



## GRAYLING FOREST MANAGEMENT UNIT COMPARTMENT REVIEW PRESENTATION

COMPARTMENT # 195 ENTRY YEAR: 2013

GIS Compartment Acreage: 1127 County: Crawford

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**Revision Date:** August 23, 2011

**Stand Examiner:** Joan Charlebois

**Legal Description:** T25N R04W Sections 24, 25, 26  
Beaver Creek Township – west part

**Management Goals:** To maintain riparian & forest health, productivity, sustainability, species diversification, and structural diversity throughout the compartment while providing for multiple use and visual management. Due to proximity of this area to North Higgins Lake State Park, the historic forest nursery, the CCC Museum, and with the North Higgins hiking/Ski Pathway running through the compartment, the management in this area is to be directed more towards recreational use and education of historical resources and less towards industrial management.

**Soils and Topography:** Upland soils are predominantly Graycalm-Grayling sands, with minor representation in Grayling and Croswell sands and the more productive Klacking loamy sand. The compartment's relatively small amount of low ground is characterized by poorly-drained soil complexes such as Kinross-AuGres and Tawas-Leafriver mucks. Terrain is generally level, with slight elevation drops associated with the wetlands and stream corridor.

**Ownership Patterns, Development, and Land Use in and Around the Compartment:** While the compartment has no private in-holdings, roughly half of its boundary is adjacent to private property. Much of that private property has been developed for year-round residences.

**Unique, Natural Features (include only non-site specific and non-sensitive information):** A small segment of Beaver Creek that is a designated tributary within the AuSable's Natural Rivers system extends just into the east edge of the compartment. There is the potential for rare dry prairie plants and insects to occur within suitable upland habitats and for rare reptiles and bird species to be associated with Beaver Creek.

**Archeological, Historical, and Cultural Features (include only non-site specific and non-sensitive information):** This area, north of the former Higgins Lake Nursery, was the site of extensive planting and research operations, starting in 1912. It contains some of the first CCC plantations as well as the Bosom Field Pine Study Area, a historical forestry research site. An old state highway rest area used to be located at the intersection of Old 27 and Fletcher Road. It is now overgrown.

**Special Management Designations or Considerations:** Beaver Creek's designated Natural Rivers segment is a High Conservation Value Area (HCVA). The Bosom Field Pine Study Area is one of the State's earliest pine plantation research sites. The Hartman-Buckley-Sharik oak/pine study is ongoing within the compartment, as well as MTU's Sirex woodwasp monitoring.

**Watershed and Fisheries Considerations:** Beaver Creek is a designated tributary within the AuSable's Natural Rivers system.

**Wildlife Habitat Considerations:** The compartment's aspen, pine and increasing oak components provide a variety of habitat types for game and non-game wildlife.

**Mineral Resource and Development Concerns and/or Restrictions:** Surface sediments consist of ice-contact and glacial outwash sand and gravel and postglacial alluvium. The glacial drift thickness varies between 200 and 600 feet. Beneath the glacial drift is the Michigan Formation, quarried for gypsum elsewhere in the State. The nearest gravel pit is located just to the south and potential is thought to be good along the south edge of the compartment. Section 27 is leased and is part of the Beaver Creek Field. The field has produced over 21 MBO from the Devonian Richfield. Sections 25 and 26 are leased for oil and gas development. Quicksilver operates the secondary recovery operations in the Richfield and they are also working on expanding the Detroit River Formation producing area. Beaver Creek Field also has produced over 5 Bcf gas from the Ordovician Prairie du Chien.

**Vehicle Access:** County roads include Old 27, Fletcher, King & Oak Roads. Two-tracks constructed in the early 1900's run along most forty lines.

**Survey Needs:** None at this time.

**Recreational Facilities and Opportunities:** The Beaver Creek MCCCT trail runs through the compartment's north end. The North Higgins Lake State Park's Beaver Creek Trail system extends into the compartment's south half. This non-motorized pathway is used for hiking, biking and cross-country skiing.

**Fire Protection:** Access is good for fire protection. Beaver Creek at Oak Road is the nearest water point.

➤ **The following reports are available:**

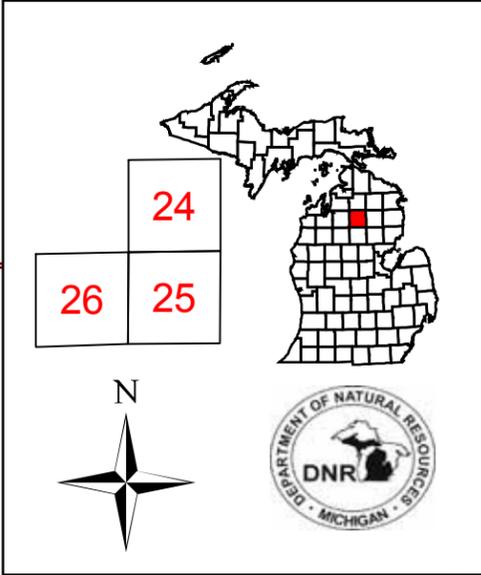
- ◆ **Total Acres by Cover Type and Age Class**
- ◆ **Proposed Treatment Summaries**
- ◆ **Dedicated Conservation Area Details**
- ◆ **Listing of Forested Stands**
- ◆ **Listing of Non-Forested Stands**
- ◆ **Proposed Treatments with No Limiting Factor**
- ◆ **Proposed Treatments with Limiting Factors**

➤ **The following information is displayed, where pertinent, on the attached compartment maps:**

- ◆ **Base feature information, stand numbers, cover types, recreation trails and facilities**
- ◆ **Proposed treatments**
- ◆ **Dedicated & Proposed Special Conservation Areas**

# Cover Type & Treatment Map

Compartment 195  
 T25N, R04W, Sec. 24, 25, 26  
 County: Crawford  
 Unit: Grayling  
 YOE: 2013  
 Acres: 1,127 GIS Calculated  
 Stand Examiner: Joan Charlebois  
 Map Revised: 9/07/2011  
 Map Phase: Pre-Review



**Stand #**  
 23  
**Stocking Density**  
 (4120) - A7  
 Level 3 OI  
 Level 4 Code  
**Cover Type Code**

### Legend

- Rls Corners
- Miris Corners
- Highway
- Paved Roads
- County Gravel Roads
- Gravel Roads
- Poor Dirt Roads
- Cable
- Pipe
- Power
- MCCCT Trail
- Snowmobile Trail
- Motorcycle (DNR Sticker)
- Parks Designated Trails
- MCCCT Trails
- Motorcycle Trails
- Snowmobile Trails
- Interstate Highway
- US Highway
- Berms
- Lakes and Rivers
- Intermittent Stream/Drain
- Stream

### Planned Regeneration

- Planted

### Treatments

- Clearcut (w/Reserves, Patch/Strip)
- Shelter Wood (w/Reserves)
- Thinning (Crown, Low, Systematic)
- Site Preparation

### Forest Stands

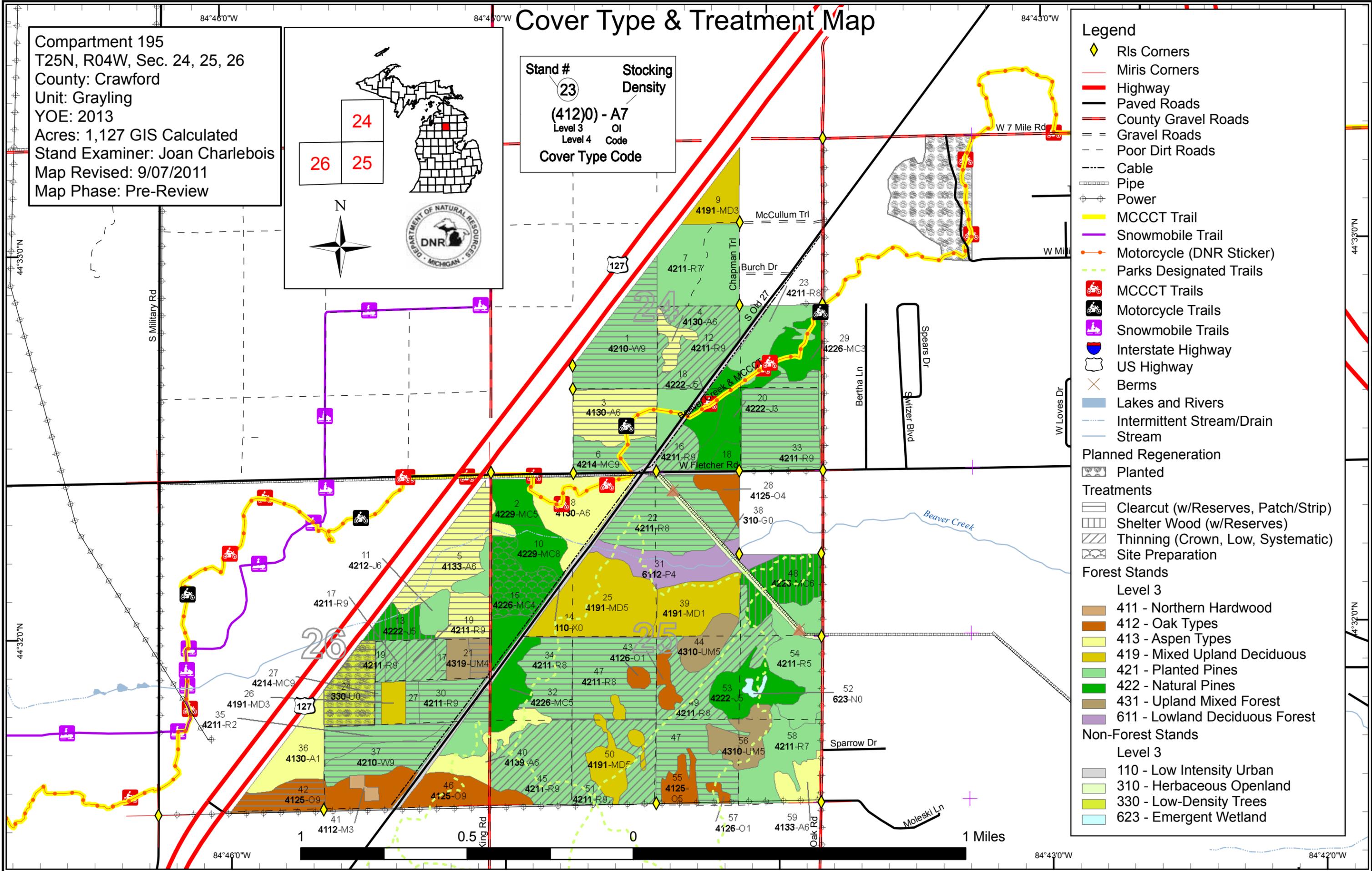
Level 3

- 411 - Northern Hardwood
- 412 - Oak Types
- 413 - Aspen Types
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 431 - Upland Mixed Forest
- 611 - Lowland Deciduous Forest

### Non-Forest Stands

Level 3

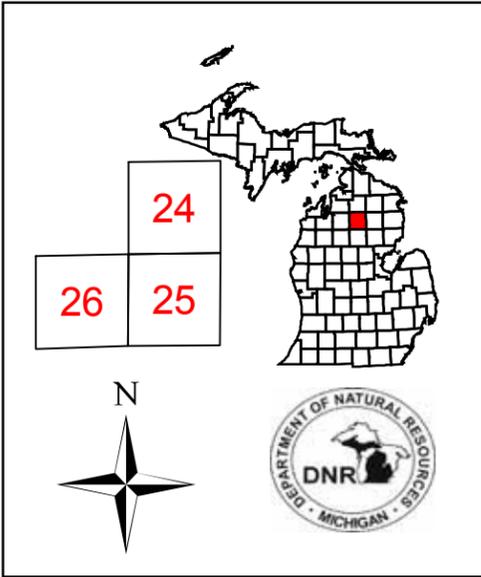
- 110 - Low Intensity Urban
- 310 - Herbaceous Openland
- 330 - Low-Density Trees
- 623 - Emergent Wetland





# Dedicated & Proposed Special Conservation Area Map

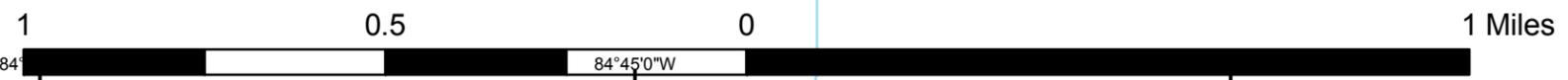
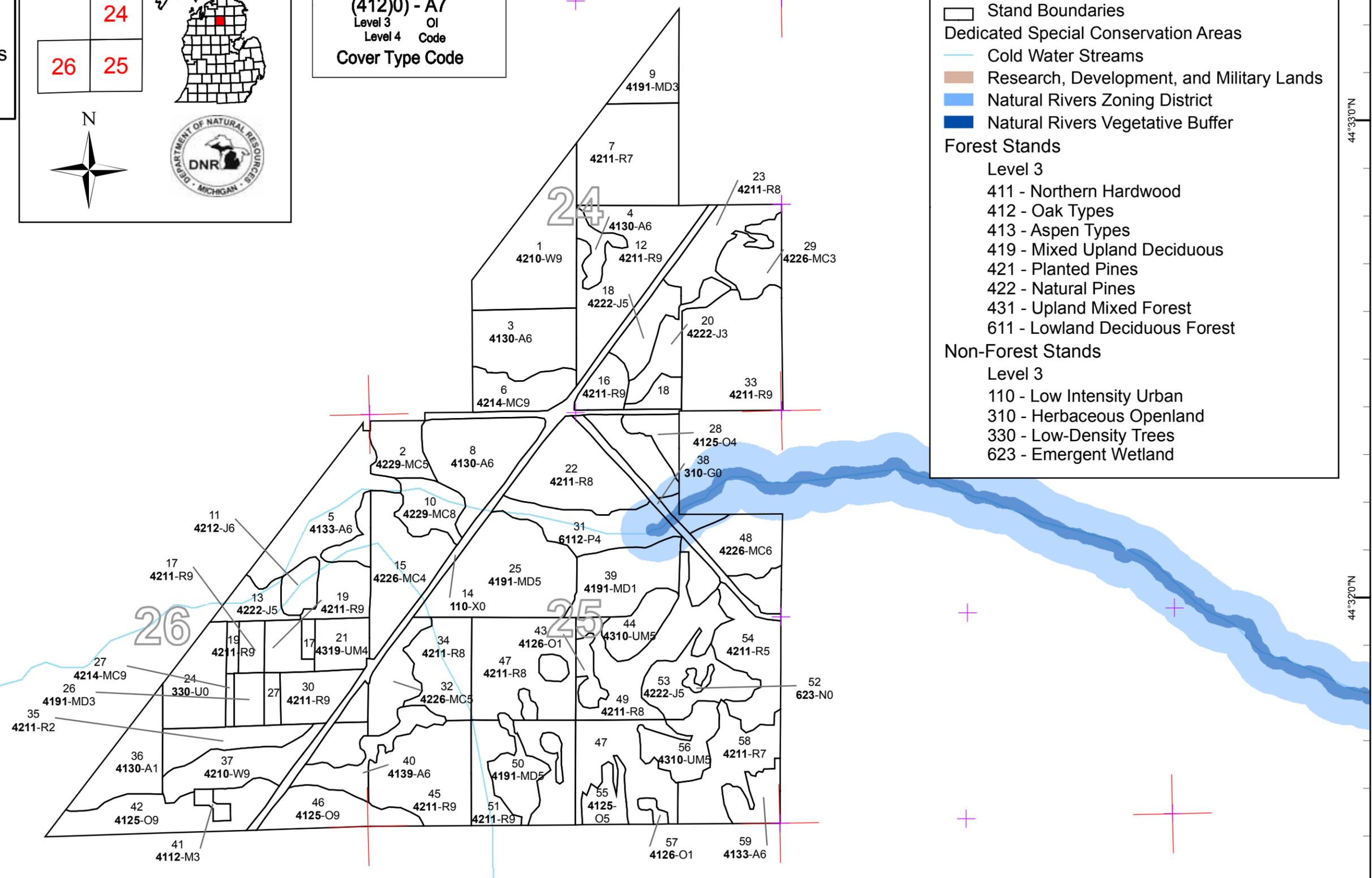
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 T25N, R04W, Sec. 24, 25, 26  
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**Stand #**  
 23  
**Stocking Density**  
 (4120) - A7  
 Level 3 OI  
 Level 4 Code  
**Cover Type Code**

**Legend**

- Miris Corners
- Stand Boundaries
- Dedicated Special Conservation Areas**
- Cold Water Streams
- Research, Development, and Military Lands
- Natural Rivers Zoning District
- Natural Rivers Vegetative Buffer
- Forest Stands**
- Level 3
- 411 - Northern Hardwood
- 412 - Oak Types
- 413 - Aspen Types
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
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	Age Class														Total	
	Non-Forested	1-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120 +		Unretn Age
Aspen	0	20	0	0	0	124	0	0	0	0	0	0	0	0	0	144
Herbaceous Openland	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
Jack Pine	0	0	11	12	0	42	0	0	0	0	0	0	0	0	0	65
Low-Density Trees	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
Lowland Aspen/Balsam Poplar	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	24
Marsh	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Mixed Upland Deciduous	0	23	19	0	0	58	0	0	0	0	0	0	0	0	0	100
Natural Mixed Pines	0	0	13	0	0	25	28	21	12	0	0	0	0	0	0	99
Northern Hardwood	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Oak	0	9	0	0	0	0	8	7	0	0	0	27	17	0	0	67
Planted Mixed Pines	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0	19
Red Pine	0	0	14	28	0	0	0	0	0	0	410	0	0	0	0	451
Upland Mixed Forest	0	0	0	0	11	25	0	0	0	0	0	0	0	0	0	36
Urban	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
White Pine	0	0	0	0	0	0	0	0	0	0	64	0	0	0	0	64
<b>Total</b>	<b>55</b>	<b>54</b>	<b>57</b>	<b>40</b>	<b>11</b>	<b>299</b>	<b>36</b>	<b>28</b>	<b>12</b>	<b>0</b>	<b>492</b>	<b>27</b>	<b>17</b>	<b>0</b>	<b>0</b>	<b>1127</b>



## Table 2 – Proposed Treatment Summaries

**Grayling Mgt. Unit**  
**Year of Entry 2013**

**Compartment 195**  
**Total Compartment Acres: 1127**

### Acres by Treatment Type

Commercial Harvest - 547	Site Prep - 21	Tree Planting - 0	Prescribed Burn - 0	Other - 0
Habitat Cut - 0	Opening Maintenance - 0	Tree Seeding - 0	Pesticide - 0	

### Cover Type by Harvest Method

		Clearcut	Selection	Seed Tree	Shelterwood	Thinning	Other - Specify	Total Acres
Aspen	71	0	0	0	0	0	0	71
Jack Pine	0	0	0	8	0	0	0	8
Low-Density Trees	20	0	0	0	0	0	0	20
Natural Mixed Pines	0	0	0	21	0	0	0	21
Oak	13	0	0	0	0	0	0	13
Planted Mixed Pines	19	0	0	0	0	0	0	19
Red Pine	189	0	0	0	144	0	0	333
Upland Mixed Forest	5	0	0	0	0	0	0	5
White Pine	57	0	0	0	0	0	0	57
<b>Total</b>	<b>373</b>	<b>0</b>	<b>0</b>	<b>30</b>	<b>144</b>	<b>0</b>	<b>0</b>	<b>547</b>



S t a n d	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
1	72195001-ccr	38.1	42101 - Planted White Pine, Mixed Deciduous	High Density Log	96	Harvest	Clearcut with Reserves	4191 - Mixed Upland Deciduous with Conifer	Cmpt. Review Proposal

Prescription Final harvest with reserves: leave the RP, the younger oak (<10" DBH), and ~2% in island retention that does not encompass non-native trees.  
Specs:

Other WP & scotch pine planted in NESW in fall 1915, & WP only planted in the SENW in spring 1916. Planted WP (densest to N end), minor components of planted scotch pine & jack pine, along with naturally established trembling aspen, red maple & oak. Occasional RP & Norway spruce. Merch aspen cut on 10 acres in 1964 (067-64) except for within 200 feet of the US-127 ROW. JP & SP largely died out. WP & remaining SP have almost universal poor form: limby, weeviled, with low forks, double tops, crook, etc. High degree of cull & decadence in the mature cohort across all species. Understory filling in with red maple & WP, also diverse mast-producing shrub layer. Relatively rich site, primarily PArVVb, with PArVVb/PArVHa crossover.  
Comments:

Next Expected regeneration is a mix of aspen, oak, RM and pine. Follow-up with natural regen survey.  
Steps:

3	72195003-ccr	24.7	4130 - Aspen	High Density Pole	46	Harvest	Clearcut with Reserves	4191 - Mixed Upland Deciduous with Conifer	Cmpt. Review Proposal
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Prescription Final harvest with reserves: leave the RP, the <10" DBH oak, and ~2% in island retention that doesn't incorporate non-native trees.  
Specs:

Other WP & European larch planted in fall 1915. Merch aspen cut in mid-1960's. Merch JP & marked WP cut in late-1960's. Stand is primarily aspen, with oak & red maple that likely regenerated from the same harvest, and older saw-sized cull WP & NPO. Relatively rich site with a well-developed mast-producing shrub layer. Aspen is slowly losing vigor; black canker and hypoxylon present. The younger pole-sized oak is vigorous; the saw-sized oak is breaking up. Scattered RP poles & saw, a trace of larch. Pocket of planted JP in stand's SE from 1971 planting, with poor form, individual stem mortality. Beaver Creek MCCCT trail crosses through the stand.  
Comments:

Next Expected regeneration is a mix of aspen, oak, RM and pine. Follow-up with natural regen survey.  
Steps:

4	72195004-ccr	5.8	4130 - Aspen	High Density Pole	46	Harvest	Clearcut with Reserves	4191 - Mixed Upland Deciduous with Conifer	Cmpt. Review Proposal
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Prescription Carry-over treatment from 2008 YOE compt 196 stand 53, on contract 720010901, currently being cut. Final harvest with reserves: Cut the aspen & oak and 10 BA of the RP.  
Specs:

Other RP & JP planted in fall 1915. Aspen cut in mid-1960's. Mostly trembling aspen, a little bigtooth, with scattered NPO, red maple, & planted RP & JP. Some conks on the trembling aspen. Nice shrub layer.  
Comments:

Next The stand is expected to regenerate to aspen. Follow-up with natural regen survey.  
Steps:

5	72195005-ccr	40.3	4133 - Aspen, Mixed Pine	High Density Pole	47	Harvest	Clearcut with Reserves	4139 - Aspen, Mixed Deciduous	Cmpt. Review Proposal
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Prescription Final harvest with reserves: leave the oak, and ~3% in island retention (ie: 3 roughly half-acre islands that encompass some of the xlog pine and low ground swales in the stand's NW).  
Specs:

Other Variable age aspen stand (40's and 50's, ave 47, oldest cohort in swath along US-127) with variable stocking/distribution of JP, WP, RP & oak. Remnant of 1914 WP plantation in far NE, 1- & 2-acre patches of large WP & RP saw w/in 400' of the freeway fence in SW. A narrow swale of low ground with patches of tag alder, cornus & viburnum arcs through the stand from SW to NE (OFS point wetlands). Part of the stand's SE had JP planted in 1983, but it largely failed there. Aspen in both age classes is declining. WP regen with D. scrobiculata flagging. Diverse shrub layer, all species combined make the high subcanopy cover benchmark.  
Comments:

Next The stand is expected to regenerate to aspen with RM, oak and pine mixed in. Follow-up with natural regen survey.  
Steps:



Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
6	72195006-ccr	13.8	42141 - Planted Mixed Pine, Mixed Deciduous	High Density Log	96	Harvest	Clearcut with Reserves	4191 - Mixed Upland Deciduous with Conifer	Cmpt. Review Proposal

Prescription Final harvest with reserves: leave the RP, the younger oak (<10" DBH), and some xlog WP.

Specs:

Other Comments: WP & European larch planted in fall 1915. Merch aspen cut in mid-1960's. Merch JP & marked WP cut in late-1960's. JP inter-planted at an unusually wide spacing in 1971, mostly in W. That JP is limby, 1-3 sticks tall. Residual WP from the 1915 planting is largely poor-form cull, except where the stocking held up; that plantation is most intact in the stand's E part, gets sketchier to W. Trace of larch left. RP saw that pre-dates the 1915 planting is concentrated in the E. Aspen starting to decline; oak poles/saplings/small saw are vigorous. Well-developed shrub layer with advanced oak regen. Occasional beech sap. Beaver Creek MCCCT trail crosses through the stand.

Next Steps: Expected regeneration is a mix of aspen, oak, RM and pine. Follow-up with natural regen survey.

12	72195012-thin	28.3	42110 - Planted Red Pine	High Density Log	96	Harvest	Low Thinning	42110 - Planted Red Pine	Cmpt. Review Proposal
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Prescription Carry-over treatment from 2008 YOE compt 196 stand 53, on contract 720010901, currently being cut: Remove all aspen, oak & 10 BA of RP.

Specs: Only the NWSE was treated, rest left as retention.

Other Comments: RP & JP planted across the N1/2SE in fall 1915, with RP & Scotch Pine planted in the SWSE in 1916. Aspen cut in the mid-1960's. Small volume contracts were issued in the 1960's and 1970's for the removal of RP cabin logs. Most of the planted JP & scotch pine removed in previous harvests or died out. Poor-quality NPO saw breaking up. Second age class of oak/aspen/red maple from 1964 cut is intermediate in the canopy. Advanced oak regen in the subcanopy. Beaver Creek MCCCT trail crosses through the stand's S end.

Next Steps:

13	72195013-seed	8.5	42220 - Natural Jack Pine	Medium Density Pole	46	Harvest	Shelter Wood with Reserves	4122 - Oak, Pine	Cmpt. Review Proposal
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Prescription Harvest the merch JP & aspen, leave all of the oak & RP.

Specs:

Other Comments: Two-aged JP with vigorous mixed oak. The older JP (60+) is declining; the younger JP (mid-forties) is maintaining. RP of varying size classes occur at low densities & in small pockets across the stand, as well as trembling aspen poles. TA declining.

Next Steps: Between the released & recruited regen, the stand is expected to have a mixture of oak, pine, and aspen. Follow-up with natural regen survey.

16	72195016-thin	7.8	42110 - Planted Red Pine	High Density Log	95	Harvest	Crown Thinning	42110 - Planted Red Pine	Cmpt. Review Proposal
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Prescription Thin the RP to reduce stress on the residual and increase the oak understory. BA varies widely (170-260 BA). Thin to ~110-120 sq. ft., except avoid removing more than half of the starting BA. Leave the other species except cut all scotch pine.

Other Comments: RP & Scotch Pine planted in spring 1916. Small volume contracts were issued in the 1960's and 1970's for the removal of cabin logs. RP saw with minor components of WP, JP, SP, RM, oak, & aspen. Majority of the RP fall within the 12 to 18 inch diam range, with a mean of 15.

Next Steps:

17	72195017-thin	6.9	42110 - Planted Red Pine	High Density Log	99	Harvest	Crown Thinning	42110 - Planted Red Pine	Cmpt. Review Proposal
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Prescription Thin to maintain tree health for possible extended rotation (100-150 years). Apply a variable density thinning, taking into consideration the Bosom Field study plot target BA's.

Other Comments: Part of the original Bosom Field Pine Study area, planted to RP in the fall of 1912 at roughly 2000 t/ac. This stand encompasses the three research plots that were thinned to lower target residual BA's. The west polygon contains two plots: the west plot's target residual BA was 80 sq. ft., the east plot's was 100 sq. ft.; both had a series of thinnings, the first in 1951 and the most recent in 1985 (720018501). The east polygon ("MCD" plot in the research report) also had a series of thinnings, the first in 1934 and the most recent in 1985 (720018501). The three plots were combined due to minimum stand mapping rules, and as such, the data had to be averaged across the plots. The BA's of 110-130-160 were recorded from W to E. The RP overstory has good diameter relative to height growth & less individual stem mortality compared to the adjacent higher-residual research plots. Understory development is low overall, with Diplodia symptoms in the RP & WP saplings.

Next Steps:



S t a n d	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
19	72195019-thin	10.2	42110 - Planted Red Pine	High Density Log	99	Harvest	Crown Thinning	42110 - Planted Red Pine	Cmpt. Review Proposal
<p><u>Prescription</u> Thin to reduce competitive stress for possible extended rotation (100-150 years). Factor in snow-load &amp; windthrow potentials when marking.</p> <p><u>Specs:</u> Apply a variable density thinning, taking into consideration the Bosom Field study plot target BA's.</p> <p><u>Other</u> <u>Comments:</u> Part of the original Bosom Field Pine Study area. Two-year old RP planted in the fall of 1912 at roughly 2000 t/ac. This stand encompasses the four research plots with higher target residual BA's. The west polygon is one plot (160 sq. ft. target). The east polygon contains three plots, with target BA's ( from W to E) of 120, 140 &amp; UNCUT. Aside from the UNCUT control, there was a series of thinnings, the first in 1951 and the most recent in 1985 (720018501). The four plots were combined due to minimum stand mapping rules, and as such, the data had to be averaged across the plots. The BA's of 190-210-230 were recorded from W to E. Not as good diameter relative to height growth, with extreme whippiness in the UNCUT block (slash accumulation there from suppressed stems weeding out). Very little understory development, except in the west block (the oak regen there makes medium, but averages to very low across the entire stand).</p> <p><u>Next</u> <u>Steps:</u></p>									
21	72195021-ccr	4.7	4319 - Mixed Upland Forest	Low Density Pole	49	Harvest	Clearcut with Reserves	4191 - Mixed Upland Deciduous with Conifer	Cmpt. Review Proposal
<p><u>Prescription</u> Exclude the west part where there is mostly spruce. In the east part, final harvest (2" DBH &amp; up) with reserves: leave the oak, red pine &amp; white pine. No additional retention due to small stand size. The salvage will be low volume/value but will serve to remove the mature scotch pine seed source and release the existing oak regen. WBHG: do not leave tops -- want the scotch pine tops removed from the site.</p> <p><u>Other</u> <u>Comments:</u> Part of the original Bosom Field Pine Study area. Four planting blocks were combined into one stand because individually they do not meet minimum stand mapping rules. A white spruce "Christmas tree plantation" was established on the west 5 acres in the spring of 1918. Half-acre strips of "Black Jack Pine" and "Yellow Jack Pine" were planted along the east edge in spring 1916, and roughly an acre of Scotch pine was planted in spring 1919 between the WS &amp; JP. A small opening/road end in the NE is filling in with scotch pine. Most of the WS is on the ground, the JP &amp; SP are dropping out also, but not as fast. The surviving planted stock represents a supercanopy layer above the dominant younger pole/sapling canopy of oak, red maple, aspen, WP &amp; RP. SP &amp; WS have been seeding in also. The mixed oak is vigorous. The WS block is considerably more open &amp; heavier to RM and cherry; the JP/SP block has 50-75% crown closure and also more of the oak component.</p> <p><u>Next</u> <u>Steps:</u> Between the residual and the regen, the stand is expected to have a mixture of oak, pine, RM &amp; aspen. Follow-up with natural regen survey.</p>									
22	72195022-ccr	40.4	42110 - Planted Red Pine	Medium Density Log	97	Harvest	Clearcut with Reserves	4191 - Mixed Upland Deciduous with Conifer	Cmpt. Review Proposal
<p><u>Prescription</u> Overstory removal: cut 2" &amp; up on the aspen, larch &amp; RM, merch &amp; up on the JP, 10" &amp; up on the oak, and leave roughly 3% by area in RP</p> <p><u>Specs:</u> (leave all SCRP) &amp; WP.</p> <p><u>Other</u> <u>Comments:</u> RP planted in fall 1914, with occasional super-canopy RP along the south edge that pre-date the planting. European larch was planted with the RP west of the forty rd. RP thinned &amp; 4" DBH and up JP &amp; aspen cut in 1994 (720499301), except on the S edge along the old floodplain. 1" radial growth in the last decade. The RP is less dense in the stand's W &amp; S. The planted larch is saw-sized and co-dominant with the RP. Intermediate canopy associates include: mature &amp; immature mixed oak, aspen, RM, WP &amp; JP. Combined high density subcanopy cover in oak, pine, RM &amp; shrubs. Branch mortality laddering in the overstory RP in small pockets along stand edges &amp; openings. Understory RP with associated shoot blight. A hard-surfaced loop drive and small opening near Old 27 are what remains of a decommissioned MDOT rest area. That opening is where most of the larch is seeding in. PRD non-motorized pathway loops through the stand's SW.</p> <p><u>Next</u> <u>Steps:</u> Between the residual and the regen, the stand will have a mix of oak, pine, aspen &amp; RM. Follow-up with natural regen survey.</p>									
27	72195027-ccr	4.9	42141 - Planted Mixed Pine, Mixed Deciduous	High Density Log	99	Harvest	Clearcut with Reserves	4122 - Oak, Pine	Cmpt. Review Proposal
<p><u>Prescription</u> Remove the WP &amp; Scotch pine overstory, and cut the understory RM &amp; scotch pine 2" and up. Will release the advanced oak regen and poles, and remove the mature SP seed source. Leave the few beech. No additional retention due to small stand size.</p> <p><u>Other</u> <u>Comments:</u> Part of the original Bosom Field Pine Study area. Two covertypes were combined because individually they do not meet minimum stand mapping rules, both established in the spring of 1912. West polygon is planted WP, east polygon has planted Scotch pine. The WP runs 140-190 BA, has decent form and self-pruning, but tends to be whippy. Both the canopy &amp; subcanopy WP is showing branch flagging symptomatic of Diplodia scrobiculata. There is slash accumulation from WP that has been wind-throwing in along the west edge. The Scotch pine is slowly dying out, but still producing large seed crops. The SP block has vigorous oak poles intermediate in the canopy, along with RM &amp; an occasional beech. The combined subcanopy under the WP makes high understory stocking in oak, RM, &amp; WP; the combined subcanopy under the SP makes medium coverage.</p> <p><u>Next</u> <u>Steps:</u> Between the residual and the regen, the stand is expected to have a mixture of oak, pine &amp; RM. Follow-up with natural regen survey.</p>									



S t a n d	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
30	72195030-ccr	15.6	42110 - Planted Red Pine	High Density Log	99	Harvest	Clearcut with Reserves	4122 - Oak, Pine	Cmpt. Review Proposal
<p><u>Prescription</u> Release the oak-dominated subcanopy by removing the RP overstory. Leave roughly 3% by area of RP in small released clumps and scattered windfirm stems, avoiding leaving any near the pockets of mortality.</p> <p><u>Specs:</u></p> <p><u>Other</u> Part of the original Bosom Field Pine Study area, planted to RP in the fall of 1912. Series of thinnings over the years, most recent in 1986 (720388501) and 1994 (720519301). Codominant RP with 80 BA circa put on 1" radial growth in the last 14 years. Small pockets of mortality, large one in NE is OFS point. Some heavy leaners in the whippier poles. Shoot blight in understory RP, likely Diplodia pinea from infected overstory trees. Bark beetle present but likely secondary pest. Branch flagging starting in the WP saplings, likely D. scrobiculata. Vigorous oak saplings &amp; poles in the multi-layered subcanopy. The oak combined with the RM make for high subcanopy cover.</p> <p><u>Comments:</u></p> <p><u>Next</u> Between the residual and the regen, the stand is expected to have a mixture of oak &amp; pine. Follow-up with natural regen survey.</p> <p><u>Steps:</u></p>									
33	72195033-ccr	38.4	42110 - Planted Red Pine	High Density Log	96	Harvest	Clearcut	4191 - Mixed Upland Deciduous with Conifer	Cmpt. Review Proposal
<p><u>Prescription</u> Final harvest (&gt;1" DBH) with no retention in order to prepare the site for planting. Treatment area excludes the strip of dense regen along the county road corridors.</p> <p><u>Specs:</u></p> <p><u>Other</u> RP &amp; scotch pine planted in fall 1915. RP pruned in 1959. No recorded treatments for the next three decades. In 1992, the stand was the south part of a larger harvest (720358901), spec'd to remove everything 2" &amp; up except red pine. While termed a thinning, this species-removal cut did not address improving RP quality, and resulted in uneven spacing and wide BA ranges (90-230 sq. ft.). Diameters also range widely, from 8-18", with 14" as a mean. Fair amount of logging damage. Individual stem mortality (bark beetle, diplodia, lightning) not progressed into pocket mortality yet. The advanced oak regen combined with the JP, RM &amp; aspen make for full subcanopy cover. Aspen is concentrated along the stand's road ROW edges, where there is roughly a chain-wide strip of dense sapling regen, including JP &amp; SP. Only a trace of the original scotch pine is left.</p> <p><u>Comments:</u></p> <p><u>Next</u> Trench &amp; plant to RP. Control competing vegetation before and after planting in order to ensure prompt RP stand establishment. Follow-up with regen survey.</p> <p><u>Steps:</u></p>									
34	72195034-ccr	20.4	42110 - Planted Red Pine	Medium Density Log	97	Harvest	Clearcut with Reserves	4122 - Oak, Pine	Cmpt. Review Proposal
<p><u>Prescription</u> Final harvest with reserves: leave approximately 5% RP by area in released clumps and scattered individual stems, and leave all oak, WP &amp; JP.</p> <p><u>Specs:</u></p> <p><u>Other</u> RP planted in fall 1914. One acre of Austrian pine planted in NE corner of stand the same year (a trace of fading AP left). Most recent recorded treatment in 1972. Variable spacing, BA's and diameters. 15" ave DBH, but the poles &amp; smaller saw are whippy. Well-developed oak-dominated understory; also some vigorous oak poles intermediate in the canopy. The numerous small openings where the planting didn't take are filling in with oak, RM &amp; JP. Better RP health than in the similar-aged higher stocked stands. PRD non-motorized pathway crosses through the stand.</p> <p><u>Comments:</u></p> <p><u>Next</u> Between the residual and the regen, the stand is expected to have a mix of oak, pine &amp; RM. Follow-up with natural regen survey.</p> <p><u>Steps:</u></p>									
35	72195035-Cut	13.7	42110 - Planted Red Pine	Medium Density Saplin	16	Harvest	Clearcut	42110 - Planted Red Pine	Cmpt. Review Proposal
<p><u>Prescription</u> Final harvest (1" DBH &amp; up) this partially-failed plantation in preparation for regenerating it to a fully-stocked condition. Leave no retention in order to facilitate site prep. Set up so that stands 24 &amp; 37 will be ready for site prep and planting at the same time as this stand.</p> <p><u>Specs:</u></p> <p><u>Other</u> Final harvested in 1994 (720519301), RP planted in 1995, with poor-form scotch pine that recruited in from the adjacent mature seed source. SP heaviest along that N edge. Lesser amounts of seeded-in WP &amp; JP. Vigorous stump-origin oak saplings. Center of plantation has failed areas with 25-50% cover. RP putting on decent growth where stocking held up.</p> <p><u>Comments:</u></p> <p><u>Next</u> Trench and plant to RP along with stands 24 &amp; 37. Control competing vegetation before and after planting in order to ensure prompt RP stand establishment. Follow-up with regen survey.</p> <p><u>Steps:</u></p>									



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Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
<b>37 72195037-cc</b>	18.4	42100 - Planted White Pine	High Density Log	97	Harvest	Clearcut	42110 - Planted Red Pine	Cmpt. Review Proposal
<p><u>Prescription:</u> West of Old 27, final harvest (&gt;1" DBH) in preparation planting the stand to RP. Polygon east of Old 27 will not be included in the treatment.</p> <p><u>Specs:</u> Leave no retention in order to facilitate site prep. Set up so that stands 24 &amp; 35 will be ready for site prep and planting at the same time as this stand.</p> <p><u>Other Comments:</u> WP, RP &amp; JP established through a series of plantings between 1914 &amp; 1930. JP died out. RM filling in the canopy gaps where the planted pine continue dropping out. That RM is recruiting from a well-established RM understory. Small pockets have shifted to more RM than pine cover. Minor aspen &amp; oak pole components are likely the same cohort as the RM poles. The WP has generally poor form, with persistent dead branches, crook, &amp; multiple tops common. WP is slowly declining, with epicormic branching, top dieback, and mortality in the suppressed narrow-crowned stems. Also seeing branch flagging symptomatic of D. scrobiculata. PRD non-motorized pathway crosses through the stand's E end.</p> <p><u>Next Steps:</u> Trench &amp; plant to RP along with stands 24 &amp; 35. Control competing vegetation before and after planting in order to ensure prompt RP stand establishment. Follow-up with regen survey.</p>								

<b>42 72195042-ccr</b>	13.3	4125 - Black, N. Pin Oak	High Density Log	108	Harvest	Clearcut with Reserves	4191 - Mixed Upland Deciduous with Conifer	Cmpt. Review Proposal
<p><u>Prescription:</u> Regarding the H-B-S study, the researchers would like to keep the plots as-is for at least 1-to-2 more growing seasons in order to measure the 5-year response of the regen to the 2008 burn, so the treatment area covers that part of the stand west of the N-S forty road. Final harvest with reserves. Retain ~3% cover in pine &amp; oak. Cut the RM 2" &amp; up.</p> <p><u>Other Comments:</u> Stand dominated by large hybridized NRO with similar stature WP &amp; RP (most of the pine planted in the early 1920's). RM is intermediate in the canopy and is continuing to recruit from the RM-dominated subcanopy. Minor components of WO &amp; aspen. The NRO is in its slow attrition phase, with progressing upper crown dieback &amp; individual tree mortality. The RM is gaining in ascendancy. Eight plots were established within the stand as part of the Hartman-Buckley-Sharik oak/pine regen study. Oak age based on that research data. The over- and understory vegetation on 6 of those plots was manipulated through varying harvest levels and 2 prescribed burns (FTP C72-464 &amp; C72-552) in 2002 &amp; 2008. The plots with mature oak residual are inclusions within this stand; the two clearcut plots were split out as a separate stand.</p> <p><u>Next Steps:</u> Oak is the primary management species, but a mixture of oak, red maple, aspen and pine is expected and accepted. Follow-up with natural regen survey.</p>								

<b>45 72195045-thin</b>	32.4	42110 - Planted Red Pine	High Density Log	98	Harvest	Crown Thinning	42110 - Planted Red Pine	Cmpt. Review Proposal
<p><u>Prescription:</u> In the NE part of the stand where the oak regen is well-established, remove most of the RP overstory, leaving RP in released clumps. Leave no RP around pockets of mortality. In the rest of the stand, thin to reduce competitive stress, leaving a residual of ~110-120 sq. ft. except avoid removing more than half of the starting BA. Cut the RM 2" &amp; up.</p> <p><u>Other Comments:</u> RP planted in spring 1913, JP fill-in plantings in 1921 and 1925. Thinned in 1994 under 051-93. The stand's NE has higher BA's, lower ave DBH, and an oak-dominated understory. OFS point is a pocket of slowly spreading mortality in the RP, with RM poles filling in below. The stand's S &amp; W has lower BAs, higher ave DBH, and is on a richer site with a RM-dominated understory. PRD non-motorized pathway crosses through the stand.</p> <p><u>Next Steps:</u></p>								

<b>47 72195047-ccr</b>	60.9	42110 - Planted Red Pine	Medium Density Log	97	Harvest	Clearcut with Reserves	4122 - Oak, Pine	Cmpt. Review Proposal
<p><u>Prescription:</u> Final harvest with reserves: leave ~3% by area in RP in released clumps and scattered windfirm stems (well away from infected pockets), leave the canopy gap patches of JP, oak, and aspen.</p> <p><u>Other Comments:</u> RP planted in 1913 &amp; 1914. Thinned in 1984 (201-84 &amp; 295-83). Thinned again in 2000 (720329801). Dominant RP with 110 BA circa put on 7/8th" radial growth in decade since harvest. Even though the RP was effectively released in 2000, and diseased pockets were salvaged in 2002, there is continuing individual stem mortality &amp; spreading pocket mortality. Widespread incidence of shoot blight in the RP regen. Some root issues starting too, a few heavy leaners. Vigorous advanced oak saplings in the understory. There was good protection of the oak regen during harvesting in 2000 and additional rebound since. RM present but not overwhelming the oak. Scattered throughout the stand are small gaps in the original planting that filled in with varying proportions of JP, mixed oak, WO, QA &amp; RM. PRD non-motorized pathway crosses through.</p> <p><u>Next Steps:</u> Between the residual and the regen, the stand is expected to have a mix of oak, pine &amp; RM. Follow-up with natural regen survey.</p>								



Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
48	72195048-shwd	21.2	42260 - Natural Pine, Mixed Deciduous	High Density Pole	60	Harvest	Shelter Wood with Reserves	42250 - Pine, Oak	Cmpt. Review Proposal
<p><u>Prescription:</u> Harvest the JP &amp; aspen, leaving the RP, WP &amp; oak.</p> <p><u>Specs:</u></p> <p><u>Other Comments:</u> Naturally-established mixed pine stand with NPO &amp; aspen. Predominantly mature to overmature JP, with pockets of variable age/size class RP &amp; WP (mostly in east end). NPO present as saplings, poles &amp; small saw, as well as scattered poor-quality large saw. Aspen occurs in small clones. Aspen &amp; the mature JP &amp; NPO are declining. The RP &amp; WP are maintaining. The younger oak is vigorous. PRD non-motorized pathway loops through the stand.</p> <p><u>Next Steps:</u> The stand will have a residual of RP, WP &amp; oak, with a mixture of oak, aspen &amp; pine regen expected. Follow-up with natural regen survey.</p>									
49	72195049-thin	30.2	42110 - Planted Red Pine	Medium Density Log	97	Harvest	Crown Thinning	42110 - Planted Red Pine	Cmpt. Review Proposal
<p><u>Prescription:</u> Apply a variable density thinning, leaving no overstory RP near pockets of mortality, reducing competitive stress in densely-stocked areas (avoid removing more than half the BA), and removing most of the overstory where there's well-established oak regen. Don't clean up all of the smaller diameter intermediate RP; leave some for vertical diversity if they're deep-crowned. Cut the RM 2" &amp; up. Leave the JP &amp; oak.</p> <p><u>Other Comments:</u> RP planted in fall of 1913 and spring of 1914. RP in the NWSE was thinned in 1983 under 300-82A along with all merch JP &amp; oak. Patch of pocket mortality along W edge was salvaged in 2002 (split off as its own stand); mortality continuing along its edges. Additional pocket mortality at OFS pt. Plantation uniformity falls apart as you move to the N &amp; E; spacing &amp; diameters get more variable, giving the appearance of naturally-established RP. Row spacing very tight in places (3-4'), with patchier planting survivorship. Site not as rich as to S, PArHa/PVcD crossover, understory coverage is lower, mostly oak, little RM. PRD non-motorized pathway runs through the stand.</p> <p><u>Next Steps:</u></p>									
51	72195051-thin	28.2	42110 - Planted Red Pine	High Density Log	98	Harvest	Crown Thinning	42110 - Planted Red Pine	Cmpt. Review Proposal
<p><u>Prescription:</u> Apply a variable density thinning: In the north part of the stand where the subcanopy is oak-dominated, remove most of the RP overstory, leaving RP in released clumps, but avoiding leaving any near the pocket mortality. On the better ground to the south where the understory is RM-dominated, thin to reduce competitive stress, leaving a residual of ~110-120 sq. ft. except avoid removing more than half of the starting BA. Clean up around the pocket mortality. Cut the RM &amp; SP 2" &amp; up, leave the other species.</p> <p><u>Other Comments:</u> RP planted in fall 1913 along with European larch &amp; Scotch pine. Spring of 1921 saw some JP planted. A few low-volume cabin log contracts were issued in the mid-1970's. RP thinned in 1985, along with SP &amp; JP species removal, under 201-84. The stand is variable in terms of DBH range, BA, spacing &amp; health because of the original planting's varied species mix &amp; survivorship, &amp; because the RP was not uniformly released across all portions of the stand. Areas w/ lower initial survivorship &amp;/or more of the removed JP &amp; SP saw effective release by default. Codominant RP in overstocked areas have thinning crowns, &amp; suppressed poles continue to weed out. Pocket mortality slowly spreading (see OFS pts). Shoot blight in over- &amp; understory RP. Site becomes richer to S, more VVb. RP tolerated the overstocking better there, has better taper/diameter. Still oak in the subcanopy on the better ground, but the RM component increases markedly. PRD non-motorized pathway crosses through.</p> <p><u>Next Steps:</u></p>									
24	NF_72195024 prep	19.7	Non-Forested		0	Harvest	Clearcut	42110 - Planted Red Pine	Cmpt. Review Proposal
<p><u>Prescription:</u> Cut the residual (&gt;1" DBH), leaving no retention in order to facilitate site prep. Set up so that stands 35 &amp; 37 will be ready for site prep and planting at the same time as this stand.</p> <p><u>Other Comments:</u> Part of the original Bosom Field Pine Study area, planted to RP in the spring of 1913. North half was thinned and the overstory was removed on the south half in 2006 (720710401), then the overstory was removed in the north half in 2009 (720110901) due to continuing mortality from bark beetle infestation. The overstory removal left a low density residual of small pole/large sapling white oak, red oak &amp; WP scattered across the stand &amp; in two concentrated swaths in the N half. That, combined with regen from the cut (black cherry &amp; oak sprouts) is not enough to make the Forested benchmark. FTP C72-606 was submitted in 2009 for trenching and planting to RP.</p> <p><u>Next Steps:</u> Trench and plant to RP along with stands 35 &amp; 37. Control competing vegetation before and after planting in order to ensure prompt RP stand establishment. Follow-up with regen survey.</p>									



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Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
15 72195015-prep	20.7	42260 - Natural Pine, Mixed Deciduous	Low Density Pole	55	Site Prep	Scarification	42260 - Natural Pine, Mixed Deciduous	Cmpt. Review Proposal

Prescription Scarify open areas in the stand's north 2/3rds (ie: run the chains through) to expose mineral soil for pine seedling establishment.

Specs:

Other Merch JP & aspen removed in 2006 (720430301). Patchy distribution of RP, WP & WO saw extend above the main canopy layer of small pole/large sapling oak & WP. JP seeded in best along skid routes; areas with undisturbed groundcover are vacant except where the cherry brush proliferated. Flagging in the WP symptomatic of Diplodia scrobiculata. Some upper crown dieback & mortality in the younger mixed oak at the S end -- harvesting was completed by mid-April, and the slow progression of mortality (multiple years in red oak group) does not indicate oak wilt. Unusual given the oak's vigor -- should have released well.

Next A mixture of JP, RP, WP & upland deciduous is expected. Follow-up with natural regen survey.

Steps:

**Total Treatment  
Acreage Proposed: 567.6**

Table 4 -- Treatments Prescribed with a Limiting Factor



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Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
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#Error

Prescription Specs:

Other Comment:

Next Steps:

Limiting Factor and No Treatment Reason

**Total Treatment Acreage Proposed: 0**

Out of YOE -- Treatments  
Prescribed with No Limiting Factor

Year of Entry: 2013



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Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
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Prescription  
Specs:

Other  
Comments:

Next  
Steps:

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**Total Treatment  
Acreage Proposed: 0**



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
1	42101 - Planted White Pine, Mixed Deciduous	High Density Log	38.1	96	111-140	WP & scotch pine planted in NESW in fall 1915, & WP only planted in the SENW in spring 1916. Planted WP (densest to N end), minor components of planted scotch pine & jack pine, along with naturally established trembling aspen, red maple & oak. Occasional RP & Norway spruce. Merch aspen cut on 10 acres in 1964 (067-64) except for within 200 feet of the US-127 ROW. JP & SP largely died out. WP & remaining SP have almost universal poor form: limby, weeviled, with low forks, double tops, crook, etc. High degree of cull & decadence in the mature cohort across all species. Understory filling in with red maple & WP, also diverse mast-producing shrub layer. Relatively rich site, primarily PARVVb, with PARVVb/PARVHa crossover.
2	42290 - Natural Mixed Pine	Medium Density Pole	11.3	40	51-80	Variable stand by all parameters: age, size class, species, distribution. Scattered & in small clumps are open-grown canopy-dominant RP, WP, NPO, JP and aspen, with an intermediate canopy layer of small pole JP, WP, oak and cherry, interspersed with small openings. The young oak is hybridized but vigorous. The scattered mature oak are slowly declining, as is the older JP (previous inventory age 73). Aspen mixes in along the stand's edges. No record of planting in this forty. S edge of stand extends down terrace of former floodplain.
3	4130 - Aspen	High Density Pole	24.7	46	81-110	WP & European larch planted in fall 1915. Merch aspen cut in mid-1960's. Merch JP & marked WP cut in late-1960's. Stand is primarily aspen, with oak & red maple that likely regenerated from the same harvest, and older saw-sized cull WP & NPO. Relatively rich site with a well-developed mast-producing shrub layer. Aspen is slowly losing vigor; black canker and hypoxylon present. The younger pole-sized oak is vigorous; the saw-sized oak is breaking up. Scattered RP poles & saw, a trace of larch. Pocket of planted JP in stand's SE from 1971 planting, with poor form, individual stem mortality. Beaver Creek MCCCT trail crosses through the stand.
4	4130 - Aspen	High Density Pole	5.8	46	111-140	RP & JP planted in fall 1915. Aspen cut in mid-1960's. Mostly trembling aspen, a little bigtooth, with scattered NPO, red maple, & planted RP & JP. Some conks on the trembling aspen. Nice shrub layer. Currently on contract 720010901, a RP thinning with species removal on the aspen, oak, JP & RM.
5	4133 - Aspen, Mixed Pine	High Density Pole	42.4	47	51-80	Variable age aspen stand (40's and 50's, ave 47, oldest cohort in swath along US-127) with variable stocking/distribution of JP, WP, RP & oak. Remnant of 1914 WP plantation in far NE, 1- & 2-acre patches of large WP & RP saw w/in 400' of the freeway fence in SW. A narrow swale of low ground with patches of tag alder, cornus & viburnum arcs through the stand from SW to NE (OFS point wetlands). Part of the stand's SE had JP planted in 1983, but it largely failed there. Aspen in both age classes is declining. WP regen with D. scrobiculata flagging. Diverse shrub layer, all species combined make the high subcanopy cover benchmark.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
6	42141 - Planted Mixed Pine, Mixed Deciduous	High Density Log	13.8	96	111-140	WP & European larch planted in fall 1915. Merch aspen cut in mid-1960's. Merch JP & marked WP cut in late-1960's. JP interplanted at an unusually wide spacing in 1971, mostly in W. That JP is limby, 1-3 sticks tall. Residual WP from the 1915 planting is largely poor-form cull, except where the stocking held up; that plantation is most intact in the stand's E part, gets sketchier to W. Trace of larch left. RP saw that pre-dates the 1915 planting is concentrated in the E. Aspen starting to decline; oak poles/saplings/small saw are vigorous. Well-developed shrub layer with advanced oak regen. Occasional beech sap. Beaver Creek MCCCT trail crosses through the stand.
7	42110 - Planted Red Pine	Low Density Log	36.6	95	1-50	RP & WP planted in 1916. RP pruned in 1958. Several low-volume thinning contracts were issued in the 1970's, with a comprehensive thinning in 1992 (720339001). Then 25 acres were shelterwood cut in 2009 (720460801 Tall Tree Red Pine) to 45 sq. ft. of stated residual, with the rest of the stand left in retention islands. Low-density overstory of residual planted RP, with a 2-layered subcanopy below: large sapling/small pole oak, red maple, & aspen, occasional sapling RP, WP, beech & white ash, over 2-year old regen from the cut (cherry, red maple, aspen & oak). Retention islands have canopy-level oak, BTA & RM mixed in with the RP, along with well-established advanced oak regen. Widely-scattered RP snags & one larger pocket of pre-harvest mortality (see OFS point). Some shoot blight there in RP saps, likely inoculum from overstory stressed trees. A handfull of post-harvest wind-thrown RP.
8	4130 - Aspen	High Density Pole	29.4	46	51-80	Trembling aspen stand slipping from A6 to A5 due to continuing dieback and mortality (hypoxylon, black canker). Mixed with the aspen are: limby, open-grown WP & RP saw, JP saw & poles, declining mature mixed oak saw, vigorous younger oak, and some RM & balsam fir. Well-developed mast-producing shrub layer. Stand's south panhandle drops down onto a low swale by the highway. Beaver Creek MCCCT trail crosses through the stand.
9	4191 - Mixed Upland Deciduous with Conifer	High Density Sapling	12.8	19	1-50	Cut in 1992 (720358901), 2" & up, except the oak. Naturally regenerated to a fully-stocked stand of oak, JP, RM & aspen, with the 1-2 stick pole oak residual from the cut extending above the main sapling canopy layer. Did not age that older yet still immature oak.
10	42290 - Natural Mixed Pine	Medium Density Log	11.6	75	51-80	Patchy, naturally-established stand of WP & RP, mostly on former floodplain & terraces. Lowest ground is dry but close to the water table (has <i>K. angustifolia</i> , <i>Aronia</i> spp). Subcanopy is large sapling/small pole in stature, with mainly WP & mixed oak. S end on the highest ground had JP & aspen removed in 2006 under 720430301. OFS point wetland.
11	42120 - Planted Jack Pine	High Density Pole	12.0	28	51-80	Small pole/large sapling JP, planted in fall of 1983. The original planted area was 25 acres; this stand encompasses the intact core of the plantation where competition from residual & natural regen wasn't as severe. Lesser components of older residual JP poles in small pockets, & trembling aspen. Widely scattered RP saw.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
12	42110 - Planted Red Pine	High Density Log	38.8	96	141-170	RP & JP planted across the N1/2SE in fall 1915, with RP & Scotch Pine planted in the SWSE in 1916. Aspen cut in the mid-1960's. Small volume contracts were issued in the 1960's and 1970's for the removal of RP cabin logs. NWSE currently on contract 720010901; largely a low thinning, with species removal on the aspen, oak, JP & RM. Most of the planted JP & scotch pine removed in previous harvests or died out. Poor-quality NPO saw breaking up. Second age class of oak/aspen/red maple from 1964 cut is intermediate in the canopy. Advanced oak regen in the subcanopy. Beaver Creek MCCCT trail crosses through the stand's S end.
13	42220 - Natural Jack Pine	Medium Density Pole	8.5	46	51-80	Two-aged JP with vigorous mixed oak. The older JP (60+) is declining; the younger JP (mid-forties) is maintaining. RP of varying size classes occur at low densities & in small pockets across the stand, as well as trembling aspen poles. TA declining.
15	42260 - Natural Pine, Mixed Deciduous	Low Density Pole	28.0	55	1-50	Merch JP & aspen removed in 2006 (720430301). Patchy distribution of RP, WP & WO saw extend above the main canopy layer of small pole/large sapling oak & WP. JP seeded in best along skid routes; areas with undisturbed groundcover are vacant except where the cherry brush proliferated. Flagging in the WP symptomatic of Diplodia scrobiculata. Some upper crown dieback & mortality in the younger mixed oak at the S end -- harvesting was completed by mid-April, and the slow progression of mortality (multiple years in red oak group) does not indicate oak wilt. Unusual given the oak's vigor -- should have released well.
16	42110 - Planted Red Pine	High Density Log	7.8	95	200+	RP & Scotch Pine planted in spring 1916. Small volume contracts were issued in the 1960's and 1970's for the removal of cabin logs. RP saw with minor components of WP, JP, SP, RM, oak, & aspen. Majority of the RP fall within the 12 to 18 inch diam range, with a mean of 15.
17	42110 - Planted Red Pine	High Density Log	6.9	99	111-140	Part of the original Bosom Field Pine Study area, planted to RP in the fall of 1912 at roughly 2000 t/ac. This stand encompasses the three research plots that were thinned to lower target residual BA's. The west polygon contains two plots: the west plot's target residual BA was 80 sq. ft., the east plot's was 100 sq. ft.; both had a series of thinnings, the first in 1951 and the most recent in 1985 (720018501). The east polygon ("MCD" plot in the research report) also had a series of thinnings, the first in 1934 and the most recent in 1985 (720018501). The three plots were combined due to minimum stand mapping rules, and as such, the data had to be averaged across the plots. The BA's of 110-130-160 were recorded from W to E. The RP overstory has good diameter relative to height growth & less individual stem mortality compared to the adjacent higher-residual research plots. Understory development is low overall, with Diplodia symptoms in the RP & WP saplings.
18	42220 - Natural Jack Pine	Medium Density Pole	15.5	41	51-80	Merch & up JP cut in 1973 (013-73) on 10 acres. Majority cover is 1-3 stick JP around 40 years old, with small pockets of overmature JP in its 70's. Scattered across the stand are vigorous oak poles/small saw/saplings, patches of trembling aspen, and RP saw. The RP tends to be widely scattered, except for a denser pocket along Old 27, likely from the 1916 planting. The aspen and overmature JP are starting to decline, but the majority younger JP & oak are healthy, and the RP is maintaining. Beaver Creek MCCCT trail crosses through the stand.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
19	42110 - Planted Red Pine	High Density Log	10.2	99	200+	Part of the original Bosom Field Pine Study area. Two-year old RP planted in the fall of 1912 at roughly 2000 t/ac. This stand encompasses the four research plots with higher target residual BA's. The west polygon is one plot (160 sq. ft. target). The east polygon contains three plots, with target BA's ( from W to E) of 120, 140 & UNCUT. Aside from the UNCUT control, there was a series of thinnings, the first in 1951 and the most recent in 1985 (720018501). The four plots were combined due to minimum stand mapping rules, and as such, the data had to be averaged across the plots. The BA's of 190-210-230 were recorded from W to E. Not as good diameter relative to height growth, with extreme whippiness in the UNCUT block (slash accumulation there from suppressed stems weeding out). Very little understory development, except in the west block (the oak regen there makes medium, but averages to very low across the entire stand).
20	42220 - Natural Jack Pine	High Density Sapling	11.3	19		Cut in 1992 (035-89), 2" & up, except red pine. Previous OI notes indicated JP was planted in 1992, but the regen had the appearance of broadcast seeding, at best. Dense JP sapling cover interspersed with small openings. Vigorous oak stump sprouts in the canopy, small patches of A3, and widely-scattered RP saw above.
21	4319 - Mixed Upland Forest	Low Density Pole	10.4	49	1-50	Part of the original Bosom Field Pine Study area. Four planting blocks were combined into one stand because individually they do not meet minimum stand mapping rules. A white spruce "Christmas tree plantation" was established on the west 5 acres in the spring of 1918. Half-acre strips of "Black Jack Pine" and "Yellow Jack Pine" were planted along the east edge in spring 1916, and roughly an acre of Scotch pine was planted in spring 1919 between the WS & JP. A small opening/road end in the NE is filling in with scotch pine. Most of the WS is on the ground, the JP & SP are dropping out also, but not as fast. The surviving planted stock represents a supercanopy layer above the dominant younger pole/sapling canopy of oak, red maple, aspen, WP & RP. SP & WS have been seeding in also. The mixed oak is vigorous. The WS block is considerably more open & heavier to RM and cherry; the JP/SP block has 50-75% crown closure and also more of the oak component.
22	42110 - Planted Red Pine	Medium Density Log	40.4	97	141-170	RP planted in fall 1914, with occasional super-canopy RP along the south edge that pre-date the planting. European larch was planted with the RP west of the forty rd. RP thinned & 4" DBH and up JP & aspen cut in 1994 (720499301), except on the S edge along the old floodplain. The RP is less dense in the stand's W & S. The planted larch is saw-sized and co-dominant with the RP. Intermediate canopy associates include: mature & immature mixed oak, aspen, RM, WP & JP. Combined high density subcanopy cover in oak, pine, RM & shrubs. Branch mortality laddering in the overstory RP in small pockets along stand edges & openings. Understory RP with associated shoot blight. A hard-surfaced loop drive and small opening near Old 27 are what remains of a decommissioned MDOT rest area. That opening is where most of the larch is seeding in, and some type of legume (invasive?) is covering the ground and climbing those saplings. PRD non-motorized pathway loops through the stand's SW.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
23	42110 - Planted Red Pine	Medium Density Log	16.9	96	111-140	RP & JP planted in fall 1915. Was the north part of a larger harvest cut in 1992 (720358901), spec'd to remove all species 2" & up, except red pine. The RP-dominated canopy has minor intermediate components of WP, oak, and RM. The combined understory of RM, oak, aspen & WP is in the high density range. This stand fingers into a sapling-sized stand along its S edge that was part of the same 1992 harvest. Beaver Creek MCCCT trail crosses through the stand.
25	4191 - Mixed Upland Deciduous with Conifer	Medium Density Pole	43.4	42	1-50	Cut in 1995 (720389301), 4" DBH & up except all RP were left west of the forty road and within 50 feet of the PRD non-motorized pathway. Oak makes up a majority of the cover, along with JP, RP, aspen, RM and a trace of Scotch and Austrian pine. Sapling regen from the cut (second age) is intermediate in the residual pole-dominated canopy. The RP saw (mostly in the stand's west end) extends above the main canopy layer. The mixed oak does not have great form due to its genetics, but that component's stand-out characteristic is its relative youth & good vigor. Austrian pine was planted on 13 acres in 1914; scattered residual poles of that species are fading.
26	4191 - Mixed Upland Deciduous with Conifer	High Density Sapling	5.9	17	1-50	Part of the original Bosom Field Pine Study area. Had an unsuccessful trial planting of JP & SP cones in 1917, then was planted to RP & JP in 1930 at roughly 800 trees/acre. Harvested 2" & up in 1994 (720519301). Small pole residual RM, oak, WP & RP represent a "supercanopy" layer above the majority cover sapling regen from the cut. The regen includes vigorous advanced oak saplings, along with RM, black cherry, WP and an occasional SP.
27	42141 - Planted Mixed Pine, Mixed Deciduous	High Density Log	4.9	99	111-140	Part of the original Bosom Field Pine Study area. Two covertypes were combined because individually they do not meet minimum stand mapping rules, both established in the spring of 1912. West polygon is planted WP, east polygon has planted Scotch pine. The WP runs 140-190 BA, has decent form and self-pruning, but tends to be whippy. Both the canopy & subcanopy WP is showing branch flagging symptomatic of <i>Diplodia scrobiculata</i> . There is slash accumulation from WP that has been wind-throwing in along the west edge. The Scotch pine is slowly dying out, but still producing large seed crops. The SP block has vigorous oak poles intermediate in the canopy, along with RM & an occasional beech. The combined subcanopy under the WP makes high understory stocking in oak, RM, & WP; the combined subcanopy under the SP makes medium coverage.
28	4125 - Black, N. Pin Oak	Low Density Pole	6.7	64	1-50	4" DBH and up JP & aspen cut in 1994 (720499301) concurrent with the adjacent RP thinning. All oak & RP were left. Residual from the cut (NPO, RM, RP, JP and aspen) forms a discontinuous canopy layer above the regenerating aspen clones. The oak is in two main classes, vigorous younger poles (first age), and declining poor-quality saw (concentrated in the NW along Fletcher Road). The aspen regen will have recruited solidly into the canopy by next inventory cycle, bringing the canopy coverage up to full.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
29	42260 - Natural Pine, Mixed Deciduous	High Density Sapling	13.1	19		Part of a larger harvest cut in 1992 (720358901), 2" & up, except red pine. Previous OI & sign on Oak Road note that 5th graders from Roscommon & Grayling planted trees in May 1994 as part of a cooperative Weyerhaeuser/DNR project. Sketchy rows visible with RP saplings overtopped by a dense mix of JP, oak & aspen regen. Excessively-stocked areas of JP have patches of snow-load flattening. Beaver Creek MCCCT trail crosses through the stand.
30	42110 - Planted Red Pine	High Density Log	15.6	99	141-170	Part of the original Bosom Field Pine Study area, planted to RP in the fall of 1912. Series of thinnings over the years, most recent in 1986 (720388501) and 1994 (720519301). Codominant RP with 80 BA circa put on 1" radial growth in the last 14 years. Small pockets of mortality, large one in NE is OFS point. Some heavy leaners in the whippier poles. Shoot blight in understory RP, likely Diplodia pinea from infected overstory trees. Bark beetle present but likely secondary pest. Branch flagging starting in the WP saplings, likely D. scrobiculata. Vigorous oak saplings & poles in the multi-layered subcanopy. The oak combined with the RM make for high subcanopy cover.
31	6112 - Lowland Aspen	Low Density Pole	24.2	46	1-50	Deteriorating trembling aspen on a former floodplain and the sideslopes down to it. No semblance of a stream channel, just long narrow swales with thick lowland shrub cover, dissected by marginally higher ground. JP mixes in on the sideslopes, along with NPO and scattered RP, WP, and a pocket of planted European larch. Surface in the west two-thirds of the stand is currently dry. Moving to the east towards Beaver Creek, the ground gets progressively more saturated, with less aspen cover and more marsh and tag alder. PRD non-motorized pathway crosses twice through the stand's W1/2.
32	42260 - Natural Pine, Mixed Deciduous	Medium Density Pole	13.7	48	51-80	Mixed pine/oak stand with a discontinuous 2-layered canopy. The main canopy layer is made up of pole-sized JP, WP, oak & RP. Scattered above that is mature oak, WP, RP & JP. Open-grown form common. Small pockets of QA mix in along margins. WP with branch flagging. PRD non-motorized pathway hits east edge of stand.
33	42110 - Planted Red Pine	High Density Log	42.2	96	141-170	RP & scotch pine planted in fall 1915. RP pruned in 1959. No recorded treatments for the next three decades. In 1992, the stand was the south part of a larger harvest (720358901), spec'd to remove everything 2" & up except red pine. While termed a thinning, this species-removal cut did not address improving RP quality, and resulted in uneven spacing and wide BA ranges (90-230 sq. ft.). Diameters also range widely, from 8-18", with 14" as a mean. Fair amount of logging damage. Individual stem mortality (bark beetle, diplodia, lightning) not progressed into pocket mortality yet. The advanced oak regen combined with the JP, RM & aspen make for full subcanopy cover. Aspen is concentrated along the stand's road ROW edges, where there is roughly a chain-wide strip of dense sapling regen, including JP & SP. Only a trace of the original scotch pine is left.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
34	42110 - Planted Red Pine	Medium Density Log	20.4	97	141-170	RP planted in fall 1914. One acre of Austrian pine planted in NE corner of stand the same year (a trace of fading AP left). Most recent recorded treatment in 1972. Variable spacing, BA's and diameters. 15" ave DBH, but the poles & smaller saw are whippy. Well-developed oak-dominated understory; also some vigorous oak poles intermediate in the canopy. The numerous small openings where the planting didn't take are filling in with oak, RM & JP. Better RP health than in the similar-aged higher stocked stands. PRD non-motorized pathway crosses through the stand.
35	42110 - Planted Red Pine	Medium Density	13.7	16		Final harvested in 1994 (720519301), RP planted in 1995, with poor-form scotch pine that recruited in from the adjacent mature seed source. SP heaviest along that N edge. Lesser amounts of seeded-in WP & JP. Vigorous stump-origin oak saplings. Center of plantation has failed areas with 25-50% cover. RP putting on decent growth where stocking held up.
36	4130 - Aspen	Low Density Sapling	19.6	1		WP & European larch planted in 1914. Cut in 2010 (195 RPP 720340801), all except leave islands along US 127 and scattered marked-to-leave RP, WP, oak, & a larch. Except for landing, regenerating to aspen with RM, cherry & oak sprouts. Residual mature oak declining.
37	42100 - Planted White Pine	High Density Log	25.5	97	141-170	WP, RP & JP established through a series of plantings between 1914 & 1930. JP died out. RM filling in the canopy gaps where the planted pine continue dropping out. That RM is recruiting from the well-established RM understory. Small pockets have shifted to more RM than pine cover. Minor aspen & oak pole components are likely the same cohort as the RM poles. The WP has generally poor form, with persistent dead branches, crook, & multiple tops common. WP is slowly declining, with epicormic branching, top dieback, and mortality in the suppressed narrow-crowned stems. Also seeing branch flagging symptomatic of <i>D. scrobiculata</i> . PRD non-motorized pathway crosses through the stand's E end.
39	4191 - Mixed Upland Deciduous with Conifer	Low Density Sapling	23.3	8	1-50	The RP overstory (planted in 1914) was harvested in early 2003 (720020301) in order to remove the source of <i>Diplodia pinea</i> inoculum. Approximately 3.5 acres were trenched and planted to RP along the SW edge, but most of the stand's RP is naturally-recruited. Continuing seedling die-back & mortality (shoot blight) within the small planted area is creating swaths of poor stocking. Furrows already vegged-over. The clumps of RP regen that established prior to the RP overstory removal tend to be over-stocked. The stand's notable feature is its young, vigorous sapling-pole oak, Part of that oak regen is post-harvest in origin, with a second age class of larger saplings/small poles that pre-dated the harvest by a couple decades. PRD non-motorized pathway crosses through the stand's north end.
40	4139 - Aspen, Mixed Deciduous	High Density Pole	12.9	43	81-110	WP, RP & JP planted between 1914 & 1921. Stand is primarily quaking aspen (a minority of stems just into the saw class and starting to break up) with significant RM pole & large sapling components that are codominant & intermediate in the canopy. Large RP & WP extend above the main deciduous canopy. Site is richer in the SW half (more PArVvb), NE half is more VHa crossover. PRD non-motorized pathway loops through.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
41	4112 - Maple, Beech, Cherry Association	High Density Sapling	2.3	9		Two of eight plots established as part of the Hartman-Buckley-Sharik oak/pine regen study. The over- and understory vegetation on these plots was manipulated through final harvesting (1990) and prescribed burning (FTP C72-464 in 2002 & C72-552 in 2008). First age based on first burn, second age based on initial harvest. Largely RM sprouts with scattered cherry & oak saplings. The oak saplings are vigorous but few in number.
42	4125 - Black, N. Pin Oak	High Density Log	26.8	108	141-170	Stand dominated by large hybridized NRO with similar stature WP & RP (most of the pine planted in the early 1920's). RM is intermediate in the canopy and is continuing to recruit from the RM-dominated subcanopy. Minor components of WO & aspen. The NRO is in its slow attrition phase, with progressing upper crown dieback & individual tree mortality. The RM is gaining in ascendancy. Eight plots were established within the stand as part of the Hartman-Buckley-Sharik oak/pine regen study. Oak age based on that research data. The over- and understory vegetation on 6 of those plots was manipulated through varying harvest levels and 2 prescribed burns (FTP C72-464 & C72-552) in 2002 & 2008. The plots with mature oak residual are inclusions within this stand; the two clearcut plots were split out as a separate stand.
43	4126 - White, Black, N. Pin Oak	Low Density Sapling	7.5	9		Two of the three patches cut in 2002 under 720110201 to remove pockets of RP mortality (due to shoot blight & bark beetle). Regen is patchy but makes the cumulative 25% benchmark. Vigorous oak in three classes: stump sprout clumps from the salvage (first age), larger single-stem saplings from the 1984 thinning (second age), and small pole oak that pre-date the thinning. RP that seeded in from the salvaged plantation are surprisingly healthy. Shoot blight is present (mostly along perimeter) but not pervasive, as the disease is under the adjacent R9.
44	4310 - Pine, Oak Mix	Medium Density Pole	10.9	35	1-50	Within 300-82A harvest area, cut in 1984. Highly variable because of the partial cut spec (merch JP & oak) that was only partially applied. Mixed NPO/JP stand, barely averages to 50% canopy cover, with a mosaic of U-type inclusions heavy to cherry. Three age/size classes of oak: scattered saw that were spec'd but not cut, poles that were non-merchantable at the time, and large sapling/small pole regen from the cut. 30-40 year old JP poles along with 60+ year old top-dying JP, & sapling regen. Scattered RP small saw & poles, a small amount of BTA & struggling QA. Oak poles/saplings don't have great form due to their genetics, but they are vigorous.
45	42110 - Planted Red Pine	High Density Log	32.4	98	141-170	RP planted in spring 1913, JP fill-in plantings in 1921 and 1925. Thinned in 1994 under 051-93. The stand's NE has higher BA's, lower ave DBH, and an oak-dominated understory. OFS point is a pocket of slowly spreading mortality in the RP, with RM poles filling in below. The stand's S & W has lower BAs, higher ave DBH, and is on a richer site with a RM-dominated understory. PRD non-motorized pathway crosses through the stand.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
46	4125 - Black, N. Pin Oak	High Density Log	17.1	110	111-140	WP was planted across part of the stand in the fall of 1920. Canopy is dominated by large-stature NRO, with co-dominant WO & an occasional large cull RM. Intermediate canopy associates: RM & WP. RM-dominated subcanopy, with scattered WP. Little oak regen, mostly WO in groundcover layer. Site crosses into PArVVb. Some hybridization in the NRO, increasing to east. Oak is in its barely maintaining/slow attrition stage, with fine branch dieback starting in the upper crowns. Individual stem mortality that has occurred is concentrated in the poorest quality hybrids. PRD non-motorized pathway crosses through.
47	42110 - Planted Red Pine	Medium Density Log	60.9	97	111-140	RP planted in 1913 & 1914. Thinned in 1984 (201-84 & 295-83). Thinned again in 2000 (720329801). Dominant RP with 110 BA circa put on 7/8th" radial growth in decade since harvest. Even though the RP was effectively released in 2000, and diseased pockets were salvaged in 2002, there is continuing individual stem mortality & spreading pocket mortality. Widespread incidence of shoot blight in the RP regen. Some root issues starting too, a few heavy leaners. Vigorous advanced oak saplings in the understory. There was good protection of the oak regen during harvesting in 2000 and additional rebound since. RM present but not overwhelming the oak. Scattered throughout the stand are small gaps in the original planting that filled in with varying proportions of JP, mixed oak, WO, QA & RM. PRD non-motorized pathway crosses through.
48	42260 - Natural Pine, Mixed Deciduous	High Density Pole	21.2	60	81-110	Naturally-established mixed pine stand with NPO & aspen. Predominantly mature to overmature JP, with pockets of variable age/size class RP & WP (mostly in east end). NPO present as saplings, poles & small saw, as well as scattered poor-quality large saw. Aspen occurs in small clones. Aspen & the mature JP & NPO are declining. The RP & WP are maintaining. The younger oak is vigorous. PRD non-motorized pathway loops through the stand.
49	42110 - Planted Red Pine	Medium Density Log	30.2	97	141-170	RP planted in fall of 1913 and spring of 1914. RP in the NWSE was thinned in 1983 under 300-82A along with all merch JP & oak. Patch of pocket mortality along W edge was salvaged in 2002 (split off as its own stand); mortality continuing along its edges. Additional pocket mortality at OFS pt. Plantation uniformity falls apart as you move to the N & E; spacing & diameters get more variable, giving the appearance of naturally-established RP. Row spacing very tight in places (3-4'), with patchier planting survivorship. Site not as rich as to S, PArHa/PVCd crossover, understory coverage is lower, mostly oak, little RM. PRD non-motorized pathway runs through the stand.
50	4191 - Mixed Upland Deciduous with Conifer	Medium Density Pole	15.1	45	1-50	One large and three outlier patches that were mostly avoided during the original 1913 RP planting, but had JP planted in 1921. There are RP saw (some of the plantation, some pre-dating it), older NPO, & WO scattered above what has regenerated since: pole & large sapling quaking aspen, JP, hybridized oak, WO, RM, RP & WP. Some truer NRO/black oak present, but most of it has strong northern pin oak influence. Patchy, variable stand, open-grown form common. The smaller polygons of this stand have varying cover percentages of the overall stand species list. A trace of Scotch pine saplings in the east polygon. PRD non-motorized pathway crosses through the stand.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
51	42110 - Planted Red Pine	High Density Log	27.6	98	200+	RP planted in fall 1913 along with European larch & Scotch pine. Spring of 1921 saw some JP planted. A few low-volume cabin log contracts were issued in the mid-1970's. RP thinned in 1985, along with SP & JP species removal, under 201-84. The stand is variable in terms of DBH range, BA, spacing & health because of the original planting's varied species mix & survivorship, & because the RP was not uniformly released across all portions of the stand. Areas w/ lower initial survivorship &/or more of the removed JP & SP saw effective release by default. Codominant RP in overstocked areas have thinning crowns, & suppressed poles continue to weed out. Pocket mortality slowly spreading (see OFS pts). Shoot blight in over- & understory RP. Site becomes richer to S, more VVb. RP tolerated the overstocking better there, has better taper/diameter. Still oak in the subcanopy on the better ground, but the RM component increases markedly. PRD non-motorized pathway crosses through.
53	42220 - Natural Jack Pine	Medium Density Pole	17.7	41	51-80	Naturally-established JP on ground relatively close to the water table but not lowland (K. angustifolia groundcover). RP planting was run through the E1/2 in the fall of 1983 but the RP that didn't die outright because of the moisture regime were overtopped by the JP. Stand encompasses a horseshoe-shaped intermittent wetland stand that is bordered by overmature JP. The stand's SW has more of the high ground, but still has swales with leatherleaf & k. angustifolia mixed in with the blueberry. More naturally-established RP & WP saw are also mixed in there, along with more of the overmature JP. PRD non-motorized pathway crosses through the stand.
54	42110 - Planted Red Pine	Medium Density Pole	27.7	28	51-80	Small pole/large sapling canopy layer composed of: RP planted in fall of 1983 and naturally-established JP, NPO, cherry & aspen, with scattered older RP, JP, WP & oak that extend above the main canopy layer. The planted RP experienced significant competition from the residual and naturally-established regen. The original plantation area (47 acres) extends beyond this stand, to the S & W, but the RP struggled with the higher water table & JP competition there; the stems that survived are relegated to the subcanopy except on the slightly higher ground inclusions. That portion of the plantation was split out as a separate JP-dominated stand.
55	4125 - Black, N. Pin Oak	Medium Density Pole	7.9	54	51-80	Area that was largely avoided during the 1913 RP planting. Patchy, variable stand with majority pole cover in hybridized NPO, QA (declining), JP & WP, with lesser components of mature mixed & white oak, and planted & naturally established RP.
56	4310 - Pine, Oak Mix	Medium Density Pole	14.5	43	51-80	Variable stand with small pole JP, NPO & struggling QA; scattered above that main canopy layer are small saw NPO, large naturally-established RP & overmature JP. A few sketchy rows of the 1914 RP plantation extend into the stand. PRD non-motorized pathway crosses through the stand.
57	4126 - White, Black, N. Pin Oak	Low Density Sapling	1.6	9		One of the three patches cut in 2002 under 720110201 to remove pockets of RP mortality (due to shoot blight & bark beetle). Vigorous oak in three classes: stump sprout clumps from the salvage (first age), larger single-stem saplings from the 1985 thinning (second age), and small pole oak that pre-date the thinning. Heavy rubus groundcover, very little pine seeded in. PRD non-motorized pathway crosses through.

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Grayling Mgt. Unit

## 5 – Forested Stands

Compartment: 195  
Year of Entry: 2013

	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
58	42110 - Planted Red Pine	Low Density Log	23.0	97	81-110	Planted in 1913 and 1914. A low-volume cabin log contract issued in the late 70's. Thinned in 2000 (720329801). Set up under marking contract by Cedar Ridge in 2004, thinned in 2006 under 720680401, except the finger N of the forty road. RP well-released, few heavy leaners, a handful root-tipped. 1/2" radial growth in 5 years since last thinning, 1" in 10 years since previous thinning. Subcanopy cover denser in the stand's south, but continuing to fill in as the oak sprouts recruit past the 3' range. Some browse, but the oak is punching past the browse line. RM regen present but not overwhelming the oak. A few QA & JP stems left uncut. Aside from the wind-throws, overall RP health maintaining. No spreading pocket mortality; shoot blight present but not widespread in the subcanopy RP. Some small RP poles of varying heights and with deep crowns were left, adding vertical diversity to the oak regen layer.
59	4133 - Aspen, Mixed Pine	High Density Pole	9.2	47	51-80	RP was planted across a third of the stand in 1914. Variable aspen, RP, & mixed oak stand with JP and small amounts of WP & RM. Aspen (mostly QA) is in slow decline, with planted & naturally established RP of all size classes, vigorous pole/sapling hybridized NPO, WO, & mostly overmature JP. Age bands from immature to mature/overmature across most of the species.



Stand	Cover Type	Acres	Managed Site	Management Priority (Objective)	General Comments:
14	11 - Low Intensity Urban	26.0	No	Low (NonForested)	Paved and gravel county road corridors (Old 27 & Fletcher Road). Euphorbia esula (leafy spurge) gaining foothold along the grassy road shoulders.
24	3301 - Low Density Deciduous Tree	19.7	Planted	Red Pine	Part of the original Bosom Field Pine Study area, planted to RP in the spring of 1913. North half was thinned and the overstory was removed on the south half in 2006 (720710401), then the overstory was removed in the north half in 2009 (720110901) due to continuing mortality from bark beetle infestation. The overstory removal left a low density residual of small pole/large sapling white oak, red oak & WP scattered across the stand & in two concentrated swaths in the N half. That, combined with regen from the cut (black cherry & oak sprouts) is not enough to make the Forested benchmark. FTP C72-606 was submitted in 2009 for trenching and planting to RP.
38	3102 - Grass	8.0	No	Low (NonForested)	Cleared pipeline corridor, closures at both ends, but the berms are being driven around. OFS wetland where the low swale crosses the pipeline. RDR mudrun there. Need to close end-runs around berms.
52	6233 - Wet Meadow	1.4	No	Low (NonForested)	Horsehoe-shaped intermittent wetland, in process of drying out for the summer. Grass/sedge & swamp dewberry cover with leatherleaf & spiraea, clumps of cinnamon & royal fern, blue flag iris. JP & WP seeding in. Mature JP along perimeter. Built-up PRD non-motorized pathway crosses one end, bringing in St. John's wort from mowing.



### 7 – PROPOSED SPECIAL CONSERVATION AREA\* (SCA) DETAILS

\* This is a partial list of SCAs for this compartment. Not included are those areas identified under other Department initiatives (Natural Rivers, Deer Wintering Areas, etc.). Those will be identified in separate, future map and report products.

Stand	SCA Type	SCA Name	Acres	Comments



**8 – DEDICATED CONSERVATION AREA DETAILS**

\* This is a list of Dedicated Biodiversity Areas for this compartment along with a 1/4 mile buffer surrounding the compartment. Refer to Dedicated Conservation Area Map for areas that the below listed Conservation Areas are located.

ERA = Ecological Reference Area  
HCVA = High Conservation Value Area  
SCA = Special Conservation Area

Conservation Area	Type	Description
SCA	Cold Water Stream	A coldwater stream has temperature and dissolved oxygen conditions that allow naturally-reproduced or stocked trout populations and those of other coldwater fish species (e.g., slimy sculpin) to persist from year to year. Coldwater streams in Michigan typically provide these conditions due to substantial contributions of groundwater to their stream flows. Such streams are established by Director's action and designated as trout resources by Fisheries Order 210.
HCVA	Natural Rivers	There are two Natural Rivers datasets which are derived from spatial buffers set from an established and approved distance from the river centerlines. The Natural Rivers Zoning District is a 400 foot buffer for most Natural Rivers. The Vegetative Buffer ranges from 25 to 100 feet. To view specific Zoning Districts and Vegetative Buffers for each Natural River see the table located on the I:\Documentation\GDSE data folder.
SCA	Research and Military Areas	These areas provide facilities and lands specifically dedicated for research, or other purposes. They include the 5,847 acre Forest Fire Experiment Station, the 12,000 acre Houghton Lake Wildlife Research Area, the Beaver Islands Archipelago Wildlife Research Area (that includes most of Garden Island, all of High and Hog Islands, all state owned land on Beaver, South Fox and North Fox Islands), the Cusino Wildlife Research Area, the 3,000 acre Hunt Creek Fisheries Research Station, the 125 acre Wyman Nursery, and over 144,000 acres of Military Lands.