



# Sustainable Resources Institute, Inc.

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October 27, 2017

Dear Prospective Timber Marking/Cruising Bidder,

The Sustainable Resources Institute, Inc. (SRI) is accepting bids on several timber sale establishment projects on the Chequamegon - Nicolet National Forest:

- Richter Lake Marking/Cruising Contract – Medford-Park Falls Ranger District
- Mink PL Marking/Cruising Contract – Medford-Park Falls Ranger District
- Elean PL Marking/Cruising Contract – Medford-Park Falls Ranger District
- Cat Fever Marking/Cruising Contract – Great Divide Ranger District
- Benchmark Marking/Cruising Contract – Washburn Ranger District
- Butterfly Marking/Cruising Contract – Eagle River - Florence Ranger District
- Camp Norwid Marking/Cruising Contract – Lakewood – Laona Ranger District

This work is being conducted as part of a Stewardship Agreement, whereby the SRI administers the marking contracts using funds resulting from the Winding Trail Pine and Lake Louise timber sales. All communications, direction, and inspection related to this work will be conducted by SRI staff or representatives.

The Timber Marking Packets, including maps, specifications, and bid sheets for each marking contract can be accessed at [www.sustainableinc.org](http://www.sustainableinc.org). The Richter Lake Marking/Cruising Contract involves 229 acres of red pine thinning cut tree marking and sample tree cruising in 4 units.. The Mink PL Marking/Cruising Contract involves 109 acres of red pine thinning on cut tree marking and sample tree cruising on 2 units. The Elean PL Marking/Cruising Contract involves 341 acres of red pine thinning cut tree marking and sample tree cruising on 5 units. The Cat Fever Marking/Cruising Contract consists of 451.5 acres (15 units) of which 28 acres (2 units) are clearcut and the remaining 423.5 acres (13 units) are cut tree mark. All units will be sample tree cruised. The Benchmark Marking/Cruising Contract involves 605 acres of red pine thinning cut tree marking and sample tree cruising on 6 units. The Butterfly Marking/Cruising Contract is 500 acres of hardwood selection of cut tree marking and sample tree cruising on 6 units. The Camp Norwid Marking/Cruising Contract involves 478 acres (24 units) of oak and pine with 68 acres (3 units) of Shelterwood establishment leave tree marking, 45 acres (2 units) of Shelterwood cut tree marking, 355 acres (17 units) of pine thinning marking, and 10 acres (2 units) of clearcut with species designated, and all to be sample tree cruised.

Direct questions to Sustainable Resources Institute, 1353 W HWY US 2, Suite 2, Crystal Falls, MI 49920; 906.875.3720; [don@sustainableinc.org](mailto:don@sustainableinc.org) or [kari@sustainableinc.org](mailto:kari@sustainableinc.org). Thank you for your interest in the Countyline Timber Sale Establishment project. Bids are due no later than noon on December 1, 2017 according to the instructions on the bid sheet.

*Kari Divine*  
Sustainable Resources Institute  
1353 W Highway US 2, Suite 2  
Crystal Falls, MI 49920

# Elevan PL Timber Sale Establishment Highlights

This timber marking/cruising contract is part of a Stewardship Supplemental Project Agreement between Sustainable Resources Institute, Inc. and the USDA Forest Service. Funds generated from the Lake Louise and Winding Trail Pine Timber Sales will be used to award this timber marking contract.

- Project Area: On the Chequamegon – Nicolet National Forest, Medford - Park Falls Ranger District.
- This contract includes cut-tree marking/cruising on 341 acres of red pine thinning.
- The overarching goals of this timber sale are to remove trees to increase the stand quality and health and to improve stem quality.
- The contractor will submit for approval an operating plan that outlines the schedule of performance. Work must be completed by October 15, 2018.
- Payment for work will be by payment unit, with a 100-acre minimum for each payment. Payment will be made upon completion by the contractor and approval by Sustainable Resources Institute, Inc.
- All timber cruisers must be certified on the Ottawa and/or Chequamegon – Nicolet National Forests prior to doing any timber cruising and must maintain certification throughout the marking contract.
- A pre-work meeting is required.

Payment Unit	Est. Quantity (Acres)	Activity
1	58	Red Pine Thinning Marking
2	78	Red Pine Thinning Marking
3	89	Red Pine Thinning Marking
4	89	Red Pine Thinning Marking
5	27	Red Pine Thinning Marking
All	341	Cruise
Total	341	

Please visit [www.sustainableinc.org](http://www.sustainableinc.org) to download the marking specifications.

Direct questions to Sustainable Resources Institute, 1353 W HWY US 2, Suite 2, Crystal Falls, MI 49920; 906.875.3720; [don@sustainableinc.org](mailto:don@sustainableinc.org) or [kari@sustainableinc.org](mailto:kari@sustainableinc.org).

**Bids are due December 1, 2017 at 12:00 p.m. CST**

## ELEVAN PL TIMBER MARKING BIDDING SHEET

Due by: Noon (12:00 p.m. CST) December 1, 2017

Payment Unit	Est. Quantity (Acres)	Activity	Bid Price per Acre	Total Bid Price per Unit
1	58	Red Pine Thinning Marking		
2	78	Red Pine Thinning Marking		
3	89	Red Pine Thinning Marking		
4	89	Red Pine Thinning Marking		
5	27	Red Pine Thinning Marking		
All	341	Cruise		
Total	341			

**BY 12:00 P.M. CST – DECEMBER 1, 2017 - SEND BIDS TO:**

**Sustainable Resources Institute, Inc.**

Attn: Elean PL Timber Marking Project  
1353 W HWY US 2, Suite 2  
Crystal Falls, MI 49920 or  
(Fax) 906.875.3724 or  
[kari@sustainableinc.org](mailto:kari@sustainableinc.org)

Signed by: \_\_\_\_\_

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

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

Phone: \_\_\_\_\_

Representing: \_\_\_\_\_

E-mail: \_\_\_\_\_

***SRI reserves the right to reject any and or all bids.***

**Elevan PL Timber Sale Marking Contract Documents:****SCHEDULE OF ITEMS****ELEVAN PL MARKING/CRUISING CONTRACT****CHEQUAMEGON-NICOLET NATIONAL FOREST – MEDFORD-PARK FALLS DISTRICT**

Marking and Cruising – CONTRACT TERM DATE OF 11/01/2018

Red Pine Thinning, Cut-Tree-Mark/Cruise

Item No.	Harvest Unit No.	Est. Quantity	Unit
01	01	58	Acre
02	02	78	Acre
03	03	89	Acre
04	04	89	Acre
05	05	27	Acre
Total Acres		341 Acres	

**Total Acres      341**

Technical contacts: Esquibel, Gabriel -FS [gesquibel@fs.fed.us](mailto:gesquibel@fs.fed.us) (715)762-5188, Staudenmaier, Shane A -FS  
[ssaudenmaier@fs.fed.us](mailto:ssaudenmaier@fs.fed.us) (715)762-5109

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruising Agreement

**Supplemental Specifications**

Layout has been completed on 341 acres for the Eleven PL Marking & Cruising SRI Agreement. Unit boundaries are marked with one or two orange slashes above DBH, facing into the unit, and stump marks made with orange paint. Forest Roads 117 - School Road, FR 553 - Lake Eleven Road, and FR 598 serve as the unit boundaries and does not have paint along it. Some portions of payment unit 1 and 2 have only flagged line along swamp areas. The Forest Service has traversed all units with GPS equipment. The acreages determined by this traverse are considered final.

Access will be from Forest Roads 553 – Lake Eleven Road, and/or Forest Road 117 – School Road. All other roads may be accessed via ATV if needed with prior approval from Forest Service Representative.

All of the units will utilize *cut-tree-marking* for designating timber. All trees designated for cutting will be marked at breast height (4 – 7 feet above ground level) and will be marked with a single slash on two opposite sides of the tree so paint is visible from all directions. These trees require stump marks – one stump mark for trees tallied as pulp and two stump marks for trees tallied as saw.

A sample tree cruise will be used in all units. Sample groups and frequencies are provided in the following pages. For all cruise trees, the tree number from the cruise card will be painted on the tree. Additionally, flagging will be tied around the tree with all measurements for that tree written in permanent marker on the flagging. These requirements are necessary to ensure cruising is being done to standard. Cruise cards for each Harvest Unit will need to be submitted to Forest Service either prior to, or along with, request for payment of any Line Item.

General Specifications:

- Timber marking paint (Mainly Type C) will be furnished by the Forest Service in quart or gallon containers depending on district's inventory. **Contractor will keep a daily log of marking paint used and trees tallied for each sample group per day and will submit this log along with Cruise Cards when submitting a request for payment, or when requested by the Forest Service.** All empty marking paint containers will be returned to the Forest Service. A weekly reconciling of Contractor paint will be done by the Contracting Officer Representative either in the field or at the Park Falls Ranger Station. The Contractor will be responsible for providing all other equipment, including paint guns & ribbon.
- To insure tree marking and volume guidelines in the Timber Marking & Volume Estimating BOA (Basic Ordering Agreement) the Contractors are required to have a Quality Control Plan: When Contractor requests acceptance of work, contractor must insure he has used this Quality Control Plan and furnish any documents that support how he or she insured the work has been completed. An example of a Quality Control Plan can be: Checking the unit by putting in ten random sample plots of which you check: 1-original basal areas, 2- residual Basal areas (trees not marked), 3-stump marks and DBH marks on marked trees, 4-tree selection good or poor; 5- provide a sketched map showing where these plots are along with a ribbon tied at plot center in a color different to what was used for cruise tree identification will be established and turned in with cruise cards.
- **Stump marks, where required, should be placed on the lowest side of the stump, at ground level, on areas free from moss, ice, and snow in a location protected from skidder damage and low enough to intersect the ground.** Stump marks are extremely important to sale administration work and proper application is imperative.
- When marking next to a travel way, prescriptions will often require that paint be applied so as not to be visible from the travel way. In these situations, cut-tree-marks shall be one-sided near the travel way, facing away from the travel way, for approximately the first 25 feet. Stump marks should still be applied at the best location, as described above, even it is facing the travel way.
- Within the desired residual BA guidelines, mark to provide for efficient falling and skidding to the transportation system. Mark trees that would be damaged by larger trees that must be felled into them, or would have to be cut to get access to marked trees. Mark access routes 12 feet wide to accommodate forwarders, feller-bunchers, and processors as necessary throughout the stand, with particular attention to hillsides and the top of ridges and eskers. Skid trails on hillsides should be marked straight up and down the slope, not side hill. Ensure there is ample room for equipment to turn at the top and bottom of any hill. If physical features (such as swamps or ponds) prevent equipment from turning around at the bottom or top of a hill, do not mark any trees on that slope. Mark un-merchantable trees in skid trails or falling areas with an "X" at breast height and, if the stump diameter is estimated to be greater than 3", mark the stump, as well. Where possible, keep skid trail grades less than 15%.
- Mark trees appropriately to ensure no equipment will operate within 50 feet of the high water mark adjacent to all lakes and navigable perennial streams. For all other streams and woodland ponds, mark appropriately to ensure no equipment operates within 15 feet of the high water mark.

**Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement**

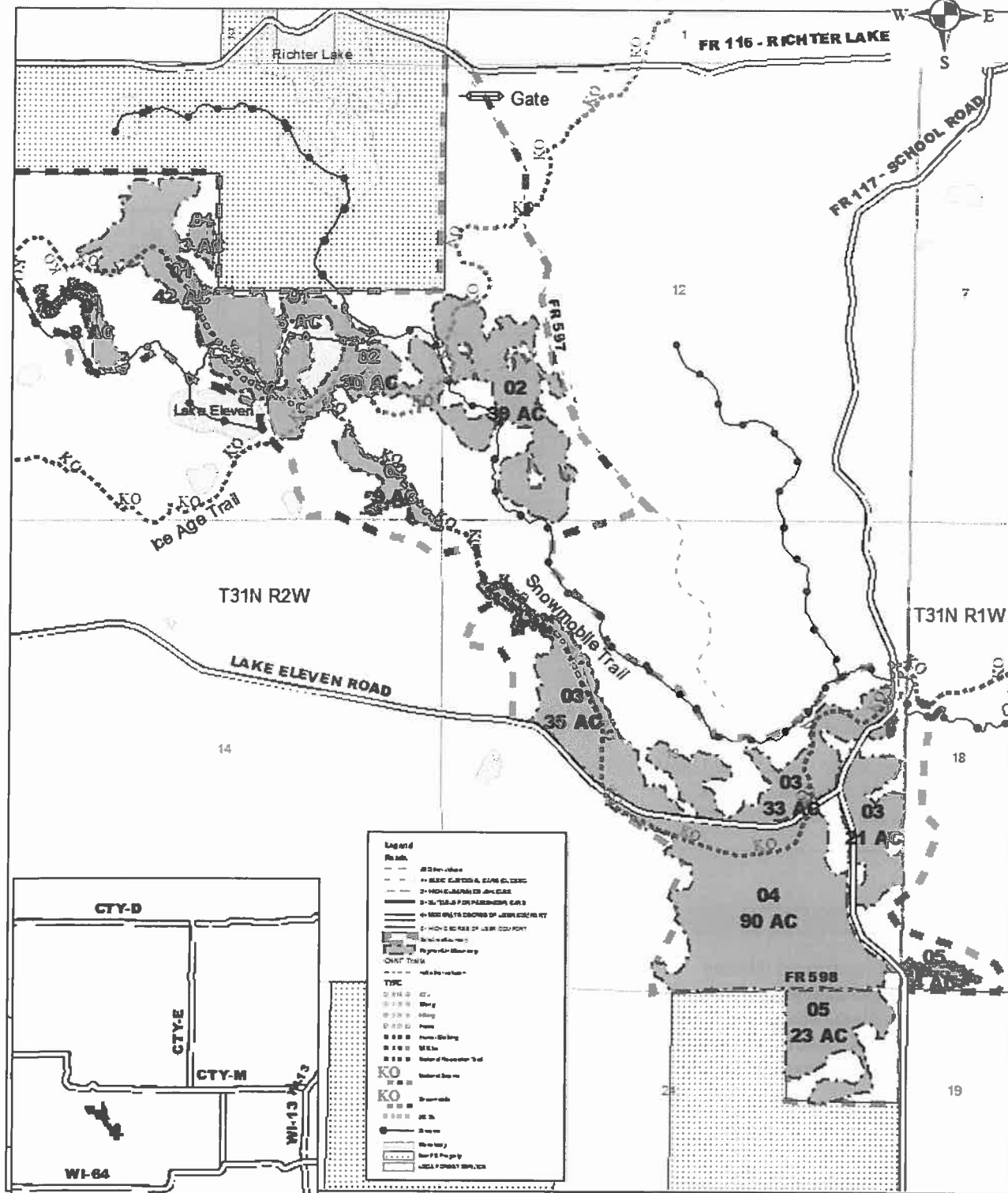
- When marking near established survey monuments, do not mark any established witness trees or any trees located between the witness trees and the survey monument. The objective is to prevent any damage to the survey monument by the operator. Inform COR of location of additional survey monuments found so they can be GPSed by Forest Service personnel.
- If any large stick nests are found by the contractor they shall notify the Contracting Officer Representative of the nest's location as soon as possible.
- Any cultural resources discovered during project implementation will be protected through contract requirements. Contractor will be required to stop work and promptly report any new discovery to the Contracting Officer Representative. The site will be evaluated and mitigation measures would be implemented as prescribed by a qualified heritage resources specialist.

**Map, Silvicultural Prescriptions (pages 3-32), & Sampling Intervals (pages 33-37) on following pages.**

**Chequamegon-Nicolet National Forest  
Medford/Park Falls Ranger District  
Elevan PL  
T31 R2W Sec 11, 12, 13, 24; T31 R1W Sec 18**

0.2 0.1 0 0.2 Mtes

Landlines are approximate SS 08/08/2017



Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruising Agreement

NEPA DECISION DOCUMENT	SALE NAME	PU	COMP-STAND
Chequamegon Red Pine Thinning EA	Eleven	1	3141-015

Stand #	Forest Type	Size Density	Acres	Total BA	Avg DBH	Habitat Type	Year of Origin	Site Index	Soil Type
015	02	09	4.4	140	12	Atm/Avwb	1940	70	Newot

**STAND DESCRIPTION**

**EXISTING STAND CONDITION - BA/AC BY SPECIES AND DBH**

LIVE TREE PER ACRES DBH PER ACRES

Diameter Classes

Species		Null	<1"	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32+	Total	GMD >0	GMD >=5
ACRU	TPA			153	68															221	2.4	
	BA/A			3	3															7		
PIRE	TPA					17	10	61	68	22										177	11.0	11.0
	BA/A					3	3	33	53	23										117		
PIST	TPA					17														17	6.0	6.0
	BA/A					3														3		
PRSE2	TPA			153																153	2.0	
	BA/A			3																3		
Total	TPA			306	68	34	10	61	68	22										568	6.5	10.6
	BA/A			7	3	7	3	33	53	23										130		

Stand 15- Basal area for red pine was 130 sq.ft. with the remainder of BA being hardwoods and snags. Red pine appears to be in decline. Uncertain if it is associated with storm damage and/or Armillaria root disease. White pine along shoreline appears to be doing well and not impacted by the red pine ailment.

**DESIRED CONDITION**

- To maintain and improve the health and vigor of red pine (and other forested conditions).

**SHORT TERM OBJECTIVES**

- Improve the health, growth, and quality of the residual trees by reducing stand density and thinning out diseased and poor-formed trees.
- Provide timber products to local operators

**LONG TERM OBJECTIVES**

- Prevent Annosus root disease
- Enhance tree diversity
- Recruit potential snags and down logs
- Provide timber products to local operators
- Revisit in 10-15 years for another thinning



Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

**MARKING GUIDE: (example)**

Name of Treatment - <i>Thinning</i>	Residual BA/Ac : 90-100	Estimated Treatment Acres – 4.4 (Traversed acres if available)
<p><b>Priorities for removal:</b></p> <ul style="list-style-type: none"> <li>• High risk trees (poor small crowns, low vigor, poor form, animal damage, or logging damage)</li> <li>• Improve spacing to residual crop trees</li> </ul> <p><b>Species Priority</b></p> <ul style="list-style-type: none"> <li>• Mark for removal red pine to 100BA.</li> <li>• Areas of low red pine stocking retain 90 sq.ft. of BA.</li> <li>• Mark hardwood areas/pockets to 80 sqft.</li> <li>• Focus on removing white/green ash. Mark maples with poor form or defect. Mark paper birch with declining crowns.</li> <li>• Retain some hardwoods for diversity</li> <li>• Mark as needed trees for operations/access</li> </ul> <p><b>Leave tree Priority</b></p> <ul style="list-style-type: none"> <li>• Reserve by not marking white pine, white cedar, hemlock, butternut, red oak, black cherry, and yellow birch.</li> <li>• Reserve by not marking all dead snags and live den trees up to 10/acre, unless they present a safety concern.</li> </ul>		

**DESIGN CRITERIA AND MITIGATION MEASURES**

<ul style="list-style-type: none"> <li>• From April 1<sup>st</sup>-December 31<sup>st</sup>, treat all conifer stumps for Heterobasidion irregulare within 24hrs of harvest.</li> <li>• Do not pile slash within or move slash into riparian areas.</li> <li>• Utilize WI's Forestry BMPs for riparian management zone categories.</li> <li>• Do not operate heavy equipment within ponds.</li> <li>• Prohibit operation of heavy equipment during non-frozen conditions within 15 feet of high water mark.</li> <li>• Rehabilitate forest trails and/or areas impacted by resource management activities. (G249)</li> <li>• Stand 15: Establish 10 foot slash removal zone along private property boundary.</li> </ul>
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**REMARKS**

<ul style="list-style-type: none"> <li>• No soil limitations, year round operations possible.</li> <li>• 50' equipment exclusion along streams and lakeshore.</li> </ul>
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**POST HARVEST TREATMENTS**

Year	FACTS Code	Name of Treatment
0	4220	Thinning
0	8100	Disease treatment for Annosus root disease

**MINIMUM STOCKING REQUIRED FOR NFMA**

<ul style="list-style-type: none"> <li>• Current stand is typed as red pine sawtimber 02-09</li> <li>• Stand not being regenerated at this time.</li> </ul>
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Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruising Agreement

Prepared by: Brian Bergman	Title: District Silviculturist	Date: 4/11/2017
Reviewed by:	Title:	Date:
Approved by:	Title: Certified Silviculturist	Date:



NEPA DECISION DOCUMENT	SALE NAME	PU	COMP-STAND
Chequamegon Red Pine Thinning EA	Eleven	1 & 2	3141-002

Stand #	Forest Type	Size Density	Acres	Total BA	Avg DBH	Habitat Type	Year of Origin	Site Index	Soil Type
002	02	09	75	140	12	Atm/Avvb	1939	67	Newot

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruiseing Agreement

STAND DESCRIPTION
EXISTING STAND CONDITION - BA/AC BY SPECIES AND DBH
<p>No FSVeg data available.</p> <p>Located on winding ridge complex north and east of Lake Eleven. Ice Age Trail passes thru the eastern half of stand. Basal area averaged around 150 sq.ft. Pockets of hardwood persist. Red pine is experiencing decline in some areas, possibly caused by Armillaria root disease.</p> <p>Two dispersed camp sites are located on the Northshore of Lake Eleven.</p>

DESIRED CONDITION
<ul style="list-style-type: none"> <li>To maintain and improve the health and vigor of red pine (and other forested conditions).</li> </ul>

SHORT TERM OBJECTIVES
<ul style="list-style-type: none"> <li>Improve the health, growth, and quality of the residual trees by reducing stand density and thinning out diseased and poor-formed trees.</li> <li>Provide timber products to local operators</li> </ul>

LONG TERM OBJECTIVES
<ul style="list-style-type: none"> <li>Prevent Annosus root disease</li> <li>Enhance tree diversity</li> <li>Recruit potential snags and down logs</li> <li>Provide timber products to local operators</li> <li>Revisit in 10-15 years for another thinning</li> </ul>

MARKING GUIDE: (example)		
Name of Treatment - <i>Thinning</i>	Residual BA/Ac : 100	Estimated Treatment Acres – 70 (Traversed acres if available)
<p><b>Priorities for removal:</b></p> <ul style="list-style-type: none"> <li>High risk trees (poor small crowns, low vigor, poor form, animal damage, or logging damage)</li> <li>Improve spacing to residual crop trees</li> </ul> <p><b>Species Priority</b></p> <ul style="list-style-type: none"> <li>Mark for removal red pine to 100BA.</li> <li>Areas of low red pine stocking retain 90 sq.ft. of BA.</li> <li>Mark hardwood areas/pockets to 80 sqft.</li> <li>Focus on removing white/green ash. Mark maples with poor form or defect. Mark paper birch with declining crowns.</li> <li>Retain some hardwoods for diversity</li> <li>Mark as needed trees for operations/access</li> </ul> <p><b>Leave tree Priority</b></p> <ul style="list-style-type: none"> <li>Reserve by not marking white pine, white cedar, hemlock, butternut, red oak, black cherry, and yellow birch.</li> <li>Reserve by not marking all dead snags and live den trees up to 10/acre, unless they present a safety concern.</li> </ul>		

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

**DESIGN CRITERIA AND MITIGATION MEASURES**

- From April 1<sup>st</sup>-December 31<sup>st</sup>, treat all conifer stumps for Heterobasidion irregulare within 24hrs of harvest.
- Do not pile slash within or move slash into riparian areas.
- Utilize WI's Forestry BMPs for riparian management zone categories.
- Do not operate heavy equipment within ponds.
- Prohibit operation of heavy equipment during non-frozen conditions within 15 feet of high water mark.
- Rehabilitate forest trails and/or areas impacted by resource management activities. (G249)
- Stand 2: Establish 10 foot slash removal zone along private property boundary.
- Stand 2: Ice Age Scenic Trail design feature applies to trail and not entire stand. 1) Winter only harvest-Dec 1<sup>st</sup>-March 14<sup>th</sup>. 2) Do not operate within 10ft of trail, except at trail crossings. Minimize crossings and they will be at right angles. 3) Restore tread if impacted by equipment. 4) Hauling, decking, forwarding is not allowed. 5) 10 to 25 feet slash removal depending on view. Slash height is < or = to 24 inches for visible area up to 150 feet from trail edge. Slash treatment will occur within 1 year of harvest. 6) Marking will be done to minimize appearance of rows and uniform spacing between trees. 7) Blaze trees will be preserved where possible.
- Stand 2: SIO = High, 1) Establish a 10 foot slash removal zone adjacent to travelways, use areas, and water bodies. 2) Slash height < or = 24" inches for the visible area up to 100 feet from edge of trails and use areas.
- Stand 2: Within a minimum of 330 feet of the designated 30 acre buffer area emphasize at least 80% crown closure with no more than 4 canopy gaps per acre up to 40 feet in diameter (RSH, G187).

**REMARKS**

- *No soil limitations, year round operations possible.*
- *50' equipment exclusion along perennial stream and lakeshore.*

**POST HARVEST TREATMENTS**

Year	FACTS Code	Name of Treatment
0	4220	Thinning
0	8100	Disease treatment for Annosus root disease

**MINIMUM STOCKING REQUIRED FOR NFMA**

- *Current stand is typed as red pine sawtimber 02-09*
- *Stand not being regenerated at this time.*

Prepared by: Brian Bergman	Title: District Silviculturist	Date: 4/11/2017
Reviewed by:	Title:	Date:
Approved by:	Title: Certified Silviculturist	Date:

Stand #	Forest Type	Size Density	Acres	Total BA	Avg DBH	Habitat Type	Year of Origin	Site Index	Soil Type
011	02	09	9	147	12	Atm/Avvb	1939	69	Newot

STAND DESCRIPTION

EXISTING STAND CONDITION - BA/AC BY SPECIES AND DBH



**Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement**

		Diameter Classes																		Total	QMD	QMD
Species		Null	<1"	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32+		>0	>=5
ACSA3	TPA			1375		24														1400	1.3	5.0
	BA/A			10		3														13		
FRAM2	TPA			611																611	1.0	
	BA/A			3																3		
PIRE	TPA					24	10	55	42	19	10									160	10.9	10.9
	BA/A					3	3	30	33	20	13									103		
TIAM	TPA					88		6	4	6	2									77	7.9	7.9
	BA/A					10		3	3	7	3									27		
Total	TPA			1965		107	10	61	47	25	12									2248	3.5	9.7
	BA/A			13		17	3	33	37	27	17									147		

Red pine basal area ranged from 130 to 160 sq.ft./ac. The QMD equals 10-12" DBH. Understory regeneration included ash, basswood, maple, and ironwood. Some evidence of "pocket decline" likely caused by Armillaria. Located on upland surrounding a lake and wetland. Spur off of FR118A.

## DESIRED CONDITION

- *To maintain and improve the health and vigor of red pine (and other forested conditions).*

### SHORT TERM OBJECTIVES

- *Improve the health, growth, and quality of the residual trees by reducing stand density and thinning out diseased and poor-formed trees.*
- *Provide timber products to local operators.*

## LONG TERM OBJECTIVES

- Prevent Annosus root disease
- Enhance tree diversity
- Recruit potential snags and down logs
- Provide timber products to local operators
- Revisit in 10-15 years for another thinning

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruising Agreement

**MARKING GUIDE: (example)**

Name of Treatment - <i>Thinning</i>	Residual BA/Ac : 100	Estimated Treatment Acres – 9 (Traversed acres if available)
<p><b>Priorities for removal:</b></p> <ul style="list-style-type: none"> <li>• High risk trees (poor small crowns, low vigor, poor form, animal damage, or logging damage)</li> <li>• Improve spacing to residual crop trees</li> </ul> <p><b>Species Priority</b></p> <ul style="list-style-type: none"> <li>• Mark for removal red pine to 100BA.</li> <li>• Areas of low red pine stocking retain 90 sq.ft. of BA.</li> <li>• Mark hardwood areas/pockets to 80 sqft.</li> <li>• Focus on removing white/green ash. Mark maples with poor form or defect. Mark paper birch with declining crowns.</li> <li>• Retain some hardwoods for diversity</li> <li>• Mark as needed trees for operations/access</li> </ul> <p><b>Leave tree Priority</b></p> <ul style="list-style-type: none"> <li>• Reserve by not marking white pine, white cedar, hemlock, butternut, red oak, black cherry, and yellow birch.</li> <li>• Reserve by not marking all dead snags and live den trees up to 10/acre, unless they present a safety concern.</li> </ul>		

**DESIGN CRITERIA AND MITIGATION MEASURES**

<ul style="list-style-type: none"> <li>• From April 1<sup>st</sup>-December 31<sup>st</sup>, treat all conifer stumps for Heterobasidion irregulare within 24hrs of harvest.</li> <li>• Do not pile slash within or move slash into riparian areas.</li> <li>• Utilize WI's Forestry BMPs for riparian management zone categories.</li> <li>• Do not operate heavy equipment within ponds.</li> <li>• Prohibit operation of heavy equipment during non-frozen conditions within 15 feet of high water mark.</li> <li>• Rehabilitate forest trails and/or areas impacted by resource management activities. (G249)</li> <li>• Human disturbance will be minimized within the hawk buffer from February 15 to August 1. No timber harvest will occur within the buffer area. (G185)</li> </ul>
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**REMARKS**

<ul style="list-style-type: none"> <li>• No soil limitations, year round operations possible.</li> <li>• 50' equipment exclusion along lakeshore.</li> </ul>
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**POST HARVEST TREATMENTS**

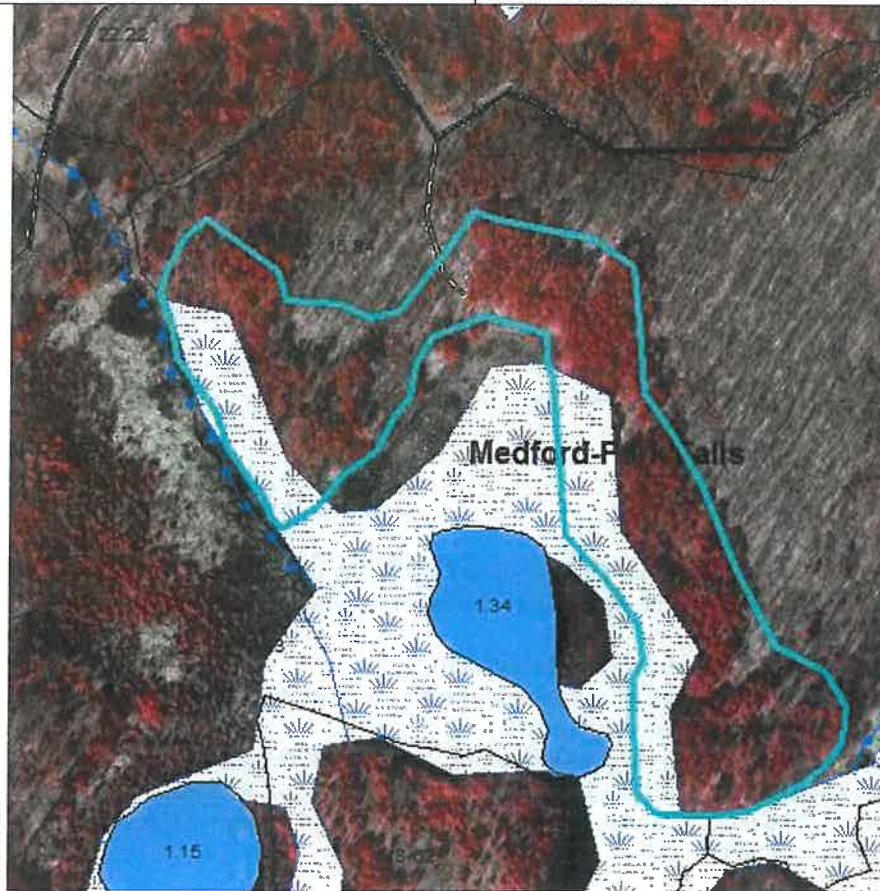
Year	FACTS Code	Name of Treatment
0	4220	Thinning
0	8100	Disease treatment for Annosus root disease

**MINIMUM STOCKING REQUIRED FOR NFMA**

<ul style="list-style-type: none"> <li>• Current stand is typed as red pine sawtimber 02-09</li> <li>• Stand not being regenerated at this time.</li> </ul>
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Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruiseing Agreement

Prepared by: Brian Bergman	Title: District Silviculturist	Date: 4/24/2017
Reviewed by:	Title:	Date:
Approved by:	Title: Certified Silviculturist	Date:



NEPA DECISION DOCUMENT	SALE NAME	PU	COMP-STAND
Chequamegon Red Pine Thinning EA	Eleven	2	3141-018

Stand #	Forest Type	Size Density	Acres	Total BA	Avg DBH	Habitat Type	Year of Origin	Site Index	Soil Type
018	02	09	9.4	167	12	Atm/Avvb	1940	70	Newot



Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

**STAND DESCRIPTION**

**EXISTING STAND CONDITION - BA/AC BY SPECIES AND DBH**

Diameter Classes

Species		Null	< 1"	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32+	Total	QMD >0	QMD ≥5
ACRU	TPA			153	38	41	19	18	13	3										285	5.3	8.4
	BA/A			3	3	7	7	10	10	3										43		
ACSA3	TPA				38	49	10													97	5.0	5.6
	BA/A				3	7	3													13		
EEAL2	TPA					24														24	5.0	5.0
	BA/A					3														3		
CADD15	TPA						10													10	8.0	8.0
	BA/A						3													3		
PIRE	TPA							24	42	22	7									96	12.4	12.4
	BA/A							13	33	23	10									80		
GURU	TPA										2									2	16.0	16.0
	BA/A										3									3		
TSCA	TPA					17	10	6	13											45	9.0	9.0
	BA/A					3	3	3	10											20		
Total	TPA			153	76	132	48	49	68	25	10									560	7.4	9.3
	BA/A			3	7	20	17	27	53	27	13									167		

Stand 18- Basal area for red pine ranged from 60 to 130 sq.ft. 12" to 14" QMD. Hardwoods made up the balance. Understory regeneration included ash, maple, and aspen. Ribes, gooseberry, was fairly common in understory. The stand is located on a steep slope with a southwest aspect. Hemlock, white pine, and balsam fir were located on the northern fringe of stand. W156303/SNO40045 traverses stand Southeast-Northwest.

**DESIRED CONDITION**

- *To maintain and improve the health and vigor of red pine (and other forested conditions).*

**SHORT TERM OBJECTIVES**

- *Improve the health, growth, and quality of the residual trees by reducing stand density and thinning out diseased and poor-formed trees.*
- *Provide timber products to local operators*

**LONG TERM OBJECTIVES**

- *Prevent Annosus root disease*
- *Enhance tree diversity*
- *Recruit potential snags and down logs*
- *Provide timber products to local operators*
- *Revisit in 10-15 years for another thinning*

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruising Agreement

**MARKING GUIDE: (example)**

Name of Treatment - <i>Thinning</i>	Residual BA/Ac : 90-100	Estimated Treatment Acres – 9 (Traversed acres if available)
<p>Do not mark in areas of high water table such as:</p> <ul style="list-style-type: none"> <li>• black ash drainages</li> <li>• black spruce/tamarack sphagnum lowland</li> <li>• ephemeral ponds</li> </ul> <p>Do not mark in areas of advanced hemlock regeneration &gt;6' tall.</p> <p>Priorities for removal:</p> <ul style="list-style-type: none"> <li>• High risk trees (poor small crowns, low vigor, poor form, animal damage, or logging damage)</li> <li>• Improve spacing to residual crop trees</li> </ul> <p>Species Priority</p> <ul style="list-style-type: none"> <li>• Mark for removal red pine to 100BA.</li> <li>• Areas of low red pine stocking retain 90 sq.ft. of BA.</li> <li>• Mark hardwood areas/pockets to 80 sqft.</li> <li>• Focus on removing white/green ash. Mark maples with poor form or defect. Mark paper birch with declining crowns.</li> <li>• Retain some hardwoods for diversity</li> <li>• Mark as needed trees for operations/access</li> </ul> <p>Leave tree Priority</p> <ul style="list-style-type: none"> <li>• Reserve by not marking white pine, white cedar, hemlock, butternut, red oak, black cherry, and yellow birch.</li> <li>• Reserve by not marking all dead snags and live den trees up to 10/acre, unless they present a safety concern.</li> </ul>		

**DESIGN CRITERIA AND MITIGATION MEASURES**

<ul style="list-style-type: none"> <li>• From April 1<sup>st</sup>-December 31<sup>st</sup>, treat all conifer stumps for Heterobasidion irregulare within 24hrs of harvest.</li> <li>• Do not pile slash within or move slash into riparian areas.</li> <li>• Utilize WI's Forestry BMPs for riparian management zone categories.</li> <li>• Do not operate heavy equipment within ponds.</li> <li>• Prohibit operation of heavy equipment during non-frozen conditions within 15 feet of high water mark.</li> <li>• Rehabilitate forest trails and/or areas impacted by resource management activities. (G249)</li> </ul>
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**REMARKS**

<ul style="list-style-type: none"> <li>• Soil/access limitations – winter or dry summer.</li> </ul>
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**POST HARVEST TREATMENTS**

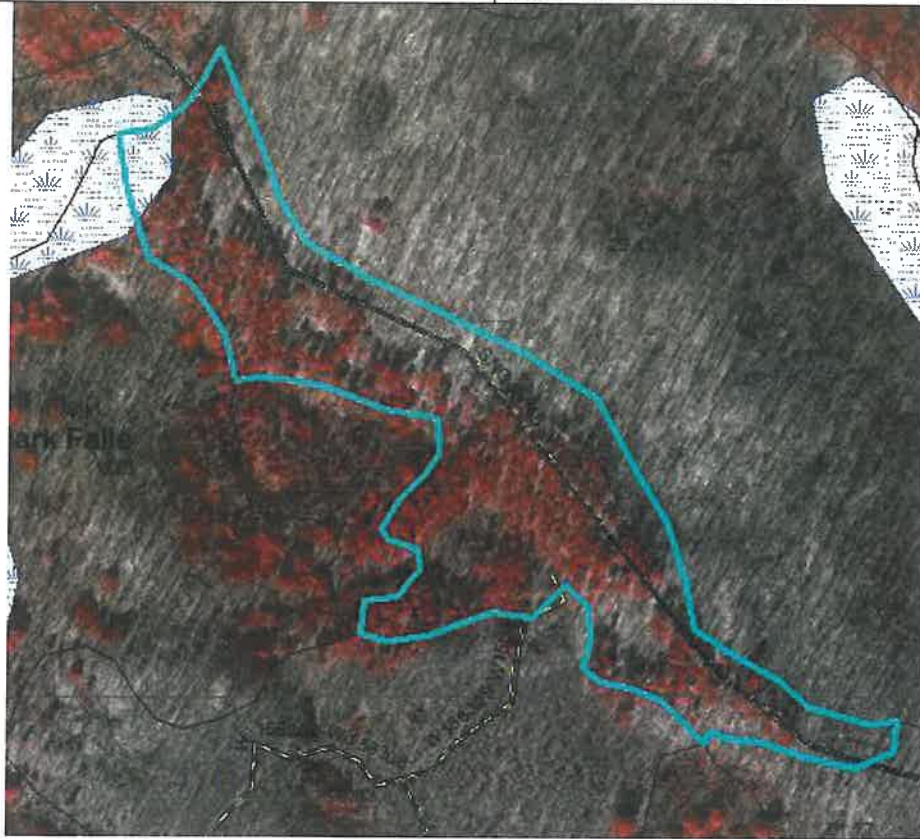
Year	FACTS Code	Name of Treatment
0	4220	Thinning
0	8100	Disease treatment for Annosus root disease

**MINIMUM STOCKING REQUIRED FOR NFMA**

<ul style="list-style-type: none"> <li>• Current stand is typed as red pine sawtimber 02-09</li> <li>• Stand not being regenerated at this time.</li> </ul>
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Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

Prepared by: Brian Bergman	Title: District Silviculturist	Date: 4/24/2017
Reviewed by:	Title:	Date:
Approved by:	Title: Certified Silviculturist	Date:



Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruising Agreement

NEPA DECISION DOCUMENT	SALE NAME	PU	COMP-STAND
Chequamegon Red Pine Thinning EA	Eleven	2	3145-004

Stand #	Forest Type	Size Density	Acres	Total BA	Avg DBH	Habitat Type	Year of Origin	Site Index	Soil Type
004	02	09	43	130	12	Atm/Avvb	1939	72	Newot

**STAND DESCRIPTION**

**EXISTING STAND CONDITION - BA/AC BY SPECIES AND DBH**

No FSVeg data available.

Located rolling upland topography. Private property boundary on west side. Ice Age Trail passes thru the northern half of stand. Basal area averaged around 110-120 sq. ft. of red pine with 20-40 sq. ft. of hardwoods. Red pine exhibited thinning small crowns in some locations with heavy competition from hardwoods. Hardwood regeneration was predominately ash and black cherry.

**DESIRED CONDITION**

- To maintain and improve the health and vigor of red pine (and other forested conditions).*

**SHORT TERM OBJECTIVES**

- Improve the health, growth, and quality of the residual trees by reducing stand density and thinning out diseased and poor-formed trees.*
- Provide timber products to local operators*

**LONG TERM OBJECTIVES**

- Prevent Annosus root disease*
- Enhance tree diversity*
- Recruit potential snags and down logs*
- Provide timber products to local operators*
- Revisit in 10-15 years for another thinning*

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

**MARKING GUIDE: (example)**

Name of Treatment - <i>Thinning</i>	Residual BA/Ac : 90-100	Estimated Treatment Acres – 40 (Traversed acres if available)
<p>Do not mark in areas of high water table such as:</p> <ul style="list-style-type: none"> <li>• black ash drainages</li> <li>• black spruce/tamarack sphagnum lowland</li> <li>• ephemeral ponds</li> </ul> <p>Do not mark in areas of advanced hemlock regeneration &gt;6' tall.</p> <p>Priorities for removal:</p> <ul style="list-style-type: none"> <li>• High risk trees (poor small crowns, low vigor, poor form, animal damage, or logging damage)</li> <li>• Improve spacing to residual crop trees</li> </ul> <p>Species Priority</p> <ul style="list-style-type: none"> <li>• Mark for removal red pine to 100BA.</li> <li>• Areas of low red pine stocking retain 90 sq.ft. of BA.</li> <li>• Mark hardwood areas/pockets to 80 sqft.</li> <li>• Focus on removing white/green ash. Mark maples with poor form or defect. Mark paper birch with declining crowns.</li> <li>• Retain some hardwoods for diversity</li> <li>• Mark as needed trees for operations/access</li> </ul> <p>Leave tree Priority</p> <ul style="list-style-type: none"> <li>• Reserve by not marking white pine, white cedar, hemlock, butternut, red oak, black cherry, and yellow birch.</li> <li>• Reserve by not marking all dead snags and live den trees up to 10/acre, unless they present a safety concern.</li> </ul>		

**DESIGN CRITERIA AND MITIGATION MEASURES**

<ul style="list-style-type: none"> <li>• From April 1<sup>st</sup>-December 31<sup>st</sup>, treat all conifer stumps for <i>Heterobasidion irregulare</i> within 24hrs of harvest.</li> <li>• Do not pile slash within or move slash into riparian areas.</li> <li>• Utilize WI's Forestry BMPs for riparian management zone categories.</li> <li>• Do not operate heavy equipment within ponds.</li> <li>• Prohibit operation of heavy equipment during non-frozen conditions within 15 feet of high water mark.</li> <li>• Rehabilitate forest trails and/or areas impacted by resource management activities. (G249)</li> <li>• Stand 4: Establish 10 foot slash removal zone along private property boundary.</li> <li>• Stand 4: Ice Age Scenic Trail design feature applies to trail and not entire stand. 1) Winter only harvest-Dec 1<sup>st</sup>-March 14<sup>th</sup>. 2) Do not operate within 10ft of trail, except at trail crossings. Minimize crossings and they will be at right angles. 3) Restore tread if impacted by equipment. 4) Hauling, decking, forwarding is not allowed. 5) 10 to 25 feet slash removal depending on view. Slash height is &lt; or = to 24 inches for visible area up to 150 feet from trail edge. Slash treatment will occur within 1 year of harvest. 6) Marking will be done to minimize appearance of rows and uniform spacing between trees. 7) Blaze trees will be preserved where possible.</li> <li>• Stand 4: SIO = High, 1) Establish a 10 foot slash removal zone adjacent to travelways, use areas, and water bodies. 2) Slash height &lt; or = 24" inches for the visible area up to 100 feet from edge of trails and use areas.</li> <li>• Stand 4 &amp; FR597: No timber harvest will occur within the buffer area. Human disturbance will be minimized within the buffer from February 1 to August 1 (RSH, G185).</li> <li>• G187 does not apply (Dassow email 3/29/17)</li> </ul>
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**REMARKS**

<ul style="list-style-type: none"> <li>• No soil limitations, year round operations possible.</li> </ul>
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Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

POST HARVEST TREATMENTS		
Year	FACTS Code	Name of Treatment
0	4220	Thinning
0	8100	Disease treatment for Annosus root disease

MINIMUM STOCKING REQUIRED FOR NFMA
<ul style="list-style-type: none"> <li>Current stand is typed as red pine sawtimber 02-09</li> <li>Stand not being regenerated at this time.</li> </ul>

Prepared by: Brian Bergman	Title: District Silviculturist	Date: 4/14/2017
Reviewed by:	Title:	Date:
Approved by:	Title: Certified Silviculturist	Date:





Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruising Agreement

NEPA DECISION DOCUMENT	SALE NAME	PU	COMP-STAND
Chequamegon Red Pine Thinning EA	Eleven	3	3141-034

Stand #	Forest Type	Size Density	Acres	Total BA	Avg DBH	Habitat Type	Year of Origin	Site Index	Soil Type
034	02	09	35.4	151	12	Atm/Avvb	1939	62	Newot

**STAND DESCRIPTION**

**EXISTING STAND CONDITION - BA/AC BY SPECIES AND DBH**

Species	Null	< 1"	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32+	Total	QMD >0	QMD >=5
QURU TPA				29															29	3.0	
BA/A				1															1		
TIAM TPA					7		3	7	1										19	10.0	10.0
BA/A					1		1	5	1										10		
Total TPA			766	166	91	16	37	47	33	10	2								1167	4.8	10.2
BA/A			9	10	17	6	20	37	36	14	3								151		

1/12/19/12 1-12/12/12

Species	Null	< 1"	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32+	Total	QMD >0	QMD >=5
ABBA TPA				45	10														56	3.7	5.0
BA/A				3	1														4		
ACRU TPA			458	16		4	10	2			2								483	2.6	10.8
BA/A			6	1		1	5	1			3								19		
ACSA3 TPA				45	44	4	3	2											98	5.4	6.7
BA/A				3	9	1	1	1											16		
BEAL2 TPA					7			2											9	7.6	7.6
BA/A					1			1											3		
FRAM2 TPA			262		7		5	2											276	2.2	8.5
BA/A			1		1		3	1											7		
PIRE TPA					15	6	16	33	32	9									112	11.9	11.9
BA/A					3	3	9	26	34	13									87		
PIST TPA										1									1	16.0	16.0
BA/A										1									1		

Red pine basal area ranges from 40 to 140 sq. ft. In some areas there was 30 sq. ft. of mixed hardwood. Pockets of storm damage are present, fully stocked with hardwood regeneration. QMD was 12-14" DBH. W156303/SNO40045 traverses the stand. FR553 is the southern stand boundary.

**DESIRED CONDITION**

- To maintain and improve the health and vigor of red pine (and other forested conditions).

**SHORT TERM OBJECTIVES**

- Improve the health, growth, and quality of the residual trees by reducing stand density and thinning out diseased and poor-formed trees.
- Provide timber products to local operators

**LONG TERM OBJECTIVES**

- Prevent Annosus root disease
- Enhance tree diversity
- Recruit potential snags and down logs
- Provide timber products to local operators
- Revisit in 10-15 years for another thinning

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

**MARKING GUIDE: (example)**

Name of Treatment - <i>Thinning</i>	Residual BA/Ac : 100	Estimated Treatment Acres – 30 (Traversed acres if available)
<p>Exclude areas of previous storm damage and pole-sized hardwoods that are sub-merchantable.</p> <p>Priorities for removal:</p> <ul style="list-style-type: none"> <li>• High risk trees (poor small crowns, low vigor, poor form, animal damage, or logging damage)</li> <li>• Improve spacing to residual crop trees</li> </ul> <p>Species Priority</p> <ul style="list-style-type: none"> <li>• Mark for removal red pine to 100BA.</li> <li>• Areas of low red pine stocking retain 90 sq.ft. of BA.</li> <li>• Mark hardwood areas/pockets to 80 sqft.</li> <li>• Focus on removing white/green ash. Mark maples with poor form or defect. Mark paper birch with declining crowns.</li> <li>• Retain some hardwoods for diversity</li> <li>• Mark as needed trees for operations/access</li> </ul> <p>Leave tree Priority</p> <ul style="list-style-type: none"> <li>• Reserve by not marking white pine, white cedar, hemlock, butternut, red oak, black cherry, and yellow birch.</li> <li>• Reserve by not marking all dead snags and live den trees up to 10/acre, unless they present a safety concern.</li> </ul>		

**DESIGN CRITERIA AND MITIGATION MEASURES**

<ul style="list-style-type: none"> <li>• From April 1<sup>st</sup>-December 31<sup>st</sup>, treat all conifer stumps for Heterobasidion irregulare within 24hrs of harvest.</li> <li>• Do not pile slash within or move slash into riparian areas.</li> <li>• Utilize WI's Forestry BMPs for riparian management zone categories.</li> <li>• Do not operate heavy equipment within ponds.</li> <li>• Prohibit operation of heavy equipment during non-frozen conditions within 15 feet of high water mark.</li> <li>• Rehabilitate forest trails and/or areas impacted by resource management activities. (G249)</li> <li>• Stand 34: SIO = Moderate, 1) Establish a 10 foot slash removal zone adjacent to travelways, use areas, and water bodies. 2) Slash height &lt; or = 24" inches for the visible area up to 100 feet from edge of trails and use areas.</li> <li>• Stand 34: G187 does not apply (See Dassow email from 3/29/17).</li> </ul>
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**REMARKS**

<ul style="list-style-type: none"> <li>• No soil limitations, year round operations possible</li> </ul>
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**POST HARVEST TREATMENTS**

Year	FACTS Code	Name of Treatment
0	4220	Thinning
0	8100	Disease treatment for Annosus root disease

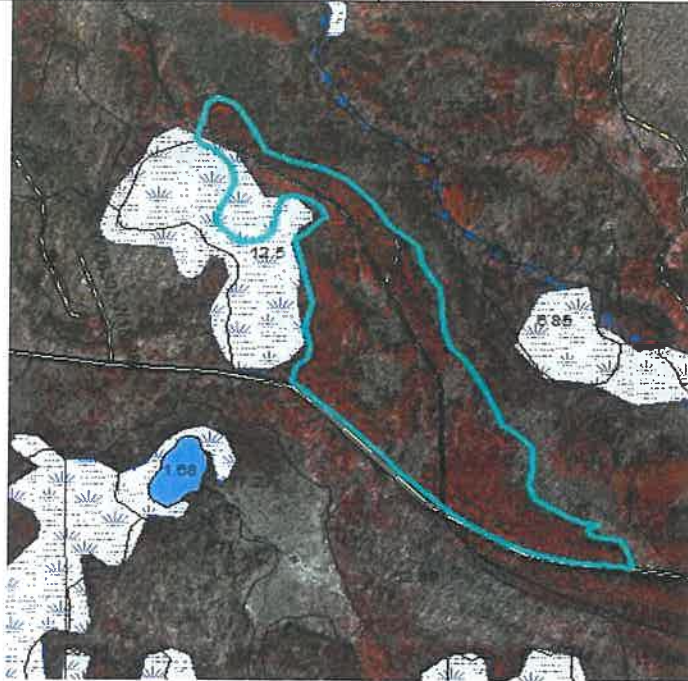


Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruising Agreement

**MINIMUM STOCKING REQUIRED FOR NFMA**

- Current stand is typed as red pine sawtimber 02-09
- Stand not being regenerated at this time.

Prepared by: Brian Bergman	Title: District Silviculturist	Date: 4/18/2017
Reviewed by:	Title:	Date:
Approved by:	Title: Certified Silviculturist	Date:



NEPA DECISION DOCUMENT	SALE NAME	PU	COMP-STAND
Chequamegon Red Pine Thinning EA	Eleven	3	3147-002

Stand #	Forest Type	Size Density	Acres	Total BA	Avg DBH	Habitat Type	Year of Origin	Site Index	Soil Type
002	02	09	23.6	140	12	Atm/Avvb	1939	70	Newot

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

STAND DESCRIPTION
<b>EXISTING STAND CONDITION - BA/AC BY SPECIES AND DBH</b>
No FS Veg data available.
Basal area averaged from 130 sq.ft. Stand red pine is largely planted on uplands, but has some low areas/depressions. Understory was dominated by balsam fir with some additional red maple and aspen. Red oak, bur oak, and white pine were also noted. FR117 is the western stand boundary.

DESIRED CONDITION
<ul style="list-style-type: none"> <li>To maintain and improve the health and vigor of red pine (and other forested conditions).</li> </ul>

SHORT TERM OBJECTIVES
<ul style="list-style-type: none"> <li>Improve the health, growth, and quality of the residual trees by reducing stand density and thinning out diseased and poor-formed trees.</li> <li>Provide timber products to local operators</li> </ul>

LONG TERM OBJECTIVES
<ul style="list-style-type: none"> <li>Prevent Annosus root disease</li> <li>Enhance tree diversity</li> <li>Recruit potential snags and down logs</li> <li>Provide timber products to local operators</li> <li>Revisit in 10-15 years for another thinning</li> </ul>

MARKING GUIDE: (example)		
Name of Treatment - <i>Thinning</i>	Residual BA/Ac : 100	Estimated Treatment Acres – 22 (Traversed acres if available)
<p>Do not mark in areas of high water table such as:</p> <ul style="list-style-type: none"> <li>black ash drainages</li> <li>black spruce/tamarack sphagnum lowland</li> <li>ephemeral ponds</li> </ul> <p>Do not mark in areas of advanced hemlock regeneration &gt;6' tall.</p> <p>Priorities for removal:</p> <ul style="list-style-type: none"> <li>High risk trees (poor small crowns, low vigor, poor form, animal damage, or logging damage)</li> <li>Improve spacing to residual crop trees</li> </ul> <p>Species Priority</p> <ul style="list-style-type: none"> <li>Mark for removal red pine to 100BA.</li> <li>Areas of low red pine stocking retain 90 sq.ft. of BA.</li> <li>Mark hardwood areas/pockets to 80 sqft.</li> <li>Focus on removing white/green ash. Mark maples with poor form or defect. Mark paper birch with declining crowns.</li> <li>Retain some hardwoods for diversity</li> <li>Mark as needed trees for operations/access</li> </ul> <p>Leave tree Priority</p> <ul style="list-style-type: none"> <li>Reserve by not, marking <u>white pine</u> white cedar, hemlock, butternut, <u>oak</u>, black cherry, and yellow birch.</li> <li>Reserve by not marking all dead snags and live den trees up to 10/acre, unless they present a safety concern.</li> </ul>		

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

**DESIGN CRITERIA AND MITIGATION MEASURES**

- From April 1<sup>st</sup>-December 31<sup>st</sup>, treat all conifer stumps for Heterobasidion irregulare within 24hrs of harvest.
- Do not pile slash within or move slash into riparian areas.
- Utilize WI's Forestry BMPs for riparian management zone categories.
- Do not operate heavy equipment within ponds.
- Prohibit operation of heavy equipment during non-frozen conditions within 15 feet of high water mark.
- Rehabilitate forest trails and/or areas impacted by resource management activities. (G249)
- G187 does not apply (Dassow email 3/29/17)
- Stand 2: No timber harvest will occur within the buffer area. Human disturbance will be minimized within the buffer from February 1 to August 1 (RSH, G185).
- Stand 2:SIO, Moderate, Slash height is < or = 24" visible area up to 100ft from ML 3,4, o 5 roads.

**REMARKS**

- *No soil limitations, year round operations possible.*

**POST HARVEST TREATMENTS**

Year	FACTS Code	Name of Treatment
0	4220	Thinning
0	8100	Disease treatment for Annosus root disease

**MINIMUM STOCKING REQUIRED FOR NFMA**

- *Current stand is typed as red pine sawtimber 02-09*
- *Stand not being regenerated at this time.*

Prepared by: Brian Bergman	Title: District Silviculturist	Date: 4/17/2017
Reviewed by:	Title:	Date:
Approved by:	Title: Certified Silviculturist	Date:

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruising Agreement



NEPA DECISION DOCUMENT	SALE NAME	PU	COMP-STAND
Chequamegon Red Pine Thinning EA	Eleven	3	3141-038

Stand #	Forest Type	Size Density	Acres	Total BA	Avg DBH	Habitat Type	Year of Origin	Site Index	Soil Type
038	02	09	28	170	12	Atm/Avvb	1939	62	Newot

STAND DESCRIPTION
EXISTING STAND CONDITION - BA/AC BY SPECIES AND DBH

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

Species		Null	<1"	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32+	Total	QMD >0	QMD ≥5
ABBA	TPA			65	91															156	2.9	
	BA/A			1	5															7		
ACRU	TPA			282	29	15	4													310	2.1	6.5
	BA/A			1	1	3	1													7		
ADCA3	TPA			131	91	7		3												232	3.0	7.3
	BA/A			3	5	1		1												11		
BEPA	TPA				29															29	3.0	
	BA/A				1															1		
FIRE	TPA						12	29	60	52	14									168	12.5	12.5
	BA/A						4	15	47	56	20									143		
Total	TPA			468	240	22	16	31	60	52	14									855	3.9	11.8
	BA/A			5	14	4	5	17	47	56	20									170		

Red pine basal area ranges from 120 to 190 sq.ft. Hazelbrush was prevalent in the understory as was balsam fir and spruce. Other species included red maple, paper birch, and black cherry. QMD was 12-14" DBH. W156303/SNO40045 traverses the stand. FR553 is the southern stand boundary. FR 117 is the eastern stand boundary. W156219 traverses the stand. Depressions/lowlands were noted.

#### DESIRED CONDITION

- To maintain and improve the health and vigor of red pine (and other forested conditions).

#### SHORT TERM OBJECTIVES

- Improve the health, growth, and quality of the residual trees by reducing stand density and thinning out diseased and poor-formed trees.
- Provide timber products to local operators

#### LONG TERM OBJECTIVES

- Prevent Annosus root disease
- Enhance tree diversity
- Recruit potential snags and down logs
- Provide timber products to local operators
- Revisit in 10-15 years for another thinning

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement  
**MARKING GUIDE: (example)**

Name of Treatment - <i>Thinning</i>	Residual BA/Ac : 110	Estimated Treatment Acres – 25 (Traversed acres if available)
<p>Do not mark in areas of high water table such as:</p> <ul style="list-style-type: none"> <li>• black ash drainages</li> <li>• black spruce/tamarack sphagnum lowland</li> <li>• ephemeral ponds</li> </ul> <p>Do not mark in areas of advanced hemlock regeneration &gt;6' tall.</p> <p>Priorities for removal:</p> <ul style="list-style-type: none"> <li>• High risk trees (poor small crowns, low vigor, poor form, animal damage, or logging damage)</li> <li>• Improve spacing to residual crop trees</li> </ul> <p>Species Priority</p> <ul style="list-style-type: none"> <li>• Mark for removal red pine to 110BA.</li> <li>• Areas of low red pine stocking retain 90 sq.ft. of BA.</li> <li>• Mark hardwood areas/pockets to 80 sqft.</li> <li>• Focus on removing white/green ash. Mark maples with poor form or defect. Mark paper birch with declining crowns.</li> <li>• Retain some hardwoods for diversity</li> <li>• Mark as needed trees for operations/access</li> </ul> <p>Leave tree Priority</p> <ul style="list-style-type: none"> <li>• Reserve by not marking white pine, white cedar, hemlock, butternut, red oak, black cherry, and yellow birch.</li> <li>• Reserve by not marking all dead snags and live den trees up to 10/acre, unless they present a safety concern.</li> </ul>		

DESIGN CRITERIA AND MITIGATION MEASURES
<ul style="list-style-type: none"> <li>• From April 1<sup>st</sup>-December 31<sup>st</sup>, treat all conifer stumps for Heterobasidion irregulare within 24hrs of harvest.</li> <li>• Do not pile slash within or move slash into riparian areas.</li> <li>• Utilize WI's Forestry BMPs for riparian management zone categories.</li> <li>• Do not operate heavy equipment within ponds.</li> <li>• Prohibit operation of heavy equipment during non-frozen conditions within 15 feet of high water mark.</li> <li>• Rehabilitate forest trails and/or areas impacted by resource management activities. (G249)</li> <li>• Stand 38: SIO = Moderate, 1) Establish a 10 foot slash removal zone adjacent to travelways, use areas, and water bodies. 2) Slash height &lt; or = 24" inches for the visible area up to 100 feet from edge of trails and use areas.</li> </ul>

REMARKS
<ul style="list-style-type: none"> <li>• No soil limitations, year round operations possible.</li> </ul>

POST HARVEST TREATMENTS		
Year	FACTS Code	Name of Treatment
0	4220	Thinning
0	8100	Disease treatment for Annosus root disease



Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

MINIMUM STOCKING REQUIRED FOR NFMA

- Current stand is typed as red pine sawtimber 02-09
- Stand not being regenerated at this time.

Prepared by: Brian Bergman

Title: District Silviculturist

Date: 4/18/2017

Reviewed by:

Title:

Date:

Approved by:

Title: Certified Silviculturist

Date:



Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruising Agreement

NEPA DECISION DOCUMENT	SALE NAME	PU	COMP-STAND
Chequamegon Red Pine Thinning EA	Eleven	4 & 5	3144-007

Stand #	Forest Type	Size Density	Acres	Total BA	Avg DBH	Habitat Type	Year of Origin	Site Index	Soil Type
007	02	09	118	150	12	Atm/Avwb	1937	64	Newot

**STAND DESCRIPTION**

**EXISTING STAND CONDITION - BA/AC BY SPECIES AND DBH**

Species		Null	< 1"	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32+	Total	QMD >0	QMD >=5
ASSA	TPA				14	3														17	3.8	6.0
	BA/A				1	1														1		
ACRU	TPA			244	54	7	2	1												309	2.0	7.0
	BA/A			1	3	1	1	1												7		
ACSA3	TPA			367	67	17	6	1												458	2.5	6.8
	BA/A			4	5	3	2	1												15		
SEPA	TPA				14															14	3.0	
	BA/A				1															1		
FRAM2	TPA			122	41															163	1.7	
	BA/A			1	2															3		
PRE	TPA					7		33	72	37	6									156	12.1	12.1
	BA/A					1		15	57	40	2									125		
PRGE2	TPA			31	8	7														45	3.3	8.0
	BA/A			1	1	1														3		
GURU	TPA																				16.0	16.0
	BA/A									1										1		

Stand 7 – Northern boundary is FR553. Eastern boundary is FR117. FR 598 traverses the middle of unit. Stand basal area ranged from 130-150. Advanced regeneration of hardwood is common in the midstory. Exclude areas of mature hemlock/hardwood where appropriate.

Southern boundary with private property.

**DESIRED CONDITION**

- To maintain and improve the health and vigor of red pine (and other forested conditions).*

**SHORT TERM OBJECTIVES**

- Improve the health, growth, and quality of the residual trees by reducing stand density and thinning out diseased and poor-formed trees.*
- Provide timber products to local operators*

**LONG TERM OBJECTIVES**

- Prevent Annosus root disease*
- Enhance tree diversity*
- Recruit potential snags and down logs*
- Provide timber products to local operators*
- Revisit in 10-15 years for another thinning*



Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

**MARKING GUIDE: (example)**

Name of Treatment - Thinning	Residual BA/Ac : 110	Estimated Treatment Acres – 100 (Traversed acres if available)
<p>Do not mark in areas of high water table such as:</p> <ul style="list-style-type: none"> <li>• black ash drainages</li> <li>• black spruce/tamarack sphagnum lowland</li> <li>• ephemeral ponds</li> </ul> <p>Do not mark in areas of advanced hemlock regeneration &gt;6' tall.</p> <p>Priorities for removal:</p> <ul style="list-style-type: none"> <li>• High risk trees (poor small crowns, low vigor, poor form, animal damage, or logging damage)</li> <li>• Improve spacing to residual crop trees</li> </ul> <p>Species Priority</p> <ul style="list-style-type: none"> <li>• Mark for removal red pine to 110BA..</li> <li>• Mark hardwood areas/pockets to 80 sqft.</li> <li>• Focus on removing white/green ash. Mark maples with poor form or defect. Mark paper birch with declining crowns.</li> <li>• Retain some hardwoods for diversity</li> <li>• Mark as needed trees for operations/access</li> </ul> <p>Leave tree Priority</p> <ul style="list-style-type: none"> <li>• Reserve by not marking white pine, white cedar, hemlock, butternut, red oak, black cherry, and yellow birch.</li> <li>• Reserve by not marking all dead snags and live den trees up to 10/acre, unless they present a safety concern.</li> </ul>		

**DESIGN CRITERIA AND MITIGATION MEASURES**

<ul style="list-style-type: none"> <li>• From April 1<sup>st</sup>-December 31<sup>st</sup>, treat all conifer stumps for Heterobasidion irregulare within 24hrs of harvest.</li> <li>• Do not pile slash within or move slash into riparian areas.</li> <li>• Utilize WI's Forestry BMPs for riparian management zone categories.</li> <li>• Do not operate heavy equipment within ponds.</li> <li>• Prohibit operation of heavy equipment during non-frozen conditions within 15 feet of high water mark.</li> <li>• Rehabilitate forest trails and/or areas impacted by resource management activities. (G249)</li> <li>• Stand 7: SIO, Moderate, Slash height is &lt; or = 24" visible area up to 100ft from ML 3,4, o 5 roads.</li> <li>• Stand 7: Establish 10 foot slash removal zone along private property boundary.</li> <li>• Stand 7: No timber harvest will occur within the buffer area. Human disturbance will be minimized within the buffer from February 1 to August 1 (RSH, G185).</li> <li>• G187 does not apply (Dassow email 3/29/17)</li> <li>• Apply NNIS mitigations – avoid placing log landings in known infestations and clean equipment prior to use on NFS lands.</li> <li>• Apply 3 year duration on each subunit. Remove the appearance of rows when thinning red pine. (D6)</li> </ul>
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**REMARKS**

<ul style="list-style-type: none"> <li>• No soil limitations, year round operations possible.</li> </ul>
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Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

POST HARVEST TREATMENTS		
Year	FACTS Code	Name of Treatment
0	4220	Thinning
0	8100	Fungicide Treatment to prevent Annosum root disease

MINIMUM STOCKING REQUIRED FOR NFMA
<ul style="list-style-type: none"> <li>Current stand is typed as red pine sawtimber 02-09</li> <li>Stand not being regenerated at this time.</li> </ul>

Prepared by: <b>Brian Bergman</b>	Title: District Silviculturist	Date: 4/14/2017
Reviewed by:	Title:	Date:
Approved by:	Title: Certified Silviculturist	Date:



Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruising Agreement

NEPA DECISION DOCUMENT	SALE NAME	PU	COMP-STAND
Chequamegon Red Pine Thinning EA	Eleven		3147-017

Stand #	Forest Type	Size Density	Acres	Total BA	Avg DBH	Habitat Type	Year of Origin	Site Index	Soil Type
017	02	06	6.5	135	10	Atm/Avvb	1962	75	Newot

**STAND DESCRIPTION**

**EXISTING STAND CONDITION - BA/AC BY SPECIES AND DBH**

Species	Null	< 1"	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32+	Total	GMD >0	GMD >=3
PIRE TPA					306	115	9												429	6.7	6.7
BA/A					60	40	5												105		
Total TPA					306	115	9												429	6.7	6.7
BA/A					60	40	5												105		

Basal area ranges from 120 sq.ft. to 190 sq.ft. Diameter ranges of red pine were from 6"-14" DBH. Thin and small red pine crowns indicate poor growing conditions. Understory was dominated by ash and black cherry regeneration. Snags of dead red pine were fairly common.

**DESIRED CONDITION**

- To maintain and improve the health and vigor of red pine (and other forested conditions).

**SHORT TERM OBJECTIVES**

- Improve the health, growth, and quality of the residual trees by reducing stand density and thinning out diseased and poor-formed trees.
- Provide timber products to local operators

**LONG TERM OBJECTIVES**

- Prevent Annosus root disease
- Enhance tree diversity
- Recruit potential snags and down logs
- Provide timber products to local operators
- Revisit in 10-15 years for another thinning

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Eleven PL Marking & Cruiseing Agreement

MARKING GUIDE: (example)		
Name of Treatment - <i>Thinning</i>	Residual BA/Ac : 90-110	Estimated Treatment Acres – 6 (Traversed acres if available)
<p>Do not mark in areas of high water table such as:</p> <ul style="list-style-type: none"> <li>• black ash drainages</li> <li>• black spruce/tamarack sphagnum lowland</li> <li>• ephemeral ponds</li> </ul> <p>Do not mark in areas of advanced hemlock regeneration &gt;6' tall.</p> <p>Priorities for removal:</p> <ul style="list-style-type: none"> <li>• High risk trees (poor small crowns, low vigor, poor form, animal damage, or logging damage)</li> <li>• Improve spacing to residual crop trees</li> </ul> <p>Species Priority</p> <ul style="list-style-type: none"> <li>• Mark for removal red pine to 10BA.</li> <li>• Areas of low red pine stocking retain 90 sq.ft. of BA.</li> <li>• Mark hardwood areas/pockets to 80 sqft.</li> <li>• Focus on removing white/green ash. Mark maples with poor form or defect. Mark paper birch with declining crowns.</li> <li>• Retain some hardwoods for diversity</li> <li>• Mark as needed trees for operations/access</li> </ul> <p>Leave tree Priority</p> <ul style="list-style-type: none"> <li>• Reserve by not marking white pine, white cedar, hemlock, butternut, red oak, black cherry, and yellow birch.</li> <li>• Reserve by not marking all dead snags and live den trees up to 10/acre, unless they present a safety concern.</li> </ul>		

DESIGN CRITERIA AND MITIGATION MEASURES
<ul style="list-style-type: none"> <li>• From April 1<sup>st</sup>-December 31<sup>st</sup>, treat all conifer stumps for Heterobasidion irregulare within 24hrs of harvest.</li> <li>• Do not pile slash within or move slash into riparian areas.</li> <li>• Utilize WI's Forestry BMPs for riparian management zone categories.</li> <li>• Do not operate heavy equipment within ponds.</li> <li>• Prohibit operation of heavy equipment during non-frozen conditions within 15 feet of high water mark.</li> <li>• Rehabilitate forest trails and/or areas impacted by resource management activities. (G249)</li> <li>• Stand 17: Establish 10 foot slash removal zone along private property boundary.</li> <li>• G187 does not apply (Dassow email 3/29/17)</li> <li>• Apply NNIS mitigations – avoid placing log landings in known infestations and clean equipment prior to use on NFS lands.</li> <li>• Apply 3 year duration on each subunit. Remove the appearance of rows when thinning red pine. (D6)</li> </ul>

REMARKS
<ul style="list-style-type: none"> <li>• No soil limitations, year round operations possible.</li> </ul>

POST HARVEST TREATMENTS		
Year	FACTS Code	Name of Treatment
0	4220	Thinning
0	8100	Disease treatment for Annosus root disease

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
Elevan PL Marking & Cruising Agreement

MINIMUM STOCKING REQUIRED FOR NFMA
<ul style="list-style-type: none"> <li>Current stand is typed as red pine sawtimber 02-09</li> <li>Stand not being regenerated at this time.</li> </ul>

Prepared by: Brian Bergman	Title: District Silviculturist	Date: 4/17/2017
Reviewed by:	Title:	Date:
Approved by:	Title: Certified Silviculturist	Date:



## 1. Cutting Unit Info

Comp. / Stand	Estimated Acres (from EA)	Payment Unit	Actual Acres (from GPS)
3141/002	43	1	45

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3141/011	9	1	8
3141/015	4	1	5
3141/002	32	2	30
3141/018	9	2	9
3145/004	43	2	39
3141/034	35	3	35
3147/002	24	3	21
3141/038	28	3	33
3144/007	89	4	89
3144/007	34	5	23
3147/017	7	5	4
<b>Total Acres</b>	<b>357</b>		<b>341</b>

Special Measures Area(s)? \_\_\_\_\_ Yes\*     x   No  
\*

Protected Area(s)? \_\_\_\_\_ Yes\*     x   No  
\*

**2. Product Merchantability.**

		Minimum Tree Specifications	Minimum Piece Specifications		
SPECIES	PRODUCT	DBH (inches)	Length (feet)	DIB (inches)	Minimum Net Scale in % of Gross
Hardwoods	Sawlogs <sup>□</sup> /	11.0	8	9.6-11.5	95 percent

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Hardwoods	Sawlogs <sup>1/</sup>	11.0	8	11.6	50 percent
Aspen	Sawlogs <sup>1/</sup>	9.0	8	7.6	70 percent
Softwoods	Sawlogs <sup>3/</sup>	9.0	8	7.6	50 percent
Hardwoods	Pulpwood	5.0	8	4.0	70 percent sound <sup>4/</sup> and reasonably straight <sup>5/</sup>
Softwoods and Aspen	Pulpwood	5.0	8	4.0	70 percent sound <sup>4/</sup> and reasonably straight <sup>5/</sup>

1/ Only logs which meet grade 3 or better factory logs are considered sawlogs.

2/ Diameter Inside Bark (DIB)

3/ On softwoods, sawlog height may be terminated because of limb size when the sum of the diameter of limbs 2 inches or larger within a 1-foot span exceeds Diameter Outside Bark (DOB) of the main stem at that point.

4/ 70 percent applies to rot, voids, and char. Mechanical type defects, such as sweep, crook, spider heart and ring shake shall not be considered.

5/ Reasonable straight: To be considered reasonably straight, hardwood pulp stick must slide through an 8-foot-long, 30-inch-diameter cylinder. Aspen and all softwoods need to slide through an 8-foot-long, 20-inch-diameter cylinder. When the true centerline of a minimum length piece does not deviate more than one half the inside diameter of the small end, plus 2 inches from a straight line drawn between the centers of the ends of the piece it is to be considered reasonably straight.

### 3. Silvicultural / Marking Guides.

SEE INDIVIDUAL STAND PRESCRIPTIONS IN SALE PREP FOLDER

(A) Method of Timber Designation:

  x   Cut Tree Mark

       Leave Tree Mark

       By Boundary Designation

(B) Paint Colors Used:

**Orange** –      Payment unit boundaries  
                         Protected area boundaries

**Blue** –            CTM trees in CTM units

### 4. Definition of Sample Population.

Chequamegon-Nicolet National Forest  
Medford-Park Falls Ranger District  
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Strata	Description
01	Payment Unit 01, 02, 03
02	Payment Unit 04, 05

Sample Group	Description
01	Small Hardwood Pulp
02	Large Hardwood Pulp (11+)
03	Small Aspen (5-10.9)
04	Large Aspen(11+)
05	Mixed Conifer
06	Red Pine Pulp(5-8.9)
11	Mixed Hardwood Saw
12	Mixed Conifer Saw
15	Red Pine Small Saw(9-15.9)
16	Red Pine Large Saw(16+)

Recon Data consists of \_\_\_\_ plots & \_\_\_\_ cruise trees.

The Cruise Design Program estimates \_\_\_\_ total plots & \_\_\_\_ total cruise trees with the following cruise design.

### 5. Sampling Method & Intensity.

STRATA	PAYMENT UNITS(S)	SAMPLING METHOD & PLOT	BAF OR PLOT SIZE (FIX)	SAMPLE GROUP	PRODUCT	SAMPLE FREQUENCY (STR & PCMTRE)
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Chequamegon-Nicolet National Forest  
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		SPACING				
01	01, 02, 03	STR		01	Small Hardwood Pulp	50
				02	Large Hardwood Pulp (11+)	10
				03	Small Aspen (5-10.9)	20
				04	Large Aspen(11+)	10
				05	Mixed Conifer	50
				06	Red Pine Pulp(5-8.9)	100
				11	Mixed Hardwood Saw	10
				15	Mixed Conifer Saw	20
				16	Red Pine Small Saw(9-15.9)	200
				17	Red Pine Large Saw(16+)	10

STRATA	PAYMENT UNITS(S)	SAMPLING METHOD & PLOT SPACING	BAF OR PLOT SIZE (FIX)	SAMPLE GROUP	PRODUCT	SAMPLE FREQUENCY (STR & PCMTRE)
02	04, 05	STR		01	Small Hardwood Pulp	50
				02	Large Hardwood Pulp (11+)	10
				03	Small Aspen (5-10.9)	20
				04	Large Aspen(11+)	10
				05	Mixed Conifer	25
				06	Red Pine Pulp(5-8.9)	75
				11	Mixed Hardwood Saw	10
				15	Mixed Conifer Saw	10
				16	Red Pine Small Saw(9-15.9)	200
				17	Red Pine Large Saw(16+)	10



## **Scope of Work and Marking Contract Specifications**

This agreement is for marking and volume estimation of timber sales on the Chequamegon-Nicolet National Forest.

The Contractor shall furnish all labor, materials, equipment, tools, instruments, supplies, transportation, professional services and supervision, except that which is designated as Government-furnished property.

### **○ SELECTING TIMBER FOR HARVEST**

- The Contractor shall select and mark trees for harvest according to the general marking instructions and detailed prescriptions. For a tree to be designated for harvest, it must meet minimum tree specifications and include one minimum piece. Trees selected for harvest must be capable of being economically felled and removed without damage to the residual stand. See the "Minimum Tree and Piece Specifications" table in the List of Attachments.

### **○ MARKING TREES FOR HARVEST**

- Variable plot sampling: Where specified in the contract, the Contractor may use variable plot sampling to determine volumes after acreage is computed. The plots shall be sampled with a 10 BAF prism. Grid size will be specified for each project.
- Marking in Cut Tree Mark (CTM) Units or Leave Tree Mark (LTM) Units: Sawtimber and pulpwood trees shall be marked with paint at or above DBH and on the stump below normal stump height as close to the ground as possible. Paint shall be applied liberally to the stump spots. Stump marks shall be placed inside butt flanges where possible to protect from damage during felling and skidding. Paint shall be placed on areas free or scraped free of moss.
- Paint is for marking trees for cutting, tallying trees, and strip lines. Strip lines are to be confined to sub-merchantable trees (mostly less than 4-inch DBH). Stump marks shall be applied using proper technique. The stump marks shall be placed on clean bark or wood, not moss or dirty stumps. Moss or other debris may need to be removed, without damaging tree. Marks shall be located on the LOW SIDE of the stump in recessed portions of the stump. (Shears and headsaw harvesters are capable of



cutting extremely low stumps.) A liberal amount of paint shall be used on stump marks, since these are very important marks and must be durable.

- All paint marks shall be concentrated in spots or slashes of paint with a minimum 7 square inches of paint per mark. The Contractor may be required to paint both sides of each tree with spots or slashes or may be required to paint two sides of the stump, as identified for each project.
- When the prescription requires the creation of canopy gaps, all undesirable non-merchantable trees within the gap shall be marked at DBH on two sides of the tree and one stump mark.
- Submerchantable trees within skid trails shall be marked at DBH on two sides of the tree and one stump mark.
- **SPECIAL CONDITIONS**
  - Any survey corner monument (bearing tree) or any tree that has been blazed as a line tree along an established land line or any tree which is designated as a superior tree shall not be designated for cutting. Superior trees are designated with a white ring around the tree bole, generally at breast height.
- **CROP TREES**
  - A crop tree is a tree that contains or has the potential to produce two 8-foot logs of Grade 2 or better quality.
- **CRUISING DESIGNATED SPECIES**
  - Merchantable trees of designated species to be cruised may or may not need a paint mark, as specified for each project. Some trees of a designated species may be required to be reserved with paint.
- **ADHERENCE TO RESIDUAL BASAL AREA OBJECTIVE**
  - The Contractor shall use a 10 BAF (basal area factor) wedge prism, Relaskop, or other equivalent optical instrument to check residual stand basal area during the marking of harvest units.
- **VOLUME ESTIMATION**
  - The Contractor shall perform volume estimation accurately to insure that net volume estimates are within +/- 5 percent of sawtimber volume and total volume of the checked sample trees.
  - Individual Tree Count Cruising
  - Sample Tree Selection. The Contractor shall use a random selection of sample trees by the timber cruisers. Sampling intensity for each stratum will be included in the Cruise Design Specifications for each project. Details concerning sampling will be finalized at the post award conference for each contract.
  - Sample Tree Measurements. Sample tree measurements shall be made according to methods outlined in Forest Service Handbook 2409.12, Timber Cruising Handbook, Chapter 10 (see Section J). Required measurements include:
    - DBH (DBH taken at points other than 4.5 feet above ground on the high side of the tree because of swell or other bole deformities shall be identified with a horizontal paint mark on the tree bole at the point of measurement).



- Merchantable height measured from the ground to the nearest foot.
- Determination of internal and external defects including sweep, crook, rot, etc
- Marking Sample Sawtimber Trees. The sample tree or brush adjacent to the tree shall be clearly identified with flagging at breast height. The sample tree shall be marked with the sample number and standard marks. The following information shall be written in order on the ribbon of each sample tree in:
  - (1) DBH
  - (2) Number of feet for sawbolts
  - (3) Percent of defect in sawbolt (to the nearest percent)
  - (4) Percent Recoverable Product (to the nearest percent)
  - (5) Total number of feet to 4-inch top (for hardwood) and total feet to top of tree (for softwood).
  - (6) Percent of defect in the pulpwood only (to the nearest percent)
  - (7) Marker's cruising identification (number or initial, as agreed to by the Government)
  - (e) Marking Sample Pulpwood Trees. Marking shall be the same as that shown above for marking sample sawtimber trees, excluding number of sawbolts and percent of defect in sawbolts and percent recoverable product.
  - (f) Marking Records. The Contractor shall ensure accurate recording of all marking records.
- Measurements from each sample tree shall be recorded on tally sheets provided by the Government (see "Timber Sale Cruise Volume Tally Sheet" in the List of Attachements.
- DBH shall be measured to the nearest full 0.1 inch (i.e. 12.94 = 12.9) rounded down.
- Tree heights (both sawtimber and pulpwood trees) shall be determined using the "Quick Guide to new cruising practices" in the List of Attachments.
- Internal and external defect shall be determined to the nearest percent using the "Volume Distribution Guide" in List of Attachments.
- Tally sheet data entries shall be complete and legible. The Contractor shall, upon the completion of each unit, deliver the completed tally sheets and other unit specific records for each unit to the Government before moving to the next area. Upon the receipt and acceptance, the cruise data for each area shall become the sole property of the Government.
- Total tree counts by stratum shall be maintained and recorded each day through the use of tally wackers or a dot tally system for each unit.
- A "Payment Unit Summary" (see Section J) shall be filled out by the Contractor for each unit, listing unusual circumstances such as



nests, archeological sites, permanent deer blinds, and so on.

- On one copy of the timber sale work map, daily marking progress shall be indicated. This record shall be made available to the Government on a daily basis. At the completion of each unit, the Contractor shall furnish a second copy of the work map indicating locations of reserve areas, road access, unusual circumstances (as listed in Item 7 above) or reserve tree locations. This second copy shall not include daily marking progress.

○ **INSTRUMENT ACCEPTANCE AND CALIBRATION**

- The Contractor shall provide for inspection and acceptance by the Government of all instruments used for tree measurement. Instruments shall be checked for calibration periodically. Measurements shall be made against known and established measures, to insure accurate measurements. The Contractor shall use a 10 basal area factor on instruments used and on measurements recorded and submitted to the Government when basal area information is required.

○ **QUALITY ASSURANCE SURVEILLANCE PLAN**

- Surveillance by the Government of the Contractor's quality assurance will be based on three types of inspections: (a) adherence to marking prescription, (b) adherence to unit requirements, and (c) accuracy of volume estimation.
- Inspection for Adherence to Marking Prescription.
  - The Government will randomly locate points within each intermediate harvest unit to check for adherence to marking prescriptions. The following factors will be considered in determining whether or not a stand has been marked to the prescription.
    - Residual Basal Area (BA) - the residual BA must be +/-10 BA of the designated residual for that unit. Residual BA is by far the most critical factor to be used to determine if the stand has been marked properly, regardless of the amount of BA specified to be removed.
    - Basal Area Removal by Proper Tree Selection - Where the Contractor is required to select trees for cutting outside of complete row removal, the trees to be removed from the stand will be of poor form, quality, and growth. These trees will usually come from the intermediate or suppressed category of trees on the site. Dominant or co-dominant trees of good form, vigor, and growth shall be favored to be retained as growing stock. The intent of each prescription is to retain as growing stock the healthy, good quality trees that will produce sawtimber in the future.
  - When differences do occur, one of the following explanations should apply:
    - It will be obvious to the inspector why a change was made to the prescription. This could be due to the need to leave



more or less BA than stated in the prescription because of variation in species, DBH, or spacing or to provide access for logging equipment.

- When not obvious to the inspector, the Contractor or representative can explain why the deviations were made and the reason is acceptable to the inspector.
- If neither of the above conditions is met, the Contractor may be required to remark the stand to the satisfaction of the Government.
  - Inspection for Adherence to Unit Requirements.
- Adherence to prescription specifications will be noted. This will include spacing of residual trees, health and form of trees left compared to those marked for removal, and quality of residual trees.
- The marking of individual sample trees will be noted to make sure information on cruise trees are legible and other markings conform to the direction given in this contract.
- The Contractor will be provided with regular critiques based on these observations. If changes in marker's practices are indicated, that adjustment will be expected within 24 hours.
- The Government will perform periodic tracer paint inspections.
- Inspection for Accuracy of Volume Estimation.
  - A percentage of the sample trees of tree measurement type units will be inspected and check cruised. Volumes from the contract timber cruisers must agree with the Government check estimate by  $\pm 5$  percent net volume for each cruiser.
  - The percent variance of net volume will be calculated by dividing the difference between the Contractor's estimate and the Government's estimate and multiplying the result by 100.
  - If the Contractor's volume is outside this tolerance and the Contractor requests, the Government will check an additional number of trees. If the Contractor's figures are within  $\pm 5$  percent of the Government's estimate, the unit passes inspection of cruise trees. If, however, the Contractor fails the second sample inspection, the Contractor shall remeasure all the cruise trees in the unit and pay the cost of the re-inspection. The cruise trees in the unit will then be inspected again as if it was the first time. This process could be repeated.
- **SCHEDULE OF PERFORMANCE**
  - The Contractor shall submit an operating plan that outlines a schedule of performance. The plan shall be subject to the approval of the Contracting Officer and Partner and shall be updated if the Contractor falls behind scheduled dates by more than 10 percent. In no cases shall performance extend beyond November 1, 2016.
  - The Contractor shall plan on rainy/wet days when trees cannot be marked. The Contractor shall exercise prudent judgment as to when to start marking during rainy periods and when to stop once precipitation has



begun. Resumption of marking following rainfall is at the Contractor's option. The Government reserves the right to stop the Contractor's marking if it is determined that weather is unsuitable and normal paint retention quality cannot be assured..

○ **MEASUREMENT AND PAYMENT**

- Acreages shown in the schedule of items are estimated. Final determination of acreages included within the unit boundaries will be made by the Government using a GPS (Global Positioning System), or a compass with a hip chain or surveyor's tape will be completed as soon as possible.
- Credit for services will be by the item, as shown in the Schedule of Items or any agreed to and definable subset. Credit for work will be upon completion by the Contractor and acceptance by the Contracting Officer.

○ **GOVERNMENT-FURNISHED PROPERTY**

- The Government will provide the following items of Government property to the Contractor for use in the performance of this contract. This property shall be used and maintained by the Contractor in accordance with the provisions of the "Government-Furnished Property" clause referenced in Section I:
- Tree-marking paint.
  - The contract will specify whether the paint will be provided in gallons or quarts. If it is provided in gallons, the Contractor shall be responsible for transferring the paint from gallons to quarts, if needed. The Government may furnish empty quart containers to the Contractor.
  - The Government will sign out the paint to the Contractor using the "Paint Sign Out Form". The quantity signed out will be the estimated amount needed for up to a 1-week period, unless otherwise stated in the contract.
  - The time and location for pick-up and return of paint cans (full and empty) will be at a time and location agreed to between the Contractor and the Government. ALL paint cans (empty, partially used or unused) shall be returned to the Government at a location agreed to at the post award conference.
  - There will be strict accountability for all paint cans, regardless of amount of content or lack thereof. The Contractor shall keep the paint cans under LOCK AND KEY, except for the paint being used or carried into the field to be used. A daily log shall be maintained by the Contractor to show paint usage and shall be provided to the Government upon request.
  - For EACH paint can that is not returned, the Contractor shall submit a written report describing in detail the circumstances which caused the misplacement of the paint can(s), along with security measures implemented in order to prevent further losses. In addition, the Contractor shall pay the Government the purchase price of a full can of paint, including administrative costs, for each





can that is not returned. (A law enforcement investigation will be conducted if any paint can is not returned to the Government).

- Timber Sale Cruise Volume Tally Sheets. All unused tally sheets shall be returned to the Government upon completion of the job.
- Aerial photos or copies, as needed. If aerial photos are lost or damaged the Contractor shall reimburse the Government at the rate of \$10.00 for each photo damaged/lost.

▪ **KEY PERSONNEL**

- All timber cruisers are considered key personnel, in accordance with AGAR 452.236-77, and shall be certified by passing a Forest Service check cruise within  $\pm 5$  percent of sawtimber volume and total volume, and have an accuracy score of 85 percent or better (an explanation of accuracy score can be found in Section J).
- The initial certification will consist of checking a minimum of 50 trees that the individual has cruised from either of the certified tests areas located on the Chequamegon-Nicolet National Forest, or one of the certified test areas on the Ottawa National Forest. If a cruiser is certified on the Chequamegon-Nicolet National Forest that certification is valid on the Ottawa National Forest, and vice versa. . All Cruisers shall be certified prior to doing any timber cruising under individual contracts. Certification of cruisers will remain valid indefinitely, as long as their performance continues at a satisfactory level. Check cruises may recommend loss of a cruiser's certification based on unsatisfactory performance. A cruiser will be considered inactive if they have not cruised any timber on the Chequamegon-Nicolet or Ottawa National Forests for a period of time longer than one year. If a cruiser has been inactive for a period of more than one year, refresher training is required prior to resuming cruising.

▪ **CONFIDENTIAL NATURE OF INFORMATION**

- Timber Sale Data.
- The Contractor shall not divulge, and shall take all reasonable steps to insure that no member of its organization divulges, any information concerning this timber sale data to any person other than those duly authorized representatives of the Contracting Officer.
- In addition, neither the Contractor nor any of the Contractor's employees may be involved in bidding on any timber sale(s) resulting from this contract.
- Archaeological Sites. Any archeological sites encountered are protected by law and shall not be disturbed. The Contractor is encouraged to be alert for potential archeological sites and report their location to the Contracting Officer. Disclosure of any archeological information to any persons, other than those duly authorized as representatives of the Contracting Officer, may be subject to legal penalties.



- - *Definition.* "Acceptance," as used in this clause, means the act of an authorized representative of the Government by which the Government assumes for itself, or as an agent of another, ownership of existing and identified supplies, or approves specific services, as partial or complete performance of the contract.
  - Notwithstanding inspection and acceptance by the Government or any provision concerning the conclusiveness thereof, the Contractor warrants that all services performed under this contract will, at the time of acceptance, be free from defects in workmanship and conform to the requirements of this contract. The Contracting Officer shall give written notice of any defect or nonconformance to the Contractor. This notice shall state either--
    - That the Contractor shall correct or reperform any defective or nonconforming services; or
    - That the Government does not require correction or reperformance.
    - If the Contractor is required to correct or reperform, it shall be at no cost to the Government, and any services corrected or reperformed by the Contractor shall be subject to this clause to the same extent as work initially performed. If the Contractor fails or refuses to correct or reperform, the Contracting Officer may, by contract or otherwise, correct or replace with similar services and charge to the Contractor the cost occasioned to the Government thereby, or make an equitable adjustment in the contract price.
    - If the Government does not require correction or reperformance, the Contracting Officer shall make an equitable adjustment in the contract price.

○ **LIST OF ATTACHMENTS**

**DEFINITIONS**

UNIT (or sometimes Stand(s)) - Individual areas to be marked for timber harvest, comprised of one or more stands of timber with a specific silvicultural prescription.

TIMBER CRUISER - An individual certified by the Government to have sufficient knowledge and skill capable of applying a silvicultural prescription to a stand of trees and making accurate measurements necessary to estimate volume within a acceptable range of variation.

TIMBER SALE CRUISE PROGRAM TALLY SHEET - Used to record sample tree measurement data which is used to estimate individual unit volume and total timber sale volume.

INTERMEDIATE HARVEST - A harvest method whereby a portion of trees are



removed leaving a residual, merchantable stand for harvest consideration within ten to twenty years. For this contract, a thinning, selection cut, and shelterwood seed tree cut shall be considered intermediate harvest.

**DESIGNATED SPECIES** - A term used to denote the cutting of all merchantable trees of a species, without having the trees marked with paint. All of these trees are counted along with the measurement of sample trees. There are often marked trees of other species in the same unit.

**MULTI-PRODUCT TREE** - A tree containing two different wood products, i.e. sawtimber and pulpwood (referred to as topwood) within the same bole.

**SAMPLE TREE** - A tree randomly selected for measurement to represent a portion of the tree population being sampled.

**RESERVE TREE** - A tree selected to remain undesignated for marking or harvest within a unit.

**RESERVE AREA** - An area of trees selected to remain undesignated for marking or harvest within a unit.

**VOLUME DISTRIBUTION CHART** - A graphic representation of tree volume based upon number of eight (8) foot logs per tree and their relative position, displayed in four (4) foot increments. Used for estimating percentage of volume lost to defect.

**ARCHEOLOGICAL SITE** (also Cultural Resource site, or Heritage Resource site) - Any cultural, historic, or prehistoric site of significance so determined by an archaeologist and requiring protection under Federal law. In the Forest locality, those can include but are not limited to shelters, old logging camps, old railroad grades, cemeteries, graves, homesteads, buildings, and so one.

**10 BAF CHECK PLOT** - A plot located in a unit, employed to check designated basal area against the desired basal area indicated by the silvicultural prescription, using a 10 Basal Area Factor wedge prism or equivalent instrument.

**SPECIE CODE GUIDE**

<b>CODE #</b>	<b>SPECIE</b>
001	Other softwoods
004	Other hardwoods
012	Balsam fir
071	Tamarack
091	Norway spruce
094	White spruce
095	Black spruce
105	Jack pine
125	Red pine
129	Eastern white pine
130	Scotch pine
241	Northern white cedar
261	Hemlock
316	Red maple
317	Silver maple
318	Sugar maple
371	Yellow birch
373	River birch
375	Paper birch
402	Bitternut hickory
531	American beech
541	White ash
543	Black ash
544	Green ash
601	Butternut
701	Ironwood
741	Balsam poplar
742	Eastern cottonwood
743	Bigtooth aspen
746	Quaking aspen
762	Black cherry
802	White oak
804	Swamp white oak
809	Northern pin oak
823	Bur oak
833	Northern red oak
951	American basswood
970	Elm undifferentiated
972	American elm
975	Slippery elm
977	Rock elm
999	Noncommercial

**VOLUME DISTRIBUTION GUIDE**

(Percent)

								Bolt #
60-64								8
56-60								
52-56								7
48-52								
44-48								6
40-44								
36-40								5
32-36								
28-32								4
24-28								
20-24								3
16-20								
12-16								2
8-12	***	21-100	15-70	12-60	11-50	9-40	9-40	8-40
4-8	39-100	26-60	19-40	16-30	13-30	12-20	11-20	10-10
0-4	61-60	30-30	22-20	17-20	14-10	12-10	11-10	10-10

8'6"	12'6"	21'0"	29'0"	37'6"	45'6"	54'0"	62'0"	Min Merch Height
1	2	3	4	5	6	7	8	

\*\*\* (39-100) 39 = Actual % of Volume by 4 foot bolts

100 = Cumulative % Volume (Rounded)

Merchantable Height must exceed this figure to qualify (Exception 1 bolt heights)



### SAWLOG SCALE DEDUCTION FOR SWEEP PERCENT OF GROSS SCALE

Absolute Sweep Inches	Scale Diameter - Inches													
	8	9	10	11	12	13	14	15	16	17	18	19	20	22
	8-Foot Logs													
2	12	11	10	9	8	8	7	7	6	6	6	5	5	5
3	25	22	20	18	17	15	14	13	12	12	11	11	10	9
4	38	33	30	27	25	23	21	20	19	18	17	16	15	14
5	50	44	40	36	33	31	29	27	25	24	22	21	20	18
6	c	56	50	45	42	38	36	33	31	29	28	26	25	23
7	c	c	60	54	50	46	43	40	38	35	33	32	30	27
8	c	c	c	64	58	54	50	47	44	41	39	37	35	32

### MINIMUM MERCHANTABLE HEIGHT PER NUMBER OF 8' BOLTS GUIDE

<u>No. 8' Bolts</u>	<u>Variable Length (Sawtimber Trees)</u>	<u>Pulpwood Trees</u>
1	8'6"	8'0"
2	12'6"+	12'0"
3	21'0"+	20'0"
4	29'0"+	28'0'
5	37'6"+	36'0'
6	45'6"+	44'0'
7	54'0"+	52'0'
8	62'0"+	60'0'
9	70'6"+	68'0'
10	78'6"+	76'0"

+ = Merchantable height must exceed this figure to qualify.

**MINIMUM TREE AND PIECE SPECIFICATIONS****MINIMUM TREE SPECIFICATION****MINIMUM PIECE SPECIFICATION**

SPECIES PRODUCT	DIAMETER BREAST HEIGHT INCHES	LENGT H FEET	DIB 2/ INCHES	MINIMUM NET SCALE IN PERCENT OF GROSS
Hardwoods Sawlogs 1/	11.0	8	9.6 – 11.5	95 percent
Hardwoods Sawlogs 1/	11.0	8	11.6	50 percent
Aspen Sawlogs 1/	9.0	8	7.6	70 percent
Softwoods Sawlogs 3/	9.0	8	7.6	50 percent
Hardwoods Pulpwood	5.0	8	4.0	70 percent sound 4/ and reasonably straight 5/
Softwoods and Aspen Pulpwood	5.0	8	4.0	70 percent sound 4/ and reasonably straight 5/

A minimum tree must include at least one piece that meets minimum specifications.

1/ Only logs which meet grade 3 or better factory logs are considered sawlogs.

2/ Diameter Inside Bark (DIB)

3/ On softwoods, sawlog height may be terminated because of limb size when the sum of the diameter of limbs 2 inches or larger within a 1-foot span exceeds Diameter Outside Bark (DOB) of the main stem at that point.

4/ 70 percent applies to rot, voids, and char. Mechanical type defects, such as sweep, crook, spider heart and ring shake shall not be considered.

5/ Reasonably straight: To be considered reasonably straight, hardwood pulp stick must slide through an 8-foot-long, 30-inch-diameter cylinder. Aspen and all softwoods need to slide through an 8-foot-long, 20-inch-diameter cylinder.

When the true centerline of a minimum length piece does not deviate more than one-half the inside diameter of the small end, plus 2 inches from a straight line drawn between the centers of the ends of the piece it is to be considered reasonably straight. .





## EXAMPLE

**PAYMENT UNIT SUMMARY**

Sale Name: \_\_\_\_\_ Stars Number \_\_\_\_\_ P.U. \_\_\_\_\_

Forest \_\_\_\_\_ District \_\_\_\_\_ Compartment \_\_\_\_\_ Stand \_\_\_\_\_

Cruisers \_\_\_\_\_ No. of T-Cards \_\_\_\_\_

Date Started \_\_\_\_\_ Acres \_\_\_\_\_

Date Completed \_\_\_\_\_

Location/Access Infor: \_\_\_\_\_

Layout By \_\_\_\_\_ Photo # \_\_\_\_\_

Paint Used (color/manuf./#) \_\_\_\_\_

Type of Cut (target resid. B.A.) \_\_\_\_\_

Paint Used (color/Manuf./#) \_\_\_\_\_

Marked Species: \_\_\_\_\_

\_\_\_\_\_

# Ref./TSI Prescription Trees \_\_\_\_\_

\_\_\_\_\_

Designated Species: \_\_\_\_\_

\_\_\_\_\_

Reserve Trees (Indiv. marked &amp;/or by species) \_\_\_\_\_

\_\_\_\_\_

Reserve Areas-Location indicated on map (number size, why) \_\_\_\_\_

\_\_\_\_\_

Equipment or Prod. Length Restrictions? (reason) \_\_\_\_\_



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Seasonal Logging Restrictions? (reason)\_\_\_\_\_

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Special Interests (circle one and comments): Powerlines, Gates, Survey Monuments, Heritage Resources, Wildlife Openings, Old Growth Characteristics:\_\_\_\_\_

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Final Comments\_\_\_\_\_

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### **Hardwood Log Grading**

A hardwood log must meet three specifications. It must have at least the minimum specified diameter inside bark (DIB) at the small end, must meet the minimum specified net scale, and be at least grade 3 quality. Grade is determined by the amount of clear cuttings on the 2<sup>nd</sup> worst face. A clearcutting is the length between grading defects. A grading defect is an abnormality or irregularity that lowers strength, takes away appearance, or otherwise limits utility of the quality zone.

The 2<sup>nd</sup> worst face is determined by dividing the log surface in to 4 equal quarters or faces. Place as many grading defects into one face as possible. The face with the next most defects is the 2<sup>nd</sup> worst or grading face.

A log must have at least 50% clearcutting to meet grade 3 quality. A clearcutting has to be at least 2' in length to be considered. Therefore, an 8' log would need to have a minimum of 4' of clearcutting that could be achieved with two 2' clearcuttings. Refer to Technical Report NE-1, a Guide to Hardwood Log Grading for more information.

### Common Grading Defects

Bulges & bumps

Burls

Butt scars

Cankers

Conks

Limbs

Knots

Deep holes

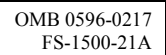
Heavy bark distortions

### Defects not to be considered

-Straight seams that can be placed between faces

-Frost cracks, seams, and splits that are not deeper than 15% of the log diameter

-Bird peck



**Sale Name** \_\_\_\_\_ **Contractor** \_\_\_\_\_

[illegible]



## Quick Guide to New Cruising Practices

### HEIGHTS

- All heights are measured in feet from the ground.  
The cruise software accounts for the stump height when calculating tree volumes.
- On all sawtimber trees, record the sawtimber height in feet.  
Warning - If you leave sawtimber height blank for a sawtimber tree the cruise software will try to figure out a sawtimber height based on tree taper. If a tree was called sawtimber but it turns out to have no sawtimber volume, then record a sawtimber height of 1 foot. This will result in zero sawtimber volume.
- On all trees, record the height to a 4" top or record total height to the very tip.  
For conifers and possibly other species with fairly uniform taper, you can measure the height to the very tip of the tree. For all other species (including most hardwoods) measure the height to the 4-inch diameter. Be sure to record the height in the correct column.
- On trees with a broken, dead, or deformed top, record the height to the point where the 4" top or the tip would have been if the tree were still growing normally, then record defect to account for the missing volume.

### DEFECT

- Defect calculations are still recorded as the percent of the volume of the product.  
Sawtimber defect is for the sawtimber portion only. Non-saw defect is for the non-saw portion only. Non-saw defect does not affect the sawtimber portion of the tree at all.
- Trees still need to be mentally divided into logs for defect calculation.  
Use the same tables and calculations you have been using all along. The tables are typically calibrated for both logs and feet.
- Record *Recoverable Product* percent for material that is defect from the standpoint of sawtimber, but which could be recovered as pulpwood volume. This is recorded only for sawtimber trees.  
An example is a sawtimber tree with a bad spiral seem affecting an entire log. Even though that log might not be sawtimber, the volume could be recovered as pulpwood (assuming it meets pulpwood specs).  
Sawtimber defect is the total percentage of the gross sawtimber volume that does not meet the specifications for sawtimber. Recoverable product is the percentage of the gross sawtimber volume that can be recovered as another product. For example, if 20% of the sawtimber volume of a tree is recoverable as pulpwood, and 10% is not recoverable, then the sawtimber defect is recorded as 30% and the recoverable product is recorded as 20%.

[illegible]



In the example above, a sample tree cruise was completed by for Payment Unit 1 of the Example Sale. Stratum 1 contains all hardwoods and stratum 2 contains all pines. Sample group HS is for hardwood sawtimber, HP is for hardwood pulpwood, and PS is for pine sawtimber.

The majority of the trees in the cruise were expected to be live cut trees, so the sale was set up in the software with that as the default. All trees are considered alive and marked for cutting unless otherwise specified in the columns labeled “Live/Dead” and “Cut/Leave”. Tree 3 in the example above was dead.

The process for correctly filling out a cruise card has not changed, however heights are now measured to the nearest whole foot. There are also several new columns.

The column labeled (Tot. Ht.) is used to record tree height to the very tip of the tree. This can be recorded instead of the height to a 4-inch top. One of these two heights is required. In the example above, pines were measured to the tip and hardwoods were measured to the 4-inch top.

The column labeled “%Recov” is for material that is defect from the standpoint of sawtimber, but which could be recovered as pulpwood volume. This is recorded only for sawtimber trees. For tree 1 in the example above, 30% of the sawtimber portion of the tree does not meet sawtimber quality, but one defected log (20% of the entire sawtimber portion) meets pulpwood specifications.

**CHECK CRUISE EVALUATION REPORT**

Sale Name: **EXAMPLE**  
Marker ID: SB  
Marker  
Name: Smokey Bear

**Tree Measurements**

Check Cruise Element	Tolerance	Total Possible	Number Incorrect	Error Weight	Total Error	Accuracy Score (%)
A	B	C	D	E	F	G
In/Out Trees	0	0	0	5	0	100
Species	0	17	0	5	0	100
Product	0	17	0	3	0	100
DBH	0.2	17	0	1	0	100
Saw Height	8	12	0	1	0	100
4-in Height	8	0	0	1	0	100
Total Height	8	17	0	1	0	100
Saw Defect	10	12	0	1	0	100
Totals		92			0	100

**Volume for Measured Trees**

Element	Tolerance	Marker	Check	% Difference
Total Cubic Volume	5	231	226	2
Sawtimber Cubic Volume	10	231	226	2

Evaluation Result:

\*\*\*\*\* **PASS** \*\*\*\*\*

The 'Total Possible' column (C) represents the number of trees that potentially have that element (A). Non-sawtimber trees do not have the elements that pertain only to sawtimber trees (for example, sawtimber height). In/out trees are only counted for plot or point cruises.

A measurement is incorrect if it is not within the specified tolerance (B) of the same measurement made by the check cruiser. The number incorrect (D) is multiplied by an error weight (E) to get the total error (F). The total error is compared to the total possible to get an accuracy score (G).

To pass this check, each element checked must have an accuracy score of at least 80 percent and the overall accuracy score must be at least 85 percent. In addition, the calculated volumes must be within the specified tolerance.

Recommendation/Comments:

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\_\_\_\_\_  
Signature of Certified Check Cruiser

\_\_\_\_\_  
Date