

TIMBER SALE REPORT & APPRAISAL

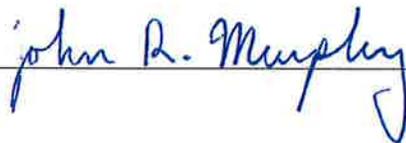
WILLOW SALVAGE TIMBER SALE

Gunnison National Forest

Gunnison Ranger District

4/17/2013

Prepared by:  Date: 4-17-13
Forester

Approved by:  Date: 4-17-2013
District Ranger

SUMMARY OF RECOMMENDATIONS

The following lists the major recommendations and results of the appraisal.

Net Volume (Appraised and Contract):

Engelmann spruce (ES)	264 CCF
True fir (TF)	14 CCF
Total Volume =	278 CCF

ES = dead Engelmann spruce sawtimber

TF = dead true fir sawtimber

ES&O POL = dead Engelmann spruce and true fir products other than logs (subject to agreement). Un-estimated volume

Sale Quadratic Mean DBH = **13.8 inches**

Net acres = **105 acres**

Salvage (wind throw)

Gross acres within Sale Area Boundary = **271 acres**

Advertised Rates:

Dead Sawtimber ES **\$5.00/CCF**

Dead Sawtimber TF **\$3.00/CCF**

Dead ES & O POL **\$1.16/CCF – subject to agreement**

Specified Road Construction = **\$0.00**

Required Slash Deposit is **\$0.00/CCF**

Required Surface Rock Replacement Deposit is **\$0.00/CCF**

Total KV Collections at advertised rates = **\$1,130**

Essential KV = **\$1,130**

Contract period is one (1) year. **Termination Date = February 28, 2014**

Normal Operating Season is June 1 to October 31

DESCRIPTION

A. Location

The Willow Salvage timber sale is located on the Alpine Plateau, approximately 45 miles southwest of Gunnison, Colorado. It is within the Gunnison Ranger District of the Grand Mesa, Uncompahgre, and Gunnison National Forest. The legal description is T.46N., R.4W., Sections 15 and 16; New Mexico Principle Meridian, Gunnison County, Colorado. The Sale Area is 271 gross acres with 105 net acres set for harvesting.

B. Land Status

All harvested lands are on National Forest Service lands.

C. Basis for Selecting Area

This area was first specified in the five-year Timber Sale Action Plan in 1999. Silvicultural and forest health evaluations conducted in Willow Creek during the 2003 field season determined that timber stands in the project area are at risk from accelerated spruce beetle activity. From this planning effort the original Willow timber sale (green tree group selection) was offered in 2010 and cut in 2011. This sale harvested one unit (unit 1) from the planned Long Draw Vegetation Management Project, and was authorized by the Environmental Assessment for the Long Draw Vegetation Management Project. The Decision Notice was signed August 9, 2005. After completion of the original Willow timber sale, some tree wind throw occurred that will be salvaged under the Willow Salvage sale.

D. Transportation Routes and Appraisal Points

The sawtimber will be appraised using Montrose, Colorado as the delivery location.

E. Silvicultural Description

The silvicultural treatment for this sale will salvage wind throw trees and any bark beetle infested tree within the 105 acres treatment unit. Estimated average net volume removal for the cutting unit is 278 CF/acre (1,312 BF/acre). Temporary roads and landings were established during the original Willow timber sale, and would likely be re-opened to facilitate the salvage and sanitation harvest (unless a long skid or forwarding operation is preferred). Trees have been designated with a blue cut tree mark.

F. Unique Circumstances

There is an infestation of spruce bark beetle in all the blown down trees, and it is critical that all infested logs and YUM be removed from site or burned before spring of 2014 when the adult beetles will emerge to infest new trees. Due to these concerns this contract must be completed by December of 2013. There will not be any extensions granted.

There is concern from the Arrowhead community regarding winter hauling, increased traffic safety needs, and increased road maintenance needs along the Alpine Plateau Road.

Winter hauling will not be permissible due to public safety concerns between snowmobile use and log hauling. Hauling will be permitted from spring break up (May 1) to snow closure (December 15).

Safety signing will be put up. Restrictions on log hauling in addition to winter hauling will include weekends and federal holidays between July 1 and September 10.

CONDITIONS OF SALE

A. Planned Cutting Methods

All trees to be harvested in this cutting unit were marked with blue paint using slash marks at a height of 5-6 feet up the bole of the tree on two sides and a stump mark usually on the root ball of the tree. All boundaries have been delineated with orange painted vertical stripes.

B. Sale Area Improvement Needs (SAI)

Fill in tree planting will occur in 2015. See the SAI Plan on form FS-2400-50 and KV Plan Narrative for more information.

C. Slash Treatment

All slash remaining in the unit will be lopped and scattered to lie within 2 feet of the ground. Some small slash piles will be retained within the unit for small animal habitat. All landing slash will be piled and burned. In order to minimize the potential for spruce beetle spread into the surrounding healthy trees, yarding of unmerchantable material (YUM) is required of green Engelmann spruce logs over 8 feet long and 8 inches in diameter at the large end. YUM material is to be piled for disposal by burning.

D. Water Quality Protection and Erosion Control

Landings, skid trails, and temporary roads will be re-vegetated to stabilize soils. Skid trails are to be laid out to reduce erosion and will require agreement by the timber sale administrator. Skid trails must be at least 100 feet from all live streams except in areas previously identified by U.S. Forest Service personnel. Drainage structures will be required where erosion potential is high. Temporary roads will be closed by installing critical drainage structures, ripping, seeding, and placing logs, rocks, stumps and slash in the roadway. Seed that is used will be certified noxious weed-free grass and forb seed mixture.

E. Project Design Specifications (Criteria)

Design criteria are additional requirements, developed on a site specific basis, along with mitigation and or monitoring measures (if any) to avoid, minimize, reduce or eliminate adverse effects as a result of implementing the proposed treatments. The specifications listed below are found in the Long Draw Vegetation Management Project Environmental Assessment, pages 10 through 18. Also included from the Decision Notice is a revision to the design criterion located in paragraph 1 on page 12 of the EA regarding stream crossings. Additional sources of design criteria are the Forest Plan standards and guidelines, the Watershed Conservation Practices Handbook for Best Management Practices (FSH 2509.25, chapter 2), Executive Order 11990 - Protection of Wetlands, the Endangered Species Act, the timber sale contract provisions, and the silvicultural prescriptions.

Range

Design Criteria (EA pp. 11)

- Logging equipment entering the Project Area will not introduce any risk of undesirable seed from noxious weed species into the area. The timber sale purchaser will not move any "Off-Road Equipment", which last operated in an area that is infested with one or more invasive species of concern onto timber sale areas without having first taken reasonable measures to make each such piece of equipment free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds.

Response: This requirement is contained in contract provision BT6.35, Equipment Cleaning.

Monitoring Measures (EA p17)

- Disturbed areas, such as roads, landings, and skid trails, will be monitored for noxious weeds. Chemical, biological, cultural, and mechanical techniques will be used as appropriate to control populations of noxious weeds as described in the 1995 EA for the Gunnison District Weed Management Program. All treatments of noxious weeds will follow state and federal regulations.
Response: Provisions CT6.601# require seeding areas with disturbed soil in an attempt to minimize establishment of noxious weeds. Noxious weed monitoring and treatment will continue by the Forest Service for two years after harvest activities conclude.

Wildlife

Design Criteria (EA p 11-12)

- A minimum of 300 snags/100 acres will be maintained with the largest DBH available. A portion of these can be large live trees with broken or dead tops (snag replacement trees), and other trees showing wildlife signs (dens, nests, cavities, squirrel middens, woodpecker activity) within and adjacent to harvest units to provide for perching, foraging, roosting, and nesting sites for wildlife. To compensate for the lack of snags along road corridors due to removal for OSHA safety needs, leave a greater density of wildlife trees in areas away from roads and landings. Snags within 500 feet of water (creeks, ponds, wet meadows, seeps, springs), meadows/parks/forest openings, and ridge tops are particularly valuable to wildlife. Retain snags in groups when possible to avoid wind throw and provide better wildlife cover. Where possible in regeneration units, link groups with advanced regeneration to minimize open areas. Use natural sinuosity or drainages for linking groups. Leave snags with a variety of heights, shapes, and decay condition. Generally, taller and larger diameter snags provide better habitat for more species. Leave snags of all species type. Aspen snags are especially valuable and all aspen snags which are not a distinct hazard should be retained to help maintain populations of cavity dwelling wildlife. Protect standing wildlife trees from damage during site preparation and post sale activities.
Response: Enough residual area will be uncut with the group selection system to meet these requirements.
- Maintain 10-20 tons per acre of coarse woody debris within harvest units to retain soil moisture at ground level for mosses, fungi, and lichens, and to encourage faster re-colonization of harvest units by small mammals and other prey species. Retain some small slash piles to provide habitat for small mammals. Existing logging debris piles will be left where they are located within forest habitats away from roads, to provide small mammal habitat and potential denning sites for lynx and American marten. In regeneration units, piles of logs, stumps or other woody debris will be created to minimize the effects of larger openings and to provide connectivity to adjacent stands for lynx, marten, and other species that may generally avoid open areas and utilize concentrations of down wood for foraging or denning. Maintain large diameter downed logs in various stages of decomposition within harvest units (50 linear feet/acre of 10 inch diameter or larger lodgepole pine and aspen logs and/or 12 inch diameter or larger spruce and fir) to provide habitat for small mammals.
Response: Enough residual area will be uncut with the group selection system to meet these requirements.
- No skidding, log landings, or log decks, or logging equipment will be allowed to operate or be located in sensitive habitats such as elk wallows, riparian areas, ponds, seeps, springs, or other wet areas, except at designated skid trail or road crossings. These areas will be avoided when designing cutting units and access locations. Skid trails, log landings, log decks, equipment use and parking areas will be located away from meadows to allow continued use of these areas by wildlife.
Response: Cutting units have been designed to minimize the potential of negative impacts to wet areas and sensitive habitats. However, there are locations within cutting units that will require careful planning of skid trail and landing locations to avoid

damage to sensitive areas. Known sensitive locations will be identified on the Sale Area Map as required in BT1.1 and protected by BT6.422, BT6.5, and BT6.6. The Sale Administrator is responsible for the approval of all skid trails and landing locations .

- Maintain screening for wildlife where possible between cutting units, roads that are open to the public, or meadows. Maintain buffer strips of uncut timber a minimum of 200 feet wide unless topographic breaks occur between cutting units and roads or meadow openings.
Response: Cutting units have been designed and marked to provide the necessary screening for wildlife.

Mitigation Measures (EA p 15-16)

- If additional territories of sensitive species or raptors are discovered within the Long Draw Planning Area, establish and manage these territories with adequate buffer zones and seasonal activity use restrictions around breeding sites if possible to prevent the disturbance or displacement of those individuals.
Response: No goshawk nesting areas or active nests were located during the initial survey, layout, or marking. Contract provision BT6.24, Protection Measures Needed for Plants, Animals, Cultural Resources, and Cave Resources, states that the purchaser shall notify the Forest Service if additional areas, resources, or members of species needing special protection are discovered. Under BT8.33, operations can be delayed or interrupted if the Sale Administrator determines that there is risk of damage or harm to resources.

Monitoring Measure (EA p17)

- Species-specific monitoring would continue in the Planning Area to validate the effectiveness of design features and to determine if species responses to the proposed project were those expected.
Response: District biology personnel will monitor species responses.

Soil and Water

Refer to the Water Conservation Practices Handbook (WCPH, FSH 2509.25) for management requirements that have been incorporated into all proposed treatments for the Long Draw project. These prescribed practices have been proven effective in the protection of soil, aquatic and riparian systems. If used properly, they meet or exceed State Best Management Practices (BMPs). These are solid, common sense stewardship actions. While they may, to one extent or another, limit certain actions or may represent an added cost, they are all reasonable and feasible when appropriately prescribed and implemented.

Design Criteria (EA p12-13)

- All perennial, intermittent, and ephemeral streams within units will be shown on the sale area map and designated as protected streamcourses.
Response: All streams are shown on the sale area map and are protected as required by provisions BT1.1 and BT6.5.
- All designed and constructed road drainage features will be installed prior to use of system roads and functioning at all times.
Response: The Sale Administrator is responsible for implementing this requirement under provisions BT6.6, BT6.67.
- All permanent stream crossings will be designed to pass the 100-year flood event.
Response: No permanent stream crossings will be installed for the Willow Timber Sale.

- All stream crossings, where grade and alignment allow, will be crossed using fords constructed with structural re-enforcement. The ford will be set so that the elevation of the channel bed and top of structure are the same. The structure will extend beyond the flood prone area.
Response: There are no stream crossings on the temporary roads needed for the Willow Timber Sale.
- Road drainage design may be dictated by terrain and site conditions. However, from an effectiveness and durability standpoint the general methods of drainage are listed in order of preference: outsloping; rolling dips and grade breaks; inside ditches and cross drainage dips; inside ditches and relief pipes.
Response: Provision BT6.63 requires the purchaser to employ these methods on temporary roads and BT6.36, BT6.65 gives the Sale Administrator the ability to approve these structures.
- In areas where soft roadbed conditions are anticipated or where road relocation work is planned, the bottom of the rolling dips will be rocked with course pit run gravel (2 to 4 inch material). Road clearing slash (tops and limbs), if available, should be placed below the dip to trap sediment.
Response: There is no road relocation work in the Willow Salvage Timber Sale, however any temporary road work and road maintenance will require Sale Administrator approval and acceptance under BT6.36, BT6.63, BT6.67.
- Roads will approach drainage crossings at right angles as topography allows. All drainage crossings (including temporary crossings) must be designed to provide for passage of expected high flows and protect channel bed and bank stability from scour. Culverts will be designed and placed so as to maintain the natural stream gradient. Installation of structures in the channel will be completed as soon as feasible once started and will be performed during low water periods of the year. Excess excavated material will be placed outside of the floodplain and disturbed areas will be revegetated as soon as practical.
Response: There is no new road construction or drainage crossings on the temporary roads needed for the Willow Timber Sale.
- A recommended method of right-of-way slash disposal, where feasible and practical, is to lop and scatter material below road fill catch to act as a sediment barrier
Response: There is no specified road construction work in the Willow Timber Sale and consequently no significant right-of-way clearing anticipated. However, any temporary road work and road maintenance will require Sale Administrator approval and acceptance under BT6.36, BT6.63, BT6.67.
- Road surfaces and ditches will divert water prior to intersecting the stream. Road drainage water will be discharged into either natural or constructed sediment filters/traps.
Response: There are no watercourse crossings needed for the construction of temporary roads.
- Road cuts less than 4 foot vertical will be laid back at slopes no steeper than 1.5:1. Back slopes would be left in a roughened condition. These measures would enhance the establishment of vegetation needed to stabilize cuts.
Response: There will be no cut or fill road construction for this timber sale.
- Sediment filter barriers will be constructed in conjunction with the new crossings of Willow Creek and Long Draw. Filter barriers will be required for any portion of the road within 100 feet slope distance of the channel. In situations where no fill is created, filters will be required only

below road drainage outlets. Filters will consist of right-of-way slash placed parallel to the fill, in a compact row, one to two feet high, immediately below the fill catch point. If insufficient slash is available to construct the specified slash filter windrow, fiber erosion control logs, no less than 10 inches in diameter, will be placed and staked as a substitute. (WCPH standard #13.2-1d)

Response: This criteria is intended to accompany the road package associated with the Long Draw Timber Sale. Since there is no specified road construction associated with the Willow Timber Sale and consequently no need to build new crossings of Willow Creek and Long Draw, this criteria does not apply.

Monitoring (EA p17)

- Monitoring soil moisture conditions during harvest activities to assure that heavy equipment use is only occurring during periods of time when the soil is dry enough to support this use without excessive impact.

Response: BT6.6 states that “equipment shall not be operated when ground conditions are such that excessive damage will result.” The Sale Administrator in coordination with the Forest Soil Scientist has the responsibility to stop equipment operations when conditions deem necessary.

Temporary Roads and Skid Trails

Design Criteria (EA p13-14)

- Skid trails and temporary roads would follow existing travel routes to the extent feasible.
Response: The Sale Administrator is responsible for implementing this requirement during approval of temporary roads and skid trails under BT5.1, and BT6.422. Proposed temporary roads have been identified on the logging plan map and will be discussed with the sale administrator prior to the commencement of logging.
- No skidding will be permitted up and down hydrologic flow paths. Crossings will be minimized to that necessary for logging purposes.
Response: These protections are incorporated through provisions BT6.5. Additionally, skid trail locations require approval by the Sale Administrator under BT6.422.
- Temporary roads must be designed to minimize sediment production. As required by the section 404 silvicultural road exemption, all fill must be removed from the flood prone area once use has terminated and vegetative cover must be re-established comparable to pre-disturbance within 10 years.
Response: These requirements are contained in BT5.1, BT6.63.
- The full length of all newly constructed temporary roads would be closed. Drainage crossings will be fully restored.
Response: All temporary roads will be closed by the purchaser.
- Approval by the timber sale administrator of temporary roads location and construction would be subject to requirements concerning drainage crossing, period of use, and road rehabilitation. These requirements would be consistent with the Watershed Conservation Practices Handbook.
Response: BT6.5, BT6.6, BT6.63, BT6.66, BT6.67 all provide erosion and streamcourse protection measures consistent with the Watershed Conservation Practices Handbook.

Activities within the Water Influence Zone

The water influence zone (WIZ) includes the geomorphic floodplain, riparian ecosystem, and inner gorge. Its minimum width (from top of each bank) is the greater of 100 feet or the mean height of

mature dominant late-seral vegetation. (R2 Amendment, FSH 2509.25 – Watershed Conservation Practices Handbook, 2001)

Design Criteria (EA p14-15)

- Ground disturbance should be minimized to the extent possible within the water influence zone (WIZ). Ensure at least one-end log suspension in the WIZ. Fell trees in a way that protects vegetation in the WIZ from damage.

Response: These protections are incorporated through felling, bucking, skidding, and yarding restrictions.

- Logging slash (tops and limbs) will be removed from perennial and intermittent flow channels. Removal of logging slash from ephemeral drainages will be required only if significant amounts exist which threaten to block or divert flows when they occur.

Response: BT6.5. provides for this protection.

- No soil disturbing site preparation activities or log landings will be located within the WIZ.

Response: In addition to the protection of streamcourses provided by provision BT6.5, the locations of all landings will be approved by the Sale Administrator prior to their construction as required by provision BT6.422.

- Any marking, felling, and skidding of merchantable timber within the WIZ for harvest unit #8 will incorporate the following guidelines.

- Remove no trees that anchor the streambank or are leaning towards the channel and are capable of reaching the channel. On steep slopes this may be greater than the height of the tree.
- No mechanical equipment will be permitted to operate within 20 feet of the streambank. Felling and skidding operations will be conducted in a manner to minimize ground disturbance.
- Silvicultural treatments will be limited to individual tree selection or group selection with opening less than ¼ acre in size.

Response: The Willow Creek Timber Sale will not harvest in Unit 8 of the Long Draw Vegetation Management Project.

- All streambeds would be protected from physical damage associated with cutting and skidding operations. Harvest of material adjacent to drainages would be done in a manner to minimize accumulations of logging residue.

Response: Provision BT6.5, along with sale area map designation of protected streamcourses, assures implementation of this measure. In the event significant accumulations of residue occurs, as determined by the forest hydrologist and timber sale administrator, the contractor would be required to remove material prior to acceptance of the harvest unit.

Transportation System

Design Criteria (EA p 15)

- Decommission temporary road immediately after timber sale activities are completed.

Response: All temporary roads will be decommissioned by the purchaser following completion of timber removal. The procedure for closure is contained in BT6.63.

- If public use becomes evident during sale activities, install signing to notify the public that the road will be closed upon completion of the sale.

Response: The Sale Administrator will install signing if deemed necessary.

- Provide dust abatement for the segment of road NFSR 867 through the Arrowhead Subdivision.
Response: Given the small amount of volume harvested in this salvage operation (28 loads) dust abatement will not be required.
- Safety signing along the Alpine Plateau Road will be done to alert the public to logging operations in progress.
Response: Signs will be posted on NFSR 867 at its intersection with highway 50 and also just south of Big Willow Park. See the sale area map for approximate locations. These signs will meet the requirements in the Manual of Uniform Traffic Control Devices. This is a legal requirement and would be implemented through contract provision BT6.33
- Restrict hauling operations during wet conditions to protect the road surface.
Response: BT6.6 states that "equipment shall not be operated when ground conditions are such that excessive damage will result." The Sale Administrator has the responsibility to stop hauling activities when conditions deem necessary.

Timber

Mitigation Measures (EA p16)

- In order to minimize the potential for spruce beetle mortality, yarding of unmerchantable material (YUM) is required of green Engelmann spruce logs over 8 feet long and 8 inches in diameter at the large end. YUM material is to be piled for disposal by burning.
Response: The requirements for slash disposal are detailed in provision CT6.7#. The purchaser is responsible for the piling and the Forest Service will conduct the pile burning.

Monitoring Measures (EA p17)

- Regeneration surveys would be conducted on harvested sites during the first, third, and fifth years after treatment. Should this monitoring conclude that additional cultural treatments are required, these treatments would be scheduled.
Response: Should these sites not naturally regenerate further cultural treatments will be scheduled per our obligation under the NFMA law utilizing Reforestation Trust Fund monies.

Recreation

Mitigation Measures (EA p16)

- If winter logging takes place, coordination with the Lake City Continental Divide Snowmobile Club and the Arrowhead Home Owners Association would occur to insure that conflicts with winter use are minimized. This may require safety signing and coordinating snowplowing in a manner that maintains the groomed trail access provided by the club and access to private residences
Response: A line officer decision was made to not allow winter hauling on NFSR 867 for the Willow Salvage Timber Sale unless a written agreement can be made. Contract provision CT5.12# lists NFSR 867 as restricted with hauling allowed from May 1 to December 15 and not allowed on weekends and federal holidays between July 1 and September 10.

CRUISE VOLUMES

This sale was laid out, marked and cruised in the summer of 2012. The sale was sampled using a sample tree sampling method (see Cruise Design report for more detail). Collected field data was entered and processed using the U.S. Forest Service FS Cruiser software and CruiseProcessing version 03.14.2012.

Unseen defect and breakage was included in volume totals (see volume calculations below). This is a tree measurement sale estimated to have a value between \$7,500 and \$10,000; therefore, the maximum sampling error for the sale as a whole must be $\pm 25\%$. This information can be found in Chapter 40 of the Timber Cruising Handbook (2409.12). The combined sampling error for this cruise is +16.98% (DS1 report).

A. Volume Summary:

Dead sawtimber volumes are grouped as Engelmann spruce (ES) and True fir. The ES contract group includes Englemann spruce sawtimber and the TF contract group includes sub-alpine fir sawtimber. Conifer species of products other than logs were not cruised during field preparation. If there is interest in harvesting POL material it will be cruised prior to removal.

Cruise Volume Reported by Contract Species Groupings

<i>Gross CCF</i>	<i>% of Total Volume</i>	<i>Net CCF</i>	<i>% of Total Volume</i>	<i>Net CCF Rounded (contract volume)¹</i>	<i>% of Total Volume</i>
dead sawtimber					
356.02	100%	278.19	100%	278	100%

Volume Reported by Individual Tree Species

<u>Dead sawtimber --</u>	<u>Gross CCF</u>	<u>%</u>	<u>Net CCF</u>	<u>%</u>
Recent Dead True Fir:	20.60	6%	14.20	5%
Older Dead Engelmann spruce:	24.01	7%	17.36	6%
Recent Dead Engelmann spruce:	311.41	87%	246.63	89%
Total --	356.02		278.19	

C. Area Determination

Area determination for this sale was conducted using a Global Positioning System (GPS). Procedures used for determining the acreages of harvest units in the timber sale area are in accordance with the standards set forth in R2 Supplement 2409.12-2000-4, chapter 52.2. GPS data was collected during the 2005 field seasons. Acreages by unit are as follows:

¹ Contract volumes may be slightly different than other reported volumes due to the characteristics of rounding contained in the TIM project management software. Contract volume is used to determine payments and is the official volume estimate used in the appraisal and the contract.

Acres by cutting unit (GPS)

Cutting Unit	Acres
1	105
Total	105

D. Contract Volume

Net Volume Worksheet Computations

tree species	contract group	visible defect %	unseen defect and breakage %	total defect %	1-defect %	gross CCF volume	net CCF volume	Contract Volume (Net CCF rounded)
Dead Sawtimber								
True Fir (recent dead)	TF	31%	10%	41%	59%	20.6	14.2	14
Engelmann Spruce (older dead)	ES	27%	15%	42%	58%	24.0	17.4	17
Engelmann Spruce (recent dead)	ES	20%	10%	30%	70%	311.4	246.6	247
Engelmann Spruce (all)	ES							264
Total							278.2	278²

Grand Total Net Contract Volume = 278 CCF

² Contract volumes may be slightly different than other reported volumes due to the characteristics of rounding contained in the TIM project management software. Contract volume is used to determine payments and is the official volume estimate used in the appraisal and the contract.

APPRAISAL

A. Appraisal Data

Sawtimber -

Current TE Sawtimber Appraisal Data – FSH 2409.22, 51.3; Bulletin No BU230413 effective May 10, 2013.

Base Data Period: 2nd QTR CY 12 – 1st QTR CY 13

Appraised to: Region 2, Zone 3

	<u>ES</u>	TF
Adjusted Base Period Price:	\$55.13/CCF	\$40.32/CCF
Average Base Haul:	\$68.53	\$50.36
Average Base Road Maintenance:	\$8.40	\$16.22
Average Base Slash Disposal:	\$2.29	\$3.05
Average Base Temporary Roads:	\$3.35	\$4.12

B. Skid/Yard

The skid/yard cost adjustment (also known as the logging cost adjustment) is calculated in the TEA234 Microsoft Access-based Appraisal System. It is based on the difference between the appraised sale and Regional average sale diameter and sale volume per acre. (Reference FSH 2409.22, 51.3 and 51.61).

Database average dbh (from Bulletin) = 13.1"

Database average volume per acre (from Bulletin) = 14.7 CCF/acre

Sale quadratic mean diameter = 13.8"

Sale volume per acre = 2.67 CCF/acre

D = 13.1" – 13.8" = -0.7" dbh difference

V = 2.67 CCF/acre – 14.7 CCF/acre = -12.03 CCF difference

Skid/yard cost adjustment = \$-45.64/CCF (line 12, 2400-17).

C. Haul Cost Calculation

1) Sawtimber: Haul to Montrose, Colorado

Assumptions:

Road Segment	Haul Class	% Grade	*Round Trip (min/mi)	Haul Miles	% Volume	Round Trip % Increase	Travel Time
Load & Unload Delay time							60.00
FDR 867.3G – T1 to 867.3B	5B3	0%	5.5	0.26	50		0.72
FDR 867.3B	5B3	5%	5.8	0.81	50		2.35
FDR 867 – Alpine Plateau Road	4B3	-3%	5.1	16	100		81.6
Hwy 50	1A1	-3%	3.2	30	100		96
Montrose/Mill	2A1	0%	3.2	2.6	100	100	16.64
Total				49.7			257.31

*Round Trip Minutes Per Mile are from FSH 2409.22 Sec. 44.1 Exhibit 1

Calculation:

257.31 min x \$0.1130/CCF/min = **\$29.08/CCF Haul Cost for Sawtimber**

2) Engelmann Spruce & other (ES&O) POL:

Assumptions:

Haul to Montrose, CO - 50 miles from center of sale

Calculation:

$$(50 - 52) \times \$0.17/\text{CCF}/\text{Mile} = \mathbf{\$-0.34/\text{CCF Haul Cost for ES\&O POL}^3}$$

D. Road Maintenance

The following maintenance requirements are based on the appraised haul route and estimates of purchasers use. An estimate of the average maintained distance is provided for each road that will be used to remove designated timber. All estimates assume the use of standard equipment and practices and that work will be completed during the normal operating season.

All costs and figures are from the USDA Forest Service Regions 2, 3, 4 2012 Cost Estimating Guide for Road Construction. Labor Rates are reduced 25% from Davis/Bacon Wage Rates. Final rates are reduced 23% for OH, profit and risk. The final costs are increased by 3% to account for inflation.

1) Pre-haul Maintenance:

Following is a list of roads requiring pre-haul maintenance by the purchaser.

<u>Road</u>	<u>Segment Length</u>	<u>Work Required</u>
867.3B	0.81	surface blading
867.3G	0.26	surface blading
Total	1.07 miles	surface blading

Assumptions: Roads to be maintained per BT5.3 and CT5.31#
Blade 1 mile in 3.4 hours (time increased 30% for rocks).
1.07 miles will be bladed 1 time.
Slides, slumps and potholes will be fixed as needed.
Pickup use 2 hours per 10 hour day.
10 hour days.
Move in costs are included in item 2 - road maintenance section.
Inflated 2 years.

Project Time: (1.07 miles x 1 times) x 3.4 hours/mile = 4 hours rounded (grader)
4 hrs (grader)/10 hrs/day = 0.5 day (grader and operator)

³ \$0.17/CCF cost is provided in the Timber Sale Appraisal Bulletin for Zones 1, 2 & 3 (i.e. "Subtract average haul miles (52) from the sale haul miles and multiply by the haul cost")

<u>Work Item</u>	<u>Work Unit</u>	<u>\$ Rate / Work Unit</u>	<u>Hours per Day</u>	<u>Days</u>	<u>Item Cost</u>
General Laborer	Hours	\$18.20	10	0.5	\$91.00
Grader Operator	Hours	\$23.61	10	0.5	\$118.05
1-Ton 4x4 Service PU	Hours	\$45.43	2	0.5	\$45.43
Cat 12H Motor Grader	Hours	\$78.70	10	0.5	\$393.85
SUBTOTAL =					\$648.33
Less overhead profit and risk (23%)					\$149.12
					\$499.21
Inflation (1 year 3%)					\$514.19
TPOH Increase (31.54%)					\$676.37

Total Pre Haul Maintenance	\$676.37
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2) Road Maintenance:

Purchaser responsibility: Following is a list of roads requiring maintenance by the purchaser.

<u>Road</u>	<u>Length</u>	<u>Work Required</u>
867.3B	0.81	blade one time
867.3G	0.26	blade one time
867.0	6.3	blade one time
Total	7.37 miles	total blading

<u>Road</u>	<u>Length</u>	<u>Quantity</u>	<u>Work Required</u>
867.3B	0.81	6	maintain drainage structures
867.3G	0.26	2	maintain drainage structures
867.0	6.3	50	maintain drainage structures
Total	7.37 miles	58	maintain drainage structures

Assumptions: Full length and all drainage structures for 867.3B and 867.3G

¼ Length (1.6miles) and ¼ drainage structures (13) for 867.0

Blade 1 mile in 2.0 hours.

Roads to be maintained per BT5.3 and CT5.31#.

Laborer to clean culverts, remove rocks, clear roadside vegetation etc.

Rolling dips and ditches to be cleared, 15 minutes each.

One drainage structure every 660 feet (8 per mile).

Slides, slumps and potholes will be fixed as needed.

Move in costs assumed for 1 move.

Pickup use 2 hours per 10 hour day.

10 hour days.

2.57 miles will be bladed 1 time.

Project Time: Grader : 2.57 miles x 2.0 hours/mile = 5.14 hours
5.14 hours

21 drainage structures x 15 minutes each = 5.25 hours for grader
 5.25 hours
 5.14 + 5.25 hours / 10 hour days = 1 day (rounded)

<u>Work Item</u>	<u>Work Unit</u>	<u>\$Rate/ Work Unit</u>	<u>Hours per Day</u>	<u>Days</u>	<u>Item Cost</u>
General Laborer	Hours	\$18.20	10	1	\$182.00
Grader Operator	Hours	\$23.61	10	1	\$236.10
1-Ton 4x4 Service PU	Hours	\$45.43	2	1	\$90.86
Cat 12H Motor Grader	Hours	\$78.77	10	1	\$787.70
Semi Driver	Hours	\$20.56	5	1	\$102.80
6x4 Tractor/Lowboy 35 T	Hours	\$98.75	5	1	\$493.75
SUBTOTAL =					\$1,893.21

Subtotal	\$1,893.21
Less overhead profit and risk (23%)	\$435.44
	\$1,457.77
Inflation (1 year 3%)	\$1,501.50
TPOH Increase (31.54%)	\$1,975.08

Total Road Maintenance	\$1,975.08
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3) Post-haul Maintenance:

Purchaser responsibility: Following is a list of roads requiring post-haul maintenance by the purchaser.

<u>Road</u>	<u>Quantity</u>	<u>Work Required</u>
867.3B	0.81	drainage/surface repair and or blading
867.3G	0.26	drainage/surface repair and or blading
867.0	6.3	drainage/surface repair and or blading
Total	7.37 miles	drainage/surface repair and or blading

Assumptions: Roads to be maintained per BT5.3 and CT5.31#

Blade 1 mile in 2.0 hours.
 Full Length of 867.3B and 867.3G will be bladed and ½ drainage structures (4) will need repair
 ¼ Length of 867.0 (1.6 miles) will be bladed, ¼ drainage structures (12) will need repair
 2.57 miles will be bladed 1 time.
 Rolling dips and ditches to be cleared, 15 minutes each.
 16 drainage structures will need maintenance.
 Slides, slumps and potholes will be fixed as needed.
 Pickup use 2 hours per 10 hour day.
 10 hour days.

Project Time: 2.57 miles x 2.0 hours/mile = 5.14 hours for grader
 5.14 hrs
 16 drainage structures x 15 min = 4 hours for grader
 1.75 + 5.14 hrs = 6.89 hrs
 6.89 hrs/10hrs/day = 1 days (rounded) for grader

<u>Work Item</u>	<u>Work Unit</u>	<u>\$ Rate / Work Unit</u>	<u>Hours / Day</u>	<u>Days</u>	<u>Item Cost</u>
Grader Operator	Hours	\$23.61	10	1	\$236.10
1-Ton 4x4 Service PU	Hours	\$45.43	2	1	\$90.86
Cat 12H Motor Grader	Hours	\$78.77	10	1	\$787.70
SUBTOTAL =					\$1,114.66

Subtotal	\$1,114.66
Less overhead profit and risk (23%)	\$256.37
	\$858.29
Inflation (1 year 3%)	\$884.04
TPOH Increase (31.54%)	\$1,162.86

Total Post Haul Maintenance	\$1,162.86
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4) Rock Replacement: (no deposit will be collected for this sale – due to the small scale and low value)

Road Maintenance Appraisal Allowances

Pre-haul Maintenance	\$676.37
Purchaser Road Maintenance	\$1,975.08
Post-haul Maintenance	\$1,162.86
Post-haul Closures	\$0.00
Dust Abatement	\$0.00
Total Cost	\$3,814.31

\$3,814.31/278 = \$13.72

\$13.72/CCF Total for Road Maintenance

Road Maintenance Deposits

Regular Road Maintenance Deposit	\$0.00
Surface Rock Replacement Deposit	\$0.00
Total Deposit	\$0.00

\$0.00/278 CCF

\$0.00/CCF Total Deposit

Total Road Maintenance Cost (Line 17 of 2400-17) =	Road Maintenance Cost	\$13.72/CCF
	Road Maintenance Deposit	\$ 0.00/CCF
		\$13.72/CCF

E. Sale Slash Disposal

Yarding of Unutilized Material (YUM):

CT 6.7# requires the removal of all unutilized pieces of green spruce having a large end diameter of 8 inches or larger and at least 8 feet in length.

$$\begin{aligned} \text{Volume of live spruce YUM} &= 356 \text{ CCF gross} - 278 \text{ CCF net} &&= 78 \text{ ccf} \\ &78 \text{ ccf} \times 25\% &&= 19.5 \text{ ccf} \end{aligned}$$

Yarding (<i>skid</i>) costs (FSH 2409.22 Section 42)	= 19.5 CCF x \$23.45	= \$457.28
Decking (<i>load</i>) costs (FSH 2409.22 Section 42)	= 19.5 CCF x \$5.43	= <u>\$105.89</u>
Sub-total YUM costs		= \$563.17
Timber Purchaser Overhead costs (31.54%)		<u>x 1.3154</u>
Total YUM Costs		= \$740.79

\$740.79/278 CCF = \$2.66/CCF ES Sawtimber for YUM

Total Slash Requirements:

Appraisal Groups	ES
Yum Costs	\$2.66
Total Slash Costs (line 20 of 2400-17)	\$2.66

F. Temporary Roads

A unique situation exists with temporary roads for this salvage harvest. There are existing temporary roads that were built during the original Willow Timber Sale (green tree group selection) entry in 2011. These roads were closed and will require re-opening to facilitate salvage harvesting. Due to this consideration, the standard road

construction cost calculation procedure does not apply for the re-opening activity. However, they do apply to the closure activity. An estimate of equipment time and labor will be used for this appraisal item.

1) Temporary Road Re-opening

Assumptions: 0.93 miles of temporary road to be reopened.

Production is assumed to be 0.5 miles per day.

Mobilization costs are included in item 2 of the Road Maintenance cost estimate

Inflate rates 1 year (2012 rates → inflate to 2013)

10 hour days.

Project Time: 0.93 miles to re-open

0.5 miles per day

1.9 days of work – round to 2 days

<u>Work Item</u>	<u>Work Unit</u>	<u>\$ Rate / Work Unit</u>	<u>Hours / Day</u>	<u>Days</u>	<u>Item Cost</u>
General Laborer	Hours	18.20	10	1	\$182.00
Dozer Operator	Hours	\$35.05	10	1	\$350.50
1-Ton 4x4 Service PU	Hours	\$45.43	2	1	\$90.86
D7H DS Cat Dozer	Hours	\$173.32	10	1	\$1,733.20
SUBTOTAL =					\$2,356.56

Subtotal \$2,356.56

Less overhead profit and risk (23%) \$542.01

\$1,814.55

Inflation (1 year 3%) \$1,868.99

TPOH Increase (31.54%) \$2,458.47

Total Temp. Road Re-opening cost	\$2,458.47
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2) Temporary Road closure

Seeding

Miles of Temporary Road	0.93 miles
Acres of Seeding per Mile	1.69 acres/mile
Cost for seeding with no mulch or fertilizer	\$275.00/acre
Percent Labor	30%
Davis-Bacon adjustment factor	0.92
Adjustment factor for wage differentials	0.93
Seeding Cost per Mile	\$397.64 / mile

Total Cost = \$397.64 / mile x 0.93 mile = **\$369.80**

Closure:

Miles of Road	0.93 miles
Outslope Road	\$1,000.00 / mile
Effectively Block Roadbed	\$550.00 / mile
Percent Labor	20%
Davis-Bacon adjustment factor	0.95
Adjustment factor for wage differentials	0.96
Cost per mile of Road Closure	\$1,413.60

Total Cost = \$1,413.60 / mile x 0.93 mile = **\$1,314.65**

Drainage:

Feet of Temporary Road	4,910 feet
1 Dip per 500ft of Road (FSH 2509.25, 13.3)	10
Cost per Dip	\$105.00
Tot Drainage Structure Cost	\$1,050.00
Davis-Bacon adjustment factor	0.95
Adjustment factor for wage differentials	0.95
Total Drainage Costs	\$947.63

Cost per Structure \$94.76

Drainage cost = 10 x \$94.76 = **\$947.60**

Total Temporary Road Closure Costs

Total Cost of closure	\$2,632.05 → (\$369.80 + \$1,314.65 + \$947.60)
-Profit 10%	<u>\$ 263.21</u>
	\$2,368.85

Increase for TPOH 31.54%	<u>\$3,115.98</u>
Total Cost (road closure)	\$3,115.98

Total Temporary Road Cost (\$2,458.47 + \$3,115.98) / 278 CCF = **\$20.05/CCF**

G. Unusual Adjustments (FSH2409.22, 51.6)

Deteriorating Live Wood and Dead Wood Adjustment. (memo: Direction for Selling Dead Timber, Aug. 11, 2004)

Deteriorating Live Sawtimber Adjustment - there were no live trees included in this timber sale

Dead Sawtimber Adjustment

Assumptions:

All of the dead true fir and Engelmann spruce sawtimber will be considered "older dead" by the time the contract is made with the purchaser. An unusual adjustment of 0.5 will be made to the dead timber. The adjusted base period price is \$39.97 for Engelmann spruce sawtimber and \$32.72 for true fir.

$(\$55.13/\text{CCF}) \times (0.5) = \$27.57/\text{CCF}$ unusual adjustment for 264 CCF of dead Engelmann spruce sawtimber

$(\$40.32/\text{CCF}) \times (0.5) = \$20.16/\text{CCF}$ unusual adjustment for 14 CCF of dead true fir sawtimber

ES Dead Sawtimber Adjustment = **-\$27.57/CCF**

TF Dead Sawtimber Adjustment = **-\$20.16/CCF**

Hauling Fuel Cost Adjustment

(see Bulletin No. BU230413a - zone 3 for description).

The round trip haul mileage for this sale is 100 miles. An unusual adjustment of \$0.001/mile/CCF is authorized in the Region 2 appraisal bulletin.

Hauling Fuel Cost Unusual Adjustments = $\$0.001 * 100 \text{ miles} = +\$0.10/\text{CCF}$ for ES and TF sawtimber. This is a negative adjustment shown on line 26 of the 2400-17.

Logging Fuel Cost Adjustment

(see Bulletin No. BU230413a - zone 3 for description).

An unusual adjustment of -\$0.48/CCF is authorized in the Region 2 appraisal bulletin.

Total Unusual Adjustments:

ES Unusual Adjustment = $\$27.57 - \$0.10 + \$0.48 = -\27.95

TF Unusual Adjustment = $\$20.16 - \$0.10 + \$0.48 = -\20.54

Short Haul (quality) Adjustment

(see Bulletin No. BU230413 - zone 3 for description).

For all sales in zone 3, a positive haul cost adjustment for each species is capped at +\$25.00.

Short Haul Quality Adjustments = $\$39.39 - \$25.00 = -\$14.39/\text{CCF}$ for ES

H. Competition Factor (FSH 2409.22, 51.3, Bulletin No. BU230413)

There is no live timber included in this sale.

J. Base Rates (FSM 2431.31b)

Dead ES Sawtimber	\$5.00/CCF
Dead TF Sawtimber	\$3.00/CCF

K. Fire Precautionary Period (AT9)

June 1 to October 31

L. Fire Suppression Reinforcement (AT10)

From the farthest corner of the sale to the appraised mill is 52 miles. 50 miles will be used.

M. Purchaser's Obligation for Fire (AT11)

Western Area Wage Rate for AD-C, type 2 firefighter = \$13.24/hour (FSH 5109.34 – Interagency Fire Business Handbook, section 13.6, ID 5109.34-2007-1)

Estimate -Woods crew: 3 people
3 people x \$13.24/hr x 12 hr shift x 3 days = \$1,429.

Rounded to the nearest hundred = **\$1,400.00**

N. Termination Date (AT12)

Termination date for this sale will be **February 28, 2014**.

O. Bid Guarantee

The minimum bid guarantee shall not be less than 10% of the advertised value of the timber required to be removed (FSH 2409.18, 56.31)

Net Volume (Appraised and Contract):

ES Sawtimber	264 CCF
TF Sawtimber	14 CCF
Total Volume =	278 CCF

ES Sawtimber	\$5.00 x 264 CCF	= \$1,320.00
TF Sawtimber	\$3.00 x 14 CCF	= \$42.00
		\$1,362.00
		x 0.10
		\$136.20

Round up to next hundred → **\$200.00** Minimum Bid Guarantee

P. Performance Bond Calculation (AT14)

There are two methods of calculating the performance bond per FSH 2409.18, 54.1. The larger of the two calculations is used for the minimum performance bond.

Method 1 - Bond Based on 10% of Advertised Stumpage Value:

\$136.00 calculated in bid guarantee section.

Round up to next hundred → **\$200.00**

Method II - Bond Based on Penal Sum, work required for 1 logging season (w/o TPOH):

Sale Volume: 278 CCF / 1 operating seasons = 278 CCF		
*Lopping (10% of fall, buck cost):	\$17.00 x .10 =	\$1.70/CCF
*Waterbar Skid Trails (5% of skid cost):	\$23.45 x .05 =	\$1.17/CCF
**Road Maintenance:	\$1,162.86/278 =	\$4.18/CCF
YUM:	\$740.79/278 =	\$2.66/CCF
***Temporary Road Closure	\$3,115.98/278	<u>\$11.21/CCF</u>
	Total =	\$20.92/CCF

* Zone average appraisal cost R2 Amendment 2409.22-95-3, Sec. 42

** This is for road maintenance before TPOH and FSOH, and does not include rock replacement or regular maintenance deposits.

*** Temporary Road Closure costs include ripping and seeding and does not include TPOH and Profit.

$$\$20.92 \times 70 \text{ CCF} \times 1.245 \text{ FSOH} = \$1,464.40$$

Round up to next hundred → **\$1,500**

The greater of Method I or Method II is: **\$1,500**

**** Assume that only ¼ of the volume will be cut if there are problems because the contract area is small.

Q. Distribution of Funds

Dead ES Sawtimber	\$5.00 x 264 CCF	= \$1,320.00
Dead TF Sawtimber	\$3.00 x 14 CCF	= <u>\$42.40</u>
		\$1,362.00

Stumpage at advertised rates:	\$1,362.00
Less Essential KV:	<u>-\$1,130.00</u>
Remainder available for NFF, KV or SSF:	\$232.00
Contribution to NFF (\$0.25/CCF):	<u>-\$69.50</u>
Remainder available for KV or SSF	\$162.50
Less Non-essential KV:	<u>-\$162.05</u>
Remainder available for SSF:	\$0.00

