



# Compartment Review Presentation

## Grayling Forest Management Unit

Compartment 72171

Entry Year 2018

Acreage: 1,886

County Crawford

Management Area: Grayling Ice Contact

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**Revision Date:** 2016-09-08

**Stand Examiner:** Joan Charlebois

**Legal Description:**

T28N R04W Sections 16, 17 & 18

**Identified Planning Goals:**

To maintain forest health, productivity, sustainability, species diversification, and structural diversity throughout the compartment while providing for multiple use and visual management.

**Soil and topography:**

The west half of the compartment is on primarily Rubicon sands on level outwash plains. Moving east across the middle of the compartment, the terrain becomes rolling to steep. The east end of the compartment transitions to more productive soil types such as Kalkaska sand and Blue Lake Sandy Loam.

**Ownership Patterns, Development, and Land Use in and Around the Compartment:**

The compartment is comprised of solid State ownership. There is private property interface along the north side of section 16 and the south side of section 18, with primarily residential development. The Deward Tract experiences a considerable amount of dispersed recreational use. Oil and gas development is common throughout the compartment.

**Unique Natural Features:**

There is the potential for rare species to occur along the Upper Manistee River corridor.

**Archeological, Historical, and Cultural Features:**

There are known concerns within the compartment. All proposed management activities have taken these concerns into consideration.

**Special Management Designations or Considerations:**

West of Manistee River Road is part of the DeWard Tract, a special management area designated to protect the Upper Manistee River. Motorized use is prohibited in the Deward Tract except on trails posted as open. The Upper Manistee is a designated Natural River and a High Conservation Value Area (HCVA). A small portion of the Pine Stump Preserve is located in the northwest corner of the compartment. The Pine Stump Preserve is an area that contains a concentration of white pine stumps that were cut around 1900.

**Watershed and Fisheries Considerations:**

The Upper Manistee is a designated Natural River and quality trout stream. The Deward Tract has several river access points. Volunteer groups have been instrumental in carrying out stream bank restoration and cedar planting projects along the river.

**Wildlife Habitat Considerations:**

The compartment's diverse mix of cover, ranging from mast-producing shrubs, to aspen, oak, pine and northern hardwoods, provide habitat for a wide variety of 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 600 and 800 feet. Beneath the glacial drift is the Coldwater Shale. The Coldwater does not have a current economic use. A gravel pit is located in Section 10 and potential is good in the upland areas. The compartment is leased and partially developed for Niagran reefs and Antrim Shale gas.

**Vehicle Access:**

County roads include Deward Road and Manistee River Road. Vehicle access within the Deward Tract is limited to three open roads. The snowmobile trail and gas well roads provide access outside of the Deward Tract.

**Survey Needs:**

None at this time.

**Recreational Facilities and Opportunities:**

The Upper Manistee River crosses through the west side of the compartment and is popular for fishing, canoeing and wildlife viewing. Snowmobile Trail #79 runs through section 16 and 17. There are also good opportunities for dispersed recreation such as hunting and gathering.

**Fire Protection:**

The Deward Tract has road closures to limit public access along the Manistee River, but they will not curtail fire suppression equipment access. Outside of the Deward Tract, the existing network of roads provides good access. Pipeline and wellsite locations will influence initial attack operations.

**Additional Compartment Information:**

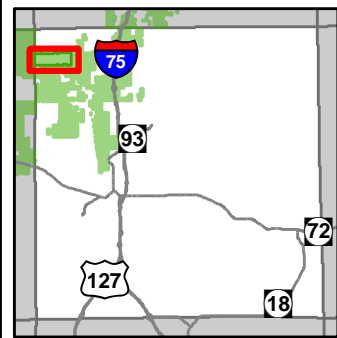
The following reports from the Inventory are attached:

- Total Acres by Cover Type and Age Class**
- Cover Type by Harvest Method**
- Proposed Treatments – No Limiting Factors**
- Proposed Treatments – With Limiting Factors**
- Stand Details (Forested and Nonforested)**
- Dedicated and Proposed Special Conservation Areas**
- Site Condition Details**

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

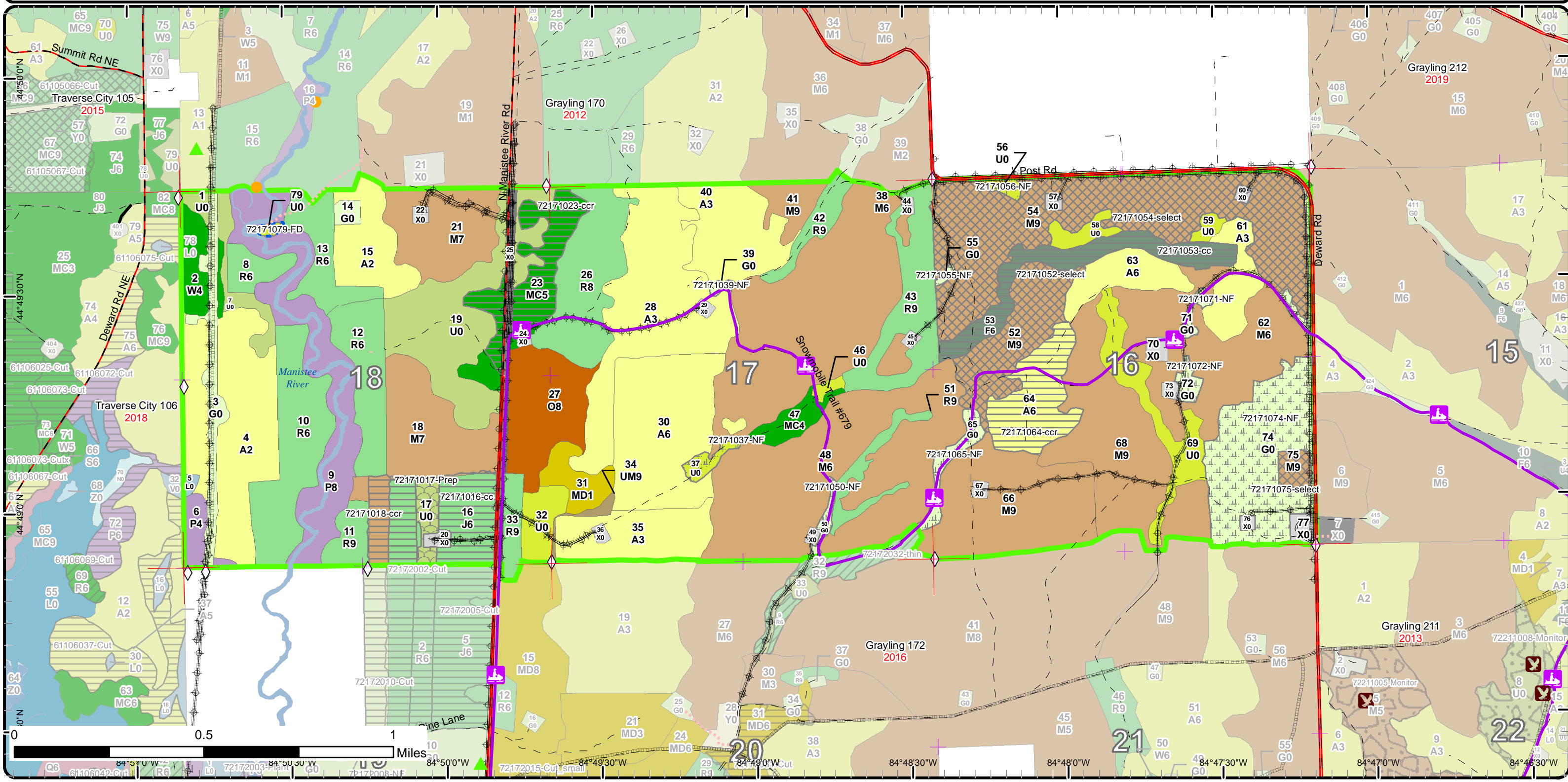
- Base feature information, stand boundaries, cover types, and numbers**
- Proposed treatments**
- Site condition boundaries**
- Details on the road access system**

# Cover Type & Treatments Map



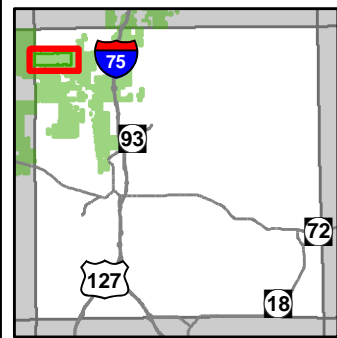
Compartment: 171  
 T28N, R04W, Sec: 16-18  
 County: Crawford  
 Unit: Grayling  
 Mgmt Area: Grayling Ice Contact  
 YOE: 2018  
 Acres: 1886 GIS Calculated  
 Examiner: Joan Charlebois  
 Map Revised: 3/9/2017  
 Map Phase: Post-Review

- Miris Corners
- + Remonumented Section Corners
- ◇ Field Grade GPS Corners
- 🦉 OFS Habitat
- ▲ OFS Human Impact
- OFS Other-Specify
- 🚙 Snowmobile Trails
- Designated Snowmobile Trails
- Paved Roads
- County Gravel Roads
- Gravel Roads
- County Poor Dirt Roads
- Poor Dirt Roads
- ⋯ Closed
- Streams
- Lakes and Rivers All
- Pipeline
- ⊕ Powerline
- ▭ Compartment Boundary
- ▭ Treatments with Site Conditions
- ▭ Site Prep
- ▭ Selection (Group, Single Tree)
- ▭ Clearcut (w/Reserves)
- ▭ Other Treatment - See Comments
- 421 - Planted Pines
- 422 - Natural Pines
- 423 - Other Upland Conifers
- 430 - Upland Mixed Forest
- 611 - Lowland Deciduous Forest
- 110 - Low Intensity Urban
- 122 - Roads/Parking Lot
- 310 - Herbaceous Openland
- 320 - Upland Shrub
- 330 - Low Density Trees
- 622 - Lowland Shrub
- Lakes
- 411 - Northern Hardwood
- 412 - Oak Types
- 413 - Aspen Types
- 419 - Mixed Upland Deciduous



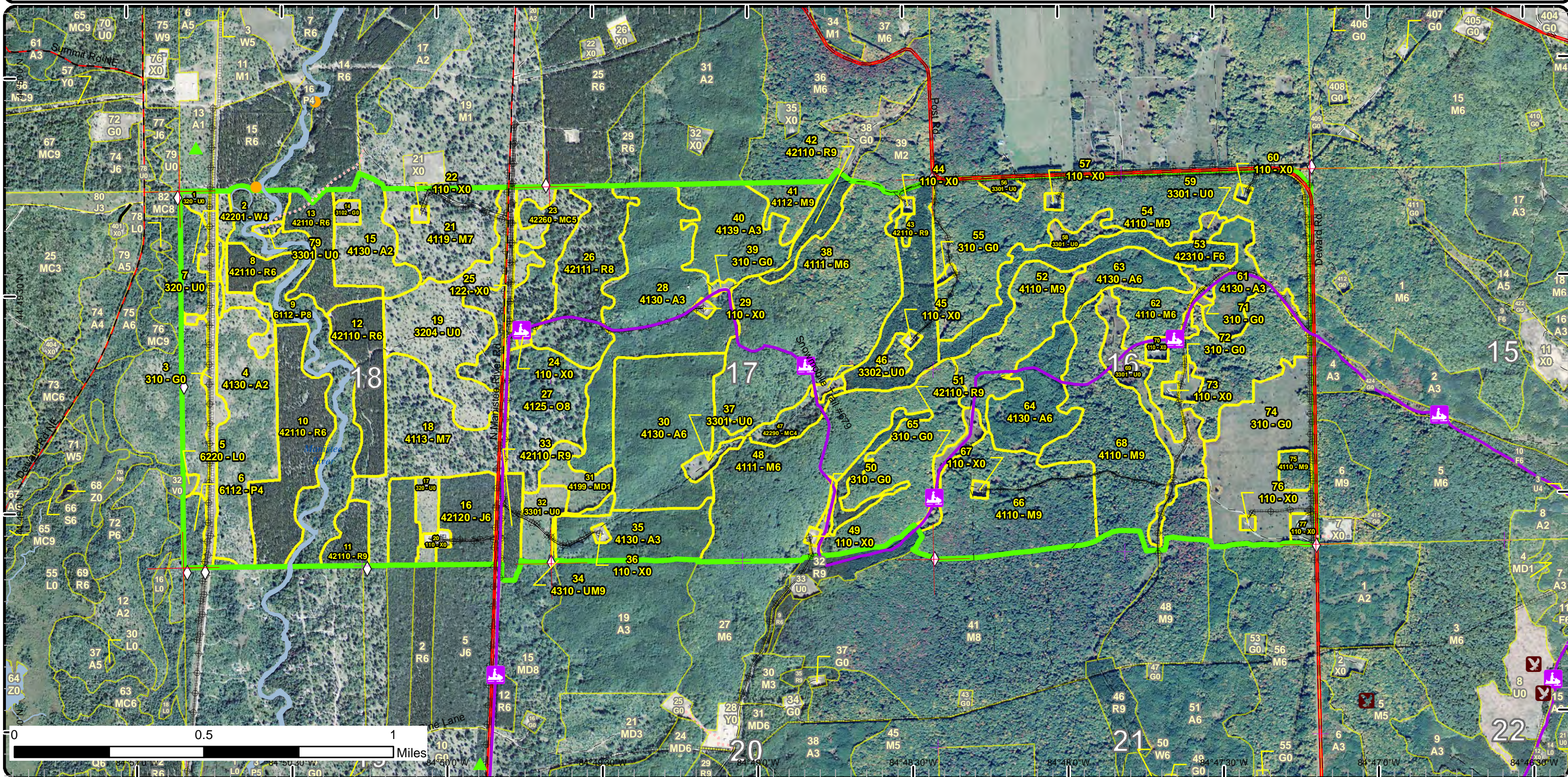
84°51'00"W 84°50'30"W 84°50'00"W 84°49'30"W 84°49'00"W 84°48'30"W 84°48'00"W 84°47'30"W 84°47'00"W

# Stand Boundary Map



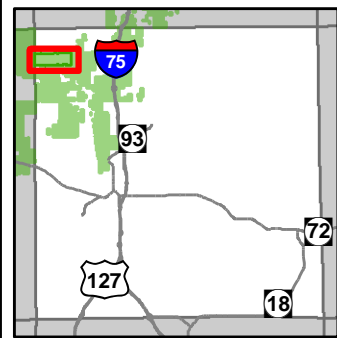
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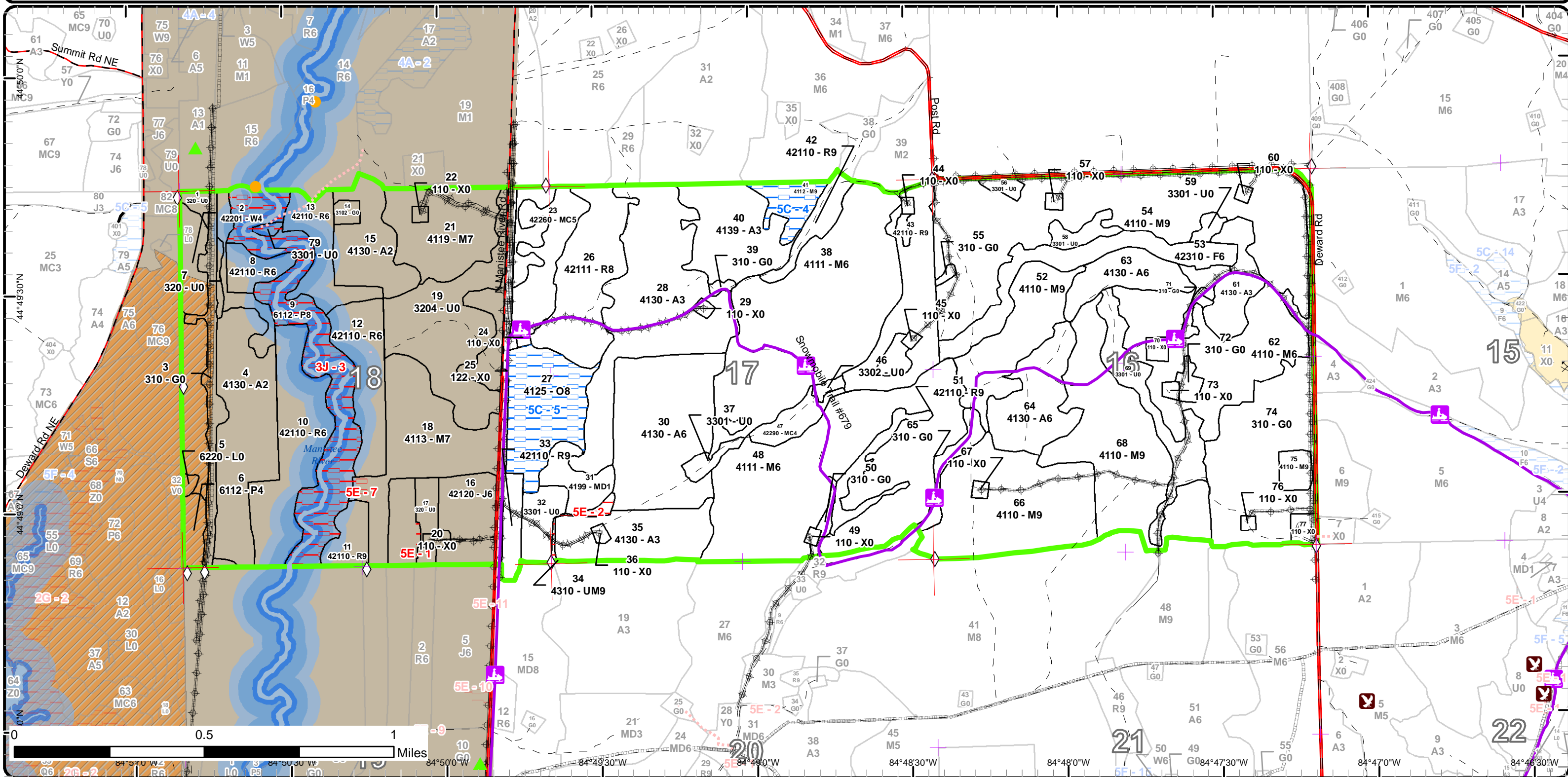


# Special Conservation Areas & Site Conditions Map

Compartment: 171  
 T28N, R04W, Sec: 16-18  
 County: Crawford  
 Unit: Grayling  
 Mgmt Area: Grayling Ice Contact  
 YOE: 2018  
 Acres: 1886 GIS Calculated  
 Examiner: Joan Charlebois  
 Map Revised: 3/9/2017  
 Map Phase: Post-Review



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- Designated Snowmobile Trails
- Paved Roads
- County Gravel Roads
- Gravel Roads
- County Poor Dirt Roads
- Poor Dirt Roads
- ⋯ Closed
- Streams
- Lakes and Rivers All
- Pipeline
- ⊕ Powerline
- Compartment Boundary
- Available w/ Constraints
- Unavailable
- 5C: Delay treatment for age/size class diversity or exceptional site quality
- 3J: Water quality / BMPs (stream, river, or lake)
- 5E: Long-Term Retention
- Stand Boundaries
- Natural Rivers Vegetative Buffer
- Natural Rivers Zoning District
- Eastern Massasuga Managed Land
- Dedicated Management Areas
- Cold Water Streams
- Cold Water Lakes
- High Priority Trout Stream Buffer
- Sand or Gravel Pit



# Report 1 – Total Acres by Cover Type and Age Class

Grayling Mgt. Unit

Compartment 171 Year of Entry 2018

Joan Charlebois : Examiner



## Age Class

	Non-Forest	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149	150+	Uneven-Aged	Total
Aspen	0	18	155	115	99	0	0	0	0	0	0	0	0	0	0	0	0	0	387
Herbaceous Openland	110	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	110
Jack Pine	0	0	0	0	0	0	33	0	0	0	0	0	0	0	0	0	0	0	33
Low-Density Trees	56	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	56
Lowland Aspen/Balsam Poplar	0	0	0	0	0	8	66	0	0	0	0	0	0	0	0	0	0	0	74
Lowland Shrub	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Mixed Upland Deciduous	0	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13
Natural Mixed Pines	0	0	0	0	9	0	35	0	0	0	0	0	0	0	0	0	0	0	44
Northern Hardwood	0	0	0	0	0	0	0	334	372	38	0	0	0	0	0	0	0	0	744
Oak	0	0	0	0	0	0	0	0	0	0	39	0	0	0	0	0	0	0	39
Red Pine	0	0	0	0	0	0	55	126	44	0	0	0	0	0	0	0	0	0	225
Upland Mixed Forest	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	2
Upland Shrub	82	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	82
Upland Spruce/Fir	0	0	0	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	30
Urban	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	33
White Pine	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	14
<b>Total</b>	<b>283</b>	<b>31</b>	<b>155</b>	<b>115</b>	<b>108</b>	<b>22</b>	<b>219</b>	<b>126</b>	<b>380</b>	<b>372</b>	<b>38</b>	<b>39</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1887</b>



## Report 2 – Treatment Summary

Grayling Mgt. Unit

Year of Entry: 2018

Acres of Harvest

Compartment 171

Total Compartment Acres: 1,886

Commercial Harvest - 304  
 Harvests with Site Condition - 0  
 Next Step Harvest - 0  
 Habitat Cut - 0

### Cover Type by Harvest Method

	Clearcut	Selection	Patch Clearcut	Seed Tree	Shelterwood	Thinning	Overstory Removal	Salvage	Other	Total Acres
Aspen	32	0	0	0	0	0	0	0	0	32
Jack Pine	33	0	0	0	0	0	0	0	0	33
Natural Mixed Pines	30	0	0	0	0	0	0	0	0	30
Northern Hardwood	8	172	0	0	0	0	0	0	0	180
Upland Spruce/Fir	30	0	0	0	0	0	0	0	0	30
<b>Total</b>	<b>133</b>	<b>172</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>304</b>

### Proposed and Next Step Treatments by Method

	Harvest	Site Prep	Planting	Seeding	Burning	Pesticide	Monitoring	Other	Non-Forest Mgt.	Total Acres
Current	304	7	0	0	0	0	1	96		409
Next Step	0	48	48	0	0	48	360	0	0	505
<b>Total</b>	<b>304</b>	<b>55</b>	<b>48</b>	<b>0</b>	<b>0</b>	<b>48</b>	<b>360</b>	<b>1</b>	<b>96</b>	<b>914</b>



Stand Name	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Approval Status
16	72171016-cc	32.9	42120 - Planted Jack Pine	Poetimber Well	57	81-110	Harvest	Clearcut	4211 - Planted Red Pine	Even-Aged	Field Boundary

**Habitat Cut: No****Site Condition:**

Prescription Final harvest 2"+ DBH. No retention due to forest health concerns in the planted JP. Follow with site prep and planting, with release treatments  
Specs: (including herbicide) as needed to secure RP establishment.

Next Step SitePrep, Trenching; Planting, Initial Plant; Pesticide, Hand Application; Monitoring, Artificial Regen(1yr); Monitoring, Artificial Regen(3yr)  
Treatments:

Acceptable Full stocking in RP  
Regen:

Other Note that the strip of RP west of the wellsite (see Site Condition layer) was left as designated retention when stand 17 was cut.  
Comment:

Proposed Start Date: 01/01/2017

17	72171017-Prep	7.1	320 - Upland Shrub	Nonstocked		Unspecified	SitePrep	Trenching	4211 - Planted Red Pine	Even-Aged	Draft Field Boundary
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**Habitat Cut: No****Site Condition:**

Prescription Mechanical and chemical treatments as needed to prepare the site for planting and secure RP establishment.  
Specs:

Next Step SitePrep, Trenching; Planting, Initial Plant; Pesticide, Aerial; Monitoring, Artificial Regen(1yr); Monitoring, Artificial Regen(3yr)  
Treatments:

Acceptable Full stocking in RP  
Regen:

Other  
Comment:

Proposed Start Date: 01/01/2017

18	72171018-ccr	8.3	4113 - R.Maple, Conifer	Sawtimber Poor	85	1-50	Harvest	Clearcut with Retention	4211 - Planted Red Pine	Even-Aged	Field Boundary
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**Habitat Cut: No****Site Condition:**

Prescription Final harvest 2"+ DBH. Follow with site prep and planting, with release treatments (including herbicide) as needed to secure RP establishment.  
Specs:

Next Step SitePrep, Trenching; Planting, Initial Plant; Pesticide, Aerial; Monitoring, Artificial Regen(1yr); Monitoring, Artificial Regen(3yr)  
Treatments:

Acceptable full stocking in RP  
Regen:

Other Per Comp Review decision, reshape the treatment to exclude the NW peninsula.  
Comment:

Proposed Start Date: 01/01/2017

23	72171023-ccr	29.6	42260 - Natural Pine, Mixed Deciduous	Poetimber Medium	57	51-80	Harvest	Clearcut with Retention	4121 - Oak, Aspen	Even-Aged	Draft Field Boundary
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**Habitat Cut: No****Site Condition:**

Prescription Final harvest 2"+ DBH except leave some of the xlog oak. For retention exclude the portion southwest of the Deward Area access road and the portion south of the snowmobile trail and wellsite. Protect the advanced oak regen.  
Specs:

Next Step Monitoring, Natural Regen (Intermediate)  
Treatments:

Acceptable A moderately-stocked mix of oak, aspen and pine, with lower stocking expected where the stand was sparse pre-harvest.  
Regen:

Other Apply snowmobile trail protection specs.  
Comment:

Proposed Start Date: 10/01/2017





Stand	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Approval Status
37	72171037-NF	4.1	3301 - Low Density Deciduous Trees	Nonstocked		Unspecified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		Draft Field Boundary

**Habitat Cut: No**

**Site Condition:**

Prescription Periodic opening maintenance, as needed, that may include disking, fertilizing, liming, food plot seeding, no-till prairie grass seeding, mowing, Specs: brushing, burning, herbicide application, and planting of mast producing tree and shrubs along opening edges.

Next Step  
Treatments:

Acceptable  
Regen:

Other  
Comment:

Proposed Start Date: 01/01/2017

39	72171039-NF	1.2	310 - Herbaceous Openland	Nonstocked		Unspecified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Periodic opening maintenance, as needed, that may include disking, fertilizing, liming, food plot seeding, no-till prairie grass seeding, mowing, Specs: brushing, burning, herbicide application, and planting of mast producing tree and shrubs along opening edges.

Next Step  
Treatments:

Acceptable  
Regen:

Other  
Comment:

Proposed Start Date: 01/01/2017

50	72171050-NF	2.6	310 - Herbaceous Openland	Nonstocked		Unspecified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Periodic opening maintenance, as needed, that may include disking, fertilizing, liming, food plot seeding, no-till prairie grass seeding, mowing, Specs: brushing, burning, herbicide application, and planting of mast producing tree and shrubs along opening edges.

Next Step  
Treatments:

Acceptable  
Regen:

Other  
Comment:

Proposed Start Date: 01/01/2017

52	72171052-select	36.0	4110 - Sugar Maple Association	Sawtimber Well	81	111-140	Harvest	Single Tree Selection	411 - Northern Hardwood	Uneven-Aged	Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Where there are at least 50 potential crop trees per acre (one every 30 feet), thin down to 80 sq. ft. ave residual basal area (range 70-90 sq. ft.). Specs: Walk through and don't mark areas of lower density that have fair-to-good quality stems. Create regen gaps (minimum 100 ft diam canopy openings, cut cleanly) in low stocked/poor quality areas. Clearcut the larger aspen-dominated patches, but don't designate-cut all aspen across the stand.

Next Step Monitoring, Natural Regen (Re-Inventory)  
Treatments:

Acceptable Moderate stocking in northern hardwoods where regen gaps are created, and aspen where the larger clones are patch clearcut. The portions of Regen: the stand that are thinned or left largely intact do not have a regen objective.

Other Apply snowmobile trail protection specs.  
Comment:

Proposed Start Date: 10/01/2017



S t a n d	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Approval Status
53	72171053-cc	30.1	42310 - Planted Spruce	Poletimber Well	52	111-140	Harvest	Clearcut	414 - Other Upland Deciduous	Even-Aged	Draft Field Boundary

**Habitat Cut: No**

**Site Condition:**

Prescription Final harvest 2"+ DBH, with no retention due to the stand's long, narrow boundary and SBW concerns. Consider expanding the north boundary into LDT stands 58 & 59.

Next Step Monitoring, Natural Regen (Re-Inventory)  
Treatments:

Acceptable A moderately-stocked mix of hardwoods and aspen.  
Regen:

Other  
Comment:

Proposed Start Date: 10/01/2017

54	72171054-select	130.1	4110 - Sugar Maple Association	Sawtimber Well	79	81-110	Harvest	Single Tree Selection	411 - Northern Hardwood	Uneven-Aged	Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Where there are at least 50 potential crop trees per acre (one every 30 feet), thin down to 80 sq. ft. ave residual basal area (range 70-90 sq. ft.).  
Specs: Walk through and don't mark areas of lower density that have fair-to-good quality stems. Create regen gaps (minimum 100 ft diam canopy openings, cut cleanly) in low stocked/poor quality areas. Clearcut the larger aspen-dominated patches, but don't designate-cut all aspen across the stand.

Next Step Monitoring, Natural Regen (Re-Inventory)  
Treatments:

Acceptable Moderate stocking in northern hardwoods where regen gaps are created, and aspen where the larger clones are patch clearcut. The portions of the stand that are thinned or left largely intact do not have a regen objective.

Other Apply snowmobile trail protection specs.  
Comment:

Proposed Start Date: 10/01/2017

55	72171055-NF	0.9	310 - Herbaceous Openland	Nonstocked			NonForestMgt	Other - Specify	310 - Herbaceous Openland		Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Periodic opening maintenance, as needed, that may include disking, fertilizing, liming, food plot seeding, no-till prairie grass seeding, mowing,  
Specs: brushing, burning, herbicide application, and planting of mast producing tree and shrubs along opening edges.

Next Step  
Treatments:

Acceptable  
Regen:

Other  
Comment:

Proposed Start Date: 01/01/2017

56	72171056-NF	2.8	3301 - Low Density Deciduous Trees	Nonstocked		Unspec ified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

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Specs: brushing, burning, herbicide application, and planting of mast producing tree and shrubs along opening edges.

Next Step  
Treatments:

Acceptable  
Regen:

Other  
Comment:

Proposed Start Date: 01/01/2017



S t a n d	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Approval Status
64	72171064-ccr	31.7	4130 - Aspen	Poletimber Well	39	81-110	Harvest	Clearcut with Retention	413 - Aspen	Even-Aged	Draft Field Boundary

**Habitat Cut: No**

**Site Condition:**

Prescription Final harvest with retention. Leave the apple trees.

Specs:

Next Step Monitoring, Natural Regen (Re-Inventory)

Treatments:

Acceptable Moderate to full stocking in aspen and mixed hardwoods.

Regen:

Other Add snowmobile trail protection specs and drumming log spec.

Comment:

Proposed Start Date: 10/01/2017

65	72171065-NF	7.4	310 - Herbaceous Openland	Nonstocked		Unspec ified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Periodic opening maintenance, as needed, that may include disking, fertilizing, liming, food plot seeding, no-till prairie grass seeding, mowing, brushing, burning, herbicide application, and planting of mast producing tree and shrubs along opening edges.

Specs:

Next Step

Treatments:

Acceptable

Regen:

Other

Comment:

Proposed Start Date: 01/01/2017

71	72171071-NF	2.5	310 - Herbaceous Openland	Nonstocked		Unspec ified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Periodic opening maintenance, as needed, that may include disking, fertilizing, liming, food plot seeding, no-till prairie grass seeding, mowing, brushing, burning, herbicide application, and planting of mast producing tree and shrubs along opening edges.

Specs:

Next Step

Treatments:

Acceptable

Regen:

Other

Comment:

Proposed Start Date: 01/01/2017

72	72171072-NF	3.4	310 - Herbaceous Openland	Nonstocked		Unspec ified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		Draft Field Boundary
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Prescription Periodic opening maintenance, as needed, that may include disking, fertilizing, liming, food plot seeding, no-till prairie grass seeding, mowing, brushing, burning, herbicide application, and planting of mast producing tree and shrubs along opening edges.

Specs:

Next Step

Treatments:

Acceptable

Regen:

Other

Comment:

Proposed Start Date: 01/01/2017



S t a n d	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Approval Status
74	72171074-NF	71.1	310 - Herbaceous Openland	Nonstocked		Unspecified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		Draft Field Boundary

**Habitat Cut: No**

**Site Condition:**

Prescription Periodic opening maintenance, as needed, that may include disking, fertilizing, liming, food plot seeding, no-till prairie grass seeding, mowing, Specs: brushing, burning, herbicide application, and planting of mast producing tree and shrubs along opening edges.

Next Step  
Treatments:

Acceptable  
Regen:

Other  
Comment:

Proposed Start Date: 01/01/2017

75	72171075-select	5.7	4110 - Sugar Maple Association	Sawtimber Well	80	111-140	Harvest	Single Tree Selection	411 - Northern Hardwood	Uneven-Aged	Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Where there are at least 50 potential crop trees per acre (one every 30 feet), thin down to 80 sq. ft. ave residual basal area (range 70-90 sq. ft.). Specs: Walk through and don't mark areas of lower density that have fair-to-good quality stems. Create regen gaps (minimum 100 ft diam canopy openings, cut cleanly) in low stocked/poor quality areas. Clearcut the larger aspen-dominated patches, but don't designate-cut all aspen across the stand.

Next Step Monitoring, Natural Regen (Re-Inventory)  
Treatments:

Acceptable Moderate stocking in northern hardwoods where regen gaps are created, and aspen where the larger clones are patch clearcut. The portions of Regen: the stand that are thinned or left largely intact do not have a regen objective.

Other  
Comment:

Proposed Start Date: 10/01/2017

79	72171079-FD	1.4	3301 - Low Density Deciduous Trees	Nonstocked	0	Unspecified	Other	Other	330 - Low-Density Trees		Draft Field Boundary
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**Habitat Cut: No**

**Site Condition: BMPs**

Prescription Maintenance of sand trap work pad along the river and stockpiling of sand spoils up the hill as deemed necessary by Fisheries Division and Specs: carried out by them with the required permits.

Next Step  
Treatments:

Acceptable  
Regen:

Other  
Comment:

Proposed Start Date: 10/01/2017

32	72172032-thin	16.2	42110 - Planted Red Pine	Sawtimber Well	59	171-200	Harvest	Crown Thinning	4211 - Planted Red Pine	Even-Aged	Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Mark stand down 120 BA  
Specs:

Next Step  
Treatments:

Acceptable  
Regen:

Other Apply snowmobile trail protection specs. Stand was proposed for treatment during the 2018 YOE inventory planning cycle and approved at Comment: Comp Review on Nov 3, 2016.

Proposed Start Date: 01/02/2017

**Total Treatment Acreage Proposed: 425.1**

## Report 4 – Site Conditions

Grayling Mgt. Unit  
Joan Charlebois : Examiner

Compartment: 171  
Year of Entry: 2018

### Availability for Management

Total Acres	Acres Available	Acres Avail		Dominant Site Conditions	Dominant Site Conditions		
		With Condition	Not Available		5C	3J	5E
386	386	0	0	Aspen			
110	110	0	0	Herbaceous Openland			
33	32	0	1	Jack Pine			1
56	55	0	1	Low-Density Trees		1	
73	8	0	66	Lowland Aspen/Balsam Poplar		66	
1	1	0	0	Lowland Shrub			
13	13	0	0	Mixed Upland Deciduous			
44	44	0	0	Natural Mixed Pines			
744	731	11	2	Northern Hardwood	11		2
39	0	39	0	Oak	39		
225	225	0	0	Red Pine		0	
2	0	0	2	Upland Mixed Forest			2
82	82	0	0	Upland Shrub			
30	30	0	0	Upland Spruce/Fir			
34	34	0	0	Urban			
13	13	0	0	White Pine			
1,886	1,764	50	72	Total Forested Acres	50	67	5
	94%	3%	4%	Relative Percent			

*\*Due to limitations in the current Site Conditions Analysis tool, all nonforested acres are considered available. Future development will enable analysis of nonforested types.*

Site No.	Dominant Site Cond Availability	Dominant Site Condition	Acres	Other Site Condition	Other Site Condition	Other Site Condition	Other Site Condition
1	Unavailable	5E: Long-Term Retention	1	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Retention left in 2009 harvest #39-08							
2	Unavailable	5E: Long-Term Retention	2	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Retention left for 2011 harvest #25-08							

## Report 4 – Site Conditions

Grayling Mgt. Unit

Joan Charlebois : Examiner

Compartment: 171

Year of Entry: 2018

3	<b>Unavailable</b>	<b>3J: Water quality / BMPs (stream, river, or lake)</b>	67	3C: Legally Designated Quiet Area, Natural Area, or Wilderness	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Floodplain and riser of the Upper Manistee, a designated Natural River.							
4	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	11	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Because of the steep terrain, this stand would best be accessed and treated concurrent with the contiguous hardwoods on the north edge in comp 170. Consider merging into compartment 170.							
5	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	39	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Start a new age class of aspen next YOE. The xlog open-grown oak is already at an age & size where vigorous stump-sprouting is unlikely.							
7	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	2	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> designated retention for stand 18's 2017 YOE harvest							

Mgt. Unit

Compartment: #Type!

Year of Entry:



### Report 5 – 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.

SCA Name	SCA Category	Detail Type	Recommendation	Acres
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Comments

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**Report 6 – EXISTING SPECIAL CONSERVATION AREA DETAILS**

\* This is a list of SCA's for this compartment along with a 1/4 mile buffer surrounding the compartment. Refer to the Special Conservation Area Map for locations of the below listed Conservation Areas.

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

Conservation Area	Type	Description
SCA	Cold Water Lake	A coldwater lake has temperature and dissolved oxygen conditions that allow naturally-reproduced or stocked trout populations and those of other coldwater fish species to persist from year to year. Suitable conditions for coldwater fishes may occur in Michigan lakes if they are relatively deep, have substantial groundwater inflows, or are located in colder (northern) areas of the state. Such lakes are established by Director's action and designated as trout resources by Fisheries Order 200.
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.
SCA	Riparian Area	A transitional area between aquatic and terrestrial ecosystems in which the terrestrial ecosystem influences the aquatic ecosystem and vice-versa. Because of the unique conditions adjacent to lakes, streams and open water wetlands, riparian areas harbor a high diversity of plants and wildlife. Riparian communities are ecologically and socially significant in their effects on water quality and quantity, as well as aesthetics, habitat, bank stability, timber production, and their contribution to overall biodiversity.
HCVA	Dedicated Management Areas	Such areas are dedicated by the DNR Director for specific management uses through the promulgation of rules, as governed by Part 5, Department of Natural Resources, of the NREPA (MCL 324.502(2) and 324.504). Section 38 of the Administrative Procedures Act (MCL 24.238) provides for public requests for the promulgation of rules. This is an active program, with one proposed site currently under review by the DNR.
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.





	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
2	42201 - Natural White Pine, Mixed Deciduous	Poletimber Poor	13.5	49	1-50	Ownership cards note the area was clearcut in 1970 (FTP G-61). Inventory comments from 20 years ago indicate it was roller-chopped. Open-grown WP with QA. Canopy is still filling in, with areas of majority WP or QA sapling cover (understory stature). Super-canopy WP are scattered along the south & west edges. Southwest corner has aspen over a seasonal high water table; the rest is dry upland, with Cladina groundcover. As the regen recruits, the stand will shift into the 50-75% canopy closure category.
4	4130 - Aspen	Sapling Medium	73.1	18	Immature	Ownership cards note the area was clearcut in 1970 (FTP G-61). Inventory comments from 20 years ago indicate it was roller-chopped. Scattered poles with majority sapling cover that has been progressively colonizing the upland brush outwash plain. The poles have hypoxylm, black canker, FTF & top-mortality. Saplings with black canker & heartrot common. The aspen clones continue to spread. Saplings aged ran in the teens, ave 17; did not age the minority pole material (date to 1970 treatment). Poor quality consistent with having been roller-chopped or K-G bladed. PVCd site. This is a 2-aged aspen stand but a MiFI error prevents that from being reflected in the stand data. U inclusions common.
6	6112 - Lowland Aspen	Poletimber Poor	7.8	47	1-50	Ownership cards note that merch aspen were cut in 1944 (#69-44), followed by a clearcut in 1970 (FTP G-61). Most of the stand is on seasonally wet ground. The aspen canopy is 2-aged, with pole material dating to the 1970 treatment, and lesser amounts of overmature saw likely dating to the earlier treatment (did not core the older saw). Aspen regen has been filling in holes in the canopy as the overmature aspen drops out, and is expanding into the adjacent upland brush type, but it is still subcanopy in stature. QA ave 45 sq. ft. (range 20-60).
8	42110 - Planted Red Pine	Poletimber Well	9.6	60	111-140	RP planted in 1957, with supplemental planting noted within the forty in 1958 (partial re-plant of this stand?). Was row-thinned in 2000 (#53-98), cutting designated rows and all JP & hardwoods in residual rows. Partially marked for free-thin before a 2008 variance was approved to not thin due to low BA's. Doubles are fairly common, but overall form, height, stocking & self-pruning are better than the plantation to the south. RP ave 135 sq. ft. (range 110-170, 80% at or below 140). RP SI 50
9	6112 - Lowland Aspen	Sawtimber Medium	65.6	57	1-50	Stand occupies the floodplain and riser of the Upper Manistee, a designated Natural River. Cover is a mosaic of aspen clones, patches of cedar, Q/E, pine, L3 and sparse regen. The stand has scattered super-canopy WP & RP and also picks up some planted RP (rows now on the river's edge, and a three-acre inclusion in the northeast that was excluded from the thinning harvests). Aspen was cut in 1972 (#30-72) on three acres in the southeast for a stream improvement project. Cedar seedlings were planted and caged in 2011 & 2012 along the river by Trout Unlimited volunteers, part of the Upper Manistee River Northern White Cedar Restoration Project (FTP C72-620). Overstory averages just under 50 sq. ft. (range 0-80).



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
10	42110 - Planted Red Pine	Poletimber Well	47.2	60	111-140	RP planted in a burnt-over WP stumpfield in 1957, with supplemental planting across portions in 1958 (mostly RP but also some JP). Was row-thinned in 2001 (#53-98), cutting designated rows and all JP & hardwoods in residual rows. Crook, doubles, sweep & persistent lower branches are common. PVCd, open below, with Cladina, Penn sedge & blueberry. Slow growth (1 mm), with little response to the row-thin. Occasional super-canopy RP & WP, and missed QA pole. RP ave 115 sq. ft. (range 60-150). RP SI 48.
11	42110 - Planted Red Pine	Sawtimber Well	10.4	60	81-110	RP planted in 1957. Was row-thinned in 2000 (#53-98), cutting designated rows and all JP & hardwoods in residual rows. Was then free-thinned in 2009 (#39-08), cutting marked RP and all A-RM (cruise residual 80 sq. ft. RP). Occasional open-grown oak. Modest & sustained response to release (increased to 2 mm). Thinning cleaned up most of the suppressed stems & doubles. Residual has good form & crown depth. RP ave 100 sq. ft. (range 80-110). RP SI 53
12	42110 - Planted Red Pine	Poletimber Well	28.3	60	141-170	RP planted in 1957. Was row-thinned in 2000 (#53-98), cutting designated rows and all JP & hardwoods in residual rows. Was part of timbersale #39-08 (marked for free-thinning) but the contract was closed incomplete, leaving this unit uncut. Acorns were hand-planted at random spacing (through an Eagle Scout project) in 2010 (C72-632) to re-introduce oak in the stand. Modest response to row thin (2mm, dropped back to 1 mm). Occasional residual RM-O-WP-A. Fair amount of doubles, but overall decent form & self-pruning. Site becomes poorer near the river. RP ave 155 (range 120-190). RP SI 48
13	42110 - Planted Red Pine	Poletimber Well	20.7	60	81-110	RP planted in 1957. Except for 3 acres in the NE, the stand was row-thinned in 2000 (#53-98), cutting designated rows and all JP & hardwoods in residual rows, and then free-thinned in 2009 (#39-08), cutting marked RP and all A-RM (cruise residual 75 sq. ft. RP). The excluded NE 3 acres is where most of the canopy RM-A-O is located, with only traces of RM-O scattered through the thinned portion. Ave BA 110 (range 90-150). RP SI 55. Relatively steady growth the last 15 years, with little response to the last thinning. Acorns were hand-planted at random spacing (through an Eagle Scout project) in 2010 (C72-632) to re-introduce oak in the stand. There is a trace of red oak seedlings present, still well below the browse line.
15	4130 - Aspen	Sapling Medium	26.9	28	Immature	Was final harvested in 1989 (#61-88), cutting stems 2"+ DBH. Regenerated to small patches of aspen that continue to colonize the upland brush cover between clones, resulting in the slow addition of new age classes on the periphery. Residual aspen stems from the cut are lg pole to small saw in size. Open-grown WP-JP-RP are scattered across the stand. Black canker is present in most of the QA clones.
16	42120 - Planted Jack Pine	Poletimber Well	32.9	57	81-110	JP planted in 1960 at high densities, with a few rows of RP west of the wellsite (left as retention for 2009 harvest #39-08). West poly was part of that timbersale & prescribed for final harvest but the contract was closed incomplete, leaving this unit uncut. Put on height but not diam growth. Small live crown ratio but persistent dead limbs to the ground. JP continue to drop out of the canopy. RM & the occasional oak are mixed into the plantation. JP ave 85 sq. ft.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
18	4113 - R.Maple, Conifer	Sawtimber Poor	52.1	85	1-50	Marginal stand, not much above low density tree status. Cull RM stump clumps with open-grown RP-JP-O-WP & small clumps of aspen. Upland brush inclusions common. Heart rot in the RM. RP-JP plantation remnants & volunteers in small clumps & widely scattered stems. Diffuse boundary with the adjacent U-LDT stand 19.
21	4119 - Mixed Northern Hardwoods	Sawtimber Poor	38.0	96	1-50	Ownership cards note RP-JP planted in 1940. Very similar to stand 18. Cull RM stump dumps, open-grown oak & RP, patches of varying age JP & aspen. Upland brush inclusions common, & diffuse boundary with adjacent upland shrub stand 19. Heart rot common in the RM.
23	42260 - Natural Pine, Mixed Deciduous	Poletimber Medium	34.7	57	51-80	Ownership cards note RP & JP were planted in 1940. Current cover is a patchy distribution of volunteer & planted JP poles-saw, planted RP saw, small aspen clones, open-grown xlog oak, & cull RM. The RP has heavy limbs, and doubles are common. The heaviest concentration of RP is in an E-W band through the stand's middle. Close to moderate stocking in oak regen.
26	42111 - Planted Red Pine, Mixed Deciduous	Sawtimber Medium	44.1	77	51-80	RP & JP were planted in 1940. Was thinned in 2011 (#25-08), cutting merch stems except RP & oak (cruise resid 50 BA). The thinning through species removal resulted in uneven residual distribution, with areas dropping into shelterwood-seed range & achieving moderate to full stocking in O-A-RM regen. RP cored 10 years younger than planting record. RP where plantation stocking didn't hold up have deep crowns & heavy limbs. Oak is 2-aged; in addition to the open-grown xlog class, there is a vigorous immature pole component. RP SI 60
27	4125 - Black, N. Pin Oak	Sawtimber Medium	39.2	106	51-80	Open-grown oak with aspen clones & RM. The aspen is mainly on the west side. Ownership cards note a harvest #14-72A but could not find the closed timbersale file. Cored an aspen; it lines up with that harvest, but it doesn't appear that any oak was cut. Canopy becomes more open to the E & S. Oak has low forks, heavy limbs, poorly-healed branch scars. Upper crown dieback & single-tree mortality is occurring in the mature oak. Areas of well-established WO in understory. Elevated blind in SE.
28	4130 - Aspen	Sapling Well	81.8	16	Immature	Was final harvested by 2001 (#9-98), cutting all stems 2"+ DBH. Regenerated to aspen and mixed hardwoods, with a notable RO component (vigorous & competitive with the aspen). On steeply-rolling terrain.
30	4130 - Aspen	Poletimber Well	67.1	36	51-80	Was final harvested by 1981 (#6-80), cutting merch stems. The patch cut to the east was part of the same contract. Regenerated to aspen & mixed hardwoods; not yet fully transitioned into the pole class. Minor but notable RO component (clean-boled & vigorous). Widely-scattered saw-sized residual (mostly open-grown oak). On steeply-rolling terrain.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
31	4199 - Other Mixed Upland Deciduous	Sapling Poor	12.7	6	Immature	RP-JP-WP were planted across most of the stand in 1940. Was final harvested in 2011 (#25-08), cutting merch stems. This portion meets the forested benchmark but doesn't yet meet moderate stocking due to the oak averaging <4' tall. Regenerated to a mix of RM-O-A, with residual small pole RM-O-RP-JP scattered. above it. MiFI rule wouldn't allow the 5-yr old regen to be listed separately from the older residual. Tsale prep noted it was an extremely low stocked stand with areas predominantly U-type (particularly to the south).
33	42110 - Planted Red Pine	Sawtimber Well	8.9	57	111-140	RP planted in 1960. Was row-thinned in 2000 (#53-98), cutting designated rows and all JP & hardwoods. Was then free-thinned in 2012 (#25-08), cutting marked trees (cruise residual 110 sq. ft.). RP shifting into the saw class, with a medium to full deciduous understory. Very little growth response to the release. Expanding pocket of RP mortality at the south end. A couple rows of the plantation fall between the road & pipeline corridors. RP ave just above 110 (range 80-140). RP SI 57
34	4310 - Pine, Oak Mix	Sawtimber Well	2.4	77	81-110	RP-JP-WP were planted across most of the stand in 1940. This edge was excluded from the 2011 harvest (#25-08) as retention? RP & WP remain from the planting, with mature O-A, & cull RM saw clumps. On level ground in the south; steep hillside in northeast. Previous inventory RM age is from 3 YOE's ago.
35	4130 - Aspen	Sapling Well	32.8	28	Immature	Most of the stand was final harvested in 1989 (#57-88), cutting stems 2"+ DBH. Regenerated to aspen & mixed hardwoods; not yet transitioned enough into the pole class to call pole overall. Minor but notable RO component (clean-boled & vigorous). Small clumps of saw-sized residual (mostly BTA) in the east half. On rolling to steeply-rolling terrain.
38	4111 - S.Maple, Hard Mast Association	Poletimber Well	121.9	80	81-110	RP-JP-WP were planted across most of the stand in 1940. The 1958 RP planting to the east isolated two small islands of northern hardwood that are part of this stand. An acre of aspen was cut in the north end in 1990 (#25-88). On rolling to steep terrain. Best form (single-stem) & proportion in saw on the hilltops. On the lower slopes, particularly the more exposed south aspects, quality & diam decreases (heavier to poles, and multiple-stem clumps). Uneven beech distribution, zero to 60% of the canopy. Beech fading & snapping starting to occur (cankered). Small patches of overmature BTA in the NW. Remnant planted RP & WP are scattered across the stand. Ave 100 sq. ft. (range 60-120).
40	4139 - Aspen, Mixed Deciduous	Sapling Well	36.3	27	Immature	RP-JP-WP were planted in the stand's southeast in 1940. Most of the stand was final harvested by 1990 (#25-88), cutting stems 2"+ DBH. Regenerated to aspen with a significant amount of mixed hardwoods; not yet fully transitioned into the pole class. Minor but notable RO component (clean-boled & vigorous). On steeply-rolling terrain. Small patches were left uncut in the NW, E & SE, presumably due to steep terrain; those residual clumps are mostly saw-sized maple, oak & beech. Larger uncut patches bordering stand 39 were merged with that stand. Traces of the planted RP & WP are scattered across the stand's south end.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
41	4112 - Maple, Beech, Cherry Association	Sawtimber Well	11.0	89	111-140	The stand's south & SW peninsulas were originally part of stand 40 and part of the final harvest contract (#25-88) but were left uncut, presumably due to steep terrain. North part of stand on the hilltop has the better-quality & larger-diameter HM. The beech there is large-crowned & xlog. Moving downhill & to the south, ave diam & quality decreases, as does the proportion in HM. On the steep slope dropping down to the RP plantation valley, there is more RM & some overmature BTA. Traces of planted WP-RP. Full beech-ironwood understory with some HM. Beech scale present. Some xlog beech mortality, though scale was light & no cankers. Ave 115 sq ft (range 80-140).
42	42110 - Planted Red Pine	Sawtimber Well	10.2	60	111-140	RP-JP-WP were planted across most of the stand in 1940. RP was re-planted in 1957, establishing the current majority cover. Was 3rd-row thinned in 1999 (#43-98) and free-thinned in 2009 (#40-08). Slow growth (1 mm) & little response to the release. Isolated RP stem mortality, pocket of thinning crowns in NE. Occasional canopy maple, and remnant WP & RP from the first planting. Full hardwood understory. Ave 115 (range 80-140). RP SI 65
43	42110 - Planted Red Pine	Sawtimber Well	36.1	59	111-140	RP-JP-WP were planted across most of the stand in 1940. RP was then re-planted in 1957-1958, establishing the current majority cover. Was 3rd-row thinned in 1999 (#43-98) and free-thinned in 2009 (#40-08). Slow-growing, little response to release (1 mm increase). Occasional HM & basswood clumps, and remnant WP-RP from the original planting. Small mortality pocket in north-center. Full hardwood understory. Ave 120 (range 100-140). RP SI 66
47	42290 - Natural Mixed Pine	Poletimber Poor	9.2	38	1-50	RP-JP-WP were planted across part of this valley in 1940. Remnants of the planted pine are scattered across the stand, but there's more volunteer pole cover (mainly JP, some WP-QA-RM) than the mature saw. Together, they still don't amount to much above LDT. The planted WP-RP is very open-grown; the planted JP is breaking up.
48	4111 - S.Maple, Hard Mast Association	Poletimber Well	132.5	75	81-110	RP-JP-WP were planted across much of the stand's west half in 1940. Rolling to steeply-rolling terrain. Cover drifts back and forth between being majority pole & majority saw. The dominant species (HM) has only partially transitioned into the saw class (majority in 8 inch diam class), while the lesser associates fall solidly in the saw class. Would have been called M5/M7 in old nomenclature. Some of the better saw cover is on the highest terrain in the west. On lower slopes (particularly the drier aspects) ave diam & quality decrease, shifting to majority pole cover. On the stand's valley margins, diam picks back up but quality drops (open-grown, doubles). Beech distribution very uneven. Basswood mainly in double+ clumps. Beech with scale, yellowing. Stand has traces of PB, YB, WO, RO and remnants of the planted RP & WP. Stand margins pick up small clumps of BTA & QA. Ave 110 sq. ft. (range 60-140, 66% at 110 or below).
51	42110 - Planted Red Pine	Sawtimber Well	9.8	59	111-140	RP was planted in 1958. Most of the stand was 3rd-row thinned in 1999 (#43-98) except for the east half of the SE peninsula. Narrow stand, a lot of edge, small HW inclusions. Crook & porky damage common along the HW edge. Heavy HW understory. Old self-extinguished pocket mortality. Widely-varying basal area, depending on how well the initial planting took, ave 140 (range 70-200, with half of swings above 140 & half below). RP SI 70



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
52	4110 - Sugar Maple Association	Sawtimber Well	36.0	81	111-140	HW sawtimber stand with varying quality, stocking & species distribution. The poorer form maple (open-grown, doubles) and overmature aspen tend to be along the stand margins. The basswood is primarily in multiple-stem clumps, but in the NE where that species is best represented, it also occurs singly. The beech tends to occur in small groups of poor-form open-grown xlog stems. Scale present. Beech understory. Overall quality increases moving north in the stand. Portions of the south are quality-challenged. Ave 120 sq. ft. (range 100-180, 1/2 @ 100).
53	42310 - Planted Spruce	Poletimber Well	30.1	52	111-140	WS planted in 1965 at 1200 t/ac. QA, poor-quality HM & basswood saw, and elm poles are mixed in. Also traces of mature beech, BC, R0, ironwood. WS diameters range widely (4-12") depending on the amount of HW competition and plantation integrity, but a majority of the spruce land within the 8' diam class. Didn't see SBW defoliation, but the plantation is self-thinning. Very slow growth in last decade (sub-mm). Ave 130 sq. ft. (range 110-150).
54	4110 - Sugar Maple Association	Sawtimber Well	130.1	79	81-110	Merch A-PB-RM were cut across most of the stand between 1965 & 1966 (#21-65, #28-65, #32-66). AFO-phase to AFOCa. The better quality HM & basswood are in the stand's north half. Stocking, diameter, form & quality decrease on the stand's long border with the LDT, U & spruce stands. The basswood is solidly in the saw class, with a good proportion in single stems. The HM drifts back and forth between majority saw and majority pole cover. Beech generally occurs as a handful of stems clustered around a few open-grown xlog individuals. The mid-1960's cutting of merch aspen left residual stems that are now very overmature (even some xlog in size). In addition to the aspen regen and residual from that cutting, the aspen continues to expand into the adjacent U-LDT stands. Small clumps of aspen are scattered throughout the stand but clone size increases along the south edge, with a string of aspen inclusions 1-to-2 acres in size. Ave 110 sq. ft. (range 30-170, 50% 110 or below).
61	4130 - Aspen	Sapling Well	17.6	8	Immature	Was final harvested in 2009 (#40-08), cutting stems 2"+ DBH. Dense clones of aspen regen separated by sparser areas (M1, mainly south of the snowmobile trail). Rubus throughout.
62	4110 - Sugar Maple Association	Poletimber Well	70.9	75	81-110	South half of the stand was part of a 120-acre private parcel purchased in 2005, with old fence posts and wire grown into trees. Tree form and quality there gives the appearance of having been pastured (doubles, open-grown, old basal damage). The stand has pockets of better-quality saw-dominated cover in the NE, NW and SW, but they are the exception. The rest of the stand, particularly in the south half and on the extensive margins with the U/LDT valley stands, are pole-dominated and quality-challenged, with the HM saw generally in the oversized cull class due to poor form. The basswood averages larger diameter than the HM but still has a portion in the pole class. Small clones of aspen of varying age and size classes are strung along the stand's margins and continue to spread into the adjacent non-forested stands. Traces of YB & WO are present. Ave 100 sq. ft. (range 50-140, 60% at 100 or below).
63	4130 - Aspen	Poletimber Well	19.0	27	51-80	Was final harvested by 1990 (#25-88), cutting stems 2"+ DBH. Aspen growing on AFO+ site, majority moved into the pole class already. The HW component (HM, basswood, ironwood, elm, birch) is still mainly sapling-sized.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
64	4130 - Aspen	Poletimber Well	31.7	39	81-110	Was final harvested in 1978 (#4-78 & #23-78), cutting merch stems except wild apple trees. Six acres of WS were recorded to have been planted in 1965 (didn't run across). Aspen growing on AFO-AFOCa site; already started transition into the saw class. HM in canopy & understory. Still traces of surviving apple in the understory.
66	4110 - Sugar Maple Association	Sawtimber Well	68.5	85	81-110	Merch aspen (and possibly some basswood and mixed hardwoods) were cut across part of the stand in 1953 (#R 16-52). Was thinned in 2001 (#44-98), cutting marked stems and all aspen. Six acres of WS were recorded to have been planted in 1965 (did not encounter). Good site, worth continuing to thin. The bulk of the stand south of the pipeline and west of the wellsite has the better quality HM & basswood sawtimber with occasional xlog beech (solid AFOCa). North of the pipeline has more canopy gaps, some filled with aspen regen from the harvest, but others dominated by sugar maple saplings. That area's hardwood canopy has poorer form & lower stocking (AFO-phase). The stand has traces of YB, IW & RO in the canopy. Ave 90 sq. ft. (range 50-120, 85% 110 or below). The original stand's south edge was incorporated into a comp 172 harvest and thinned in 2008 (#1-06), so that portion was shifted to comp 172.
68	4110 - Sugar Maple Association	Sawtimber Well	77.0	86	81-110	Most of the stand was thinned in 2012 (#50-09), cutting orange-marked trees and merch aspen (cruise residual 80 sq. ft.). Cutting was incomplete in the NW; elsewhere, there is the occasional uncut BTA & marked HW, and unprocessed basswood bundles. The stand's uncut portions (a mix of redline excluded and incomplete harvest) are on the perimeter. Ave 100 sq. ft. (range 80-130, 75% 110 or below). Part of the original stand's south edge was incorporated into an earlier comp 172 harvest and thinned in 2008 (#1-06), so that portion was shifted to comp 172.
75	4110 - Sugar Maple Association	Sawtimber Well	5.7	80	111-140	Was part of a 120-acre private parcel purchased in 2005. Woodlot surrounded by old farm field. South edge has open-grown xlog maple & beech, but the rest has younger, more uniform HM-bass saw, with overmature BTA clumps. AFOCa site. Quality is there to thin, but the basswood is heavy to multiple stem clumps that complicate selective removal (difficult to thin within clumps, and take-all or leave-all can make for wide swings in residual BA).



Stand	Cover Type	Acres	Managed Site	General Comments:
1	320 - Upland Shrub	2.8	No	Old pine stump area with BC, serviceberry, traces of wild raisin, and scattered WP.
3	310 - Herbaceous Openland	18.2	No	Cleared pipeline corridor and adjacent openings. Grass, blueberry, brackenfern & knapweed, with encroaching black cherry.
5	6220 - Alder/willow	1.2	No	Willow, alder-leaved buckthorn & wet meadow. Euphorbia esula.
7	320 - Upland Shrub	10.0	No	Old pine stump area with BC, serviceberry, scattered WP & RM, and small patches of QA regen.
14	3102 - Grass	2.7	No	Former wellsite. Mostly grass, with some knapweed, sweetfern & encroaching BC-JP.
17	320 - Upland Shrub	7.1	No	RP was planted in 1960. Was final harvested in 2009 (#39-08), cutting stems 2"+ DBH. Has scattered black cherry & RM stump sprouts regen over Penn sedge & brackenfern. Windrows of tops & small piles of pulpwood would complicate burning.
19	3204 - Mast Producing Shrub	61.9	No	RP & JP were planted across most of the stand in 1940. The stand is park-like and open, with BC, serviceberry, & mature RM-O-RP-JP (distribution ranging from widely-scattered individuals to small pockets). Also includes sub-acre clones of aspen. Previous inventory age on the oak was 91.
20	110 - Low Intensity Urban	1.9	No	LINN Operating wellsites State Frederic XI D3-18 & -18SWD. Grass & knapweed.
22	110 - Low Intensity Urban	1.2	No	LINN Operating wellsite State Frederic XI A3-18. Grass, Knapweed, sweetfern & encroaching BC-JP.
24	110 - Low Intensity Urban	1.1	No	LINN Operating wellsite State Frederic XI B 4-18. Grass, knapweed, sweetfern & encroaching JP.
25	122 - Road/Parking Lot	12.9	No	Manistee River Road and cleared pipeline/snowmobile trail corridor. There is an uncleared strip between the road and pipeline with sparse oak-aspen cover, and the south end picks up a couple rows of the adjacent RP plantation.
29	110 - Low Intensity Urban	1.2	No	LINN Operating wellsite State Frederic XI B 2-17. Grass, knapweed & encroaching aspen.
32	3301 - Low Density Deciduous Tree	11.9	No	RP-JP-WP were planted across most of the stand in 1940. Was final harvested in 2011 (#25-08), cutting merch stems. This portion doesn't meet the forested benchmark. Tsale prep noted that the original stand was extremely low stocked, with areas predominantly U-type (particularly to the south). This new stand encompasses that area and is also sparse due to the oak regen being heavily frosted on the flats this year. Cherry brush with residual pole RM-O-pine scattered above sparse RM-A-O sprout regen.
36	110 - Low Intensity Urban	1.1	No	LINN Operating wellsite State Frederic XI D 1-17. Grass, knapweed & encroaching aspen.





Stand	Cover Type	Acres	Managed Site	General Comments:
37	3301 - Low Density Deciduous Tree	4.1	No	Valley opening with scattered O-RM-BC-A and clumps of sumac & serviceberry. West end is a former wellsite.
39	310 - Herbaceous Openland	1.2	No	Opening with grass, knapweed, brackenfern & encroaching A-O-RP.
44	110 - Low Intensity Urban	0.9	No	LINN Operating wellsite State Frederic XI A 4-17. Knapweed, grass & encroaching RP.
45	110 - Low Intensity Urban	0.9	No	LINN Operating wellsite State Frederic XI B 4-17. Knapweed, grass & encroaching RP.
46	3302 - Low Density Conifer Trees	1.8	No	Valley opening (grass, knapweed) with encroaching RP-JP-WP & BC.
49	110 - Low Intensity Urban	0.9	No	LINN Operating wellsite State Frederic XI D3-17. Grass & knapweed.
50	310 - Herbaceous Openland	2.6	No	Valley opening (grass, rubus) with scattered BC and perimeter maple, pine & oak.
55	310 - Herbaceous Openland	0.9	No	Former landing with grass, rubus & encroaching RP.
56	3301 - Low Density Deciduous Tree	2.8	No	Roadside opening (grass, rubus) with cherry brush, prairie willow and clumps of maple & basswood. Short illegal trail grubbed in w/ small tractor across from 9784 Post Road, with bark & lawn clippings partially buried in a depression by the pipeline.
57	110 - Low Intensity Urban	1.3	No	LINN Operating wellsite State Frederic VI A2-16. Grass, Knapweed, rubus & encroaching A-M.
58	3301 - Low Density Deciduous Tree	6.1	No	Upland brush (cherry, serviceberry) with scattered open-grown maple & basswood sawtimber, and encroaching aspen & white spruce.
59	3301 - Low Density Deciduous Tree	2.8	No	Upland brush (cherry, serviceberry) with scattered open-grown basswood & maple saw and encroaching aspen.
60	110 - Low Intensity Urban	1.0	No	LINN Operating wellsite State Frederic VI A4-16. Knapweed, grass, rubus & encroaching aspen.
65	310 - Herbaceous Openland	7.4	No	Valley opening (grass, rubus) with BC, sumac, prairie willow & encroaching maple & aspen
67	110 - Low Intensity Urban	1.2	No	LINN Operating wellsite State Frederic VI D1-16. Grass, knapweed & encroaching hardwoods & aspen.
69	3301 - Low Density Deciduous Tree	25.2	No	Valley opening (grass, brackenfern) with BC, prairie willow, serviceberry, sumac & common apple, scattered basswood and maple (singly & in sub-acre patches), and small clones of encroaching aspen. See notes.



Stand	Cover Type	Acres	Managed Site	General Comments:
70	110 - Low Intensity Urban	2.3	No	Merit Energy wellsite State Frederic-Fisher 2-16. Grass, knapweed & encroaching hardwoods & aspen.
71	310 - Herbaceous Openland	2.5	No	Grass & brackenfern with BC, hardwoods & aspen encroaching on perimeter.
72	310 - Herbaceous Openland	3.4	No	Grass & brackenfern with BC, hardwoods & aspen encroaching on perimeter.
73	110 - Low Intensity Urban	1.2	No	LINN Operating wellsite State Frederic VI C3-16. Grass, knapweed & encroaching hardwoods.
74	310 - Herbaceous Openland	71.1	No	Old farm field and cleared pipeline corridor along the county road. The field was part of a 120-acre private parcel purchased in 2005. Grass, rubus & brackenfern with scattered BC, prairie willow and sumac, encroaching aspen-WP-RP-SP, & sub-acre islands of northern hardwood sawtimber.
76	110 - Low Intensity Urban	1.0	No	LINN Operating wellsite State Frederic VI D4-16. Grass, knapweed & encroaching WP & SP.
77	110 - Low Intensity Urban	3.6	No	LINN Operating wellsiteGarden (Frederic IV) D4-16 SWD. Grass, knapweed.
79	3301 - Low Density Deciduous Tree	1.4	No	Fisheries Division Sand Trap work pad and spoils stockpiling area. The spoils area up the hill has scattered open-grown RM & BTA, and there is a row of planted RP on the north edge.