVE	Domestic	9.6	40.0	8,962	2.7	92.9	10.8
DF	12 - 15	LIVE	Cull	13.1	14.0	0	100.0	0.0	0.0
RA	5 - 7	LIVE	Pulp	5.0	23.0	56	0.0	0.4	0.1
RA	5 - 7	LIVE	Domestic	6.7	30.0	26	8.1	0.3	0.0
RA	8 - 11	LIVE	Pulp	8.6	30.0	44	0.0	0.4	0.1

FPA/N No: 2421793

Effective Date: 9/4/2020

Expiration Date: 9/4/2023

Shut Down Zone 655

EARR Tax Credit: ☒ Eligible ☐ Non-eligible

Reference: Smuggler VRH RMZ #30-099053

Forest Practices Application/Notification

Notice of Decision

Decision

☐ **Notification Accepted** Operations shall not begin before the effective date.

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

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

☐ **Closed** Applicant has withdrawn the FPA/N.

FPA/N Classification

☐ Class II ☒ Class III ☐ Class IVG ☐ Class IVS

Number of Years Granted on Multi-Year Request

☐ 4 yrs ☐ 5 yrs

Conditions on Approval/Reasons for Disapproval

Issued By: Matt Brady **Region:** South Puget Sound

Title: Resource Protection Forester **Date:** 9/4/2020

Copies to: ☒ Landowner, Timber Owner and Operator

Issued in person: ☐ Landowner ☐ Timber Owner ☐ Operator **By:** _____

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** South Puget Sound Region
Physical Address 1111 Israel Road, SW Suite 301 Tumwater, WA 98501 Mailing address Post Office Box 40903 Olympia, WA 98504-0903	Physical Address 1125 Washington Street, SE Olympia, WA 98504 Mailing Address Post Office Box 40100 Olympia, WA 98504-0100	Physical & Mailing Address 950 Farman Ave N Enumclaw, WA 98022

Information regarding the Pollution Control Hearings Board can be found at: http://www.eluho.wa.gov/

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: http://www.dnr.wa.gov/businesspermits/forestpractices. 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 affidavit of mailing:

On this day **9/8/2020**, I placed in the United States mail at **Olympia**, WA, postage paid, a true and accurate copy of this document. Notice of Decision FPA #**2421793**

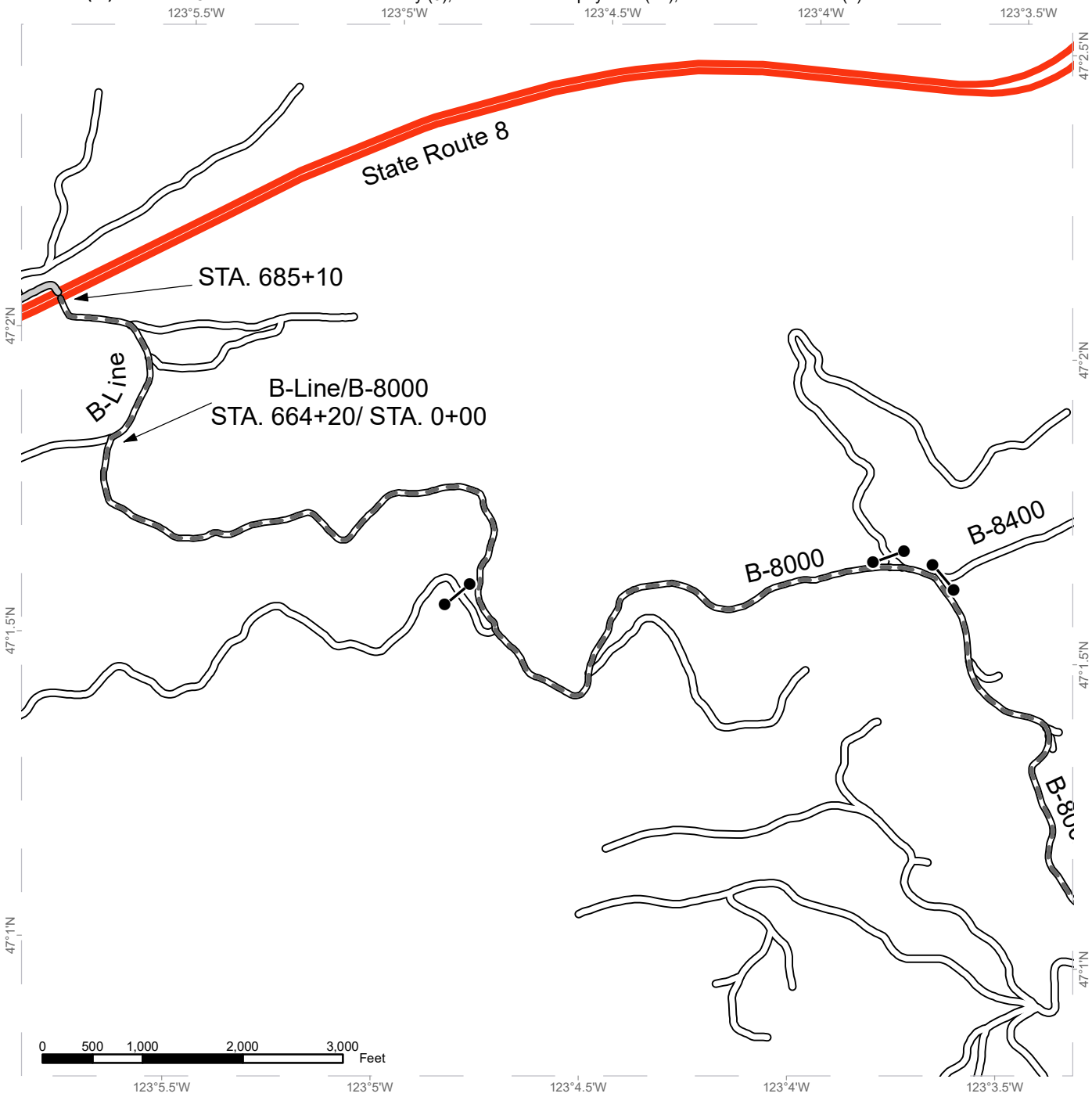
Betty Burton _____ _____

(Printed Name) *(Signature)*

ROAD WORK MAP 1 OF 6

SALE NAME: SMUGGLER
AGREEMENT #: None
TOWNSHIP(S): T18R3W
TRUST(S): Common School and Indemnity (3), Forest Board Repayment (42), State Forest Transfer (1)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 200-1400



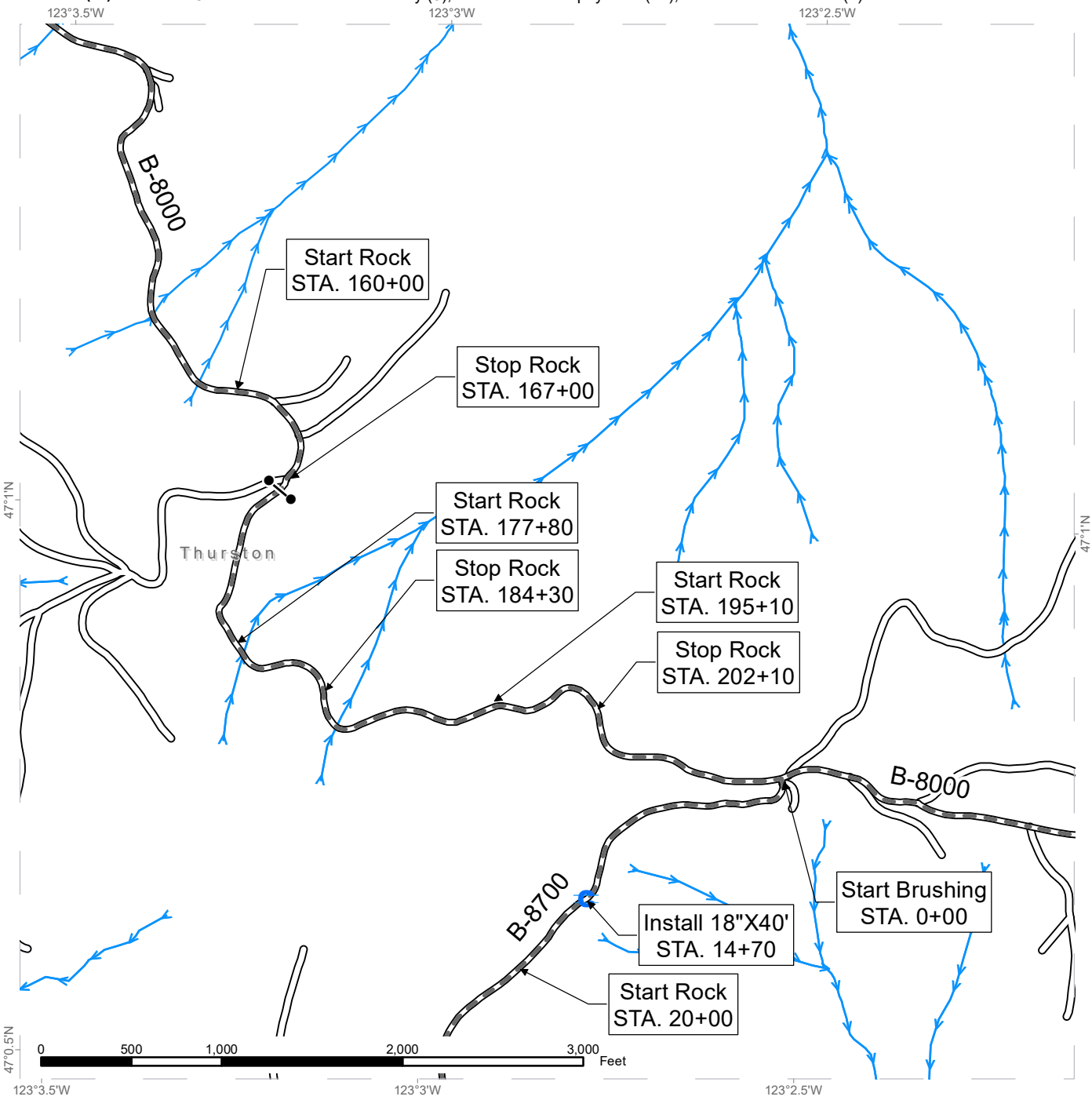
County Road
Existing Roads
Required Pre-Haul Maintenance
Highway
Gates

N

ROAD WORK MAP 2 OF 6

SALE NAME: SMUGGLER
AGREEMENT #: None
TOWNSHIP(S): T18R3W
TRUST(S): Common School and Indemnity (3), Forest Board Repayment (42), State Forest Transfer (1)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 200-1400



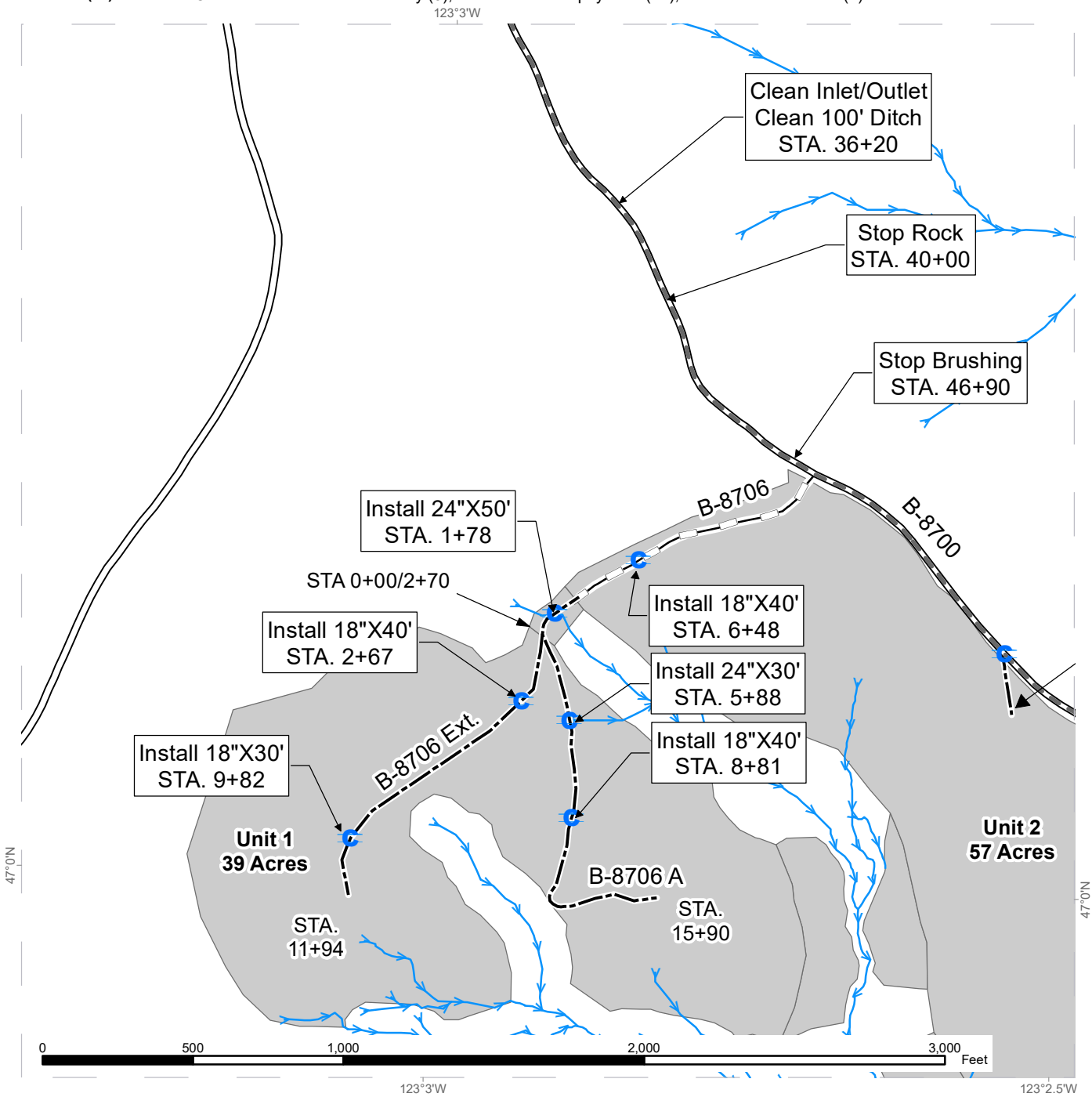
Existing Roads
Required Pre-Haul Maintenance
Streams
Gates
Culverts

N

ROAD WORK MAP 3 OF 6

SALE NAME: SMUGGLER
AGREEMENT #: None
TOWNSHIP(S): T18R3W
TRUST(S): Common School and Indemnity (3), Forest Board Repayment (42), State Forest Transfer (1)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 200-1400



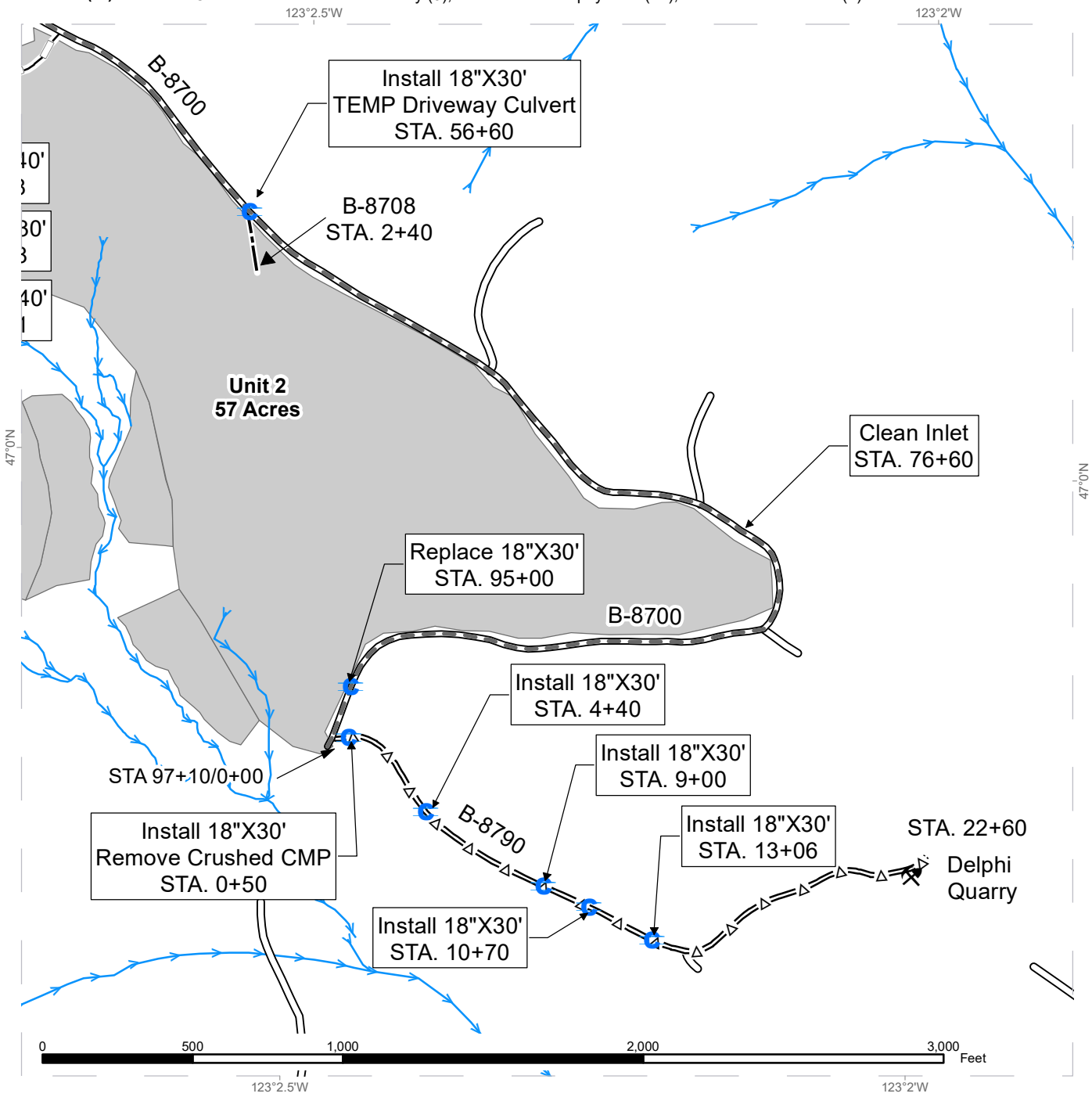
Existing Roads
Required Pre-Haul Maintenance
Optional Construction
Optional Reconstruction
Streams
Culverts

N

ROAD WORK MAP 4 OF 6

SALE NAME: SMUGGLER
AGREEMENT #: None
TOWNSHIP(S): T18R3W
TRUST(S): Common School and Indemnity (3), Forest Board Repayment (42), State Forest Transfer (1)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 200-1400



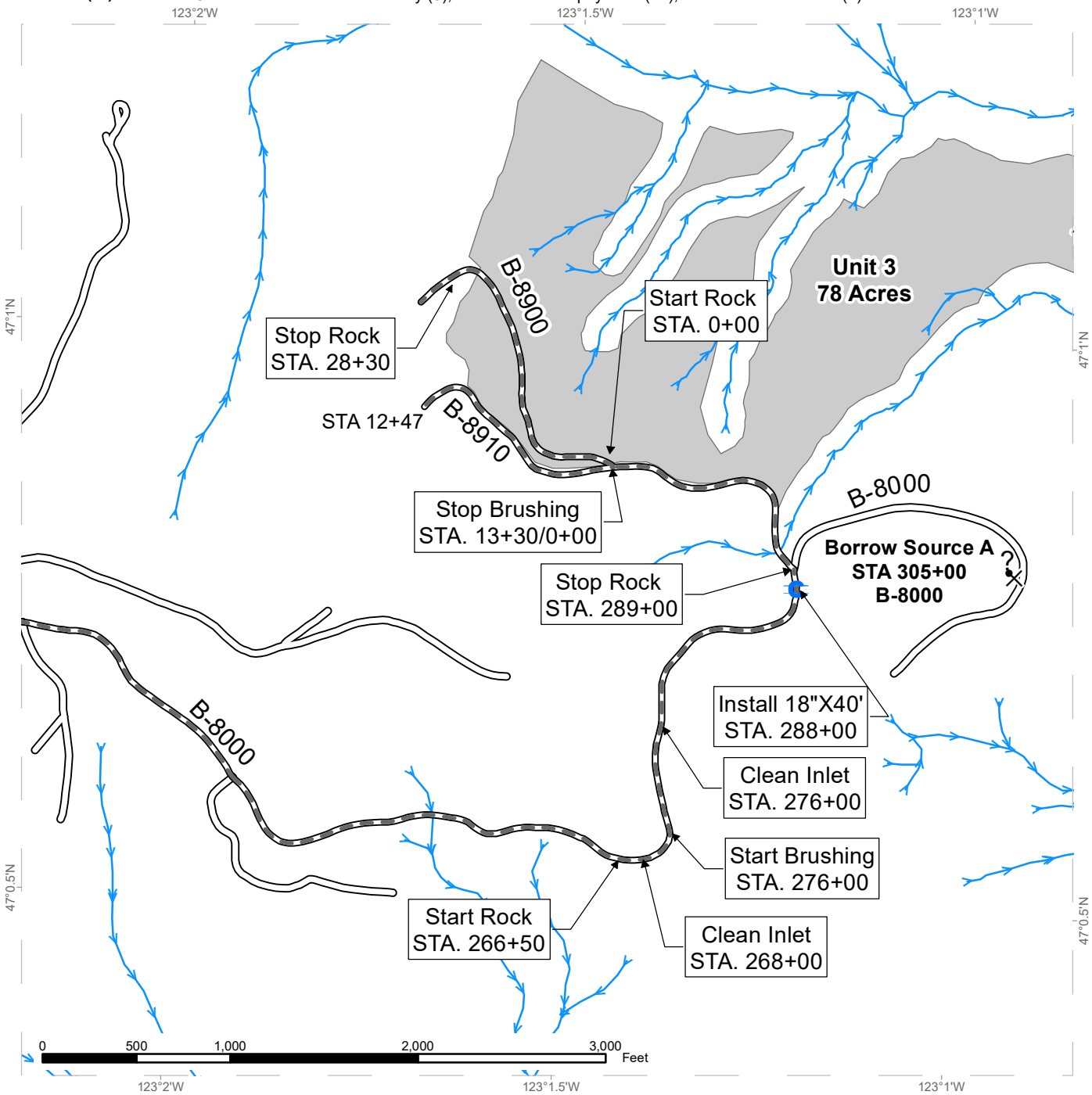
Existing Roads
Required Pre-Haul Maintenance
Optional Pre-Haul Maintenance
Optional Construction
Optional Reconstruction
Streams
Culverts
Rock Pit

N

ROAD WORK MAP 5 OF 6

SALE NAME: SMUGGLER
AGREEMENT #: None
TOWNSHIP(S): T18R3W
TRUST(S): Common School and Indemnity (3), Forest Board Repayment (42), State Forest Transfer (1)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 200-1400



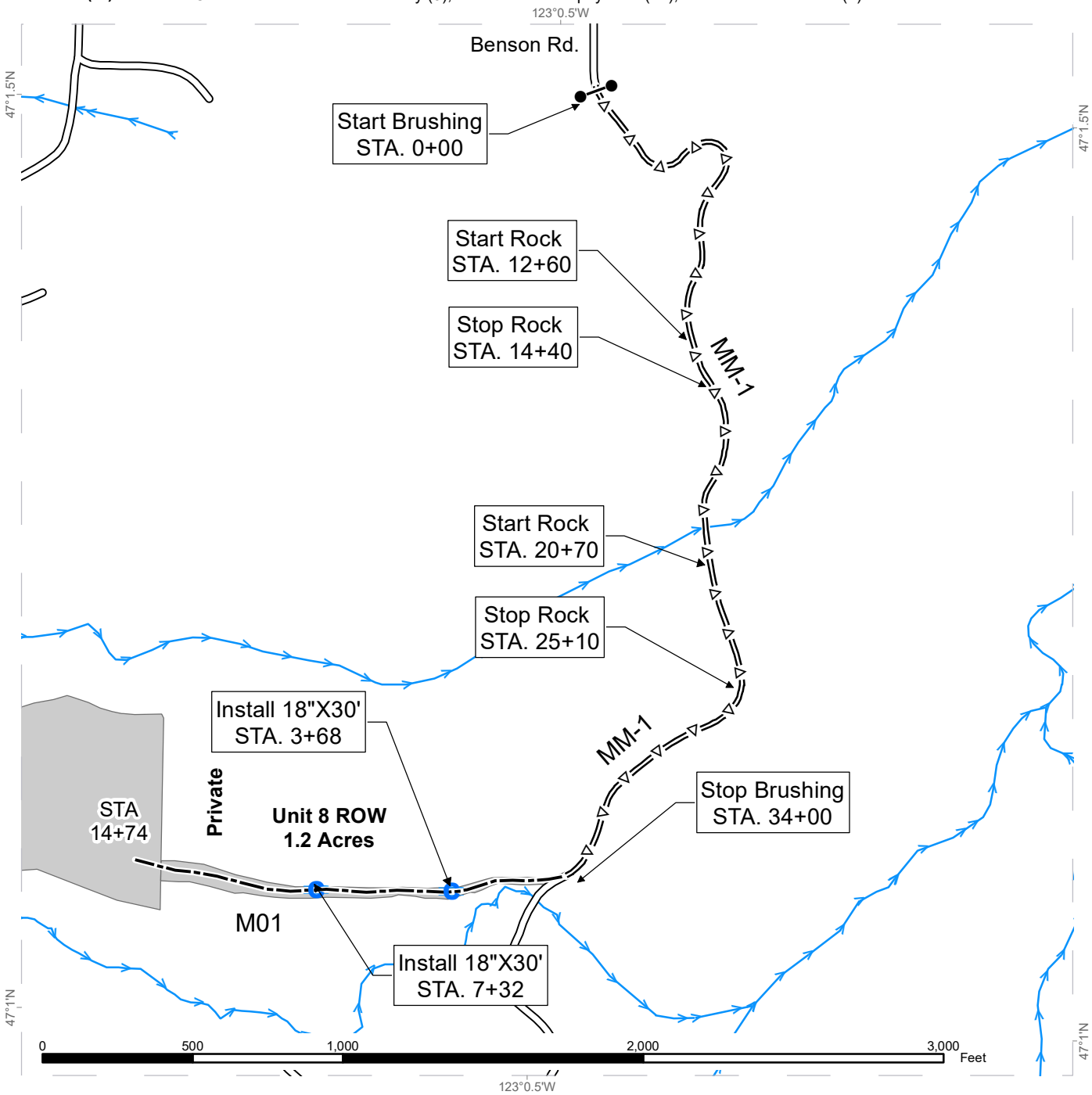
Existing Roads
Required Pre-Haul Maintenance
Streams
Borrow Source
Culverts

N

ROAD WORK MAP 6 OF 6

SALE NAME: SMUGGLER
AGREEMENT #: None
TOWNSHIP(S): T18R3W
TRUST(S): Common School and Indemnity (3), Forest Board Repayment (42), State Forest Transfer (1)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 200-1400



Existing Roads
Optional Pre-Haul Maintenance
Optional Construction
Streams
Gates
Culverts

N

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

SMUGGLER VRH RMZ TIMBER SALE ROAD PLAN
THURSTON COUNTY
DELPHI UNIT
BLACK HILLS DISTRICT

AGREEMENT NO.: 30-099053 STAFF ENGINEER: JACOB GROSS

DATE: FEBRUARY 28, 2020 DRAWN & COMPILED BY: JACOB GROSS

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.

Road	Stations	Type
B-Line	664+20 to 685+10	Pre-Haul Maintenance
B-8000	0+00 to 289+00	Pre-Haul Maintenance
B-8700	0+00 to 97+10	Pre-Haul Maintenance
B-8706A	2+70 to 15+90	Abandonment, if built
B-8708	0+00 to 2+40	Abandonment, if built
B-8900	0+00 to 28+30	Pre-Haul Maintenance
B-8910	0+00 to 12+47	Pre-Haul Maintenance
M01	10+41 to 14+74	Abandonment, if built

0-3 OPTIONAL ROADS

The specified work on the following roads is not required. Any optional roads built by the Purchaser must meet all the specifications in the road plan.

Road	Stations	Type
B-8706	0+00 to 8+14	Reconstruction
B-8706A	0+00 to 15+90	Construction
B-8706Ext.	0+00 to 11+94	Construction
B-8708	0+00 to 2+40	Construction
B-8790	0+00 to 22+60	Pre-Haul Maintenance
MM-1	0+00 to 34+00	Pre-Haul Maintenance
M01	0+00 to 14+74	Construction

0-4 CONSTRUCTION

Construction includes, but is not limited to:

- Clearing
- Grubbing
- Right-of-way debris disposal
- Excavation and/or embankment to subgrade
- Turnout and turnaround construction
- Landing construction
- Acquisition and installation of drainage structures
- Acquisition, manufacture, and application of rock

0-5 RECONSTRUCTION

This project includes, but is not limited to the following reconstruction requirements:

- Clearing
- Grubbing
- Right-of-way debris disposal
- Excavation and/or embankment to subgrade
- Ditch construction
- Acquisition and installation of drainage structures
- Acquisition, manufacture, and application of rock

0-6 PRE-HAUL MAINTENANCE

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

- Cleaning ditches
- Cleaning culverts, and catchbasins
- Ditch reconstruction
- Reconstructing headwalls
- Constructing catchbasin and headwall
- Acquisition, manufacture and application of rock
- Cross drain culvert replacement
- Grading and shaping existing road surface and turnouts

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 may involve, Clearing, Stripping, Drilling, and blasting. 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 any submitted plan that changes the scope of work or environmental condition from the original road 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 or design data (plan, profile, and cross-sections).

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.

Tolerance Class	A	B	C
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. Designs or Plans. On designs and plans, figured dimensions shall take precedence over scaled dimensions.
3. Road Plan Clauses.
4. Typical Section Sheet.
5. Standard Lists.
6. Standard Details.
7. Road Plan Maps.

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 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.

SUBSECTION ROAD MARKING

1-15 ROAD MARKING

Purchaser shall perform road work in accordance with the state's marked location. All road work is marked as follows:

- Pre-haul activities: 2 in. x 48 in. wooden lath with station and activity
- Construction: Orange ribbon tied eye-height along centerline, w/orange pin flags or wooden lath marking centerline

1-16 CONSTRUCTION STAKES SET BY STATE

Purchaser shall perform work in accordance with the construction stakes and/or reference points set in the field for grade and alignment. Reconstruction of existing road grades must conform to the original location except where construction staked or designed.

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.

SUBSECTION TIMING

1-20 COMPLETE BY DATE

Purchaser shall complete pre-haul road work before the start of timber haul.

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:

- Drainage installation
- Subgrade compaction
- Rock compaction

SUBSECTION RESTRICTIONS

1-25 ACTIVITY TIMING RESTRICTION

The specified activities are not allowed during the listed closure period(s) unless authorized in writing by the Contract Administrator. The operation of road construction equipment is not allowed on weekends or state recognized holidays, unless authorized in writing by the Contract Administrator

Activity	Closure Period
All road work activities	November 1 to April 30

1-26 OPERATING DURING CLOSURE PERIOD

If permission is granted to operate during a seasonal closure period listed in Clause 1-25 ACTIVITY TIMING RESTRICTION and Contract Clause H-130 Special Harvest Requirements, the Purchaser shall comply with a maintenance plan to include further protection of water, soil, roads, and other forest assets at the Purchaser's expense. Preventative measures shall be in place prior to operating during the closure period. Purchaser is required to maintain all haul roads at their own expense including those listed in Contract Clause C-060 DESIGNATED ROAD MAINTAINER. If other operators are using, or desire to use these roads, a joint operating plan must be developed. All parties shall follow this plan.

1-29 SEDIMENT RESTRICTION

Purchaser shall not allow silt-bearing runoff to enter any streams. Purchaser shall accomplish sediment removal through silt traps, silt fences, settling ponds, or other methods as approved, in writing by the Contract Administrator.

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 jaw run roads.
- Wheel track rutting exceeds 4 inches on crushed rock roads.
- Surface or base stability problems persist.

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.

1-32 BRIDGE AND ASPHALT SURFACE RESTRICTION

The use of metal tracked equipment is not allowed on bridge or asphalt surfaces at any time. If Purchaser must run equipment on bridge or asphalt surfaces, then rubber tired equipment or other methods, approved in writing by Contract Administrator, must be used.

Purchaser shall remove any dirt, rock, or other material tracked or spilled on the bridge or asphalt surface(s) and have surface(s) evaluated for any damage caused by transporting equipment. Any damage to the surface(s) will be repaired, at the Purchaser's expense, as directed by the Contract Administrator.

1-33 SNOW PLOWING RESTRICTION

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

SUBSECTION OTHER INFRASTRUCTURE

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.

2-3 ROAD MAINTENANCE – DESIGNATED MAINTAINER

Purchaser may be required to perform maintenance on roads listed in Contract Clause C-060 DESIGNATED ROAD MAINTAINER as directed by the Contract Administrator. Purchaser shall maintain roads 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 rock application and/or timber haul.

Road	Stations
B-Line	664+20 to 685+10
B-8000	0+00 to 289+00
B-8700	0+00 to 97+10
B-8790	0+00 to 22+60
B-8900	0+00 to 15+16
B-8910	0+00 to 12+47
MM-1	0+00 to 34+00

2-6 CLEANING CULVERTS

On the following roads, Purchaser shall clean the inlets and outlets of all culverts**:**

Road	Stations	Comments
B-8700	36+20, 76+60	Clean Inlet & Outlet, Organic Debris/Soil
B-8900	268+00, 276+00	Clean Inlet & Outlet, Organic Debris/Soil
MM-1	0+00 to 34+00	Clean Inlet & Outlet, Organic Debris/Soil

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

SUBSECTION BRUSHING

3-1 BRUSHING

On the following road(s), Purchaser shall cut vegetative material up to 5 inches in diameter, including limbs, as shown on the BRUSHING DETAIL. Brushing must be achieved by manual or mechanical cutting of brush, trees, and branches. Root systems and stumps of cut vegetation may not be disturbed unless directed by the Contract Administrator. Purchaser shall remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets.

Road	Stations
B-8000	276+00 to 289+00
B-8700	0+00 to 46+90
B-8900	0+00 to 13+30
MM-1	0+00 to 34+00

SUBSECTION CLEARING

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.
- Against state owned standing trees.

SUBSECTION GRUBBING

3-10 GRUBBING

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

SUBSECTION ORGANIC DEBRIS

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 grubbing 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 and/or timber haul.

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 55%.
- 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 State owned 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. Where natural openings are unavailable or restrictive, alternate debris disposal methods are subject to the written approval of the Contract Administrator.

SECTION 4 – EXCAVATION

4-2 PIONEERING

Pioneering may not extend past construction that will be completed during the current construction season. In addition, the following actions must be taken as pioneering progresses:

- Drainage must be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.
- Road pioneering operations may not undercut the final cut slope, deposit excavated material outside the grubbing limits, or restrict drainage.
- Culverts at live stream crossings must be installed during pioneering operations

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 15 percent adverse.
- Minimum curve radius is 60 feet at centerline.
- Maximum grade change for sag vertical curves is 6% 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, unless construction staked or designed:

Material Type	Excavation Slope Ratio	Excavation Slope Percent
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:

Material Type	Embankment Slope Ratio	Embankment Slope Percent
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 less than 6 feet.
- 4 feet for embankment heights at centerline of 6 feet or greater.

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

SUBSECTION DITCH CONSTRUCTION

4-25 DITCH CONSTRUCTION AND RECONSTRUCTION

Purchaser shall construct or reconstruct 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 shall be constructed concurrently with construction of the subgrade. Ditches must drain to cross-drain culverts or ditchouts.

4-29 DITCHOUTS

Purchaser shall construct ditchouts as identified in maps, in field, 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.

SUBSECTION WASTE MATERIAL (DIRT)

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 45% if the waste material is compacted and free of organic debris.

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.
- On side slopes steeper than 45%.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- Within the operational area for cable landings.
- Against standing timber.

SUBSECTION BORROW

4-45 SELECT BORROW

Select borrow consists of granular material, either naturally occurring or processed, and contains no more than 5% clay, organic debris, or trash by volume. Select borrow material must be free of rocks greater than 10 inches in any dimension.

4-49 BORROW SOURCE

Purchaser may obtain borrow material from the listed borrow source(s). Development of the borrow source must be in accordance with a written BORROW SOURCE DEVELOPMENT PLAN to be submitted by the Purchaser and approved in writing by the Contract Administrator.

Source	Location	Type
Borrow Source A	B-8000 (STA. 305+00)	Select Borrow

SUBSECTION SHAPING

4-55 ROAD SHAPING

Purchaser shall shape each lift of 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.

4-56 DRY WEATHER SHAPING

At any time of year, the Contract Administrator may require the application of water to facilitate shaping activities. The method of water application is subject to written approval by the Contract Administrator.

SUBSECTION COMPACTION

4-60 FILL COMPACTION

Purchaser shall compact all embankment and waste material in accordance with the COMPACTION LIST by routing equipment over the entire width of each lift. Waste material may be placed by end-dumping or sidecasting until sufficiently wide enough to support the equipment.

4-61 SUBGRADE COMPACTION

Purchaser shall compact constructed subgrades in accordance with the COMPACTION LIST by routing equipment over the entire width except ditch. On fills deeper than 5 feet at the road shoulder Purchaser shall compact fill material in lifts no greater than 18 inches. Purchaser shall obtain written approval from the Contract Administrator for subgrade compaction before rock application.

4-62 DRY WEATHER COMPACTION

At any time of year, the Contract Administrator may require the application of water to facilitate compaction activities. The method of water application is subject to written approval by the Contract Administrator.

4-63 EXISTING SURFACE COMPACTION

Purchaser shall compact maintained road surfaces in accordance with the COMPACTION LIST by routing equipment over the entire width.

SECTION 5 – DRAINAGE

5-1 REMOVAL OF SHOULDER BERMS

Purchaser shall remove berms from road shoulders to permit escape of runoff.

SUBSECTION CULVERTS

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 the CULVERT AND DRAINAGE LIST. Culvert, downspout, and flume lengths may be adjusted to fit as-built conditions and may not terminate directly on unprotected soil. Culverts must be new material and meet the specifications in Clauses 10-15 through 10-23.

5-7 USED CULVERT MATERIAL

On temporary roads, Purchaser may install used culverts. All other roads must have new culverts installed. Culverts must meet the specifications in Clauses 10-15 through 10-24.

5-12 UNUSED MATERIALS STATE PROPERTY

On required roads, any materials listed on the CULVERT AND DRAINAGE LIST and materials listed in Clause 5-13 CONTINGENCY CULVERTS that are not installed will become the property of the state. Purchaser shall stockpile materials as directed by the Contract Administrator.

5-13 CONTINGENCY CULVERTS

The following culverts will be supplied by the Purchaser and are available for installation as directed by the Contract Administrator.

Road	Size
On any portion of road used for timber or rock haul.	18”X30’ Culvert 18”X30’ Culvert 18” Culvert band

SUBSECTION CULVERT INSTALLATION

5-15 CULVERT INSTALLATION

Culvert, downspout, flume and energy dissipater installation must be in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL and the Corrugated Polyethylene Pipe Association’s “Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings”. Culverts shall be

banded using lengths of no less than 10 feet, and no more than one length less than 16 feet**.** Shorter section of banded culvert shall be installed at the inlet end.

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 12%.

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.

SUBSECTION ENERGY DISSIPATERS

5-20 ENERGY DISSIPATERS

Purchaser shall install energy dissipaters in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all culverts on the CULVERT LIST that specify the placement of rock. Energy dissipater installation is subject to approval by the Contract Administrator.

The type of energy dissipater and the amount of material must be consistent with the specifications listed on the CULVERT LIST. Placement must be by zero-drop-height method only. No placement by end dumping or dropping of rock is allowed. QUARRY SPALLS shall meet the specifications in Clause 6-43.

SUBSECTION CATCH BASINS, HEADWALLS, AND ARMORING

5-25 CATCH BASINS

Purchaser shall construct catch basins to resist erosion 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 CULVERTS

Purchaser shall construct headwalls in accordance with the CULVERT AND DRAINAGE SPECIFICATION DETAIL at all culverts on the CULVERT LIST that specify the placement of rock.

5-27 ARMORING FOR STREAM CROSSING CULVERTS

Purchaser shall place inlet and outlet protection in conjunction with or immediately following construction of the embankment. Rock must be placed on shoulders, slopes, and around culvert inlets and outlets as designated on CULVERT LIST. Rock may not restrict the flow of water into culvert inlets or catch basins. Rock must be set in place by machine. Placement must be by zero-drop-height method only.

5-33 NATIVE SURFACE ROADS

If overwintered, native surface roads must be waterbarred by November 1. Purchaser shall construct waterbars according to the attached DRIVABLE WATERBAR DETAIL at a maximum spacing that will produce a vertical distance of no more than 10 feet between waterbars or between natural drainage paths, and with a maximum spacing of 300 feet.

SECTION 6 – ROCK AND SURFACING

SUBSECTION ROCK SOURCE

6-2 ROCK SOURCE ON STATE LAND

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the following source(s) 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(s), a joint operating plan must be developed. All parties shall follow this plan. Purchaser shall notify the Contract Administrator a minimum of 3 calendar days before starting any operations in the listed locations.

Source	Location	Rock Type
Delphi Quarry	SW ¼ SW ¼ Section 35, Township 18 North, Range 03 West, W.M.	4 Inch In-Place, Select Pit Run, Quarry Spalls.
Perry Creek Quarry	SE 1/4, SW 1/4, Section 15, Township 18 North, Range 03 West, W.M.	4 Inch In-Place, Select Pit Run, Quarry Spalls.

6-3 ROCK SOURCE STATE LAND, EXISTING STOCKPILE

Rock used in accordance with the quantities on the ROCK LIST may be obtained from the following existing stockpile(s) on state land at no charge to the Purchaser. Purchaser shall not remove additional yardage without prior written approval from the Contract Administrator.

Source	Location	Rock Type	Quantity
Perry Creek Quarry	See Pit Plan	2 ½ Inch Crushed	1,300 CY
Perry Creek Quarry	See Pit Plan	3 Inch	1,600 CY

6-5 ROCK FROM COMMERCIAL SOURCE

Rock used in accordance with the quantities on the ROCK 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.

SUBSECTION ROCK SOURCE DEVELOPMENT

6-10 ROCK SOURCE DEVELOPMENT PLAN BY STATE

Purchaser shall conduct rock source development and use at the following sources, in accordance with the written ROCK SOURCE DEVELOPMENT PLAN prepared by the state and included in this road plan. 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. Purchaser shall notify the Contract Administrator a minimum of 3 calendar days before starting any operations in the rock source.

Source	Location
Delphi Quarry	SW ¼ SW ¼ Section 35, Township 18 North, Range 03 West, W.M.
Perry Creek Quarry	SE 1/4, SW 1/4, Section 15, Township 18 North, Range 03 West, W.M.

6-12 ROCK SOURCE SPECIFICATIONS

Rock sources must be in accordance with the following specifications, unless otherwise specified in the ROCK SOURCE DEVELOPMENT PLAN:

- 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 at the end of operations.

6-14 DRILL AND SHOOT

Rock drilling and shooting must meet the following specifications:

- Oversize material remaining in the rock source at the conclusion of the timber sale may not exceed 200 cubic yards.
- Oversize material is defined as rock fragments larger than two feet in any dimension.
- Oversized rock that exceeds the maximum allowable amount must be reduced to a smaller size within the rock source.
- Purchaser shall notify the Contract Administrator a minimum of 3 working days before blasting operations.
- Purchaser shall submit an informational drilling and shooting plan to the Contract Administrator 3 working days before any drilling. The drilling and shooting plan must include, at a minimum, the mapped location and spacing of all holes to be loaded, the type of blasting agent used, the powder factor calculated and the units of same, stem amount held per hole. After drilling, the type of rock encountered while drilling e.g. hard black, soft brown, etc. shall be amended to submitted plan.
- All operations must be carried out in compliance with 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 the Safety Standards for Construction Work (296-155 WAC), Washington Department of Labor and Industries.
- Purchaser shall block access roads before blasting operations.

SUBSECTION ROCK MANUFACTURE

6-20 ROCK CRUSHING OPERATIONS

Rock crushing operations must conform to the following specifications:

- Operations and placement of oversize material must be conducted in or near the rock source site, as approved in writing by the Contract Administrator.
- The crushing operation must be concluded within 30 working days from the time it begins.

6-23 ROCK GRADATION TYPES

Purchaser shall manufacture rock in accordance with the types and amounts listed in the ROCK LIST. Rock must meet the following specifications for gradation and uniform quality when placed in hauling vehicles**.** Purchaser shall provide a sieve analysis upon request from the Contract Administrator.

SUBSECTION ROCK GRADATIONS

6-32 2 ½-INCH MINUS CRUSHED ROCK

% Passing 2 ½” square sieve	100%
% Passing 2” square sieve	65 - 95%
% Passing 1” square sieve	50 – 80%
% Passing U.S. #4 sieve	30 – 50%
% Passing U.S. #40 sieve	16% maximum
% Passing U.S. #200 sieve	8% maximum

6-37 4-INCH JAW RUN ROCK

% Passing 4” square sieve	95%
% 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.

6-38 4-INCH IN-PLACE ROCK

4-inch in-place rock must have a minimum of 90 percent of the top 4 inches of the running surface pass a 4-inch square opening.

In-place rock may not contain more than 5 percent by weight of organic debris and trash. No more than 50 percent of rock may be larger than 6 inches in any dimension and no rock may be larger than 12 inches in any dimension.

6-41 SELECT PIT RUN ROCK

No more than 50 percent of the rock may be larger than 6 inches in any dimension and no rock may be larger than 10 inches in any dimension. Pit Run rock may not contain more than 5 percent by weight of organic debris, and trash. Rock may require processing to meet this specification.

6-43 QUARRY SPALLS

% Passing 8" square sieve	100%
% Passing 3" square sieve	40% maximum
% Passing 3/4" square sieve	10% maximum

Rock may not contain more than 5 percent vegetative debris or trash. All percentages are by weight.

SUBSECTION ROCK MEASUREMENT

6-55 ROCK APPLICATION MEASURED BY COMPACTED DEPTH

Measurement of specified rock depths, are defined as the compacted depth(s) using the compaction methods required in this road plan. Estimated quantities specified in the ROCK LIST are compacted 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.

SUBSECTION ROCK APPLICATION

6-70 APPROVAL BEFORE ROCK APPLICATION

Purchaser shall obtain written approval from the Contract Administrator for subgrade including: ditches, headwalls, catch basins, culverts, energy dissipaters, ditch-outs, subgrade shaping and compacting before rock application.

6-71 ROCK APPLICATION

Purchaser shall apply rock in accordance with the specifications and quantities shown on the ROCK LIST. Rock must be spread, shaped, and compacted full width concurrent with rock hauling operations. The Contract Administrator will direct locations for rock that is to be applied as spot patching. Road surfaces must be compacted in accordance with the COMPACTION LIST 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.

6-75 OPTIONAL ROCK EXCEPTION

On the following roads, if hauling takes place from May 1 to October 31 the Purchaser may place less rock than shown on the ROCK LIST, as approved in writing by the Contract Administrator. If less rock is applied, the Purchaser shall submit a written plan, for approval, describing how these roads shall be constructed, used, maintained, and treated post-haul. The Purchaser shall meet post-haul specifications in Section 9 POST-HAUL ROAD WORK, or other conditions of the approved plan as required by the Contract Administrator.

Road	Stations
B-8706A	2+70 to 15+90
B-8708	0+00 to 2+40
M01	10+41 to 14+74

SECTION 8 – EROSION CONTROL

8-1 SEDIMENT CONTROL STRUCTURES

Sediment control shall be accomplished using sediment traps, silt fences, rock berms, settling ponds or other methods as approved, in writing, by the Contract Administrator.

8-2 PROTECTION FOR EXPOSED SOIL

Purchaser shall provide and evenly spread a layer of straw to all exposed soils that have potential to deliver to typed water.

8-15 REVEGETATION

On the following road(s), Purchaser shall spread grass seed on all exposed soils resulting from road work activities.

Road	Location
B-8706A	2+70 to 15+90
B-8708	0+00 to 2+40
M01	10+41 to 14+74

8-17 REVEGETATION TIMING

On the following roads, Purchaser shall revegetate immediately following the completion of the activity listed below. Soils may not be allowed to sit exposed for longer than one week without receiving revegetation treatment unless otherwise approved in writing by the Contract Administrator.

Road	Revegetation Type	Comments
B-8706A	Grass Seed	Revegetate as abandoned
B-8708	Grass Seed	Revegetate as abandoned
M01	Grass Seed	Revegetate as abandoned

8-25 GRASS SEED

Purchaser shall evenly spread the seed mixture listed below on all exposed soil 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 unless a comparable mix is approved in writing by the Contract Administrator.

Kind and Variety of Seed in Mixture	% by Weight
Perennial Rye	35-45
Red Fescue	30-40
Highland Bent	5-15
White Clover	10-20
Inert and Other Crop	0.5

SECTION 9 – POST-HAUL ROAD WORK

SUBSECTION STRUCTURES

9-1 BARRICADES

Purchaser shall construct barricades in accordance with the BARRICADE DETAIL.

Road	Stations
B-8706A	3+20
B-8708	0+50
M01	10+91
M01	14+74

9-3 CULVERT MATERIAL REMOVED FROM STATE LAND

Culverts removed from roads become the property of the Purchaser and must be removed from state land.

9-5 POST-HAUL MAINTENANCE

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

SUBSECTION POST-HAUL LANDING MAINTENANCE

9-10 LANDING DRAINAGE

Purchaser shall provide for drainage of the landing surface.

SUBSECTION DECOMMISSIONING AND ABANDONMENT

9-21 ROAD ABANDONMENT

If constructed/reconstructed, Purchaser shall abandon the following roads before the termination of this contract.

Road	Stations
B-8706A	2+70 to 15+90
B-8708	0+00 to 2+40
M01	10+41 to 14+74

9-22 ABANDONMENT

- Remove road shoulder berms except as directed.
- Construct non-drivable waterbars according to the attached NON-DRIVABLE WATERBAR DETAIL at a maximum spacing that will produce a vertical drop of no more than 10 feet between waterbars or between natural drainage paths and with a maximum spacing of 100 feet, or as marked in the field.
- Skew waterbars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3 per cent 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.
- Remove ditch cross drain culverts and leave the resulting trench open.
- Remove used culvert material from State Land.
- Seed all exposed soil concurrently with abandonment per clause 8-15 REVEGETATION.
- Provide and evenly spread a 2-inch layer of straw to all exposed waste material generated by fill removal that is within 30 feet of excavation limits.
- Construct earth barricade as per clause 9-1 BARRICADES

SECTION 10 MATERIALS

SUBSECTION CULVERTS

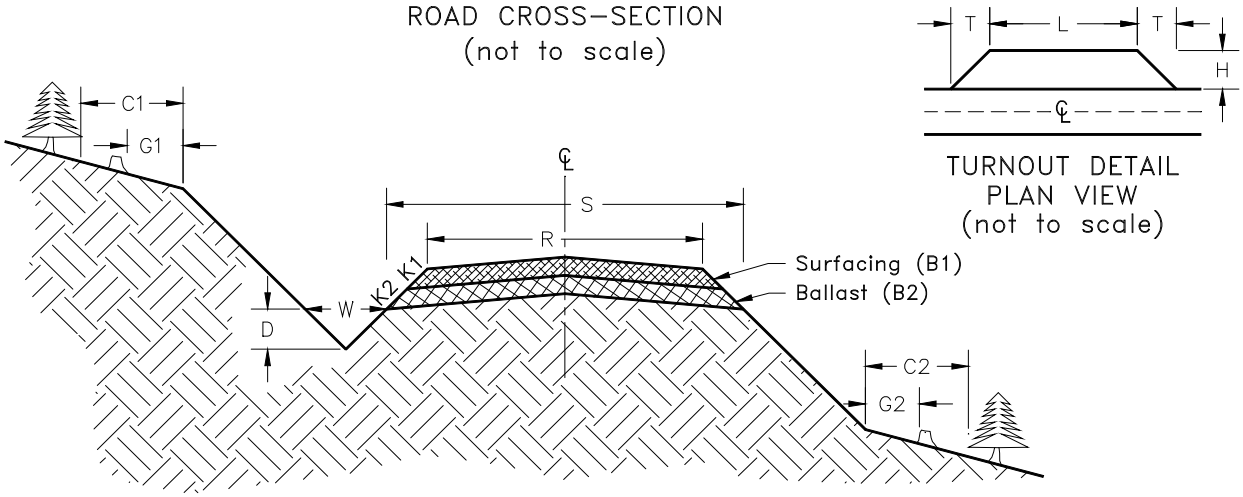
10-17 CORRUGATED PLASTIC CULVERT

Polyethylene culverts must meet AASHTO M-294 specifications, or ASTM F-2648 specifications for recycled polyethylene. Culvert segments not specifically labeled as downspouts must be Type S – double walled with a corrugated exterior and smooth interior.

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. Couplings must be split coupling band. Split coupling bands must have a minimum of four corrugations, two on each side of the pipe joint.

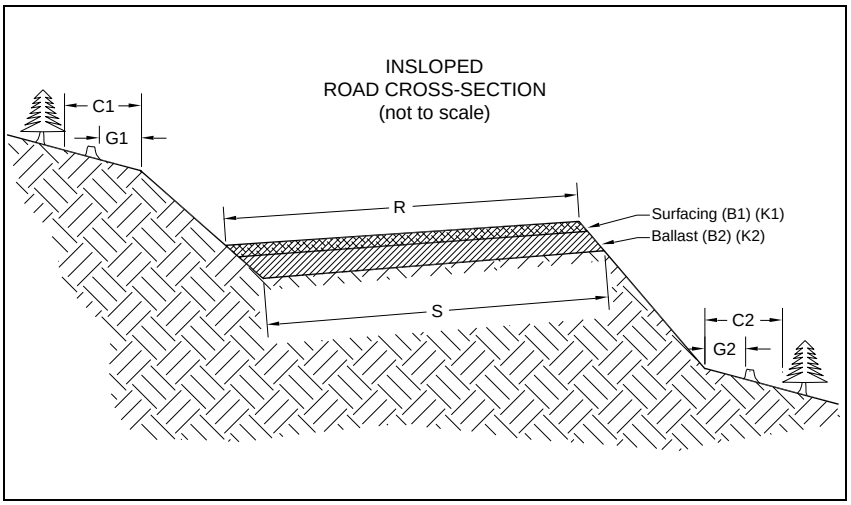
TYPICAL SECTION SHEET (pg 1 of 1)



Road Number	From Station	To Station	Tolerance Class	Subgrade Width (feet)	Road Width (feet)	Ditch Width (feet)	Ditch Depth (feet)	Crown in. @ CL	Grubbing Limits (feet)		Clearing Limits (feet)		Cut Slope Ratio	Fill Slope Ratio
				S	R	W	D		G1	G2	C1	C2	Clause	Clause
B-Line	664+20	685+10	A		16	3	1	4	-	-	-	-	4-5	4-6
B-8000	0+00	288+90	A		14	3	1	4	-	-	-	-	4-5	4-6
B-8700	0+00	97+10	A		14	3	1	4	-	-	-	-	4-5	4-6
B-8706	0+00	8+14	A	16	12	3	1	4	3	3	5	5	4-5	4-6
B-8706A	0+00	15+90	C	16	12	3	1	4	0	0	0	0	4-5	4-6
B-8706Ext.	0+00	11+94	C	16	12	3	1	4	3	3	5	5	4-5	4-6
B-8708	0+00	2+40	C	16	12	3	1	4	0	0	0	0	4-5	4-6
B-8790	0+00	22+60	A		12	3	1	4	-	-	-	-	4-5	4-6
B-8900	0+00	15+16	A		14	3	1	4	-	-	-	-	4-5	4-6
B-8910	0+00	12+47	C	16	12	3	1	4	0	0	0	0	4-5	4-6
MM-1	0+00	34+00	A		12	3	1	4	-	-	-	-	4-5	4-6
M01	3+50	14+74	C	16	12	3	1	4	3	3	Tags	Tags	4-5	4-6

TYPICAL INSLOPED SECTION SHEET

Page **1** of **1**



Road Number	From Station	To Station	Tolerance Class	Subgrade Width (feet)	Road Width (feet)	Super elevation in. @ CL	Grubbing Limits (feet)		Clearing Limits (feet)	
				S	R		G1	G2	C1	C2
M01	0+00	3+50	C	15	12	3	3	3	Tags**	Tags**

**Tags are orange right of way tags

COMPACTION LIST

Road	From Station	To Station	Type	Max Depth of Lift (inches)	Equipment Type	Equipment Weight (lbs)	Minimum Number of Passes	Maximum Operating Speed (mph)
All new rock for pre-haul/post-haul maintenance			Pre/Post-haul rock	6	Smooth Drum Vibratory Roller	14,000	2 low freq. vibe on	3.5
All new construction and reconstruction			Subgrade, rock	12, 6	Smooth Drum Vibratory Roller	14,000	2 low freq. vibe on	3.5
All pre-haul maintenance roads			After pre-haul grading	6	Smooth Drum Vibratory Roller	14,000	2 low freq. vibe on	3.5

ROCK LIST

BALLAST

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth (inches)	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source	Comments		
			K2	B2	**4 Inch In Place**				CW	TO	TA
B-8706A	0+00	2+70	1 ½ :1	12	56	2.71	152	Perry Creek Quarry, Delphi Quarry			
B-8706A*	2+70	15+90	1 ½ :1	12	56	13.19	739				
B-8706 Ext.	0+00	11+94	1 ½ :1	12	56	11.94	669				
B-8708*	0+00	2+40	1 ½ :1	12	56	2.40	135				
					4 Inch Jaw						
M01	0+00	10+41	1 ½ :1	12	56	10.41	583	Commercial			
M01*	10+41	14+74	1 ½ :1	12	56	4.33	243				
Landing Rock*							500	Perry Creek Quarry, Delphi Quarry, Borrow Source A	Landings may use select pit run in place of 4 inch.		
					Quarry Spalls						
Culvert Headwalls and Dissipaters							50		See CULVERT AND DRAINAGE LIST		

4 Inch Jaw Total__826__Cubic Yards
4 Inch In-Place Total__1,695__Cubic Yards
Quarry Spalls Total__50__Cubic Yards
Select Pit Run/4 Inch Jaw__500__Cubic Yards
Ballast Total__3,071__Cubic Yards

Included in C.Y. Subtotal
CW – Curve Widening
TO – Turn Out
TA – Turn Around

*Optional Rock: If Purchaser elects to haul on optional rock roads in wet weather, the depth listed above is recommended but not required.

SURFACE

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth (inches)	C.Y. Station	# of Stations	C.Y. Subtotal	Rock Source	Comments		
			K1	B1	**2 ½ Inch Crushed**				CW	TO	TA
B-8000	160+00	167+00	1 ½ :1	6	24	7.00	168	Perry Creek Stockpile			
B-8000	177+80	184+30	1 ½ :1	6	24	6.50	156				
B-8000	195+10	202+10	1 ½ :1	6	24	7.00	168				
B-8000	266+50	289+00	1 ½ :1	6	24	22.50	540				
B-8706A	0+00	2+70	1 ½ :1	6	24	2.70	65				
MM-1	12+60	14+40	1 ½ :1	6	24	1.80	44	Commercial Source			
MM-1	20+70	25+10	1 ½ :1	6	24	4.40	106				
M01	0+00	1+50	1 ½ :1	6	24	1.5	36				
					3 Inch Crushed						
B-8700	20+00	40+00	1 ½ :1	6	24	20.00	480	Perry Creek Stockpile			
B-8706	0+00	8+14	1 ½ :1	12	52	8.14	424				
B-8900	0+00	28+30	1 ½ :1	6	24	28.30	680				

2 ½ Inch Minus Crushed Total___1,283____ Cubic Yards
3 Inch Crushed Total___1,584____ Cubic Yards
Surface Total___2,867____ Cubic Yards

*Optional Rock: If Purchaser elects to haul on optional rock roads in wet weather, the depth listed above is recommended but not required.

NOTE: Yardages are estimated on a compacted (In-Place) basis. Compliance of required rock will be based on compacted depth measurement. **Apply appropriate factors to determine loose amounts for estimating purposes.** Roads and rock quantities are designed for dry weather use. If Purchaser elects to haul in wet weather additional rock may be obtained from the rock pits listed in Section 6 at the Purchaser's expense and with prior written approval from the Contract Administrator.

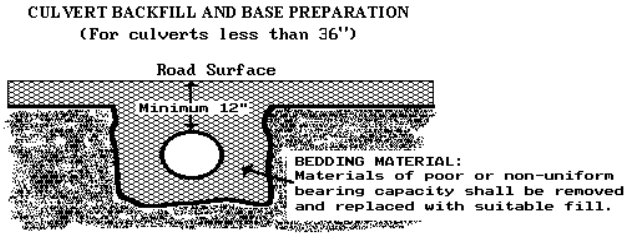
CULVERT AND DRAINAGE LIST, pg 1 of 1

Road Number	Location	Culvert Dia. (in)	Culvert Type	Length (ft) Culvert	Length (ft) Downspt	Length (ft) Flume	Riprap (C.Y.) Inlet	Riprap (C.Y.) Outlet	Riprap (C.Y.) Type	Backfill Material*	Placement Method*	Const. Staked *	Remarks
B-8000	288+00	18	PD	40	-	-	1	1.5	QS	NT			Install Cross Drain
B-8700	14+70	18	PD	40	-	-	1	1.5	QS	NT			Install Cross Drain
B-8700	95+00	18	PD	30	-	-	1	1.5	QS	NT			Replace Cross Drain
B-8706	6+48	18	PD	40	-	-	1	1.5	QS	NT			Install Cross Drain
B-8706A	1+78	24	PD	50	-	-	2	3	QS	NT			Install **Live Stream**
B-8706A	5+88	24	TEMP	30	-	-	2	3	QS	NT			Install **Live Stream**
B-8706A	8+81	18	TEMP	40	-	-	1	1.5	QS	NT			Install Cross Drain
B-8706 Ext.	2+67	18	PD	40	-	-	1	1.5	QS	NT			Install Cross Drain
B-8706 Ext.	9+82	18	PD	30	-	-	1	1.5	QS	NT			Install Cross Drain
B-8708	2+40	18	TEMP	30	-	-	-	-	-	NT			Install Driveway Culvert STA 0+00
B-8790	0+50	18	PD	30	-	-	1	1.5	QS	NT			Replace Cross Drain
B-8790	4+40	18	PD	30	-	-	1	1.5	QS	NT			Install Cross Drain
B-8790	9+00	18	PD	30	-	-	1	1.5	QS	NT			Install Cross Drain
B-8790	10+70	18	PD	30	-	-	1	1.5	QS	NT			Install Cross Drain
B-8790	13+06	18	PD	30	-	-	1	1.5	QS	NT			Install Cross Drain
M01	3+68	18	PD	30	-	-	1	1.5	QS	NT			Install Cross Drain
M01	7+32	18	PD	30	-	-	1	1.5	QS	NT			Install Cross Drain
As Directed by C.A.		18	PD	30	-	-	1	1.5	QS	NT			Contingency
		18	PD	30	-	-	1	1.5	QS	NT			Contingency
		18	PD	BAND	-	-							Contingency

* SEE CULVERT AND DRAINAGE SPECIFICATION DETAIL

PD = Polyethylene Pipe Dual Wall AASHTO No. M294 Type S or ASTM F2648

TEMP = Temporary Culvert



Key:

QS - Quarry Spalls

LL - Light Loose Riprap

SR - Shot Rock

NT - Native (bank run)

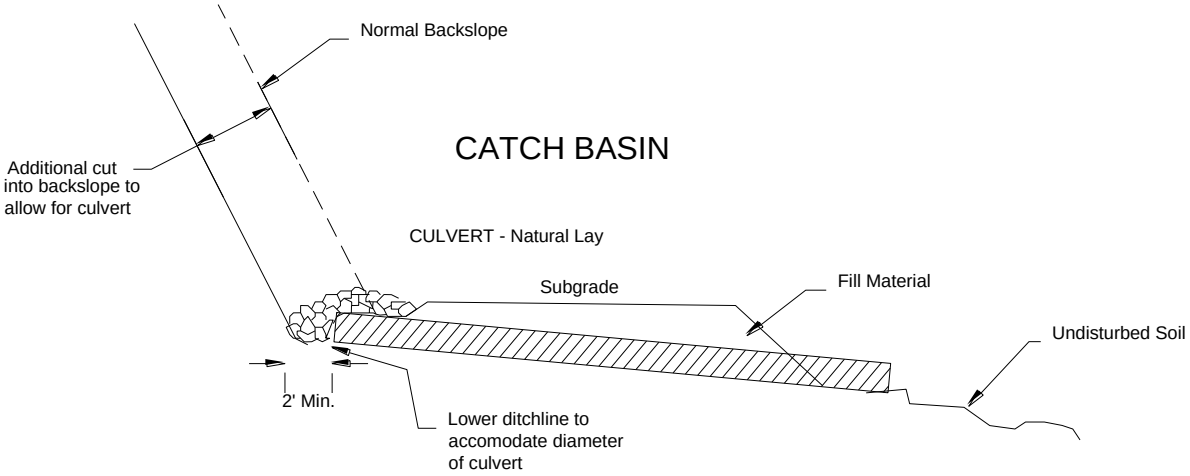
SL - Select Fill

Flume - Half round pipe

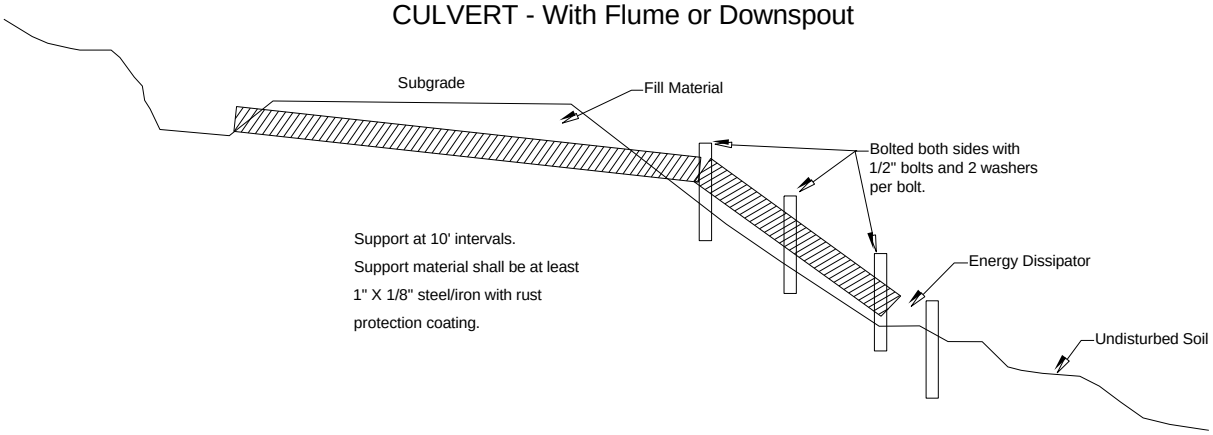
Downspout - Full round pipe

CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 1 of 3)



CULVERT - With Flume or Downspout

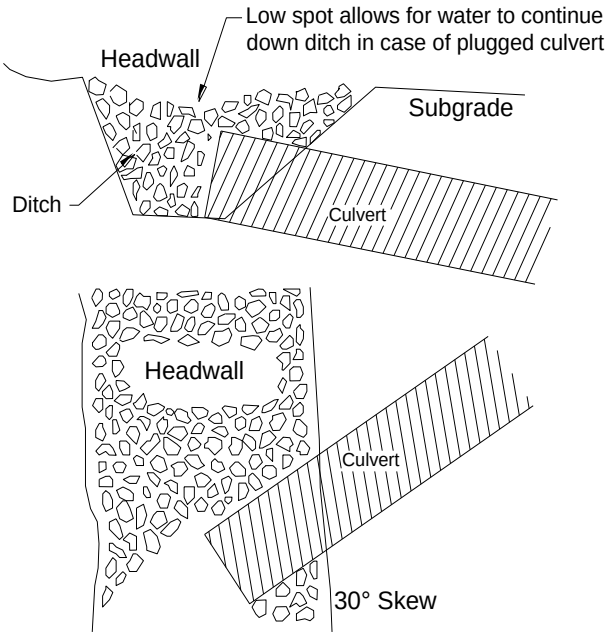


CULVERT AND DRAINAGE SPECIFICATION DETAIL

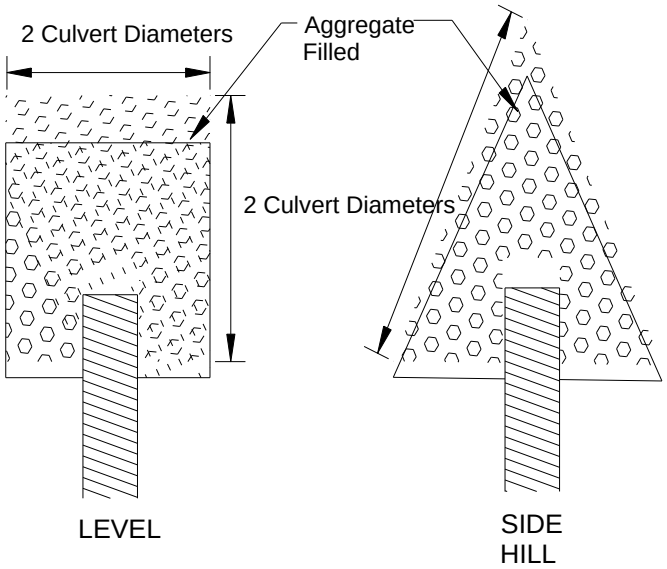
(Page 2 of 3)

Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.

HEADWALLS



ENERGY DISSIPATORS



Headwalls to be constructed of material that will resist erosion.

Dissipater Specifications:
Depth: 1 culvert diameter
Aggregate: as specified in the CULVERT LIST.

CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 3 of 3)

POLYETHYLENE PIPE INSTALLATION

INSTALLATION REQUIREMENTS:

1. Crushed stone, gravel, or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4" diameter, whichever is smaller.

2. The corrugated pipe shall be laid on grade, on a layer of bedding material as shown for the two types of installations. If native soil is used as the bedding and backfill material, it shall be well compacted in six inch layers under the haunches, around the sides and above the pipe to the recommended minimum height of cover.

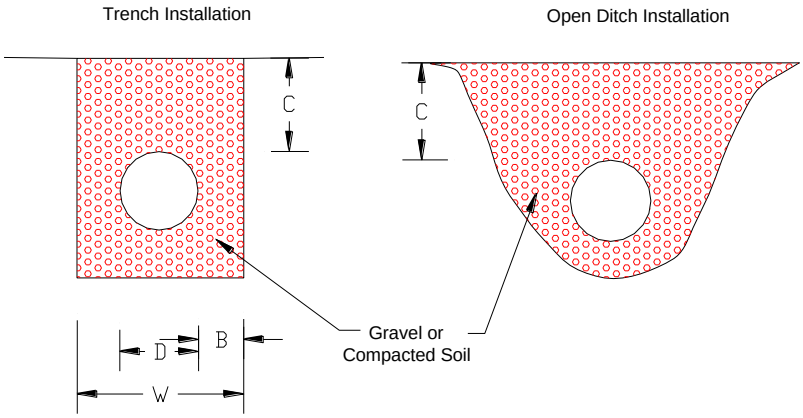
3. Either crushed aggregate or flexible (asphalt) pavement may be laid as part of the minimum cover requirements.

4. Site conditions and availability of bedding materials often dictate the type of installation method used.

5. The load bearing capability of flexible conduits is dependent on the type of backfill material used and the degree of compaction achieved. Crushed stone and gravel backfill materials typically reach a compaction level of 90-95% AASHTO standard density without compaction. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.

MINIMUM DIMENSIONS

Trench or Open Ditch Installation



Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
D	B	C	W
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
6"	6"	12"	54"

FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

(Sheet 1 of 2)

Cuts and Fills

- Maintain slope lines to a stable gradient compatible with the cut slope/fill slope ratios. Remove slides up to 100 cubic yards in volume from ditches and the roadway. Repair fill-failures 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

- Shape the road surface, turnouts, and shoulders to the original shape on the TYPICAL SECTION SHEET 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.
- 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.

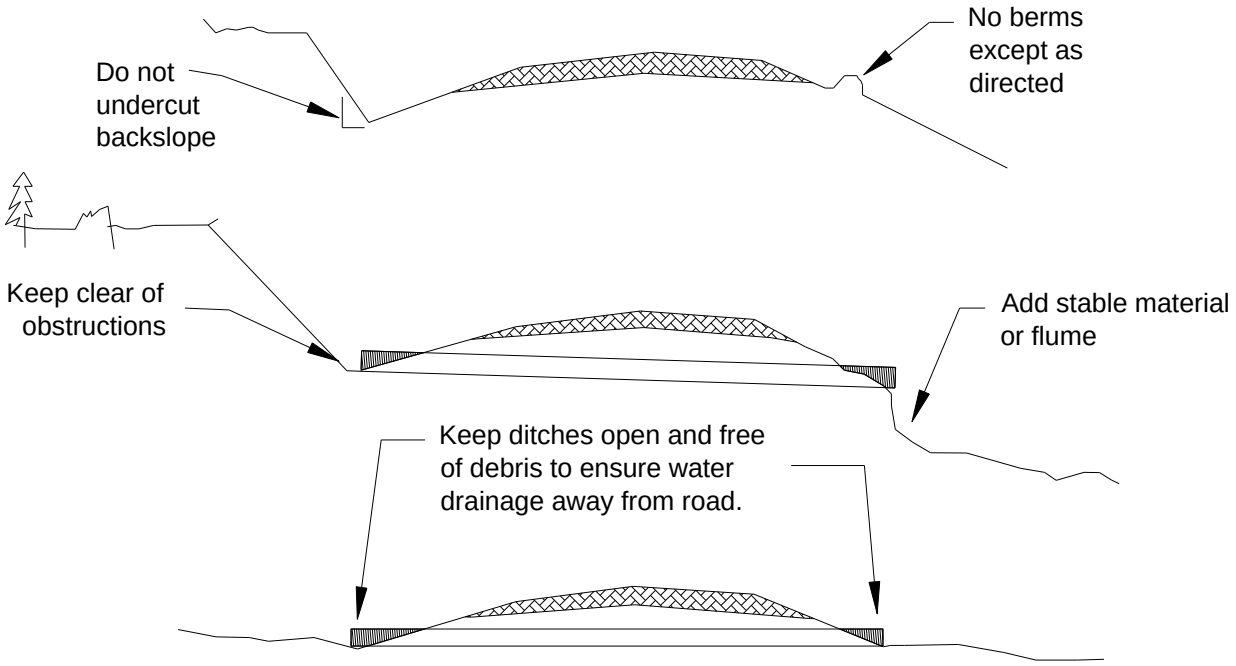
FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS
(Sheet 2 of 2)

Termination of Use or End of Season

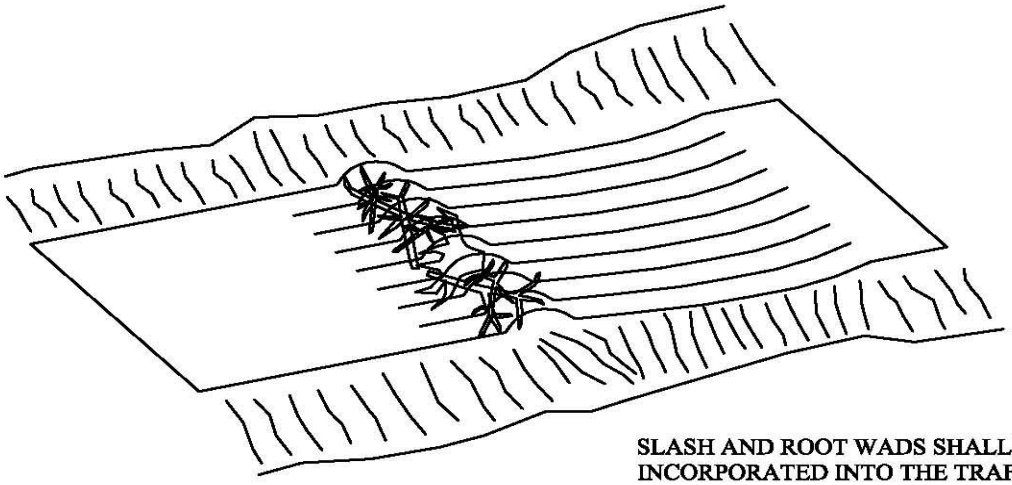
- At the conclusion of logging operations, ensure all conditions of these specifications have been met.

Debris

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

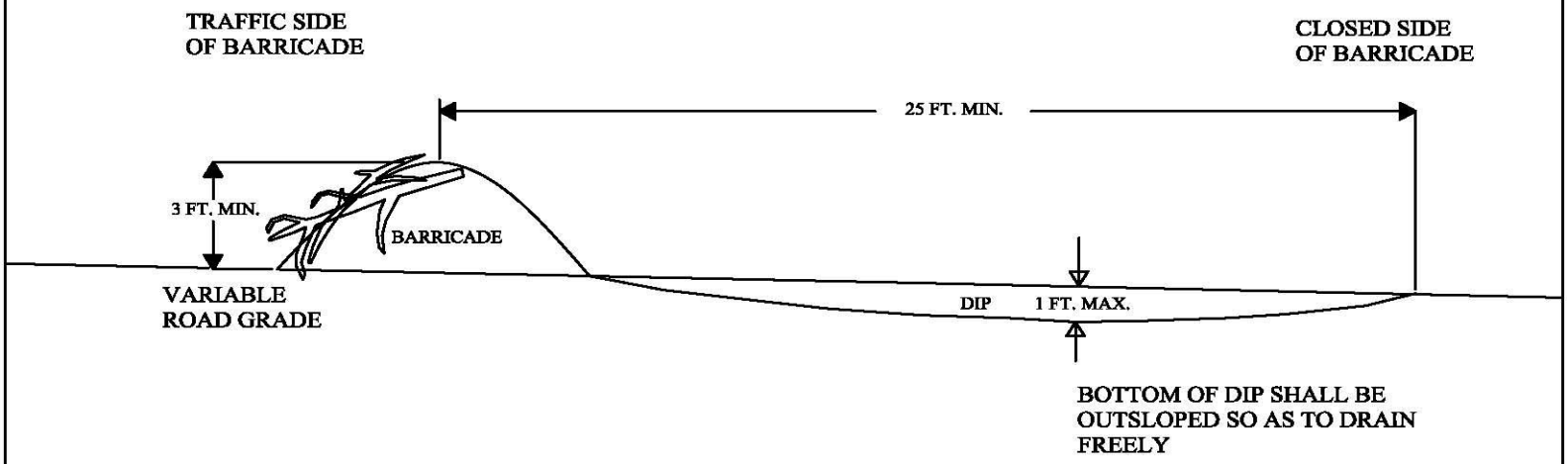


BARRICADE DETAIL



SLASH AND ROOT WADS SHALL BE INCORPORATED INTO THE TRAFFIC SIDE OF THE BARRICADE.

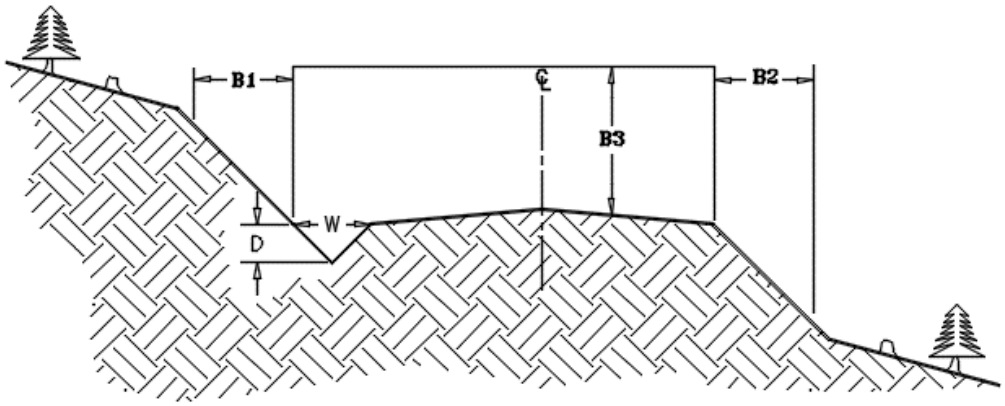
PLAN VIEW



PROFILE VIEW

BRUSHING DETAIL

(not to scale)



BRUSHING LIST

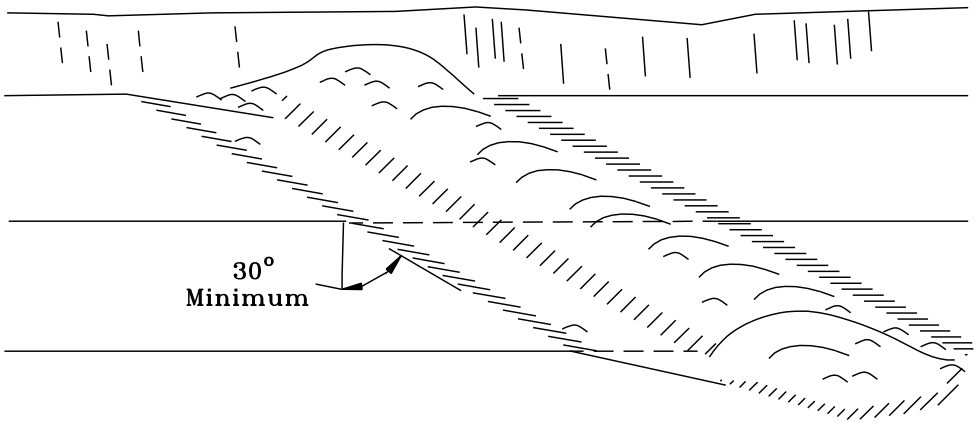
Road Number	From station	To station	Road Width (feet)	Ditch** Width (feet)	Ditch** Depth (feet)	Brushing Limits (feet)			Remarks In addition to brushing…
				W	D	B1	B2	B3	
B-8000	276+00	289+00	Variable	3	1	8	8	14	Cut brush an extra 16 feet on the inside of a curve to provide extra visibility on switchbacks and curves
B-8700	0+00	46+90	Variable	3	1	8	8	14	
B-8900	0+00	13+30	Variable	3	1	8	8	14	
MM-1	0+00	34+00	Variable	3	1	8	8	14	

B1 extends horizontally the specified distance in feet from the back of the ditch. B2 extends horizontally the specified distance in feet from the outside edge of the running surface. Brush is defined as all non-merchantable vegetative material found within the specified limits. Brush must be cut to a height of 3 inches above the ground. Brush that is cut shall be removed to the downhill side of the road and placed such that it will not block ditches, ditch-outs, or drainage structures. Signs, culvert location markers, culverts or any other identification features damaged by brushing shall be replaced at the Purchasers expense.

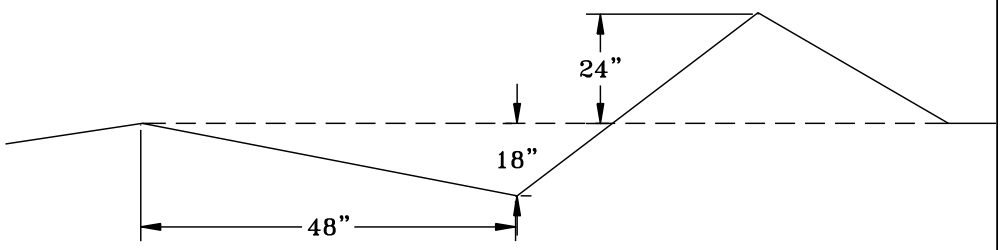
**Ditch Width and Ditch Depth are estimated, some existing roads may have slightly larger or smaller widths and depths. The Brushing Limits shall extend from the edge of ditch as seen in detail above.

Non-Drivable Water Bar Detail

Cross Ditch



Cross Section at Centerline



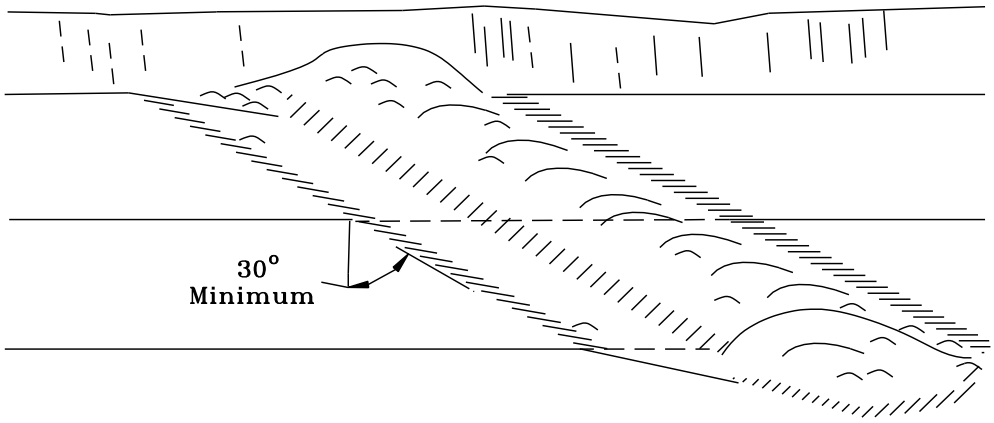
Date:
Scale : None
App#
Drawn by: M.A.D.

Water Bar Detail

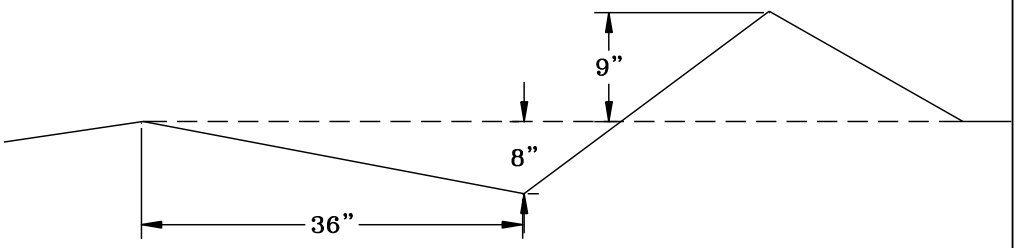
WASHINGTON STATE DEPARTMENT OF
NATURAL RESOURCES

Drivable Water Bar Detail

Cross Ditch



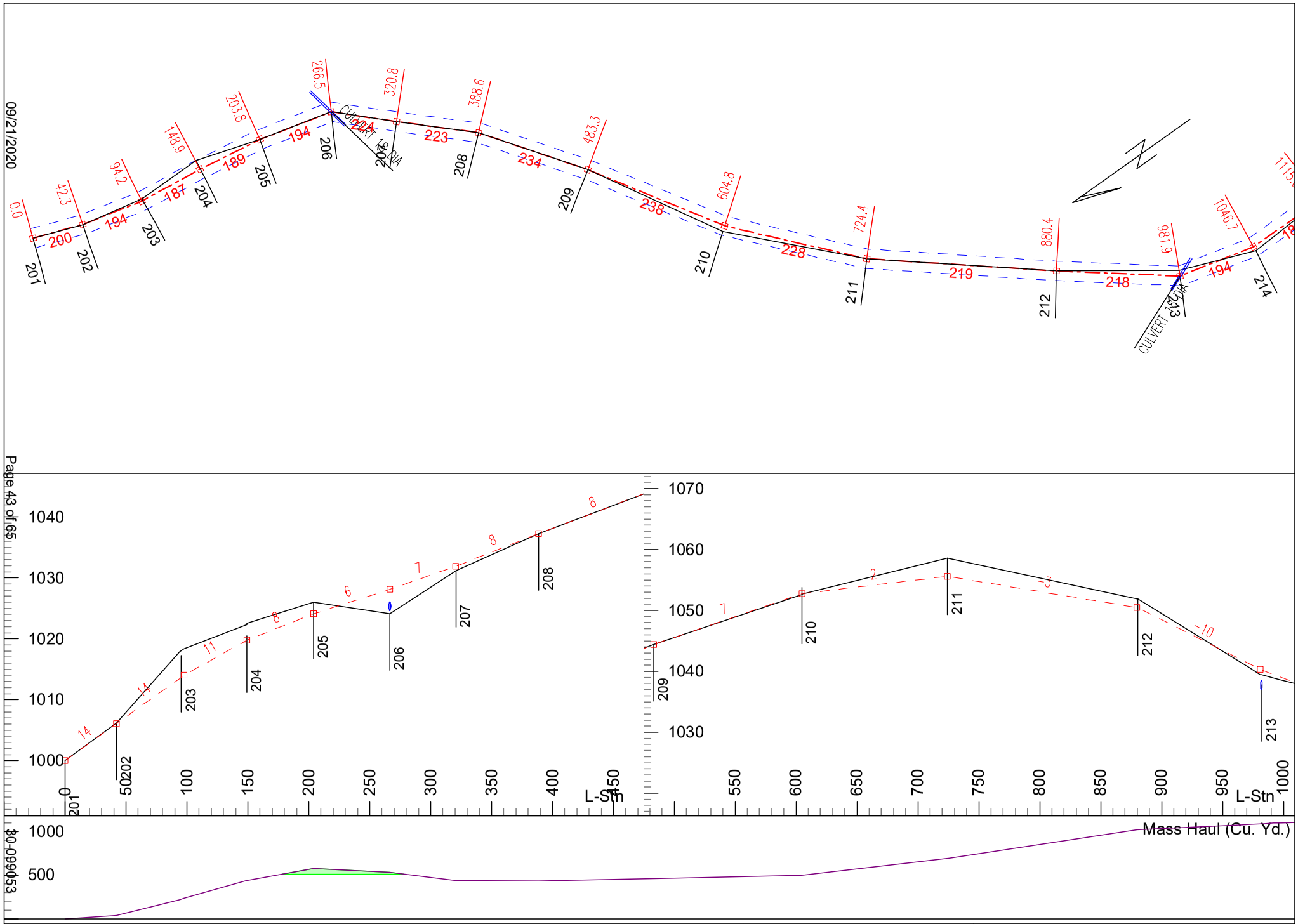
Cross Section at Centerline



Date:
Scale : None
App#
Drawn by: M.A.D.

Water Bar Detail

WASHINGTON STATE DEPARTMENT OF
NATURAL RESOURCES



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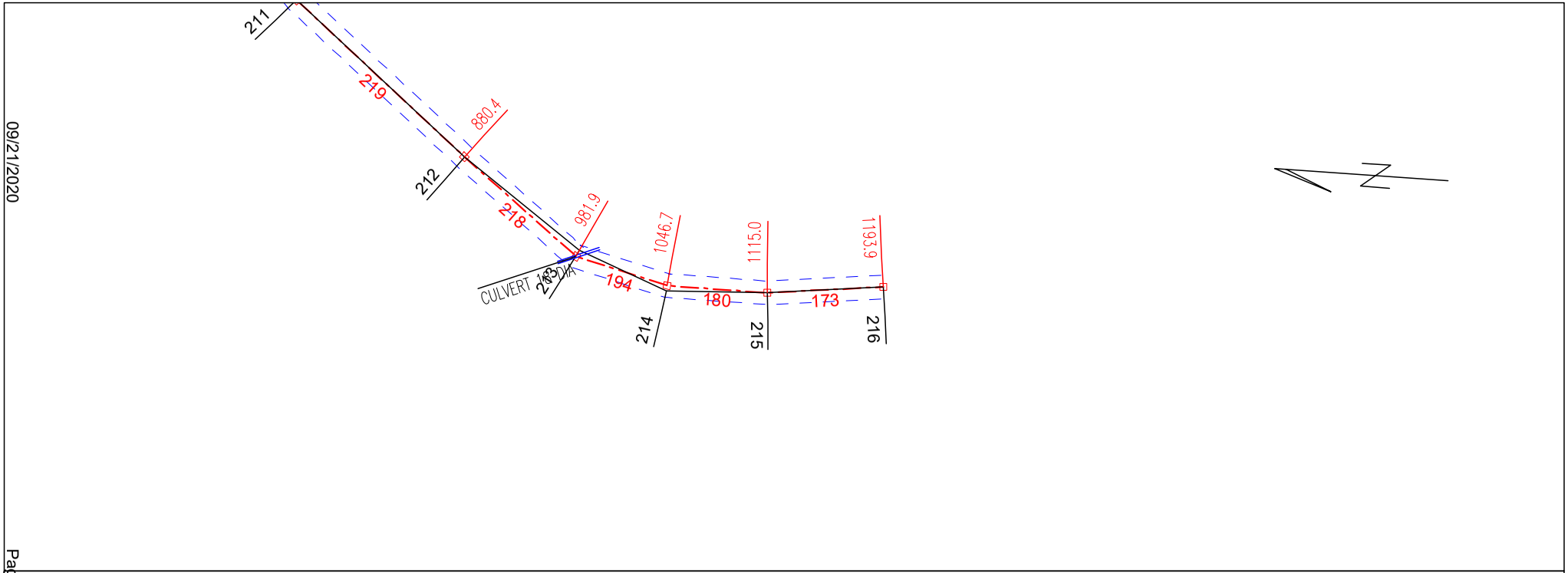
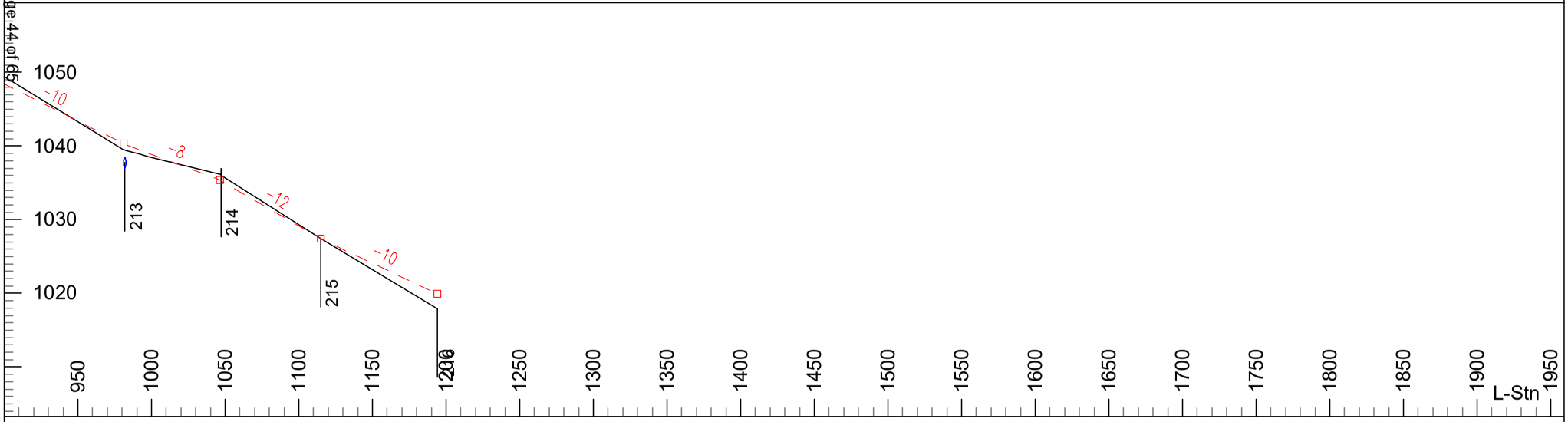
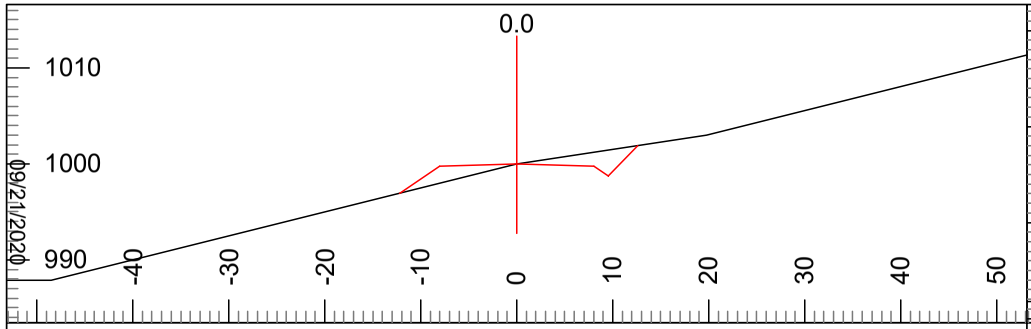




Smuggler Timber Sale B-8706 Ext. Contract#: 30-099053	Washington State Department of Natural Resources South Puget Sound Region	Plan Scale 1:1200 Profile Vert Scale 1:240 Profile Horz Scale 1:1200	Engineer: J. Gross 20/02/28	Page 2 of 4



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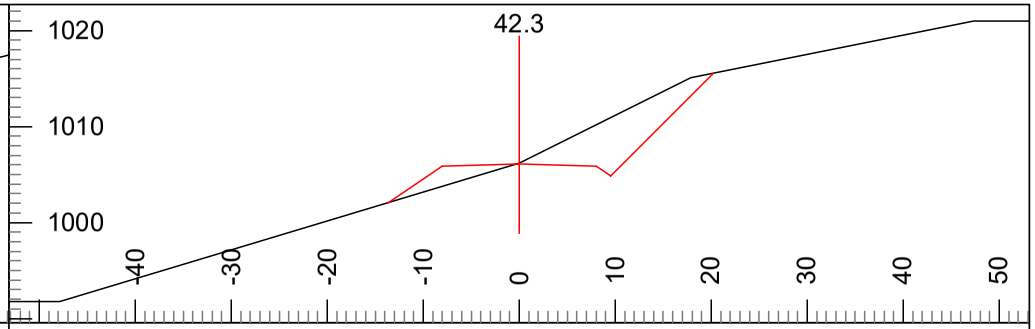

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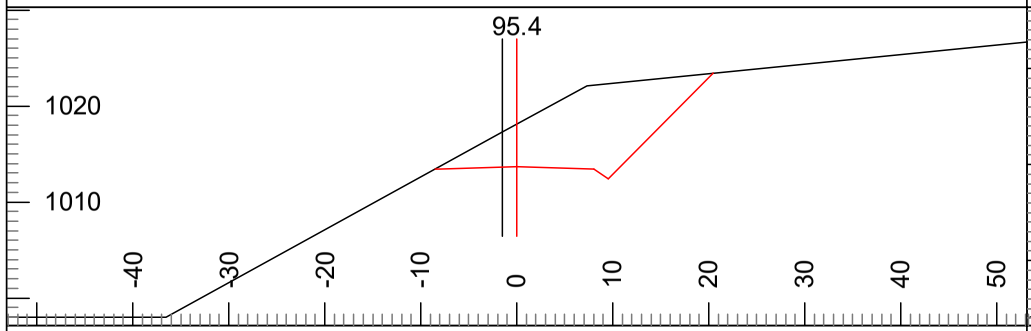

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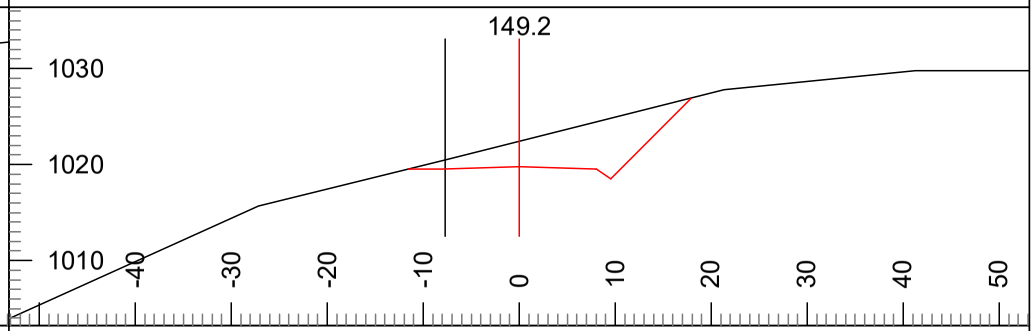

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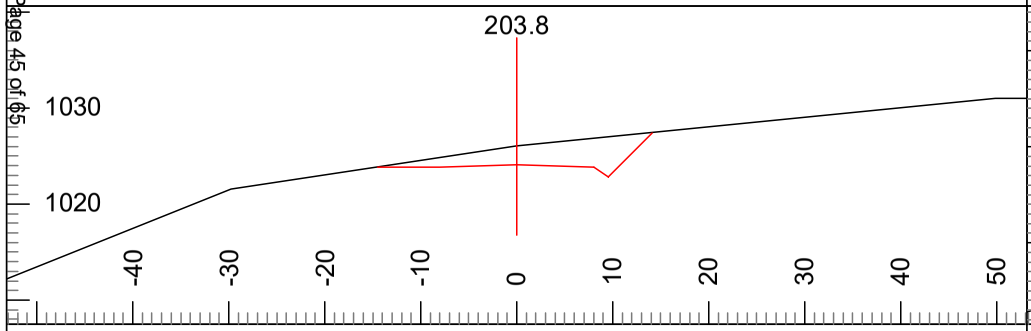

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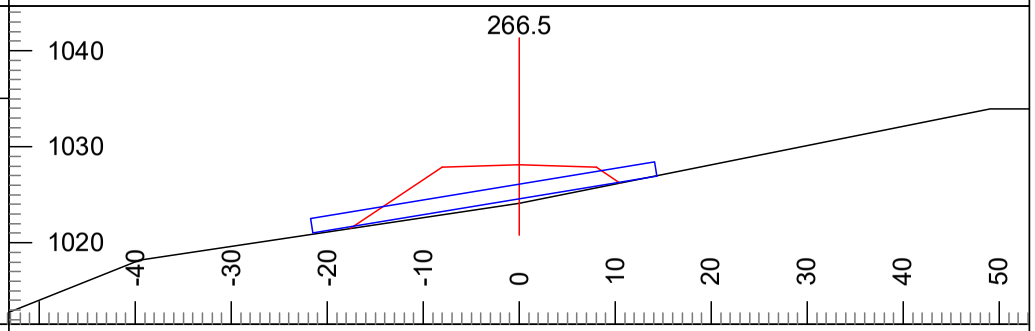
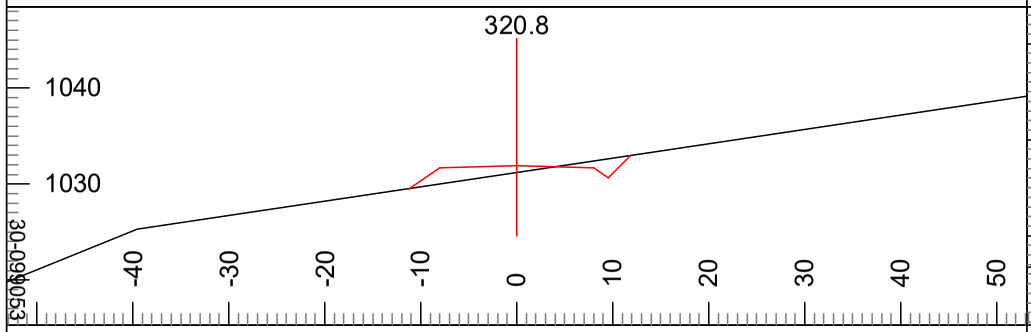


P-Stn : 267.6 L-Stn : 266.5 V.Offset: 4.0 H. Offset: 0.0 Cut Dp: -4.0 Index: 206



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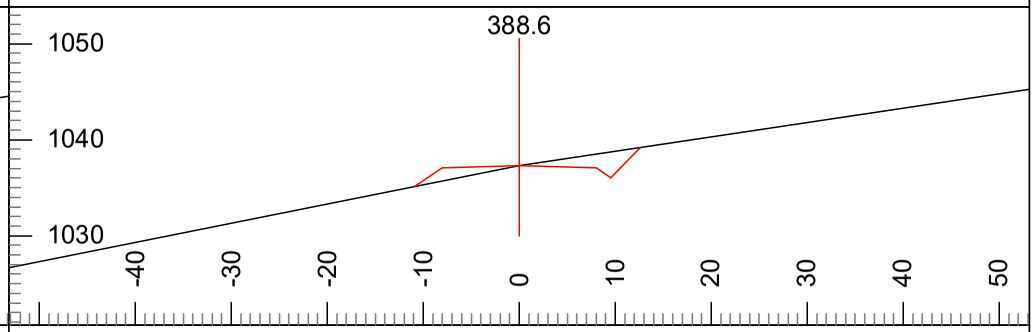

P-Stn : 389.7 L-Stn : 388.6 V.Offset: 0.0 H. Offset: 0.0 Cut Dp: 0.0 Index: 208

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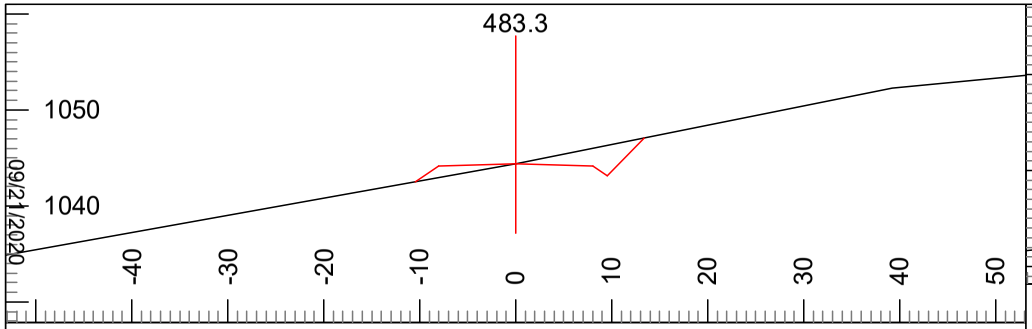

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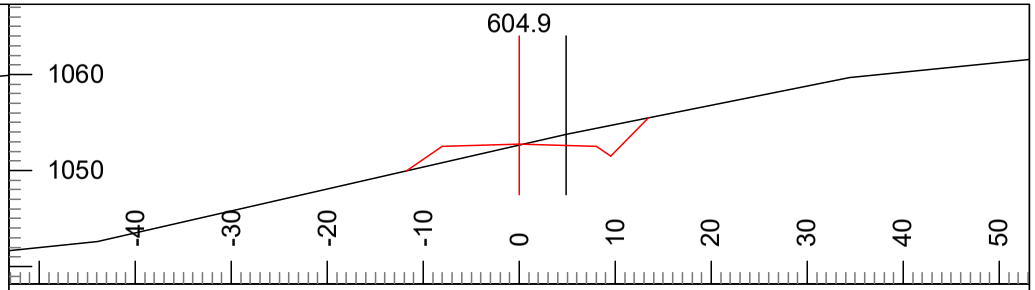

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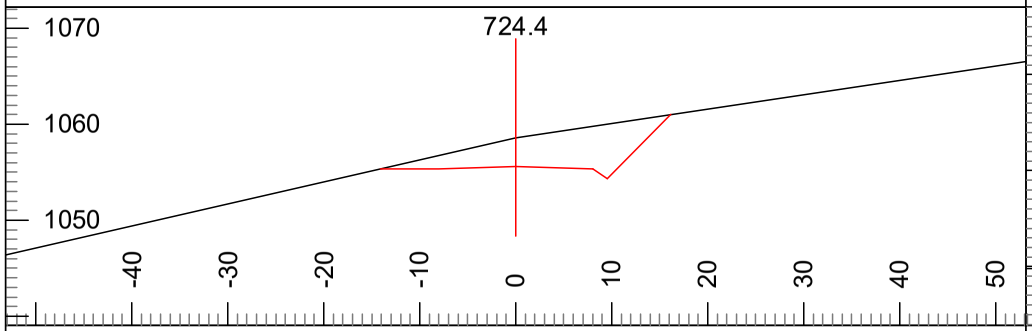
L-Stn : 604.9 H. Offset: -4.9 Index: 210



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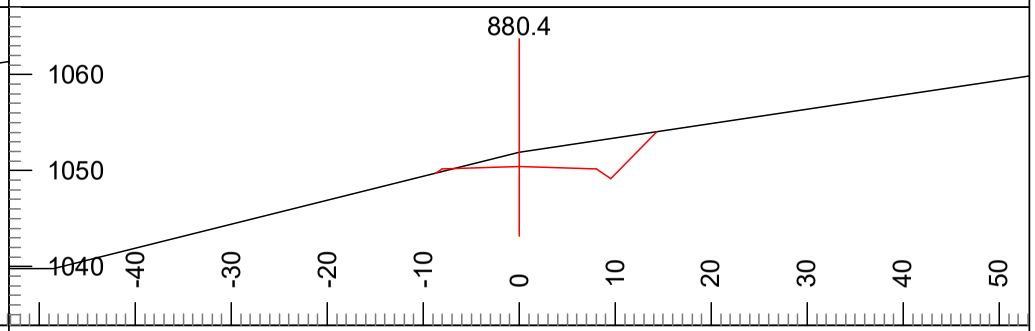
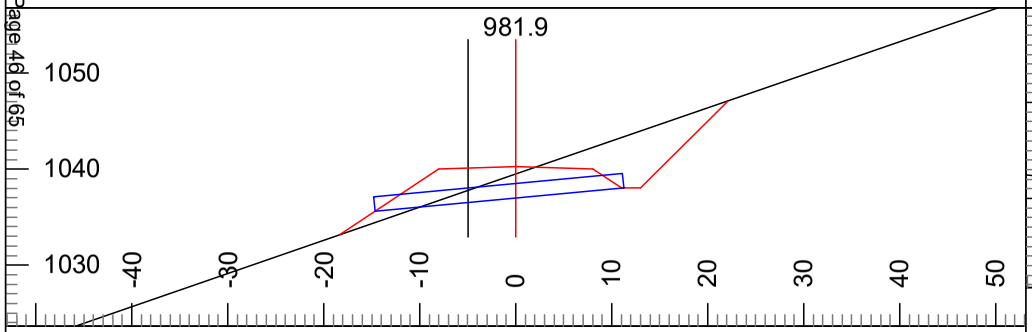
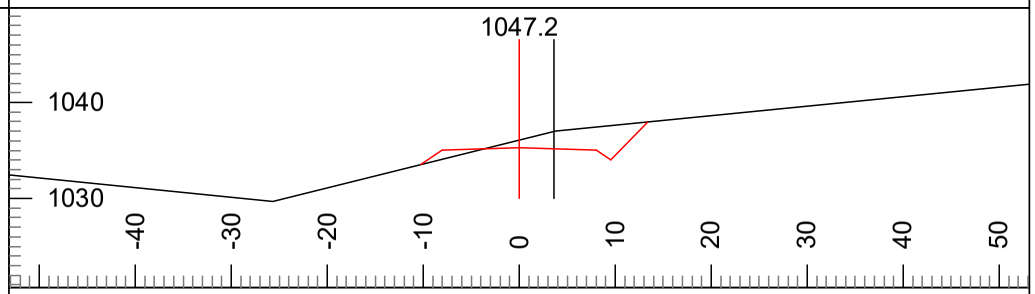


P-Stn : 882.5 L-Stn : 880.4 V.Offset: -1.5 H. Offset: 0.0 Cut Dp: 1.5 Index: 212



P-Stn : 983.2 L-Stn : 981.9 V.Offset: 2.5 H. Offset: 4.8 Cut Dp: -0.8 Index: 213



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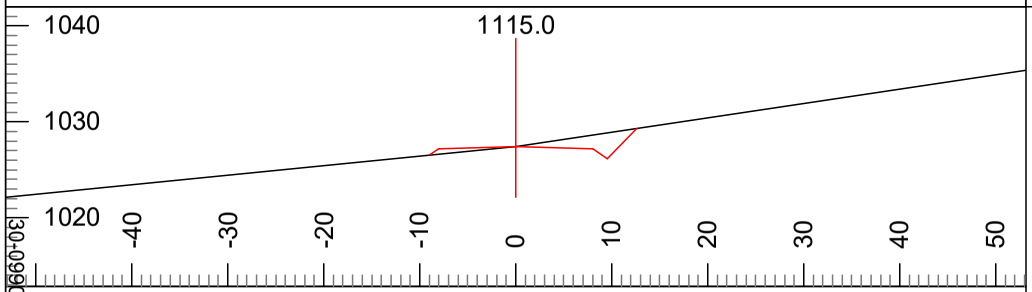
L-Stn : 1047.2 H. Offset: -3.7 Index: 214



P-Stn : 1116.6 V.Offset: 0.0 Cut Dp: 0.0
L-Stn : 1115.0 H. Offset: 0.0 Index: 215

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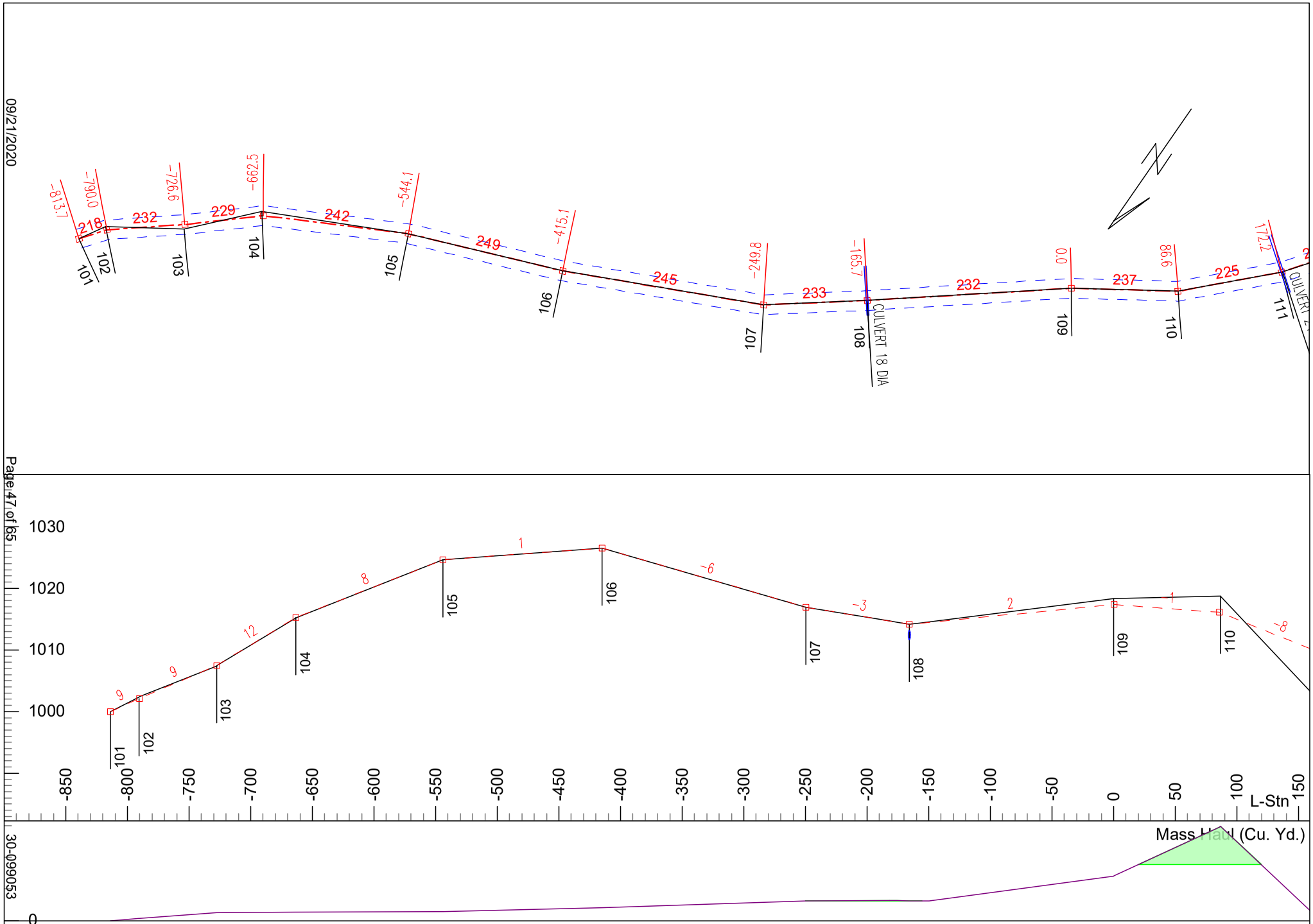
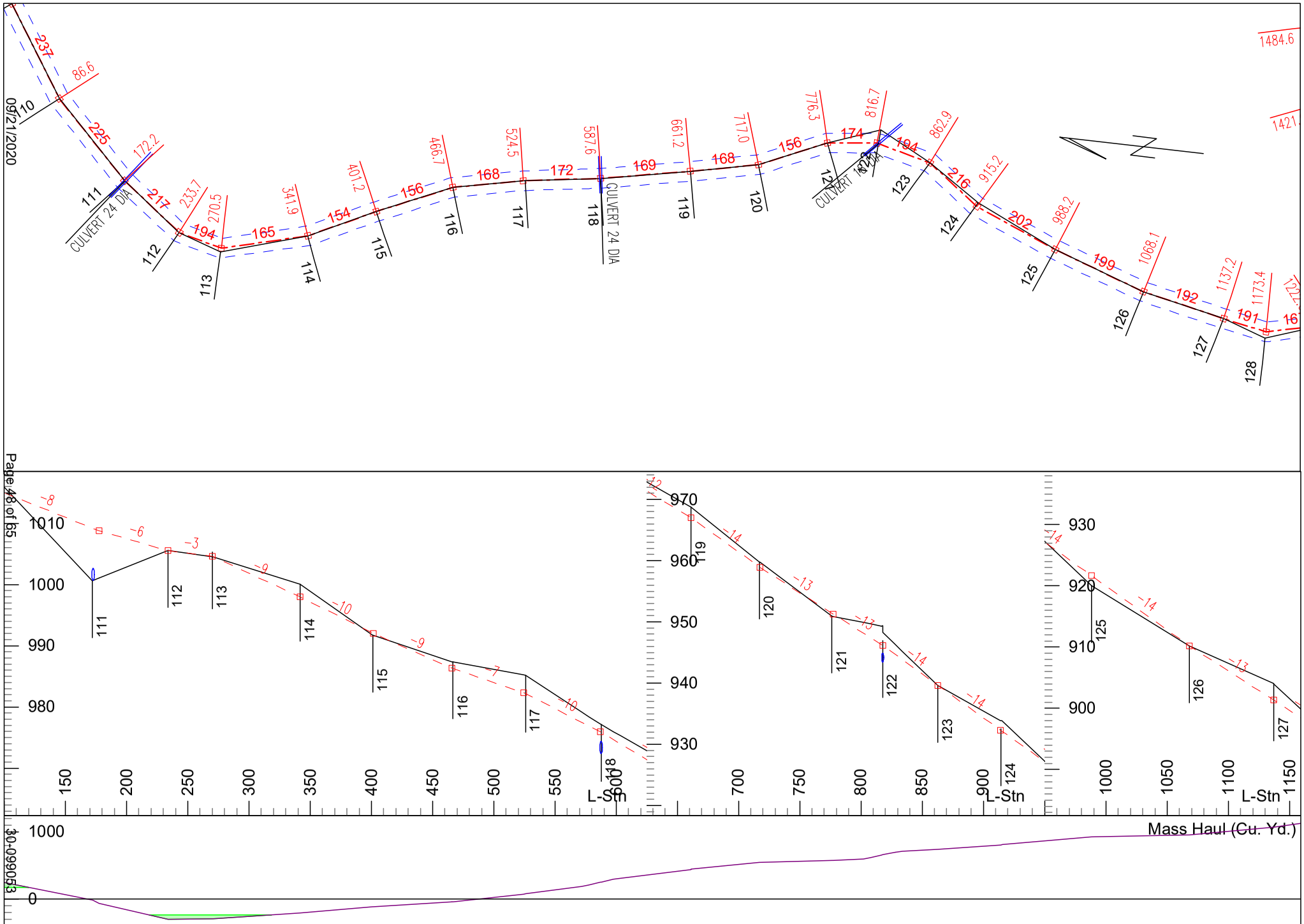
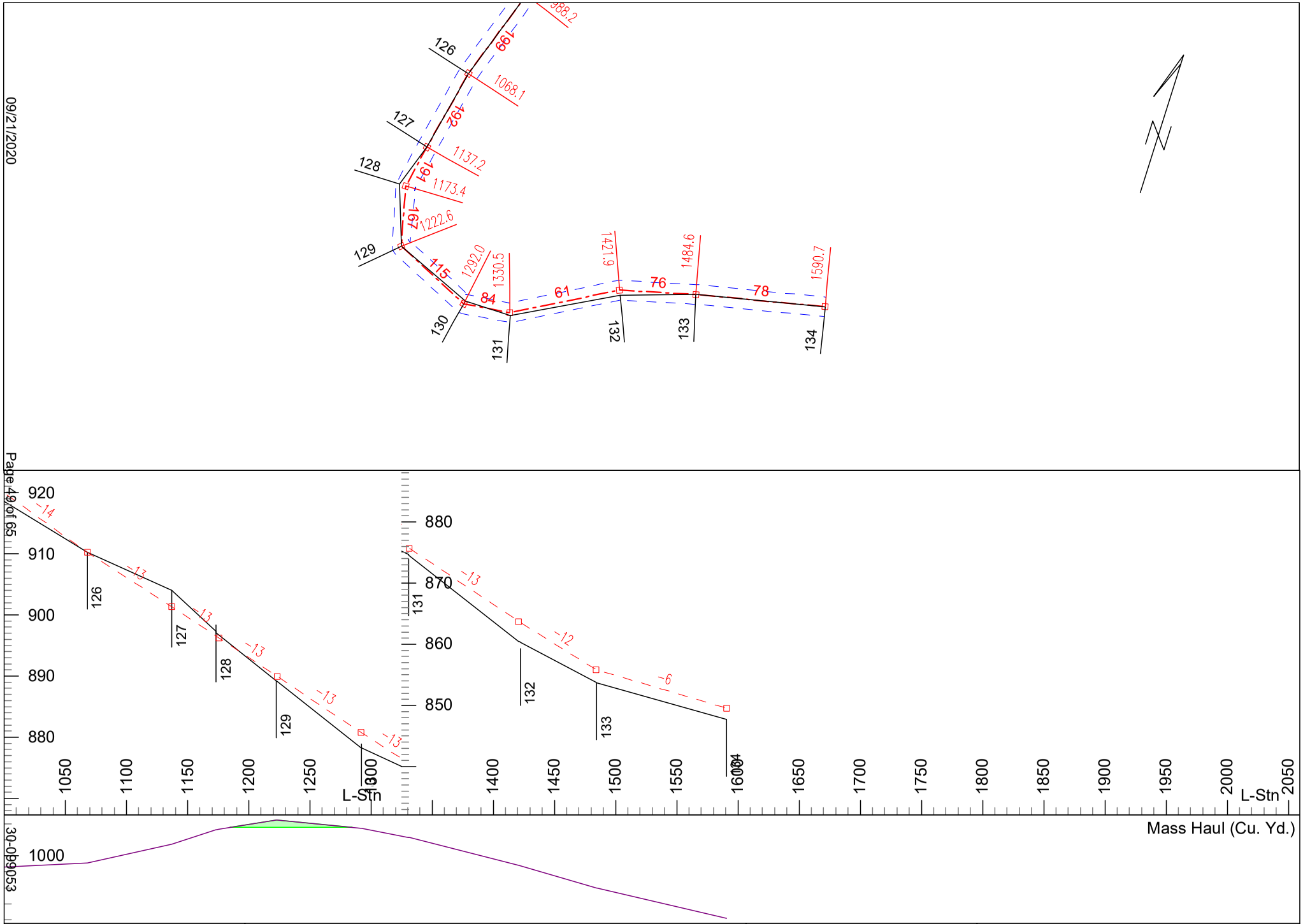


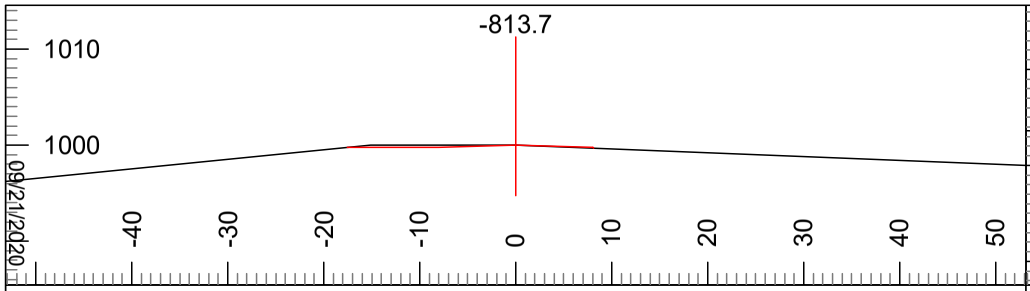
Smuggler Timber Sale B-8706A Road Contract#: 30-099053	Washington State Department of Natural Resources South Puget Sound Region	Plan Scale 1:1200 Profile Vert Scale 1:240 Profile Horz Scale 1:1200	Engineer: J. Gross 20/02/28	Page 1 of 8



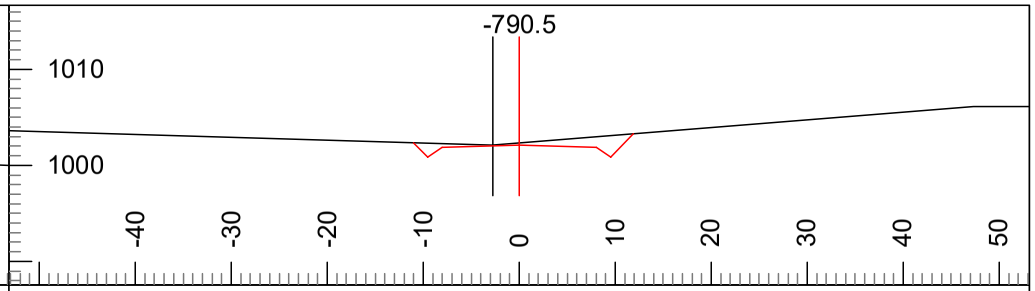
Smuggler Timber Sale B-8706A Road Contract#: 30-099053	Washington State Department of Natural Resources South Puget Sound Region	Plan Scale 1:1200 Profile Vert Scale 1:240 Profile Horz Scale 1:1200	Engineer: J. Gross 20/02/28 Page 2 of 8



Smuggler Timber Sale B-8706A Road Contract#: 30-099053	Washington State Department of Natural Resources South Puget Sound Region	Plan Scale 1:200 Profile Vert Scale 1:240 Profile Horz Scale 1:1200	Engineer: J. Gross 20/02/28 Page 3 of 8



P-Stn : 0.0 V.Offset: 0.0 Cut Dp: 0.0
L-Stn : -813.7 H. Offset: 0.0 Index: 101



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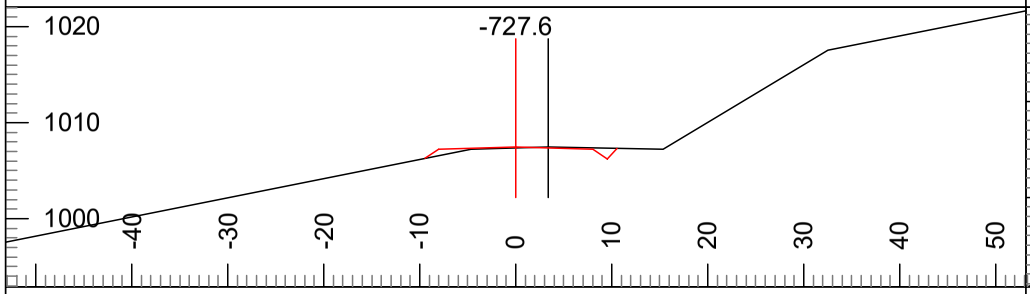
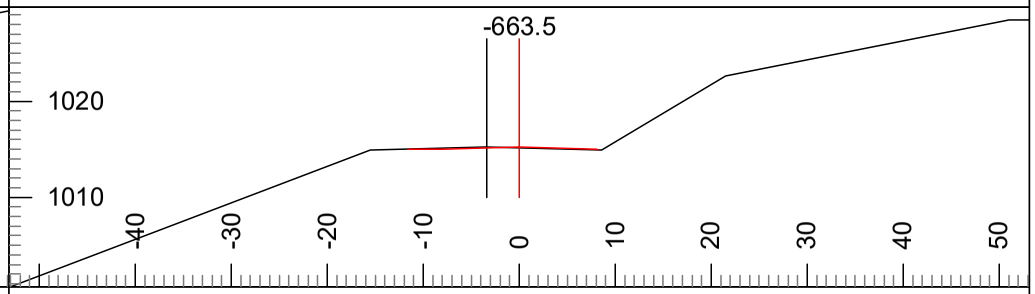
L-Stn : -790.5 H. Offset: 2.8 Index: 102



P-Stn : 87.3 V.Offset: 0.0 Cut Dp: -0.1
L-Stn : -727.6 H. Offset: -3.4 Index: 103



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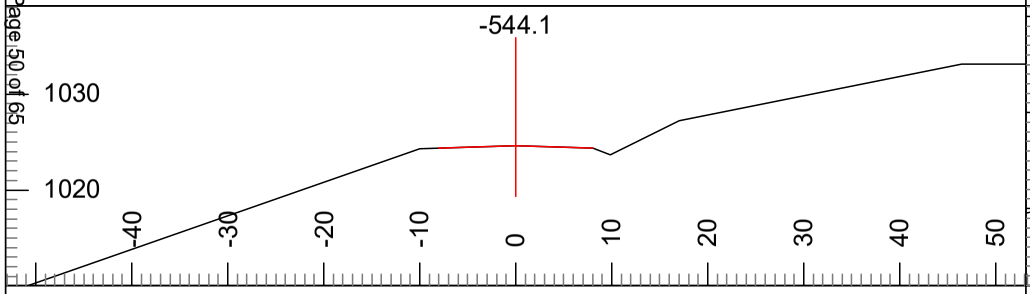
L-Stn : -663.5 H. Offset: 3.4 Index: 104



P-Stn : 272.1 V.Offset: 0.0 Cut Dp: 0.0
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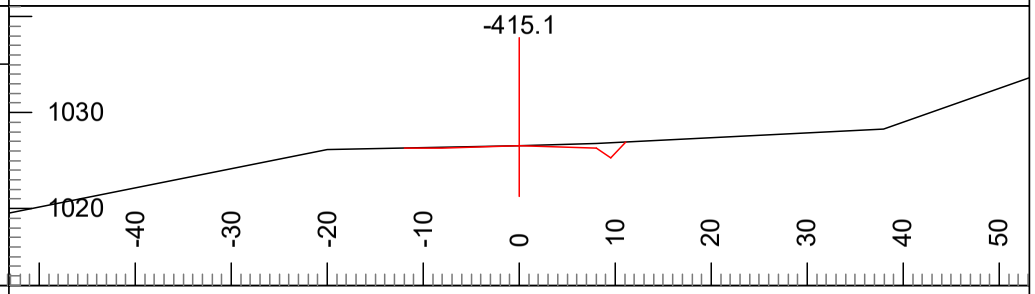

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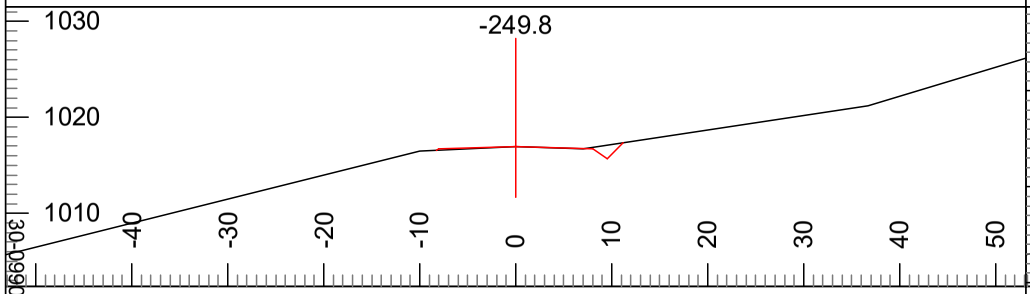
L-Stn : -415.1 H. Offset: 0.0 Index: 106



P-Stn : 566.4 V.Offset: 0.0 Cut Dp: 0.0
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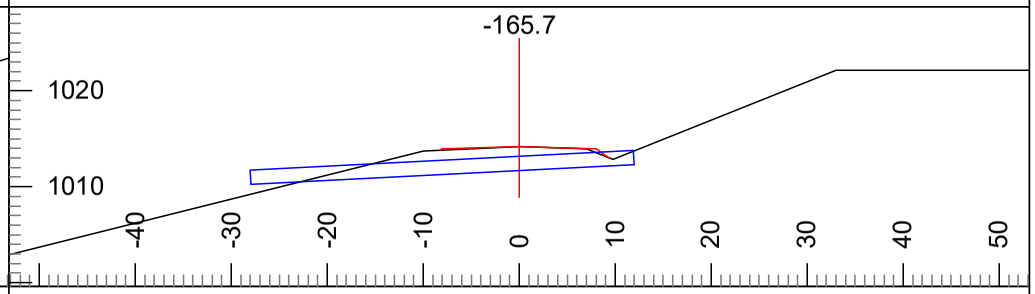

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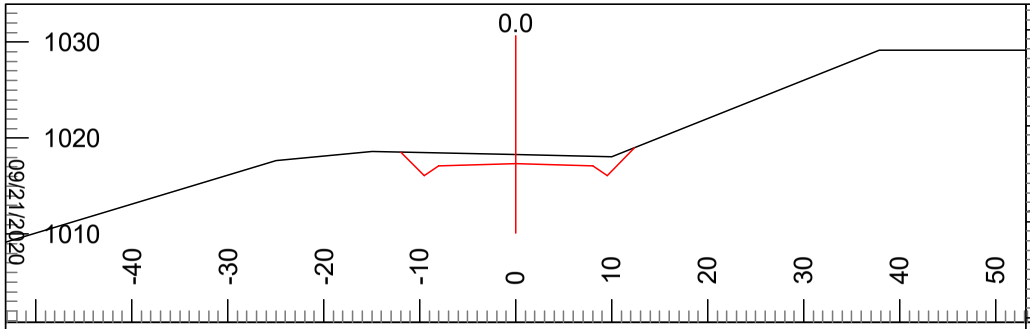
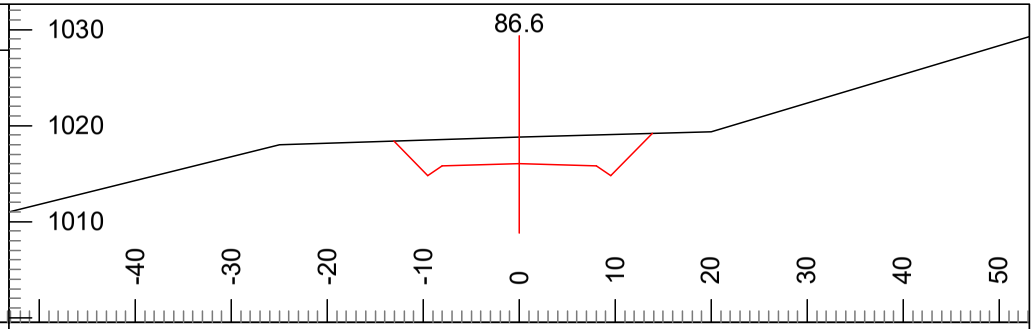
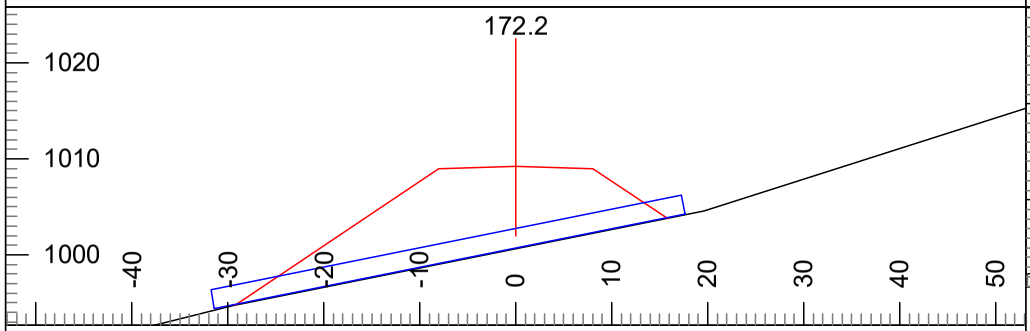


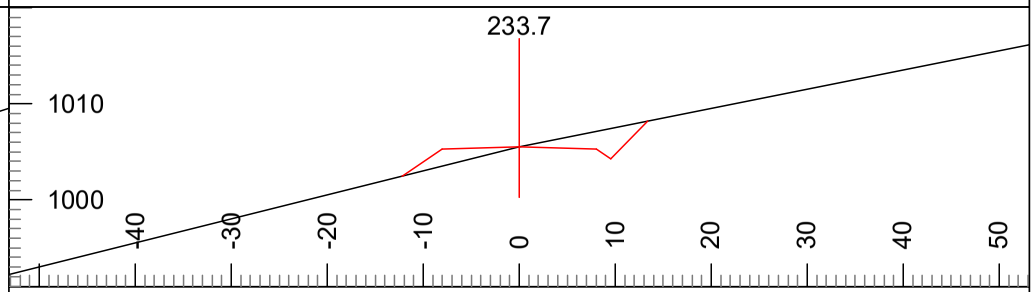
P-Stn : 816.2 L-Stn : 0.0 V.Offset: -1.0 H. Offset: 0.0 Cut Dp: 1.0 Index: 109



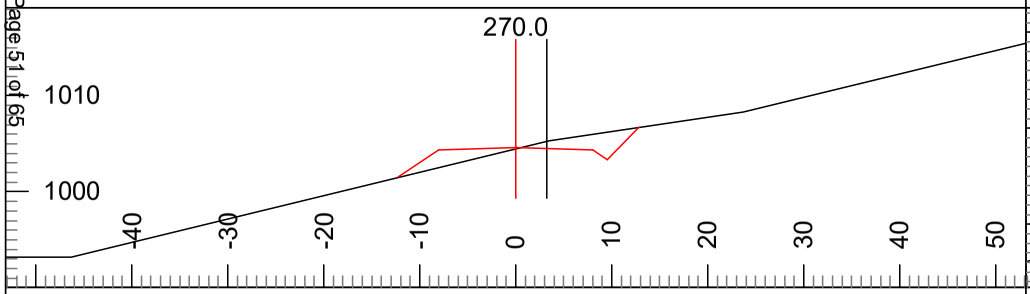
P-Stn : 902.8 L-Stn : 86.6 V.Offset: -2.7 H. Offset: 0.0 Cut Dp: 2.7 Index: 110



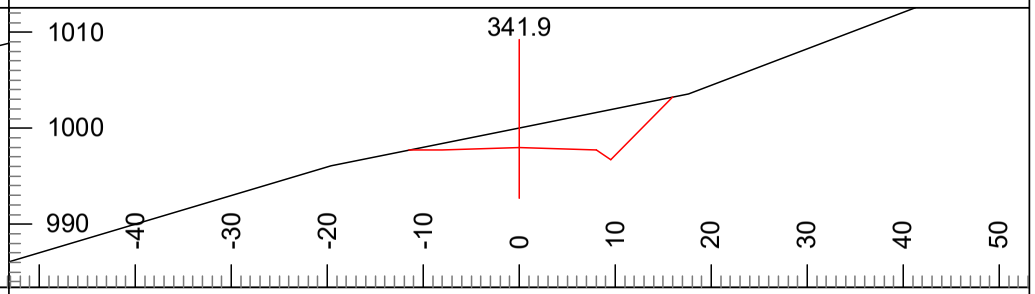
P-Stn : 988.4 L-Stn : 172.2 V.Offset: 8.6 H. Offset: 0.0 Cut Dp: -8.6 Index: 111



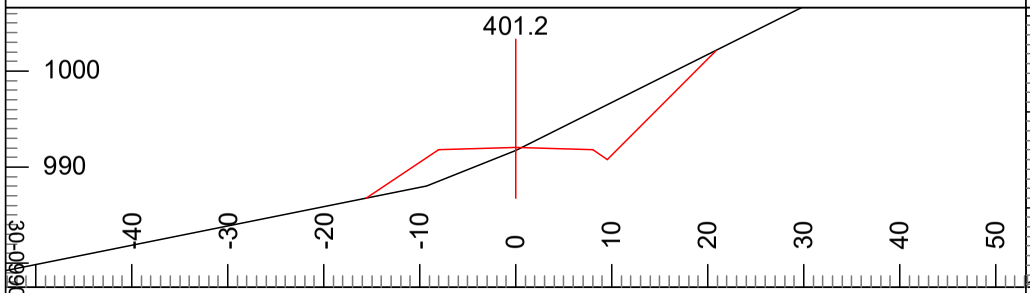
P-Stn : 1049.9 V.Offset: 0.0 Cut Dp: 0.0
L-Stn : 233.7 H. Offset: 0.0 Index: 112



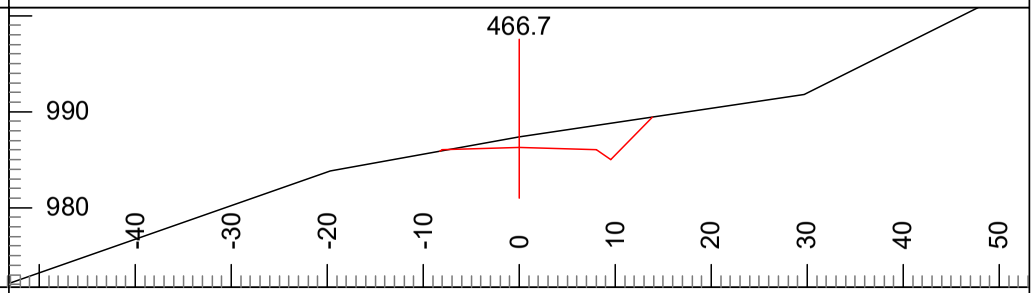
P-Stn : 1087.1 V.Offset: -0.7 Cut Dp: -0.1
L-Stn : 270.0 H. Offset: -3.4 Index: 113



P-Stn : 1159.9 V.Offset: -2.1 Cut Dp: 2.1
L-Stn : 341.9 H. Offset: 0.0 Index: 114



P-Stn : 1219.2 V.Offset: 0.3 Cut Dp: -0.3
L-Stn : 401.2 H. Offset: 0.0 Index: 115



P-Stn : 1284.6 V.Offset: -1.1 Cut Dp: 1.1
L-Stn : 466.7 H. Offset: 0.0 Index: 116

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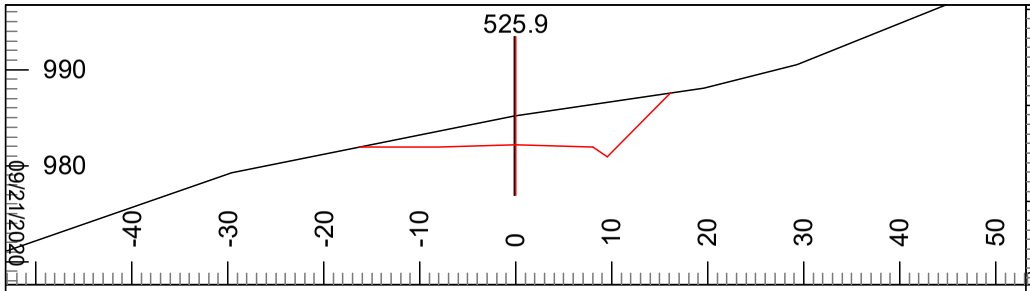

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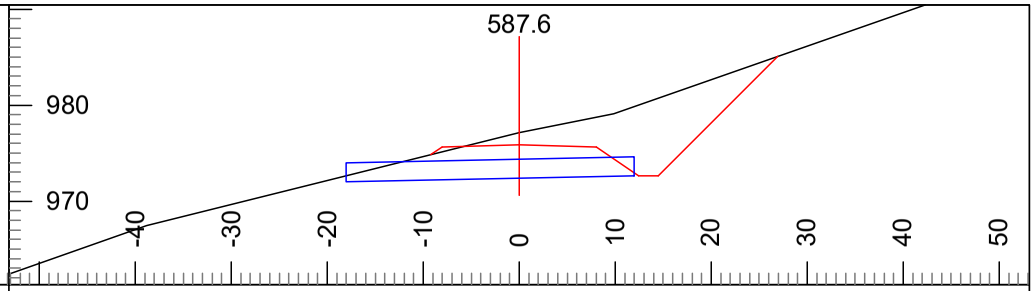
L-Stn : 525.9 H. Offset: 0.2 Index: 117



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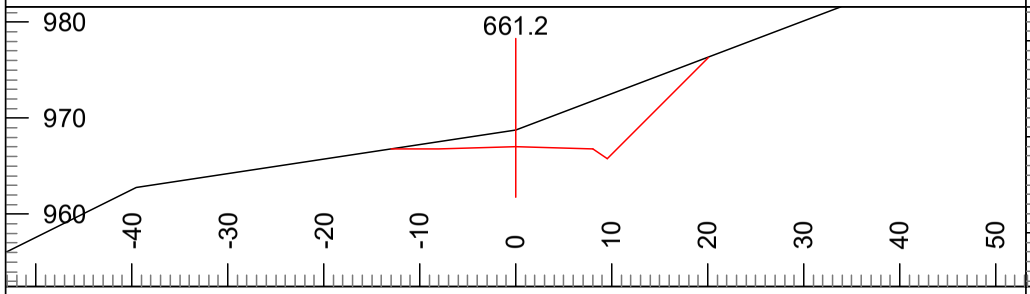

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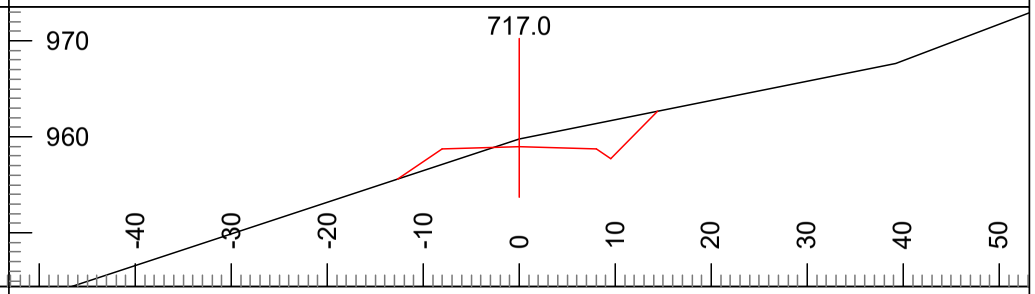

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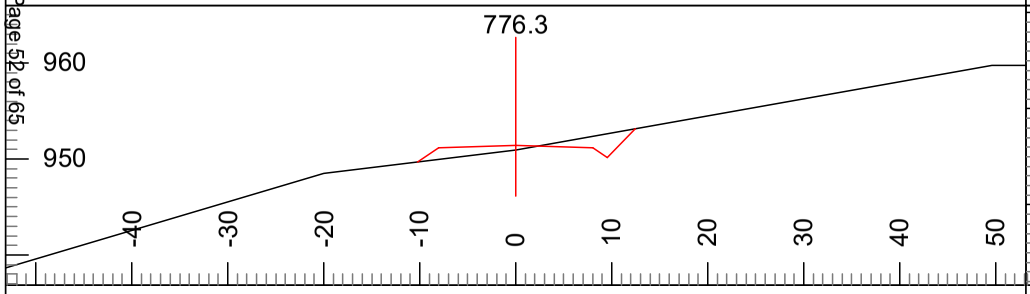

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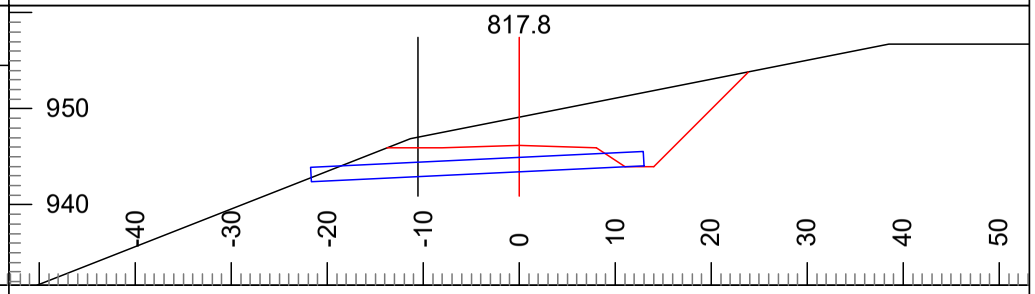

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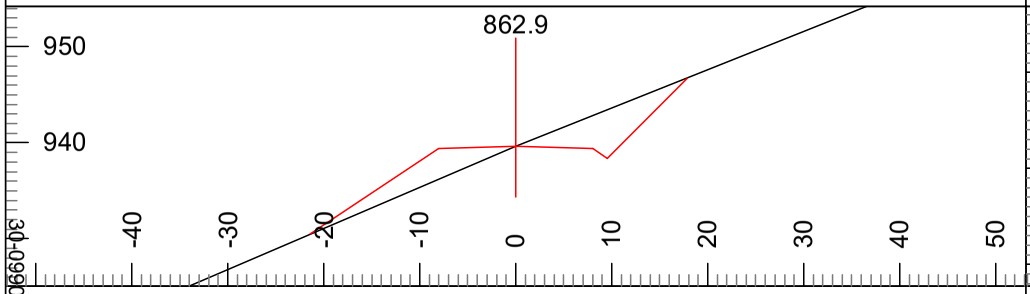

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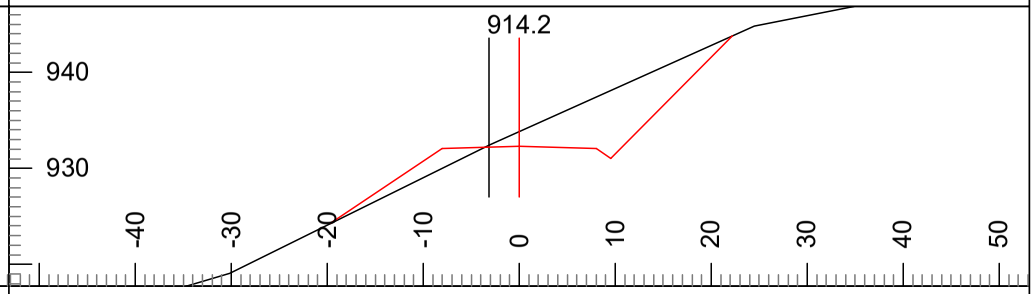

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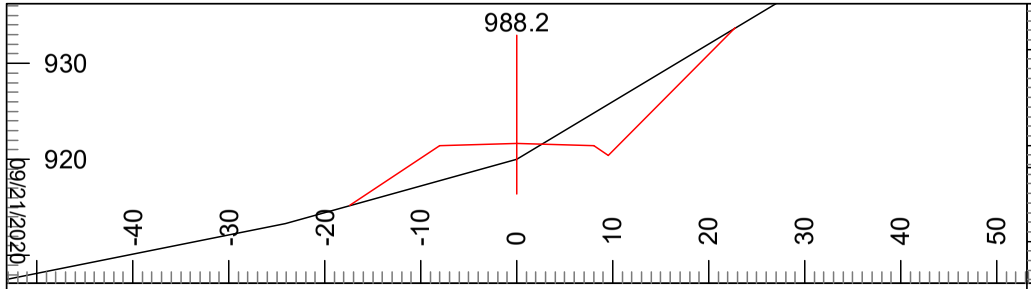
Smuggler Timber Sale B-8706A Road Contract#: 30-099053	Washington State Department of Natural Resources South Puget Sound Region	Section Scale 1:240	Engineer: J. Gross 20/02/28 Page 6 of 8



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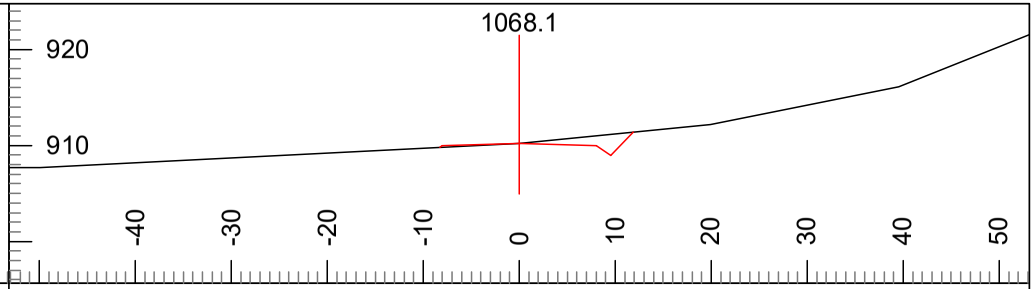

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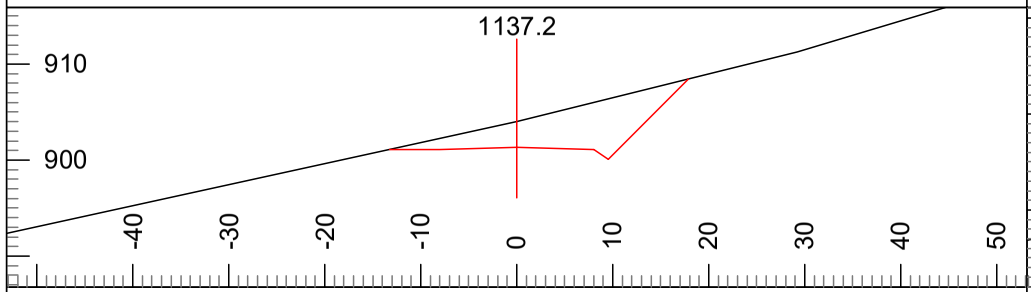

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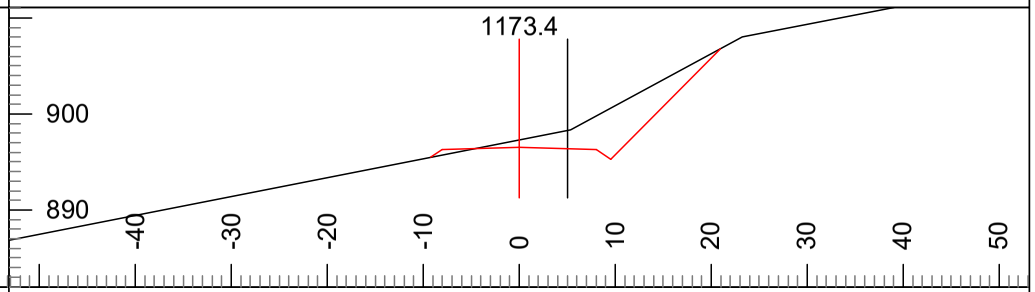

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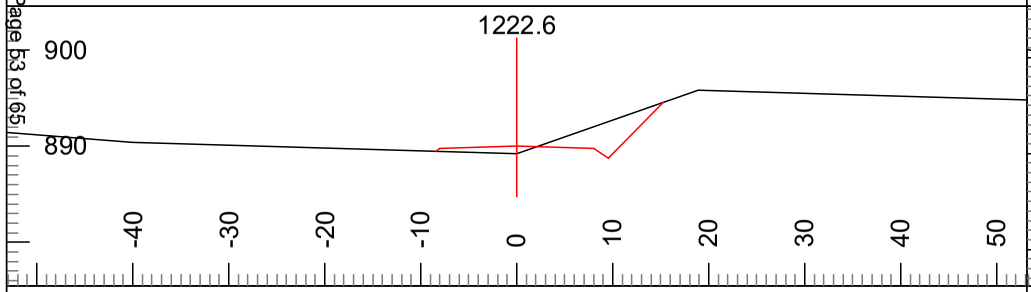

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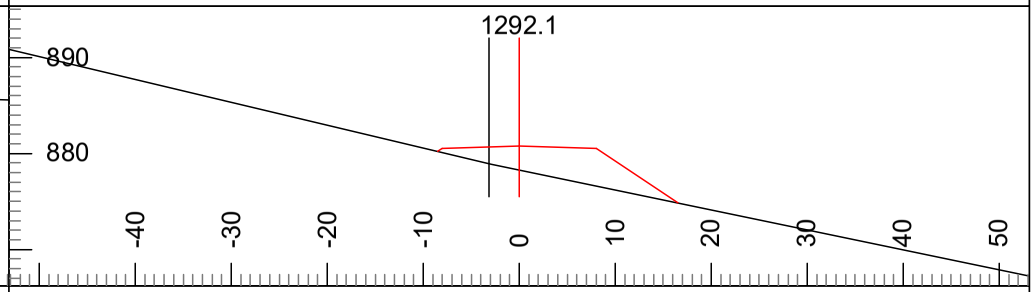

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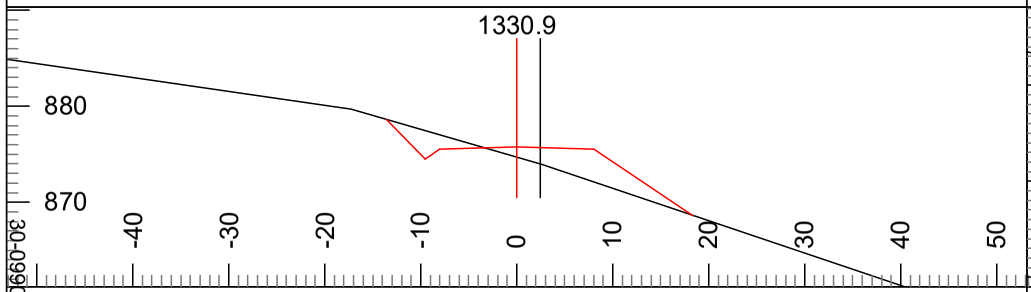

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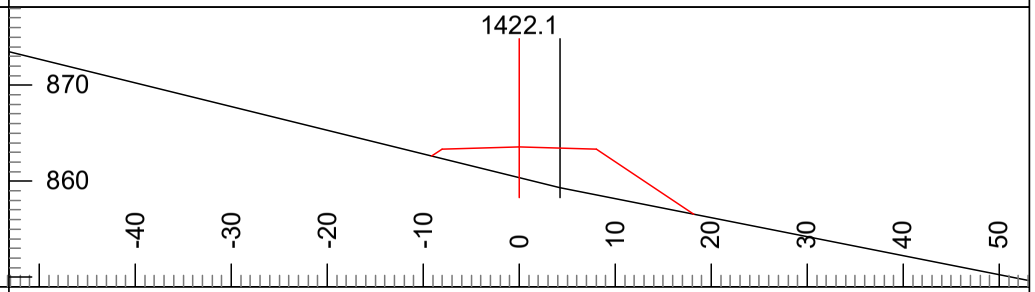

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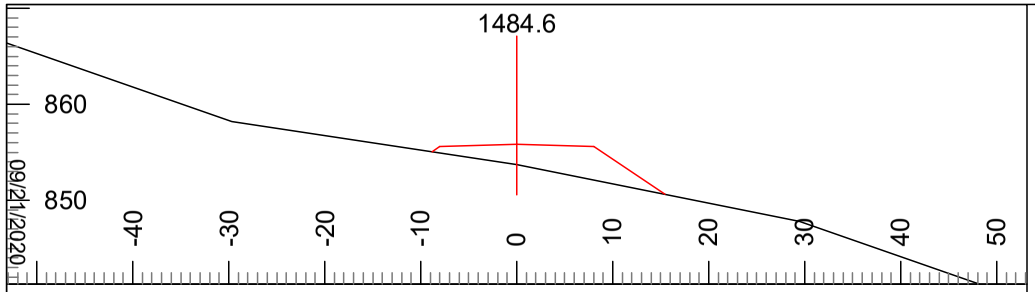

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L-Stn :	1484.6	H. Offset:	0.0	Index:	133

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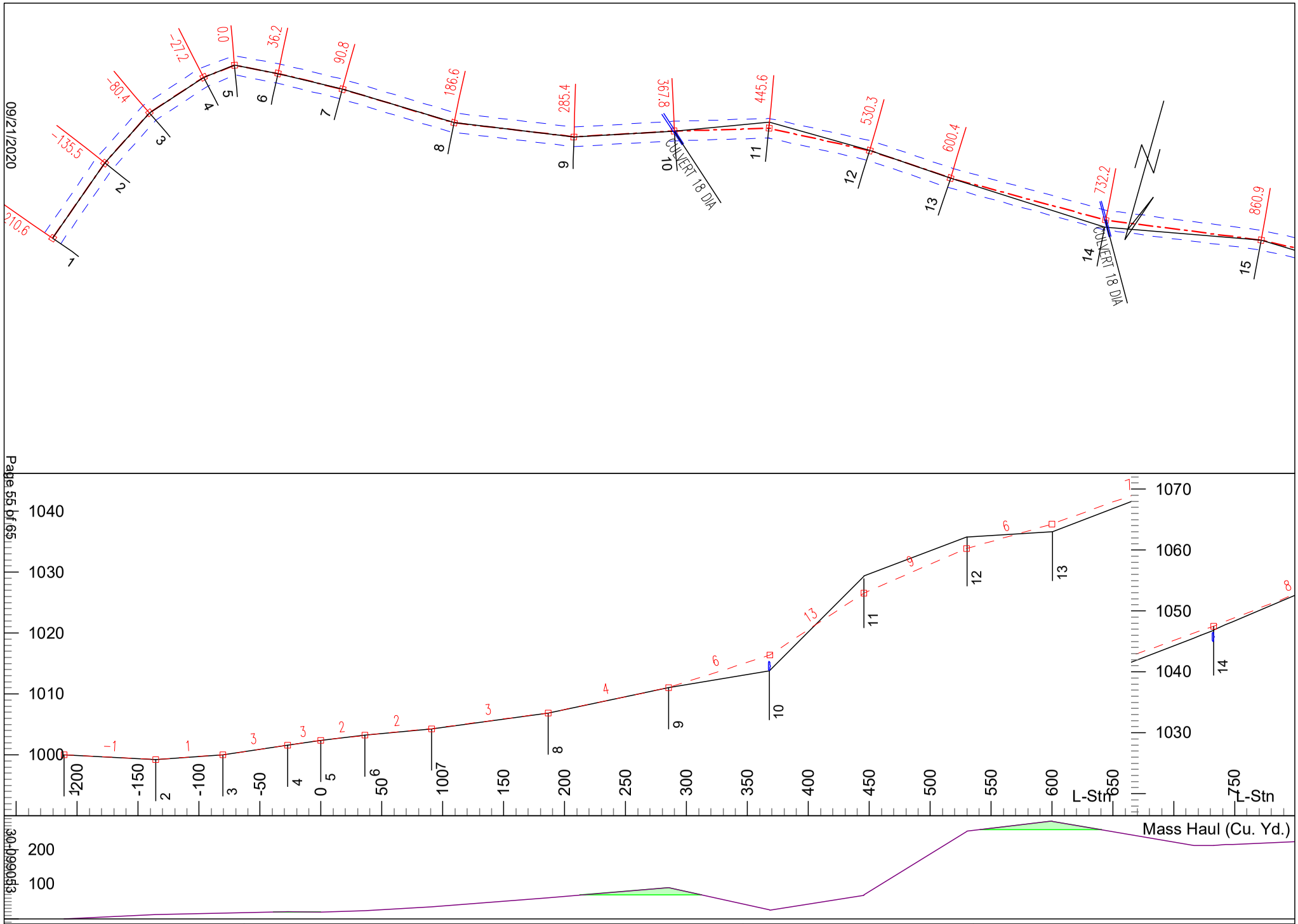
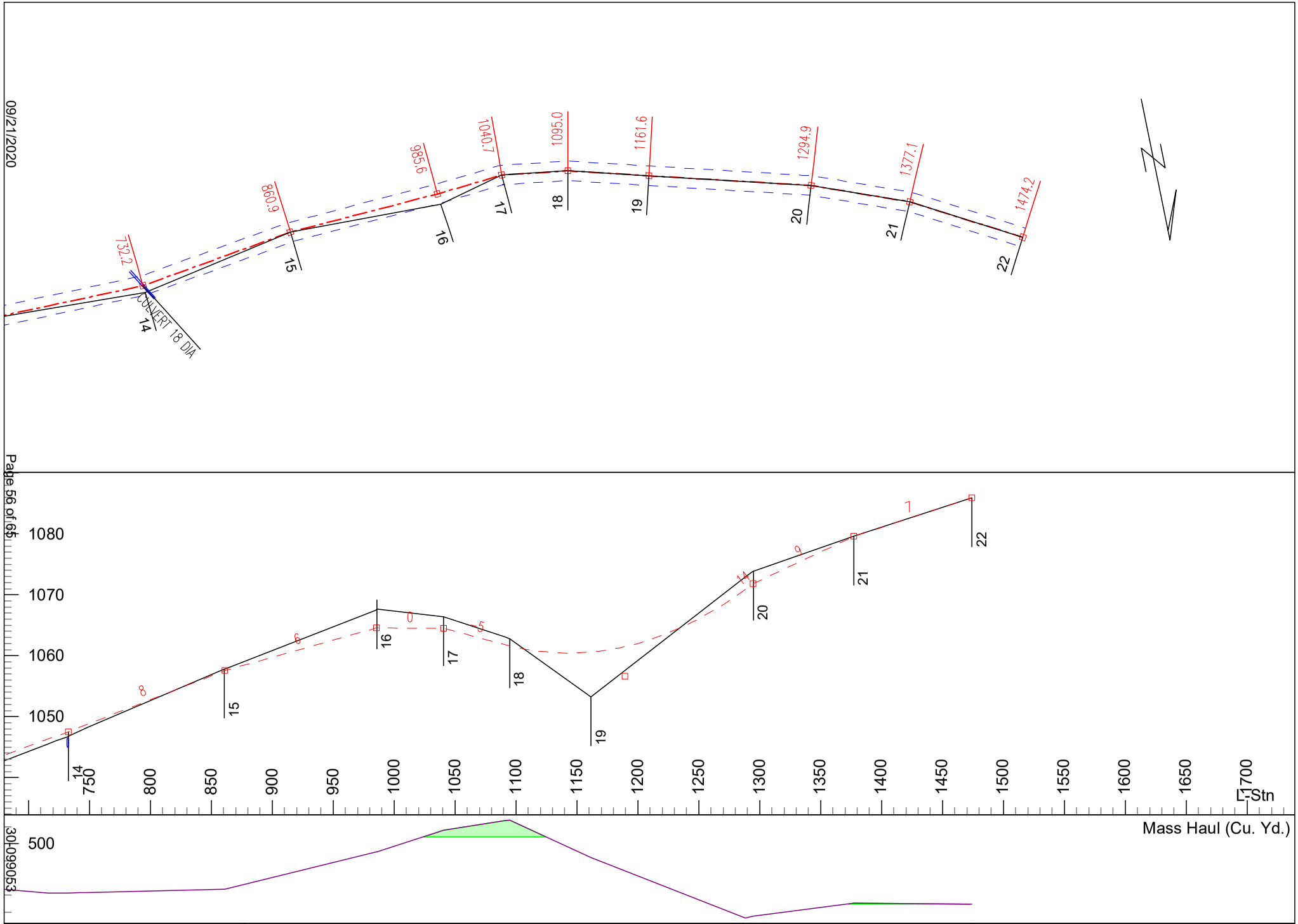
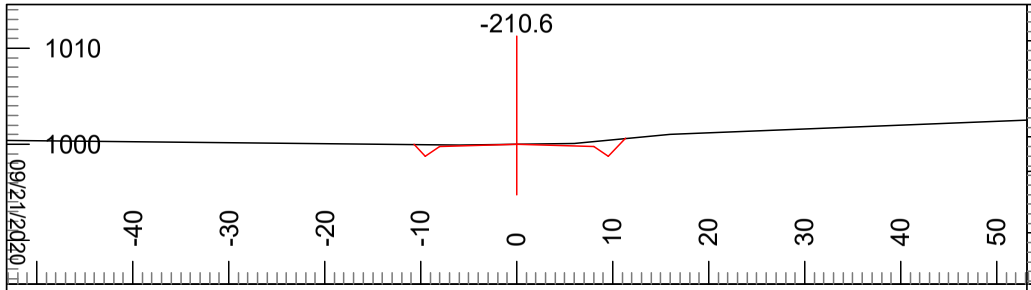


Smuggler Timber Sale M01 Road Contract#: 30-099053	Washington State Department of Natural Resources South Puget Sound Region	Plan Scale 1:1200 Profile Vert Scale 1:240 Profile Horz Scale 1:1200	Engineer: J. Gross 20/02/28 Page 1 of 5



Smuggler Timber Sale M01 Road Contract#: 30-099053	Washington State Department of Natural Resources South Puget Sound Region	Plan Scale 1:1200 Profile Vert Scale 1:240 Profile Horz Scale 1:1200	Engineer: J. Gross 20/02/28 Page 2 of 5



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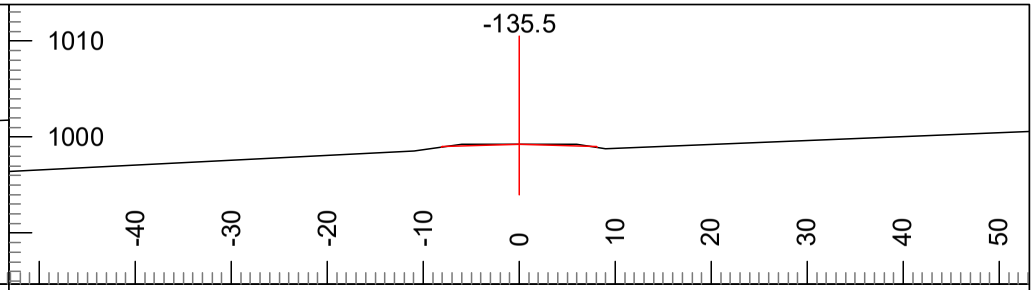

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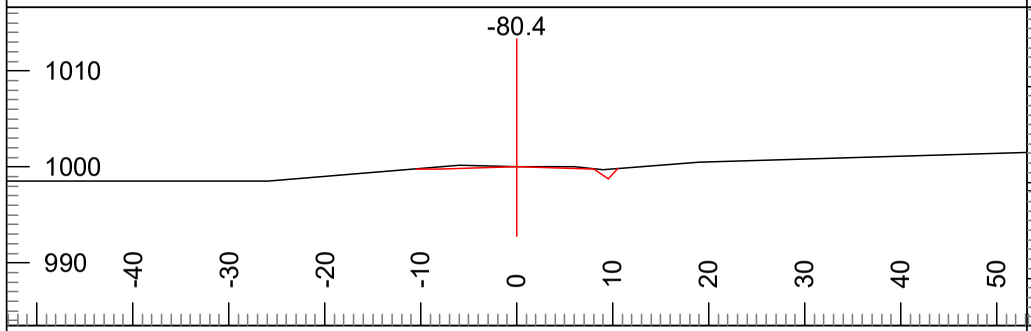

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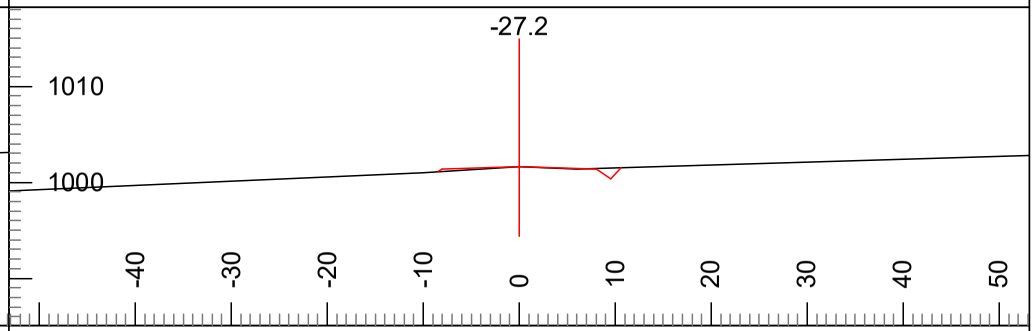

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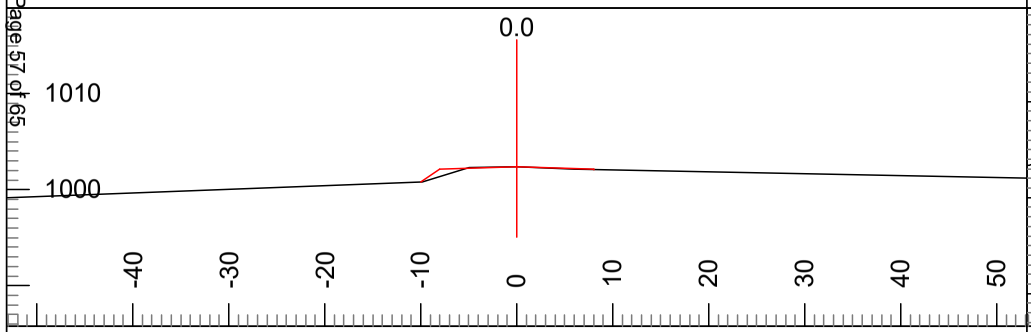

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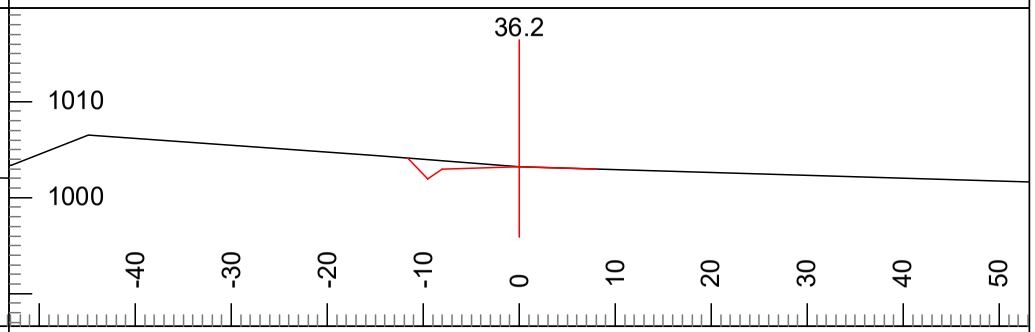

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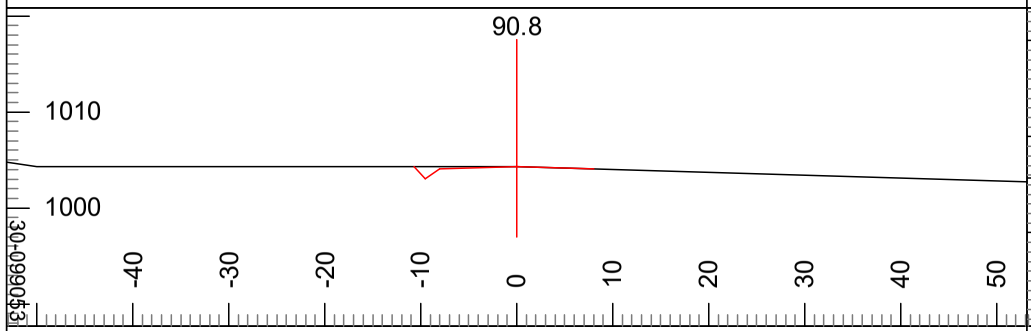

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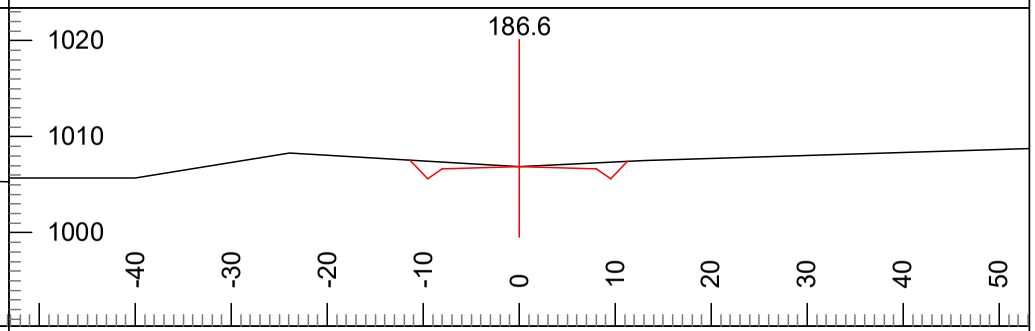
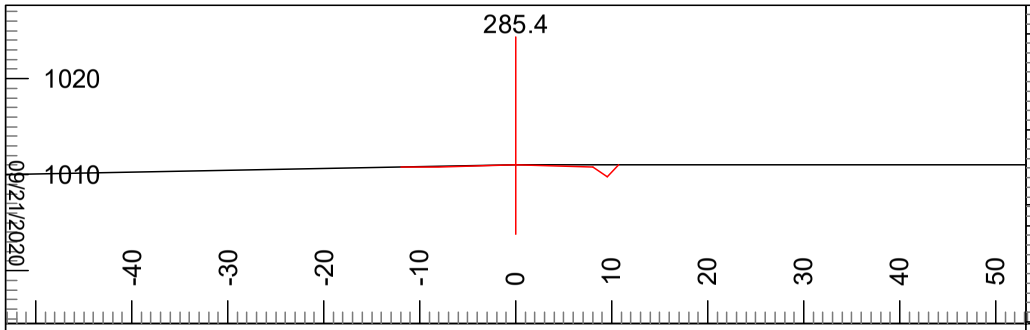


P-Stn : 397.2 L-Stn : 186.6 V.Offset: 0.0 H. Offset: 0.0 Cut Dp: 0.0 Index: 8

Smuggler Timber Sale M01 Road Contract#: 30-099053	Washington State Department of Natural Resources South Puget Sound Region	Section Scale 1:240	Engineer: J. Gross 20/02/28 Page 3 of 5



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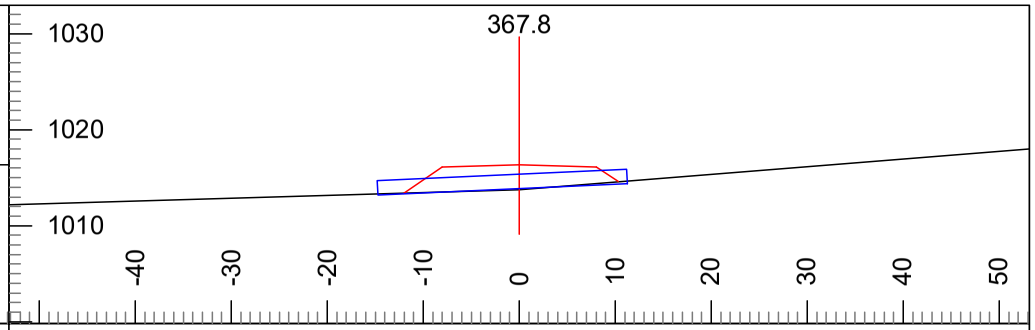

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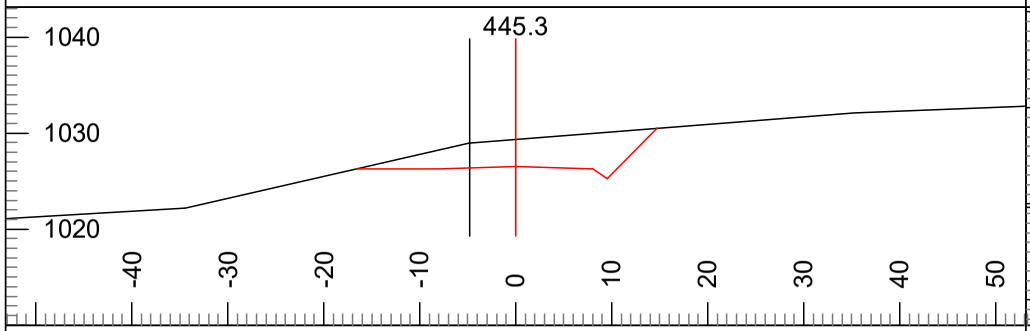

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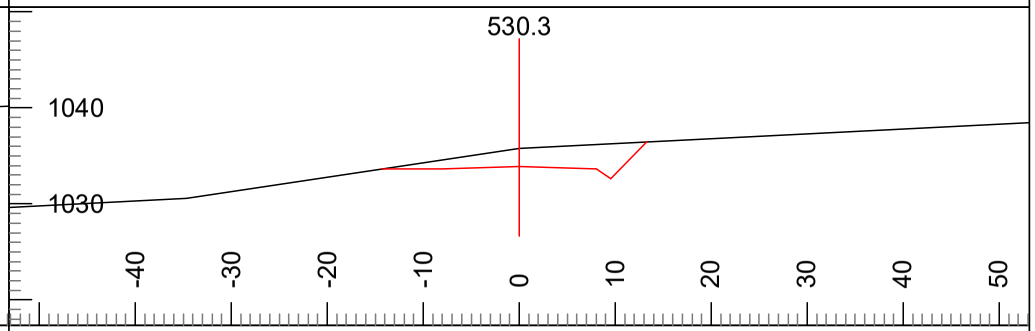

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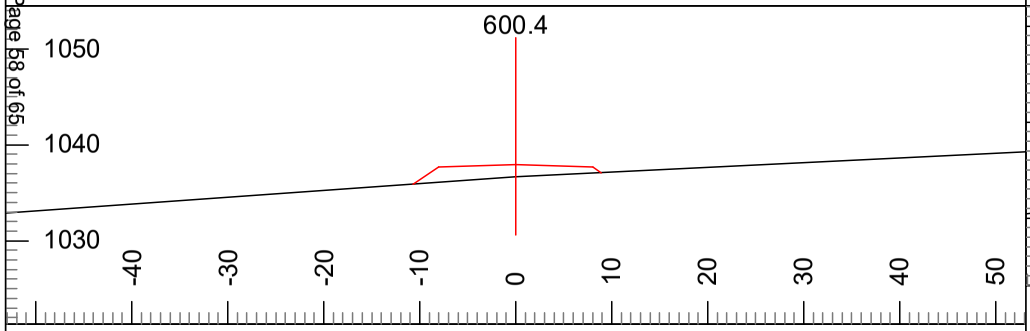

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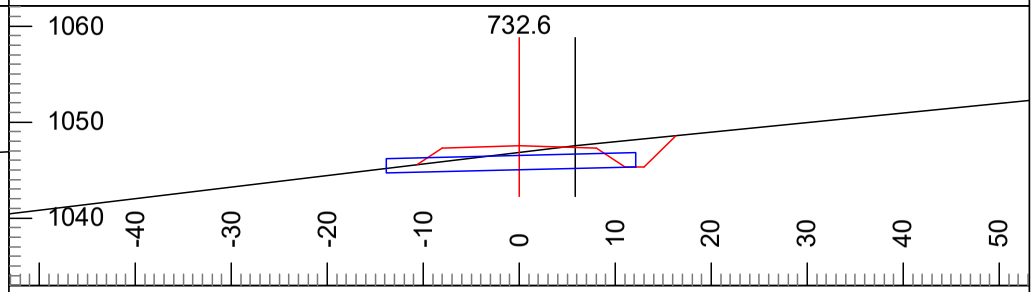

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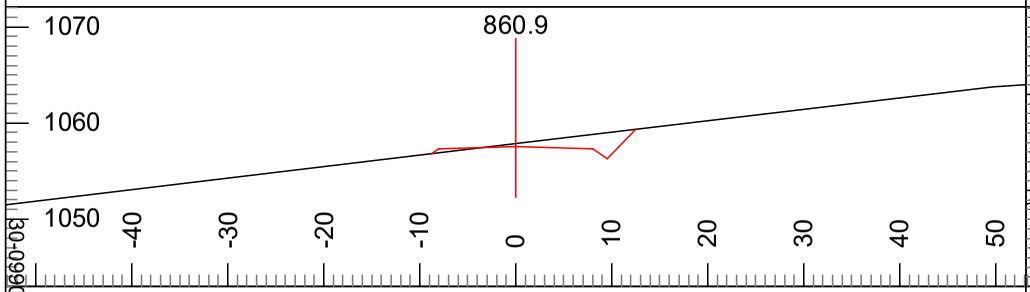

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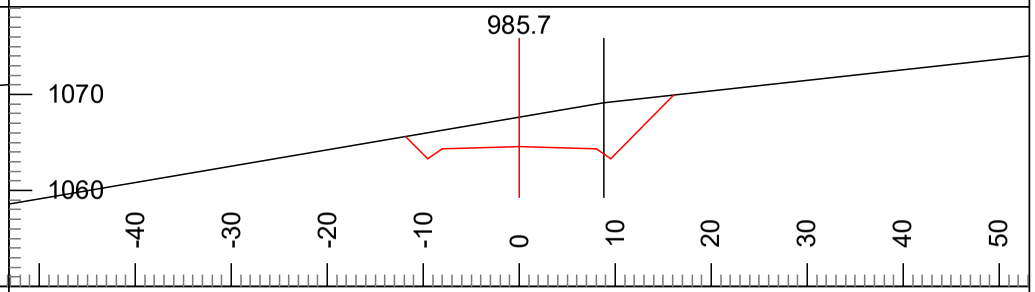

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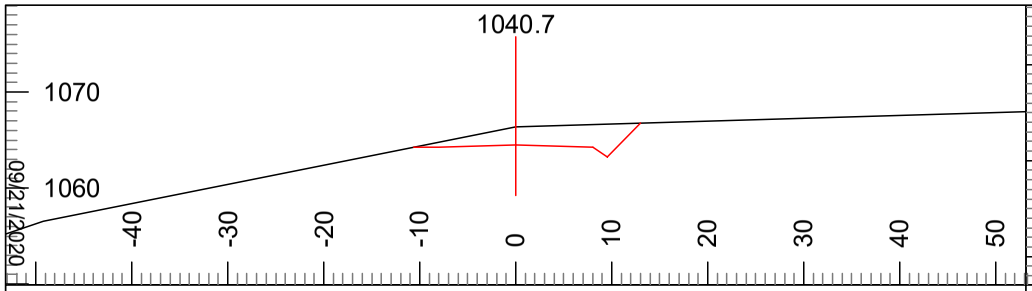

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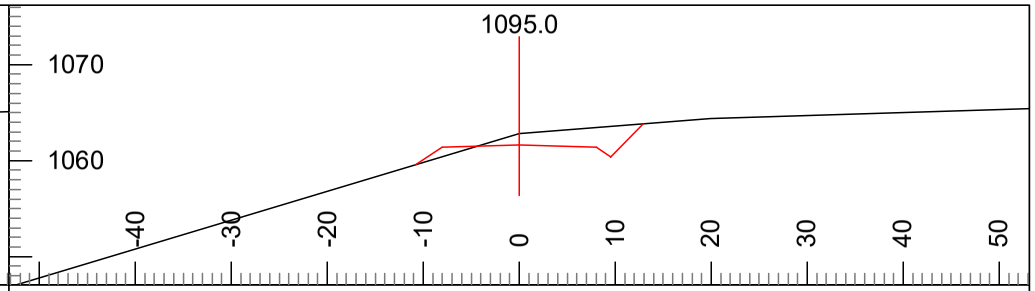

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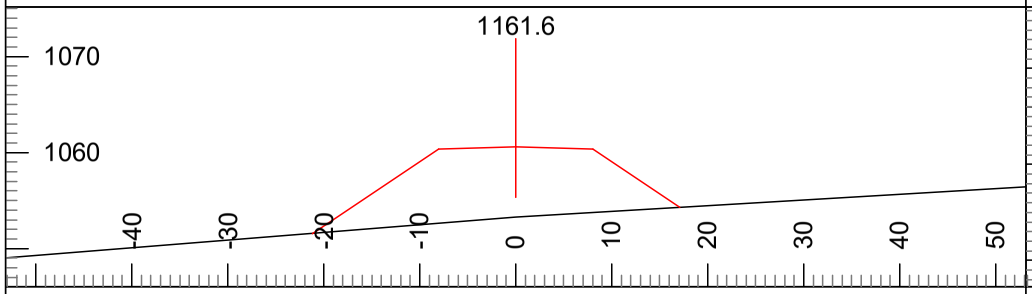

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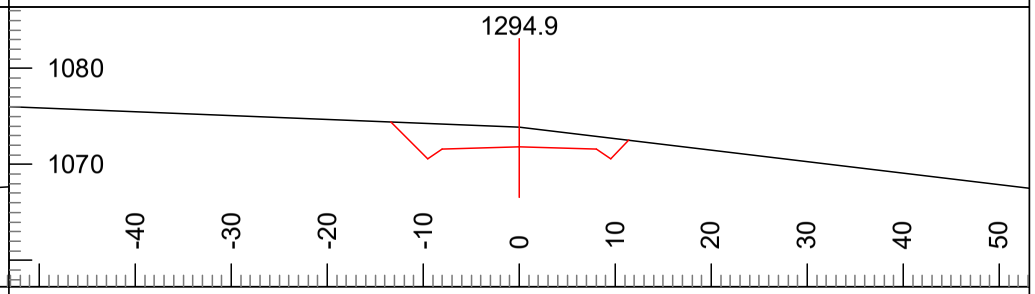

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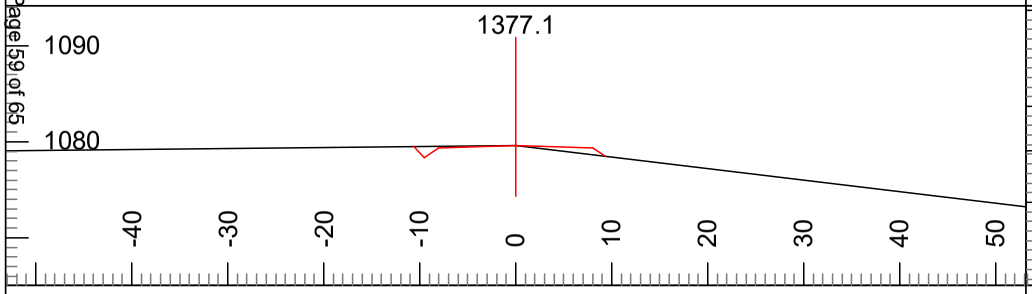

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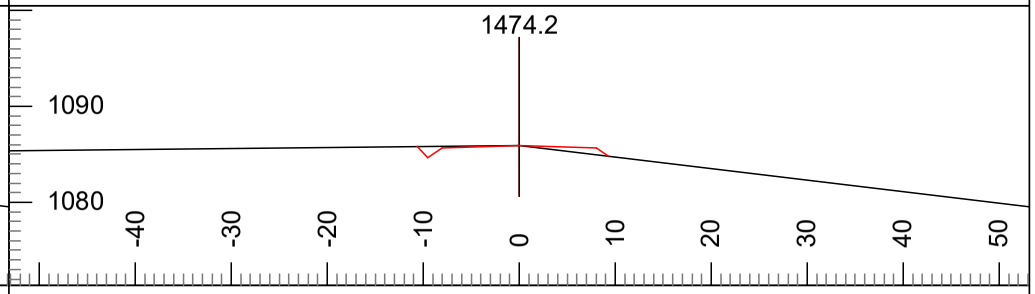

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L-Stn : 1474.2 H. Offset: 0.0 Index: 22

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STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
SOUTH PUGET SOUND REGION

PERRY CREEK QUARRY DEVELOPMENT PLAN
SE 1/4, SW 1/4, Section 15, Township 18 North, Range 03 West, W.M.

(Page 1 of 3)

1. Stockpiled rock may be used per the Smuggler Road Plan Specifications.

2. If needed, Development for ballast rock shall begin in area A as indicated on the Perry Creek Quarry Plan View below.

3. All vegetation including stumps shall be cleared a minimum of 35 feet beyond the top of all working faces. Trees shall be cleared to a minimum of ¾ of the height of the tallest tree adjacent to the pit. Surface shall be scalped of all overburden within 20 feet of working face at all times.

4. Overburden shall be end hauled or pushed to the designated waste area (as shown in the Plan View) and compacted. Minimal acceptable compaction is achieved by placing waste material in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts.

5. Root wads and organic debris larger than one cubic foot in volume shall be separated from overburden material and piled in the vegetative waste area as shown in the Plan View.

6. Quarry faces shall not exceed 30 feet in height and shall be sloped no steeper than 1/4:1.

7. Working bench width shall be a minimum of 30 feet.

8. The quarry floor shall have continuity of slope be left in a smooth and neat condition, providing drainage to the southwest at a minimum of 2 percent. All knobs, bumps, or extrusions shall be removed to the designated floor level by excavation or drill and shoot techniques. No sediment shall enter live water.

9. Oversize material remaining in the rock source at the conclusion of use shall not exceed 10 percent of the total volume mined during that operation. Oversize material is defined as rock fragments larger than two feet in any direction. At the conclusion of operations, oversize material shall be placed as directed by the Contract Administrator.

10. All operations shall be carried out in compliance with all regulations of:
    a. Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration.
    b. Safety Standards – Metal and Nonmetallic Mines, Quarries, Pits, and Crushing Operations" (296-61 WAC), Washington Department of Labor and Industries.
    c. "Safety Standards for Construction Work" (296-155 WAC), Washington Department of Labor and Industries.

PERRY CREEK QUARRY DEVELOPMENT PLAN

SE 1/4, SW 1/4, Section 15, Township 18 North, Range 03 West, W.M.

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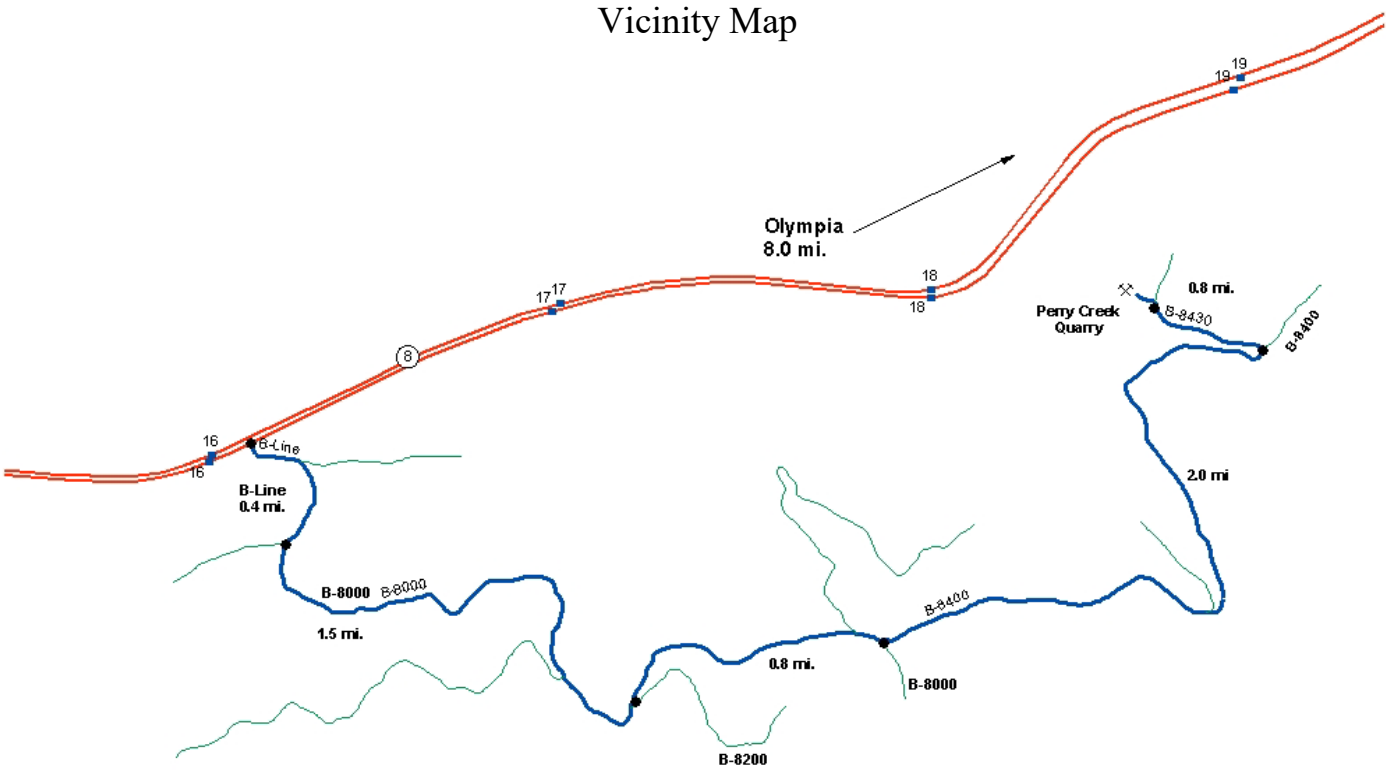
11. The Operator shall submit an informational drilling and shooting plan to the Contract Administrator 5 working days prior to any drilling (Form #M-126PAC).

12. At the completion of rock source operations, Purchaser shall ask Contract Administrator for written approval of final rock source condition and compliance with the terms of this plan.

13. At the end of operations, quarry faces and walls shall be scaled and cleared of loose and overhanging material, benches shall have safety berms constructed or access blocked to highway vehicles. The site shall be cleared of all temporary structures, equipment and rubbish, and shall be left in a neat and presentable condition.

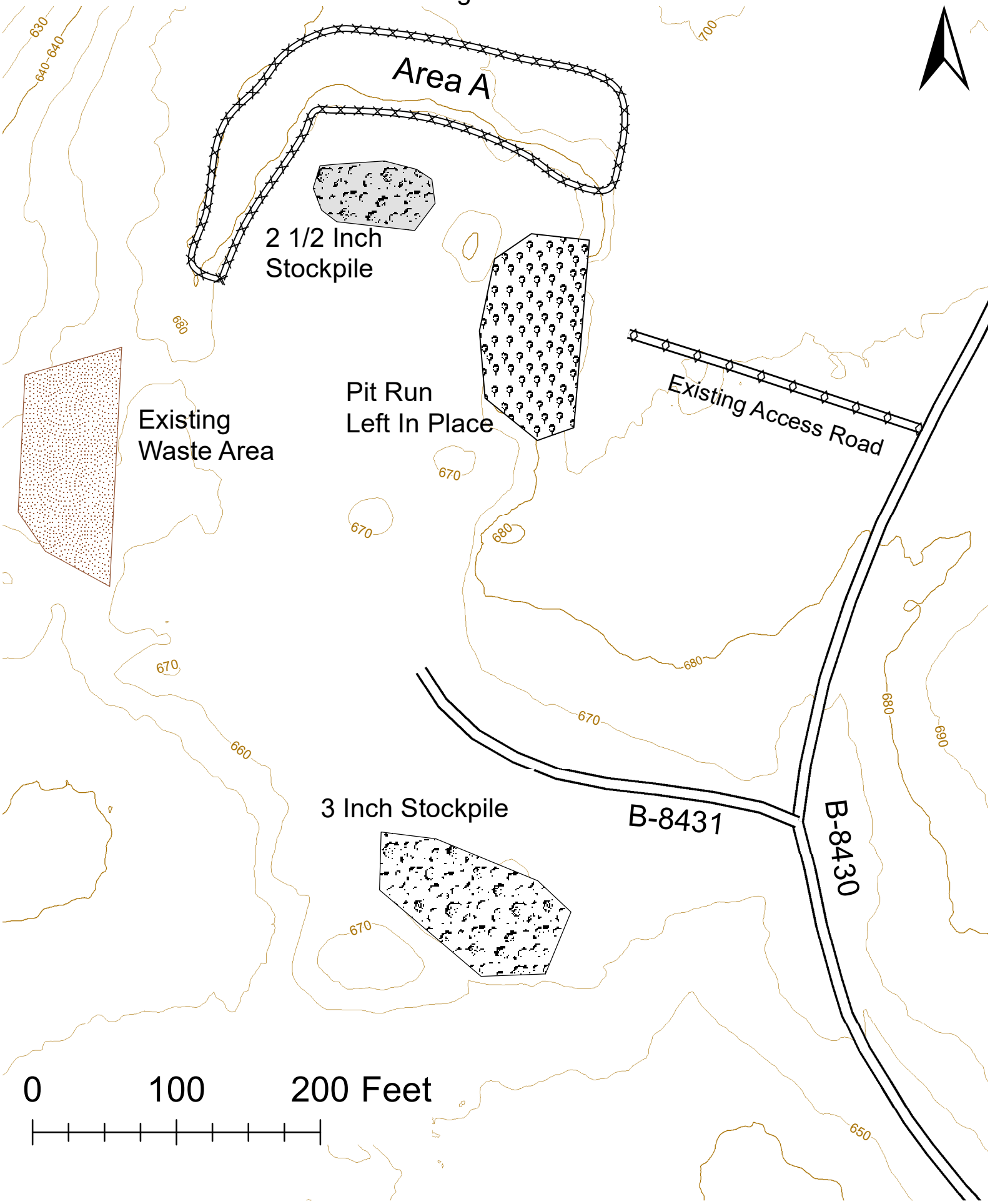
14. The quarry area shall be worked and left in a condition that future operations may proceed in an orderly manner.

Vicinity Map



Perry Creek Quarry Development Plan

Page 3 of 3



STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES SOUTH PUGET SOUND REGION

DELPHI QUARRY DEVELOPMENT PLAN
SW ¼ SW ¼ S35 T18N R03W W.M.

1. No explosives shall be used in the development of this quarry.

2. Rock for manufacture shall be obtained from Area A.

3. All vegetation including stumps shall be cleared a minimum of 10 feet beyond the top of all working faces. Trees shall be cleared to a minimum of ½ of the height of the tallest tree adjacent to the pit.

4. Overburden shall be end hauled or end pushed to the designated waste area and compacted. Minimal acceptable compaction is achieved by placing waste material in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts. Final placement of waste material shall be approved in writing by the Contract Administrator.

5. Root wads and organic debris larger than one cubic foot in volume shall be separated from overburden material and piled separately in waste area vicinity. Organics debris placement must be approved in writing by the Contract Administrator.

6. Quarry faces shall not exceed 35 feet in height and shall have a slope no steeper than ½ (H):1 (V).

7. The width of pit benches shall be a minimum of 1.5 times the maximum length of the largest machine used.

8. The surface of pit floors and benches shall be uniform and free-draining at a minimum 2% outslope gradient.

9. Oversize material remaining in the quarry shall not exceed 3% of the total volume mined in the source. Oversize material is defined as rock fragments larger than two feet in any direction. Oversize material shall be placed adjacent to the north face or as approved in writing by the Contract Administrator.

10. At the end of operations, pit faces and walls shall be scaled and cleared of loose and overhanging material, benches shall have safety berms constructed, and all access blocked to recreational vehicles.

11. At the end of operations, all stockpiles remaining shall be located as follows:

    a. Before placing aggregates upon the stockpile site, the site shall be cleared of vegetation, trees, stumps, brush, rocks or other debris and the ground leveled to a smooth, firm, uniform surface. The stockpile, when completed, shall be neat and regular in shape.
    b. Final placement of stockpiles shall be approved in writing by the Contract Administrator.

11. All operations shall be carried out in compliance with all regulations of:

    a. "Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations" (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration.
    b. "Safety Standards for Construction Work" (296-155 WAC) Washington Department of Labor and Industries.

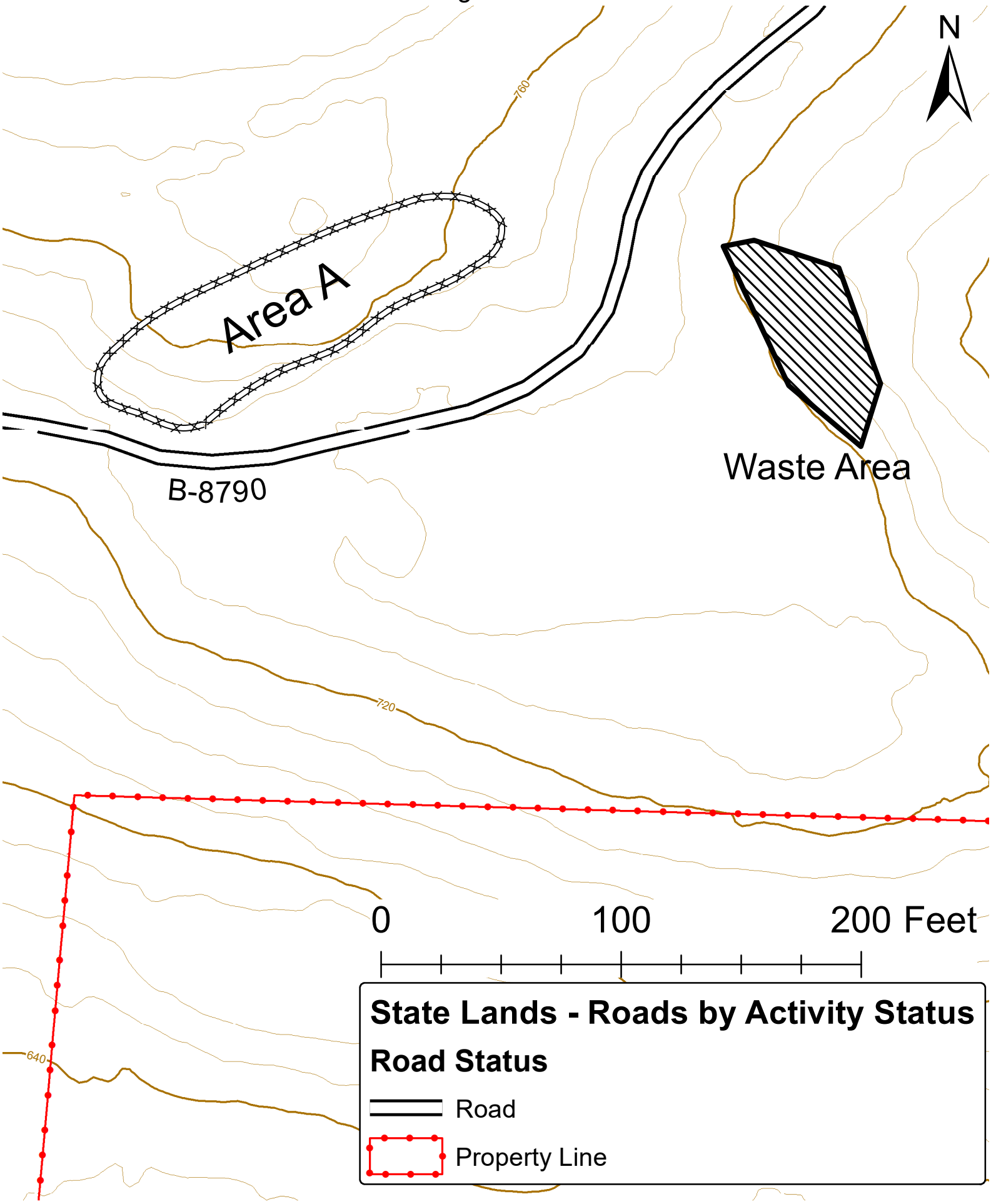
12. The Purchaser shall submit an informational drilling and shooting plan to the Contract Administrator prior to any drilling (Form #M-126PAC).

13. The quarry area shall be worked and left in a condition such that future operations may proceed in an orderly manner.

14. The quarry site shall be cleared of all temporary structures, equipment, and rubbish upon completion of rock source operations. The quarry site shall be left in a neat and presentable condition.

15. At the completion of rock source operations, Purchaser shall ask Contract Administrator for written approval of final rock source condition and compliance with the terms of this plan.

Delphi Quarry Development Plan



DEPARTMENT OF NATURAL RESOURCES - SOUTH PUGET SOUND REGION

FORM 9-87(Rev. 01-09)

Road Development Cost Estimate

(For internal DNR use only. Costs are estimates only & are not guaranteed by the State or part of the Road Plan.)

REGION: SPS UNIT: Delphi

SALE/PROJECT NAME: Smuggler Timber Sale CONTRACT NUMBER: 30-099053

LEGAL DESCRIPTION:

ROAD NUMBER:		B-8706A, B-8706 Ex., B-8708, M01	B-8706	B-Line, B-8000, B-8700, B-8900, B-8910, B-8790, MM-1
ROAD STANDARD:		Construction	Reconstruction	Pre-haul maintenance
NUMBER OF STATIONS:		44.98	8.14	504.37
SIDESLOPE:		20-40%	30%	0%
CLEARING AND GRUBBING:		$8,337	$366	
EXCAVATION AND FILL:		$16,124	$1,433	
MISC. MAINTENANCE:				$5,808
ROCK TOTALS (Cu. Yds.):				
Ballast/Quarry Spalls	4475	$51,572	$5,422	$0
Crushed Rock	3173	$2,007	$0	$39,682
CULVERTS AND FLUMES:		$7,433	$819	$7,017
STRUCTURES:		$0	$0	$0
GENERAL EXPENSES:		$6,838	$884	$4,726
MOBILIZATION:		$4,227	$4,227	$4,227
TOTAL COSTS:		$96,537	$13,152	$61,459
COST PER STATION:		$2,146	$1,616	$122

ROAD DEACTIVATION AND ABANDONMENT COSTS: $5,795

NOTE[1]: This appraisal has no allowance for profit and risk.

TOTAL (All Roads) = $176,942

SALE VOLUME MBF = 8,371

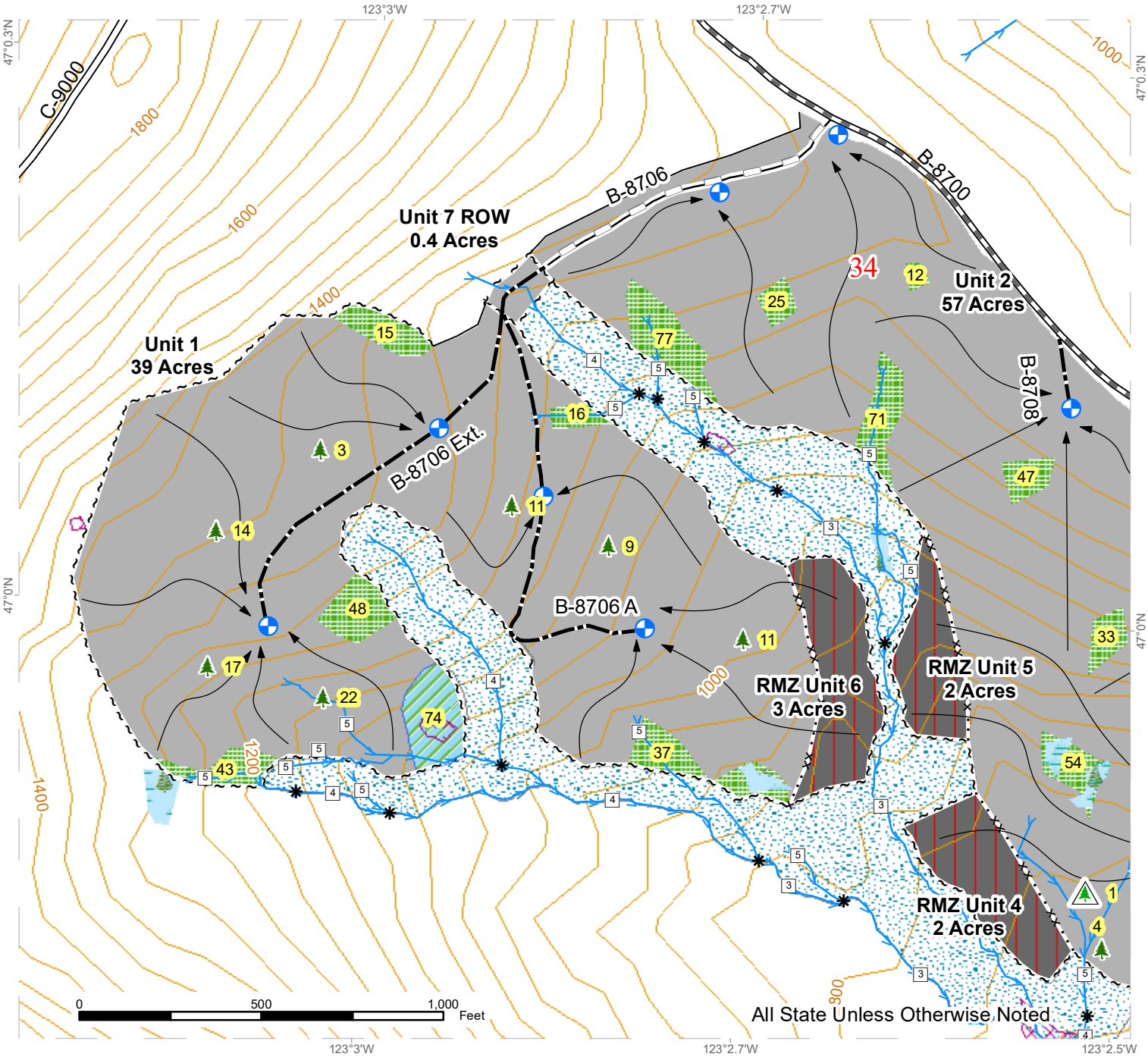
TOTAL COST PER MBF = $21.14

Date: 04/10/20

LOGGING PLAN MAP

SALE NAME: SMUGGLER VRH RMZ
AGREEMENT#: 30-099053
TOWNSHIP(S): T18R3W
TRUST(S): Forest Board Repayment (42), State Forest Transfer (1)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 200-1400



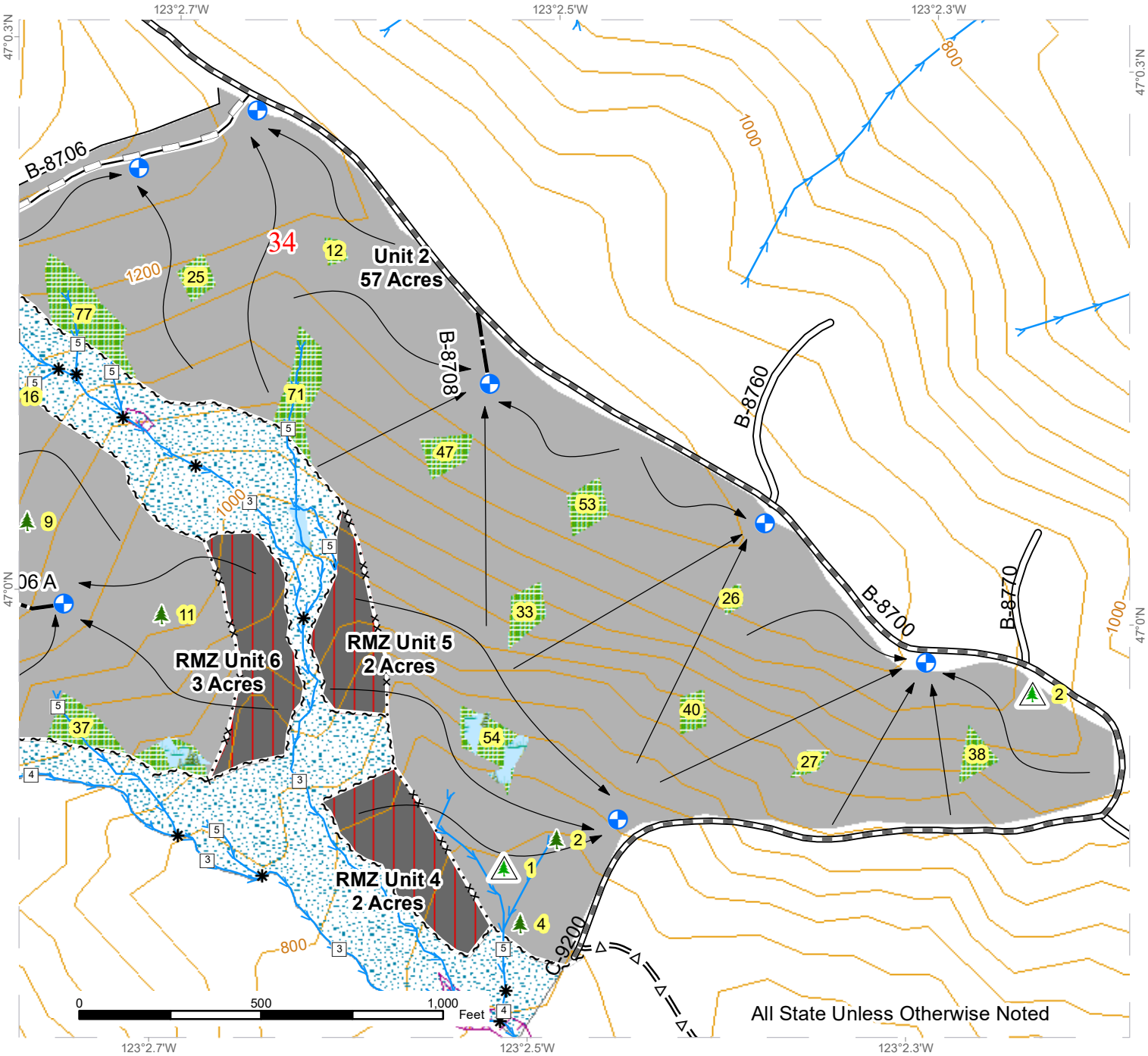
Variable Retention Harvest	Sale Boundary Tags	Streams
Riparian Restoration	Timber Type Change	Stream Type
Ground Harvest	Special Mgmt Area	Stream Type Break
Cable Harvest	Right of Way Tags	Landing - Proposed
Riparian Mgt Zone	Existing Roads	Leave Tree Area <1/4-acre
Tailhold Restriction Area	Required Pre-Haul Maintenance	Non-Tradeable Leave Trees
Leave Tree Area	Optional Construction	
Forested Wetland	Optional Reconstruction	
Non-Tradeable Leave Tree Area		

N

LOGGING PLAN MAP

SALE NAME: SMUGGLER VRH RMZ
AGREEMENT#: 30-099053
TOWNSHIP(S): T18R3W
TRUST(S): Forest Board Repayment (42), State Forest Transfer (1)

REGION: South Puget Sound Region
COUNTY(S): Thurston
ELEVATION RGE: 200-1400



Variable Retention Harvest	Sale Boundary Tags	Streams
Riparian Restoration	Timber Type Change	Stream Type
Ground Harvest	Special Mgmt Area	Stream Type Break
Cable Harvest	Existing Roads	Landing - Proposed
Riparian Mgt Zone	Required Pre-Haul Maintenance	Leave Tree Area <1/4-acre
Tailhold Restriction Area	Optional Pre-Haul Maintenance	Non-Tradeable Leave Trees
Leave Tree Area	Optional Construction	
Forested Wetland	Optional Reconstruction	

N

LOGGING PLAN MAP

SALE NAME: SMUGGLER VRH RMZ
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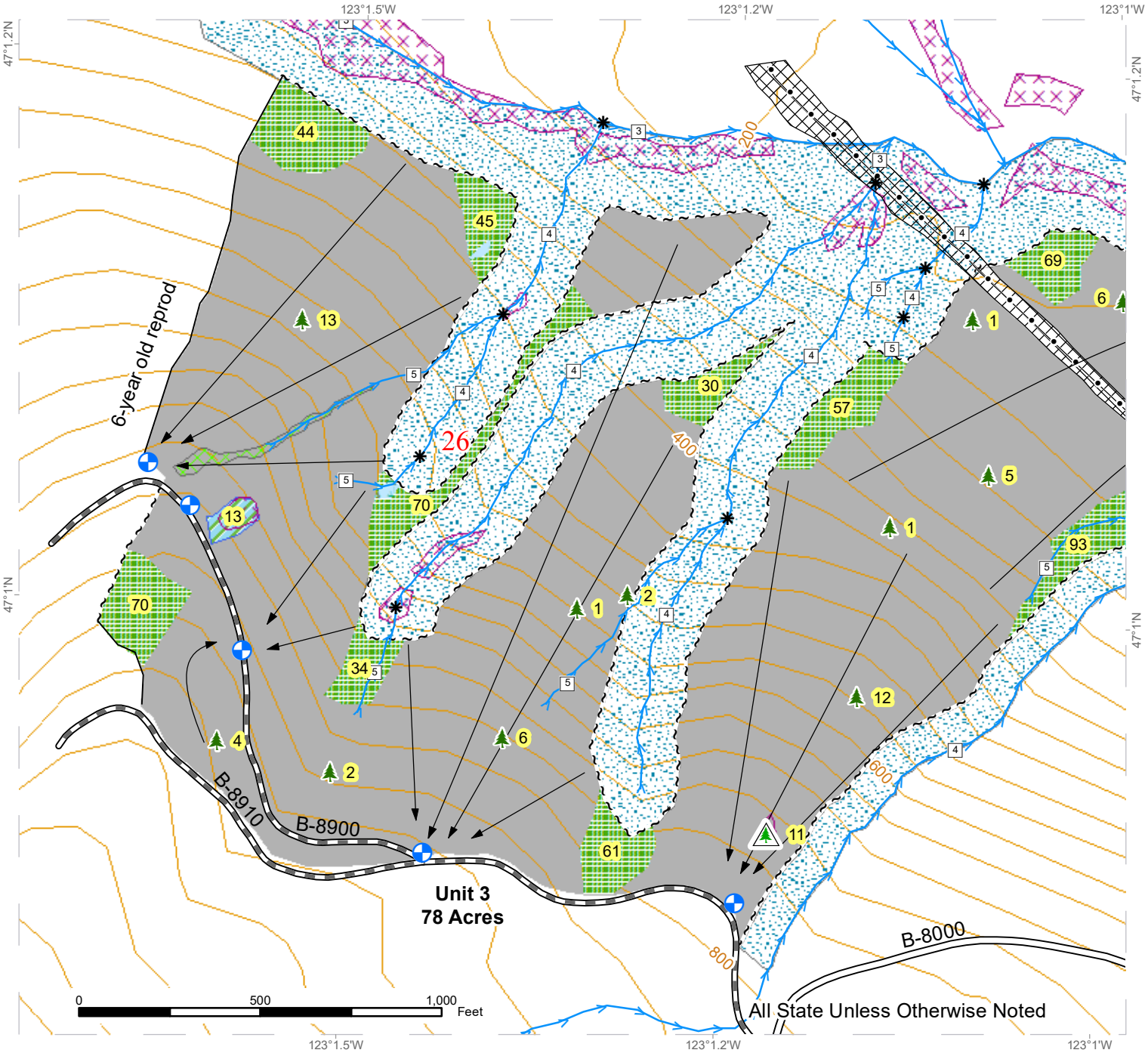

Variable Retention Harvest	~ ~ ~ Sale Boundary Tags	Streams
Ground Harvest	Timber Type Change	Stream Type
Cable Harvest	Existing Roads	Stream Type Break
Riparian Mgt Zone	Required Pre-Haul Maintenance	Landing - Proposed
Tailhold Restriction Area	Pipeline	Leave Tree Area <1/4-acre
Leave Tree Area	Underground Utility ROW	Non-Tradeable Leave Trees
Forested Wetland		
Non-Tradeable Leave Tree Area		
Slope Mitigation Area		

N

LOGGING PLAN MAP

SALE NAME: SMUGGLER VRH RMZ
AGREEMENT#: 30-099053
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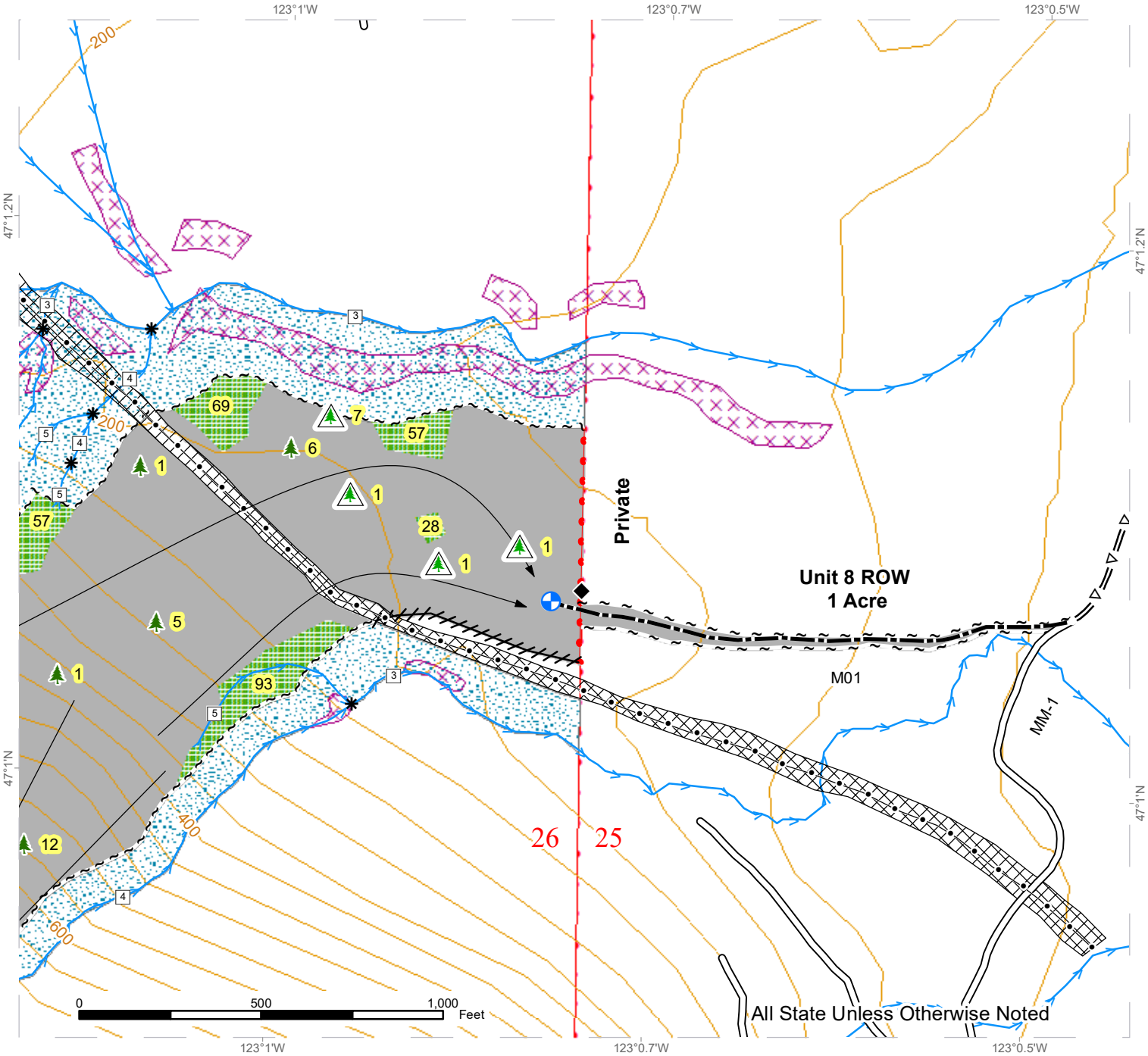

Variable Retention Harvest	Sale Boundary Tags	Streams
Ground Harvest	Flag Line	Stream Type
Cable Harvest	Right of Way Tags	Stream Type Break
Riparian Mgt Zone	Property Line	Landing - Proposed
Tailhold Restriction Area	Existing Roads	Leave Tree Area <1/4-acre
Leave Tree Area	Optional Pre-Haul Maintenance	Non-Tradeable Leave Trees
	Optional Construction	
	Pipeline	
	Underground Utility ROW	

N