



TIMBER NOTICE OF SALE

SALE NAME: WILLEY RIDGE VRH VDT

AGREEMENT NO: 30-98103

AUCTION: November 18, 2020 starting at 10:00 a.m., COUNTY: Clallam
Olympic Region Office, Forks, WA

SALE LOCATION: Sale located approximately 26 miles northeast of Forks, WA

PRODUCTS SOLD AND SALE AREA: All timber, except trees bounded by a band of blue paint, bounded by leave tree area tags,
downed red cedar, or timber that has been on the ground for five years or more (five
years is defined by more than 1.5 inches of sap; bounded by timber sale boundary tags in
in Units 1, 3, 4, 5 and 6.

All timber as described in Schedule C, except those trees described in Schedule D,
downed red cedar or any timber that has been on the ground for five years or more (five
years is defined by more than 1.5 inches) bounded by timber sale boundary tags and
special management boundary tags in Unit 2.

All timber bounded by right of way boundary tags

All forest products above located on part(s) of Sections 9, 16 and 17 all in Township 30
North, Range 11 West, W.M., containing 329 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:

Table with columns: Species, Avg DBH, Ring Count, Total MBF, and MBF by Grade (1P, 2P, 3P, SM, 1S, 2S, 3S, 4S, UT). Rows include Hemlock, Douglas fir, Silver fir, Red alder, Red cedar, and Sale Total.

MINIMUM BID: \$1,669,000.00 BID METHOD: Sealed Bids

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

EXPIRATION DATE: October 31, 2023 ALLOCATION: Export Restricted

BID DEPOSIT: \$166,900.00 or Bid Bond. Said deposit shall constitute an opening bid at the appraised
price.

HARVEST METHOD: Ground - 14%/Uphill Cable - 70%/Downhill Cable - 16%.

ROADS: 136.17 stations of required construction. 69.00 stations of required reconstruction.
512.30 stations of required pre-haul maintenance. Road reconstruction and construction
on the W-1000 (stations 120+00 - 207+50) and reconstruction on the W-1200 will not be



## TIMBER NOTICE OF SALE

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permitted from October 15-April 15 unless a winter road construction plan is submitted and approved by the Contract Administrator.

Littleton East Pit - Construct new pit road; strip, drill and shoot 10,000 cy of clean rock, shot ballast by December 31, 2021.

### **ACREAGE DETERMINATION**

**CRUISE METHOD:** Sale acreage was 100% GPS'd. Sale units were cruised using a variable plot sample.

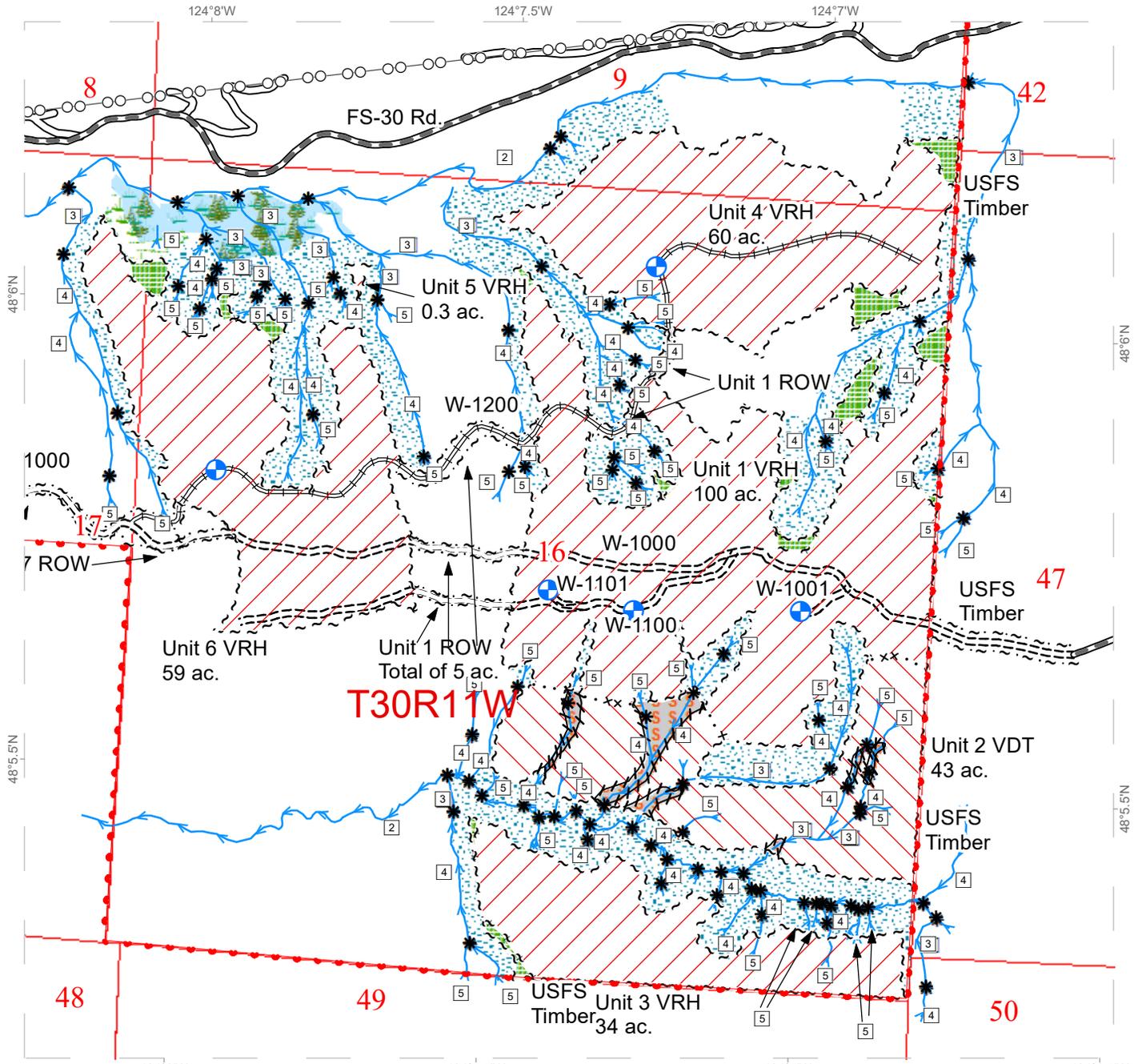
**FEES:** \$149,549.00 is due on day of sale. \$9.00 per MBF is due upon removal. These are in addition to the bid price.

**SPECIAL REMARKS:** There are locked gates on the B-6500, B-8500 and the Mary Clark Pit Roads - contact the Olympic Region Dispatch Center at 360-374-2811 to obtain a AA-1 key.

# TIMBER SALE MAP

**SALE NAME:** WILLEY RIDGE VRH VDT  
**AGREEMENT #:** 30-098103  
**TOWNSHIP(S):** T30R11W  
**TRUST(S):** State Forest Transfer (01), Capitol Grant (07), Common School, Indemnity (03)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 830'-2,120'

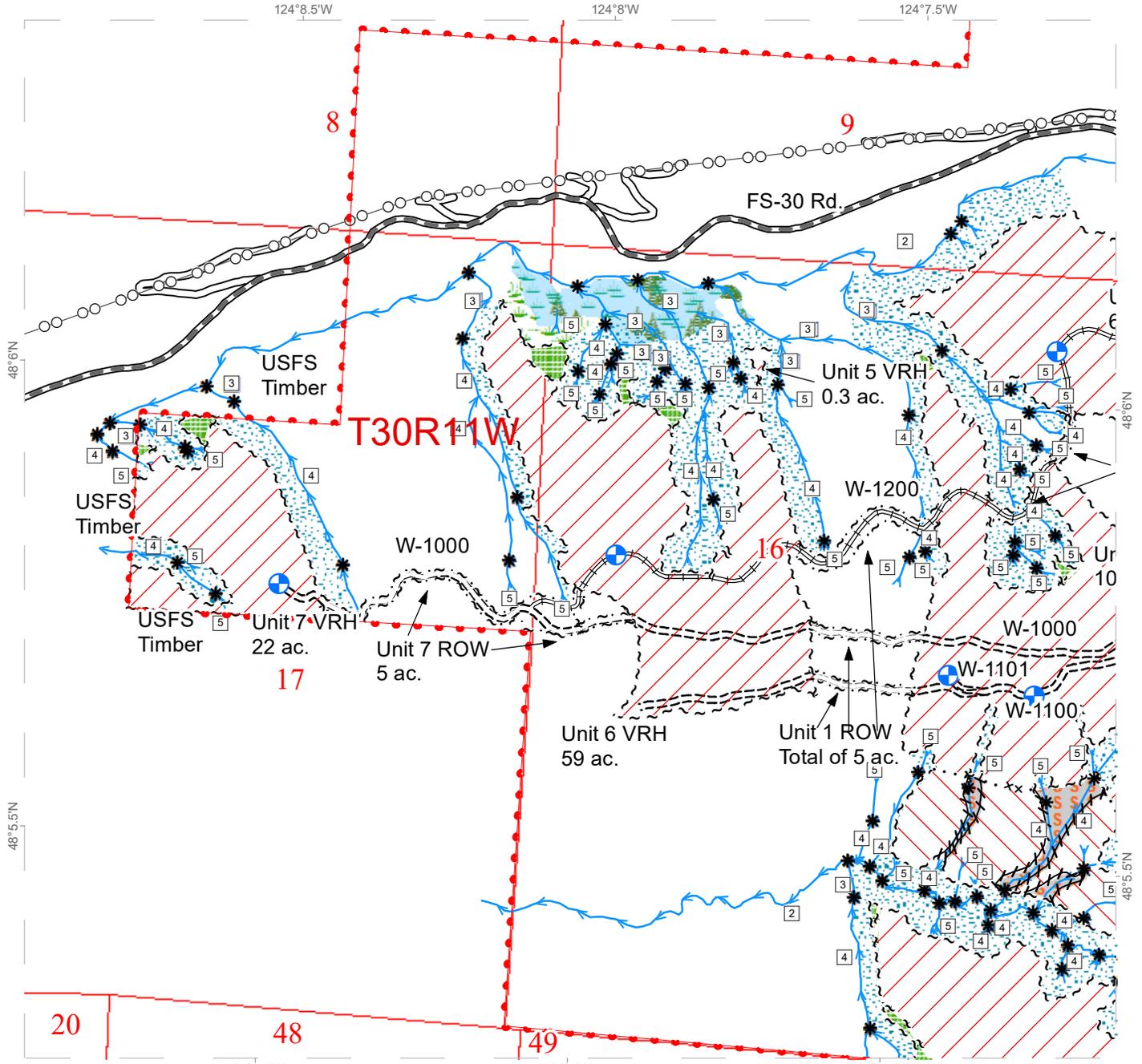


Landing - Proposed	Power Lines	Wetland Mgt Zone	Public Land Survey Townships
Sale Boundary Tags	Existing Roads	Forested Wetland	Public Land Survey Sections
Right of Way Tags	Required Pre-Haul Maintenance	Skip	DNR Managed Lands
Special Mgmt Area	Required Construction	Leave Tree Area	Stream Type
Leave Tree Tags	Required Reconstruction	Riparian Mgt Zone	Stream Type Break
Skip (Double Blue Slashes)	Streams		
Variable Retention Harvest			
Variable Density Thinning			

# TIMBER SALE MAP

**SALE NAME:** WILLEY RIDGE VRH VDT  
**AGREEMENT #:** 30-098103  
**TOWNSHIP(S):** T30R11W  
**TRUST(S):** State Forest Transfer (01), Capitol Grant (07), Common School, Indemnity (03)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 830'-2,120'



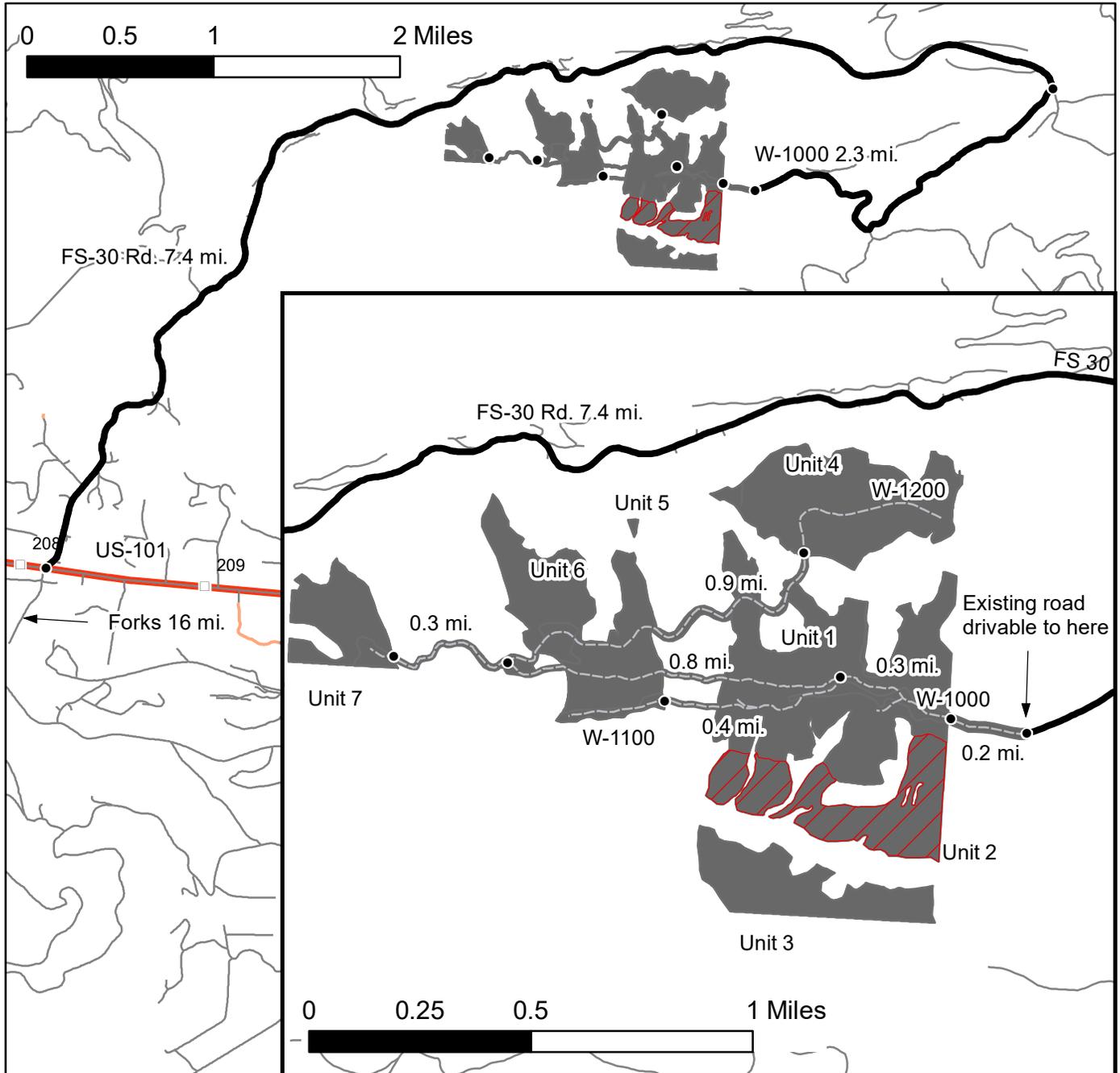
Landing - Proposed	Power Lines	Wetland Mgt Zone	Public Land Survey Townships
Sale Boundary Tags	Existing Roads	Forested Wetland	Public Land Survey Sections
Right of Way Tags	Required Pre-Haul Maintenance	Skip	DNR Managed Lands
Special Mgmt Area	Required Construction	Leave Tree Area	Stream Type
Leave Tree Tags	Required Reconstruction	Riparian Mgt Zone	Stream Type Break
Skip (Double Blue Slashes)	Streams		
Variable Retention Harvest			
Variable Density Thinning			



# DRIVING MAP

**SALE NAME:** WILLEY RIDGE VRH VDT  
**AGREEMENT#:** 30-098103  
**TOWNSHIP(S):** T30R11W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1), Capitol Grant (07)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam



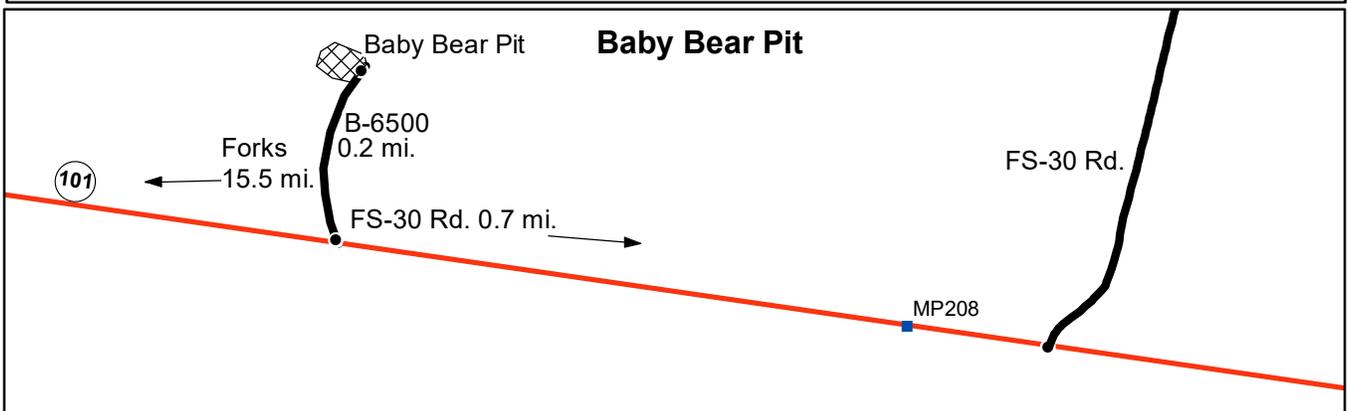
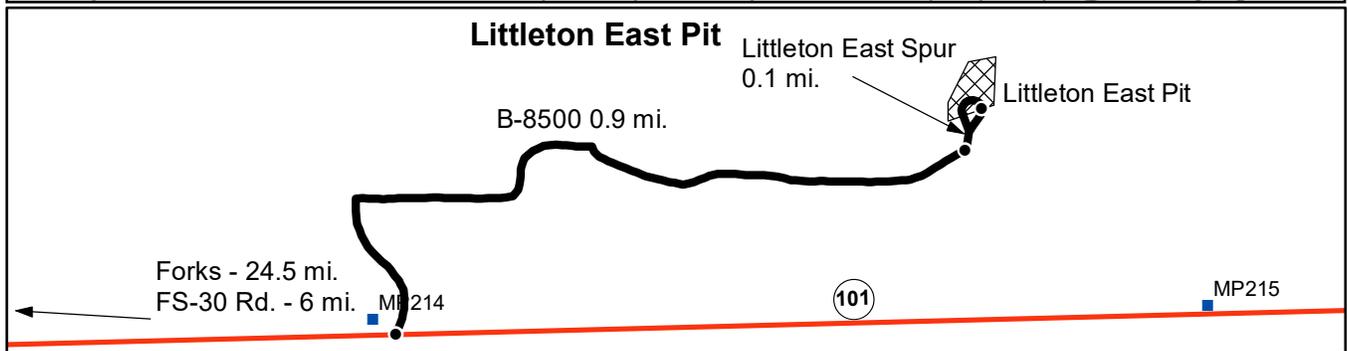
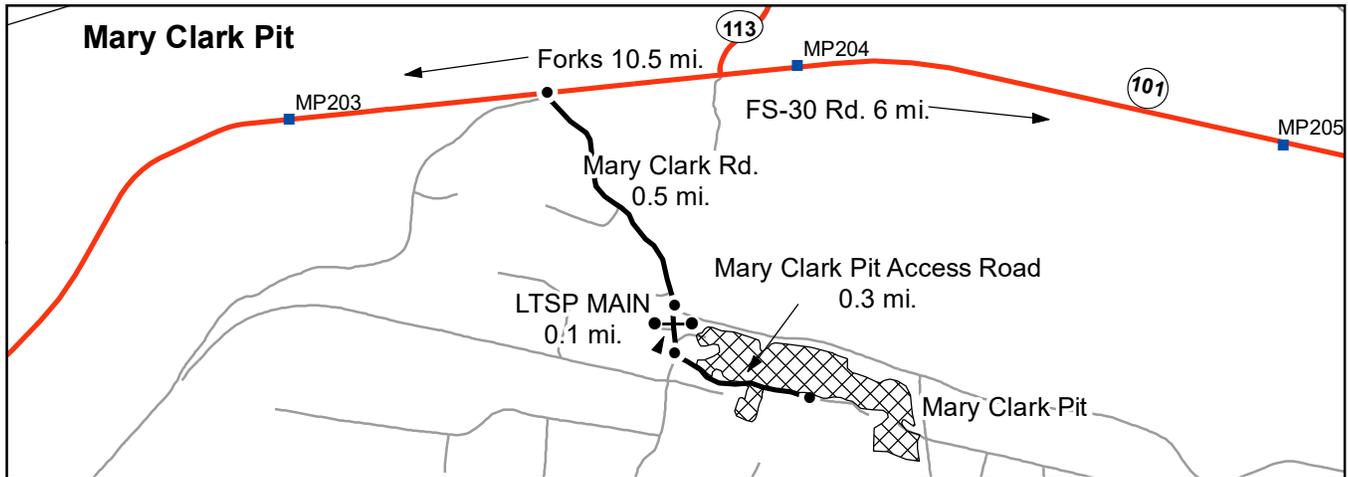
	Variable Retention Harvest
	Variable Density Thinning
	Milepost Markers
	Distance Indicator
	Haul Route
	Haul Route To Be Constructed
	Other Roads

**Driving Directions:**  
 Unit 1: From Forks, drive north on US 101 for 16 mi. and turn left on the FS-30 Rd. Continue 7.4 mi. and turn right onto W-1000 Rd. Continue 2.3 mi. to end of drivable road. Continue 0.2 mi. on W-1000 (to be constructed) to Unit 1.  
 Unit 2: Unit 2 is located immediately south of Unit 1 (no road access).  
 Unit 3: Unit 3 is located immediately south across S.F. Bear Cr. from Unit 2 (no road access).  
 Unit 4: Continue 1.1 mi. on the W-1000 (to be constructed) to the jct. with the W-1200 (to be constructed). Continue east on the W-1200 0.9 mi. to Unit 4  
 Unit 6: From the beginning of Unit 1, continue 0.3 mi. on the W-1000 (to be constructed) to the jct. with the W-1100 (to be constructed). Continue 0.4 mi. on the W-1100 to Unit 4  
 Unit 5: Unit 5 is located immediately north of Unit 6 (no road access)  
 Unit 7: Continue 0.3 mi. past the W-1200 / W-1000 jct. on the W-1000 (to be constructed) to Unit 7.

# DRIVING MAP

**SALE NAME:** Willey Ridge VRH VDT  
**AGREEMENT#:** 30-098103  
**TOWNSHIP(S):** T30R11W  
**TRUST(S):** State Forest Transfer(1), Common School, Indemnity(3), Capitol Grant (07)

**REGION:** Olympic Region  
**COUNTY(S):** CLALLAM



- Haul Route
- Other Route
- Milepost Markers
- Distance Indicator
- Gate (AA1)
- Rock Pit

### DRIVING DIRECTIONS:

**Mary Clark Pit:** From Forks, WA, travel north on US 101 10.5 mi. and turn right on Mary Clark Rd. Continue for 0.5 mi., then turn right on LTSP Main road. After 0.1 mi., turn left on the Mary Clark Pit Access Road and continue for 0.3 mi. to the Mary Clark Pit.

**Littleton East Pit:** From Forks, drive 24.5 mi. north on US 101 and turn left on the B-8500. Continue 0.9 mi. to Littleton East Pit Spur (to be constructed). Littleton East Pit (to be developed) is located 0.1 mi. north of the B-8500 on the Littleton East Spur.

**Baby Bear Pit:** From Forks, drive 15.5 mi. north on US 101 and turn left on the B-6500 Rd. Drive 0.2 mi. to Baby Bear Pit, on left.



**STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES**

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

**Export Restricted Lump Sum AGREEMENT NO. 30-098103**

**SALE NAME: WILLEY RIDGE VRH VDT**

**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 18, 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 trees bounded by a band of blue paint, bounded by leave tree area tags, downed red cedar, or timber that has been on the ground for five years or more (five years is defined by more than 1.5 inches of sap; bounded by timber sale boundary tags in in Units 1, 3, 4, 5 and 6.

All timber as described in Schedule C, except those trees described in Schedule D, downed red cedar or any timber that has been on the ground for five years or more (five years is defined by more than 1.5 inches) bounded by timber sale boundary tags and special management boundary tags in Unit 2.

All timber bounded by right of way boundary tags

All forest products above located on approximately 329 acres on part(s) of Sections 9, 16, and 17 all in Township 30 North, Range 11 West W.M. in Clallam 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	SLASH PILING SPECS
B	GREEN TREE RETENTION PLAN
C	CUT TREE SELECTION CRITERIA-UNIT 2
D	LEAVE TREE SELECTION CRITERIA-UNIT 2
E	UNIT TARGET TABLE-UNIT 2

G-031 Contract Term

Purchaser shall complete all work required by this contract prior to October 31, 2023.

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 \$750.00 per acre per annum for the acres on which an operating release has not been issued.
- 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 Forks, 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; FS-30, B-6500, B-8500, LTSP Main, W-1000, W-1100, W-1200, W-1001, W-1101, Mary Clark Pit Access Road and Littleton East Spur. The State may authorize in writing the use of other roads subject to fees, restrictions, and prior rights.

**G-330 Pre-work Conference**

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

**G-340 Preservation of Markers**

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

**G-360 Road Use Reservation**

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

**G-370 Blocking Roads**

Purchaser shall not block the FS-30 and W-1000 (0+00 - 120+00) Roads, unless authority is granted in writing by the Contract Administrator.

G-380 Road Easement and Road Use Permit Requirements

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

RUP #55-095048 with USFS

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:

Easement, including the terms and provisions thereof,

For: Road

In Favor of: United States of America – Olympic National Forest

Disclosed by Application No.: 50-001842

Granted: 10/16/1947

Expires: Indefinite

Easement, including the terms and provisions thereof,

For: Overhead Power Transmission

In Favor of: Bonneville Power Administration

Disclosed by Application No.: 50-029594

Granted: 8/1/1964

Expires: Indefinite

Easement, including the terms and provisions thereof,

For: Fiber Optic Line

In Favor of: Qwest Corporation

Disclosed by Application No.: 50-074130

Granted: 2/16/2005

Expires: 9/30/2032

Easement, including the terms and provisions thereof,

For: Road, Overhead Power Transmission, Overhead Communication Line

In Favor of: United States of America – Forest Service – U.S.D.A.

Disclosed by Application No.: 50-074888

Granted: 4/10/1947

Expires: Indefinite

Easement, including the terms and provisions thereof,

For: Road, Overhead Power Transmission, Overhead Communication Line

In Favor of: United States of America – Forest Service – U.S.D.A.

Disclosed by Application No.: 50-081263

Granted: 10/27/1948

Expires: Indefinite

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 \$228,722.00. The total contract price consists of a \$0.00 contract bid price plus \$228,722.00 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-001 Operations Outside the Sale Boundaries

No operations shall occur outside the sale boundaries, as described within the contract, unless approved in writing by the State.

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 20 square inches.
- b. A leave tree top is broken or the live crown ratio is reduced below 30 percent.
- c. A leave tree has more than 1/3 of the circumference of its root system injured such that the cambium layer is exposed.

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

#### H-013 Reserve Tree Damage Definition

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

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

- a. A reserve tree has one or more scars on its trunk exposing the cambium layer, which in total exceeds 100 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-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-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-120 Harvesting Equipment

Forest products sold under this contract shall be harvested and removed using ground and cable methods. 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. Purchaser must fully suspend all logs when yarding through riparian management zones. Logs shall be bucked prior to yarding if required to achieve full suspension through riparian management zones.

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-127 Tailholds on Private Land

If Purchaser chooses to tailhold on private property, Purchaser shall obtain permit(s) and assumes responsibility for all costs and damages associated with the permit(s). Purchaser must provide the State with a copy of the executed permit(s) or a letter from the landowner indicating that a satisfactory tailhold permit(s) has been consummated between Purchaser and the landowner.

H-140 Special Harvest Requirements

Purchaser shall accomplish the following during the harvest operations:

1. Purchaser shall immediately repair all gate damage resulting from operations to an equal or better condition that existed at the time of the sale.

2. While felling timber, one warning sign must be posted on the W-1000 Road.
3. Yarding equipment shall not cross live streams without an FPHP.
4. The Purchaser shall notify all employees and contractors working on this sale that any danger tree, marked or unmarked, may be felled. Any felled marked danger tree shall be replaced with a suitable tree of similar size and species as approved by the Contract Administrator.
5. All yarding corridors through riparian management zones shall be marked by Purchaser and approved by the Contract Administrator prior to yarding through riparian management zones. When yarding through riparian management zones during logging operations in Unit 3, yarding corridors may not exceed 30' in width and must be a minimum of 100' apart within the riparian management zones. All trees that must be cut in yarding corridors through riparian management zones must be left on the ground and to the extent possible, be felled side hill.
6. Purchaser shall fully suspend all logs when yarding through Riparian Management Zones. Logs shall be bucked prior to yarding if required to achieve full suspension through Riparian Management Zones.

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

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.

Section C: Construction and Maintenance

C-040 Road Plan

Road construction and associated work provisions of the Road Plan for this sale, dated 2/20/2019 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 W-1000, W-1001, W-1100, W-1101, W-1200, FS 30 Road and the Littleton East Spur. 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 the FS-30, LTSP Main, B-8500, B-6500, Mary Clark Pit Access Road and other roads not covered in 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-140 Water Bars

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

Section S: Site Preparation and Protection

S-001 Emergency Response Plan

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

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

S-010 Fire Hazardous Conditions

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

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

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

S-030 Landing Debris Clean Up

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

S-035 Logging Debris Clean Up

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

S-050 Cessation of Operations for Low Humidity

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

S-060 Pump Truck or Pump Trailer

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

S-100 Stream Cleanout

Slash or debris which enters any typed water 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-120 Stream Protection

No timber shall be felled into, across, or yarded through any streams.

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 Unit 2.

## 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, 3-7.

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

\_\_\_\_\_  
Mona Griswold  
Olympic Region Manager

\_\_\_\_\_  
Print Name

Date: \_\_\_\_\_

Date: \_\_\_\_\_

Address: \_\_\_\_\_

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

STATE OF \_\_\_\_\_ )

COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, before me personally appeared \_\_\_\_\_

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

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

\_\_\_\_\_  
Notary Public in and for the State of

\_\_\_\_\_

My appointment expires \_\_\_\_\_

**Schedule A**  
**SLASH PILING SPECS**

The areas shall be piled by creating circular piles of slash and brush conforming to the following specifications:

1. Piles shall be a minimum of 12 feet tall by 8 feet wide to a maximum of 30 feet tall and 16 feet wide. Piles shall be cone shaped and stable.
2. Piles shall be free of topsoil, large rotten logs and large stumps. No material larger than 8 inches in diameter shall be piled. Any burnable material shall be well scattered.
3. Piles shall not be placed on large stumps or logs.
4. Piles shall be stacked a minimum of 50 feet from all unit boundaries, Riparian Management Zones, leave tree areas and any standing timber; a minimum of 100 feet from any public roads and highways; and a minimum of 200 feet from any structures.
5. Piling shall be completed using an approved hydraulic shovel and grapples.
6. Slash and displaced soil shall be removed from swales and natural drainage channels concurrent with yarding.
7. Slash shall be placed in skid roads or ahead of machinery. Slash which accumulates on landings and/or roads shall be lopped and scattered within the harvest area or as designated by the Contract Administrator.
8. Slash generated during cable yarding shall be stacked in dirt free piles and shall not block roads or interfere with functioning of drainage structures, ditches, or stream channels.

**Schedule B**  
**GREEN TREE RETENTION PLAN**

Leave the following as directed by the Contract Administrator:

1. All trees marked with a blue band of paint and all leave tree area clumps shall remain standing. The perimeter of the leave tree clumps are designated by Leave Tree Area tags. The tags face outward from the leave tree clumps.

Unit #	# of Individually Marked Trees	# of Clumps	# of Trees Clumped	Total # of Leave Trees
1	48	6	760	808
3	26	2	253	279
4	64	2	416	480
5	3	0	0	3
6	72	3	400	472
7	21	2	161	182

**Schedule C**  
**CUT TREE SELECTION CRITERIA-UNIT 2**

1. Cut trees are defined as all trees in the sale area, as shown on the timber sale maps that meet the following criteria:
  - a. All trees less than 22 inches in diameter at a 12 inch stump height provided that enough evenly distributed trees per acre remain to achieve the relative densities shown in the Unit Target Table.
  - b. All trees which are severely deformed, as defined below in part 2, provided that the remaining stand is not reduced below the relative densities shown in the Unit Target Table (Schedule E); or unless designated by the Contract Administrator for snag recruitment.
  - c. Those trees which are not defined as leave trees.
  
2. Severely deformed trees are defined as trees with one or more of the following characteristics:
  - a. Trees with three (3) or more tops.
  - b. Trees with a broken top.
  - c. Trees with two (2) tops if they twist around each other or are otherwise badly deformed.
  - d. Trees with basal scars or scars on the lower stem if visible soft decay is evident. Trees with scars that have healed over are not to be considered severely deformed.

**Schedule D**  
**LEAVE TREE SELECTION CRITERIA-UNIT 2**

1. Leave trees are defined as follows:

- a. All trees greater than or equal to 22 inches in diameter at a 12 inch stump height.
- b. Trees greater than or equal to 16 inches in diameter at a 12 inch stump height, with good form, shall only be felled if leaving them results in a residual stand of higher relative density than shown in the Unit Target Table (Schedule E).
- c. All trees less than 16 inches in diameter at a 12 inch stump height needed to achieve relative densities as shown in the Unit Target Table (Schedule E).
- d. All trees within the non-operational areas as shown on the timber sale maps.

2. Leave trees shall be well distributed at the relative density and spacing as shown in the Unit Target Table (Schedule E), and will consist of the largest diameter and best formed trees available.

Best form is defined as follows:

- a. Tallest trees
- b. Straightest trees
- c. Smaller diameter limbs
- d. Full crowns

3. Leave trees will be identified by comparing their characteristics with other trees in the stand. Spacing will be varied to insure the best trees available are left as leave trees. Felling of trees shall not result in creating an opening in the stand greater than 30 feet in diameter. If openings in the stand approach this diameter, then sufficient trees shall be left on the perimeter of the opening to maintain the target density or spacing (Unit Target Table - Schedule E).

**Schedule E**  
**UNIT TARGET TABLE-UNIT 2**

Unit	Acres	Approx. Stems/acre	Approx. Basal Area	Approx. Spacing	Relative Density
2	43	150	200	17' x 17'	50

1. Spacing may be varied as necessary to ensure the largest diameter and best formed trees available are left on site.
2. Felling trees shall not result in creating an opening in the stand greater than 34 feet in diameter. If openings in the stand approach this diameter, then a sufficient number of trees shall be left on the perimeter of the opening to maintain the basal area target.
3. When a selection must be made between different tree species of similar diameter, the preferred species to leave in order of preference are: a. western red cedar, b. cottonwood, c. Douglas fir, d. western hemlock, e. red alder, f. big leaf maple, g. all other species.
4. Snags shall be cut unless necessary for operational or safety reasons. If snags must be cut, they shall be left on site and not yarded. Snags will not be counted towards meeting the post thin basal area target.

## Cruise Narrative

<b>Sale Name:</b> Willey Ridge	<b>Region:</b> Olympic
<b>Agreement #:</b> 30-	<b>District:</b> Coast
<b>Lead Cruiser:</b> Kevin Peterson	<b>Completion Date:</b> 12/20/18
<b>Other Cruisers:</b> none	

### Unit acreage specifications:

Unit #	Cruised Acres	Cruised acres agree with sale acres? Y/N	If acres do not agree explain why.
1	106	Y	
2	43	Y	
3	34	Y	
4	60	Y	
5	0.3	Y	
6	59	Y	
7	27	Y	
<b>Total</b>	<b>329.3</b>	<b>Y</b>	

### Unit cruise specifications:

Unit #	Sample Type (VP,FP,ITS,100%)	Expansion Factor (baf,full/half)	Sighting Height (4.5', 16')	Grid Size (plot spacing)	Plot Ratio (cruise/count)	Number of plots
1	VP	54.45/40	4.5'	290 X290	1:2	53
2	VP	54.45/40	4.5'	450X450	All Cruise	9
3	VP	54.45/40	4.5'	290X290	1:1	17
4	VP	54.45/40	4.5'	290X290	1:2	30
5	VP	54.45/40	4.5'	290X290	All Cruise	1
6	VP	54.45/40	4.5'	290X290	1:2	30
7	VP	54.45/40	4.5'	290X290	1:1	14

### Sale/Cruise Description:

<b>Minor species cruise intensity</b>	Minor species sampled using same cruise plots. Red Cedar and Red Alder were cruised at a 40 BAF					
<b>Minimum cruise spec:</b>	40% of Form Factor at 16 ft. D.O.B or 5 inch top.					
<b>Average ring count:</b>	<b>DF =</b>	6	<b>WH =</b>	5	<b>SF =</b>	5
<b>Leave/take tree description:</b>	Leave tree clumps are bounded out with yellow tags, pink flashers and blue paint. Individual leave trees are marked with blue bands and two blue butt marks.					
<b>Other conditions:</b>	Exterior boundaries are marked with white tags and pink flashers					

<p><b>Sort Description:</b></p>	<p><b>HA</b>– Logs meeting the following criteria: Surface characteristics for a high quality A sort will have sound tight knots not to exceed 1 ½” in diameter, numbering not more than an average of one per foot of log length. May include logs with not more than two larger knots. Knots and knot indicators ½” in diameter and smaller shall not be a determining factor. Logs will have a growth ring count of 6 or more rings per inch in the outer third top end of the log. (minimum diameter 8”.)</p> <p><b>R</b> – Logs meeting the following criteria: Gross diameter of 12 inches or greater, excessive knots greater than 2 ½ inches with recovery less than 65% of the net scale.</p>
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**Field Observations:**

Willey Ridge is a 329.3 acre timber sale that consists of 7 units, one of which is a thinning unit. The sale is located off of the FS 30 Rd. off of US HWY 101.

The sale has a total take volume of 8,797 MBF and is comprised of 42% Silver-fir, 23% Douglas-fir, 22% Western Hemlock and 13% Red Alder; with traces of Western Red Cedar. The average SF has a DBH of 13.9” and a bole height of 56’, common defect is frost cracks. The average DF has a DBH of 19” and a bole height of 75’, sweep and crocks are common defects. The average WH has a DBH of 13.9” and bole height of 59’.

Access to units 4-7 requires you to pass over Bear Creek and units 1-3 are accessed from an unnamed ridge road off of FS 30. The sale is 95% uphill cable harvest.

**Grants:** 01, 03 and 07

**Prepared By:** Kevin Peterson – Olympic Region Check Cruiser

TC		PSPCSTGR		Species, Sort Grade - Board Foot Volumes (Project)																		
T000 R000 S00 TyU1 THRU T000 R000 S00 TyU7				Project: <b>WILLEY</b>										Page <b>1</b>								
				Acres <b>329.30</b>										Date <b>12/20/2018</b>			Time <b>8:26:41AM</b>					
Spp	S T	So rt	Gr ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre	
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf		
									5-7	8-11	12-15	16+	12-20	21-30	31-35	36-99						
DF	T	CU	CU															3	8		0.00	5.1
DF	T	D	2S	36	2.8	2,307	2,243	739				52	48					40	15	331	2.33	6.8
DF	T	D	3S	54	2.1	3,339	3,268	1,076	5	95								40	9	120	0.95	27.1
DF	T	D	4S	10		590	590	194	100					21	31	33	15	26	5	29	0.33	20.4
DF	T	D	UT															10	7		0.00	1.0
<b>DF Totals</b>				21	2.2	6,237	6,102	2,009	12	51	19	18		2	3	3	92	32	8	101	0.96	60.3
DF		D	2S	13		77	77	25										40	14	290	1.98	.3
DF		D	3S	73	4.5	426	406	134	5	95								40	10	133	1.09	3.1
DF		D	4S	14		75	75	25	100					18	47	16	19	25	5	27	0.36	2.8
<b>DF Totals</b>				2	3.3	578	559	184	17	69	14			2	6	2	89	33	8	91	0.88	6.1
RA	T	CU	CU																6		0.00	1.9
RA	T	D	2S	12	8.0	475	437	144				100		43	57			25	12	115	1.22	3.8
RA	T	D	3S	23	10.1	923	830	273								55	45	34	9	96	0.89	8.6
RA	T	D	4S	51	8.8	1,962	1,789	589	38	62					41	8	51	34	7	59	0.62	30.6
RA	T	D	UT	14		488	488	161	100					51	34		16	20	5	21	0.30	23.2
<b>RA Totals</b>				12	7.9	3,848	3,544	1,167	33	54	12			12	45	4	39	28	7	52	0.62	68.1
RA		D	3S	52	8.4	143	131	43										36	9	100	0.97	1.3
RA		D	4S	37	19.3	116	94	31	71	29					41	23	37	33	6	41	0.54	2.3
RA		D	UT	11		27	27	9	100					26	74			23	5	23	0.34	1.1
<b>RA Totals</b>				1	12.1	285	251	83	37	63				3	37	8	51	32	7	53	0.64	4.7
WH	T	CU	CU																9		0.00	1.5
WH	T	D	2S	17	3.7	2,119	2,040	672				69	31					40	14	284	2.05	7.2
WH	T	D	3S	62		6,984	6,984	2,300	30	70								40	8	95	0.73	73.5
WH	T	D	4S	19		2,177	2,177	717	100					19	52	25	4	23	5	25	0.28	86.8
WH	T	D	UT	2		185	185	61	100									20	5	17	0.32	11.2
<b>WH Totals</b>				39	.7	11,466	11,386	3,749	39	43	12	6		4	10	8	79	30	7	63	0.62	180.2
WH		D	3S	76		559	559	184	10	90								40	9	122	0.94	4.6
WH		D	4S	22		165	165	54	75	25				10	67	13	10	25	6	29	0.35	5.6
WH		D	UT	2		10	10	3	100					100				14	5	10	0.24	1.0
<b>WH Totals</b>				3		735	735	242	26	74				4	15	3	78	30	7	65	0.67	11.2
SF	T	CU	CU																4	6	0.00	3.0
SF	T	D	2S	14	2.7	823	801	264				100						35	14	234	1.88	3.4
SF	T	D	3S	52	3.6	3,004	2,897	954	23	77						32	68	38	8	105	0.84	27.6
SF	T	D	4S	24		1,347	1,347	444	89	11				8	38	18	35	27	5	33	0.38	40.6
SF	T	D	UT	10		550	550	181	67	20	12			31	3	10	56	17	5	22	0.40	24.6
<b>SF Totals</b>				19	2.3	5,725	5,595	1,842	40	44	16			5	14	12	69	27	7	56	0.62	99.2
SF		CU	CU																11	7	0.00	.3
SF		D	2S	14		147	147	49				51	49					33	14	222	1.71	.7
SF		D	3S	67	4.1	694	666	219	11	89								38	9	109	0.94	6.1
SF		D	4S	16		158	158	52	78	22				29	27	11	33	24	5	31	0.36	5.0
SF		D	UT	3		25	25	8	100									26	5	25	0.32	1.0
<b>SF Totals</b>				3	2.7	1,024	996	328	22	63	7	7		5	13	11	72	31	7	76	0.77	13.1

**Species, Sort Grade - Board Foot Volumes (Project)**

T000 R000 S00 TyU1  
 THRU  
 T000 R000 S00 TyU7

**Project: WILLEY**  
**Acres 329.30**

**Page 2**  
**Date 12/20/2018**  
**Time 8:26:41AM**

S Spp	So T	Gr rt	Ad	% Net BdFt	Bd. Ft. per Acre			Total Net MBF	Percent of Net Board Foot Volume								Average Log				Logs Per /Acre		
					Def%	Gross	Net		Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft	CF/ Lf			
									5-7	8-11	12-15	16+	12-20	21-30	31-35	36-99							
RC	T	D	4S	100	13.4	104	90	30	100					100					17	5	17	0.20	5.2
<b>RC Totals</b>				0	13.4	104	90	30	100					100					17	5	17	0.20	5.2
RC		D	4S	100		33	33	11	100					100					16	5	20	0.24	1.7
<b>RC Totals</b>				0		33	33	11	100					100					16	5	20	0.24	1.7
<b>Totals</b>					2.5	30,035	29,290	9,645		32	48	14	6		5	14	7	74	29	7	65	0.68	449.8

Total Take Volume 8,797 MBF

TC PSTATS		<b>PROJECT STATISTICS</b>							PAGE	1	
		<b>PROJECT WILLEY</b>							DATE	12/20/2018	
TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	RIDGE	U1	THR	329.30	154	874	S	W	
000	000	00	RIDGE	U7							
			PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL			154	874	5.7						
CRUISE			65	334	5.1	81,205	.4				
DBH COUNT											
REFOREST											
COUNT			89	534	6.0						
BLANKS											
100 %											
<b>STAND SUMMARY</b>											
SAMPLE TREES		TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC	
WHEMLOCK	9	5.6	15.2	64	1.8	7.1	735	735	224	224	
WHEMLOCK-T	112	103.6	13.9	59	29.2	108.9	11,466	11,386	3,352	3,352	
DOUG FIR	7	3.1	18.2	69	1.3	5.5	578	559	179	179	
DOUG FIR-T	36	27.1	19.0	75	12.3	53.4	6,237	6,102	1,843	1,843	
PS FIR	12	6.4	16.5	67	2.3	9.5	1,024	996	310	311	
PS FIR-T	74	54.8	13.9	56	15.5	57.7	5,725	5,595	1,689	1,688	
R ALDER	6	3.0	14.5	53	0.9	3.5	285	251	95	95	
R ALDER-T	70	36.0	14.6	57	10.9	41.8	3,848	3,544	1,170	1,171	
WR CEDAR	1	1.7	8.0	20	0.2	.6	33	33	6	6	
WR CEDAR-T	7	5.2	9.7	20	0.9	2.7	104	90	30	17	
<b>TOTAL</b>	<b>334</b>	<b>246.6</b>	<b>14.7</b>	<b>59</b>	<b>75.8</b>	<b>290.6</b>	<b>30,035</b>	<b>29,290</b>	<b>8,899</b>	<b>8,887</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL	68.1	COEFF		TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK		488.5	39.4	3	6	8					
WHEMLOCK-T		100.1	8.1	95	104	112					
DOUG FIR		696.4	56.1	1	3	5					
DOUG FIR-T		157.4	12.7	24	27	31					
PS FIR		645.6	52.0	3	6	10					
PS FIR-T		166.6	13.4	47	55	62					
R ALDER		625.4	50.4	2	3	5					
R ALDER-T		128.6	10.4	32	36	40					
WR CEDAR		1241.0	100.0	0	2	3					
WR CEDAR-T		403.1	32.5	4	5	7					
<b>TOTAL</b>		<b>50.2</b>	<b>4.0</b>	<b>237</b>	<b>247</b>	<b>257</b>	<b>101</b>	<b>51</b>	<b>25</b>		
CL	68.1	COEFF		BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK		488.6	39.4	4	7	10					
WHEMLOCK-T		95.3	7.7	100	109	117					
DOUG FIR		681.5	54.9	2	6	9					
DOUG FIR-T		154.8	12.5	47	53	60					
PS FIR		631.6	50.9	5	9	14					
PS FIR-T		159.8	12.9	50	58	65					
R ALDER		648.5	52.3	2	3	5					
R ALDER-T		128.1	10.3	37	42	46					
WR CEDAR		1241.0	100.0	0	1	1					
WR CEDAR-T		361.7	29.1	2	3	3					
<b>TOTAL</b>		<b>41.3</b>	<b>3.3</b>	<b>281</b>	<b>291</b>	<b>300</b>	<b>68</b>	<b>35</b>	<b>17</b>		
CL	68.1	COEFF		NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK		500.0	40.3	439	735	1,031					

**PROJECT STATISTICS****PROJECT WILLEY**

TWP	RGE	SC	TRACT	TYPE		ACRES	PLOTS	TREES	CuFt	BdFt
000	000	00	RIDGE	U1	THR	329.30	154	874	S	W
000	000	00	RIDGE	U7						
CL	68.1		COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.00		VAR.	S.E.%	LOW	AVG	HIGH	5	7	10
WHEMLOCK-T			98.2	7.9	10,485	11,386	12,287			
DOUG FIR			674.8	54.4	255	559	862			
DOUG FIR-T			155.9	12.6	5,335	6,102	6,868			
PS FIR			635.7	51.2	486	996	1,507			
PS FIR-T			161.6	13.0	4,866	5,595	6,323			
R ALDER			685.2	55.2	112	251	390			
R ALDER-T			130.8	10.5	3,170	3,544	3,917			
WR CEDAR			1241.0	100.0	0	33	67			
WR CEDAR-T			447.9	36.1	58	90	123			
<b>TOTAL</b>			<b>42.4</b>	<b>3.4</b>	<b>28,289</b>	<b>29,290</b>	<b>30,292</b>	<b>72</b>	<b>37</b>	<b>18</b>
CL	68.1		COEFF	V BAR/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0		VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10
WHEMLOCK			500.0	40.3	62	103	145			
WHEMLOCK-T					96	105	113			
DOUG FIR			674.8	54.4	46	101	156			
DOUG FIR-T					100	114	129			
PS FIR			635.7	51.2	51	105	159			
PS FIR-T			75.3	6.1	84	97	110			
R ALDER			685.2	55.2	32	72	112			
R ALDER-T					76	85	94			
WR CEDAR			1241.0	100.0	0	57	115			
WR CEDAR-T			370.1	29.8	22	34	46			
<b>TOTAL</b>			<b>39.9</b>	<b>3.2</b>	<b>97</b>	<b>101</b>	<b>104</b>	<b>64</b>	<b>32</b>	<b>16</b>



TC TSTATS				STATISTICS				PAGE	1		
				PROJECT	WILLEY			DATE	12/20/2018		
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt		
000	000	00	RIDGE	U1	106.00	53	298	S	W		
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES					
TOTAL		53	298	5.6							
CRUISE		17	88	5.2	26,481	.3					
DBH COUNT REFOREST COUNT		36	208	5.8							
BLANKS											
100 %											
STAND SUMMARY											
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC	
WHEMLOCK-T	34	100.9	14.4	60	30.0	113.5	11,962	11,891	3,526	3,526	
PS FIR-T	26	88.5	13.5	55	24.0	88.4	8,342	8,147	2,504	2,504	
DOUG FIR-T	10	27.4	19.3	75	12.6	55.5	6,443	6,281	1,916	1,916	
R ALDER-T	16	29.1	14.5	57	8.8	33.5	3,111	2,870	941	943	
WR CEDAR-T	2	4.0	10.2	20	0.7	2.3	79	65	25	13	
<b>TOTAL</b>	<b>88</b>	<b>249.8</b>	<b>14.7</b>	<b>59</b>	<b>76.5</b>	<b>293.1</b>	<b>29,937</b>	<b>29,254</b>	<b>8,913</b>	<b>8,901</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK-T	99.3	13.6		87	101	115					
PS FIR-T	126.0	17.3		73	88	104					
DOUG FIR-T	152.9	21.0		22	27	33					
R ALDER-T	171.8	23.6		22	29	36					
WR CEDAR-T	467.6	64.2		1	4	7					
<b>TOTAL</b>	<b>30.3</b>	<b>4.2</b>		<b>239</b>	<b>250</b>	<b>260</b>	<b>37</b>	<b>19</b>	<b>9</b>		
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK-T	97.5	13.4		98	113	129					
PS FIR-T	124.6	17.1		73	88	103					
DOUG FIR-T	152.2	20.9		44	55	67					
R ALDER-T	172.0	23.6		26	33	41					
WR CEDAR-T	412.2	56.6		1	2	4					
<b>TOTAL</b>	<b>25.1</b>	<b>3.4</b>		<b>283</b>	<b>293</b>	<b>303</b>	<b>25</b>	<b>13</b>	<b>6</b>		
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK-T	99.9	13.7		10,259	11,891	13,523					
PS FIR-T	126.0	17.3		6,737	8,147	9,557					
DOUG FIR-T	152.5	20.9		4,965	6,281	7,596					
R ALDER-T	174.4	24.0		2,183	2,870	3,558					
WR CEDAR-T	538.4	74.0		17	65	113					
<b>TOTAL</b>	<b>30.3</b>	<b>4.2</b>		<b>28,038</b>	<b>29,254</b>	<b>30,471</b>	<b>37</b>	<b>19</b>	<b>9</b>		
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.			
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10		
WHEMLOCK-T				90	105	119					
PS FIR-T				76	92	108					
DOUG FIR-T				89	113	137					
R ALDER-T	23.5	3.2		65	86	106					
WR CEDAR-T	479.5	65.9		7	29	50					
<b>TOTAL</b>	<b>352.4</b>	<b>48.4</b>		<b>96</b>	<b>100</b>	<b>104</b>	<b>4,968</b>	<b>2,534</b>	<b>1,242</b>		



TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	WILLEY			DATE	12/20/2018	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	RIDGE	U2	43.00	9	50	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		9	50	5.6						
CRUISE		9	50	5.6	11,595	.4				
DBH COUNT										
REFOREST										
COUNT										
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
PS FIR	12	49.1	16.5	67	17.9	72.6	7,846	7,630	2,378	2,379
PS FIR-T	6	55.3	11.0	45	11.0	36.3	2,760	2,760	747	747
WHEMLOCK	9	43.0	15.2	64	14.0	54.5	5,626	5,626	1,712	1,712
WHEMLOCK-T	6	50.9	11.4	52	10.7	36.3	3,288	3,288	931	931
DOUG FIR	7	23.4	18.2	69	9.9	42.4	4,424	4,277	1,371	1,371
R ALDER	6	23.3	14.5	53	7.0	26.7	2,185	1,922	728	727
R ALDER-T	3	12.0	14.3	56	3.5	13.3	1,251	1,144	377	378
WR CEDAR	1	12.7	8.0	20	1.6	4.4	255	255	49	49
<b>TOTAL</b>	<b>50</b>	<b>269.7</b>	<b>14.0</b>	<b>55</b>	<b>76.7</b>	<b>286.4</b>	<b>27,634</b>	<b>26,901</b>	<b>8,293</b>	<b>8,295</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
PS FIR	129.0	45.6		27	49	71				
PS FIR-T	124.9	44.1		31	55	80				
WHEMLOCK	70.7	25.0		32	43	54				
WHEMLOCK-T	137.2	48.5		26	51	76				
DOUG FIR	145.2	51.3		11	23	35				
R ALDER	122.3	43.2		13	23	33				
R ALDER-T	150.8	53.3		6	12	18				
WR CEDAR	300.0	106.0			13	26				
<b>TOTAL</b>	<b>29.2</b>	<b>10.3</b>		<b>242</b>	<b>270</b>	<b>297</b>	<b>38</b>	<b>20</b>	<b>10</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
PS FIR	124.4	43.9		41	73	104				
PS FIR-T	129.9	45.9		20	36	53				
WHEMLOCK	70.7	25.0		41	54	68				
WHEMLOCK-T	106.1	37.5		23	36	50				
DOUG FIR	140.5	49.6		21	42	63				
R ALDER	129.9	45.9		14	27	39				
R ALDER-T	150.0	53.0		6	13	20				
WR CEDAR	300.0	106.0			4	9				
<b>TOTAL</b>	<b>17.3</b>	<b>6.1</b>		<b>269</b>	<b>286</b>	<b>304</b>	<b>13</b>	<b>7</b>	<b>3</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
PS FIR	125.7	44.4		4,242	7,630	11,019				
PS FIR-T	135.6	47.9		1,438	2,760	4,082				
WHEMLOCK	75.8	26.8		4,120	5,626	7,131				
WHEMLOCK-T	106.1	37.5		2,056	3,288	4,520				
DOUG FIR	138.4	48.9		2,186	4,277	6,368				
R ALDER	141.7	50.1		960	1,922	2,884				
R ALDER-T	150.3	53.1		537	1,144	1,752				
WR CEDAR	300.0	106.0			255	525				
<b>TOTAL</b>	<b>18.5</b>	<b>6.5</b>		<b>25,145</b>	<b>26,901</b>	<b>28,658</b>	<b>15</b>	<b>8</b>	<b>4</b>	

TC TSTATS				STATISTICS				PAGE	2	
				PROJECT	WILLEY			DATE	12/20/2018	
TWP	RGE	SECT	TRACT	TYPE	ACRES		PLOTS	TREES	CuFt	BdFt
000	000	00	RIDGE	U2	43.00		9	50	S	W
CL:	68.1 %	COEFF		V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.	S.E.%	LOW	AVG	HIGH	5	7	10	
CL:	68.1 %	COEFF		V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.	
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
PS FIR		125.7	44.4	58	105	152				
PS FIR-T		135.6	47.9	40	76	112				
WHEMLOCK		75.8	26.8	76	103	131				
WHEMLOCK-T		106.1	37.5	57	91	125				
DOUG FIR		138.4	48.9	52	101	150				
R ALDER		141.7	50.1	36	72	108				
R ALDER-T		150.3	53.1	40	86	131				
WR CEDAR		300.0	106.0		57	118				
<b>TOTAL</b>		<i>16.5</i>	<i>5.8</i>	<i>88</i>	<i>94</i>	<i>100</i>	<i>12</i>	<i>6</i>	<i>3</i>	

TC		TSTNDSUMRdVBar		Stand Table Summary with RD, V-bar - Type														
Project													WILLEY					
T000 R000 S00 TU2													T000 R000 S00 TU2					
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees		Page:	1								
000	000	00	RIDGE	U2	43.00	9	50		Date:	12/20/2018								
									Time:	8:30:07AM								
Spc	S	DBH	Sample	QMD	Total	Bole	Total	Avg	Avg	RD	V	Ht/D	Trees/	BA/	Gross Bd.	Def	Net	MBF
	T	Class	Trees	DBH	Age	Ht.	Ht.	FF	CR		Bar		Acre	Acre	Ft. Acre	%	Bd. Ft. Acre	
SF		9	1	9.2	65	28	31	82		2.0	43	40.4	13.105	6.05	262		262	11
SF		11	3	11.2	65	50	60	82		5.4	83	64.9	26.732	18.15	1,506		1,506	65
SF		12	2	12.0	65	51	62	81		3.5	82	61.7	15.435	12.10	992		992	43
SF		13	1	12.6	65	56	69	81		1.7	92	65.7	6.987	6.05	559		559	24
SF		14	1	14.4	65	61	75	82		1.6	97	62.5	5.349	6.05	588		588	25
SF		15	1	14.7	65	60	74	82		1.6	93	60.4	5.133	6.05	565		565	24
SF		16	1	16.4	65	69	86	81		1.5	102	62.9	4.124	6.05	619		619	27
SF		17	3	16.6	65	65	81	82		4.5	97	58.2	12.030	18.15	1,841	4	1,760	76
SF		18	3	17.9	65	76	95	81		4.3	110	63.3	10.357	18.15	2,134	6	2,000	86
SF		20	1	19.7	65	76	95	81		1.4	118	57.9	2.858	6.05	715		715	31
SF		22	1	22.3	65	79	99	82		1.3	136	53.3	2.231	6.05	825		825	35
SF		Totals	18	13.8	65	55	67	82		29.3	95	58.4	104.342	108.90	10,605	2	10,390	447
WH		8	1	8.0	65	38	44	83		2.1	86	66.0	17.332	6.05	520		520	22
WH		12	3	11.9	65	53	64	81		5.3	90	64.4	23.385	18.15	1,627		1,627	70
WH		13	3	13.1	65	60	73	81		5.0	85	66.8	19.326	18.15	1,547		1,547	67
WH		14	1	14.3	65	70	86	82		1.6	108	72.2	5.424	6.05	651		651	28
WH		15	1	14.8	65	62	75	82		1.6	92	60.8	5.064	6.05	557		557	24
WH		16	1	16.0	65	68	83	81		1.5	107	62.3	4.333	6.05	650		650	28
WH		17	4	16.8	65	67	82	81		5.9	109	58.6	15.726	24.20	2,634		2,634	113
WH		18	1	18.3	65	79	97	81		1.4	120	63.6	3.312	6.05	729		729	31
WH		Totals	15	13.3	65	57	69	82		24.9	98	62.3	93.903	90.75	8,914		8,914	383
DF		15	1	14.7	65	60	73	82		1.6	93	59.6	5.133	6.05	565		565	24
DF		16	1	15.9	65	65	80	82		1.5	87	60.4	4.388	6.05	614	14	527	23
DF		19	2	18.8	65	72	89	81		2.8	106	56.7	6.245	12.10	1,311	2	1,280	55
DF		20	2	19.9	65	74	92	80		2.7	97	55.6	5.575	12.10	1,198	2	1,171	50
DF		23	1	23.3	65	80	100	82		1.3	122	51.5	2.043	6.05	736		736	32
DF		Totals	7	18.2	65	69	86	81		9.9	101	56.4	23.384	42.35	4,424	3	4,277	184
RA		11	1	11.1	65	44	52	82		1.3	60	56.2	6.614	4.44	265		265	11
RA		14	4	14.1	65	52	63	80		4.7	72	53.3	16.417	17.78	1,311	3	1,271	55
RA		15	1	15.1	65	60	72	81		1.1	88	57.2	3.574	4.44	500	21	393	17
RA		16	1	16.1	65	65	79	82		1.1	85	58.9	3.144	4.44	440	14	377	16
RA		17	1	16.7	65	68	83	82		1.1	112	59.6	2.922	4.44	526	6	497	21
RA		18	1	17.6	65	52	62	79		1.1	59	42.3	2.631	4.44	395	33	263	11
RA		Totals	9	14.4	65	54	65	81		10.5	77	53.9	35.300	40.00	3,437	11	3,066	132
RC		8	1	8.0	65	20	21	77		1.6	57	31.5	12.732	4.44	255		255	11
RC		Totals	1	8.0	65	20	21	77		1.6	57	31.5	12.732	4.44	255		255	11
Totals			50	14.0	65	55	67	81		76.7	94	57.6	269.662	286.44	27,634	3	26,901	1,157

T	TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page	1								
												Date		12/20/2018							
												Time		8:26:42AM							
T000 R000 S00 TU3										T000 R000 S00 TU3											
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt												
000	000	00	RIDGE	U3	34.00	17	41	S	W												
Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre
					Net BdFt	Def%	Gross		Net	Log Scale Dia.				Log Length				Ln	Dia	Bd	
									5-7	8-11	12-15	16+	12-20	21-30	31-35	36-99	Ft	In	Ft		
WH	T	D	2S	7		919	919	31									40	12	200	1.60	4.6
WH	T	D	3S	68		7,947	7,947	270	44	56							40	8	86	0.67	92.2
WH	T	D	4S	21		2,450	2,450	83	100				27	61	12		21	5	23	0.24	105.4
WH	T	D	UT	4		375	375	13	100								21	5	19	0.34	20.3
<b>WH T Totals</b>				47		11,691	11,691	398	54	38	8		6	13	6	76	29	6	53	0.53	222.5
RA	T	CU	CU														6			0.00	3.0
RA	T	D	2S	13	8.0	746	687	23					43	57			25	12	115	1.22	6.0
RA	T	D	3S	21	9.1	1,117	1,016	35			100				30	70	36	9	91	0.87	11.1
RA	T	D	4S	51	10.0	2,798	2,519	86	41	59				47	7	46	34	7	57	0.62	44.1
RA	T	D	UT	15		741	741	25	100				46	38	16		20	5	21	0.31	34.9
<b>RA T Totals</b>				20	8.1	5,402	4,962	169	36	50	14		13	43	4	40	28	7	50	0.61	99.0
DF	T	D	2S	31	2.7	1,692	1,646	56									40	14	312	2.25	5.3
DF	T	D	3S	58	3.7	3,230	3,112	106	10	90							39	9	121	1.02	25.7
DF	T	D	4S	11		544	544	19	100				26	51	24		26	5	27	0.34	20.5
<b>DF T Totals</b>				21	3.0	5,467	5,302	180	16	53	31		3	5	2	90	34	8	103	0.96	51.5
SF	T	CU	CU														11	7		0.00	1.2
SF	T	D	2S	21		561	561	19			100			48	52		33	13	209	1.75	2.7
SF	T	D	3S	55	7.5	1,581	1,463	50	5	95					5	95	39	9	125	0.99	11.7
SF	T	D	4S	19		504	504	17	71	29				42	14	43	27	5	35	0.39	14.4
SF	T	D	UT	5		107	107	4	100				43		57		25	5	25	0.32	4.3
<b>SF T Totals</b>				11	4.3	2,753	2,635	90	20	58	21		2	18	8	72	31	7	77	0.75	34.3
RC	T	D	4S	100	18.1	247	202	7	100								17	5	16	0.19	12.4
<b>RC T Totals</b>				1	18.1	247	202	7	100								17	5	16	0.19	12.4
<b>Type Totals</b>					3.0	25,560	24,793	843	39	46	15		7	18	5	71	29	7	59	0.62	419.6

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	WILLEY			DATE	12/20/2018	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	RIDGE	U3	34.00	17	90	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		17	90	5.3						
CRUISE		9	41	4.6	8,240	.5				
DBH COUNT										
REFOREST										
COUNT		8	47	5.9						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK-T	12	130.3	12.9	57	32.8	117.7	11,691	11,691	3,408	3,408
R ALDER-T	13	53.8	14.4	55	16.1	61.2	5,402	4,962	1,672	1,675
DOUG FIR-T	6	25.7	19.1	71	11.7	51.2	5,467	5,302	1,693	1,693
PS FIR-T	8	20.2	15.3	57	6.6	25.6	2,753	2,635	801	800
WR CEDAR-T	2	12.4	10.2	20	2.2	7.1	247	202	79	39
<b>TOTAL</b>	<b>41</b>	<b>242.3</b>	<b>14.1</b>	<b>56</b>	<b>70.0</b>	<b>262.8</b>	<b>25,560</b>	<b>24,793</b>	<b>7,653</b>	<b>7,615</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	94.4	23.6		100	130	161				
R ALDER-T	87.0	21.8		42	54	65				
DOUG FIR-T	145.4	36.3		16	26	35				
PS FIR-T	298.1	74.5		5	20	35				
WR CEDAR-T	256.7	64.2		4	12	20				
<b>TOTAL</b>	<b>40.7</b>	<b>10.2</b>		<b>218</b>	<b>242</b>	<b>267</b>	<b>71</b>	<b>36</b>	<b>18</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	89.0	22.2		91	118	144				
R ALDER-T	86.9	21.7		48	61	74				
DOUG FIR-T	137.9	34.5		34	51	69				
PS FIR-T	272.1	68.0		8	26	43				
WR CEDAR-T	222.7	55.7		3	7	11				
<b>TOTAL</b>	<b>32.9</b>	<b>8.2</b>		<b>241</b>	<b>263</b>	<b>284</b>	<b>46</b>	<b>23</b>	<b>11</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	90.2	22.5		9,055	11,691	14,328				
R ALDER-T	89.0	22.3		3,858	4,962	6,067				
DOUG FIR-T	135.9	34.0		3,500	5,302	7,104				
PS FIR-T	267.6	66.9		872	2,635	4,397				
WR CEDAR-T	299.5	74.9		51	202	354				
<b>TOTAL</b>	<b>39.0</b>	<b>9.8</b>		<b>22,375</b>	<b>24,793</b>	<b>27,211</b>	<b>65</b>	<b>33</b>	<b>16</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T				77	99	122				
R ALDER-T				63	81	99				
DOUG FIR-T				68	103	139				
PS FIR-T	267.6	66.9		34	103	172				
WR CEDAR-T	263.9	66.0		7	29	50				
<b>TOTAL</b>	<b>219.3</b>	<b>54.8</b>		<b>85</b>	<b>94</b>	<b>104</b>	<b>2,044</b>	<b>1,043</b>	<b>511</b>	

T	TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page	1											
Project:												Date	12/20/2018											
WILLEY												Time	8:26:42AM											
T000 R000 S00 TU4										T000 R000 S00 TU4														
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt	Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt					
000	000	00	RIDGE	U4	60.00	30	58	S	W	000	000	00	RIDGE	U4	60.00	30	58	S	W					
Spp	S	So	Gr	%	Net	Bd. Ft. per Acre	Total	Percent Net Board Foot Volume	Average Log	Logs	Per	/Acre	Ln	Dia	Bd	CF/	Lf	Ft	In	Ft	CF/	Lf		
																							Def%	Gross
WH	T	CU	CU										9			0.00							3.0	
WH	T	D	2S	24	3.3	3,860	3,732	224					69	31		100			40	14	287	2.05	13.0	
WH	T	D	3S	57		8,450	8,450	507	27	73						100			40	8	97	0.74	87.2	
WH	T	D	4S	17		2,595	2,595	156	100				16	54	25	5			24	5	26	0.29	100.8	
WH	T	D	UT	2		231	231	14	100							100			21	5	19	0.34	12.5	
<b>WH T Totals</b>				44	.8	15,137	15,008	901	34	41	17	8	3	9	6	82			31	7	69	0.66	216.5	
DF	T	CU	CU										5	7		0.00							8.6	
DF	T	D	2S	38	3.7	4,131	3,978	239					25	75		100			40	15	353	2.50	11.3	
DF	T	D	3S	52	2.4	5,603	5,467	328		100						100			40	10	138	1.07	39.5	
DF	T	D	4S	10		1,003	1,003	60	100						38	42	20		31	5	36	0.36	28.2	
DF	T	D	UT																10	7		0.00	2.7	
<b>DF T Totals</b>				31	2.7	10,737	10,448	627	10	52	10	29			4	4	92			33	9	116	1.06	90.2
RA	T	CU	CU																				2.3	
RA	T	D	2S	10	8.0	586	539	32					100		43	57			25	12	115	1.22	4.7	
RA	T	D	3S	28	10.2	1,553	1,394	84		100					60		40		34	10	97	0.90	14.4	
RA	T	D	4S	49	8.1	2,705	2,486	149	41	59					37	9	54		35	7	57	0.60	43.7	
RA	T	D	UT	13		651	651	39	100						51	34	14		20	5	21	0.30	30.8	
<b>RA T Totals</b>				15	7.7	5,496	5,071	304	33	57	11				11	45	5	39		28	7	53	0.61	96.0
SF	T	CU	CU																				3.2	
SF	T	D	2S	22		746	746	45					100		43		57		33	14	231	1.79	3.2	
SF	T	D	3S	55	7.4	1,922	1,779	107	6	94							100		40	9	126	0.99	14.1	
SF	T	D	4S	19		607	607	36	71	29					42		58		28	5	35	0.39	17.3	
SF	T	D	UT	4		129	129	8	100						43		57		25	5	25	0.32	5.2	
<b>SF T Totals</b>				10	4.2	3,404	3,261	196	20	57	23				2	18	2	78		30	7	76	0.75	43.1
RC	T	D	4S	100	18.1	140	115	7	100						100				17	5	16	0.19	7.0	
<b>RC T Totals</b>				0	18.1	140	115	7	100						100					17	5	16	0.19	7.0
<b>Type Totals</b>					2.9	34,913	33,903	2,034	25	48	14	12	3	14	5	78				30	7	75	0.74	452.9

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	WILLEY			DATE	12/20/2018	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	RIDGE	U4	60.00	30	190	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		30	190	6.3						
CRUISE		11	58	5.3	14,720	.4				
DBH COUNT										
REFOREST										
COUNT		19	130	6.8						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK-T	23	123.2	14.4	60	36.6	138.8	15,137	15,008	4,422	4,422
DOUG FIR-T	9	39.5	20.3	78	19.7	88.9	10,737	10,448	3,140	3,140
R ALDER-T	16	51.4	14.5	57	15.5	59.1	5,496	5,071	1,663	1,665
PS FIR-T	8	24.3	15.3	58	7.9	30.9	3,404	3,261	983	983
WR CEDAR-T	2	7.0	10.2	20	1.3	4.0	140	115	45	22
<b>TOTAL</b>	<b>58</b>	<b>245.3</b>	<b>15.5</b>	<b>61</b>	<b>81.7</b>	<b>321.7</b>	<b>34,913</b>	<b>33,903</b>	<b>10,253</b>	<b>10,231</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	98.0	18.2		101	123	146				
DOUG FIR-T	133.9	24.9		30	39	49				
R ALDER-T	111.7	20.8		41	51	62				
PS FIR-T	250.9	46.6		13	24	36				
WR CEDAR-T	348.0	64.7		2	7	12				
<b>TOTAL</b>	<b>36.2</b>	<b>6.7</b>		<b>229</b>	<b>245</b>	<b>262</b>	<b>54</b>	<b>28</b>	<b>14</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	96.2	17.9		114	139	164				
DOUG FIR-T	132.1	24.5		67	89	111				
R ALDER-T	111.8	20.8		47	59	71				
PS FIR-T	239.4	44.5		17	31	45				
WR CEDAR-T	305.1	56.7		2	4	6				
<b>TOTAL</b>	<b>30.3</b>	<b>5.6</b>		<b>304</b>	<b>322</b>	<b>340</b>	<b>38</b>	<b>19</b>	<b>10</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	98.2	18.2		12,271	15,008	17,746				
DOUG FIR-T	131.8	24.5		7,889	10,448	13,006				
R ALDER-T	114.0	21.2		3,997	5,071	6,145				
PS FIR-T	238.7	44.3		1,815	3,261	4,707				
WR CEDAR-T	402.6	74.8		29	115	200				
<b>TOTAL</b>	<b>35.6</b>	<b>6.6</b>		<b>31,661</b>	<b>33,903</b>	<b>36,145</b>	<b>52</b>	<b>27</b>	<b>13</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T				88	108	128				
DOUG FIR-T				89	117	146				
R ALDER-T				68	86	104				
PS FIR-T	146.7	27.3		59	106	153				
WR CEDAR-T	357.2	66.4		7	29	50				
<b>TOTAL</b>	<b>350.5</b>	<b>65.1</b>		<b>98</b>	<b>105</b>	<b>112</b>	<b>5,088</b>	<b>2,596</b>	<b>1,272</b>	

T000 R000 S00 TU5  
 Twp Rge Sec Tract Type Acres Plots Sample Trees CuFt T000 R000 S00 TU5  
 000 000 00 RIDGE U5 .30 1 6 S W  
 BdFt

Spp	T	D	Gr	%	Bd. Ft. per Acre			Total Net MBF	Percent Net Board Foot Volume								Average Log				Logs Per /Acre		
					Net BdFt	Def%	Gross		Net	Log Scale Dia.				Log Length				Ln Ft	Dia In	Bd Ft		CF/Lf	
										5-7	8-11	12-15	16+	12-20	21-30	31-35	36-99						
DF	T	D	3S	78	5.2	14,517	13,765	4	100				100				40	10	134	1.06	102.8		
DF	T	D	4S	22		3,670	3,670	1	100				36 64				32	5	36	0.35	102.8		
<b>DF T Totals</b>				54	4.1	18,187	17,435	5	21	79					8	92	36	7	85	0.74	205.7		
WH	T	D	3S	80		9,264	9,264	3	100				100				40	8	103	0.80	89.9		
WH	T	D	4S	20		2,189	2,189	1	100				47	53					20	5	24	0.27	89.9
<b>WH T Totals</b>				36		11,452	11,452	3	19	81					9	10	81	30	7	64	0.62	179.9	
RA	T	D	3S	77		2,619	2,619	1	100				100				30	9	70	0.76	37.4		
RA	T	D	4S	23	33.3	1,123	748	0	100				100				27	5	20	0.29	37.4		
<b>RA T Totals</b>				10	10.0	3,742	3,368	1	22	78					100				29	7	45	0.53	74.8
<b>Type Totals</b>					3.4	33,381	32,255	10	20	80					3	18	79	32	7	70	0.67	460.4	

TC TSTATS				<b>STATISTICS</b>				PAGE	1		
				PROJECT		WILLEY		DATE	12/20/2018		
<b>TWP</b>	<b>RGE</b>	<b>SECT</b>	<b>TRACT</b>	<b>TYPE</b>	<b>ACRES</b>	<b>PLOTS</b>	<b>TREES</b>	<b>CuFt</b>	<b>BdFt</b>		
<b>000</b>	<b>000</b>	<b>00</b>	<b>RIDGE</b>	<b>U5</b>	0.30	1	6	S	W		
				TREES	ESTIMATED			PERCENT			
				PER PLOT	TOTAL			SAMPLE			
				PLOTS	TREES	PER PLOT	TREES	TREES			
TOTAL		1	6	6.0							
CRUISE		1	6	6.0	69		8.7				
DBH COUNT											
REFOREST											
COUNT											
BLANKS											
100 %											
<b>STAND SUMMARY</b>											
	SAMPLE	TREES	AVG	BOLE	REL	BASAL	GROSS	NET	GROSS	NET	
	TREES	/ACRE	DBH	LEN	DEN	AREA	BF/AC	BF/AC	CF/AC	CF/AC	
DOUG FIR-T	3	102.8	17.1	75	39.5	163.4	18,187	17,435	5,481	5,481	
WHEMLOCK-T	2	89.9	14.9	65	28.2	108.9	11,452	11,452	3,370	3,370	
R ALDER-T	1	37.4	14.0	62	10.7	40.0	3,742	3,368	1,140	1,140	
<b>TOTAL</b>	<b>6</b>	<b>230.2</b>	<b>15.8</b>	<b>69</b>	<b>78.6</b>	<b>312.3</b>	<b>33,381</b>	<b>32,255</b>	<b>9,991</b>	<b>9,991</b>	
CONFIDENCE LIMITS OF THE SAMPLE											
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR											



TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	WILLEY			DATE	12/20/2018	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	RIDGE	U6	59.00	30	172	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		30	172	5.7						
CRUISE		11	58	5.3	14,465	.4				
DBH COUNT										
REFOREST										
COUNT		19	114	6.0						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK-T	22	105.4	14.3	59	31.0	117.0	12,816	12,702	3,715	3,715
PS FIR-T	23	67.3	15.2	63	21.8	85.3	9,307	9,170	2,752	2,751
DOUG FIR-T	2	36.1	16.9	71	13.7	56.3	6,600	6,600	1,915	1,915
R ALDER-T	10	28.8	15.2	58	9.3	36.5	3,309	3,002	1,021	1,023
WR CEDAR-T	1	7.6	8.0	20	0.9	2.7	153	153	30	30
<b>TOTAL</b>	<b>58</b>	<b>245.2</b>	<b>14.9</b>	<b>61</b>	<b>77.1</b>	<b>297.7</b>	<b>32,184</b>	<b>31,627</b>	<b>9,433</b>	<b>9,434</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	98.3	18.3		86	105	125				
PS FIR-T	133.8	24.9		51	67	84				
DOUG FIR-T	164.1	30.5		25	36	47				
R ALDER-T	135.5	25.2		22	29	36				
WR CEDAR-T	380.6	70.7		2	8	13				
<b>TOTAL</b>	<b>30.5</b>	<b>5.7</b>		<b>231</b>	<b>245</b>	<b>259</b>	<b>39</b>	<b>20</b>	<b>10</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	94.9	17.6		96	117	138				
PS FIR-T	132.7	24.7		64	85	106				
DOUG FIR-T	163.7	30.4		39	56	73				
R ALDER-T	136.4	25.3		27	36	46				
WR CEDAR-T	380.6	70.7		1	3	5				
<b>TOTAL</b>	<b>24.8</b>	<b>4.6</b>		<b>284</b>	<b>298</b>	<b>311</b>	<b>26</b>	<b>13</b>	<b>6</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	97.1	18.1		10,410	12,702	14,995				
PS FIR-T	133.3	24.8		6,898	9,170	11,441				
DOUG FIR-T	163.7	30.4		4,592	6,600	8,608				
R ALDER-T	138.5	25.7		2,230	3,002	3,775				
WR CEDAR-T	380.6	70.7		45	153	261				
<b>TOTAL</b>	<b>28.3</b>	<b>5.3</b>		<b>29,964</b>	<b>31,627</b>	<b>33,290</b>	<b>33</b>	<b>17</b>	<b>8</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T				89	109	128				
PS FIR-T	48.2	9.0		81	107	134				
DOUG FIR-T				82	117	153				
R ALDER-T				61	82	103				
WR CEDAR-T	259.3	48.2		17	57	98				
<b>TOTAL</b>	<b>302.7</b>	<b>56.2</b>		<b>101</b>	<b>106</b>	<b>112</b>	<b>3,795</b>	<b>1,936</b>	<b>949</b>	

T TSPCSTGR	Species, Sort Grade - Board Foot Volumes (Type)										Page 1											
	Project: WILLEY										Date 12/20/2018											
											Time 8:26:42AM											
T000 R000 S00 TU7										T000 R000 S00 TU7												
Twp	Rge	Sec	Tract	Type	Acres	Plots	Sample Trees	CuFt	BdFt													
000	000	00	RIDGE	U7	27.00	14	33	S	W													
Spp	S	So	Gr	%	Bd. Ft. per Acre			Total	Percent Net Board Foot Volume								Average Log				Logs Per /Acre	
					Net BdFt	Def%	Gross		Net	Log Scale Dia.				Log Length				Ln	Dia	Bd		CF/Lf
									5-7	8-11	12-15	16+	12-20	21-30	31-35	36-99	Ft	In	Ft	Lf		
WH	T	D	2S	12	10.1	1,556	1,400	38			64	36				100	40	13	236	1.94	5.9	
WH	T	D	3S	63		6,908	6,908	187	41	59						100	40	8	87	0.68	79.0	
WH	T	D	4S	21		2,350	2,350	63	100				18	64	11	8	22	5	24	0.25	97.9	
WH	T	D	UT	4		332	332	9	100							100	21	5	19	0.34	17.9	
<b>WH T Totals</b>				47	1.4	11,146	10,990	297	50	37	8	5	4	14	5	77	29	6	55	0.56	200.8	
RA	T	CU	CU														6			0.00	4.0	
RA	T	D	2S	15	8.0	989	910	25			100		43	57			25	12	115	1.22	7.9	
RA	T	D	3S	23	8.7	1,547	1,413	38		100						100	30	10	92	0.88	15.4	
RA	T	D	4S	50	6.7	3,245	3,028	82	49	51				38	5	57	34	7	53	0.56	57.0	
RA	T	D	UT	12		664	664	18	100				76			24	19	5	21	0.30	32.2	
<b>RA T Totals</b>				26	6.7	6,445	6,015	162	35	49	15		15	51	3	31	28	7	52	0.60	116.4	
DF	T	CU	CU														8			0.00	2.7	
DF	T	D	2S	28	2.7	1,541	1,499	40			100					100	40	14	312	2.25	4.8	
DF	T	D	3S	59	3.4	3,175	3,068	83	5	95						100	40	9	131	1.03	23.4	
DF	T	D	4S	13		682	682	18	100					28	49	23	31	5	37	0.36	18.6	
<b>DF T Totals</b>				22	2.8	5,399	5,249	142	16	56	29		4	6	90		34	8	106	0.94	49.6	
SF	T	CU	CU														11	7		0.00	1.5	
SF	T	D	2S	25		324	324	9			100					100	25	15	220	2.04	1.5	
SF	T	D	3S	49	8.3	669	613	17		100						100	40	9	110	0.92	5.6	
SF	T	D	4S	21		260	260	7	32	68				32	68		31	6	61	0.53	4.3	
SF	T	D	UT	5		56	56	2	100				100				20	5	20	0.29	2.8	
<b>SF T Totals</b>				5	4.3	1,309	1,253	34	11	63	26		4	33	63		30	8	81	0.79	15.6	
<b>Type Totals</b>					3.3	24,299	23,508	635	37	46	15	2	6	22	5	68		30	7	61	0.64	382.3

TC TSTATS				STATISTICS				PAGE	1	
				PROJECT	WILLEY			DATE	12/20/2018	
TWP	RGE	SECT	TRACT	TYPE	ACRES	PLOTS	TREES	CuFt	BdFt	
000	000	00	RIDGE	U7	27.00	14	68	S	W	
		PLOTS	TREES	TREES PER PLOT	ESTIMATED TOTAL TREES	PERCENT SAMPLE TREES				
TOTAL		14	68	4.9						
CRUISE		7	33	4.7	5,634	.6				
DBH COUNT										
REFOREST										
COUNT		7	35	5.0						
BLANKS										
100 %										
STAND SUMMARY										
	SAMPLE TREES	TREES /ACRE	AVG DBH	BOLE LEN	REL DEN	BASAL AREA	GROSS BF/AC	NET BF/AC	GROSS CF/AC	NET CF/AC
WHEMLOCK-T	13	117.2	13.2	58	30.5	110.7	11,146	10,990	3,287	3,287
R ALDER-T	11	60.9	14.4	58	18.1	68.6	6,445	6,015	1,925	1,926
DOUG FIR-T	6	23.4	19.1	76	10.7	46.7	5,399	5,249	1,606	1,606
PS FIR-T	3	7.0	17.4	69	2.8	11.7	1,309	1,253	367	366
<b>TOTAL</b>	<b>33</b>	<b>208.7</b>	<b>14.4</b>	<b>60</b>	<b>62.5</b>	<b>237.6</b>	<b>24,299</b>	<b>23,508</b>	<b>7,185</b>	<b>7,185</b>
CONFIDENCE LIMITS OF THE SAMPLE										
68.1 TIMES OUT OF 100 THE VOLUME WILL BE WITHIN THE SAMPLE ERROR										
CL:	68.1 %	COEFF	TREES/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	92.8	25.7		87	117	147				
R ALDER-T	85.6	23.7		46	61	75				
DOUG FIR-T	140.0	38.8		14	23	33				
PS FIR-T	260.6	72.3		2	7	12				
<b>TOTAL</b>	<b>43.4</b>	<b>12.0</b>		<b>184</b>	<b>209</b>	<b>234</b>	<b>81</b>	<b>41</b>	<b>20</b>	
CL:	68.1 %	COEFF	BASAL AREA/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	83.3	23.1		85	111	136				
R ALDER-T	83.8	23.2		53	69	85				
DOUG FIR-T	128.3	35.6		30	47	63				
PS FIR-T	270.2	74.9		3	12	20				
<b>TOTAL</b>	<b>37.3</b>	<b>10.3</b>		<b>213</b>	<b>238</b>	<b>262</b>	<b>60</b>	<b>31</b>	<b>15</b>	
CL:	68.1 %	COEFF	NET BF/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T	84.9	23.5		8,404	10,990	13,575				
R ALDER-T	87.8	24.4		4,550	6,015	7,480				
DOUG FIR-T	125.8	34.9		3,418	5,249	7,081				
PS FIR-T	270.1	74.9		315	1,253	2,192				
<b>TOTAL</b>	<b>41.9</b>	<b>11.6</b>		<b>20,777</b>	<b>23,508</b>	<b>26,238</b>	<b>76</b>	<b>39</b>	<b>19</b>	
CL:	68.1 %	COEFF	V-BAR/ACRE			# OF PLOTS REQ.		INF. POP.		
SD:	1.0	VAR.%	S.E.%	LOW	AVG	HIGH	5	7	10	
WHEMLOCK-T				76	99	123				
R ALDER-T				66	88	109				
DOUG FIR-T	57.1	15.8		73	112	152				
PS FIR-T	270.1	74.9		27	107	188				
<b>TOTAL</b>	<b>200.2</b>	<b>55.5</b>		<b>87</b>	<b>99</b>	<b>110</b>	<b>1,725</b>	<b>880</b>	<b>431</b>	

**Species Summary - Trees, Logs, Tons, CCF, MBF**

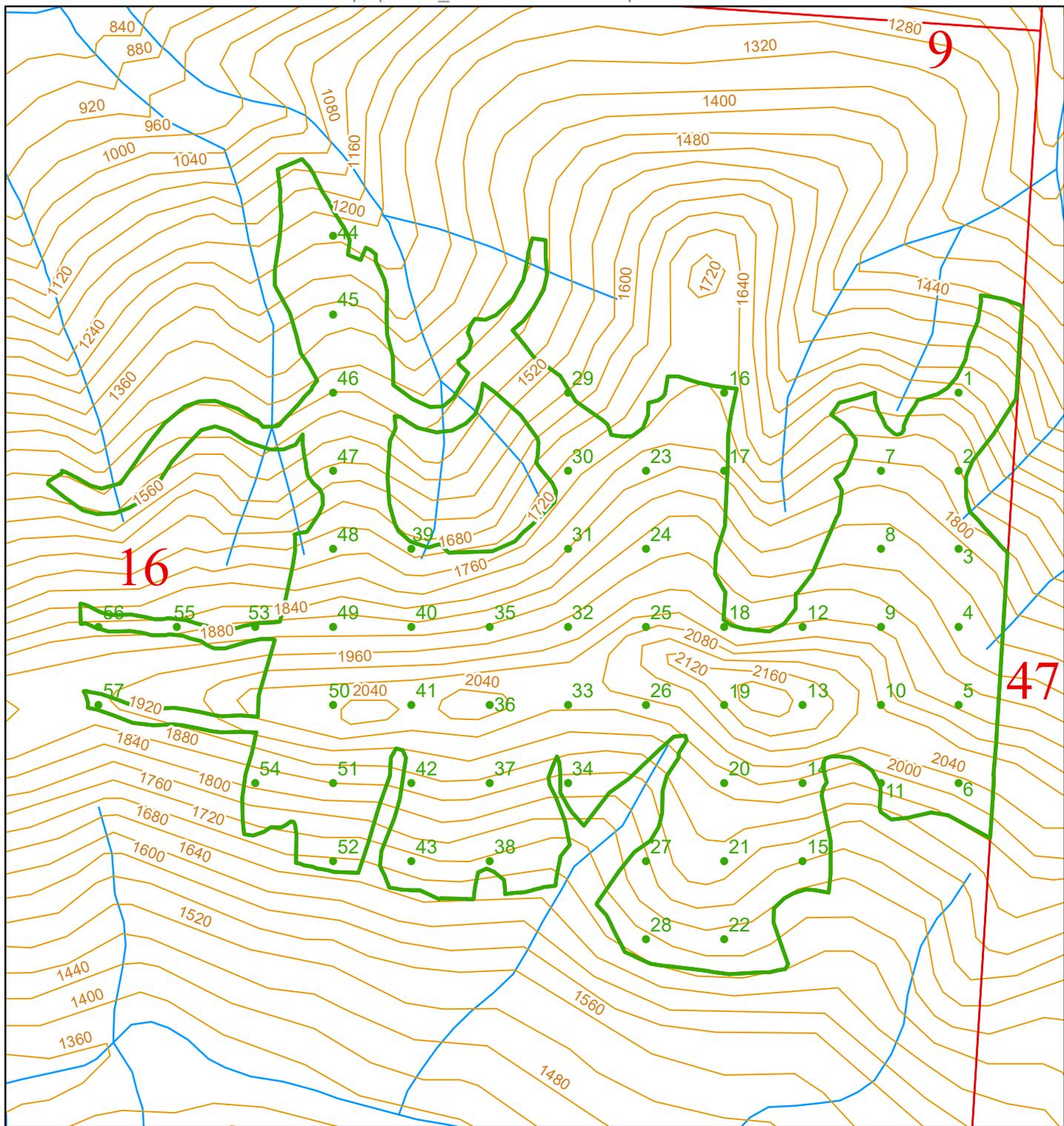
T000 R000 S00 TyU1	106.0
T000 R000 S00 TyU2	43.0
T000 R000 S00 TyU7	27.0

**Project WILLEY**  
**Acres 329.30**

**Page No 1**  
**Date: 12/20/2018**  
**Time 8:26:42AM**

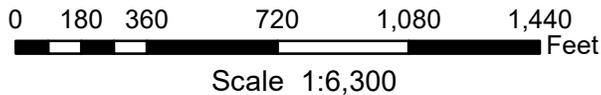
Species	s T	Total	Total	Total	Net Cubic Ft/		CF/	Total CCF		Total MBF	
		Trees	Logs	Tons	Tree	Log	LF	Gross	Net	Gross	Net
WHEMLOCK	T	34,121	58,832	35,327	32.35	18.76	0.64	11,040	11,039	3,776	3,749
DOUG FIR	T	8,936	18,192	17,301	67.93	33.37	0.98	6,070	6,070	2,054	2,009
PS FIR	T	18,059	31,678	15,931	30.78	17.55	0.63	5,561	5,559	1,885	1,842
R ALDER	T	11,862	21,789	10,593	32.52	17.70	0.62	3,852	3,857	1,267	1,167
PS FIR		2,110	4,220	2,929	48.48	24.24	0.78	1,022	1,023	337	328
WHEMLOCK		1,850	3,701	2,356	39.79	19.90	0.66	736	736	242	242
DOUG FIR		1,006	2,011	1,680	58.63	29.31	0.89	590	590	190	184
R ALDER		1,003	1,549	861	31.15	20.18	0.65	313	313	94	83
WR CEDAR	T	1,710	1,710	230	3.36	3.36	0.20	98	58	34	30
WR CEDAR		547	547	50	3.88	3.88	0.24	21	21	11	11
<b>Totals</b>		81,205	144,229	87,259	36.04	20.29	0.69	29,303	29,266	9,890	9,645

Wood Type Species	Total	Total	Total	Net Cubic Ft/		CF/	Total CCF		Total MBF	
	Trees	Logs	Tons	Tree	Log	LF	Gross	Net	Gross	Net
C	68,340	120,892	75,805	36.72	20.76	0.70	25,138	25,096	8,529	8,396
H	12,866	23,337	11,454	32.41	17.87	0.62	4,165	4,170	1,361	1,250
<b>Totals</b>	81,205	144,229	87,259	36.04	20.29	0.69	29,303	29,266	9,890	9,645



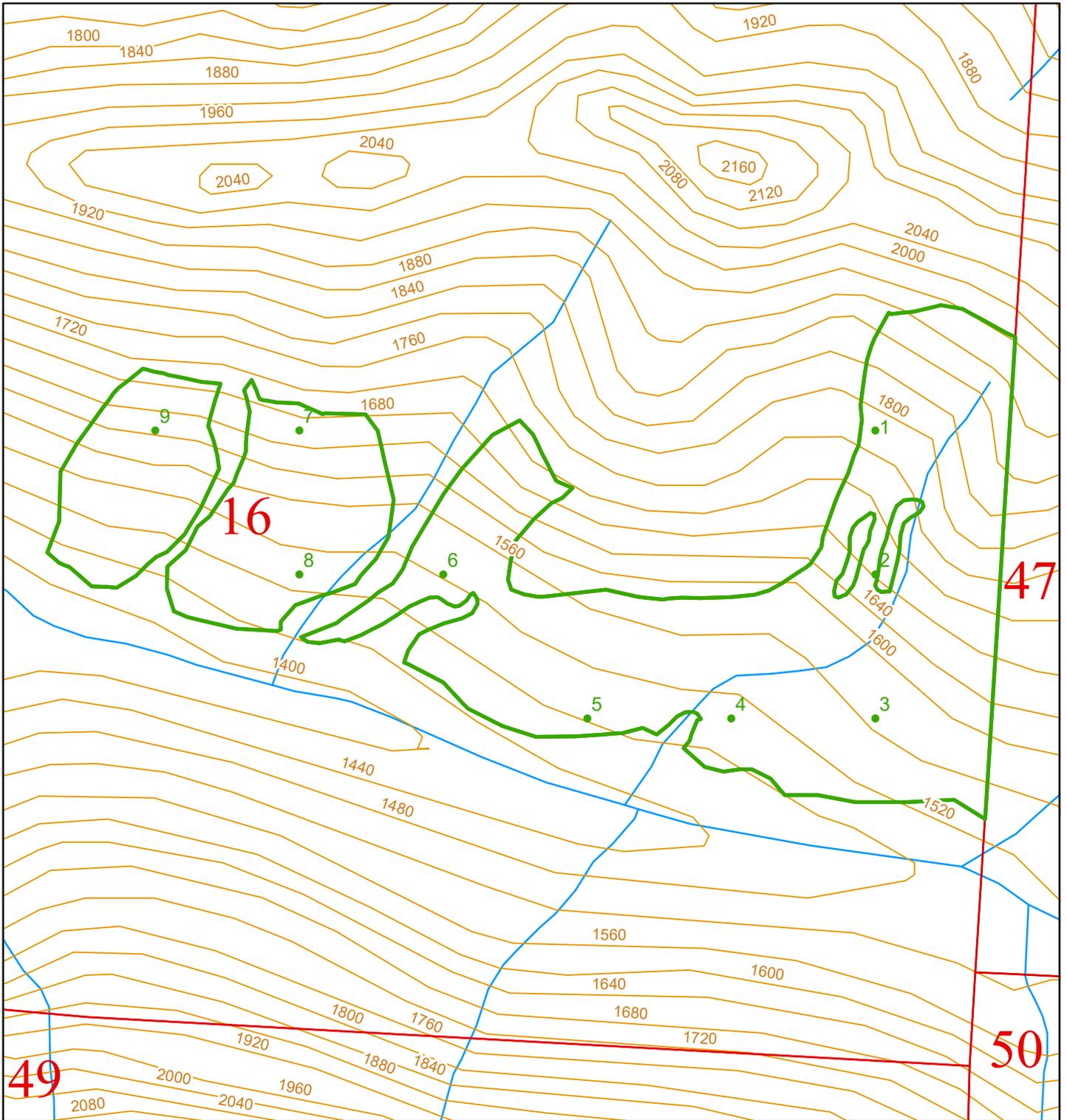
**Cruiser Sample Point Locations**

LAYER NAME:	willy_ridge_planned	Township:	T30R11W
POLY ID:	1	Total Sample Points:	57
Acres:	106	Spacing Between Points:	Width: 290 Height: 290
		Point Rotation Degrees:	0



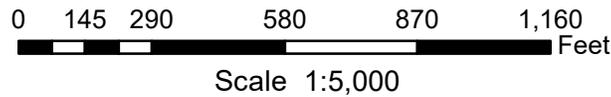
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



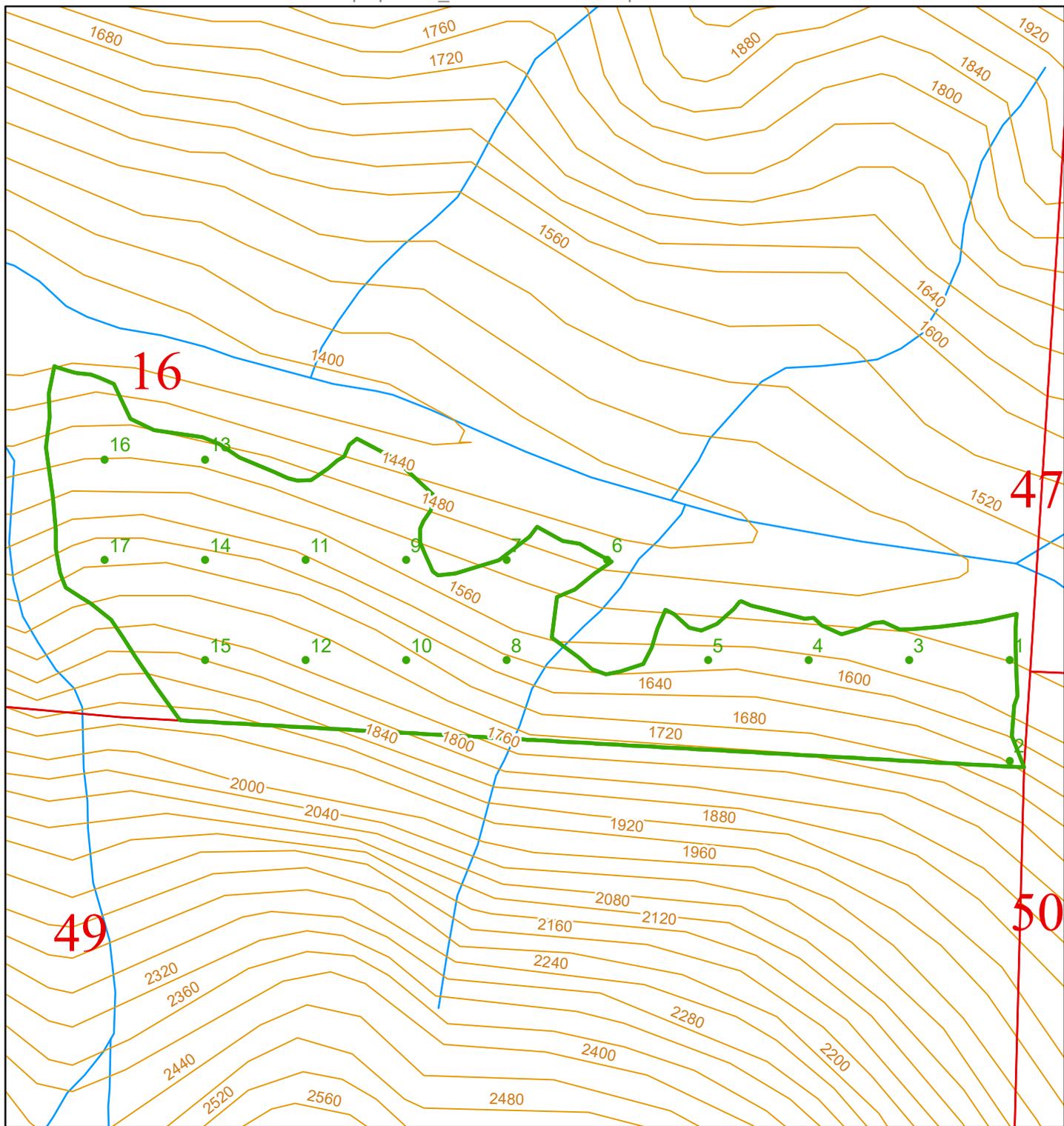
**Cruiser Sample Point Locations**

LAYER NAME:	willy_ridge_planned	Township:	T30R11W
POLY ID:	1	Total Sample Points:	9
Acres:	43	Spacing Between Points:	425
		Point Rotation Degrees:	0



**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



### Cruiser Sample Point Locations

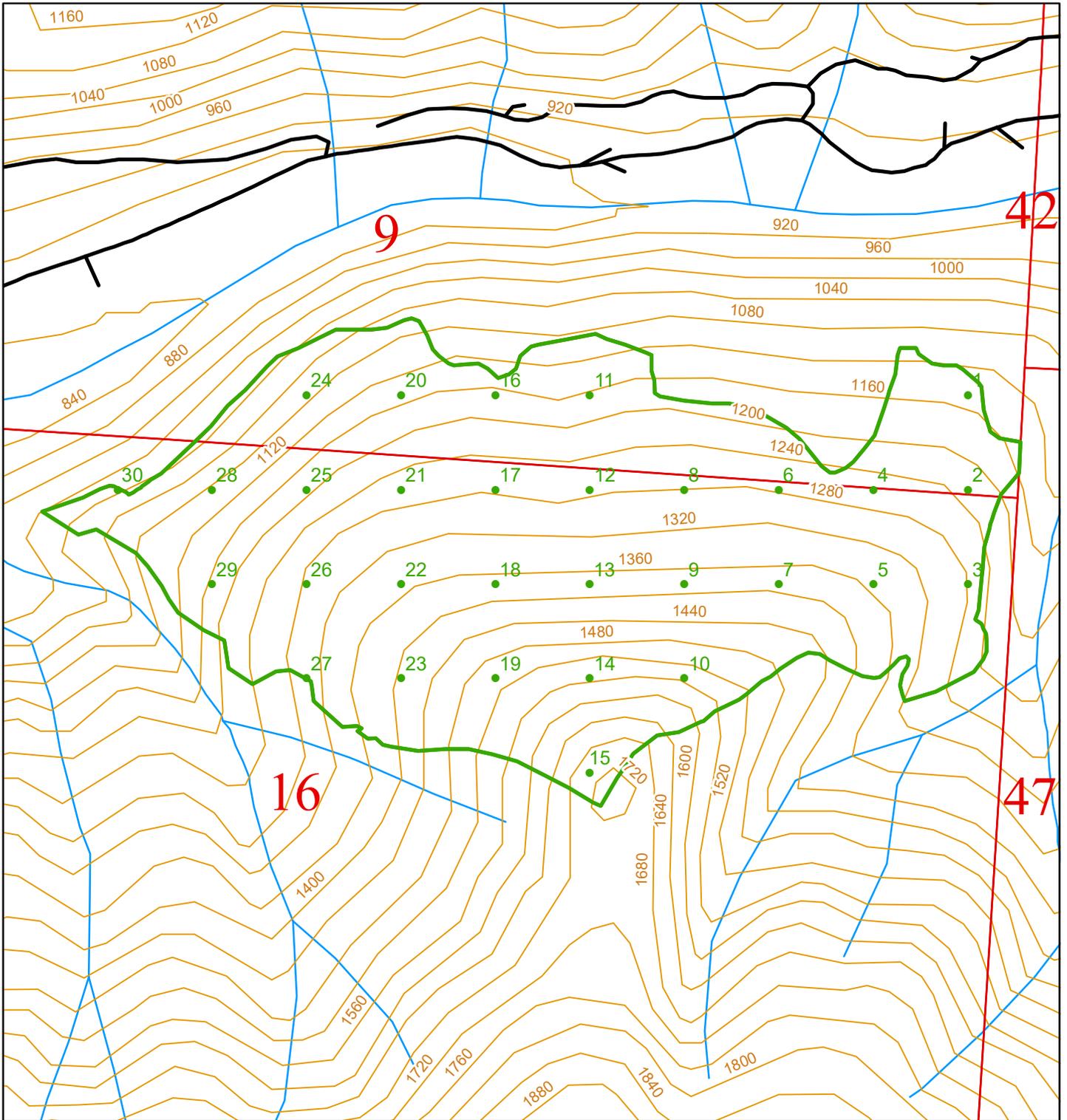
LAYER NAME:	willy_ridge_planned	Township:	T30R11W
POLY ID:	1	Total Sample Points:	17
Acres:	34	Spacing Between Points:	Width: 290 Height: 290
		Point Rotation Degrees:	0



Scale 1:4,900

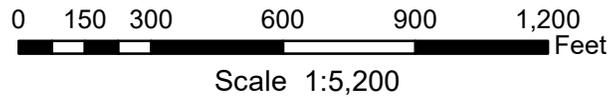
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



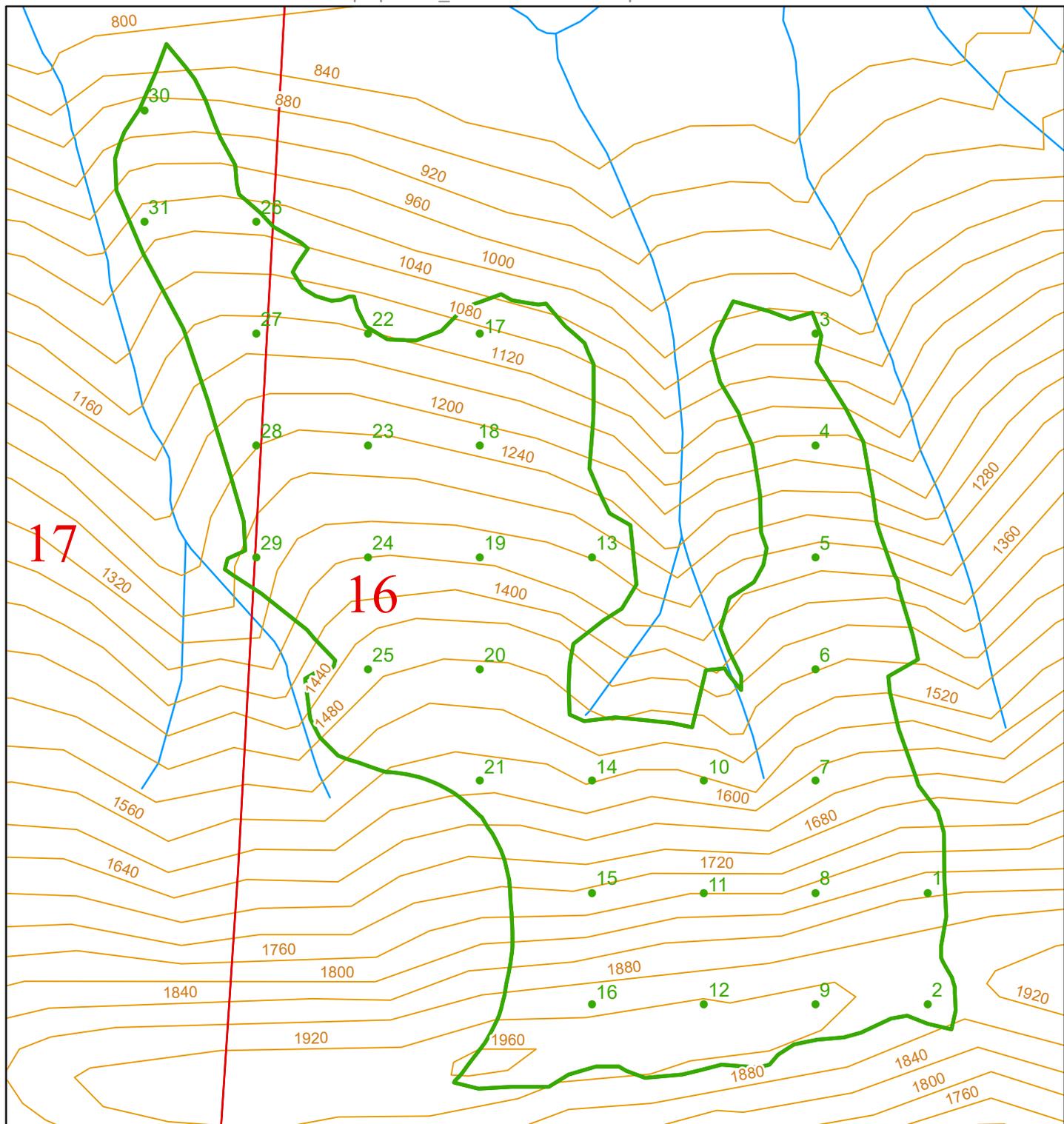
**Cruiser Sample Point Locations**

LAYER NAME:	willy_ridge_planned	Township:	T30R11W
POLY ID:	1	Total Sample Points:	30
Acres:	60	Spacing Between Points:	Width: 290 Height: 290
		Point Rotation Degrees:	0



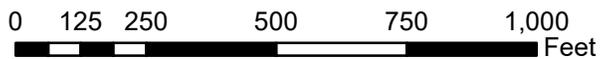
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



**Cruiser Sample Point Locations**

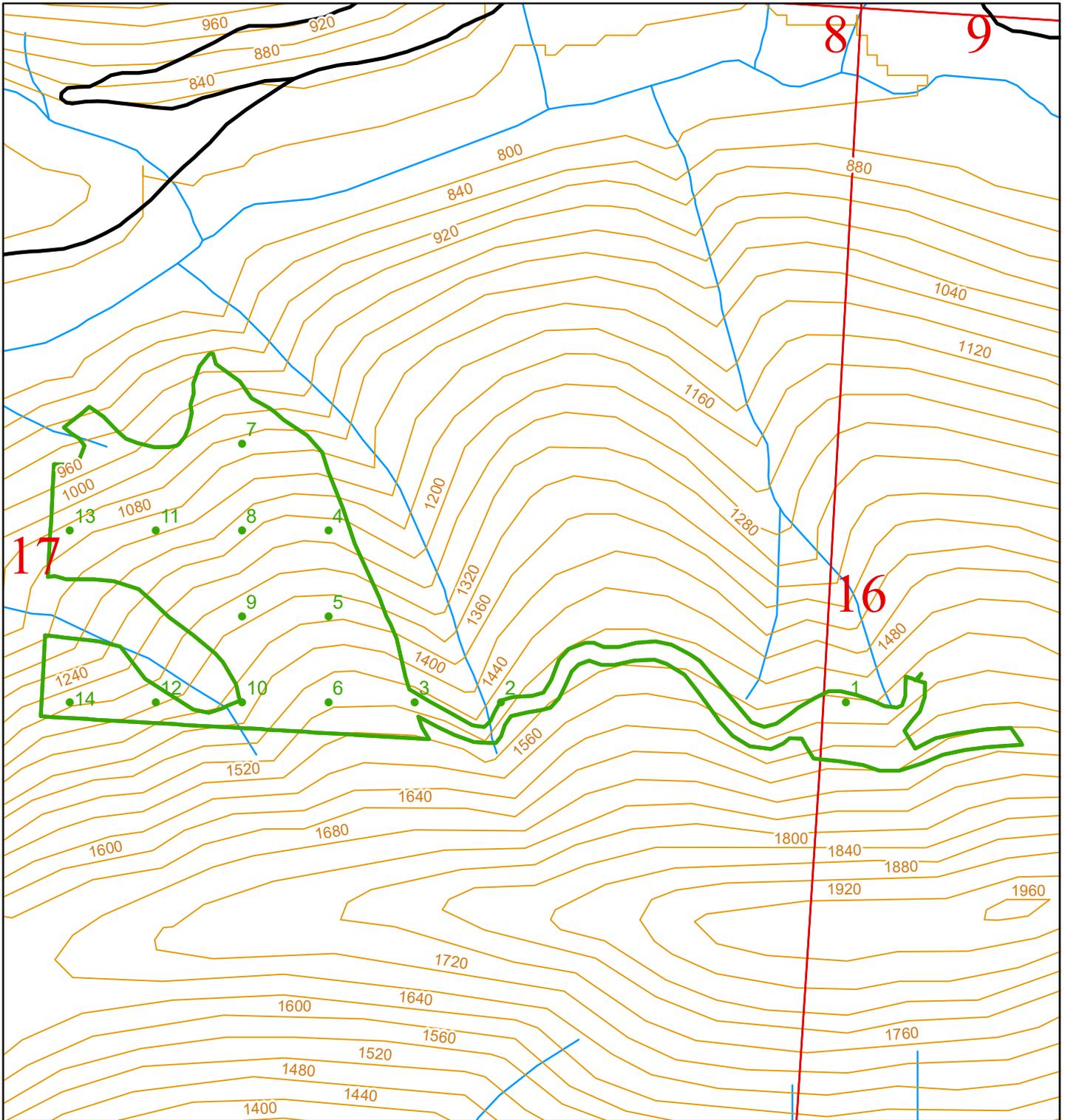
LAYER NAME:	willy_ridge_planned	Township:	T30R11W
POLY ID:	1	Total Sample Points:	31
Acres:	59	Spacing Between Points:	Width: 290 Height: 290
		Point Rotation Degrees:	0



Scale 1:4,400

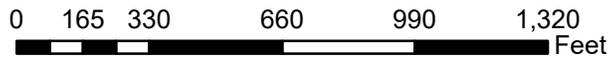
**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



**Cruiser Sample Point Locations**

LAYER NAME:	willy_ridge_planned	Township:	T30R11W
POLY ID:	1	Total Sample Points:	14
Acres:	27	Spacing Between Points:	Width: 290 Height: 290
		Point Rotation Degrees:	0



Scale 1:5,700

**Legend**

- Sample Points
- Unit
- Public Land Survey Sections
- Contours 40-foot



# Forest Practices Application/Notification Notice of Decision

FPA/N No: 2615793  
 Effective Date: 2/1/2019  
 Expiration Date: 2/1/2022  
 Shut Down Zone: 652NW  
 EARR Tax Credit:  Eligible [ ] Non-eligible  
 Reference: DNR  
 Willey Ridge VRH-VDT

### Decision

- Notification 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 FPA/N.

### FPA/N Classification

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

### Number of Years Granted on Multi-Year Request

4 years [ ] 5 years

### Conditions on Approval / Reasons for Disapproval

Issued By: Erik Dukes Region: Olympic

Title: Forest Practice Forester Date: 2/1/2019

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

Issued in person:  Landowner  Timber Owner  Operator By:  Christine Fouts

**Appeal Information**

You have thirty (30) days to appeal this Decision and any related State Environmental Policy Act determinations to the Pollution Control Hearings Board in writing at the following addresses:

**Physical address: 1111 Israel Rd. SW, Ste 301, Tumwater, WA 98501**

**Mailing address: P.O. BOX 40903, OLYMPIA, WA 98504-0903**

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

At the same time you file an appeal with the Pollution Control Hearings Board, also send a copy of the appeal to the Department of Natural Resources' region office and the Office of the Attorney General at the following addresses:

Office of the Attorney General  
Natural Resources Division  
1125 Washington Street SE  
PO Box 40100  
Olympia, WA 98504-0100

And

Department Of Natural Resources  
Olympic Region  
411 Tillicum Lane  
Forks, WA 98331

**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 Forest Land Obligations (RCW 76.09.060, RCW 76.09.070, RCW 76.09.390, and WAC 222-20-055)**

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

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

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

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

**DNR affidavit of mailing:**

On this day _____, I placed in the United States mail at _____, WA,	
(date)	(post office location)
postage paid, a true and accurate copy of this document. Notice of Decision FPA # <u>2615793</u>	
_____	_____
(Printed name)	(Signature)

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES

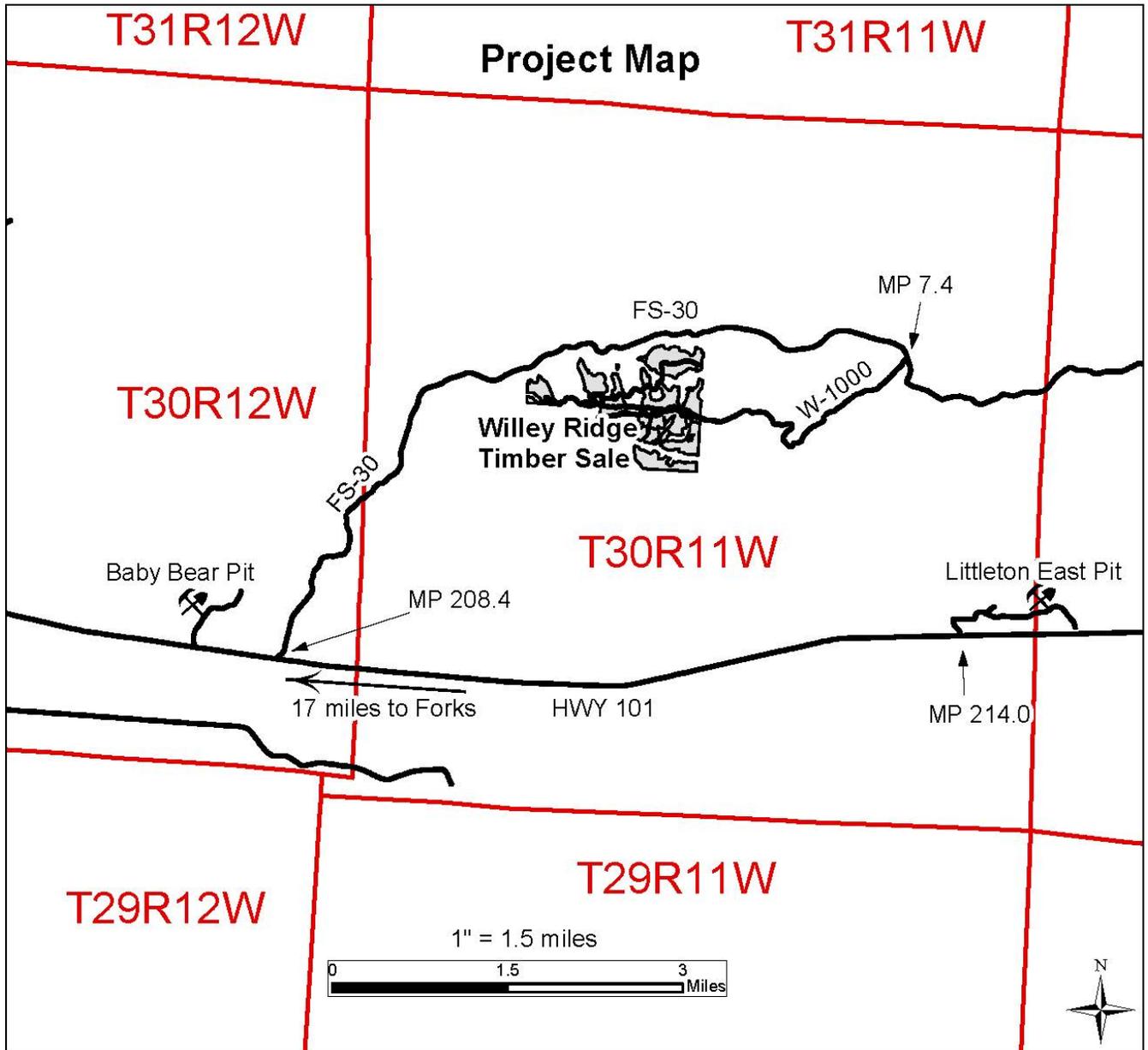
WILLEY RIDGE VRH VDT ROAD PLAN  
CLALLAM COUNTY  
COAST DISTRICT

AGREEMENT NO.: 30-098103

DISTRICT ENGINEER: BILL MEHL

DATE: 15 SEPT. 2020

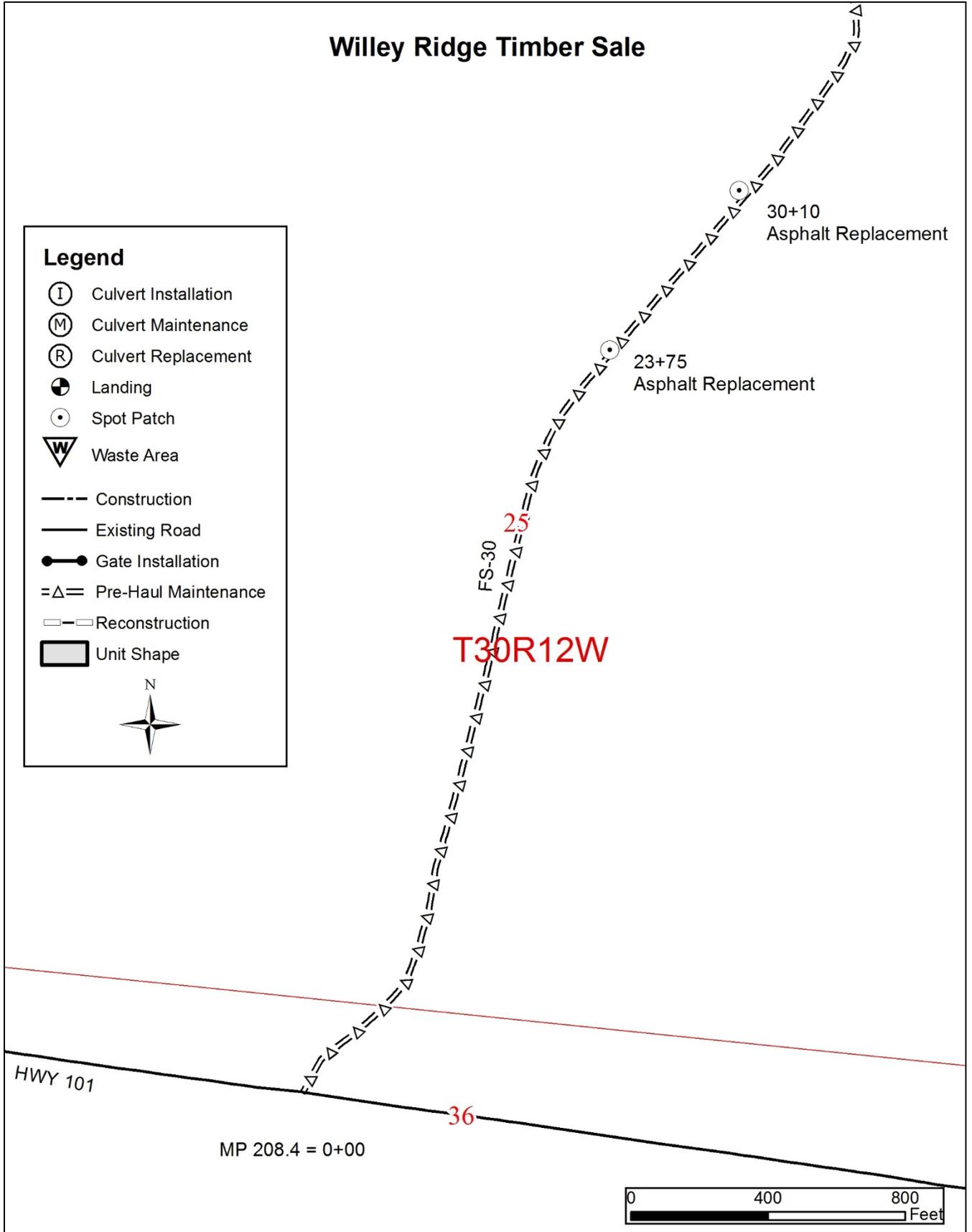
DRAWN & COMPILED BY: JED NOWAK



# Willey Ridge Timber Sale

**Legend**

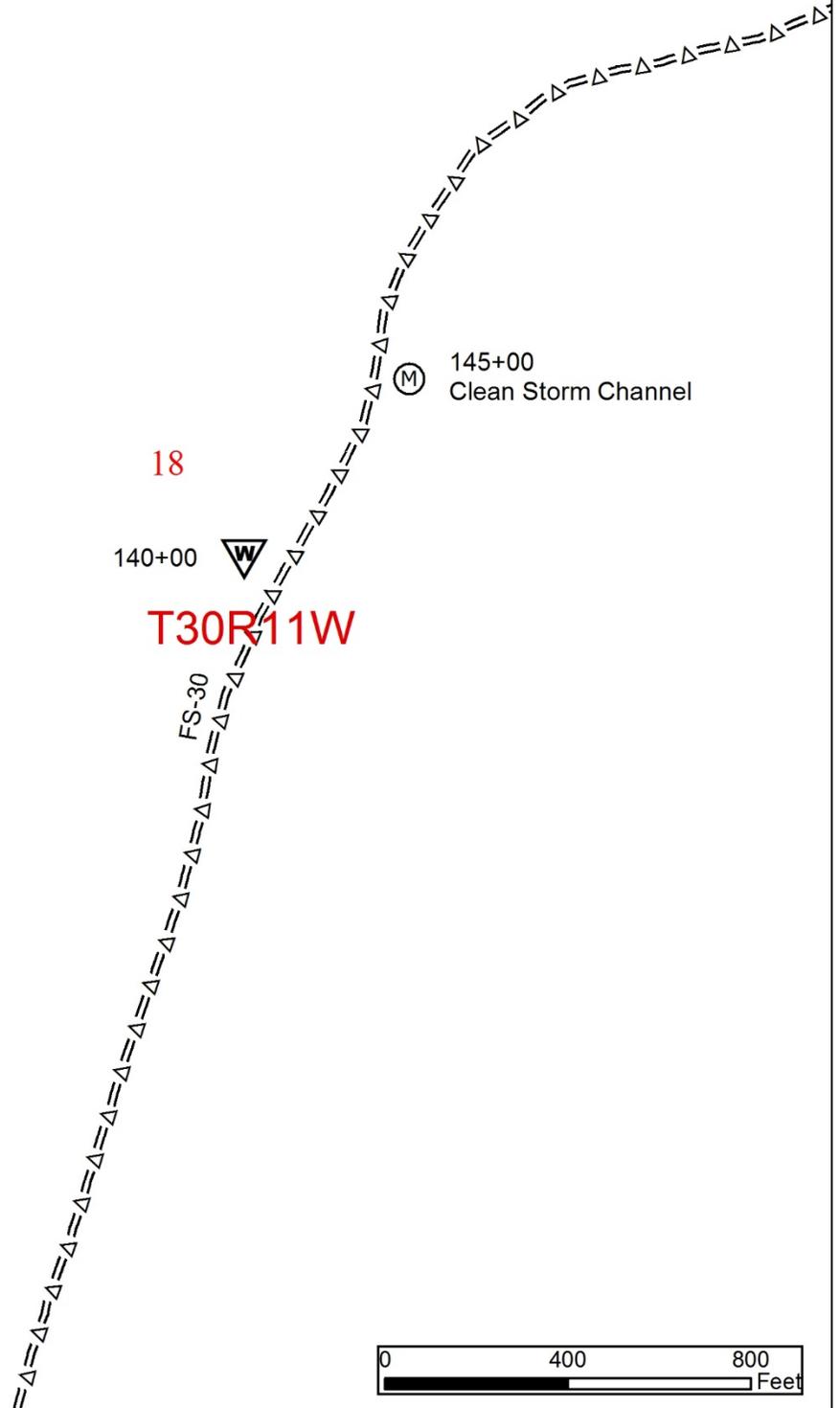
-  Culvert Installation
-  Culvert Maintenance
-  Culvert Replacement
-  Landing
-  Spot Patch
-  Waste Area
-  Construction
-  Existing Road
-  Gate Installation
-  Pre-Haul Maintenance
-  Reconstruction
-  Unit Shape

# Willey Ridge Timber Sale

**Legend**

- (I) Culvert Installation
- (M) Culvert Maintenance
- (R) Culvert Replacement
- ⊙ Landing
- ⊙ Spot Patch
- ⚠ Waste Area
- Construction
- Existing Road
- Gate Installation
- =Δ= Pre-Haul Maintenance
- Reconstruction
- Unit Shape

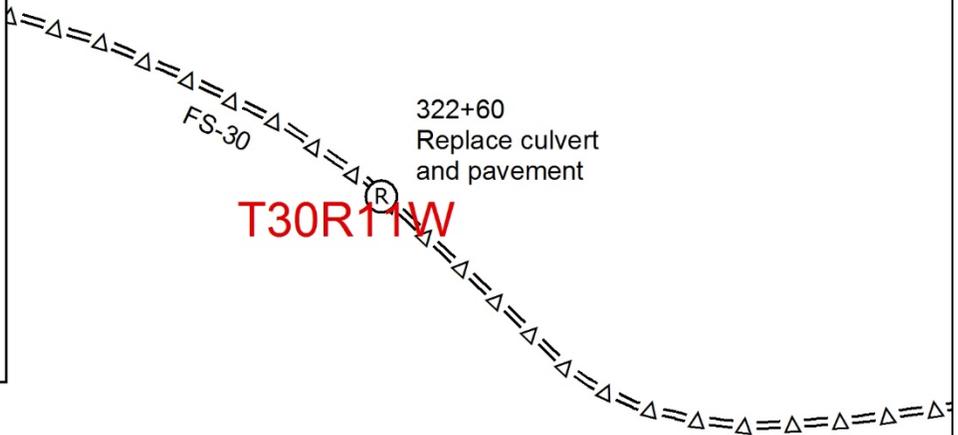
# Willey Ridge Timber Sale

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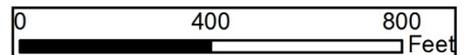
-  Culvert Installation
-  Culvert Maintenance
-  Culvert Replacement
-  Landing
-  Spot Patch
-  Waste Area
-  Construction
-  Existing Road
-  Gate Installation
-  Pre-Haul Maintenance
-  Reconstruction
-  Unit Shape



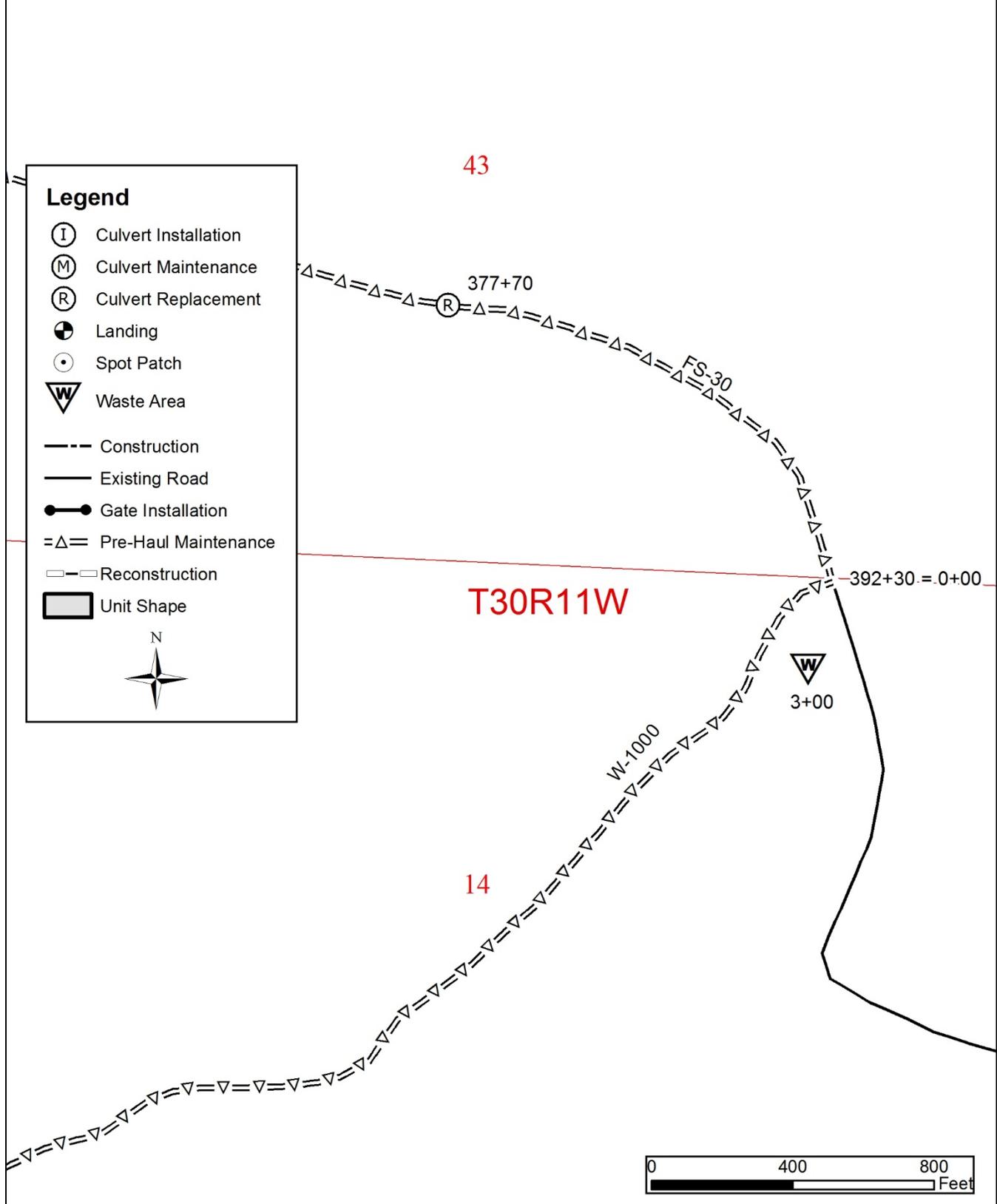
42



47



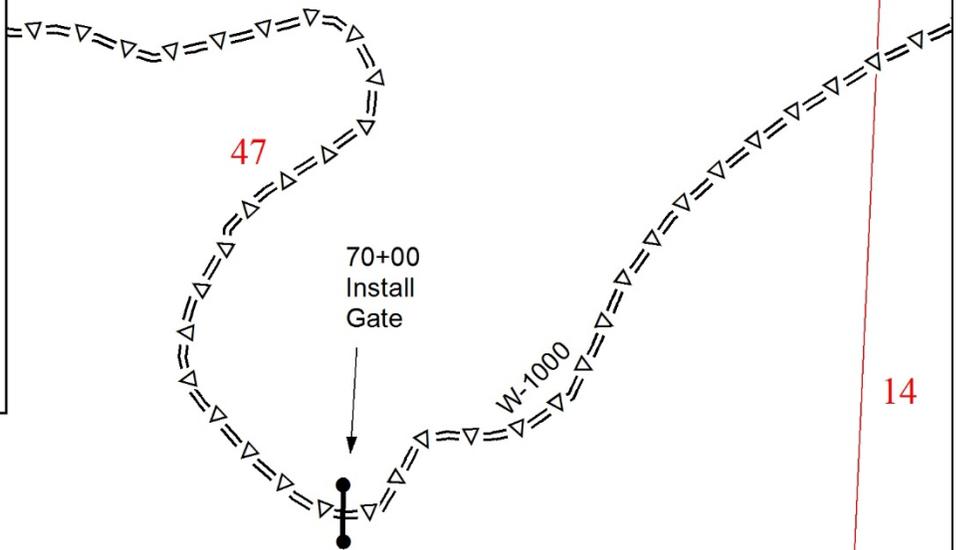
# Willey Ridge Timber Sale



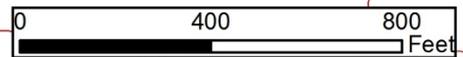
# Willey Ridge Timber Sale

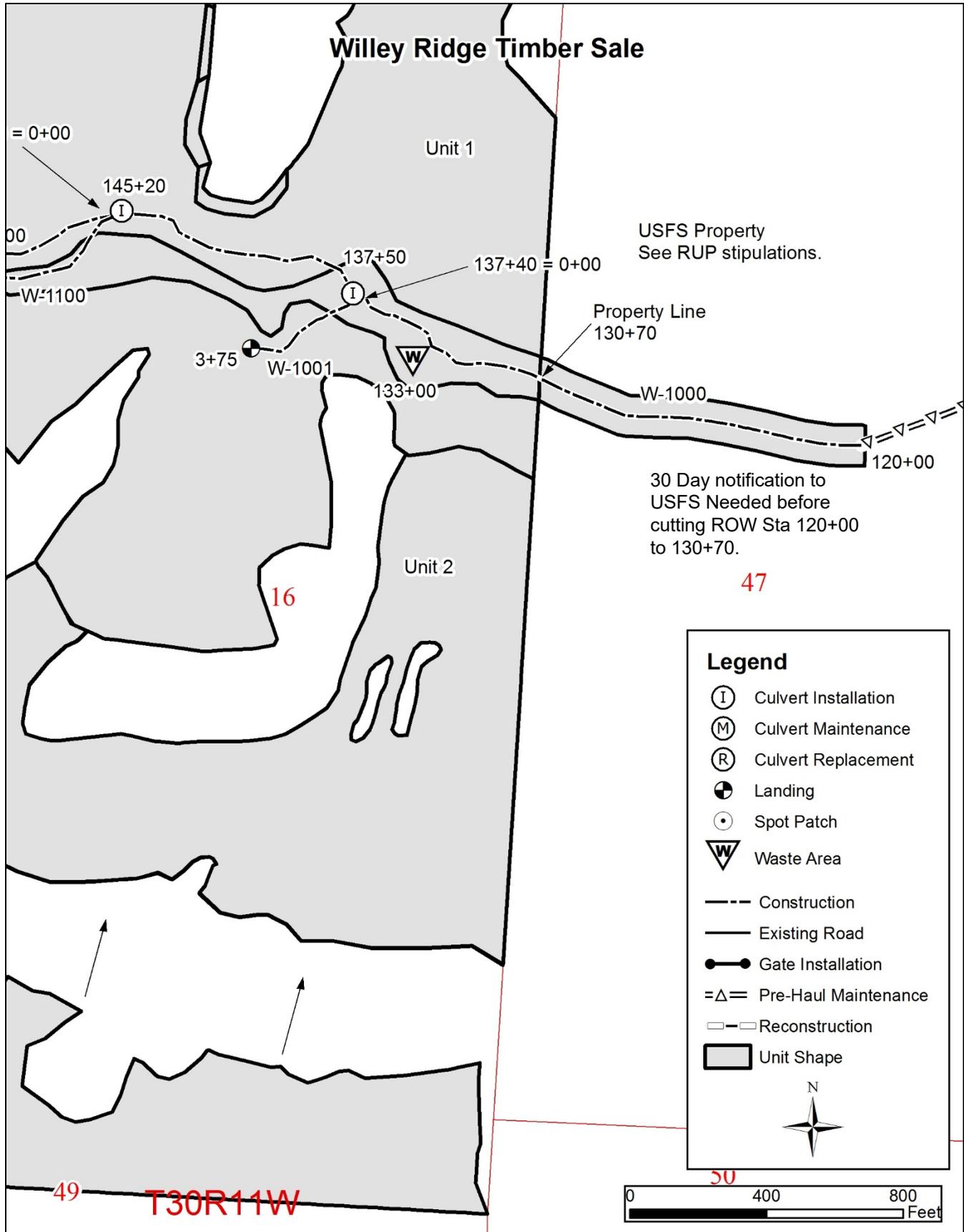
**Legend**

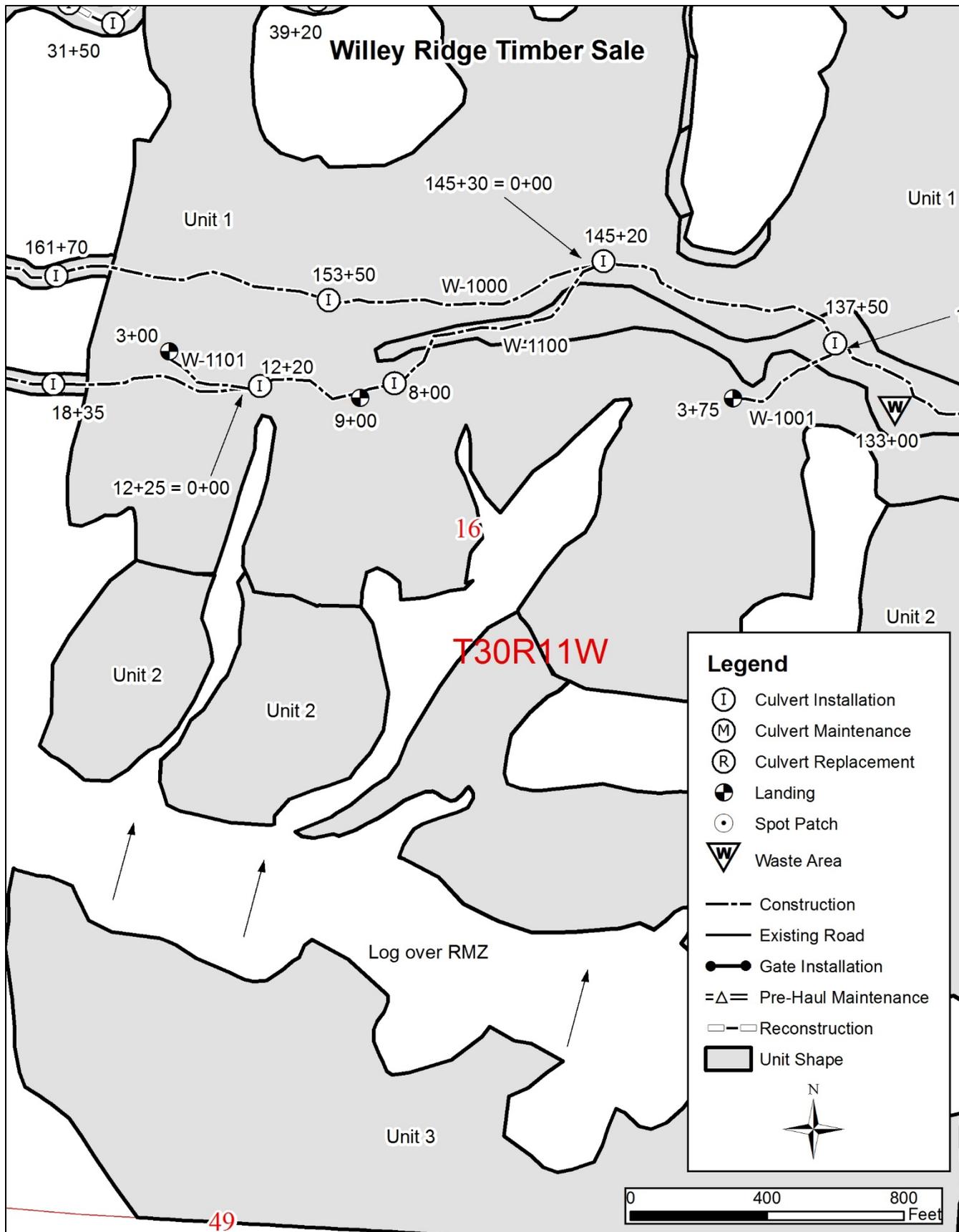
- (I) Culvert Installation
- (M) Culvert Maintenance
- (R) Culvert Replacement
- ⊕ Landing
- ⊙ Spot Patch
- ⚠ Waste Area
- Construction
- Existing Road
- Gate Installation
- =Δ= Pre-Haul Maintenance
- Reconstruction
- Unit Shape

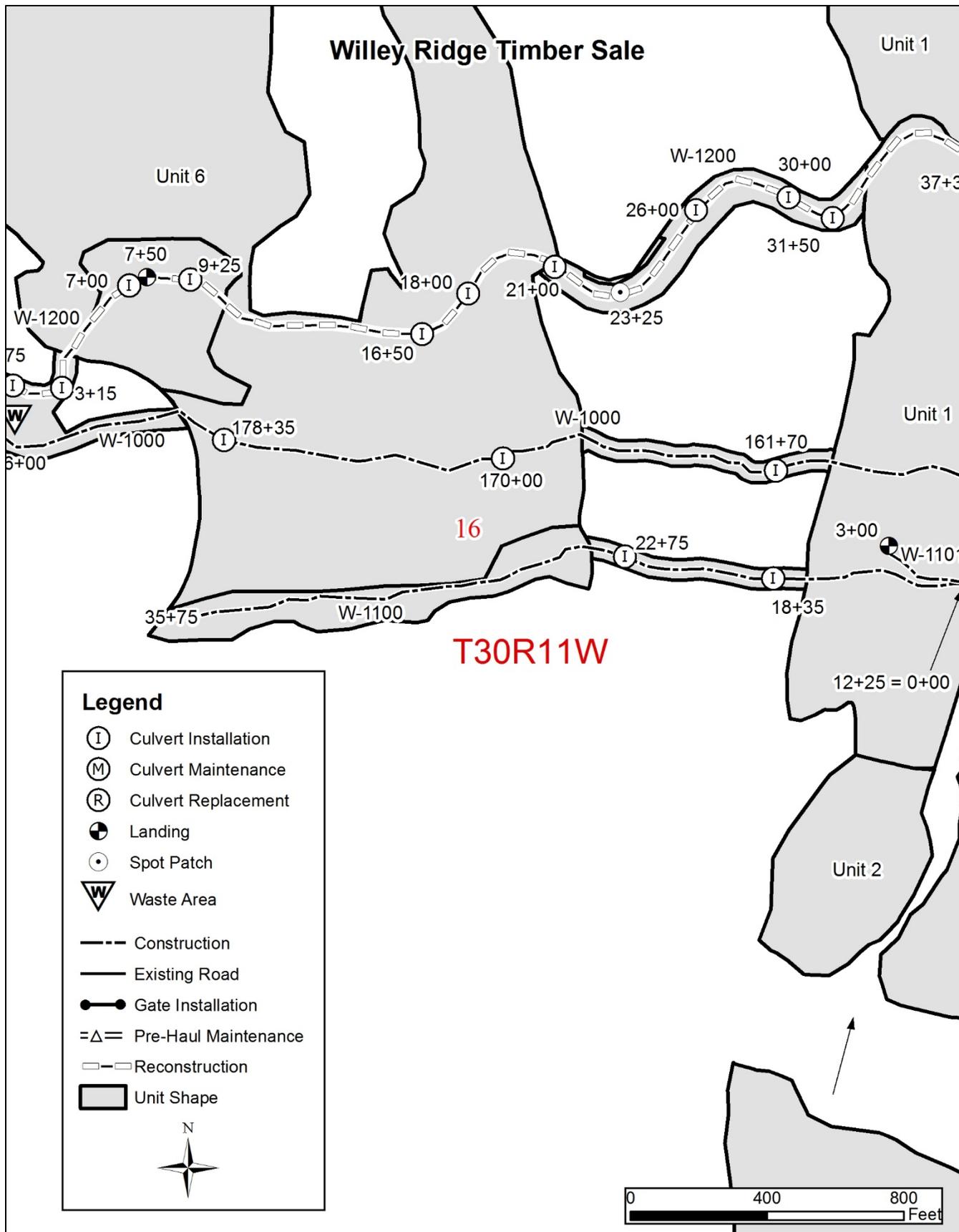



T30R11W



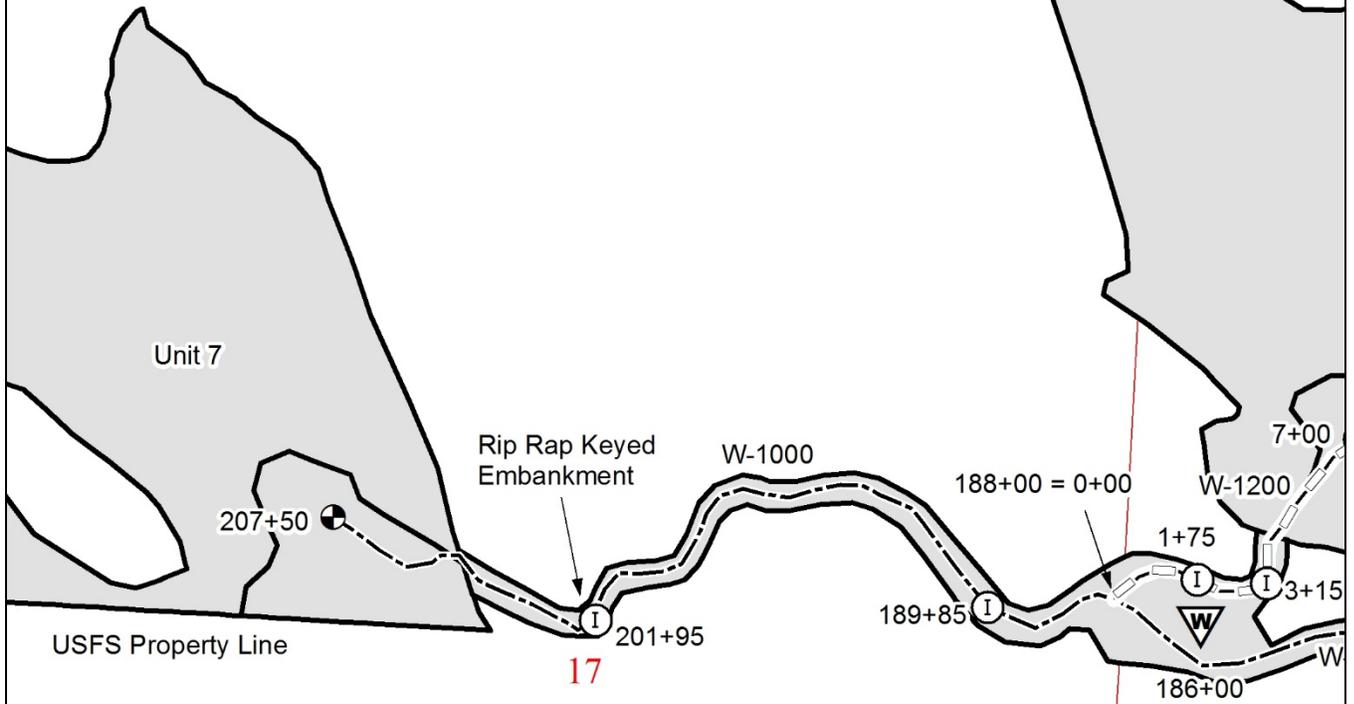






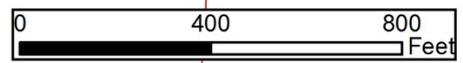
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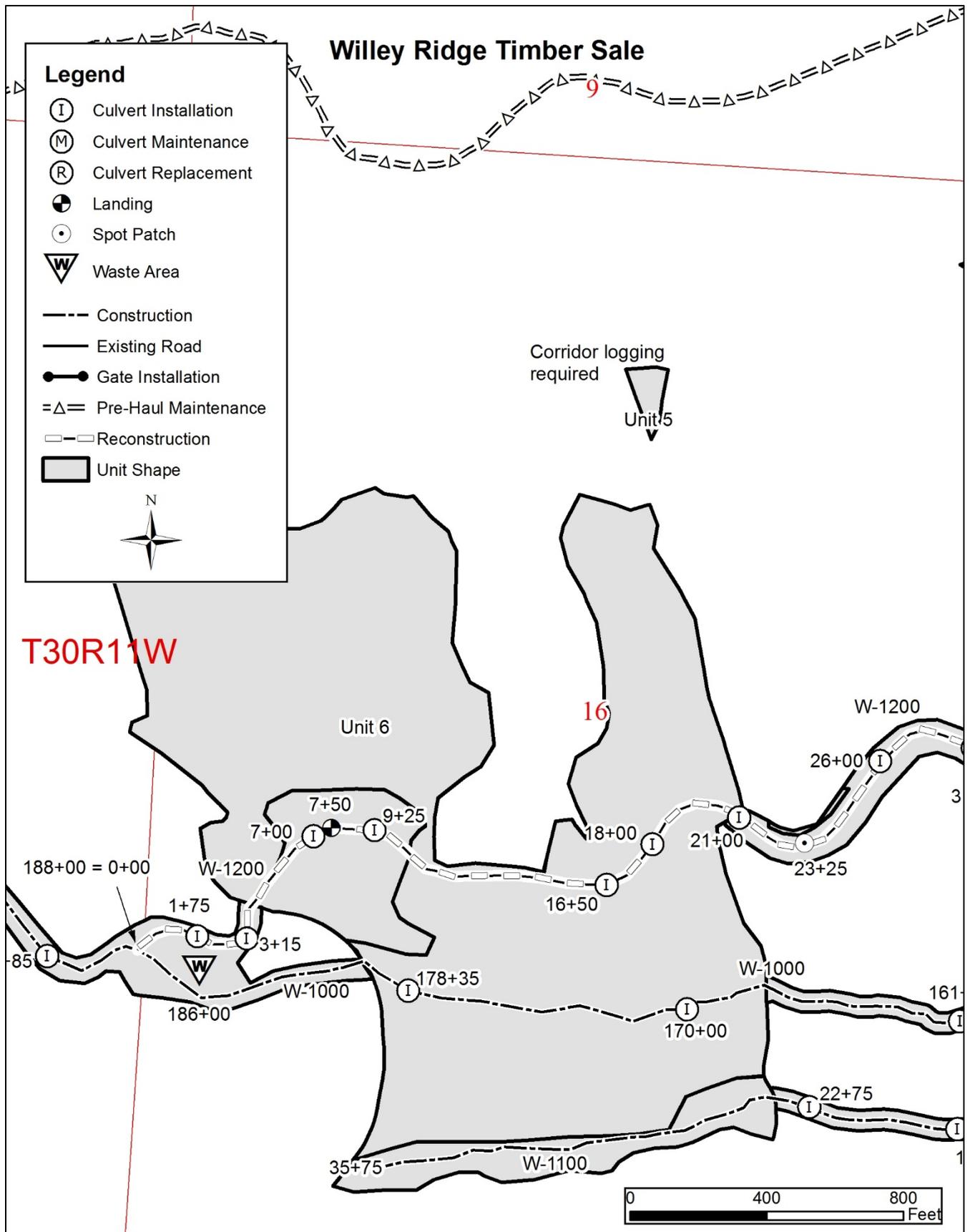
T30R11W



**Legend**

- (I) Culvert Installation
- (M) Culvert Maintenance
- (R) Culvert Replacement
- ⊕ Landing
- ⊙ Spot Patch
- ▽W Waste Area
- Construction
- Existing Road
- Gate Installation
- =△= Pre-Haul Maintenance
- - - Reconstruction
- ▭ Unit Shape



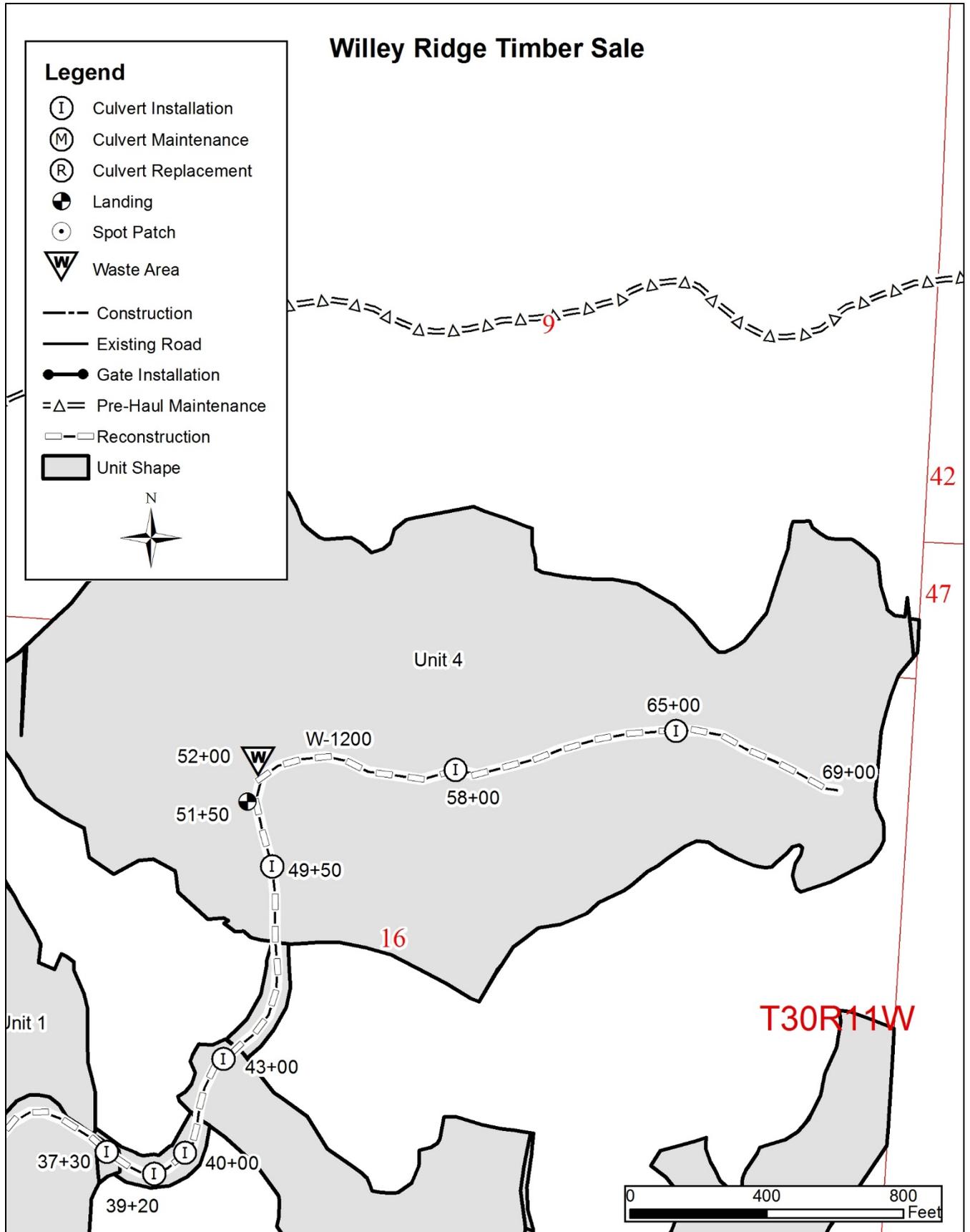




# Willey Ridge Timber Sale

## Legend

- I Culvert Installation
- M Culvert Maintenance
- R Culvert Replacement
- Landing
- Spot Patch
- W** Waste Area
- Construction
- Existing Road
- Gate Installation
- Pre-Haul Maintenance
- Reconstruction
- Unit Shape



## SECTION 0 – SCOPE OF PROJECT

### 0-1 ROAD PLAN SCOPE

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

### 0-2 REQUIRED ROADS

The specified work on the following roads is required.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
FS-30	392.30 STAs	Pre-Haul Maintenance
W-1000	120.00 STAs	Pre-Haul Maintenance
W-1000	87.50 STAs	Construction
W-1100	35.75 STAs	Construction
W-1001	3.75 STAs	Construction
W-1101	3.00 STAs	Construction
W-1200	69.00 STAs	Reconstruction
Littleton East Spur	6.17 STAs	Construction

### 0-4 CONSTRUCTION

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

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
W-1000	120+00 – 207+50	See below
W-1100	0+00 – 35+75	See below
W-1001	0+00 – 3+75	See below
W-1101	0+00 – 3+00	See below
Littleton East Spur	0+00 – 6+17	See below and Pit Development Plan Map
<i>Total:</i>	<i>136.17 STAs</i>	

Construction includes, but is not limited to:

Clearing, grubbing, right-of-way debris disposal, excavation and/or embankment to subgrade, end hauling material for construction, compacting road surfaces, constructing ditchlines, constructing ditchouts, constructing turnouts and turnarounds, curve widening, acquisition and installation of drainage structures, application of rock, spreading grass seed and hay.

### 0-5 RECONSTRUCTION

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

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
W-1200	0+00 – 69+00	Reconstruct using full-bench construction techniques and realigning road into hillside where necessary and as specified in Clause 4-12 and 8-11. Grade and shape road in accordance with Clause 2-5. Construct ditches in accordance with Clause 2-7 and 4-38. Remove all vegetative material with a minimum loss of rock in accordance with Clause 2-9 and 3-23. Install culverts in

		accordance with Culvert List. Construct catch basins with silt fence in accordance with Clause 2-7 and 8-1. Apply rock in accordance with Rock List. Compact rock in accordance with Compaction List. Remove raveled material to reestablish ditch line and road width.
<i>Total:</i>	<i>69.00 STAs</i>	

Reconstruction includes, but is not limited to:  
 Installing additional culvert, realigning road segments, application of rock, removing culvert.

**0-6 PRE-HAUL MAINTENANCE**

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

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
FS-30	0+00 – 392+30	<b>All equipment operation on the FS-30 shall be conducted with rubber tracked or rubber tired equipment, unless otherwise approved in writing by the District Engineer.</b> Maintain erosion control structures in accordance with Clause 2-8 and as directed by Contract Administrator. Grade and shape road in accordance with Clause 2-5. Apply rock in accordance with Rock List. Compact rock and surface in accordance with Compaction List. Construct ditches in accordance with Clause 2-7 and 4-38. Replace culverts in accordance with Culvert List. Clean storm channel vicinity STA 145+00 in accordance with Clause 2-7 and 4-38 and as marked in field. Replace asphalt sections in accordance with Clause 6-89 and as marked in field.
W-1000	0+00 – 120+00	Grade and shape road in accordance with Clause 2-5. Brush road in accordance with Clause 3-1 and Brushing Detail. Construct catch basins with silt fence in accordance with Clause 2-7 and 8-1. Apply rock in accordance with Rock List. Compact rock and surface in accordance with Compaction List. Install gate in accordance with Clause 7-76 and Typical Gate Installation Detail.
<i>Total:</i>	<i>512.30 STAs</i>	

Maintenance includes, but is not limited to:

Brushing right-of-way, right-of-way debris disposal, cleaning ditches, constructing ditches, installing additional culverts, widening road segments, constructing headwalls, cleaning culvert inlets and outlets, cross drain culvert replacement, installing erosion control materials and sediment removal structures, spot rocking, grading and shaping existing road surface and turnouts, constructing additional turnouts, compaction of road surface, application of rock, acquisition and application of grass seed and hay.

**0-7 POST-HAUL MAINTENANCE**

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

**0-12 DEVELOP ROCK SOURCE**

The Purchaser shall develop a rock source called Littleton Pit. Purchaser shall strip and drill & shoot Littleton Pit to obtain 10,000 CY of shot rock ballast material. This pit work shall be completed by 31 December 2021. Work for developing rock sources is listed in Section 6 ROCK AND SURFACING.

**0-13 STRUCTURES**

The Purchaser shall acquire and install all structures. Requirements for these structures are listed in Section 7 Structures.

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 shall be submitted, in writing, to the Contract Administrator for consideration. The State must approve the submitted plans before road work begins.

**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**

Unless controlled by construction stakes or design data (plan, profile, and cross-sections), road work shall be performed in accordance with the dimensions shown on the Typical Section Sheet and the specifications within this Road Plan.

**1-5 DESIGN DATA**

Design data is available upon request at the Department of Natural Resources Olympic Region Office in Forks, WA.

**1-6 ORDER OF PRECEDENCE**

Any conflict or inconsistency in this Road Plan shall 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.

In case of any ambiguity or dispute over interpreting the Road Plan, the Contract Administrator’s or designee’s decision will be final.

**1-7 TEMPORARY ROAD CLOSURE**

The Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before the closure of any road. Road work shall not close any road for more than 3 consecutive days.

Road	Number of Allowable Closed Days
FS-30	3 (for asphalt replacement work)

**1-8 REPAIR OR REPLACEMENT OF DAMAGED MATERIALS**

The Purchaser is responsible for the repair or replacement of all materials, roadway infrastructure, and road components damaged during roadwork or operation activities. Repairs and replacements shall be directed by the Contract Administrator. Repairs to structural materials will be made according to the manufacturer’s recommendation, and shall 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.

**1-10 WSDOT STANDARD SPECIFICATION REFERENCE**

References in this road plan to “WSDOT Standard Specifications” mean the Washington State Department of Transportation’s Standard Specifications for Road, Bridge, and Municipal Construction 2012 (M41-10).

**1-12 SURVEY MONUMENTS**

At no time during construction, reconstruction, or maintenance shall survey monuments, witness trees, or bearing trees be disturbed or damaged. If damaged or disturbed, Purchaser shall hire a licensed land surveyor to repair, replace, and/or reset them.

## SUBSECTION ROAD MARKING

### 1-15 ROAD MARKING

Road work must be in accordance with the State's marked location. All road work is marked as follows:

- Orange ribbon and paint for construction centerlines.
- Construction stakes for everything else.

### 1-16 CONSTRUCTION STAKES SET BY STATE

Purchaser shall perform work on the following road(s) in accordance with the construction stakes and 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.

<u>Road</u>	<u>Stations</u>	<u>Type</u>
FS-30	Vicinity 145+00	Storm Channel Cleaning
W-1000	120+00 – 207+50	Construction
W-1200	0+00 – 69+00	Reconstruction

### 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. Gate installation on the W-1000 shall be completed prior to contract expiration. Littleton Pit development shall be completed by 31 December 2021.

### 1-21 HAUL APPROVAL

The Purchaser shall not use roads under this Road Plan without written approval from the Contract Administrator.

### 1-22 WORK NOTIFICATIONS

On all roads, the Purchaser shall notify the Contract Administrator a minimum of 3 calendar days before work begins.

### 1-23 ROAD WORK PHASE APPROVAL

Written approval by Contract Administrator needs to be given at these phases of road work:

- Subgrade approval
- Drainage installation
- Subgrade compaction
- Rock application
- Rock compaction

## SUBSECTION RESTRICTIONS

### 1-25 ACTIVITY TIMING RESTRICTION

On the following road(s), the specified activities are not permitted during the listed closure period(s) unless authorized in writing by the Contract Administrator.

<u>Road</u>	<u>Stations</u>	<u>Activity</u>	<u>Closure Period</u>
W-1000	120+00 – 207+50	Construction	October 15 <sup>th</sup> – April 15 <sup>th</sup>
W-1200	0+00 – 69+00	Reconstruction	October 15 <sup>th</sup> – April 15 <sup>th</sup>

*30 day notification to USFS must be made before cutting any USFS ROW (W-1000 sta. 120+00 to 130+70)*

### 1-26 OPERATING DURING CLOSURE PERIOD

If permission is granted to operate during a closure period listed in Clause 1-25 Activity Timing Restriction, the Purchaser shall provide a maintenance plan to include further protection of State resources. The Contract Administrator must approve the maintenance plan in writing, and preventative measures shall be put in place, before operation in the closure period. The Purchaser shall be 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 designated maintainer roads, a joint operating plan shall be developed. All parties shall follow this plan.

### 1-29 SEDIMENT RESTRICTION

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

### 1-30 CLOSURE TO PREVENT DAMAGE

In accordance with Contract Clause G-220 State Suspends Operation, the Contract Administrator shall suspend road work or hauling of right-of-way timber, forest products, or rock under the following conditions:

- In the opinion of the Contract Administrator excessive road damage or rutting may occur.

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

### 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, as approved in writing by Contract Administrator, shall be used. **This restriction applies to all work conducted on the FS-30.**

If tracked equipment is used on bridge or asphalt surfaces, Purchaser shall immediately cease all road work and hauling operations. Any dirt, rock, or other material tracked or spilled on bridge or asphalt surface(s) shall be removed immediately. Any damage to the

surface(s) shall be repaired at the Purchaser's expense as directed by the Contract Administrator.

**1-33 SNOW PLOWING RESTRICTION**

On all roads, snow plowing shall be permitted only 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.

**1-34 EQUIPMENT CLEANING RESTRICTION**

All off-road equipment must be cleaned of dirt/mud, seeds, and other plant parts before it is moved onto National Forest Service Land. 'Off-road equipment' includes all machinery other than log trucks, chip vans, dump trucks, pickup trucks or vehicles used to transport personnel on a daily basis.

SUBSECTION OTHER INFRASTRUCTURE

**1-40 ROAD APPROACHES TO COUNTY ROADS AND STATE HIGHWAYS**

At existing road approaches to county roads and state highways, any mud, dirt, rock or other material tracked or spilled on the asphalt surface shall be removed immediately by the Purchaser.

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

The following county roads and state highways are affected by this sale:

<u>Road Name</u>
HWY 101
Mary Clark Road

**1-41 REQUIREMENTS FOR PAVED ROAD APPROACHES**

Requirements for the FS-30 road approaches:

Purchaser shall build up approaches to allow a smooth grade transition between the W-1000 and FS-30 roads. The top of the W-1000 road surfacing must be kept level with the surface of the FS-30 road at all times. The surface of the W-1000 approach must slope up from the edge of the FS-30 road at the rate of 2 inches per foot for a distance of 100 feet, unless otherwise directed by the Contract Administrator.

**1-43 ROAD WORK AROUND UTILITIES**

Road work is in close proximity to a utility. Known utilities are listed, but it is the Purchaser's responsibility to identify any utilities not listed. The Purchaser shall work in accordance with all applicable laws or rules concerning utilities. The Purchaser is responsible for all notification, including "call before you dig", and liabilities associated with the utilities and their rights-of-way.

<u>Road</u>	<u>Stations</u>	<u>Utility</u>	<u>Utility Contact</u>
FS-30	All	Underground Lines	Utility Notification Center 1-800-424-5555 (or 811)

## 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.

### 2-4 PASSAGE OF LIGHT VEHICLES

Purchaser shall maintain the following road(s) in a condition that will allow the passage of light administrative vehicles.

<u>Road</u>	<u>Stations</u>
FS-30	All
W-1000	0+00 – 120+00

### 2-5 MAINTENANCE GRADING – EXISTING ROAD

On the following road(s), a grader shall be used to shape the existing surface.

<u>Road</u>	<u>Stations</u>	<u>Requirements</u>
W-1000	0+00 – 120+00	Grade and shape existing surface
W-1200	0+00 – 69+00	Grade, shape, and remove shoulder and surface vegetation.

### 2-7 CLEANING DITCHES, HEADWALLS, AND CATCH BASINS

On the following road(s), Purchaser shall clean and/or construct the ditches, headwalls, and catch basins. Work shall be completed before the start of timber haul and shall be done in accordance with the Typical Section Sheet. Pulling ditch material across the road or mixing in with the road surface will not be allowed. Ditchlines, headwalls, and catch basins shall not encroach into the existing road.

<u>Road</u>	<u>Stations</u>	<u>Left or Right</u>	<u>Comments</u>
W-1200	0+00 – 69+00	Right	Ditching
W-1200	40+00 – 41+50	Left	Ditching
W-1200	31+50	Right	4x Catch Basins with Silt Fence
W-1200	39+20	Right	2x Catch Basins with Silt Fence
W-1200	40+00	Right	4x Catch Basins with Silt Fence
W-1000	201+95	Left	4x Catch Basins with Silt Fence
FS-30	126+75 – 227+00	Both as needed	Clean Ditchlines
FS-30	306+25 – 392+30	Both as needed	Clean Ditchlines

FS-30	Vicinity 145+00	Right	Clean storm channel as marked in field
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**2-8 MAINTAINING EROSION CONTROL STRUCTURES**

On the following road(s), Purchaser shall clean and maintain all erosion control devices. Work shall be completed before the start of timber haul and shall be done in accordance with all pertaining clauses contained in this Road Plan. Excavated material shall be disposed of in accordance with Clause 4-35 through Clause 4-38.

<u>Road</u>	<u>Stations</u>	<u>Work Needed</u>
FS-30	All	As Directed

**2-9 REMOVING VEGETATIVE MATERIAL**

On the following road(s), Purchaser shall remove all vegetative material, dirt, mud, and other debris on the existing road surface with a minimum loss of rock. Material removed shall be disposed of in accordance with Clause 3-21 through Clause 3-25 and Clause 4-36 through Clause 4-38.

<u>Road</u>	<u>Stations</u>
W-1200	0+00 – 69+00

SECTION 3 – CLEARING, GRUBBING, AND DISPOSAL

SUBSECTION BRUSHING

**3-1 BRUSHING**

On the following road(s), vegetative material up to 5 inches in diameter, including limbs, shall be cut as shown on the Brushing Detail. Brushing shall be achieved by mechanical cutting of brush, trees, and branches. Root systems and stumps of cut vegetation shall not be disturbed unless directed by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
W-1000	0+00 – 120+00

**3-2 BRUSHING RESTRICTION**

Pulling, digging, pushing over, and other non-cutting methods used for vegetation removal shall not be used for brushing. Excavator buckets, log loaders and similar equipment shall not be used for brushing.

**3-3 BRUSH REMOVAL**

Remove brushing debris from the road surface, ditchlines, and culvert inlets and outlets. Brush should be disposed of so that it will not fall back onto the road prism.

SUBSECTION CLEARING

**3-5 CLEARING**

Purchaser shall fall all vegetative material larger than 5 inches DBH or over 15 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.

**3-7 RIGHT-OF-WAY DECKING**

Deck all merchantable right-of-way timber. Decks shall be parallel to the road centerline and placed within the cleared right-of-way. Decks shall be free of dirt, limbs and other right-of-way debris, and removable by standard log loading equipment.

**3-8 PROHIBITED DECKING AREAS**

Right-of-way timber shall not be decked in the following areas:

- Within the grubbing limits.
- Within 50 feet of any stream.
- In locations that interfere with the construction of the road prism.
- In locations that impede drainage.
- On slopes greater than 40%.
- Against standing trees unless approved by the Contract Administrator.

SUBSECTION GRUBBING

**3-10 GRUBBING**

Remove all stumps between the grubbing limits specified on the Typical Section Sheet. Those stumps outside the grubbing limits but with undercut roots shall also be removed. Stump removal shall be accomplished using a hydraulic mounted excavator unless authorized, in writing, by the Contract Administrator. Grubbing shall be completed before starting excavation and embankment.

**3-12 STUMP PLACEMENT**

Grubbed stumps shall be placed outside of the clearing limits, as directed by the Contract Administrator and in compliance with all other clauses in this road plan. Stumps shall be positioned upright with root wads in contact with the forest floor and on stable locations.

SUBSECTION ORGANIC DEBRIS

**3-20 ORGANIC DEBRIS DEFINITION**

Organic debris is defined as all vegetative material not eligible for removal by Contract Clauses 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 Typical Section Sheet.

**3-21 DISPOSAL COMPLETION**

All disposal of organic debris, shall be completed before the application of rock.

**3-23 PROHIBITED DISPOSAL AREAS**

Organic debris shall not be deposited in the following areas:

- Within 5 feet of a cross drain culvert.
- Within 50 feet of a live stream, or wetland.
- On road subgrades road prism excavation and embankment slopes.
- On slopes greater than 45%.
- Within the operational area for cable landings where debris may shift or roll.
- On locations where brush will fall into the ditch or onto the road surface.
- Against standing timber.

**3-24 BURYING ORGANIC DEBRIS RESTRICTED**

Organic debris shall not be buried unless otherwise stated in this Road Plan.

**3-25 SCATTERING ORGANIC DEBRIS**

Organic debris shall be scattered outside of the grubbing limits in accordance with Clause 3-23 unless otherwise detailed in this Road Plan and as directed by the Contract Administrator.

**SECTION 4 – EXCAVATION**

**4-1 EXCAVATOR CONSTRUCTION**

All roads shall be constructed, reconstructed, and maintained using a track mounted hydraulic excavator unless stated otherwise within this Road Plan, or permission to do otherwise is granted in writing by the Contract Administrator.

**4-2 PIONEERING**

Pioneering shall not extend past construction that will be completed during the current construction season. Pioneering shall not extend more than 1000 feet beyond completed construction unless approved in writing by the Contract Administrator. In addition, the following actions shall be taken as pioneering progresses:

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

**4-3 ROAD GRADE AND ALIGNMENT STANDARDS**

The following road grade and alignment standards shall be followed:

- Grade and alignment shall have smooth continuity, without abrupt changes in direction.
- Maximum grade shall not exceed 18 percent favorable and 16 percent adverse.
- Minimum curve radius is 60 feet at centerline.
- Sag vertical curves shall not have a grade change greater than 5% in 100 feet.
- Crest vertical curves shall not have a grade change greater than 4% in 100 feet.

**4-4 SWITCHBACK STANDARDS**

A switchback is defined as a curved segment of road between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

The following standards for switchbacks shall be followed:

- Adverse grades on switchbacks shall not exceed 10%.
- Favorable grades through switchbacks shall not exceed 12%.
- Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.
- Transition grades required to meet switchback grade limitations shall be constructed on the tangents preceding and departing from the switchbacks.

**4-5 CUT SLOPE RATIO**

Unless construction staked or designed excavation slopes shall be constructed no steeper than shown on the following table:

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

**4-6 EMBANKMENT SLOPE RATIO**

Unless construction staked or designed embankment slopes shall be constructed no steeper than shown on the following table:

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

**4-7 SHAPING CUT AND FILL SLOPE**

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

**4-8 CURVE WIDENING**

The minimum widening placed on the inside of curves is:

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

**4-9 EMBANKMENT WIDENING**

The minimum embankment widening is:

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

Embankment widening shall be applied equally to both sides of the road to achieve the required width.

**4-11 KEYED EMBANKMENT**

On the following road(s), embankments shall be keyed into the native slope in accordance with the Typical Embankment Key Detail Sheet.

<u>Road</u>	<u>Stations</u>
W-1000	198+50 – 202+00

**4-12 FULL BENCH CONSTRUCTION**

On the following road(s), and where side slopes exceed 45%, Purchaser shall use full bench construction for the entire subgrade width except as construction staked or

designed. If designated, Purchaser shall end haul waste material to the location specified in Clause 4-37 WASTE AREA LOCATION.

<u>Road</u>	<u>Full Bench Location</u>	<u>Comments</u>
W-1000	137+40 – 207+50	
W-1200	1+15 – 6+25, 10+50 – 12+00, 31+00 – 32+50, 37+50 – 40+25, 45+00 – 47+25, 58+00 – 59+25	

#### SUBSECTION INTERSECTIONS, TURNOUTS AND TURNAROUNDS

##### **4-21 TURNOUTS**

Turnouts shall be intervisible with maximum of 1,000 feet between turnouts unless shown otherwise on drawings. Locations shall be adjusted to fit the final subgrade alignment and sight distances. Turnout locations shall be subject to written approval by the Contract Administrator.

##### **4-22 TURNAROUNDS**

Turnarounds shall be no larger than 50 feet long and 30 feet wide. Locations shall be subject to written approval by the Contract Administrator.

##### **4-23 SUBGRADE FLARE FOR INTERSECTIONS**

The W-1000/W-1200 intersection shall be constructed/reconstructed to include additional intersection flare.

#### SUBSECTION DITCH CONSTRUCTION

##### **4-25 DITCH CONSTRUCTION AND RECONSTRUCTION**

The Purchaser shall construct ditches into the subgrade as specified on the Typical Section Sheet. Excavated slopes shall be consistent with Clause 4-5 Cut Slope Ratio. Ditches shall be constructed concurrently with construction of the subgrade.

##### **4-27 DITCH WORK – MATERIAL USE PROHIBITED**

On all roads, pulling ditch material across the road or mixing in with the road surface will not be allowed. Excavated material shall be disposed of as specified in Clause 4-36 through Clause 4-38.

##### **4-28 DITCH DRAINAGE**

Ditches must drain to cross-drain culverts or ditchouts.

#### 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. On side slopes greater than 45%, all waste material must be end hauled or pushed to the designated embankment sites and waste areas identified in Clause 4-37 WASTE AREA LOCATION.

#### 4-37 WASTE AREA LOCATION

Waste material shall be deposited in the listed designated areas. The amount of material to be contained in a waste area shall be at the discretion of the Contract Administrator.

Note: All amount values are estimated bank yards.

<u>Waste Area Location</u>	<u>Waste Generated From Road</u>	<u>Waste Generated at Stations</u>	<u>Estimated Volume</u>
FS-30 vicinity STA 140+00	FS-30	Storm Channel vicinity 145+00	110 CY
W-1000 vicinity STA 3+00	FS-30	126+75 – 227+00, 306+25 – 392+30	1840 CY
W-1000 STA 133+00	W-1000	120+00 – 186+00	30,000 CY
W-1000 STA 186+00	W-1000	186+00 – 207+50	20,000 CY
W-1200 STA 52+00	W-1200	52+00 – 69+00	2000 CY

#### 4-38 PROHIBITED WASTE DISPOSAL AREAS

Waste material shall not be deposited in the following areas:

- Within 5 feet of a cross drain culvert.
- Within 50 feet of a live stream or wetland.
- Within a riparian management zone.
- 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.

#### 4-39 WASTE AREA COMPACTION

Excavated material may be deposited adjacent to the road prism on side slopes up to 45% if the waste material is compacted and free of debris. On side slopes of 45% or more, all excavation shall be end hauled or pushed to designated waste areas. All waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over the entire width of the lifts, with the exception of side hill embankments too narrow to accommodate excavation equipment which may be placed by end-dumping or sidecasting until sufficiently wide to support the equipment.

### SUBSECTION BORROW

#### 4-45 SELECT BORROW

Select borrow shall consist of granular material, either naturally occurring or processed, and shall contain no more than 5% clay, organic debris, or trash by volume.

#### 4-49 BORROW SOURCE

Borrow may be obtained from the listed borrow source(s). This borrow source is suitable select borrow material found during new construction of W-1000.

<u>Source</u>	<u>Location</u>	<u>Yards</u>
W-1000	186+00 – 207+50	400 CY

**4-50 BORROW APPLICATION**

Borrow may be applied in accordance with quantities shown below. Borrow shall be spread, shaped and compacted full width concurrent with hauling operations.

<u>Road</u>	<u>Stations</u>	<u>Cubic Yards</u>	<u>Type / Comments</u>
W-1000	198+50 – 202+00	400 CY	Select Borrow obtained during new construction of W-1000

**SUBSECTION SHAPING**

**4-55 ROAD SHAPING**

The road subgrade and surface shall be shaped as shown on the Typical Section Sheet. The subgrade and surface shape shall ensure runoff in an even, un-concentrated manner, and shall 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. A plate compactor must be used for areas specifically requiring keyed embankment construction, and embankment segments too narrow to accommodate equipment.

**4-61 SUBGRADE COMPACTION**

Purchaser shall compact constructed and reconstructed subgrades in accordance with the Compaction List by routing equipment over the entire width, except ditch. Purchaser shall obtain written approval from the Contract Administrator for subgrade compaction before placement of rock.

**4-62 DRY WEATHER COMPACTION**

At any time of the 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.

**4-64 WASTE MATERIAL COMPACTION**

All waste material shall be compacted by running equipment over it or bucket tamping.

**4-65 CULVERT BACKFILL COMPACTION**

Culvert backfills shall be accomplished by using a jumping jack compactor, performing at least 2 passes per lift, in lifts not to exceed 8 inches.

**4-66 COMPACTION BY METHOD**

Compaction shall consist of three complete passes over the entire width of each lift with a vibratory drum roller weighing a minimum of 6,000 pounds at a maximum operating speed of 3 mph. For embankment segments too narrow to accommodate a drum roller, a plate compactor shall be used.

SECTION 5 – DRAINAGE

**5-4 PUNCHEON RESTRICTED**

At no time shall puncheon be used in the subgrade, unless approved by the Contract Administrator.

SUBSECTION CULVERTS

**5-5 CULVERTS**

Culverts shall be installed as part of this contract. Culverts shall be installed concurrently with subgrade work and shall be installed before subgrade compaction and rock application. Culvert locations and the minimum requirements for culvert length and diameter are designated on the Culvert List. Culvert, downspout, and flume lengths shall be adjusted to fit as-built conditions and shall not terminate directly on unprotected soil. Culverts shall be new and meet the material specifications in Clauses 10-15 through 10-23.

**5-11 UNUSED MATERIALS STATE PROPERTY**

On required roads, any materials listed on the Culvert List and Rock List that are not installed shall become the property of the State. Purchaser shall stockpile materials as directed by the Contract Administrator.

**5-12 CONTINGENCY CULVERTS**

The following culverts will be supplied by the Purchaser and will be available for installation on any road listed in the TYPICAL SECTION SHEET as directed by the Contract Administrator. Unused contingency culverts shall be stockpiled at Mary Clark Pit or as directed by the Contract Administrator.

<u>Road</u>	<u>Size</u>
As Directed	18" x 30'
By C/A	18" x 30'
	18" x 30'
	24" x 30'

SUBSECTION CULVERT INSTALLATION

**5-15 CULVERT INSTALLATION**

Installation shall be in accordance with the Typical Cross Drain Culvert Installation Detail, Typical Type Ns Np Culvert Installation Detail, the National Corrugated Metal Pipe Association's "Installation Manual for Corrugated Steel Drainage Structures", and the Corrugated Polyethylene Pipe Association's "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings". Corrugated Polyethylene pipe shall be installed in a manner consistent with the manufacturer's recommendations.

**5-16 APPROVAL FOR LARGER CULVERT INSTALLATION**

Installation of culverts 30 inches in diameter and over shall be subject to written approval by the District Engineer or their designee before backfilling.

**5-17 CROSS DRAIN SKEW AND SLOPE**

Cross drains on road grades in excess of 3% shall 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. Where the cross drain is at the low point in the road, culverts shall not be skewed. Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3% or more than 10%.

**5-18 CULVERT DEPTH OF COVER**

Cross drain culverts shall be installed with a depth of cover of not less than 18 inches of compacted depth over the top of the culvert at the shallowest point. Stream crossing culverts shall be installed with a depth of cover specified in the Engineer's design, Type Ns Np Typical Detail Sheet, or to the minimum depth recommended by the culvert manufacturer for the type of cover material over the pipe, whichever is greater.

SUBSECTION ENERGY DISSIPATERS

**5-20 ENERGY DISSIPATERS**

Energy dissipaters shall be installed to prevent erosion and are subject to approval by the Contract Administrator. Rock shall weigh at least 10 pounds and be placed by zero-drop-height method. Energy dissipater shall extend a minimum of ¾ foot to each side of the culvert at the outlet and a minimum of 2 feet beyond the outlet.

SUBSECTION CATCH BASINS, HEADWALLS, AND ARMORING

**5-25 CATCH BASINS**

Catch basins shall be constructed to resist erosion. Approximate dimensions are 1-2 feet deep, 1-2 feet wide, and 2-4 feet long.

**5-26 HEADWALLS FOR CROSS DRAIN CULVERTS**

Headwalls shall be constructed in accordance with the Typical Cross Drain Culvert Installation Detail at all cross drain culverts that specify the placement of rock. Rock used for headwalls shall consist of oversize or quarry spall material. Rock shall be placed on shoulders, slopes, and around culvert inlets and outlets. Rock shall not restrict the flow of water into culvert inlets or catch basins. No end dumping of rock is allowed.

**5-27 ARMORING FOR STREAM CROSSING CULVERTS**

At the following culvert(s), rip rap shall be set in place immediately following construction of the embankment. Rock shall be placed on shoulders, slopes, and around culvert inlets and outlets as designated on the Typical Type Ns Np Culvert Installation Detail as directed by the Contract Administrator. Rock shall not restrict the flow of water into culvert inlets or catch basins. Rock shall be set in place by machine. Placement shall be by zero-drop-height method only. No placement by end dumping or dropping of rock shall be allowed.

<u>Road</u>	<u>Stations</u>	<u>Rock Type</u>
W-1000	201+95	Oversize
W-1200	31+50	Oversize
W-1200	39+20	Oversize
W-1200	40+00	Oversize

## 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. Use of material from any other source must have prior written approval from the Contract Administrator. If other operators are using, or desire to use, the rock source(s), a joint operating plan shall be developed. All parties shall follow this plan. The Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before starting any operations in the listed locations.

<u>Source</u>	<u>Location</u>	<u>Rock Type</u>
Baby Bear Pit	T30N, R12W, Sec. 26	Pit Run
Mary Clark Pit	T30N, R12W, Sec. 32	Crushed, Oversize
Littleton Pit	T30N, R11W, Sec. 25 T30N, R10W, Sec. 30	Clean rock shot ballast

#### 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 remove no more than 450 cubic yards of 1 ¼" minus crushed rock.

<u>Source</u>	<u>Location</u>	<u>Quantity (yd<sup>3</sup>)</u>
Mary Clark Pit	T30N, R12W, Sec. 32	450 yd <sup>3</sup>

#### 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 will be subject to written approval by the Contract Administrator before their use. Any commercial rock used for construction or pre-haul maintenance across US Forest Service ground shall be certified weed free. This stipulation applies to the FS-30 and the portion of the W-1000 from 0+00 to 130+70.

### SUBSECTION ROCK SOURCE DEVELOPMENT

#### 6-10 ROCK SOURCE DEVELOPMENT PLAN BY STATE

All rock source development and use shall be in accordance with a written Rock Source Development and Reclamation Plan prepared by the State and included in this Road Plan. Rock source operations shall be conducted as directed by the Contract Administrator and in accordance with the plan. Upon completion of operations, the rock

source shall be left in the condition specified in the Rock Source Development and Reclamation Plan, and approved in writing by the Contract Administrator. The Purchaser shall notify the Contract Administrator a minimum of 5 calendar days before starting any operations in the rock source.

**6-12 ROCK SOURCE SPECIFICATIONS**

Rock sources shall be in accordance with the following unless otherwise specified in Rock Source Development and reclamation plan:

- Pit walls shall not be undermined or over-steepened. The maximum slope of the walls shall 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 shall be maintained in a condition to minimize the possibility of the walls sliding or failing.
- The width of pit benches shall be a minimum of 1.5 times the maximum length of the largest machine used.
- The surface of pit floors and benches shall be uniform and free-draining at a minimum 2% outslope gradient.
- All operations shall 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.
- Block all vehicle access to the top of the pit faces.

**6-14 DRILL AND SHOOT**

Rock drilling and shooting shall meet the following specifications:

- Oversize material remaining in the rock source at the conclusion of the timber sale shall not exceed 5% of the total volume mined in that source.
- Oversize material is defined as rock fragments larger than five feet in any dimension.
- Oversized rock that exceeds the maximum allowable amount shall be shot or broken up.
- The Purchaser shall notify the Contract Administrator a minimum of 3 working days before blasting operations.
- The Purchaser shall submit an informational drilling and shooting plan to the Contract Administrator 10 working days before any drilling (Form #M-126PAC).

- All operations shall 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.

**6-15 REQUIRED ROCK SOURCE WORK**

The following rock source work is required. Work is to be done according to the approved Rock Source Development And Reclamation Plan and as directed by the Contract Administrator. Work shall be completed by 31 December 2021.

<u>Site</u>	<u>Requirements</u>
Littleton East	Construct new pit road. Strip, drill, and shoot 10,000 CY of clean rock, shot ballast. Work shall be completed by 31 December 2021.

**6-16 TECHNICAL SPECIFICATIONS**

**DRILLING**

The Purchaser shall drill in accordance to an approved Shot Plan. Drill depth shall not extend more than 5 feet below existing pit floor. The District Engineer (or designee) and Purchaser shall jointly measure and determine drill depths, hole spacing and pattern and must be approved prior to loading explosives. During drilling operation, drill operator shall keep a bore log which includes the depth and location of each hole drilled. The District Engineer or designee may ask to see the bore log during and after the drilling process has completed.

**BLASTING**

The Purchaser shall furnish and load appropriate explosives, detonators, and ignition sources in accordance to all State and Federal laws and in accordance to an approved Shot Plan.

**DRILLING AND SHOOTING PLAN “SHOT PLAN”**

The Purchaser shall submit a written drilling and shooting plan, including drawings, to the District Engineer or designee, which must meet the approval of the District Engineer prior to the start of the drilling operation. The plan and drawing(s) shall include the following proposals: drill hole diameter, drill hole spacing, drill hole pattern, drill hole depth, any stemming depths, type and depth of explosive including amount per drill hole, detonator and ignition type, and proposed delay pattern. Any adjustment or modifications to the proposals during operations must be noted and resubmitted prior to loading of explosives.

**WEATHER LIMITATIONS**

When, in the opinion of the District Engineer or designee, the weather is such that satisfactory results cannot be obtained in any phase of operation, Purchaser shall suspend operations until the weather is favorable. Before and during any suspension, Purchaser shall protect the work from damage or deterioration.

SUBSECTION ROCK MANUFACTURE

**6-20 ROCK GRADATION TYPES**

Purchaser shall manufacture rock in accordance with the types and amounts listed in the Manufacturing List. Rock shall meet the following specifications for gradation and uniform quality during manufacture and placement into a stockpile. Work shall be completed by 31 December 2021.

<u>Rock Type</u>	<u>Amount</u>
Clean Rock, Shot Ballast	10,000 CY

#### SUBSECTION ROCK GRADATIONS

**6-28 1 ¼-INCH MINUS CRUSHED ROCK**

% Passing 1 ¼" square sieve	100%
% Passing 5/8" square sieve	50 - 80%
% Passing U.S. #4 sieve	30 - 50%
% Passing U.S. #40 sieve	3 - 18%
% Passing U.S. #200 sieve	5%

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

**6-42 CLEAN ROCK, SHOT BALLAST**

Shot Ballast rock shall contain no more than 5% by weight of organic debris, dirt, and trash. Shot Ballast will meet the following specifications for rock gradation when placed on the subgrade:

- No more than 25% of the rock by weight shall exceed 8 inches in any dimension, and no rock shall be larger than 24 inches in any dimension. Rock may require processing to meet these requirements.

**6-52 OVERSIZE**

% Passing 8" square sieve	100%
% Passing 4" square sieve	0%

Rock shall 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 estimated truck 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 STOCKPILE

**6-67 ROCK STOCKPILE SPECIFICATIONS**

Rock stockpiles shall meet the following specifications:

- 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.
- When completed, the stockpile shall be neat and regular in shape.
- The stockpile height shall be limited to a maximum of 30 feet.
- Stockpiles in excess of 500 cubic yards shall be built up in layers not more than 8 feet in depth. Stockpile layers shall be constructed by trucks, clamshells, or other methods approved, in writing, by the Contract Administrator.
- Each layer shall be completed over the entire area of the pile before depositing aggregates in the next layer. The aggregates shall not be dumped so that they run down and over the lower layers in the stockpile. The method of dropping from a bucket or spout in one location so as to form a cone shaped pile will not be permitted.
- Stockpiles of different types or sizes of aggregate shall be spaced far enough apart, or separated by suitable walls or partitions, to prevent the mixing of the aggregates.

**SUBSECTION ROCK APPLICATION**

**6-70 APPROVAL BEFORE ROCK APPLICATION**

Subgrade drainage installation including grading and compaction, shall be completed and approved in writing by the Contract Administrator, before rock application.

**6-71 ROCK APPLICATION**

Rock shall be applied in accordance with the specifications and quantities shown on the Rock List. Rock shall be spread, shaped, and compacted full-width concurrent with rock hauling operations. Rock shall be compacted in accordance with Compaction List, in lifts not to exceed 6 inches.

**6-72 ROCK APPLICATION AFTER HAULING**

On the following road(s), upon completion of all hauling operations, Purchaser shall apply 1 1/4" minus crushed rock in accordance with the quantities shown on the Rock List.

<u>Road</u>	<u>Stations</u>	<u>Amount</u>
FS-30	As Directed by Contract Administrator	150 CY
W-1000	As Directed by Contract Administrator	150 CY

**6-73 ROCK FOR WIDENED PORTIONS**

Turnarounds, turnouts, and areas with curve widening shall have rock applied to the same depth and specifications as the traveled way.

**6-78 ROCK FOR SPOT PATCHING**

Rock for spot patching shall be applied before any grading is done and before any rock lifts are applied. Once applied, spot patches shall be graded into the existing running surface.

**SUBSECTION ASPHALT**

**6-89 REQUIRED ASPHALT REPAIR**

Asphalt repairs are required as listed in the table below. All pavement repair areas shall be saw-cut before removal. The cutting line shall be a minimum of 6 inches beyond the damaged area. Damaged areas exceeding 200 square feet shall have asphalt placed with an approved paving machine. The replacement asphalt shall be Hot Mix Asphalt or equivalent and installed per WSDOT Standard Specifications. Purchaser shall notify the District Engineer or their designee at least 5 working days before starting any asphalt road repairs. All completed repairs shall be approved in writing by the District Engineer or their designee.

<u>Road</u>	<u>Stations</u>	<u>Width(ft)</u>	<u>Depth(in)</u>	<u>Asphalt Quantity (Tons)</u>
FS-30	23+75	19'	4"	7
FS-30	30+10	19'	4"	2
FS-30	218+40	19'	4"	10
FS-30	322+60	19'	4"	5

**6-93 ASPHALT REPAIR**

If hauled upon, the pavement on the FS-30 road could deteriorate. Any damage or wear, including but not limited to depressions, sags, cracks, and alligating, needs to be replaced with new material. All pavement repair areas shall be saw-cut before removal. The cutting line shall be a minimum of 6 inches beyond the damaged area. Damaged areas exceeding 200 square feet shall have asphalt placed with an approved paving machine. The replacement asphalt shall be Hot Mix Asphalt or equivalent and installed per WSDOT Standard Specifications. Purchaser shall notify the District Engineer or their designee at least 5 working days before starting any asphalt road repairs. All completed repairs shall be approved in writing by the District Engineer or their designee.

**6-94 HMA WEATHER LIMITATIONS (WSDOT 5-04.3(16))**

HMA shall not be placed on any wet surface, or when the average surface temperatures are less than 45°F or when weather conditions otherwise prevent the proper handling or finishing of the HMA.

When, in the opinion of the District Engineer or their designee, the weather is such that satisfactory results cannot be obtained in any phase of operations, the Purchaser shall suspend operations until weather is favorable.

**SECTION 7 – STRUCTURES**

**SUBSECTION SIGNS**

**7-2 SIGN INSTALLATION (NON-HIGHWAY)**

The Purchaser shall be responsible for the purchase, installation, and maintenance of the following road signs. Signs shall be installed a minimum of 7 days before beginning road work. Signs shall be at least 2 feet in any direction, and shall be orange with black lettering.

<u>Road</u>	<u>Station</u>	<u>Sign</u>
W-1000	0+10	Forest Operations Ahead

SUBSECTION STREAM CROSSING STRUCTURES GENERAL

**7-5 STRUCTURE DEBRIS**

The Purchaser shall ensure that debris from the installation or removal of structures does not enter any stream. Components removed from the existing structures(s) shall be placed at designated site(s), as directed in writing by the Contract Administrator. The Purchaser is responsible for maintaining a clean jobsite, with all materials stored away from any high water mark or other area presenting a risk of the materials entering a stream. Debris entering any stream shall be removed immediately and placed in the site(s) designated for stockpiling or disposal. The Purchaser is responsible for retrieving all material carried downstream from the jobsite by the stream current.

**7-6 STREAM CROSSING INSTALLATION**

Installation of stream crossing structures shall be in accordance with the manufacturer's requirements, and as directed by the District Engineer or their designee.

**7-7 BANK PROTECTION FOR STREAM CROSSING STRUCTURES**

Bank protection shall be designed and constructed to prevent the undermining of the structure.

SUBSECTION GATES AND FENCES

**7-76 GATE INSTALLATION**

On the following road(s), Purchaser shall install the designated gate(s). Gate shall be installed prior to the end of the contract.

<u>Road</u>	<u>Station</u>	<u>Type*</u>	<u>Furnished by</u>
W-1000	70+00	Permanent Medium Duty Gate	Purchaser

\* Tubular gate installation(s) shall be in accordance CLOSURE GATE TYPICAL.

The gate and lock box shall be installed plumb and aligned to ensure all mating components match with precision. Each post shall be filled with concrete, capped, and set in a minimum of 2 cubic yards of poured-in-place concrete. The gate shall be installed with a post and locking device to allow the gate to be locked in an open position. The Contract Administrator will supply the Purchaser with a padlock. If the Purchaser wishes to install an alternate design, detailed plans for the construction of the gate shall be submitted to the Contract Administrator or their designee in writing, for approval, before gate installation. The gate shall be primed and painted in at least 2 coats of Safety Yellow.

If fences exist at the site of gate installation(s), the Purchaser shall be required to connect the fencing to the posts of the new installation, except by permission from the

Contract Administrator. Purchaser shall supply and place stumps to prevent vehicles driving around the gate.

**7-78 GATE SUPPLIED BY PURCHASER**

The gate structure to be installed by the Purchaser, as specified in Clause 7-76 Gate Installation, shall be supplied by the Purchaser and accepted, in writing, by the Contract Administrator before installation.

**SECTION 8 – EROSION CONTROL**

**8-1 SEDIMENT CONTROL STRUCTURES**

On the following road(s), Purchaser shall install sediment control structures as listed below.

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
W-1200	31+50 R	4x Catch Basins with Silt Fence
W-1200	39+20 R	2x Catch Basins with Silt Fence
W-1200	40+00 R	4x Catch Basins with Silt Fence
W-1000	201+95 L	4x Catch Basins with Silt Fence

**8-2 PROTECTION FOR EXPOSED SOIL**

Purchaser shall furnish and evenly spread a 3-inch layer of straw to all exposed soils at stream culvert installations. Soils shall not be allowed to sit exposed during any rain event.

**SUBSECTION SLOPE STABILIZATION**

**8-11 STABILIZE SLOPES – MATERIAL REMOVAL**

On the following road(s), Purchaser shall stabilize embankment slopes by removing approximately 400 cubic yards of sidecast material. End haul all material to a waste area designated in Clause 4-37 WASTE AREA LOCATION or by the Contract Administrator. All work is subject to approval by the Contract Administrator.

<u>Road</u>	<u>Stations</u>
W-1200	1+15 – 6+25, 10+50 – 12+00, 31+00 – 32+50, 37+50 – 40+25, 45+00 – 47+25, 58+00 – 59+25

**SUBSECTION REVEGETATION**

**8-15 REVEGETATION**

Purchaser shall grass seed and hay mulch all exposed soils including, but not limited to, stream culverts, waste areas, sidecast pull back areas, stream crossing removals, bridge installations, and other areas directed by the Contract Administrator. Revegetation of exposed soils shall be accomplished by manual dispersal of grass seed unless otherwise detailed in this Road Plan. Other methods of revegetation must be approved in writing by the Contract Administrator.

**8-16 REVEGETATION SUPPLY**

All seed, mulch, hay, matting, etc. will be provided by the Purchaser.

**8-17 REVEGETATION TIMING**

Purchaser shall perform revegetation during the first available opportunity. Soils shall not be allowed to sit exposed for longer than one month without receiving revegetation treatment unless otherwise approved in writing by the Contract Administrator. Soils shall not be allowed to sit exposed during any rain event.

**8-18 PROTECTION FOR SEED**

Purchaser shall provide a protective cover over the revegetated area. The protective cover may consist of, but not be limited to, such items as dispersed hay mulch 3" thick or jute matting.

**8-19 ASSURANCE FOR SEEDED AREA**

The Purchaser shall be responsible to ensure a uniform and dense crop of grass. The Purchaser shall reapply the seed and/or mulch in areas that have been damaged through any cause, before approval from the Contract Administrator. The Purchaser shall restore eroded or disturbed areas, clean up and properly dispose of eroded materials, and reapply the seed and/or mulch at no additional cost to the state.

SUBSECTION SEED, FERTILIZER, AND MULCH

**8-25 GRASS SEED**

Purchaser shall evenly spread the seed mixture listed below on all exposed soils at a rate of 60 pounds per acre of exposed soil.

<u>Seed Species</u>	<u>% by Weight</u>
• Perennial Ryegrass	40.00
• Creeping Red Fescue	40.00
• White Dutch Clover	10.00
• Colonial Bentgrass	10.00

Grass seed shall 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

SECTION 9 – POST-HAUL ROAD WORK

SUBSECTION STRUCTURES

**9-3 REMOVAL OF CULVERT MATERIAL FROM STATE LAND**

Culvert material removed from roads becomes the property of the Purchaser and must be removed from state land.

SUBSECTION POST-HAUL MAINTENANCE

**9-5 POST-HAUL MAINTENANCE**

Post-haul maintenance shall be performed in accordance with the Forest Access Road Maintenance Specifications and as specified below.

<u>Road</u>	<u>Stations</u>	<u>Additional Requirements</u>
All (to include B-6500, B-8500)	All	Clean culverts, clean ditches, grade road shape and compact as directed by the Contract Administrator.
FS-30, W-1000	As Directed	Apply post haul rock as per Clause 6-72.

SUBSECTION POST-HAUL LANDING MAINTENANCE

**9-10 LANDING DRAINAGE**

On all roads, Purchaser shall provide for drainage of the landing surface as approved in writing by the Contract Administrator.

**9-11 LANDING EMBANKMENT**

On all roads, landing embankments shall be sloped to original construction specifications.

SECTION 10 MATERIALS

SUBSECTION GEOTEXTILES

**10-6 GEOTEXTILE FOR TEMPORARY SILT FENCE**

Geotextiles shall meet the following minimum requirements for strength and property qualities, and shall be designed by the manufacturer to be used for filtration. Woven slit-film geotextiles will not be allowed. Material shall be free of defects, cuts, and tears.

	<u>ASTM Test</u>	<u>Requirements</u>
Type	--	Unsupported between posts
Apparent opening size	D 4751	No. 30 max., No. 100 min.
Water permittivity	D 4491	0.02 sec <sup>-1</sup>
Grab tensile strength	D 4632	180 lb in machine direction, 100lb in cross-machine direction
Grab tensile elongation	D 4632	30% max. at 180 lb or more
Ultraviolet stability	D 4355	70% retained after 500 hours of exposure

SUBSECTION CULVERTS

**10-15 CORRUGATED STEEL CULVERT**

Metallic coated steel culverts shall meet AASHTO M-36 (ASTM A-760) specifications. Culverts shall be aluminized (aluminum type 2 coated meeting AASHTO M-274.

**10-16 CORRUGATED ALUMINUM CULVERT**

Aluminum culverts shall meet AASHTO M-196 (ASTM A-745) specifications.

**10-17 CORRUGATED PLASTIC CULVERT**

Polyethylene culverts shall meet AASHTO M-294 specifications. Culverts shall be Type S – double walled with a corrugated exterior and smooth interior.

**10-18 CORRUGATED STEEL STRUCTURAL PLATE**

Structural plate culverts shall be galvanized steel meeting AASHTO M-167 (ASTM A-761) specifications.

**10-19 CORRUGATED ALUMINUM STRUCTURAL PLATE**

Structural plate culverts shall be aluminum alloy meeting AASHTO M-219 (ASTM A-746) specifications.

**10-20 FLUME AND DOWNSPOUT**

Downspouts and flumes shall meet the AASHTO specification designated for the culvert. Plastic downspouts and flumes shall be Type S – double walled with a corrugated exterior and smooth interior.

**10-21 METAL BAND**

Metal coupling and end bands shall meet the AASHTO specification designated for the culvert and shall have matching corrugations. On culverts 24 inches and smaller, bands shall have a minimum width of 12 inches. On culverts over 24 inches, bands shall have a minimum width of 24 inches.

**10-22 PLASTIC BAND**

Plastic coupling and end bands shall meet the AASHTO specification designated for the culvert. Only fittings supplied or recommended by the culvert manufacturer shall be used. Couplings shall be split coupling band. Split coupling bands shall have a minimum of four corrugations, two on each side of the pipe joint.

**10-23 RUBBER CULVERT GASKETS**

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

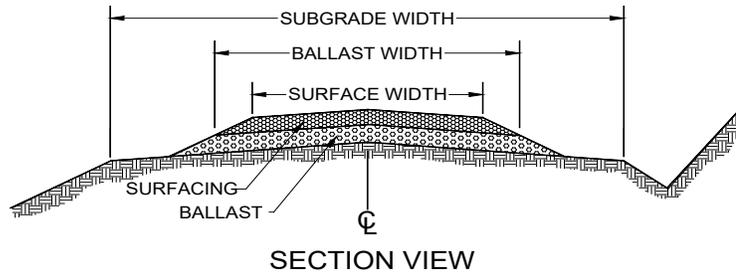
**10-24 GAGE AND CORRUGATION**

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

<u>Diameter</u>	<u>Gage</u>	<u>Corrugation</u>
18"	16 (0.064")	2 2/3" X 1/2"
24" to 42"	14 (0.079")	2 2/3" X 1/2"
48" to 54"	12	3" X 1"
60" +	10	5" X 1"



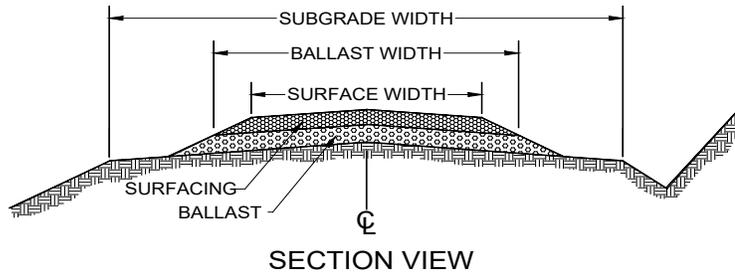
## ROCK LIST SHEET



1. Rock quantities, subtotals and totals are "truck measure" estimates. Rock shall be applied to at least the depths listed.
2. All depths are compacted depths.
3. Rock slopes shall be 1½ (H) : 1 (V).
4. All rock sources are subject to approval by the Contract Administrator.
5. Pitrun is defined as pitrun or ballast per Line 6. Crushed is defined as any crushed rock from ¼" minus to 4" minus per Line 6. Oversize is defined as oversize, quarry spalls, light loose rip rap, or heavy loose rip rap per Line 6.
6. Rock sources= 1: Baby Bear Pit Run, 2: Mary Clark 1 ¼" minus, 3: Littleton Shot Rock, 4: Mary Clark Oversize

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/Rip rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>W-1000</b>	Misc								2				50		
Lift	120+00	145+20		1		18	110	2770							
Lift	145+20	207+50	17						3	12	12	80	4980		
Culvert	137+50			1				20						4	1
Culvert	145+20			1				20						4	1
Culvert	153+50			1				20						4	1
Culvert	161+70			1				20						4	1
Culvert	170+00			1				20						4	1
Culvert	178+35			1				20						4	1
Culvert	189+85			1				20						4	1
Culvert	199+15			1				20						4	1
Culvert	201+95			1				200						4	100
Landing	207+50			1				50							
Post-Haul									2				150		
<b>W-1001</b>															
Lift	0+00	3+75		1	12	18	110	410							
Landing	3+75			1				50							
<b>W-1101</b>															
Lift	0+00	3+00							3	12	12	80	240		
Landing	3+00			1				50							
<b>Totals:</b>								3690					200/5220		108

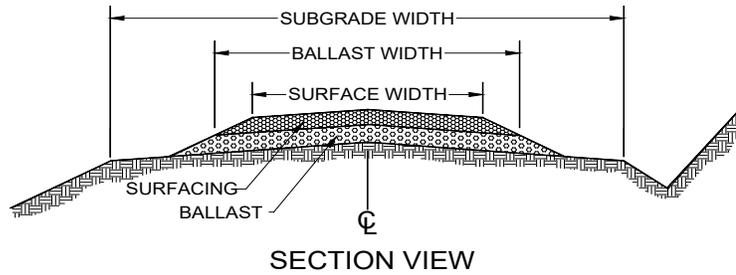
## ROCK LIST SHEET CONTINUED



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<b>W-1100</b>															
Lift	0+00	35+75	17	1	12	18	110	3930							
Culvert	8+00			1				20						4	1
Landing	9+00			1				50							
Culvert	12+20			1				20						4	1
Culvert	18+35			1				20						4	1
Culvert	22+75			1				20						4	1
<b>W-1200</b>															
Lift	0+00	69+00	17	1	12	12	70	4830							
Culvert	1+75			1				20						4	1
Culvert	3+15			1				20						4	1
Culvert	7+00			1				20						4	1
Landing	7+50			1				50							
Culvert	9+25			1				20						4	1
Culvert	16+50			1				20						4	1
Culvert	18+00			1				20						4	1
Culvert	21+00			1				20						4	1
Spot Patch	23+25			1				40							
Culvert	26+00			1				20						4	1
Culvert	30+00			1				20						4	1
<b>Totals:</b>								<b>9160</b>					<b>0/0</b>		<b>13</b>

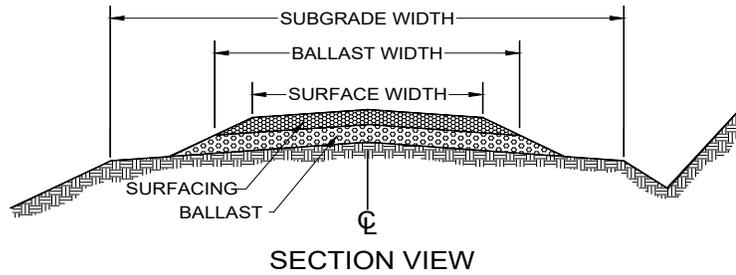
## ROCK LIST SHEET CONTINUED



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6. Rock sources= 1: Baby Bear Pit Run, 2: Mary Clark 1 ¼" minus, 3: Littleton Shot Rock, 4: Mary Clark Oversize

ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd³/sta)	Pitrun SUBTOTAL(yd³)	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd³/sta)	Crushed Subtotal(yd³)	Oversize/ Rip Rap Source	Oversize/Rip Rap Quantity(yd³)
<b>W-1200</b>															
Culvert	31+50			1			40							4	3
Culvert	37+30			1			20							4	1
Culvert	39+20			1			50							4	4
Culvert	40+00			1			50							4	3
Culvert	43+00			1			20							4	1
Culvert	49+50			1			20							4	1
Landing	51+50			1			50								
Culvert	58+00			1			20							4	1
Culvert	65+00			1			20							4	1
<b>Littleton East</b>	0+00	6+17							3	12	12	80	490		
Culvert	5+62								3				20		
Culvert (B-8500)	24+38								3				20		
<b>FS-30</b>															
Pre-Haul	Misc								2				100		
Spot Patch	23+75								2				40		
Spot Patch	30+10								2				40		
Spot Patch	218+40								2				50		
Culvert	322+60								2				40		
Culvert	377+70								2				40		
Post-Haul	Misc								2				150		
<b>Totals:</b>								290					460/530		15

## ROCK LIST SHEET CONTINUED



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ROAD NAME	START STATION	END STATION	SUBGRADE WIDTH (ft)	Pitrun SOURCE	Pitrun WIDTH (ft)	Pitrun DEPTH (in)	Pitrun Quantity(yd <sup>3</sup> /sta)	Pitrun SUBTOTAL(yd <sup>3</sup> )	Crushed SOURCE	Crushed WIDTH (ft)	Crushed DEPTH (in)	Crushed Quantity(yd <sup>3</sup> /sta)	Crushed Subtotal(yd <sup>3</sup> )	Oversize/ Rip Rap Source	Oversize/Rip Rap Quantity(yd <sup>3</sup> )
<b>Contingency</b>															
4x Culverts				1			80							4	4
Logger's Choice															
4x Landings				1			200								
Totals:							280						0/0		4
Grand Total:							13420					660/5750			140

**Totals**  
**Baby Bear Pit Run = 13,420 CY**  
**Mary Clark 1 ¼” Minus = 660 CY**  
**Littleton Shot Rock = 5,750 CY**  
**Mary Clark Oversize = 140 CY**

## CULVERT LIST

ROAD NAME	STATION	CULVERT DIAMETER (in)	CULVERT LENGTH (ft)	FLUME LENGTH (ft)		RIP RAP - INLET (cy)	RIP RAP - OUTLET (cy)	BACKFILL MATERIAL	NOTES
FS-30	322+60	24	36					CR	Culvert Replacement (metal pipe req.)
FS-30	377+70	24	40					CR	Culvert Replacement
W-1000	137+50	18	30				1	PR	Culvert Installation
W-1000	145+20	18	30				1	PR	Culvert Installation
W-1000	153+50	18	30				1	PR	Culvert Installation
W-1000	161+70	18	30				1	PR	Culvert Installation
W-1000	170+00	18	30				1	PR	Culvert Installation
W-1000	178+35	18	30				1	PR	Culvert Installation
W-1000	189+85	18	30				1	PR	Culvert Installation
W-1000	201+95	30	60				5	PR	Np Stream Culvert Installation
W-1100	8+00	18	30				1	PR	Culvert Installation
W-1100	12+20	18	30				1	PR	Culvert Installation
W-1100	18+35	18	30				1	PR	Culvert Installation
W-1100	22+75	18	30				1	PR	Culvert Installation
W-1200	1+75	18	26				1	PR	Culvert Installation
W-1200	3+15	24	40				1	PR	Culvert Installation
W-1200	7+00	18	30				1	PR	Culvert Installation
W-1200	9+25	18	26				1	PR	Culvert Installation
W-1200	16+50	24	30				1	PR	Culvert Installation
W-1200	18+00	18	26				1	PR	Culvert Installation
W-1200	21+00	18	30				1	PR	Culvert Installation
W-1200	26+00	18	26				1	PR	Culvert Installation
W-1200	30+00	18	30				1	PR	Culvert Installation
W-1200	31+50	24	40				3	PR	Np Stream Culvert Installation
W-1200	37+30	18	26				1	PR	Culvert Installation
W-1200	39+20	30	40				4	PR	Np Stream Culvert Installation
W-1200	40+00	24	30				3	PR	Np Stream Culvert Installation
W-1200	43+00	18	26				1	PR	Culvert Installation
W-1200	49+50	24	30				1	PR	Culvert Installation

All rip rap shall be Oversize unless specified in the Rock List, or in the field.

All backfill shall be native material (NT) unless specified otherwise. CR = 1 ¼"- crushed rock,

PR = pit run, SR = shot rock.





## Typical Type Ns, Np Culvert Installation Detail Sheet.

-Water shall be diverted away from the work site before any "in stream" work begins, and shall continue until culvert installation is complete.

-Culvert lay shall match stream gradient up to 5%.

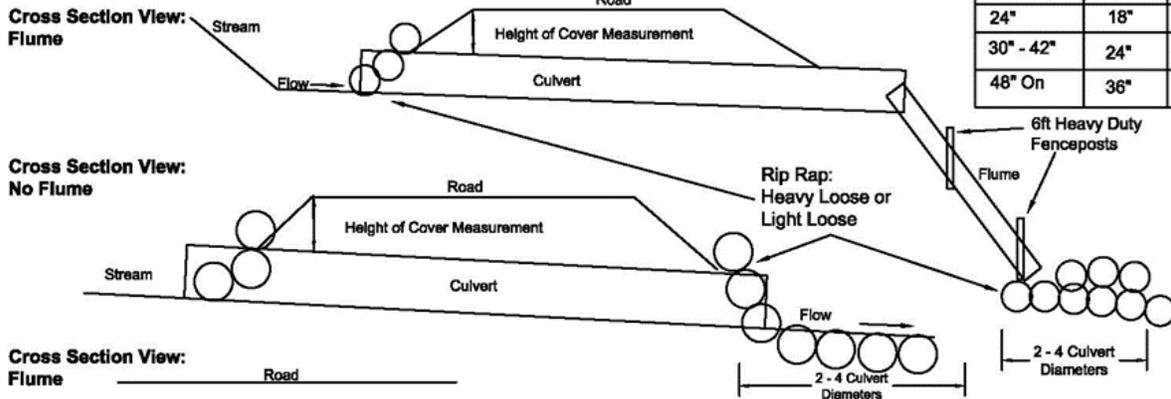
-Flumes longer than 10ft shall be staked on both sides at maximum intervals of 10ft with 6ft heavy duty steel fence posts, and fastened securely to the posts with No. 10 galvanized smooth wire or bolted to the fence posts.

-Rip rap shall be placed using a "zero height drop method", and shall be set in conjunction with the culvert installation.

-Rip rap shall be placed at headwalls, along the fill at the inlet, and at the end off flumes in accordance with this Detail. On culverts with no flume rip rap shall be placed along the fill at the outlet, unless there is stream drop or it is called for in the Road Plan, at which point it will be installed as an energy dissipater at the end of the culvert as specified in this Detail. All rip rap distance to be determined by the Contract Administrator or the District Engineer.

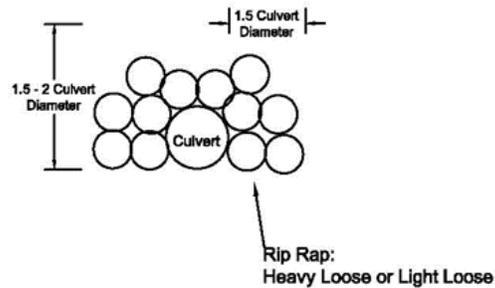
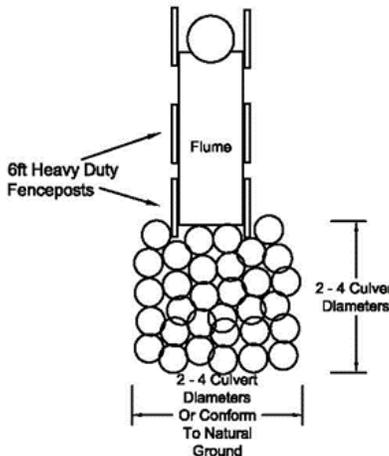
-Backfill compaction shall be achieved using a jumping jack, walk behind vibratory roller, or plate compactor on lifts not to exceed 8in. 3 complete passes per lift is required for compaction. Backfill shall be placed and compacted evenly on both sides of the culvert. Care shall be taken to ensure adequate compaction of backfill material under the haunches of the pipe. Excavation trench width shall be at least culvert diameter plus 3 times the width of the compactor footprint used.

Culvert Minimum Cover		
Diameter	Steel	Plastic
24"	18"	24"
30" - 42"	24"	24"
48" On	36"	36"



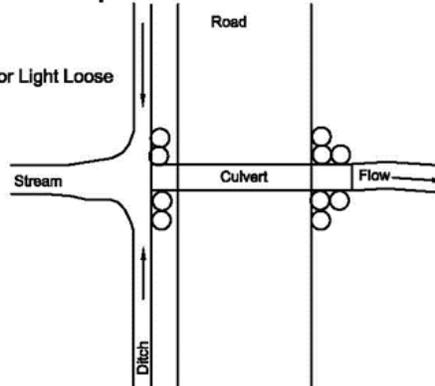
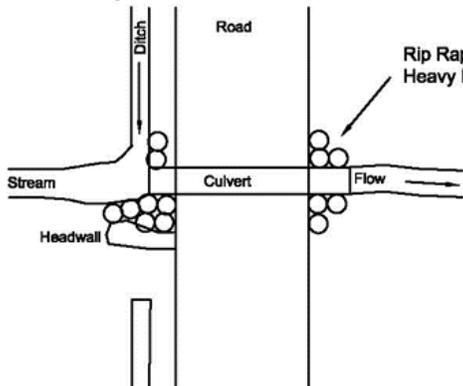
**Cross Section View: Flume**

**Cross Section View: No Flume**



**Plan View: No Dip**

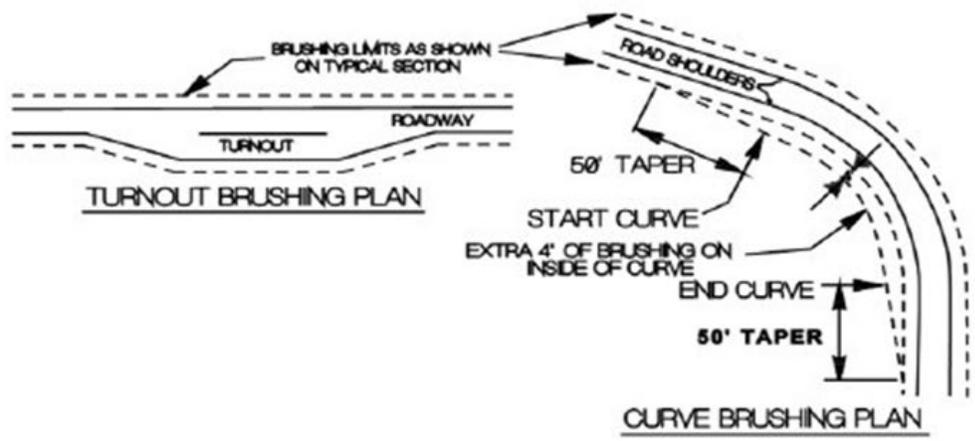
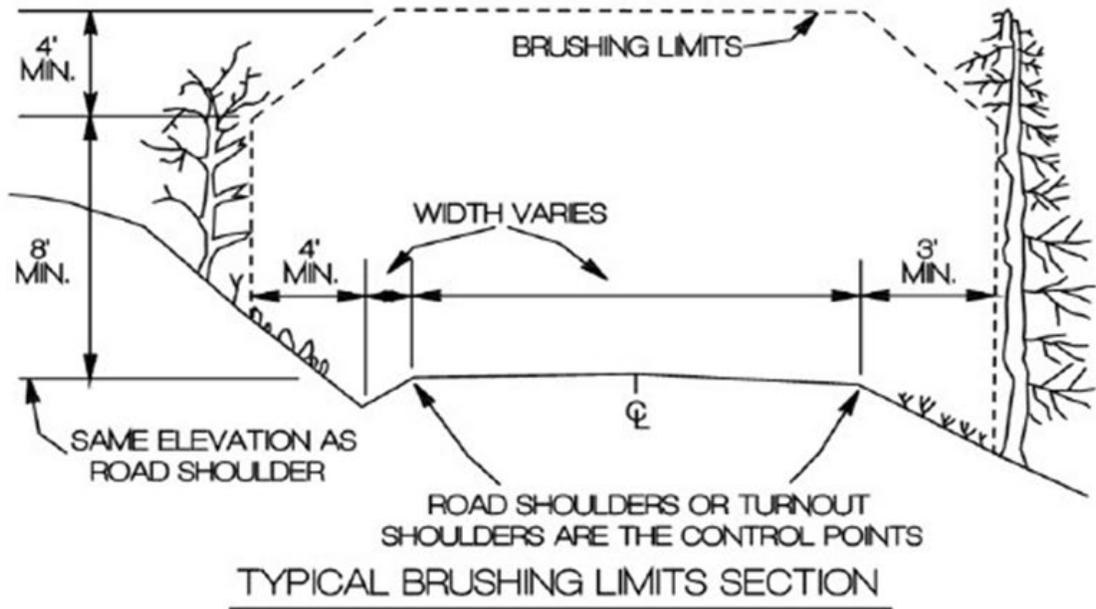
**Plan View: Dip**



**Not To Scale**



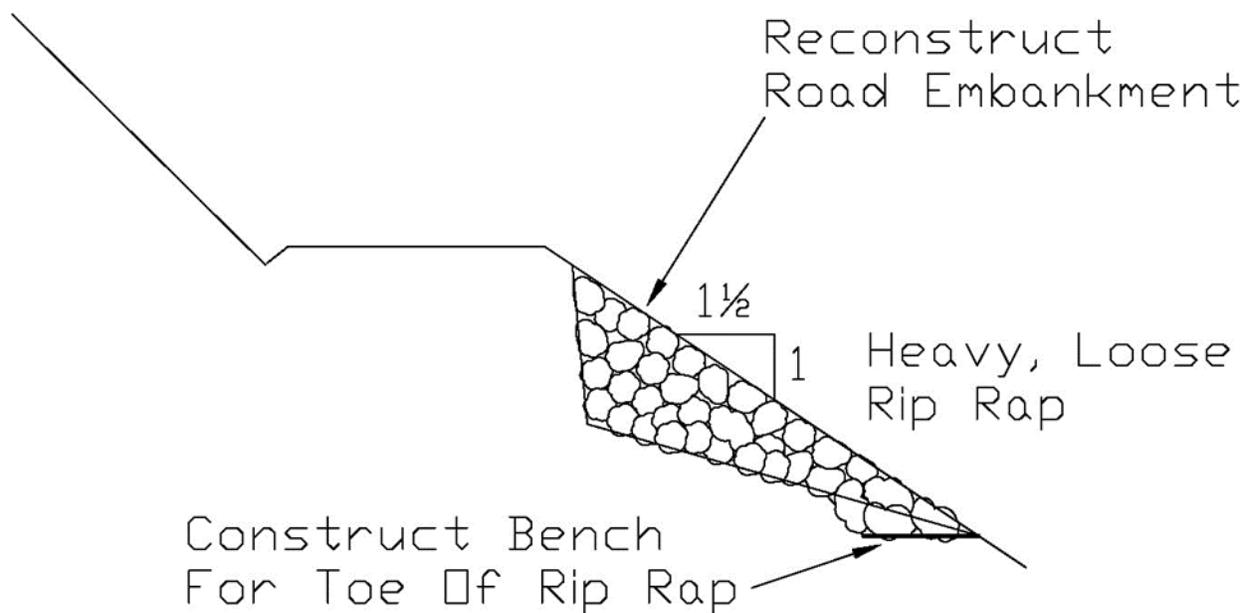
# BRUSHING DETAIL



- 1) ALL VEGETATION WITHIN THE BRUSHING LIMITS SHALL BE CUT TO WITHIN 8' OF THE GROUND, UNLESS OTHERWISE DIRECTED BY THE CONTRACT ADMINISTRATOR.
- 2) ALL BRUSH, TREES, LIMBS, ETC. SHALL BE REMOVED FROM THE ROAD SURFACE.
- 3) ALL BRUSH, TREES, LIMBS, ETC. THAT MAY RESTRICT THE FLOW OF WATER SHALL BE REMOVED FROM THE DITCH LINE.
- 4) ALL DEBRIS THAT MAY ROLL OR MIGRATE INTO THE DITCHLINE SHALL BE REMOVED.

# Typical Embankment Key Detail

Except where designed otherwise,  
road reconstruction with rip rap  
keyed toe and embankment.



## GUIDELINES FOR LOGGING ACTIVITIES

### ON OR NEAR BPA RIGHTS-OF-WAY

The Bonneville Power Administration (BPA) wants to keep you and your logging operation safe. Before conducting logging activities adjacent to or under BPA transmission lines, **contact a BPA regional representative before planning logging activities.** See the list of BPA personnel attached below.

The following are special concerns for operations on or near BPA transmission lines:

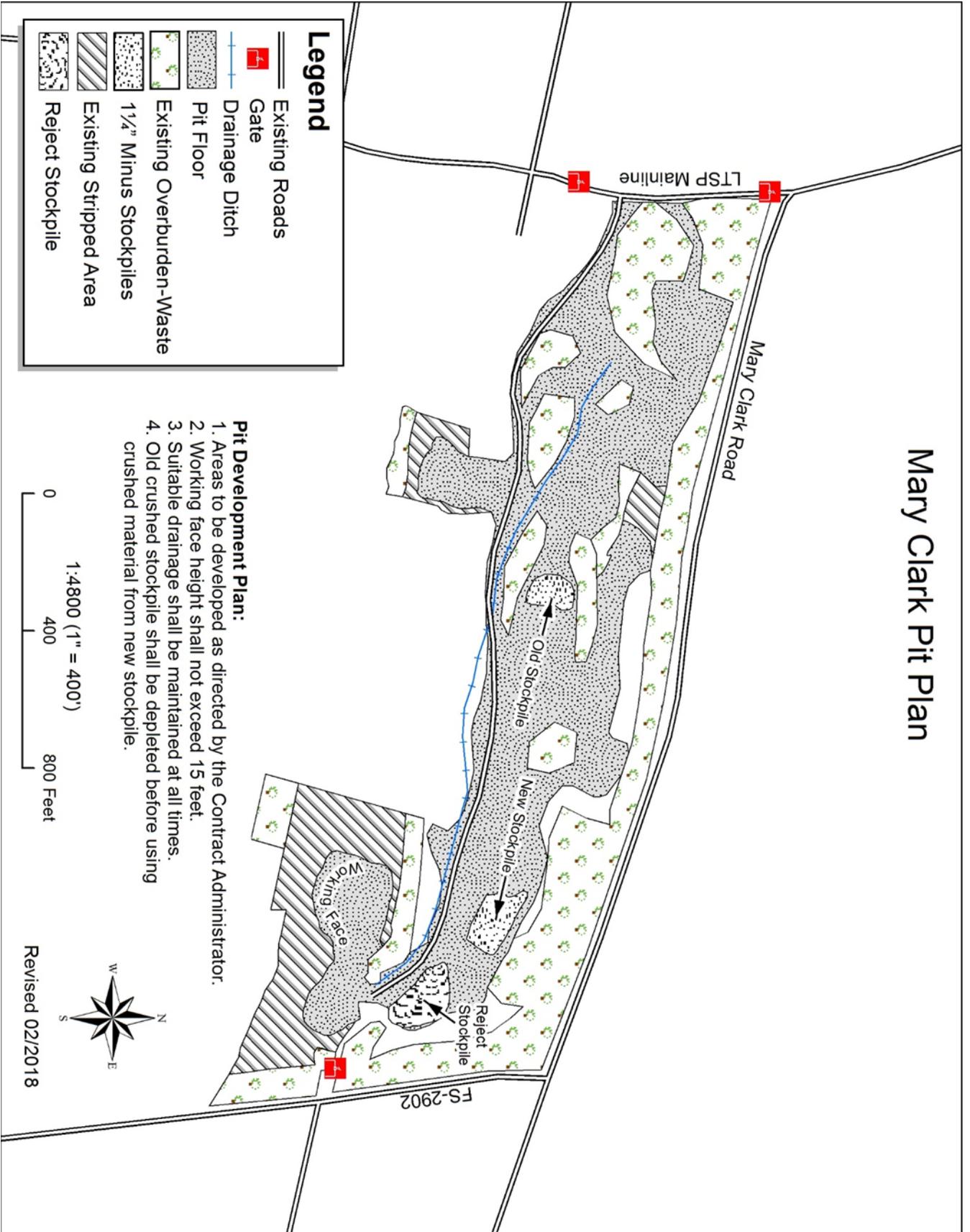
- Assume all **overhead** transmission lines **are always energized**. BPA transmission lines carry high voltage electricity that can injure or kill if conducted to ground through your equipment, fallen trees, or you.
- Do not leave strips of uncut trees between the cut unit boundary and the BPA right-of-way. Trees located near the edge of the right-of way should be felled away from transmission lines.
- BPA access roads used for timber sale roads shall be kept reasonably free of equipment, forest products, and debris. BPA may need to have road access for emergencies. In this case “reasonably free” means; roads could be cleared within an hour of notice; and roads would be left clear and passable when the timber sale purchaser or contractors leave the area for more than an hour at a time. After project completion, access roads should be in as good or better condition than that which existed prior to the project.
- Logging trucks and equipment should be parked on the right-of-way only during emergencies. When this occurs, the truck/equipment should be grounded with a flexible wire connecting the chassis to an approved ground rod driven into the ground, or by making the connection to ground with a drag chain attached to the truck/equipment chassis.
- Haul roads or skid trail location must be at least 50 feet from the point where the steel tower legs enter the earth. If this clearance cannot be met, use of the road may be permitted if adequate protection barriers for BPA structures are provided by the use of guard devices (guard rails, posts, Jersey-type barriers, etc.). If guard devices are used, their location and design must be approved by BPA to assure they will protect the structure from vehicle and logging activity incursions.
- Yarders used near the transmission lines should be grounded with approved copper wire attached to an approved copper rod pounded six to eight feet in the ground. Skyline cables should be grounded as described above at the tailhold. Chokers should be allowed to contact mineral earth prior to contacting any personal and equipment. Track mounted equipment is recommended for use near transmission lines to promote "drain off" of induced voltage. If rubber tire machines are used, a chain should be used to drain off voltage. Maintain a minimum separation of 25 feet between transmission line conductors and equipment, personnel, and machinery.
  - No high-lead or skyline yarding across/perpendicular to the power line right-of-way.

- Avoid loaded helicopter flights over transmission facilities. If necessary fly at right angles to the line and cross at a tower location (for better visibility), maintaining a minimum clearance of 100 feet.
- No slash or debris burning on or near the right-of-way. Concentrated columns of smoke from slash burning off right-of-way should be avoided in order to prevent electrical arc. Burning necessary or authorized by the Regional Forest Service District adjacent to the right-of-way will be discussed with BPA District Maintenance personnel prior to writing the burn plan.
- No log decking or storage of logs on the transmission line right-of-way. No storage of flammable materials on the right-of-way. No personal carrying of flammable material on the right-of-way.
- No loading of logging trucks on the right-of-way. Logging trucks shall not be loaded to a height greater than 14 feet above the roadbed when traveling underneath the line.
  - No fueling of vehicles or equipment on the right-of-way.
- If a tree comes in contact with the transmission line, DO NOT ATTEMPT TO REMOVE IT. Quickly remove personnel from the immediate area. Immediately contact BPA Dittmer Dispatch Center, 24 hours per day, 7 days per week: (877) 836-6632 or **(800) 392-0816**.
- If a wildfire occurs on or near the right-of-way, contact BPA Dittmer Dispatch Center immediately, 24 hours per day, 7 days per week: (800) 392-0816
- For extreme safety hazard trees near the transmission line, and with advance notification, BPA may be able to provide personnel at the work site.

BPA Transmission Field Services Technical Support Offices:

<b>Counties</b>	<b>Contact Person</b>
Based in Snohomish, North King, Skagit, Snohomish, Whatcom,	Steve Scott (360) 563-3631
Based in Covington, South King, West Kittitas, Pierce	Stefan Schildt (253) 638-3731
Based in Olympia, Clallam, Grays Harbor, Jefferson, Kitsap, Mason, Thurston, North Pacific	Lee Webb (360) 570-4361
Based in Chehalis, North Cowlitz, Lewis, Pacific, Thurston, Wahkiakum	Jeremy Jackson (360) 748-6575
Based in Vancouver, Clark, South Cowlitz, Skamania, and Oregon Counties near Portland.	Troy Anderson or Troy Dalrymple (360) 418-8002

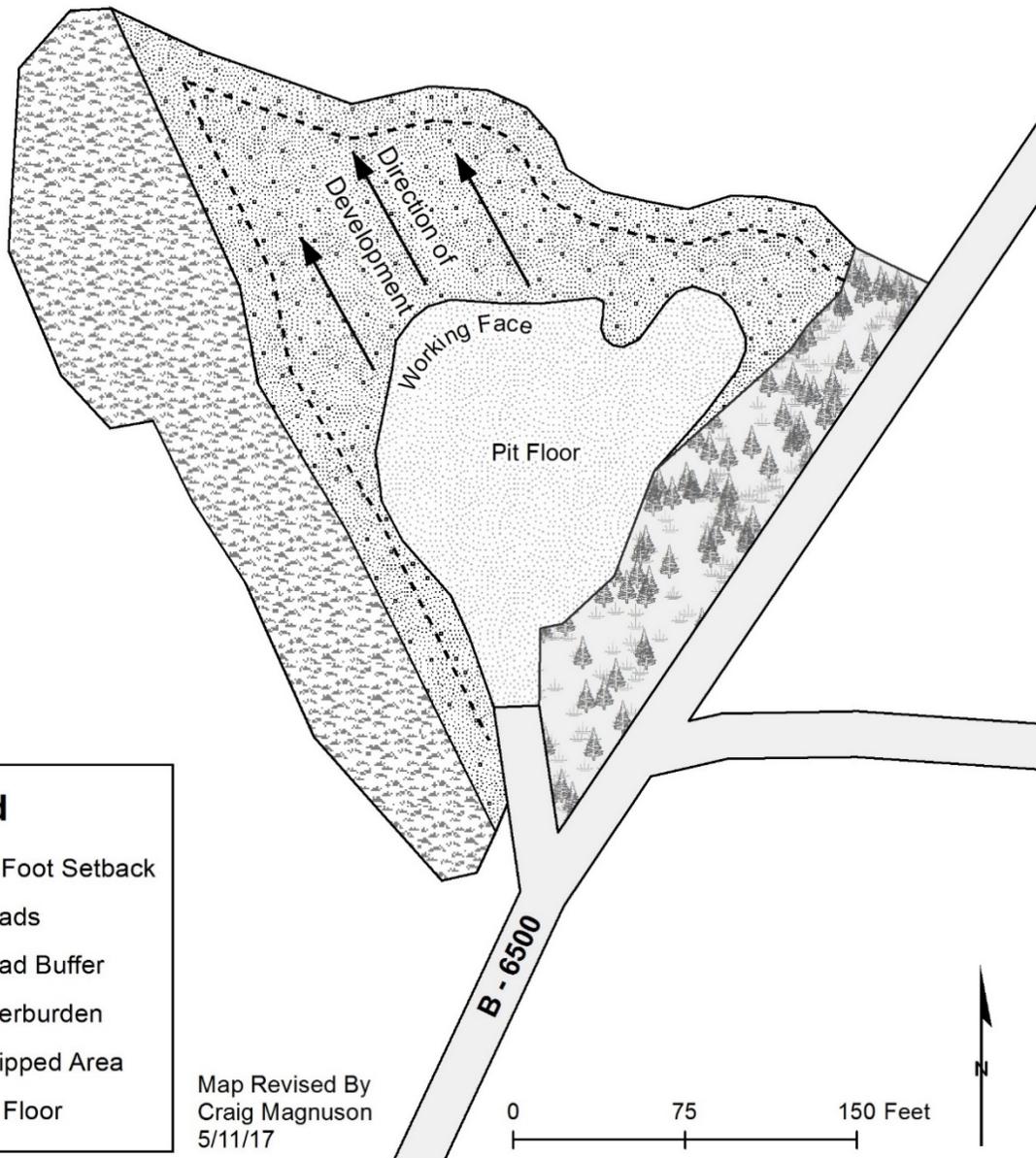
# Mary Clark Pit Plan



## Baby Bear Pit T30N R12W Sec 26

### Pit Development Plan

1. Areas to be developed as directed by the Contract Administrator.
2. Working face height shall not exceed 15 feet.
3. Waste material and oversize material to be placed as directed by the Contract Administrator.
4. Suitable drainage shall be maintained at all times.
5. Maintain 15' setback from overburden storage and unstripped areas.



### Legend

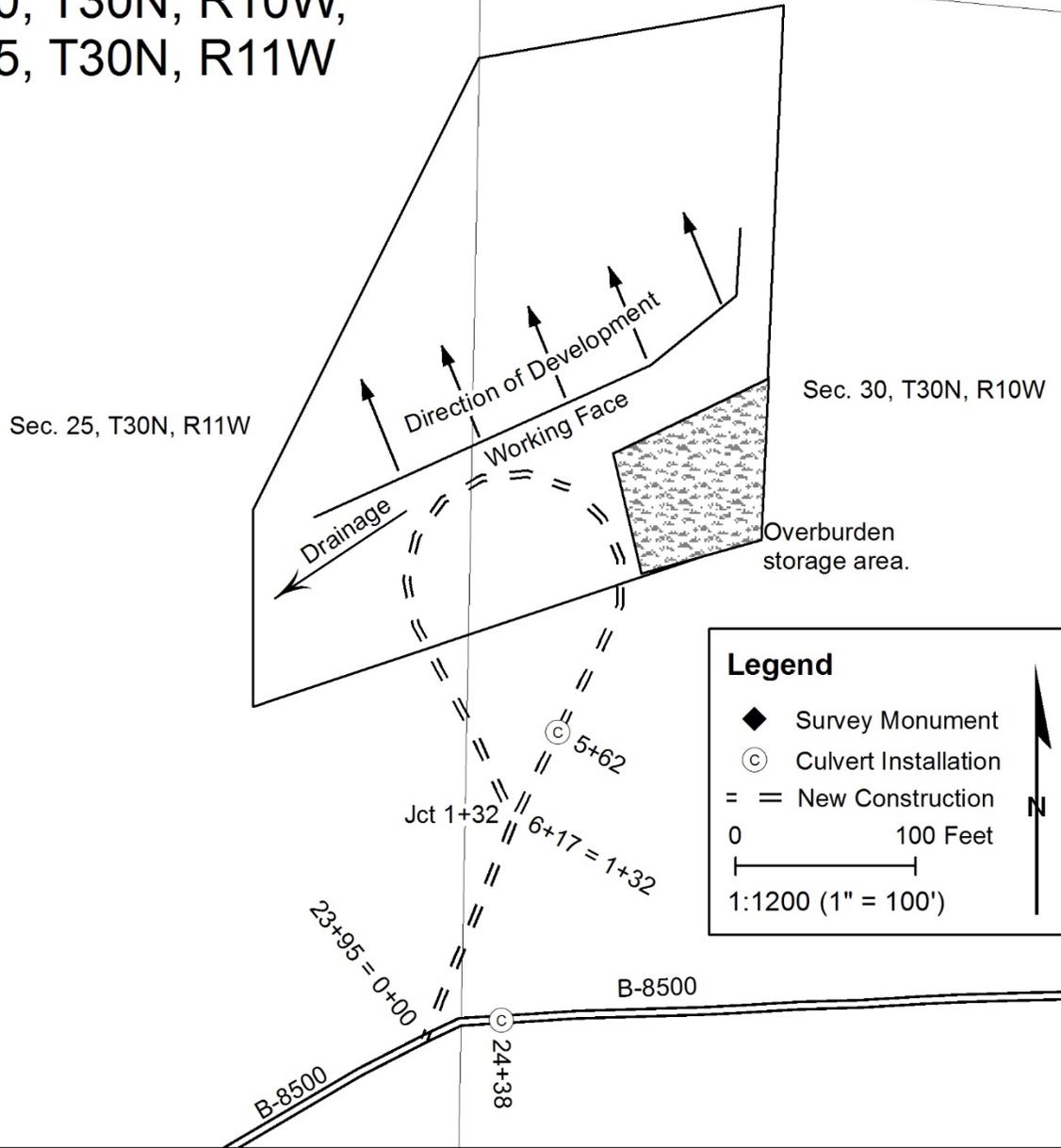
- - - - 15 Foot Setback
-  Roads
-  Road Buffer
-  Overburden
-  Stripped Area
-  Pit Floor

Map Revised By  
Craig Magnuson  
5/11/17

0 75 150 Feet

Littleton East Pit  
 Sec. 30, T30N, R10W,  
 Sec. 25, T30N, R11W

Revised: Nowak 12/2018



**Pit Development Plan**

1. Areas to be developed as directed by the Contract Administrator.
2. Waste, Oversize, and Riprap shall be sorted and placed as directed by Contract Administrator.
3. Within the pit development area drill and shoot 10,000 cubic yards as directed by the Contract Administrator.
4. Suitable drainage shall be maintained at all times.
5. Working face height shall not exceed 30 feet.
6. Safety berms shall be installed as directed by the Contract Administrator.
7. Construct 6.17 Stations of new access road.
8. Install Culverts per road plan and as staked in field.
9. Work shall be completed by 31 December 2019.





## FOREST ACCESS ROAD MAINTENANCE SPECIFICATIONS

### Cuts and Fills

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

### Surface

- Grade, shape, and compact 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, or as directed by the Contract Administrator.
- Remove shoulder berms, created by grading, to facilitate drainage, except as marked or directed by the Contract Administrator.
- For roads with geotextile fabric: spread surface aggregate to fill in soft spots and wheel ruts (barrel spread) to prevent damage to the geotextile fabric.

### Drainage

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

### Preventative Maintenance

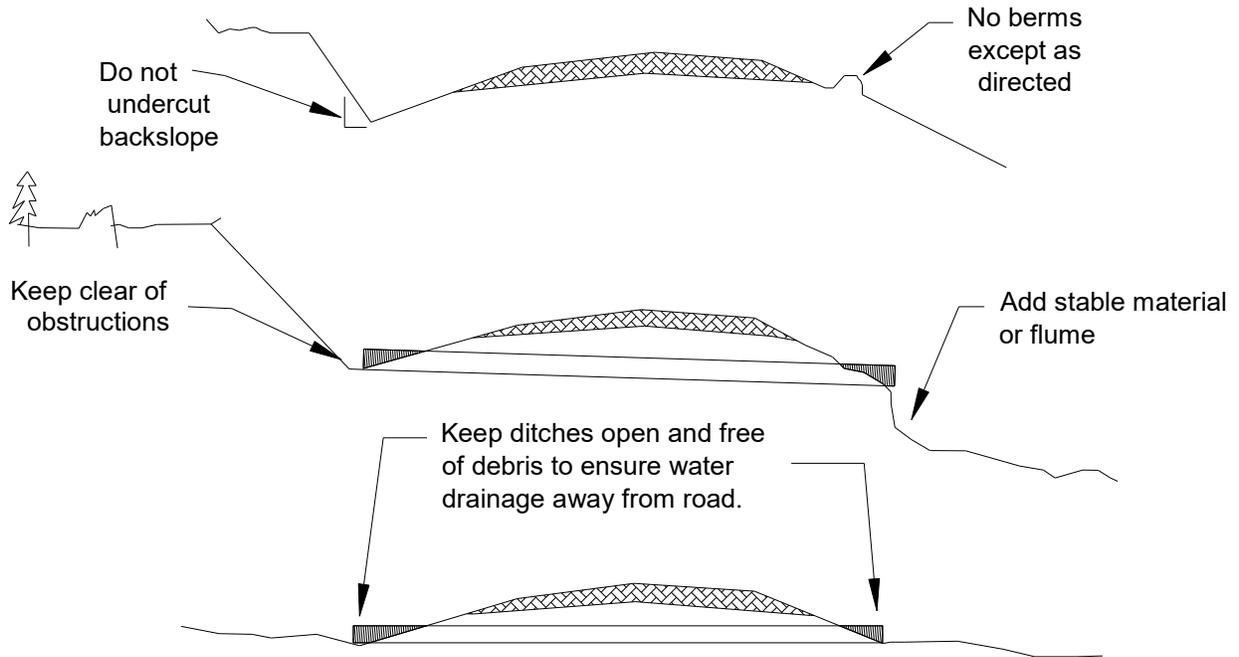
Perform preventative maintenance work to safeguard against storm damage, such as blading to ensure correct runoff, ditch and culvert cleaning, and waterbar maintenance.

### Termination of Use or End of Season

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

**Debris**

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



STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES  
OLYMPIC REGION

FORM M-126 PAC  
INFORMATIONAL BLASTING PLAN

Timber Sale/Project Name: \_\_\_\_\_ App./Project No.: \_\_\_\_\_

1. Blaster-in-Charge: Name: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone: \_\_\_\_\_

2. Quarry Name/Location:  
3. Total Estimated Cubic Yards in Blast (loose):  
4. Hole Spacing:  
5. Burden:  
6. Hole Diameter:  
7. Hole Depth:  
8. Sub Drill:  
9. Number of Holes:  
10. Stemming Depth:  
11. Explosive (mfg., name, density, %, V.O.D.):  
12. Type and Size of Primer (if applicable):  
13. Total Weight of Primers for Shot:  
14. Calculated Powder Factor/Cubic Yard:  
15. Number of Delays (in M.S.):  
16. Number of Holes Fired on Each Delay:  
17. Total Amount of Explosives Fired on Each Delay:  
18. Type of Blasting Machine:  
19. Date, Start Drilling:  
20. Date and Time, Start Loading:  
21. Date and Time of Blast (approx.):

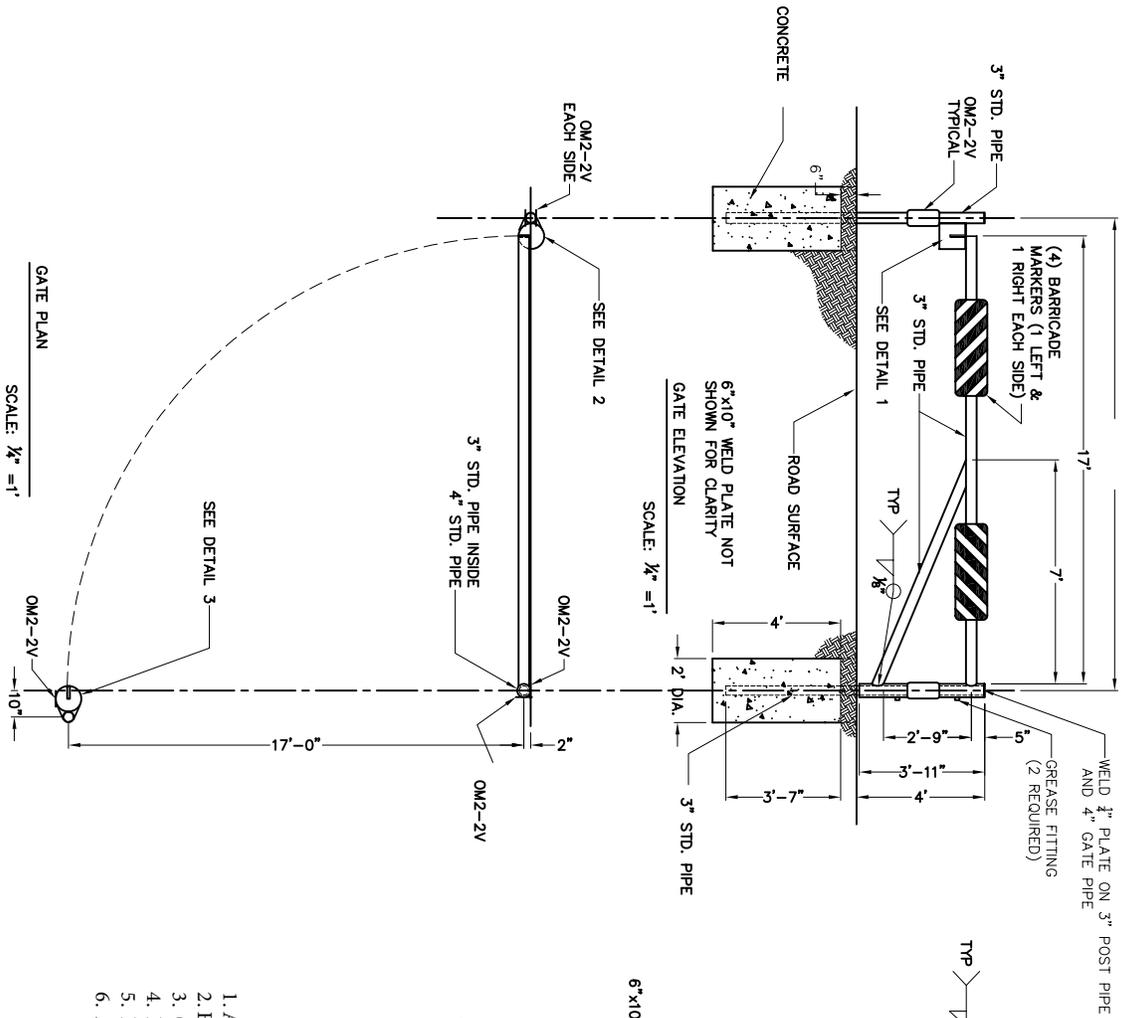
22. Detail drawing of delay system (show hole pattern and delays in milliseconds). Attach additional sheets if required:

23. Typical cross-section of hole (show primer, main charge, sub drill, and stemming):

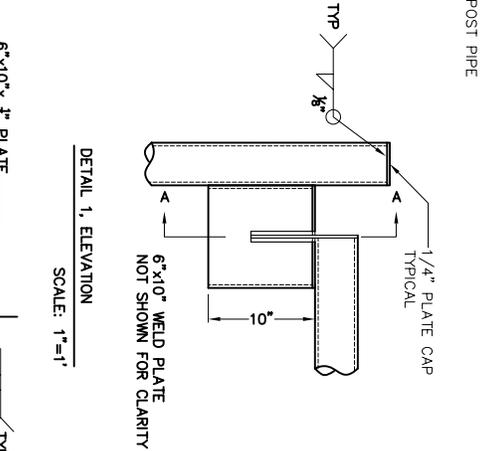
23. Submitted by: \_\_\_\_\_ Date: \_\_\_\_\_

24. Received by: \_\_\_\_\_ Date: \_\_\_\_\_

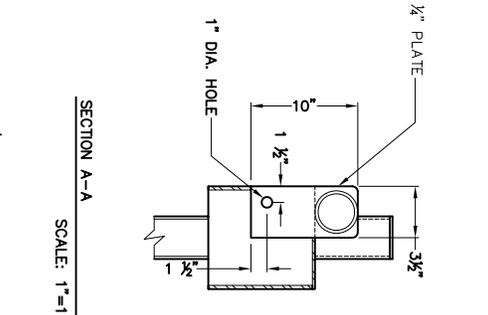
Note: Attach copies of manufacturer's data sheet(s) for explosive and caps.



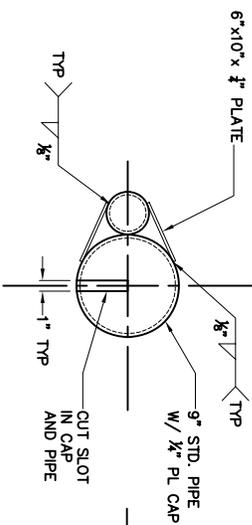
GATE PLAN  
SCALE: 1/4" = 1'



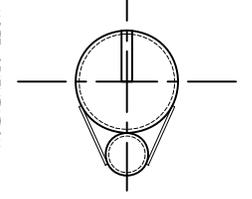
DETAIL 1, ELEVATION  
SCALE: 1" = 1'



SECTION A-A  
SCALE: 1" = 1'



DETAIL 2: PLAN VIEW  
SCALE: 1" = 1'

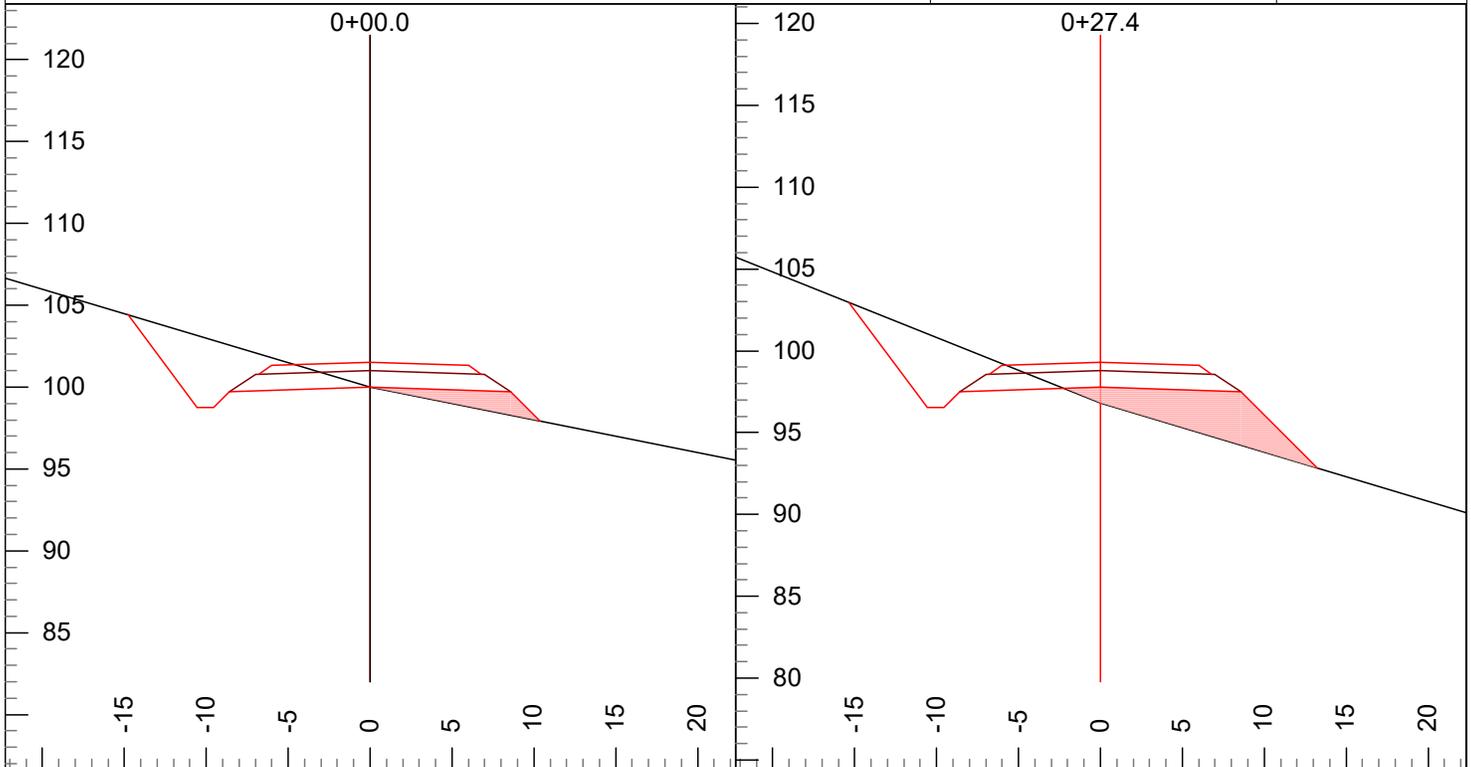


DETAIL 3: PLAN VIEW  
SCALE: 1" = 1'

NOTE ORIENTATION,  
FOR OTHER INFO SEE DETAIL 2

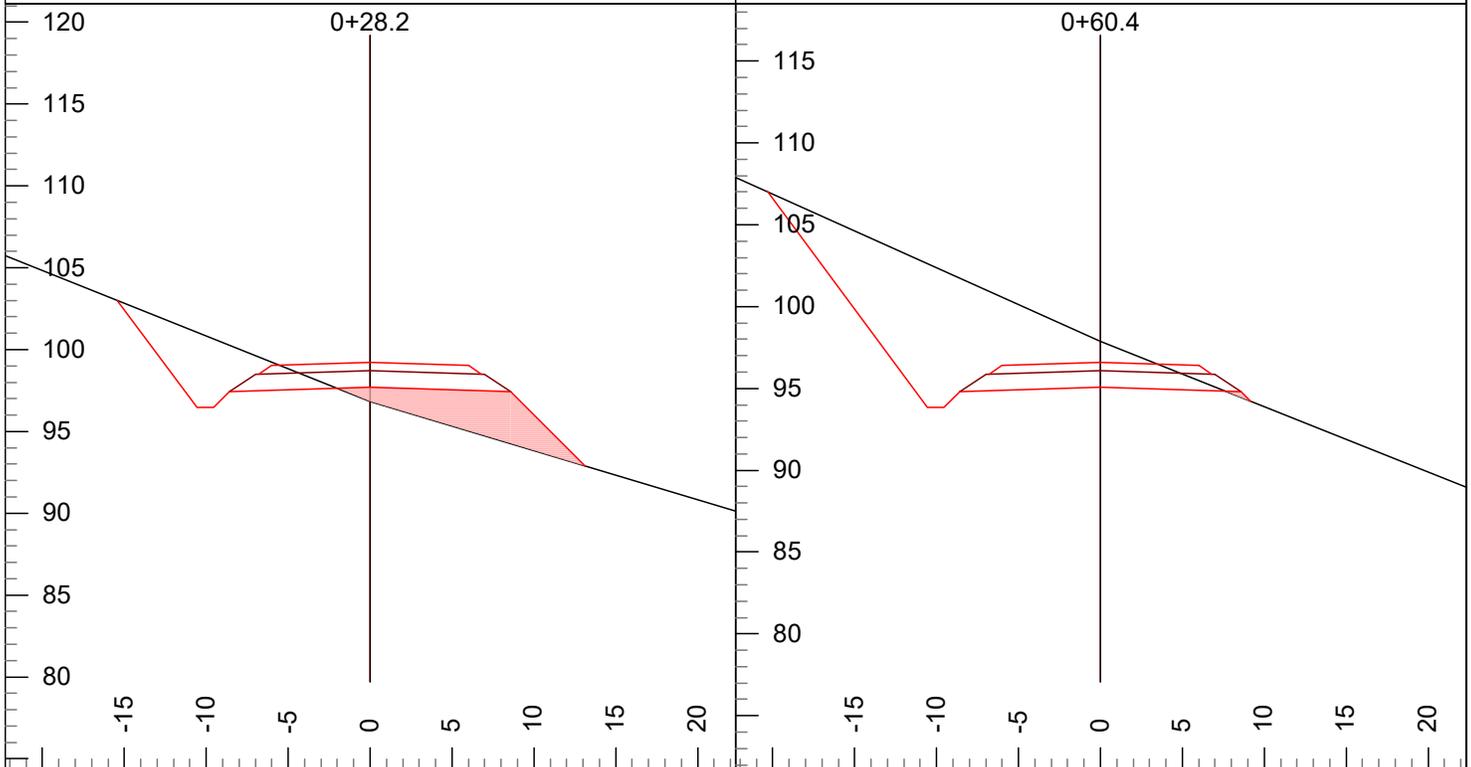
1. All pipe shall be ASTM A53 Grade B steel pipe.
2. Entire gate shall be painted yellow.
3. Concrete shall be 3000 psi and may be blended pre-approved bag mix.
4. Barricade signs to be determined by contract administrator.
5. Field verify post length for traffic, and post depths.
6. Any design changes to be approved by contract administrator before installation.

CLOSURE GATE TYPICAL



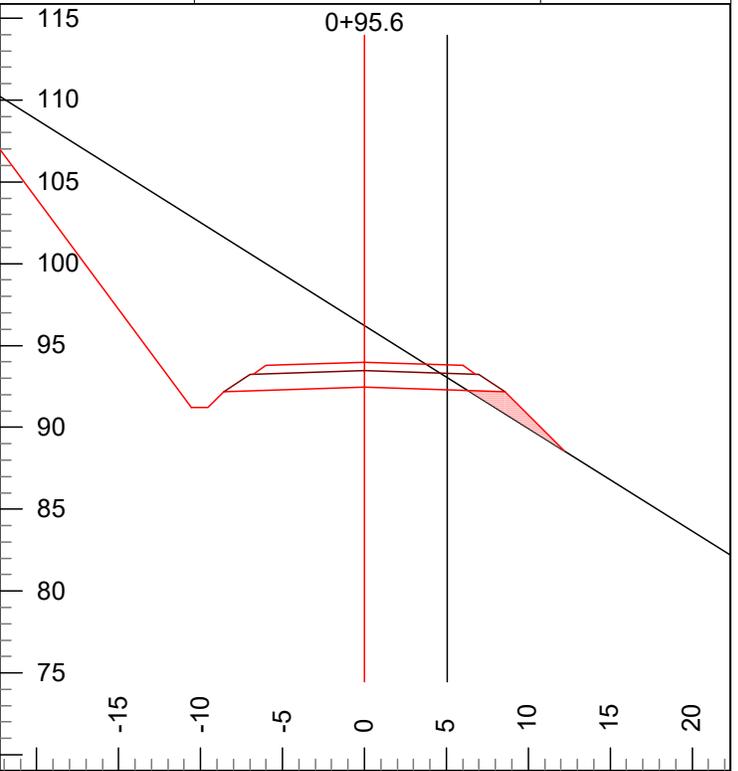
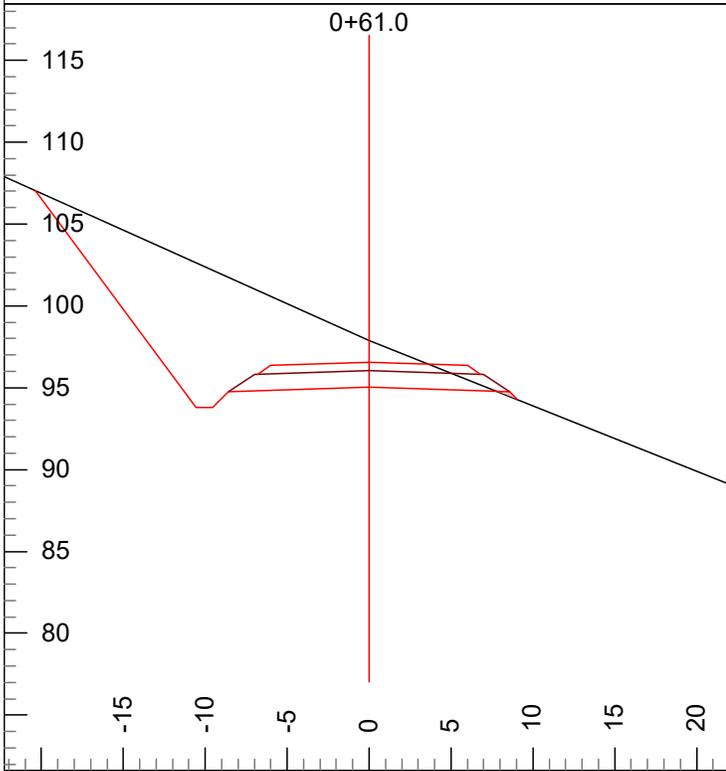
L-Stn : 0+00.0 L-Ssl: 30.0 F Slope L: 135.00  
 P-Stn : 0+00.0 L-Ssr: -20.0 F Slope R: -100.00  
 Grd.Nxt.: -8.1 Super L: -3.0 Cut Dp: 0.0  
 Grd.Lst: n/a Super R: -3.0

L-Stn : 0+27.4 L-Ssl: 40.0 F Slope L: 135.00  
 P-Stn : 0+27.4 L-Ssr: -30.0 F Slope R: -100.00  
 Grd.Nxt.: -8.1 Super L: -3.0 Cut Dp: -1.0  
 Grd.Lst: -8.1 Super R: -3.0



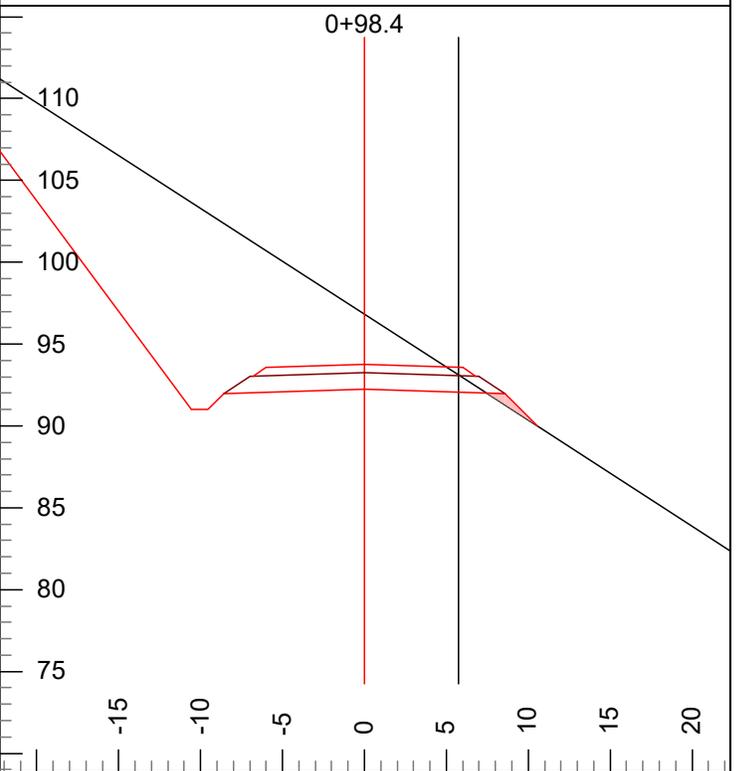
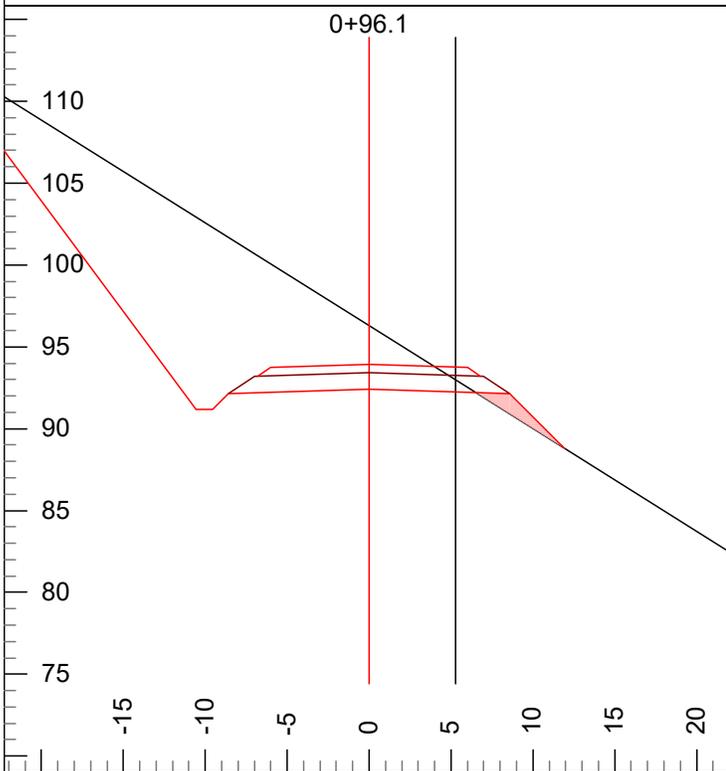
L-Stn : 0+28.2 L-Ssl: 40.0 F Slope L: 135.00  
 P-Stn : 0+28.2 L-Ssr: -30.0 F Slope R: -100.00  
 Grd.Nxt.: -8.2 Super L: -3.0 Cut Dp: -0.9  
 Grd.Lst: -8.1 Super R: -3.0

L-Stn : 0+60.4 L-Ssl: 45.0 F Slope L: 135.00  
 P-Stn : 0+60.4 L-Ssr: -40.0 F Slope R: -100.00  
 Grd.Nxt.: -7.4 Super L: -3.0 Cut Dp: 2.8  
 Grd.Lst: -8.2 Super R: -3.0



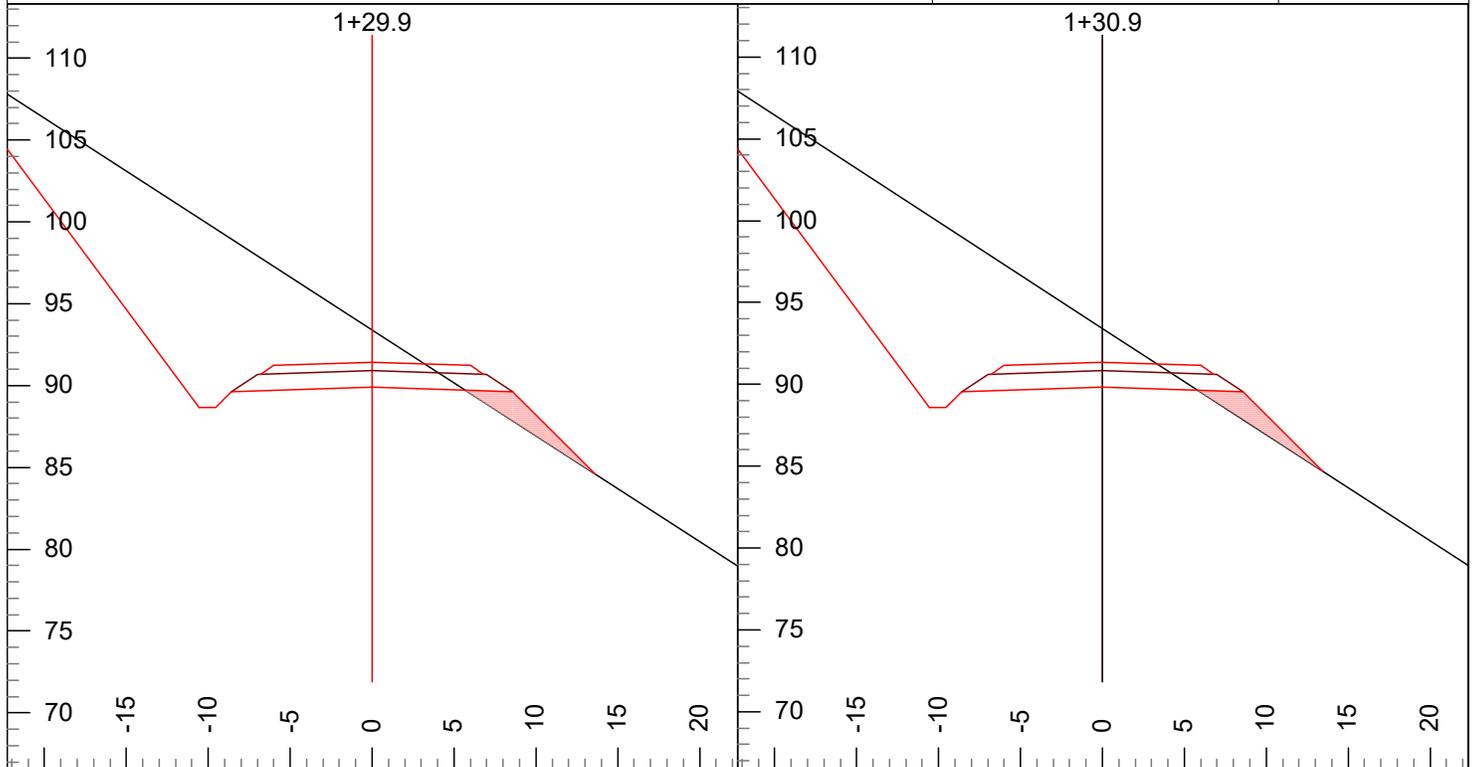
L-Stn : 0+61.0 L-Ssl: 44.9 F Slope L: 135.00  
 P-Stn : 0+61.0 L-Ssr: -39.9 F Slope R: -100.00  
 Grd.Nxt.: -7.4 Super L: -3.0 Cut Dp: 2.9  
 Grd.Lst: -7.4 Super R: -3.0

L-Stn : 0+95.6 L-Ssl: 62.8 F Slope L: 135.00  
 P-Stn : 0+95.2 L-Ssr: -62.8 F Slope R: -100.00  
 Grd.Nxt.: -7.5 Super L: -3.0 Cut Dp: 3.8  
 Grd.Lst: -7.4 Super R: -3.0



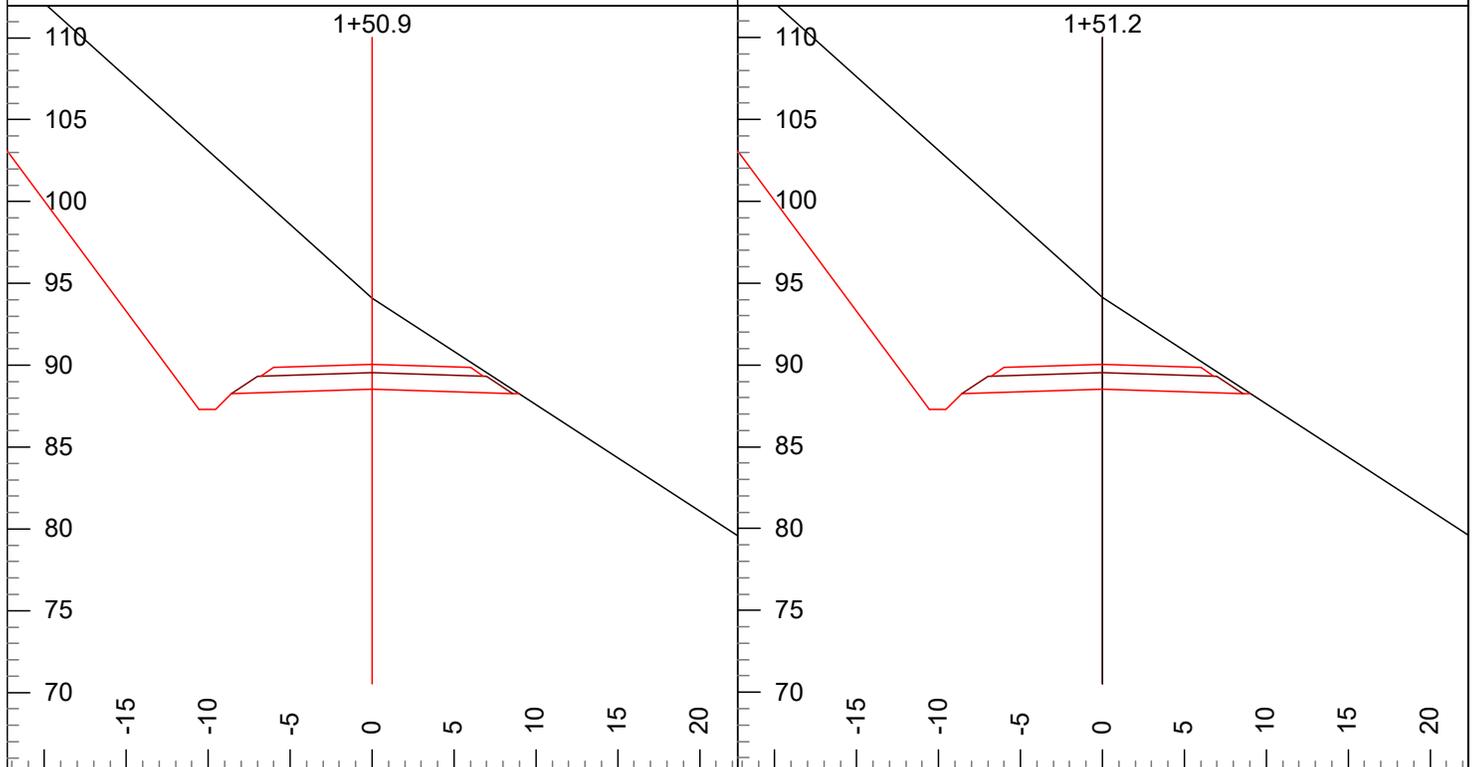
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 P-Stn : 0+95.2 L-Ssr: -62.8 F Slope R: -100.00  
 Grd.Nxt.: -7.5 Super L: -3.0 Cut Dp: 3.9  
 Grd.Lst: -7.5 Super R: -3.0

L-Stn : 0+98.4 L-Ssl: 64.7 F Slope L: 135.00  
 P-Stn : 0+96.7 L-Ssr: -64.7 F Slope R: -100.00  
 Grd.Nxt.: -7.5 Super L: -3.0 Cut Dp: 4.6  
 Grd.Lst: -7.5 Super R: -3.0



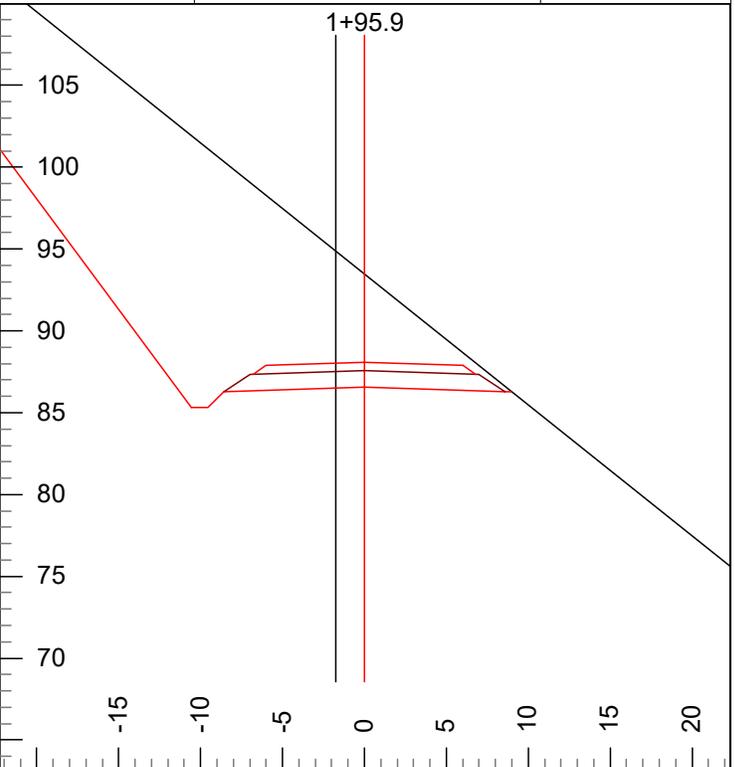
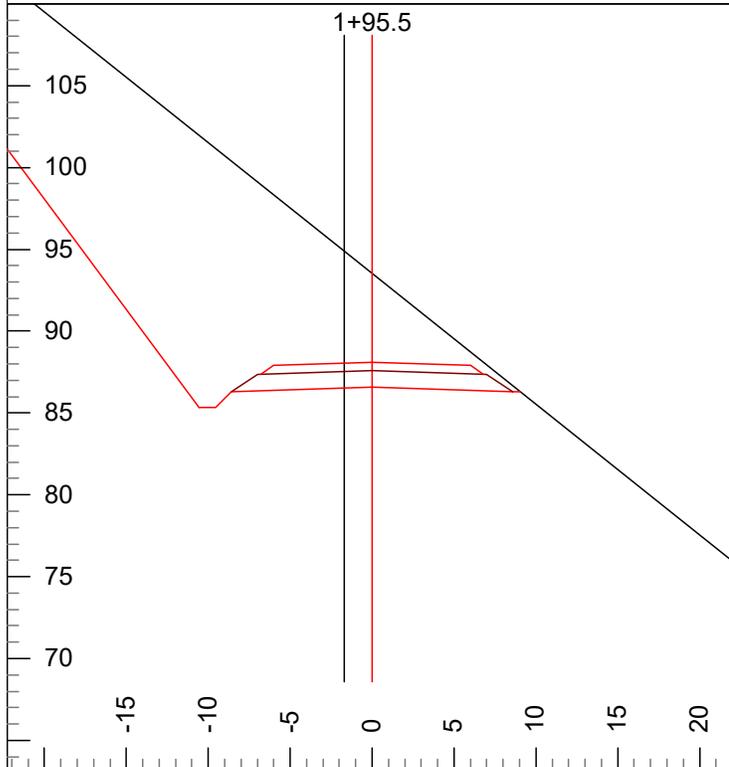
L-Stn : 1+29.9 L-Ssl: 64.7 F Slope L: 135.00  
 P-Stn : 1+27.7 L-Ssr: -64.7 F Slope R: -100.00  
 Grd.Nxt.: -7.5 Super L: -3.0 Cut Dp: 3.5  
 Grd.Lst: -7.5 Super R: -3.0

L-Stn : 1+30.9 L-Ssl: 65.0 F Slope L: 135.00  
 P-Stn : 1+28.6 L-Ssr: -65.0 F Slope R: -100.00  
 Grd.Nxt.: -6.5 Super L: -3.0 Cut Dp: 3.6  
 Grd.Lst: -7.5 Super R: -3.0



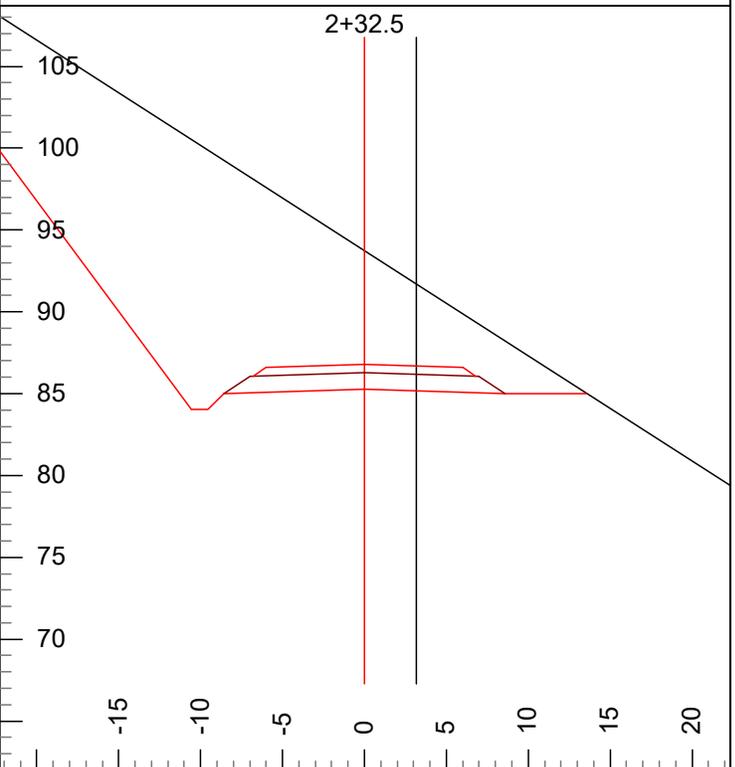
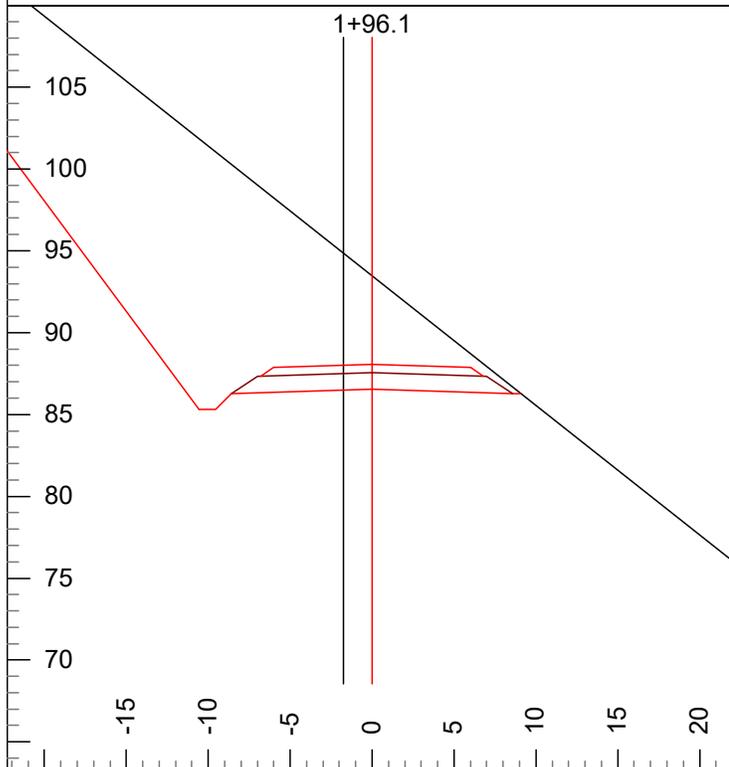
L-Stn : 1+50.9 L-Ssl: 90.0 F Slope L: 135.00  
 P-Stn : 1+48.7 L-Ssr: -65.0 F Slope R: 0.00  
 Grd.Nxt.: -6.5 Super L: -3.0 Cut Dp: 5.6  
 Grd.Lst: -6.5 Super R: -3.0

L-Stn : 1+51.2 L-Ssl: 89.9 F Slope L: 135.00  
 P-Stn : 1+49.0 L-Ssr: -65.0 F Slope R: 0.00  
 Grd.Nxt.: -4.4 Super L: -3.0 Cut Dp: 5.6  
 Grd.Lst: -6.5 Super R: -3.0



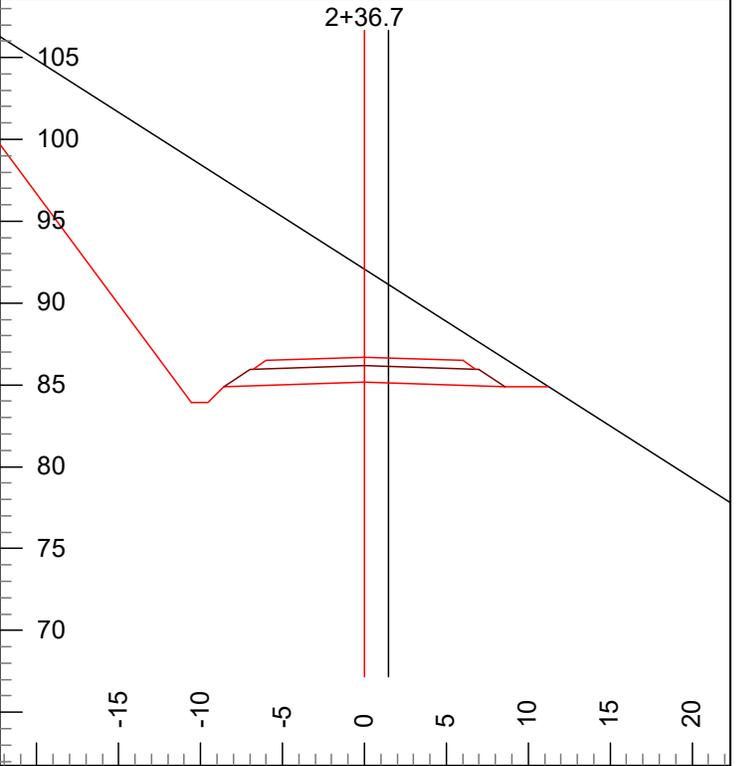
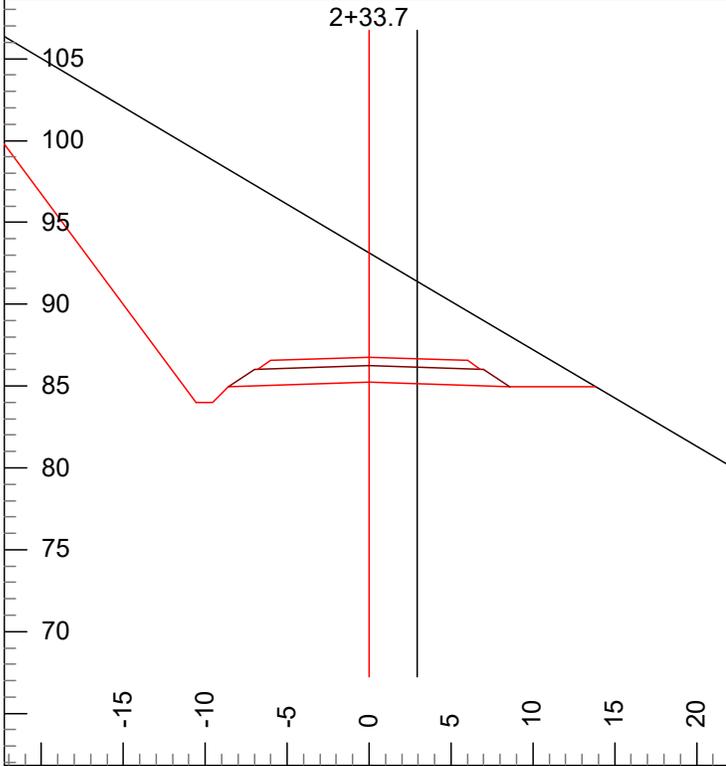
L-Stn : 1+95.5 L-Ssl: 79.9 F Slope L: 135.00  
 P-Stn : 1+93.2 L-Ssr: -79.9 F Slope R: 0.00  
 Grd.Nxt.: -4.4 Super L: -3.0 Cut Dp: 7.0  
 Grd.Lst: -4.4 Super R: -3.0

L-Stn : 1+95.9 L-Ssl: 80.0 F Slope L: 135.00  
 P-Stn : 1+93.5 L-Ssr: -80.0 F Slope R: 0.00  
 Grd.Nxt.: -4.4 Super L: -3.0 Cut Dp: 6.9  
 Grd.Lst: -4.4 Super R: -3.0



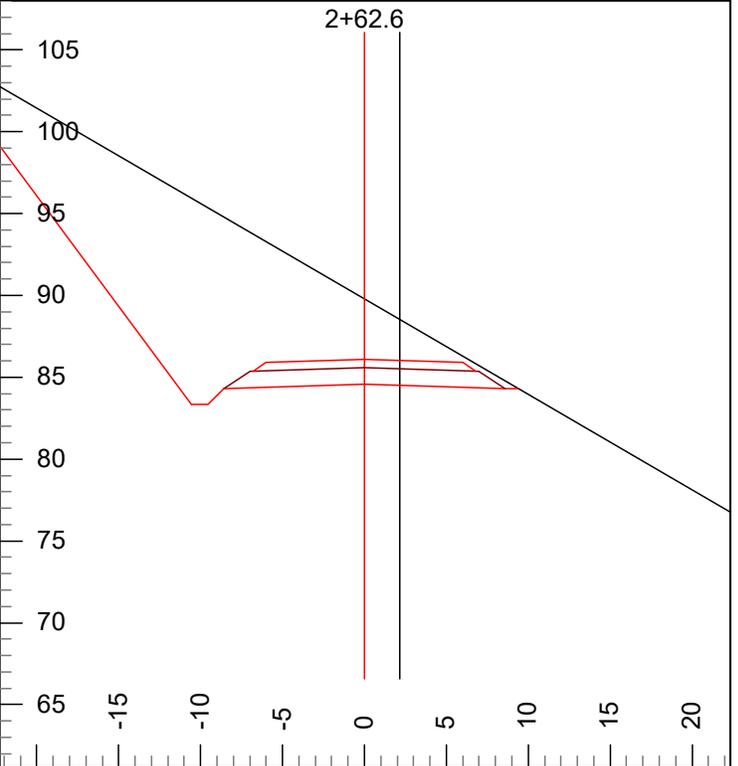
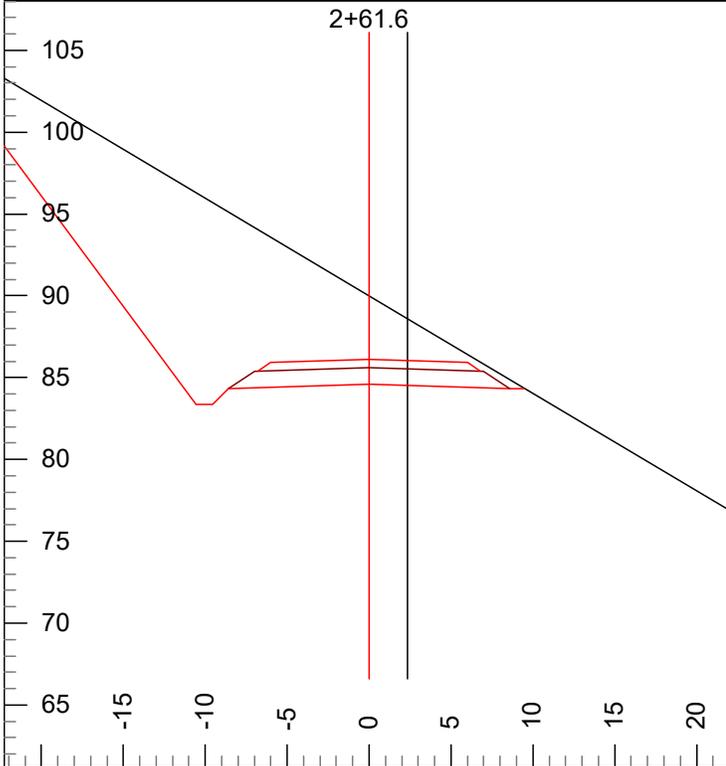
L-Stn : 1+96.1 L-Ssl: 79.3 F Slope L: 135.00  
 P-Stn : 1+93.8 L-Ssr: -79.3 F Slope R: 0.00  
 Grd.Nxt.: -3.5 Super L: -3.0 Cut Dp: 6.9  
 Grd.Lst: -4.4 Super R: -3.0

L-Stn : 2+32.5 L-Ssl: 64.3 F Slope L: 135.00  
 P-Stn : 2+30.8 L-Ssr: -64.3 F Slope R: 0.00  
 Grd.Nxt.: -3.5 Super L: -3.0 Cut Dp: 8.5  
 Grd.Lst: -3.5 Super R: -3.0



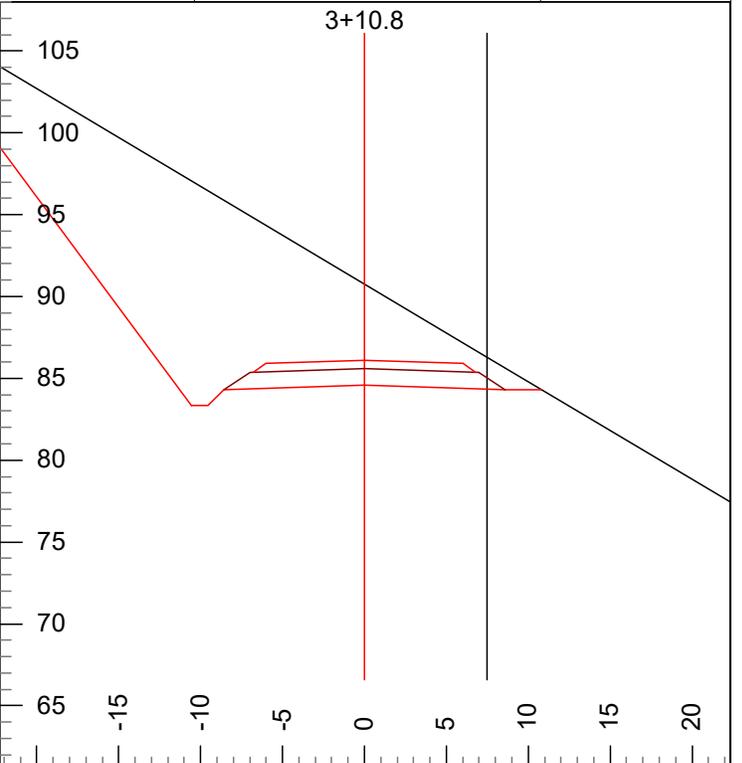
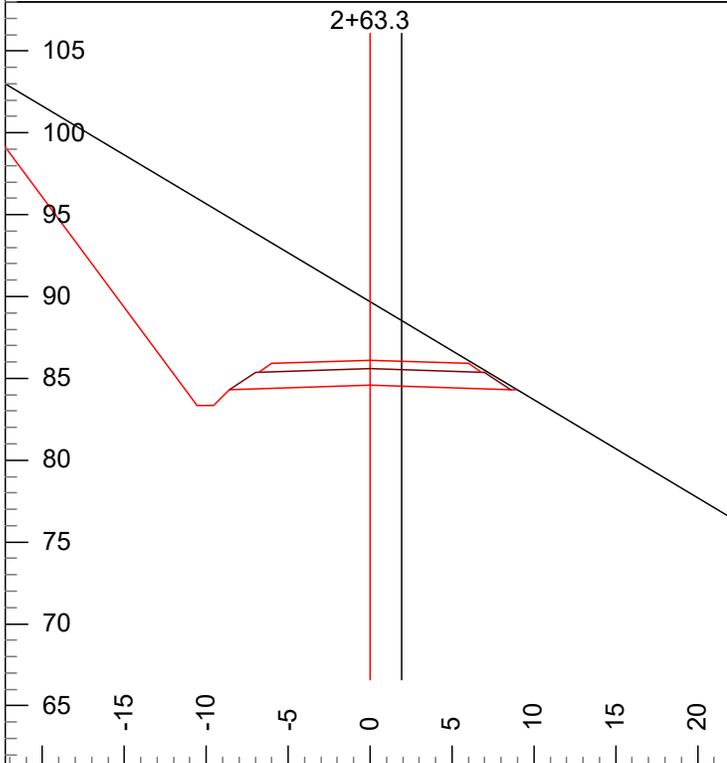
L-Stn : 2+33.7 L-Ssl: 59.2 F Slope L: 135.00  
 P-Stn : 2+32.7 L-Ssr: -59.2 F Slope R: 0.00  
 Grd.Nxt.: -2.3 Super L: -3.0 Cut Dp: 7.9  
 Grd.Lst: -3.5 Super R: -3.0

L-Stn : 2+36.7 L-Ssl: 63.8 F Slope L: 135.00  
 P-Stn : 2+35.5 L-Ssr: -63.8 F Slope R: 0.00  
 Grd.Nxt.: -2.3 Super L: -3.0 Cut Dp: 6.9  
 Grd.Lst: -2.3 Super R: -3.0



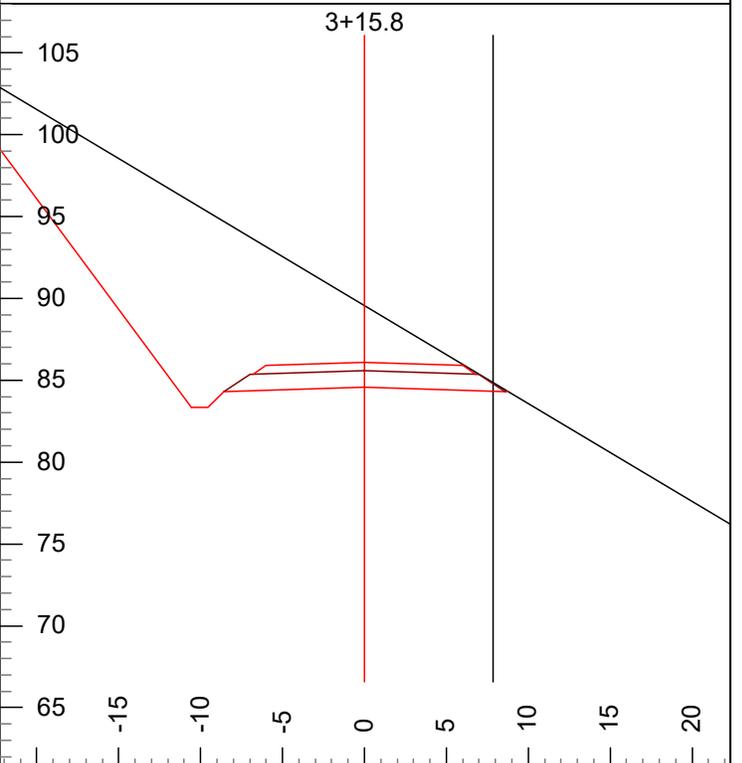
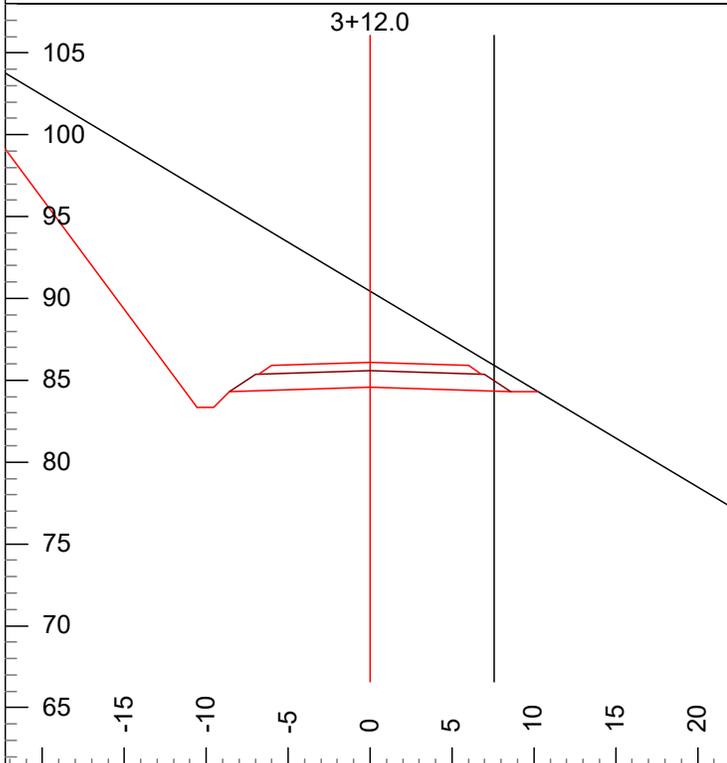
L-Stn : 2+61.6 L-Ssl: 59.7 F Slope L: 135.00  
 P-Stn : 2+60.7 L-Ssr: -59.7 F Slope R: 0.00  
 Grd.Nxt.: -2.3 Super L: -3.0 Cut Dp: 5.4  
 Grd.Lst: -2.3 Super R: -3.0

L-Stn : 2+62.6 L-Ssl: 58.2 F Slope L: 135.00  
 P-Stn : 2+62.0 L-Ssr: -58.2 F Slope R: 0.00  
 Grd.Nxt.: 0.0 Super L: -3.0 Cut Dp: 5.2  
 Grd.Lst: -2.3 Super R: -3.0



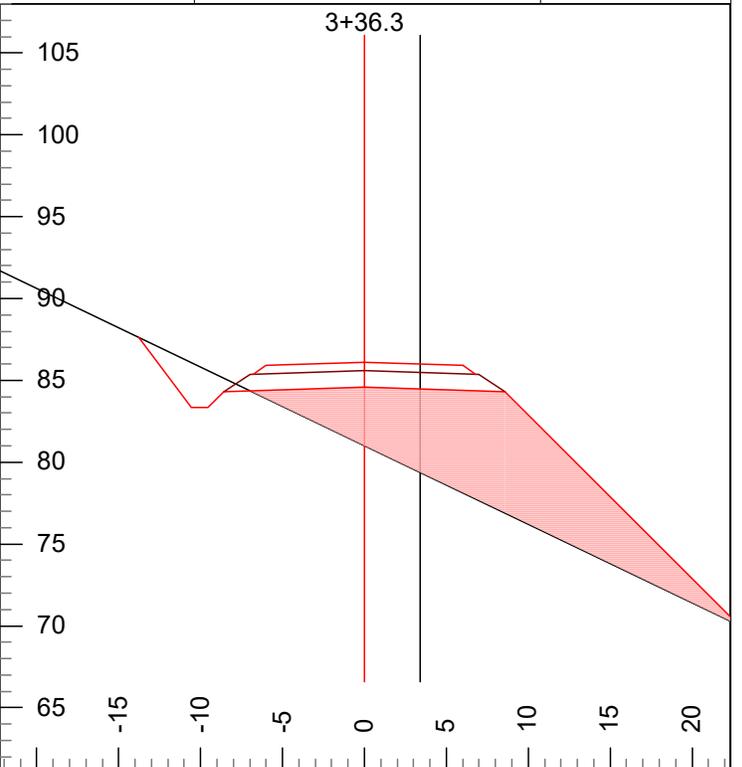
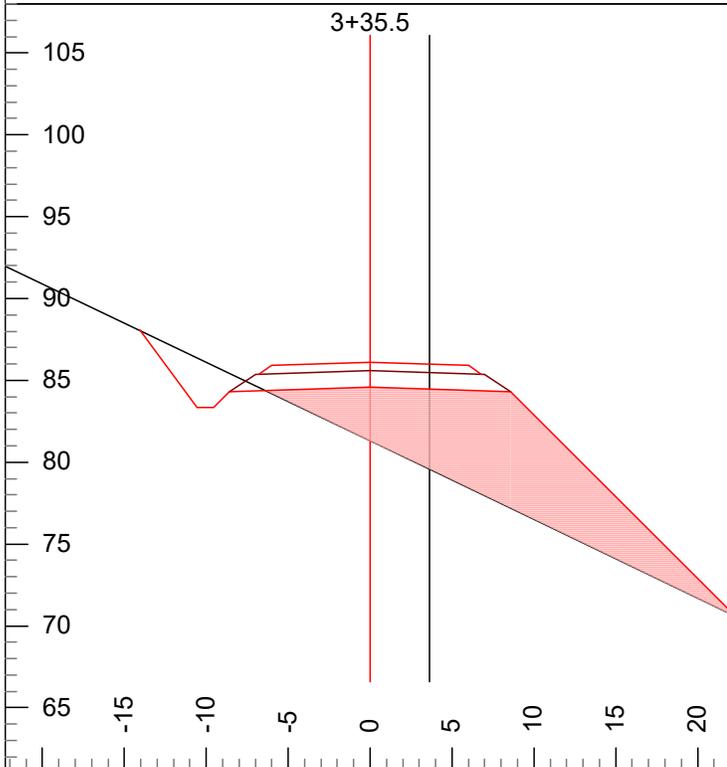
L-Stn : 2+63.3 L-Ssl: 59.9 F Slope L: 135.00  
 P-Stn : 2+62.6 L-Ssr: -59.9 F Slope R: 0.00  
 Grd.Nxt.: 0.0 Super L: -3.0 Cut Dp: 5.1  
 Grd.Lst: 0.0 Super R: -3.0

L-Stn : 3+10.8 L-Ssl: 59.7 F Slope L: 135.00  
 P-Stn : 3+10.0 L-Ssr: -59.7 F Slope R: 0.00  
 Grd.Nxt.: 0.0 Super L: -3.0 Cut Dp: 6.2  
 Grd.Lst: 0.0 Super R: -3.0



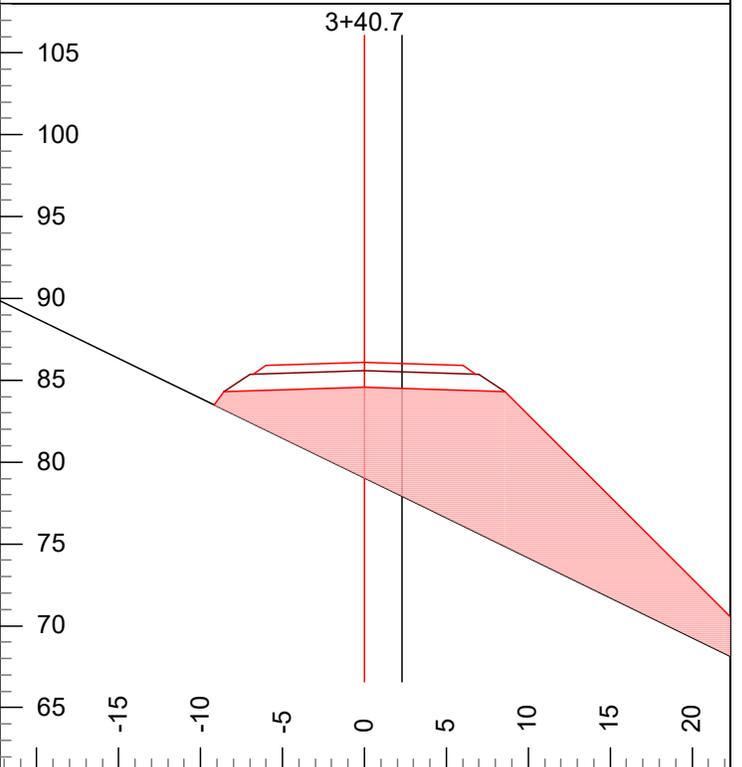
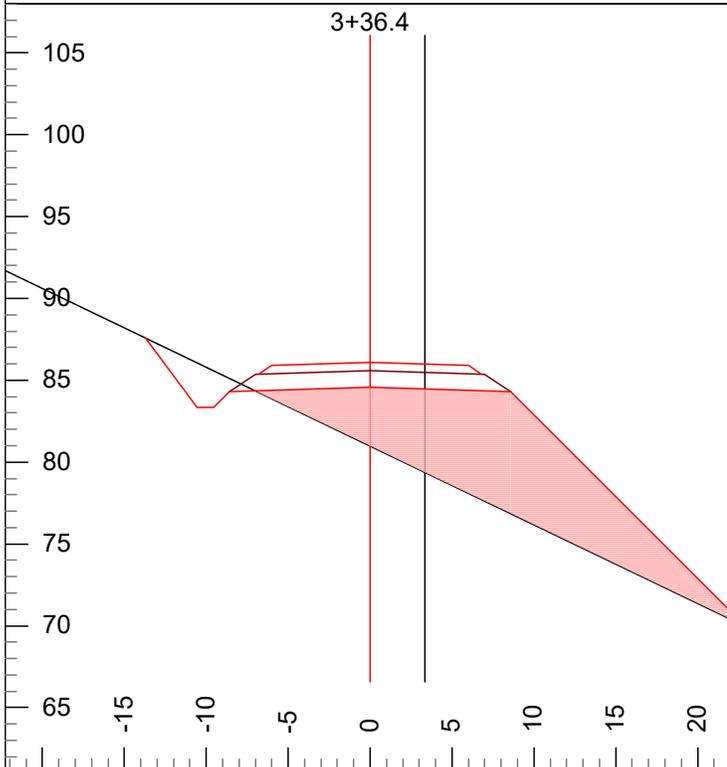
L-Stn : 3+12.0 L-Ssl: 59.8 F Slope L: 135.00  
 P-Stn : 3+11.3 L-Ssr: -59.8 F Slope R: 0.00  
 Grd.Nxt.: 0.0 Super L: -3.0 Cut Dp: 5.9  
 Grd.Lst: 0.0 Super R: -3.0

L-Stn : 3+15.8 L-Ssl: 59.8 F Slope L: 135.00  
 P-Stn : 3+15.2 L-Ssr: -59.8 F Slope R: 0.00  
 Grd.Nxt.: 0.0 Super L: -3.0 Cut Dp: 5.0  
 Grd.Lst: 0.0 Super R: -3.0



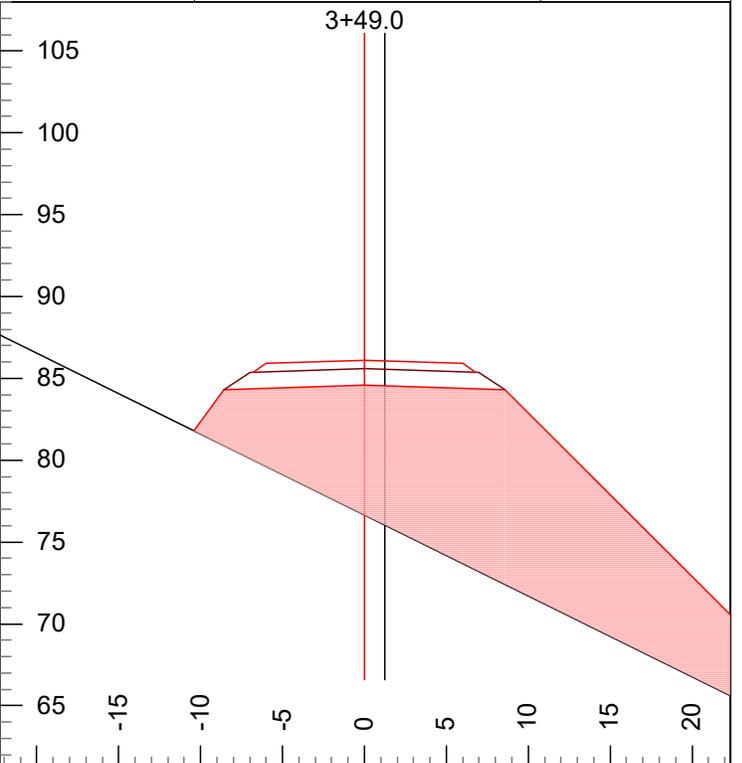
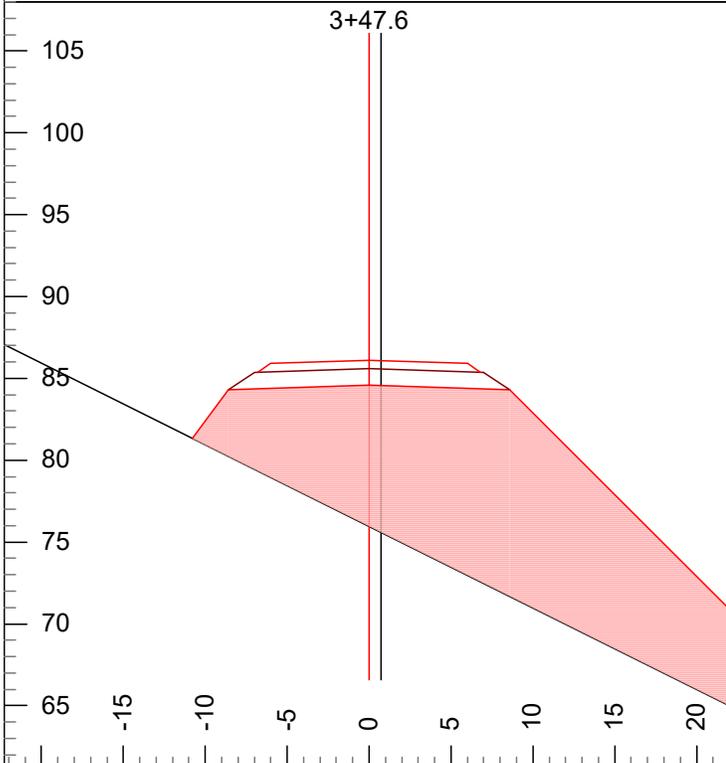
L-Stn : 3+35.5 L-Ssl: 48.1 F Slope L: 135.00  
 P-Stn : 3+34.3 L-Ssr: -48.1 F Slope R: -100.00  
 Grd.Nxt.: 0.0 Super L: -3.0 Cut Dp: -3.3  
 Grd.Lst: 0.0 Super R: -3.0

L-Stn : 3+36.3 L-Ssl: 48.1 F Slope L: 135.00  
 P-Stn : 3+34.9 L-Ssr: -48.1 F Slope R: -100.00  
 Grd.Nxt.: 0.0 Super L: -3.0 Cut Dp: -3.6  
 Grd.Lst: 0.0 Super R: -3.0



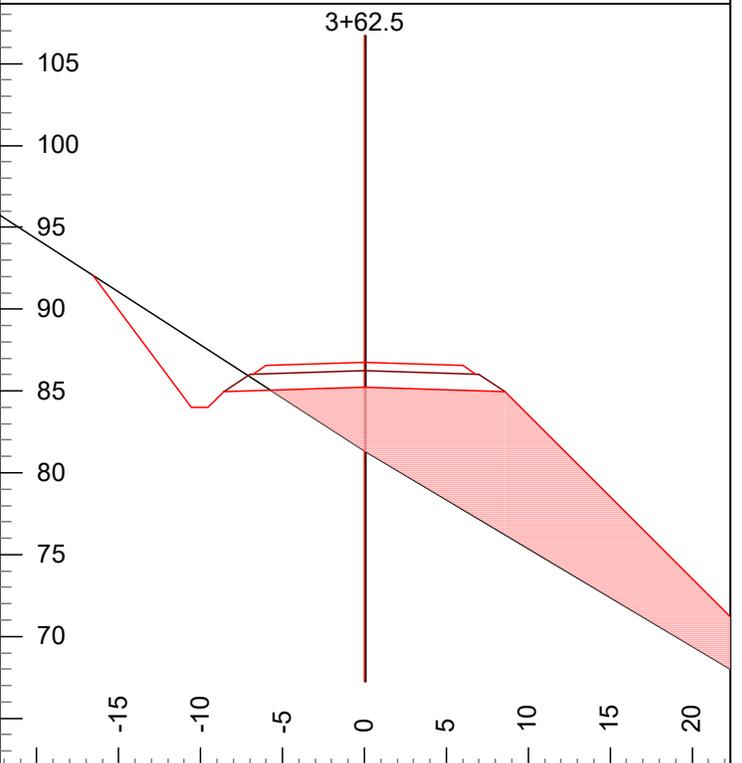
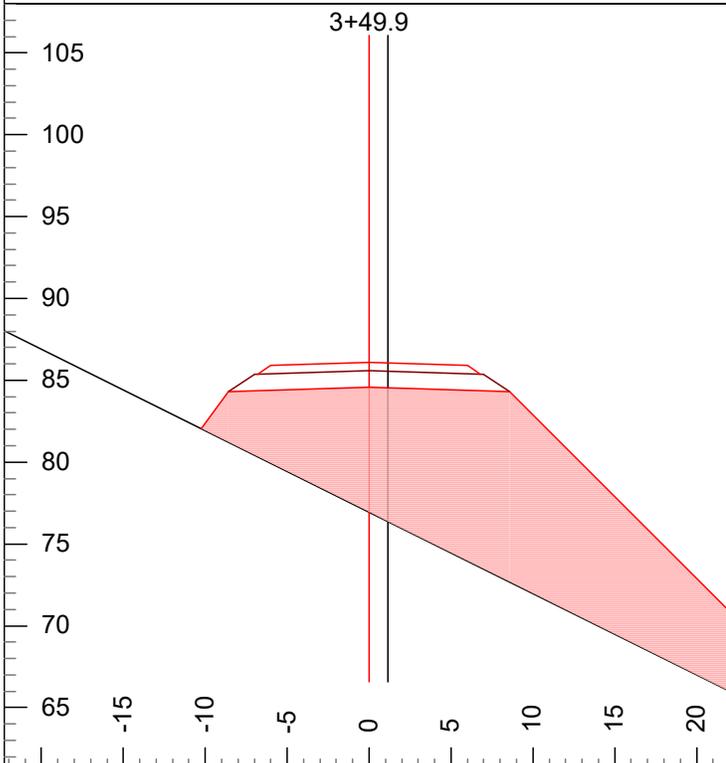
L-Stn : 3+36.4 L-Ssl: 48.1 F Slope L: 135.00  
 P-Stn : 3+34.9 L-Ssr: -48.1 F Slope R: -100.00  
 Grd.Nxt.: 0.0 Super L: -3.0 Cut Dp: -3.6  
 Grd.Lst: 0.0 Super R: -3.0

L-Stn : 3+40.7 L-Ssl: 48.7 F Slope L: -135.00  
 P-Stn : 3+39.1 L-Ssr: -48.7 F Slope R: -100.00  
 Grd.Nxt.: 0.0 Super L: -3.0 Cut Dp: -5.6  
 Grd.Lst: 0.0 Super R: -3.0



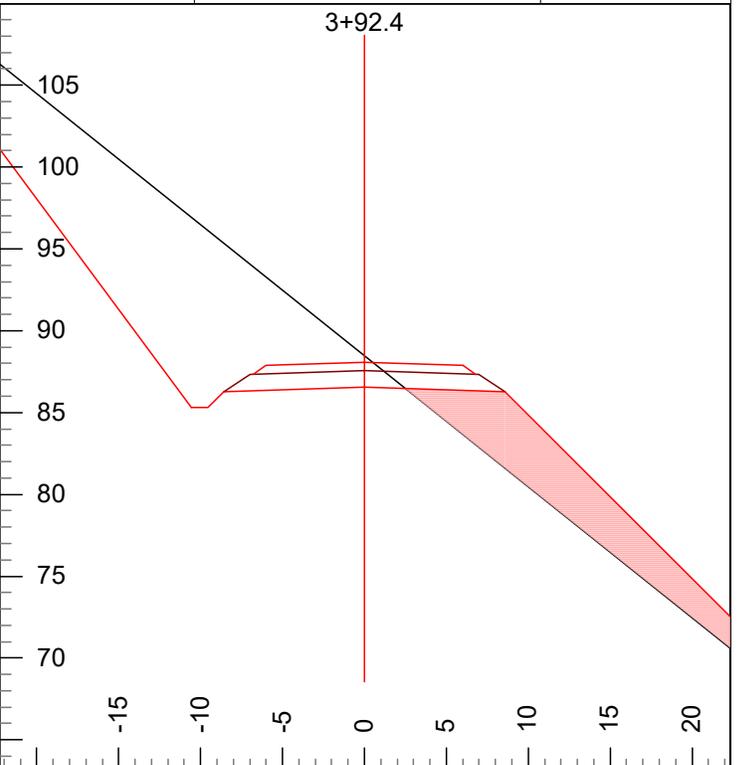
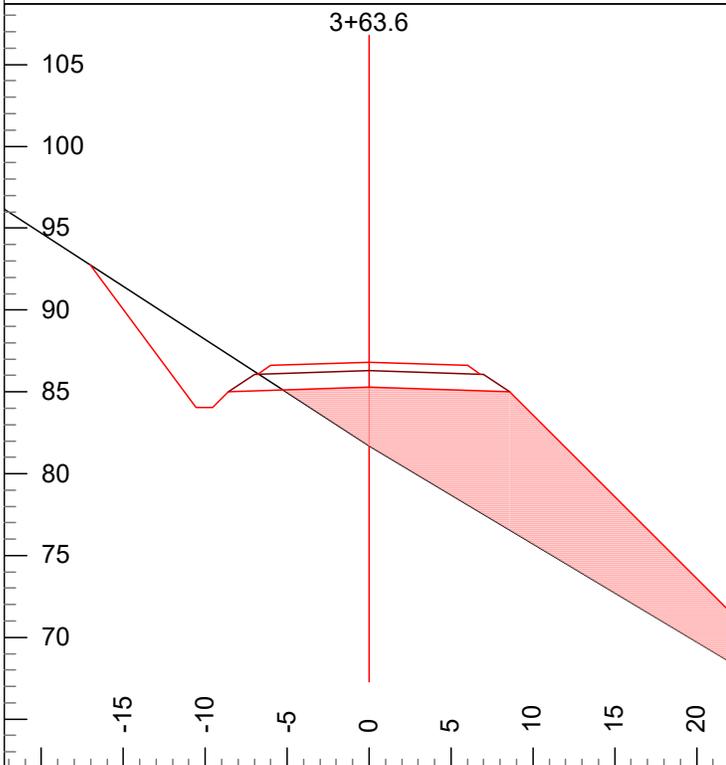
L-Stn : 3+47.6 L-Ssl: 49.8 F Slope L: -135.00  
 P-Stn : 3+45.5 L-Ssr: -49.8 F Slope R: -100.00  
 Grd.Nxt.: 0.0 Super L: -3.0 Cut Dp: -8.6  
 Grd.Lst: 0.0 Super R: -3.0

L-Stn : 3+49.0 L-Ssl: 49.4 F Slope L: -135.00  
 P-Stn : 3+46.6 L-Ssr: -49.4 F Slope R: -100.00  
 Grd.Nxt.: 0.0 Super L: -3.0 Cut Dp: -7.9  
 Grd.Lst: 0.0 Super R: -3.0



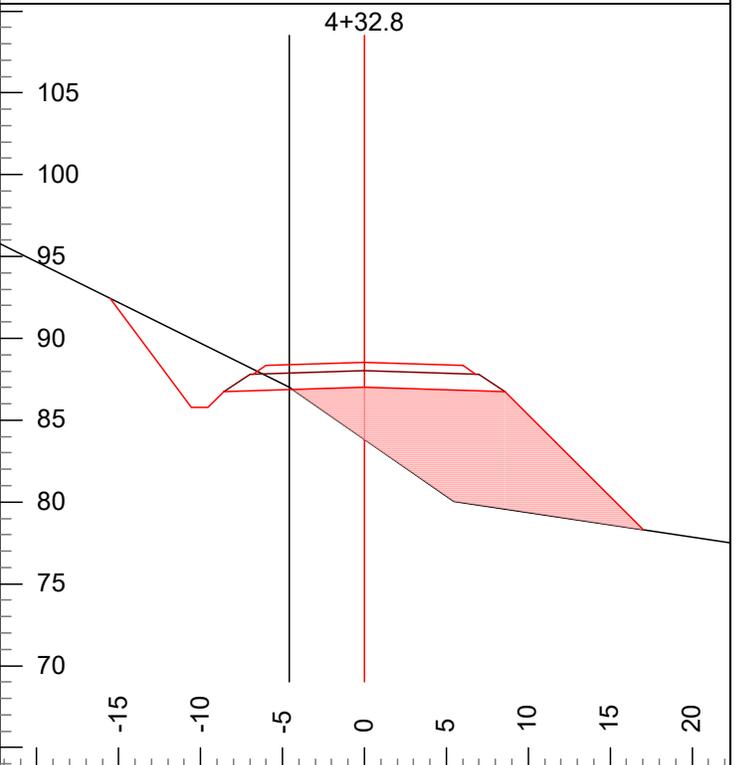
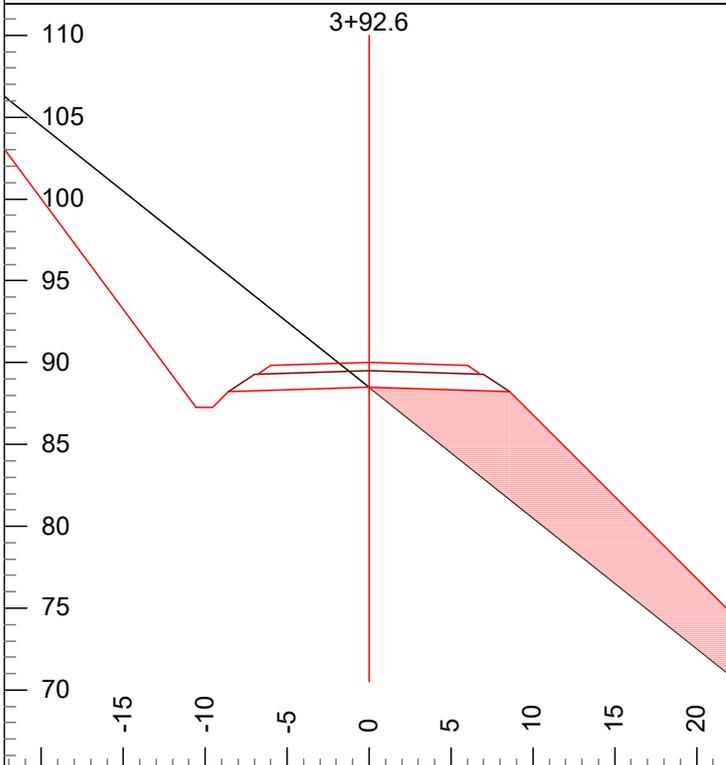
L-Stn : 3+49.9 L-Ssl: 49.8 F Slope L: -135.00  
 P-Stn : 3+47.5 L-Ssr: -49.8 F Slope R: -100.00  
 Grd.Nxt.: 5.2 Super L: -3.0 Cut Dp: -7.6  
 Grd.Lst: 0.0 Super R: -3.0

L-Stn : 3+62.5 L-Ssl: 64.8 F Slope L: 135.00  
 P-Stn : 3+60.0 L-Ssr: -59.8 F Slope R: -100.00  
 Grd.Nxt.: 4.4 Super L: -3.0 Cut Dp: -3.9  
 Grd.Lst: 5.2 Super R: -3.0



L-Stn :	3+63.6	L-Ssl:	64.9	F Slope L:	135.00
P-Stn :	3+61.1	L-Ssr:	-59.9	F Slope R:	-100.00
Grd.Nxt.:	4.4	Super L:	-3.0	Cut Dp:	-3.6
Grd.Lst:	4.4	Super R:	-3.0		

L-Stn :	3+92.4	L-Ssl:	80.0	F Slope L:	135.00
P-Stn :	3+90.0	L-Ssr:	-80.0	F Slope R:	-100.00
Grd.Nxt.:	n/a	Super L:	-3.0	Cut Dp:	1.9
Grd.Lst:	4.4	Super R:	-3.0		



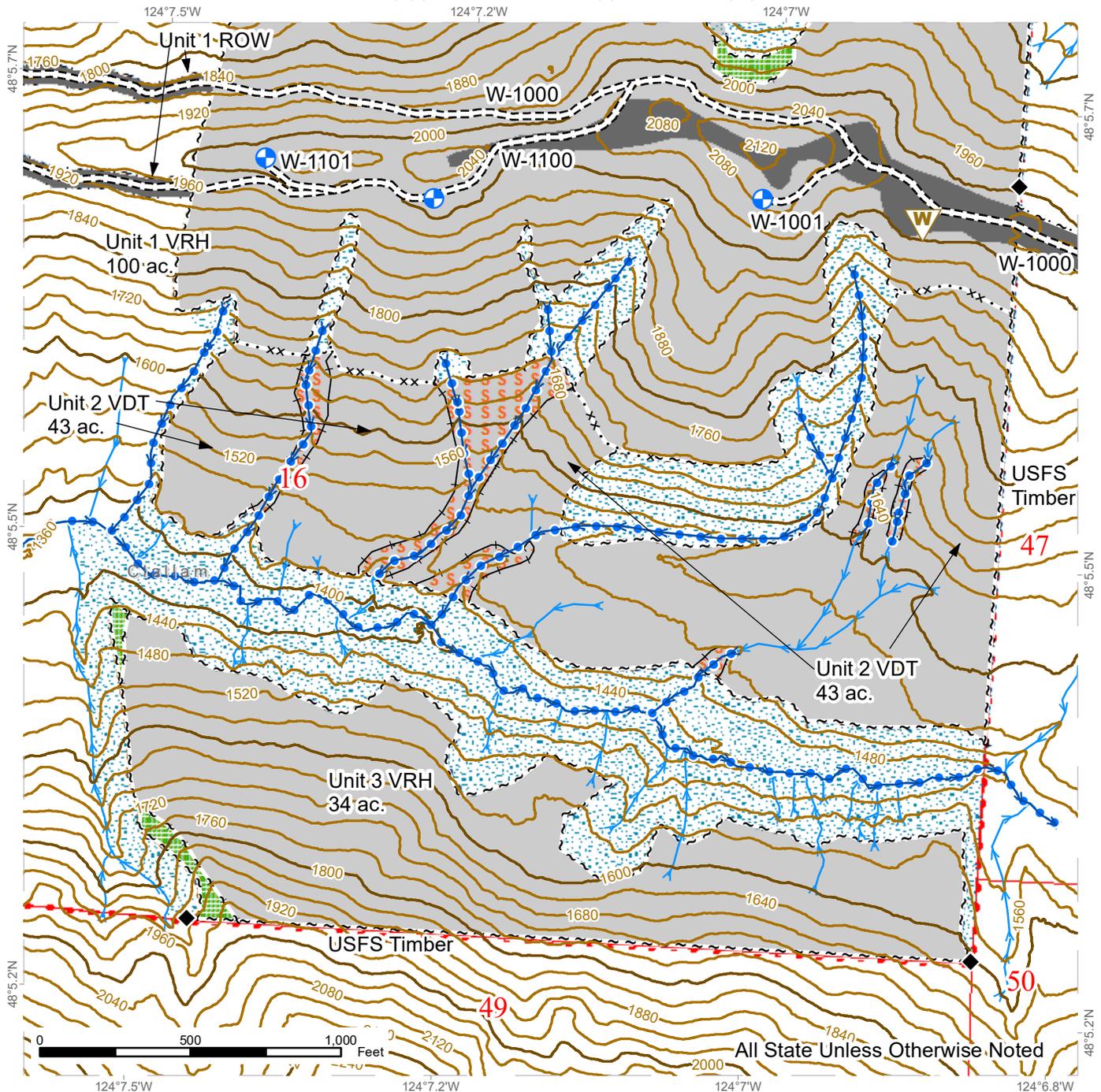
L-Stn :	3+92.6	L-Ssl:	79.9	F Slope L:	135.00
P-Stn :	3+90.1	L-Ssr:	-79.9	F Slope R:	-100.00
Grd.Nxt.:	n/a	Super L:	-3.0	Cut Dp:	0.0
Grd.Lst:	1359.6	Super R:	-3.0		

L-Stn :	4+32.8	L-Ssl:	69.5	F Slope L:	135.00
P-Stn :	4+30.1	L-Ssr:	-69.5	F Slope R:	-100.00
Grd.Nxt.:	n/a	Super L:	-3.0	Cut Dp:	-3.2
Grd.Lst:	1.2	Super R:	-3.0		

# LOGGING PLAN MAP

**SALE NAME:** WILLEY RIDGE VRH VDT  
**AGREEMENT#:** 30-098103  
**TOWNSHIP(S):** T30R11W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1), Capitol Grant (07)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 830'-2,120'



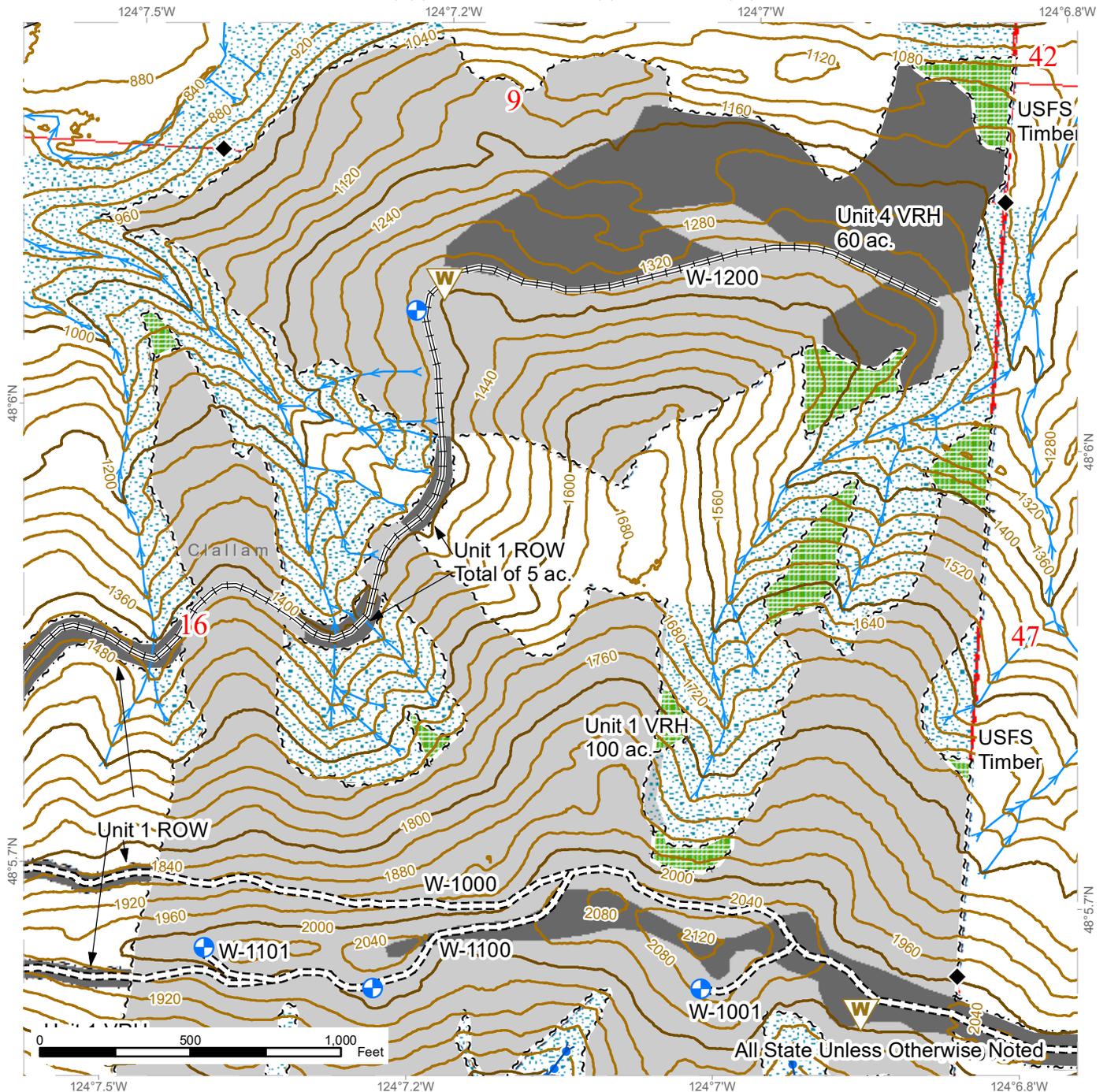
~ ~ Sale Boundary Tags	⊕ Landing - Proposed	□ Public Land Survey Sections
... Special Mgmt Area	W Waste Area	□ Public Land Survey Townships
~ ~ Leave Tree Tags	▬▬ Required Construction	▬ Existing Roads
~ ~ Right of Way Tags	▬▬ Required Reconstruction	▬▬ Required Pre-Haul Maintenance
⊕ Skip (Double Blue Slashes)	◆ Survey Monument	
▬ Property Line		
▬ Contours 40 ft		
▬ Skip		
▬ Leave Tree Area		
▬ Riparian Mgt Zone		
▬ Streams		
▬ Stream- Full Suspension Yarding Req'd.		
▬ Ground		
▬ Cable		



# LOGGING PLAN MAP

**SALE NAME:** WILLEY RIDGE VRH VDT  
**AGREEMENT#:** 30-098103  
**TOWNSHIP(S):** T30R11W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1), Capitol Grant (07)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 830'-2,120'



~ ~ Sale Boundary Tags	Leave Tree Area	⊕ Landing - Proposed	Public Land Survey Sections
... Special Mgmt Area	Riparian Mgt Zone	W Waste Area	Public Land Survey Townships
~ ~ Leave Tree Tags	Streams	⚡ Required Construction	
~ ~ Right of Way Tags	Stream- Full Suspension Yarding Req'd.	Existing Roads	
⚡ Skip (Double Blue Slashes)	Ground	⚡ Required Reconstruction	
— Property Line	Cable	⚡ Required Pre-Haul Maintenance	
— Contours 40 ft		◆ Survey Monument	

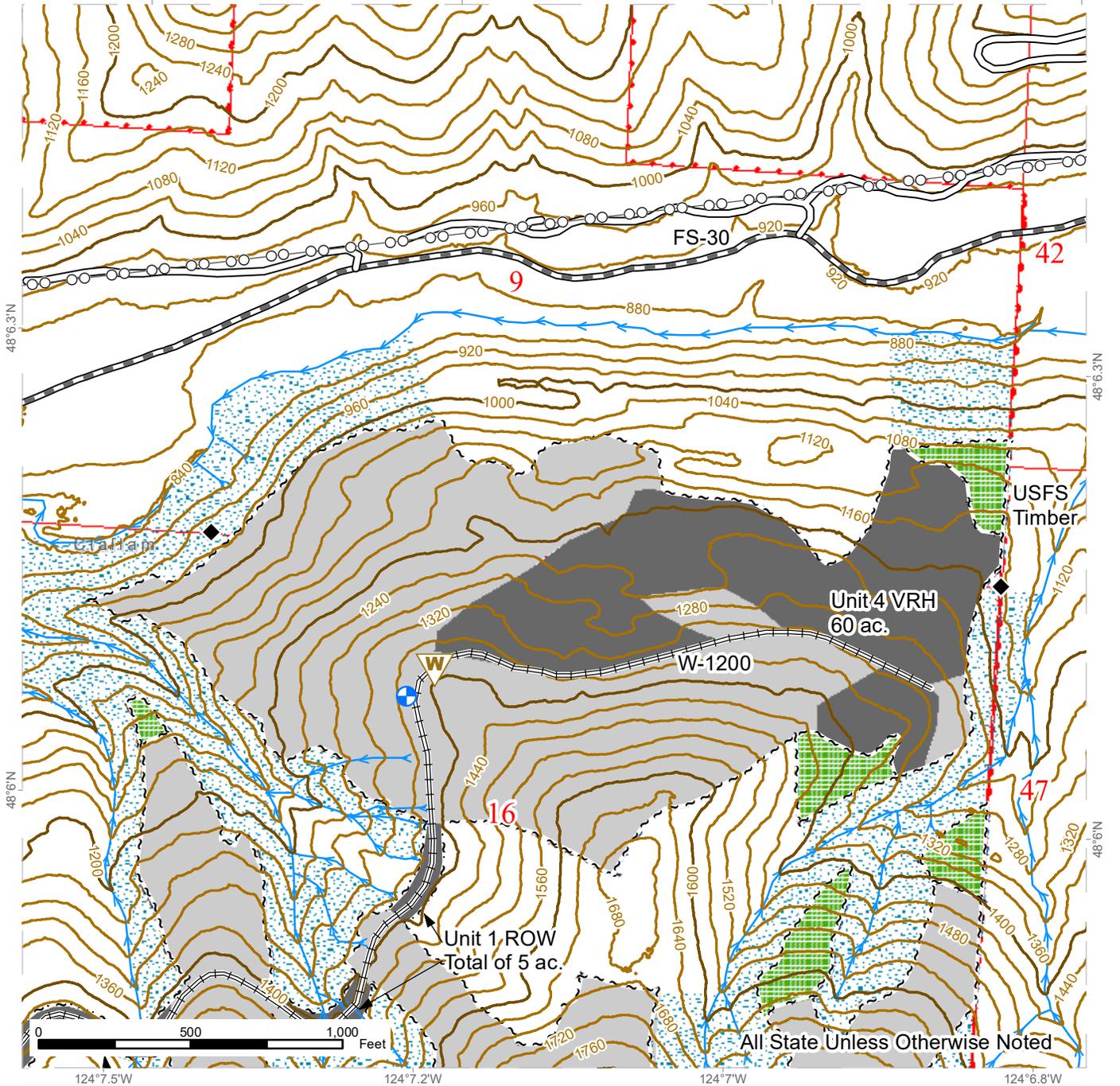


# LOGGING PLAN MAP

**SALE NAME:** WILLEY RIDGE VRH VDT  
**AGREEMENT#:** 30-098103  
**TOWNSHIP(S):** T30R11W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1), Capitol Grant (07)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 830'-2,120'

124°7.5'W 124°7.2'W 124°7'W 124°6.8'W



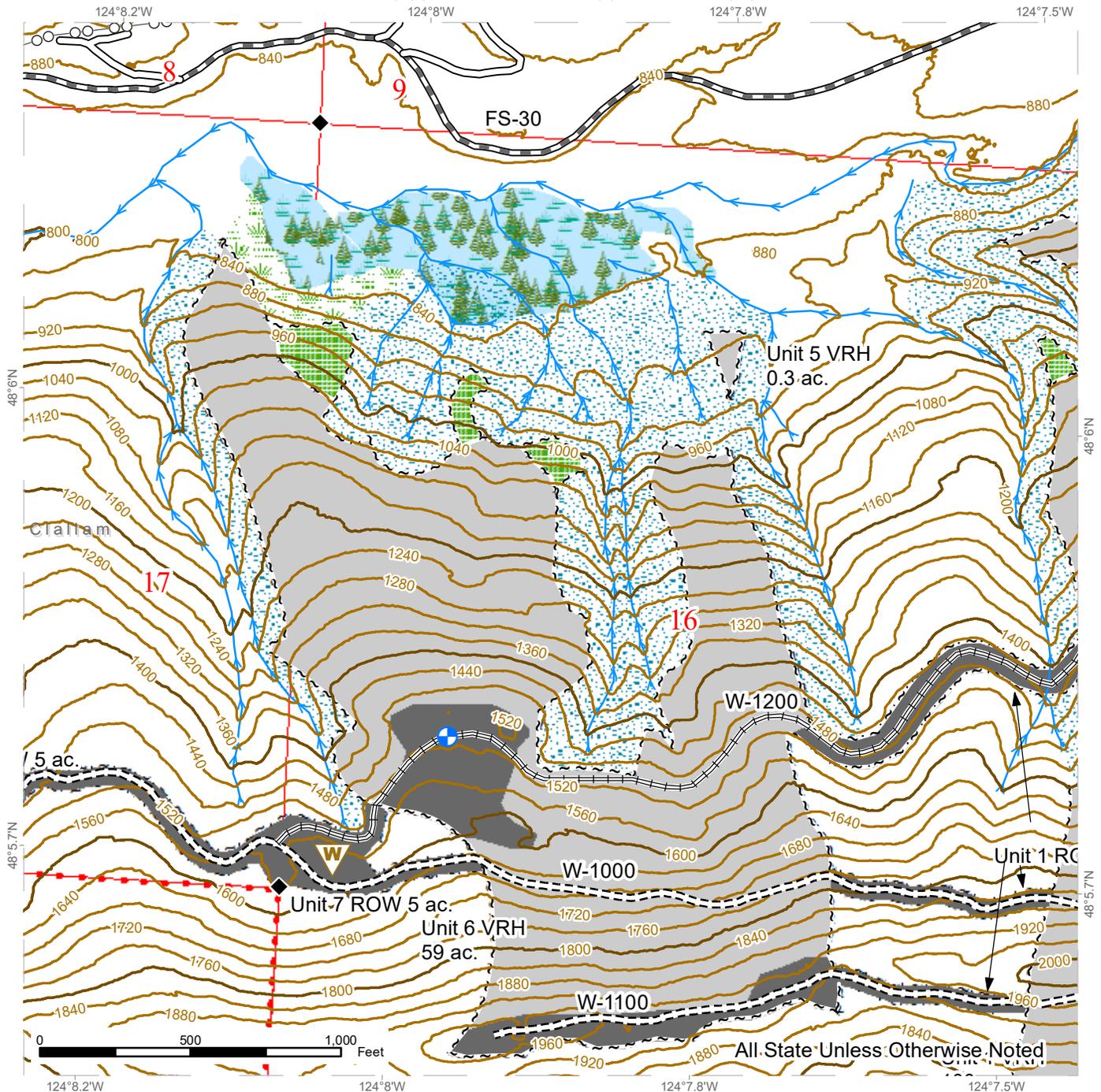
~ ~ Sale Boundary Tags	Leave Tree Area	⊕ Landing - Proposed	Public Land Survey Sections
... Special Mgmt Area	Riparian Mgt Zone	W Waste Area	Public Land Survey Townships
~ ~ Leave Tree Tags	Streams	▬▬ Required Construction	
~ ~ Right of Way Tags	Stream- Full Suspension Yarding Req'd.	▬ Existing Roads	
⊕ Skip (Double Blue Slashes)	Ground	▬▬ Required Reconstruction	
••• Property Line	Cable	▬▬ Required Pre-Haul Maintenance	
— Contours 40 ft		○ Power Lines	
		◆ Survey Monument	



# LOGGING PLAN MAP

**SALE NAME:** WILLEY RIDGE VRH VDT  
**AGREEMENT#:** 30-098103  
**TOWNSHIP(S):** T30R11W  
**TRUST(S):** Common School and Indemnity (3), State Forest Transfer (1), Capitol Grant (07)

**REGION:** Olympic Region  
**COUNTY(S):** Clallam  
**ELEVATION RGE:** 830'-2,120'



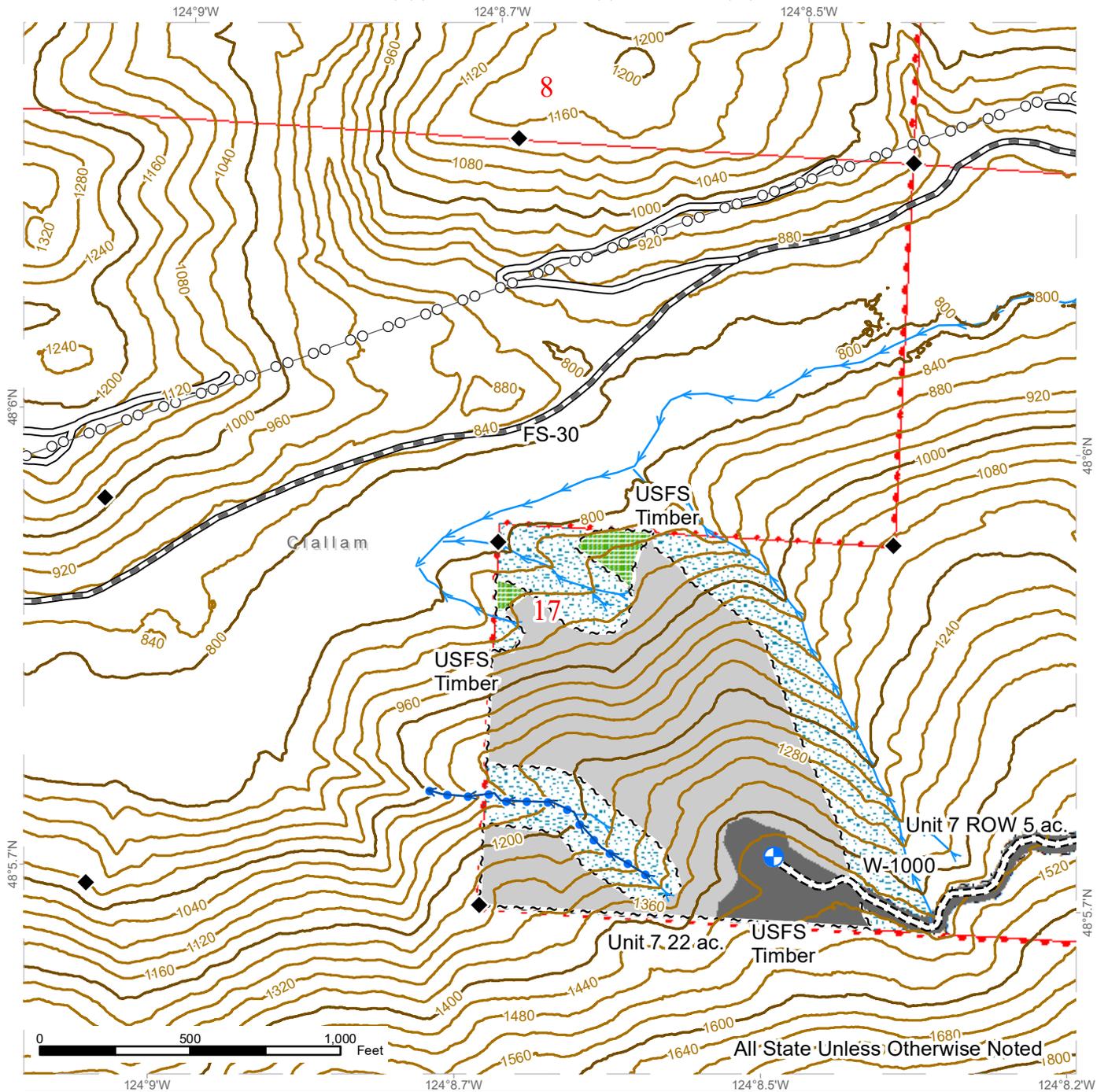
~ ~ Sale Boundary Tags	▨ Leave Tree Area	⊕ Landing - Proposed	□ Public Land Survey Sections
⋯ Special Mgmt Area	▨ Riparian Mgt Zone	⚠ Waste Area	□ Public Land Survey Townships
~ ~ Leave Tree Tags	▨ Forested Wetland	⚡ Required Construction	
~ ~ Right of Way Tags	▨ Wetland Mgt Zone	⬭ Existing Roads	
⚡ Skip (Double Blue Slashes)	▨ Streams	⚡ Required Reconstruction	
⚡ Property Line	▨ Stream- Full Suspension Yarding Req'd.	⚡ Required Pre-Haul Maintenance	
— Contours 40 ft	■ Ground	○ Power Lines	
	■ Cable	◆ Survey Monument	



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~ ~ Sale Boundary Tags	Leave Tree Area	⊕ Landing - Proposed	Public Land Survey Sections
... Special Mgmt Area	Riparian Mgt Zone	⋮ Required Construction	Public Land Survey Townships
~ ~ Leave Tree Tags	Streams	Existing Roads	
~ ~ Right of Way Tags	Stream- Full Suspension Yarding Req'd.	⋮ Required Reconstruction	
⋮ Skip (Double Blue Slashes)	Ground	⋮ Required Pre-Haul Maintenance	
⋮ Property Line	Cable	○ ○ Power Lines	
Contours 40 ft		◆ Survey Monument	