

Jackson Demonstratin State Forest
SOUTH FORK CASPAR MATRIX 2017 Timber Sale

SUMMARY OF SALE INFORMATION

Bid Date:	April 4, 2017	Estimated Net Volume:	8,191 MBF
Redwood	\$575.00 /Mbf (min bid)	THP Number:	1-16-124 MEN
Douglas-fir	\$100.00 /Mbf (fixed rate)	Phone:	(707) 964-5674
Whitewoods	\$100.00 /Mbf (fixed rate)	Information:	Jason Serna

Table 1. Estimated Total Volume to be Harvested (Bf)

Species	Gross	Net	% Defect & Breakage	% Comp.
Redwood	6,166,757	5,611,749	9%	68.5%
Douglas-fir	2,492,599	2,193,487	12%	26.8%
Whitewoods	438,612	385,979	12%	4.7%
Totals	9,097,968	8,191,215		100%

Table 2b. Estimated Volume, Cable and WLPZ (Bf) 63%

Species	Gross	Net
Redwood	3,956,254	3,600,191
Douglas-fir	1,525,757	1,342,666
Whitewoods	266,974	234,937
Totals	5,748,985	5,177,794

Table 2c. Estimated Volume, Tractor and ROW (Bf) 37%

Species	Gross	Net
Redwood	2,210,503	2,011,558
Douglas-fir	966,842	850,821
Whitewoods	171,638	151,041
Totals	3,348,983	3,013,420

Table 3. Estimated Acreage

	Plan acres
Cable	210
Tractor/Road ROW	105
Totals	315

Table 4. Harvest QMD by Species *(not including estimated cable corridor)*

Species	DBH (in.)
Redwood	24.9
Douglas-fir	21.8
Whitewoods	18.5

GENERAL INFORMATION

The list below is not intended to be all inclusive and all requirements of the South Fork Caspar Timber Harvest Plan (1-16-124 MEN) apply. Copies of Sections I and II of the THP are available by request from the State Forest headquarters or available via the internet, [ftp://thp.fire.ca.gov/THPLibrary/North Coast Region/THPs/THPs2016/1-16-124MEN/](ftp://thp.fire.ca.gov/THPLibrary/North_Coast_Region/THPs/THPs2016/1-16-124MEN/) . One complete copy will be provided to the LTO.

TIMBER HARVESTING PLAN

Item 14d

Marking of trees shall be either for harvest with blue paint, or retention with orange paint. Marking of trees shall be done by the RPF and/or his supervised designee(s)

Blue Mark : In areas where harvest trees are designated, marking shall be with blue paint using a breast height mark (horizontal stripe) and a stump mark (spot).

Orange Mark : In areas where retention trees are designated, marking shall be with orange paint using a breast height mark (horizontal stripe) and a stump mark (spot). All orange marked trees are not designated for harvest and shall be retained, and all other trees may be harvested and/or felled. In the two variable retention units, all living trees not marked for retention, regardless of merchantability or size (1 inch or greater at DBH), are to be felled prior to completion, though the felling may be subsequent to the harvest. Snags are not required to be felled except as required for safety or fire considerations.

Unmarked : In instances where a tree is “unmarked”, this may be indicated by either black paint placed over the prior paint, OR a circle at breast height and at the base of the tree in blue or orange paint.

Trees of Merchantable size (14in. DBH) not designated for harvest may be felled in the following situations:

- 1) To provide safe operating corridors for skyline cable operations. See CABLE CLEARANCE TREES below, Item 14g.
- 2) To provide stumps for cable-rigging purposes.
- 3) Within road and landing right of ways as marked.
- 4) To allow construction of tractor roads.
- 5) Compliance with Title 8 CCR, Logging and Sawmill Safety Orders.

Item 14f

Felling of hardwoods may occur incidental to operations, as necessary for safety, yarding, or road construction. Any harvested hardwood may be yarded to the nearest landing.

Slash generated at landings shall be spread on landings, skid trails or spur roads, chipped, placed in a burn pile or removed in a manner which will leave previously existing roads passable by logging trucks.

Item 14g

As per 14 CCR 914.1, felling shall adhere to the following:

914.1(b) – Desirable residual trees and tree seedlings of commercial species shall not be damaged or destroyed by felling operations, except where unavoidable due to safety factors, lean of trees, location of obstructions or roads, or lack of sufficient openings to accommodate felled trees.

914.1(c) – Trees shall be felled in conformance with watercourse and lake protection measures incorporated in the Timber Harvest Plan and consistent with Article 6 of these rules. See Item 27(j) regarding exceptions for harvesting unmarked trees in the WLPZ in regards to Cable Corridors, access to map (remediation) points and completing map point work

916.3(e) : Trees cut within the WLPZ shall be felled away from the watercourse by pulling or other mechanical methods if necessary, in order to protect the residual vegetation in the WLPZ. Exceptions may be proposed in the THP and used when approved by the Director.

Due to the presence of watercourses in such close proximity that falling away from one is effectively falling towards another, an exception is proposed under Item 27(C).

DIRECTIONAL FALLING : As a first course of action, Wedges, jacks and cable pulling methods shall be used as feasible to direct the fall of trees away from watercourses, and sensitive areas, to minimize damage to regeneration and residual timber, to minimize breakage, and to fell to lead.

Item 27(c) : The following practice is proposed : Within any WLPZ, a tree shall be directionally felled parallel, quartered away or felled away from the nearest watercourse. The tree shall be felled such that no part of it's crown or bole falls within any Class I – III watercourse.

914.1(a) – To the fullest extent possible and with due consideration given to topography, lean of trees, landings, utility lines, local obstructions, and safety factors, trees shall be felled to lead in a direction away from watercourses.

Item 27(c) : The following clarification and restriction is proposed on Class IIIs : Trees may be felled towards Class III watercourses only if their canopy shall be completely clear the channel. If the tree must be felled across a Class III, this may only be done if the bole completely spans the watercourse. Please see Section III, Item 27 for 1-5 and the explanation and justification.

Per 916(3)(c)...”debris deposited during timber operations shall be removed or stabilized before the conclusion of timber operations, or before October 15.”

The additional restriction is placed on organic debris from falling or yarding which inadvertently is deposited in a Class I, II, or III watercourse : Any such debris shall be removed by hand as soon as safe operations allows.

914.1(d) – Felling practices shall conform to requirements of 14 CCR 919.2 to protect bird nesting sites.

TRADING TREES:

There shall be no trading of trees without pre-approval of the plan submitter or their designee.

CABLE CLEARANCE TREES:

Any tree (within the THP area only) may be harvested/felled if necessary for cable clearance, except for trees located within a WPLZ. Trees located within a WLPZ shall not be felled for cable corridors unless they directly impact the safety of cable-yarding operations, these trees felled for safety may be harvested. Compliance with all other applicable Forest Practice Rules and requirements in the THP is required.

TRACTOR ROAD CLEARANCE TREES:

Unmarked Trees located at or along access routes to map points may be removed as necessary for safety and required equipment operations at the map point. This includes WLPZ and Channel Zone trees. See Item 27(j).

TREES SUBSTANTIALLY DAMAGED BY LOGGING OPERATIONS: Damaged trees may not be felled if within a WLPZ, if marked for retention, or if the damaged tree has a cavity potentially used by wildlife. Otherwise, merchantable young growth trees damaged during timber operations shall be felled and yarded as approved and directed by the plan submitter.

DOWNED TREES: There shall be no cutting or removal of existing unmarked down trees or logs. These logs may be moved if necessary for clearing truck road rights-of-way and as otherwise necessary to harvest the

designated timber. If windthrow of merchantable trees occurs in the logging area prior to completion of operations, windthrown trees outside of the WLPZ may be harvested upon approval of the plan submitter.

Item 16

Cable Yarding

- No cable corridors shall be situated such that logs are yarded directly up or down watercourse channels.
- With prior approval of the Plan Submitter, the LTO may cable yard any area designated for ground based yarding operations provided it will afford equal or greater protection to the soil and residual stand.
- Tailholds located outside the plan boundary shall be considered part of the logging area. Where tailholds are located outside the plan boundary, stumps shall be used to the extent feasible. Live trees may be used for tailholds where no suitable stumps exist.

Tractor Yarding

- Equipment Limitation Zones shall be observed within 30 feet of Class III watercourses when slopes are 30% or less and 50 feet when slopes are greater than 30%. This regulation shall be observed for all tractor yarding portions of this Timber Harvest Plan. This is flagged with Red & White Flagging in the tractor portions of units.
- Ground Lead : Tractor sited on tractor ground or on logging or tractor roads may yard Cable ground by use of winches.
- Heavy Equipment operations in Cable Areas : Tractor roads in cable areas are shown on the map. They offer access to Map Points(MP) for remediation work. In each of these cases, the tractor road in cable area does not need to be bladed wide open, and so shall be opened and cleared to the minimum extent necessary for conduct of operations.
- Unstable Areas : Where ground-based tractor operations are proposed on unstable areas, equipment shall be restricted to existing skid trails or those flagged by the RPF prior to operations on that unstable area.

Item 23

Year-round wet weather restrictions apply and shall be adhered to. A winter operating plan is included in Item 23.

Item 25

New road construction, reconstruction and road abandonment is proposed.

Prior to commencing road construction : The LTO shall ensure the equipment operator tasked with the construction and the RPF responsible for advice have conducted an onsite meeting regarding the roads, crossings and landings to be built.

Logging roads to be constructed shall:

- Be outsloped where feasible and drained with waterbreaks and/or rolling dips in conformance with other applicable Forest Practice Rules.
- Be hydrologically disconnected from watercourses and lakes to the extent feasible to minimize sediment delivery from road runoff to a watercourse, and reduce the potential for hydrologic changes that alter the magnitude and frequency of runoff delivery to a watercourse.
- Include adequate drainage structures and facilities necessary to avoid concentrating and diverting runoff, to minimize erosion of roadbeds, landing surfaces, drainage ditches, sidecast and fills, to minimize the potential for soil erosion and sediment transport, and to prevent significant sediment discharge.
- Be no wider than a single-lane compatible with the largest type of equipment specified for use on the logging road, with adequate turnouts provided as required for safety, except where wider road dimensions are required by existing contracts with a federal agency.

Landings to be constructed or to be reconstructed shall:

- Be no larger than one-quarter acre.
- Avoid construction on slopes greater than 40 percent.
- Landings may be smaller than the marked right of ways at the LTO's discretion.
- Landings adjacent to Control Watersheds (THP+Red flagging) shall be bermed and or sloped to drain away from the control watershed.

Excavator End-Haul

- See Item 24(e)

Road Right of Ways

- Road and landing right of ways are marked in the field. See Flagging Code, Item 38. The RPF responsible for advice can adjust the designations to meet site specific considerations.

Item 26

The following measures are incorporated into the plan to stabilize soils, minimize soil erosion, and prevent discharge of sediment into waters in amounts deleterious to aquatic species or the quality and beneficial uses of water in WLPZ areas and Class III watercourses.

All Class I and Class II Watercourses

- The WLPZ shall be clearly identified on the ground by the RPF or his supervised designee prior to the pre-harvest inspection. WLPZ boundaries are identified with blue/white striped "WLPZ" flagging and solid orange flags.
- Trees to be harvested within the WLPZ outside of cable corridors shall be marked prior to the pre-harvest inspection.
- Unmarked trees within the WLPZ may be felled/harvested for cable clearance. Harvesting of unmarked trees shall comply with Section II, Item 14g. See Section II and III item 27 for additional information.
- The WLPZ shall be considered an equipment exclusion zone except for road & map point work.
- Trees cut within the WLPZ as allowed per 916.9(e)(1) may be harvested.
 - 916.9(e)(1)(C) Actions necessary for the protection of public health, safety and general welfare.
 - 916.9(e)(1)(D) Actions to allow for full suspension cable yarding when necessary to transport logs through the channel zones.
- At least 75% surface cover and undisturbed area shall be retained to act as a filter strip for raindrop energy dissipation and for wildlife habitat.
- Native hardwoods shall not be harvested in the WLPZ except for cable corridors, incidental damage due to falling and yarding operations and safety concerns.
- Accidental depositions of soil or other debris in lakes or below the watercourse or lake transition line in waters classed I, II, and IV shall be removed immediately after the deposition.
- Trees cut within the WLPZ shall be felled away from the watercourse by pulling or other mechanical methods if necessary, in order to protect the residual vegetation in the WLPZ.
- No salvage logging shall occur.
- Harvesting within the WLPZ will be limited to removal of codominant, intermediate, or suppressed trees to promote growth on larger diameter dominant trees and improve LWD recruitment potential.

Item 30

Slash created and trees knocked down by timber operations within 100 feet of the edge of County Road 408, County Road 409, and JDSF Road 700 shall be treated for hazard reduction. Treatment shall consist of lopping as defined in 14 CCR895.1: Severing and spreading of slash so that no part of it remains more than 30" above the ground (Ref. Sec. 4551.5,PRC).

The post harvest state of roads will be specified in the logging contracts. This may require the LTO to install a gate, a barrier such as large root wads/tank traps/large rip rap, or tractor walk slash into the road surface to make them impassable.

Item 32

Northern Spotted Owl

No timber operations shall occur until protocol NSO surveys have been completed for the current, and/or immediately preceding survey period, the results have been provided to CAL FIRE to be evaluated for consistency with the plan and the protocol, and the results have been amended into the plan. Year 1 (2015) survey information is included with the plan.

Marbled Murrelet

The road 640 Marbled Murrelet habitat is "probable absence". Habitat trees shall not be designated for harvest. Post-Survey Consultation 13-R1-CTP-018-MAMU is included in Section V.

There is an active Marbled Murrelet nest stand in Russian Gulch State Park. Extensive fieldwork by JDSF Senior Wildlife Biologist Tina Fabula in conjunction with CDF&W Adam Hutchinson confirmed habitat extended over Road 409 and into JDSF. The THP boundary has been established at a distance measured at 300 feet or greater from the habitat edge trees.

A Consultation letter is included as part of Section II, Item 38. The Protection measures have been copied verbatim from that document.

Item 33

Snags that pose a safety hazard to workers in the harvesting area will be felled. To provide protection and benefits for wildlife, all other snags shall be retained.

Item 38

ROAD MAINTENANCE

The RPF shall designate the LTO(s) responsible for road and landing maintenance in the THP area(s) and on appurtenant road(s); this action shall be in the form of a minor deviation (14 CCR 1040) submitted in writing to the Director prior to any road and/or landing. If multiple LTOs are listed, their responsibilities shall be defined in the minor deviation. This measure is to clarify the LTO(s) responsible for road and/or maintenance. If the RPF on the THP does not have the authority under THP Item 13(c) to submit minor deviations (commonly called minor amendments) the Plan Submitter shall be responsible for accomplishing this measure.

MAP POINTS.

One or more LTOs may be designated responsibility for the map point work. This action shall be in the form of a minor deviation (14 CCR 1040) submitted in writing to the Director prior to any map point work. If multiple LTOs are listed, their responsibilities shall be defined in the minor deviation. If the RPF on the THP does not have the authority under THP Item 13(c) to submit minor deviations (commonly called minor amendments) the Plan Submitter shall be responsible for accomplishing this measure.

The following table describes the flagging (ribbon) designations used during THP development.

DESIGNATED ACTIVITY	FLAGGING COLOR
Timber harvesting boundary	Pink-glo Site-Mark® "TIMBER HARVEST BOUNDARY" in black lettering
THP Boundary Adjacent to Control Watershed	Solid Red flagging with Pink "TIMBER HARVEST BOUNDARY"
Class I, II, and Springs / Wet Area WLPZ	Blue/white stripe Site-Mark® "LAKE AND WATERCOURSE PROTECTION ZONE" in black lettering & solid orange
Class I watercourse	Blue (not flagged on Caspar Creek or South Fork Caspar Creek)
Class II watercourse	Blue/white stripe
Class III watercourse	Blue/white polka-dot
Tractor road (skid trail)	Yellow Site-Mark® "SKID TRAIL" in black lettering
Tractor/Cable boundary	Red/white stripe
Silviculture Change	Either Tractor/Cable, or WLPZ flaglines OR Lime Green Site-Mark® "Silviculture"
Swale Exclusion	Solid red flagline in swale – no tractor presence in swale.
Equipment Exclusion Zone (EEZ) / Equipment Limitation Zone (ELZ)	Solid red with solid white
Sale Unit Boundary	Solid pink with solid lime
Skyline profile	Red/white polka-dot with solid white
SUBWATERSHED BOUNDARIES	
Gauged watershed boundaries	Research : Solid white
Control Watershed boundary	White/Orange Checkerboard tied with lime OR Solid red flagging along county roads 408 and 409
ROADS AND LANDINGS	
Road centerline	Orange Site-Mark® "TRUCK ROAD" in black lettering, hung at proposed centerline of new logging roads, and on closest vegetation on reconstructed tractor roads.
Road grade	Horizontal solid orange flag on or near road alignment, projects to 5 feet above the expected grade at centerline of road.
Road End	Three orange "TRUCK ROAD"
Road Split	Two orange "TRUCK ROAD"
Suggested Landing location	Three solid orange flags
Road/Landing right of way limit	PAINT : Two vertical orange or yellow paint markings
Other	
Research Plots	Purple, White/Orange Checkerboard
Map points/message/note	Pink/black stripe with White (combination) and / or Yellow Paint
Unstable areas, protection zones	Orange/white stripe Site-Mark® "SPECIAL TREATMENT AREA" in black lettering & solid orange
Botanical Protection Area	Lime Green plus info in pen
Property Line	Red "Property Line" (Site Mark, Surveyor use only) and/or paint blazes.
Two dangling flags	General symbol for flagline making sharp turn or splitting
Three dangling flags	General symbol for flagline ending. In case of streams, new flagline may start.

OTHER FLAGGING : There are a variety of flagging colors and combinations used over the years by researchers in the watershed. These are not relevant to this THP. Flagging for prior THP efforts has been sought out and removed, and *should* not be a source of confusion. If the LTO is concerned by flagging, the LTO should consult with the RPF responsible for advice and confirm that the flagging is research related, or remnants from prior THP work, and not THP flagging.

OLD PAINT : There is some scattered examples of very old marking paint, faded to a white or a blue-white. All such encountered have been obviously decades old. The LTO is to instruct the fallers that such paint is to be disregarded. The LTO is reminded there is an RPF responsible for advice to resolve any differences.

Timing constraints :

Due to the presence of neighbors, the Horse Camp entrance of Russian Gulch State Park, and the “Caspar Creek Learning Community” along road 409, the following limits are placed :

For that portion of the harvest area south of South Fork Caspar Creek, and west of the RIC watershed.
Timber harvest operations may only occur between 6:00 am and 5:00pm, Monday-Friday.

Log Hauling on County Road 409 :

Use of the County road is also limited by the Marbled Murrelet considerations.

Paved Portions :

Loaded Log truck traffic may only occur between 6am and 6pm.

To avoid school traffic, during the school year the following applies :

Log trucks may not use this road from 8:30-9:30am, Monday-Friday

Log trucks may not use this road from 12:30,-1:00pm, Monday-Friday,

Log trucks may not use this road from 3:00-4:00pm, Monday-Thursday

School year can be defined at Casparcreek.org/Events, or Mendocino School District calendar.

Between Memorial day and Labor day, log hauling is limited to Monday-Friday.

Unpaved Portions :

Loaded Log truck traffic is limited to 15mph on the unpaved portion of the County Road

Between Memorial day and Labor day, hauling is limited to Monday-Friday.

LTO ADVISED : The RIC and WIL Control watersheds border County Roads 408 and 409. No operations may occur in these watersheds beyond the traveled surface of the County road and existing pullouts. This includes parking equipment, storage of road rock, etc. To assist in identifying the location of the ROC and WIL control watershed, red flagging has been hung along the roadside.

TIMBER SALE AGREEMENT

Item 2D

All timber scaled by "third party" scaling organization, using Revised Scribner Decimal C Log Rule.

Item 3A

Unless written extension of time is granted by the Director of Forestry and Fire Protection, within Units 2 and 3 all merchantable timber designated for cutting shall be paid for and felled, and all other timber operations, shall be completed by October 15, 2017. In addition, at least 1.5 MMBF shall be paid for, cut and yarded within the cable yarding area within harvest unit 1, by June 30, 2018.

All remaining merchantable timber designated for cutting shall be paid for and felled, and all other timber operations shall be completed by November 15, 2018. This Agreement shall terminate on June 30, 2019, by which date all requirements of the Agreement must be completed.

Item 3B

The PURCHASER shall notify and obtain approval from the STATE in advance on each occasion of conducting timber operations in the sale area on weekends or State holidays.

Timing restrictions apply to logging truck traffic on County Road 409. On the paved portion of County Road 409, logging trucks may only travel between 6 am and 6pm. To avoid school traffic during the school year, logging traffic may not use the paved section of County Road 409 from 8:30-9:30 am and 12:30-1:00 pm, Monday thru Friday and 3:00-4:00 pm, Monday thru Thursday. On the unpaved portion of County Road 409, logging trucks traffic is limited to 15 mph between Memorial Day and Labor Day, hauling is limited to Monday thru Friday. Additional restrictions for Marbled Murrelet (MAMU) for log hauling along County Road 409 are described below and in THP 1-16-124 MEN, Section II, Item 32.

Item 7

Production and cost data with respect to all timber harvesting operations and other forestry activities. Required data includes person-hours and equipment-hours spent on each activity, and applicable rates for employees, machines and supervision, and costs for any materials or services needed for completion of activities.

Item 10

The minimum log dimensions for utilization is 10 feet in length and 8 inches in small-end diameter.

Any log segment presented for scaling shall be scaled as merchantable which has a net volume of at least 10 board feet, providing a net merchantable scale of at least 25 percent of the total volume.

Item 11B

Payment for scaling and reporting services performed by the scaling organization shall be made by the Purchaser.

Item 11J

Conduct a minimum of one check scale per month per scaler by the scaling organization, during the operating season, to document scaler proficiency.

Item 11P

Weekly reports of faller days and volume by unit. This information to be available for collection by the Timber Sale Officer or delivered to State Forest HQ no later than the following Tuesday.

Item 13A

All terms, provisions and requirements of the Forest Practice Rules and the Timber Harvesting Plan (1-16-124 MEN) are made part of the Timber Sale Agreement.

On completion of operations satisfactory to the Timber Sale Officer, the operator shall certify by letter to the STATE, all operations are complete and comply with Forest Practice Rules and THP.

Item 13A1

A pre-work conference to be attended by representatives of the State and the Purchaser, including subcontractors is required before operations can begin.

The Purchaser is responsible to ensure all contractors are provided with relevant applicable documentation.

Item 13A2

No timber operations shall be conducted after January 31 of any year until the State or the Purchaser has completed required surveys for northern spotted owls, and extension of the No-Take determination has been received from the appropriate reviewing agency.

Timber operations include restrictions to marbled murrelet (MAMU) habitat, including noise restrictions within habitat areas along County Road 409 and timber operation restrictions to the Road 640 MAMU habitat area within harvest unit 1.

Item 13A3 & A5

Flagging of all skid trails required at least two weeks in advance and notify the Timber Sale Officer for approval. Minimum distance between new skid trails is 100 feet, unless waived by the Sale Officer.

Item 13A7

Merchantable trees felled and bucked to log lengths, limbed to the 8-inch top, and the top bucked at the time of felling.

Item 13A8

All slash created by timber operations within 100 feet of county road 408 shall be lopped to the extent that no portion shall remain over 12 inches above the ground for the first 50 feet and 24 inches above the ground for the remaining 50 feet and within 100 feet of JDSF permanent road 640 shall be lopped to the extent that no portion shall remain over 24 inches above the ground. All slash created by timber operation within 50 feet of all other seasonal and temporary roads shall be lopped to the extent that no portion shall remain over 24 inches above the ground.

Item 13A9

Maximize the extent of spreading slash to avoid or minimize the need for piling and isolating slash for burning. Logging wastes on landings on permanent and seasonal roads shall be segregated into large materials which can be utilized by firewood cutters. Material at least 8 inches in diameter and 6 feet in length is considered suitable for firewood.

Item 13A12

Location of cable corridors will be flagged, mapped and approved by Sale Officer prior to rigging. Distance between cable corridors, no less than 200 feet measured from the back of cable road.

Item 13A16

No permanent painted messages. Use temporary signs to be removed once their function is complete.

Item 16

While conducted timber operations within the South Fork Caspar THP (1-16-124 MEN), no heavy equipment, vehicles, tree felling, tailholds or any other ground disturbances are allowed within the boundaries of gauged watershed areas, shown on the attached Timber Sale Agreement Maps (Exhibit A, Attachment 2).

Tail holds shall not be located within the flagged "Thinning Study" research area west of road 600 as shown on the attached Timber Sale Agreement map (Exhibit A, Attachment 2) without approval of the Timber Sale Officer. The research area boundary is flagged with a combination of orange and white checkered and solid yellow flagging. In the event tailholds are placed above flagged areas, the PURCHASER shall protect measure trees to the highest extent feasible from rigging cable yarding lines through the thinning study site. Measure trees are identified with aluminum tags and/or white colored tree paint.

Item 17A3

Road width is 14 feet including 1 foot shoulder on each side of a 12 foot traveled surface. Width may be wider on curves.

Item 17A6

Seasonal roads will be outsloped (2-5%) without a berm or ditch. Rolling dips will be constructed on road grades of 7% or less during road construction at locations proposed by the Purchaser, approved by the Timber Sale Officer.

Item 17D

All required culvert installations on existing roads shall be completed prior to log hauling on those roads, and not later than October 15 of the first year of operations in the sale area unless otherwise approved by the Sale Officer. Culvert and downspout installations on roads to be constructed shall be concurrent with road construction and prior to their use for hauling timber. All map points associated with Roads 600, 600B, 601, including map points 124, 125, 129, 130, 134, 148, 149, 219, 224, 225, 226 and 227, shall be completed prior to the beginning of pond clean out work described in Item 18. As described above in Item 3A, within Units 2 and 3 all timber operation shall be completed by October 15, 2017, including work at map points B, 42, 43, 45, 47, 48 in unit 2 and map points 62, 289, 290 and 324 in unit 3.

Item 17H

Maintenance work to be done within 15 days of end of hauling operation on each road and immediately on completion of hauling on any road after October 15.

Item 17J

The PURCHASER shall construct, reconstruct and maintain approximately 1.7 miles of seasonal truck road, shown on the Timber Sale Agreement Map (Exhibit A, Attachment 2) as roads, Rs-1, Rs-2, Rs-3, Rs-4, Rs-5, Rs-6, Rs-7, Rs-10, Rs-16 and Rs-17. Where roads Rs-7, Rs-9 and Rs-16 leave the sale boundary and into gauged watersheds, all road work shall cease prior to entering gauged watershed areas to comply with Item 16 above, as shown on the Timber Sale Agreement Map (Exhibit A, Attachment 2).

Item 17K

The PURCHASER shall comply with an encroachment permit from the Mendocino County Department of Public Works; shall provide all needed material, temporary and permanent signs, equipment, labor, traffic control and supervision; and shall construct a encroachment off County Road 408 at the intersections of new proposed JDSF Roads Rs-16 and Rs-17 and at an existing landing/rockpit, shown on the Timber Sale Agreement Map (Exhibit A, Attachment 2).

Item 17P

The PURCHASER shall abandon end of Road 645, end of Road 649 within harvest unit 1 and Road 650A just outside of harvest unit 2.

Item 17S

The PURCHASER shall perform road work on existing Road 500 as indicated on the attached Road 500 Work Map (Exhibit A, Attachment 2).

Item 17T

The PURCHASER shall, to the satisfaction of the Timber Sale Officer, remove existing gate and provide and install a new "heavy" iron pipe gate on Road 640 at the intersection of County Road 408.

Item 18 – South Fork Caspar Pond Clean-Out Project

The PURCHASER shall remove and end-haul stored sediment within the South Fork Caspar Weir Pond. All required removal and end-hauling of spoils shall commence no sooner than July 15, 2017 and to be completed no later than September 30, 2017.

Item 21

In addition to required fire tools complement, have available to the sale area for fire suppression purposes a "water wagon" or similar self-propelled vehicle of at least 1,000 gallon capacity. The "water wagon" shall be located within a 60 minute drive to the sale area.

Exhibit B – Item 1

A deposit of \$90,000 must be submitted with the bid.

Exhibit B – Item 3

Furnish STATE copies of Timber Yield Tax calculations and reporting forms.

Exhibit E – Item 4

Performance security of \$150,000 required prior to contract approval.