



# Compartment Review Presentation

## Grayling Forest Management Unit

Compartment 72177

Entry Year 2019

Acreage: 1,359

County Crawford

Management Area: Grayling Ice Contact

**Revision Date:** 2017-09-06

**Stand Examiner:** Joan Charlebois

### Legal Description:

T27N R04W Sections 15, 16, 17  
Frederic Township

### 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 side of the compartment with river interface is on Tawas Lupton mucks. The outwash plains flanking Manistee River Road are on level Grayling sand. The terrain becomes increasingly steep moving east, on Grayling sands transitioning to Graycalm-Grayling and Rubicon-Graycalm sands on rolling to steep terrain. Grayling sands can be found in the valley bottoms on the east side of the compartment also.

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

Aside from the 80-acre parcel of land flanking the river, the compartment has solid State ownership, with private property interface along Manistee River Road and along the northeast compartment boundary. The adjacent private property has been developed for year-round and seasonal residential use.

### 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 no known concerns within the compartment.

### Special Management Designations or Considerations:

The Upper Manistee River is a designated Natural River and High Conservation Value Area (HCVA).

### Watershed and Fisheries Considerations:

The Upper Manistee is a designated Natural River and quality trout stream.

### Wildlife Habitat Considerations:

The compartment's diverse mix of cover, ranging from upland shrubs, to aspen, oak and pine, provide habitat for a wide variety of game and non-game wildlife.

### Mineral Resource and Development Concerns and/or Restrictions

Gravel pits are not located in the area, but potential is excellent on the upland areas. There are currently no active state mineral leases within the compartment, but the compartment was recently leased and active leases remain just to the east. These leases are held by Marathon, who has indicated they are leaving the state and have been in the process of releasing all of their remaining leases. There is no known metallic mineral potential in this part of the state.

### Vehicle Access:

Seasonal County road access to the compartment is by way of Snake Trail, Howes Lake Road and Batterson Road. Additional access is provided by state forest roads.

### Survey Needs:

None at this time.

### Recreational Facilities and Opportunities:

Designated recreation trail segments within the compartment include the dual-designated Snowmobile Trail #679 and Frederic ORV Route in section 16, and the Frederic 50" ATV Trail in sections 16 & 17. The Shore to Shore Equestrian trail is located just north of the compartment in section 9. The Upper Manistee River crosses through the west side of the

compartment and is popular for fishing, canoeing and wildlife viewing. There are also good opportunities for dispersed recreation such as hunting and camping in the majority upland portion of the compartment.

**Fire Protection:**

The nearest water source is the Upper Manistee River at County Road 612. Access may be limited by terrain within parts of the compartment, but those areas have majority deciduous cover, so the potential for large fire development there is low.

**Additional Compartment Information:**

Note that there is a narrow strip of private property on the east side of Manistee River Road.

**The following reports from the Inventory are attached:**

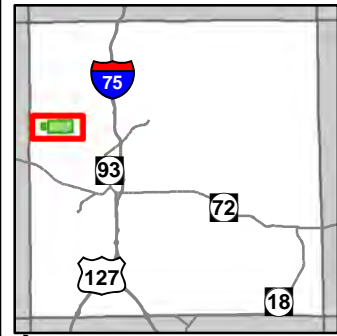
- Total Acres by Cover Type and Age Class**
- Cover Type by Harvest Method**
- Proposed Treatments – No Limiting Factors**
- Proposed Treatments – With Limiting Factors**
- Stand Details (Forested and Nonforested)**
- Dedicated and Proposed Special Conservation Areas**
- Site Condition Details**

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

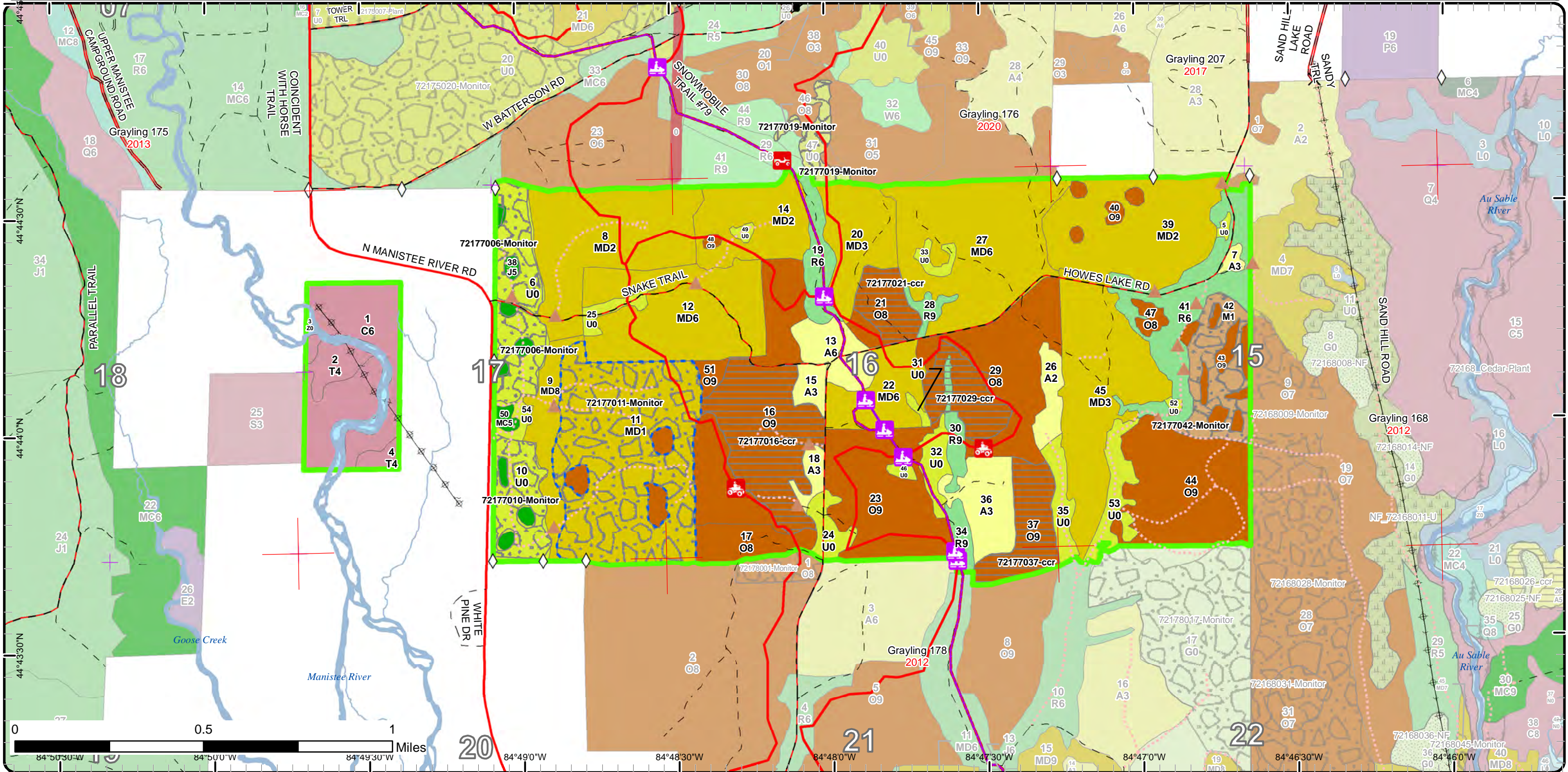
- Base feature information, stand boundaries, cover types, and numbers**
- Proposed treatments**
- Site condition boundaries**
- Details on the road access system**

# Cover Type & Treatments Map

Compartment: 177  
 T27N, R04W, Sec: 15-17  
 County: Crawford  
 Unit: Grayling  
 Mgmt Area: Grayling Ice Contact  
 YOE: 2019  
 Acres: 1358.7 GIS Calculated  
 Examiner: Joan Charlebois  
 Map Revised: 3/5/2018  
 Map Phase: Post-Review



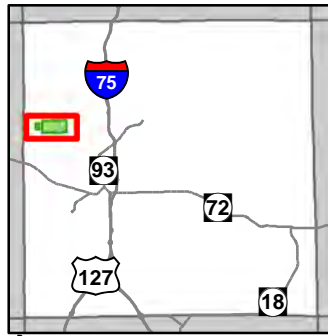
- Miris Corners
- + Remonumented Section Corners
- ◇ Field Grade GPS Corners
- Counties
- ✕ Gate
- ▲ Berms
- 🚙 ORV Trails
- 🚙 ORV Routes
- 🚙 Snowmobile Trails
- Designated ATV
- - - Designated ORV Route
- Designated Snowmobile Trails
- County Paved Roads
- Paved Roads
- County Gravel Roads
- Gravel Roads
- County Poor Dirt Roads
- Poor Dirt Roads
- - - Closed
- Streams
- Lakes and Rivers All
- Powerline
- Compartment Boundary
- Treatments with Site Conditions
- Clearcut (w/Reserves)
- Regeneration Survey
- 411 - Northern Hardwood
- 412 - Oak Types
- 413 - Aspen
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 612 - Lowland Coniferous Forest
- 330 - Low Density Trees
- 500 - Water
- Lakes



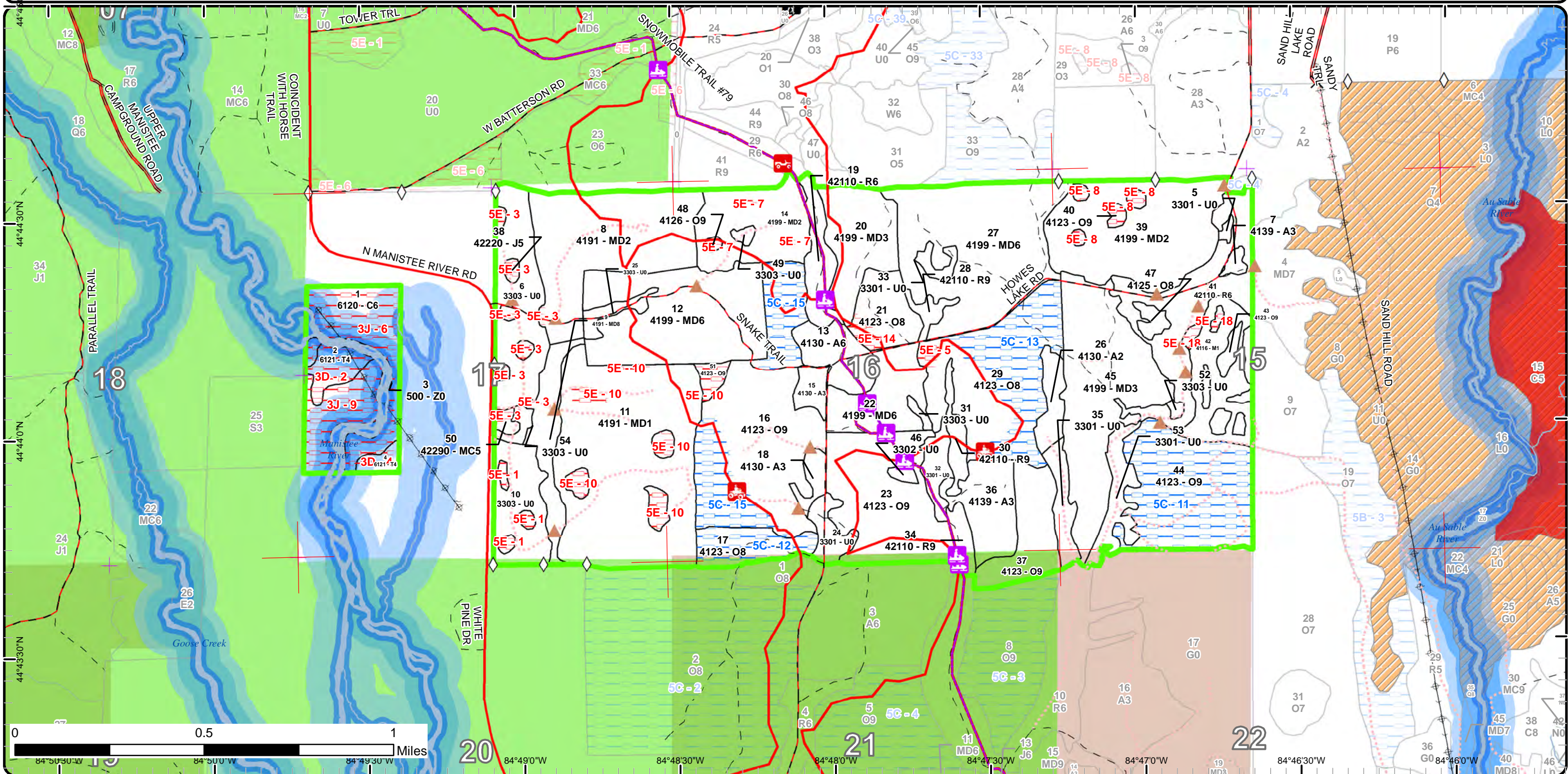


# Special Conservation Areas & Site Conditions Map

Compartment: 177  
 T27N, R04W, Sec: 15-17  
 County: Crawford  
 Unit: Grayling  
 Mgmt Area: Grayling Ice Contact  
 YOE: 2019  
 Acres: 1358.7 GIS Calculated  
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 Map Revised: 3/5/2018  
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- Miris Corners
- Remonumented Section Corners
- ◇ Field Grade GPS Corners
- Counties
- ✕ Gate
- ▲ Berms
- 🛵 ORV Trails
- 🛵 ORV Routes
- 🏂 Snowmobile Trails
- Designated ATV
- Designated ORV Route
- Designated Snowmobile Trails
- County Paved Roads
- Paved Roads
- County Gravel Roads
- Gravel Roads
- County Poor Dirt Roads
- Poor Dirt Roads
- Closed
- Streams
- Lakes and Rivers All
- ⚡ Powerline
- Compartment Boundary
- Available w/ Constraints
- Unavailable
- 5C: Delay treatment for age/size class diversity or exceptional site quality
- 3D: Recreational / Scenic values
- 3J: Water quality / BMPs (stream, river, or lake)
- 5E: Long-Term Retention
- Stand Boundaries
- Ecological Reference Areas
- Natural Rivers Vegetative Buffer
- Natural Rivers Zoning District
- Eastern Massasauga Managed Land
- Kirtland Warbler Habitat
- Cold Water Streams
- Cold Water Lakes
- High Priority Trout Stream Buffer
- Research, Development, and Military Lands
- State Forest Campground



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

Grayling Mgt. Unit

Compartment 177 Year of Entry 2019

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	22	0	23	18	0	0	0	0	0	0	0	0	0	0	0	0	0	63
Cedar	0	0	0	0	0	0	0	0	0	0	0	0	55	0	0	0	0	0	55
Jack Pine	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	6
Low-Density Trees	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	120
Mixed Upland Deciduous	0	223	72	32	255	0	0	0	0	20	0	0	0	0	0	0	0	0	601
Natural Mixed Pines	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	5
Northern Hardwood	0	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26
Oak	0	0	0	0	0	0	0	0	0	172	210	0	0	0	0	0	0	0	382
Red Pine	0	0	0	0	0	0	77	0	0	0	0	0	0	0	0	0	0	0	77
Tamarack	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	0	0	13
Water	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11
<b>Total</b>	<b>131</b>	<b>271</b>	<b>72</b>	<b>55</b>	<b>273</b>	<b>0</b>	<b>88</b>	<b>0</b>	<b>13</b>	<b>0</b>	<b>192</b>	<b>210</b>	<b>0</b>	<b>55</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1359</b>



## Report 2 – Treatment Summary

Grayling Mgt. Unit

Year of Entry: 2019

Acres of Harvest

Compartment 177

Total Compartment Acres: 1,359

Commercial Harvest - 119  
 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
Oak	119	0	0	0	0	0	0	0	0	119
<b>Total</b>	<b>119</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>119</b>

### Proposed and Next Step Treatments by Method

	Harvest	Site Prep	Planting	Seeding	Burning	Pesticide	Monitoring	Other	Non-Forest Mgt.	Total Acres
Current	119	0	0	0	0	201	0	0	0	320
Next Step	0	0	0	0	0	57	176	0	0	233
<b>Total</b>	<b>119</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>57</b>	<b>376</b>	<b>0</b>	<b>0</b>	<b>552</b>



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Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Approval Status
6 72177006-Monitor	35.0	3303 - Mixed Low Density Trees	Nonstocked		Unspecified	Monitoring	Artificial Regen(1yr)	42211 - Natural Red Pine, Mixed Deciduous	Even-Aged	Draft Field Boundary

**Habitat Cut: No**

**Site Condition:**

Prescription check regen

Specs:

Next Step Pesticide, Skidder/Mechanical; ; Monitoring, Artificial Regen(3yr)

Treatments:

Acceptable Fully stocked RP with oak component.

Regen:

Other Percent to Treat = 100%

Comment:

Proposed Start Date: 04/20/2016

10 72177010-Monitor	21.8	3303 - Mixed Low Density Trees	Nonstocked		Unspecified	Monitoring	Artificial Regen(1yr)	42111 - Planted Red Pine, Mixed Deciduous	Even-Aged	Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription

Specs:

Next Step Pesticide, Skidder/Mechanical; ; Monitoring, Artificial Regen(3yr)

Treatments:

Acceptable Stand dominated by planted RP with a natural Oak component. Variance approved to use herbicide.

Regen:

Other Percent to Treat = 100%

Comment:

Proposed Start Date: 04/20/2016

11 72177011-Monitor	117.8	4191 - Mixed Upland Deciduous with Conifer	Sapling Poor	5	Immature	Monitoring	Natural Regen (Intermediate)	4199 - Other Mixed Upland Deciduous	Two-Aged	Draft Field Boundary
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**Habitat Cut: No**

**Site Condition: Long-Term Retention**

Prescription Check regen again after 2 more growing seasons.

Specs:

Next Step

Treatments:

Acceptable Moderate stocking in oak, RM, pine & aspen.

Regen:

Other

Comment:

Proposed Start Date: 06/01/2019

16 72177016-ccr	55.9	4123 - Red Oak	Sawtimber Well	99	81-110	Harvest	Clearcut with Retention	4199 - Other Mixed Upland Deciduous	Even-Aged	Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Final harvest with retention. Cut 1"+ DBH except protect the pine. Treat that portion of the stand from Snake Trail south to the ORV trail. Also treat the potential oak wilt patch west of the ORV trail (see OFS), if indicated to address forest health concerns. Treatment boundary has been edited to approximate the intended inclusions/exclusions.

Specs:

Next Step Monitoring, Natural Regen (Intermediate)

Treatments:

Acceptable A moderately stocked mix of oak, RM & aspen, with a minimum acceptable proportion in oak of 20% at regen survey. The proportion in oak is expected to increase beyond what is recorded at regen survey as their crown diameter growth surpasses that of the RM & A.

Regen:

Other Consider spec'ing dormant oak harvest. Note acre bounded by oak wilt control line and satellite patch to south (OFS pts). Add ORV trail protection specs.

Comment:

Proposed Start Date: 10/01/2018





Stand Name	Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Approval Status
47	72177019-Monitor	11.7	330 - Low-Density Trees	Nonstocked	0	Unspecified	Monitoring	Natural Regen (Re-Inventory)	4129 - Mixed Oak	Even-Aged	Draft Field Boundary

**Habitat Cut: No**

**Site Condition:**

Prescription Monitor during next inventory

Specs:

Next Step  
Treatments:

Acceptable Regen: Regeneration of Oak species, red maple, aspen and white/red pine should be considered successful following harvest.

Other Comment: Percent to Treat = 100%

Proposed Start Date: 10/02/2017

21	72177021-ccr	15.5	4123 - Red Oak	Sawtimber Medium	106	51-80	Harvest	Clearcut with Retention	4199 - Other Mixed Upland Deciduous	Even-Aged	Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Final harvest with retention, cutting 1"+ DBH except protect the pine. Exclude the SW corner bounded by the ORV trail as retention (treatment boundary has been edited to approximate that exclusion).

Next Step Monitoring, Natural Regen (Intermediate)  
Treatments:

Acceptable Regen: A moderately stocked mix of oak, RM & aspen, with a minimum acceptable proportion in oak of 20% at regen survey. The proportion in oak is expected to increase beyond what is recorded at regen survey as their crown diameter growth surpasses that of the RM & A.

Other Comment: Consider spec'ing to harvest when the oak is dormant. Add ORV trail protection specs.

Proposed Start Date: 10/01/2018

29	72177029-ccr	22.3	4123 - Red Oak	Sawtimber Medium	103	51-80	Harvest	Clearcut with Retention	4199 - Other Mixed Upland Deciduous	Even-Aged	Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Final harvest with retention. Cut 1"+ DBH except protect the naturally-established pine. Treat that portion of the stand west of the ORV trail.  
Specs: Include in the harvest the narrow north peninsula of stand 30 where the planted RP established poorly. Designate as retention the corner of stand 29 NW of the ORV trail. The treatment boundary has been edited to approximate the proposed inclusions/exclusions.

Next Step Monitoring, Natural Regen (Intermediate)  
Treatments:

Acceptable Regen: A moderately stocked mix of oak, RM & aspen, with a minimum acceptable proportion in oak of 20% at regen survey. The proportion in oak is expected to increase beyond what is recorded at regen survey as their crown diameter growth surpasses that of the RM & A.

Other Comment: Consider spec'ing dormant oak harvest. Add ORV trail protection specs.

Proposed Start Date: 10/01/2018

37	72177037-ccr	25.2	4123 - Red Oak	Sawtimber Well	103	81-110	Harvest	Clearcut with Retention	4140 - Other Upland Deciduous	Even-Aged	Draft Field Boundary
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**Habitat Cut: No**

**Site Condition:**

Prescription Final harvest with standard retention. Cut 1"+ DBH except protect the pine.

Specs:

Next Step Monitoring, Natural Regen (Intermediate)  
Treatments:

Acceptable Regen: A moderately stocked mix of oak, RM & aspen, with a minimum acceptable proportion in oak of 20% at regen survey. The proportion in oak is expected to increase beyond what is recorded at regen survey as their crown diameter growth surpasses that of the RM & A.

Other Comment: Consider dormant oak harvest. Add snowmobile trail protection specs.

Proposed Start Date: 10/01/2018



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Treatment Name	Acres	Stand CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Age Structure	Approval Status
42 72177042-Monitor	26.0	4116 - Mixed N. Hardwood - Aspen	Sapling Poor	3	Immature	Monitoring	Natural Regen (Intermediate)	4199 - Other Mixed Upland Deciduous	Even-Aged	Draft Field Boundary

**Habitat Cut: No**

**Site Condition:**

Prescription Check regen again after two more growing seasons.

Specs:

Next Step

Treatments:

Acceptable Moderate stocking in oak, RM, aspen & pine.

Regen:

Other

Comment:

Proposed Start Date: 06/01/2019

**Total Treatment Acreage Proposed: 331.2**

## Report 4 – Site Conditions

Grayling Mgt. Unit  
Joan Charlebois : Examiner

Compartment: 177  
Year of Entry: 2019

### Availability for Management

Total Acres	Acres Available	Acres Avail		Acres Not Available		Dominant Site Conditions			
		With Condition				5C	3D	3J	5E
63	63	0		0	Aspen				
55	0	0		55	Cedar		6	49	
5	0	0		5	Jack Pine				5
120	119	0		1	Low-Density Trees				1
600	592	0		9	Mixed Upland Deciduous				9
5	1	0		4	Natural Mixed Pines				4
26	26	0		0	Northern Hardwood				
382	190	166		25	Oak	166			25
77	77	0		0	Red Pine				
13	2	0		11	Tamarack		11	0	
11	0	0		11	Water			11	
1,359	1,071	166		121	Total Forested Acres	166	17	60	44
	79%	12%		9%	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	4	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Designated retention for stand 10's 2014 harvest (#033-09)							
2	Unavailable	3D: Recreational / Scenic values	11	2G: Too wet (sensitive soils, does not include access issues)	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
3	Unavailable	5E: Long-Term Retention	7	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Designated retention islands from stand 6's 2014 harvest (#033-09)							

## Report 4 – Site Conditions

Grayling Mgt. Unit  
Joan Charlebois : Examiner

Compartment: 177  
Year of Entry: 2019

4	<b>Unavailable</b>	<b>3D: Recreational / Scenic values</b>	2	2G: Too wet (sensitive soils, does not include access issues)	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
5	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	3	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Possible retention for stand 29's proposed harvest.							
6	<b>Unavailable</b>	<b>3J: Water quality / BMPs (stream, river, or lake)</b>	29	2B: Unknown if access through adjacent landowner(s) is possible	4A: No Markets Available for these Forest Products	Unspecified	Unspecified
<b>Comments:</b> This stand was evaluated for possible spruce budworm salvage efforts. It is an isolated parcel surrounded by private land. When you factor in the buffer required due to natural river setbacks, it will minimize the amount of area able to be treated. Salvage efforts are not necessary for this stand.							
7	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	2	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Designated retention islands for stand 14's 2013 harvest (#033-09). Most of the islands were subsequently windthrown.							
8	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	5	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Retention islands left when stand 39 was harvested in 2010.							
9	<b>Unavailable</b>	<b>3J: Water quality / BMPs (stream, river, or lake)</b>	21	2B: Unknown if access through adjacent landowner(s) is possible	4A: No Markets Available for these Forest Products	Unspecified	Unspecified
<b>Comments:</b> This stand was evaluated for possible spruce budworm salvage efforts. It is an isolated parcel surrounded by private land. When you factor in the buffer required due to natural river setbacks, it will minimize the amount of area able to be treated. Salvage efforts are not necessary for this stand.							

## Report 4 – Site Conditions

Grayling Mgt. Unit  
Joan Charlebois : Examiner

Compartment: 177  
Year of Entry: 2019

10	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	15	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
11	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	63	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Extensive oak harvests to N, E & S have not successfully regenerated yet.							
12	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	17	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Stand is bounded to the W & S by recent harvests that have not yet successfully regenerated.							
13	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	46	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							
14	<b>Unavailable</b>	<b>5E: Long-Term Retention</b>	3	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b> Possible retention for stand 21's proposed harvest.							
15	<b>Available</b>	<b>5C: Delay treatment for age/size class diversity or exceptional site quality</b>	41	Unspecified	Unspecified	Unspecified	Unspecified
<b>Comments:</b>							

## Report 4 – Site Conditions

Grayling Mgt. Unit

Joan Charlebois : Examiner

Compartment: 177

Year of Entry: 2019

18	Unavailable	5E: Long-Term Retention	2	5B: Maintain for regeneration purposes	Unspecified	Unspecified	Unspecified
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**Comments:**

Designated retention for stand 42's harvest. The other islands were left for shelterwood purposes only, and will be available for treatment once stand 42's regeneration is established.

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



## 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	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.
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	Designated Critical Habitat	Critical habitat areas are established via a consultative and cooperative process between the DNR and the U.S. Fish and Wildlife service for the recovery of threatened and endangered species, as governed by Part 365, Endangered Species Protection, of the Natural Resources and Environmental Protection Act, 1994 PA 451, and the Federal Endangered Species Act of 1973. This is an active program, with proposed species plans in various stages of review. As of now only two exist, Kirtland Warbler Habitat and Piping Plover Habitat.
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:
1	6120 - Lowland Cedar	Poletimber Well	55.1	122	111-140	Stand not visited this YOE. Carried forward data from last field visit. Slow-growing cedar with black spruce, tamarack and paper birch associates, bisected by the Upper Manistee River. Ownership cards note the north half is within a forty acquired for a public fishing site, and an FTP (#G-5, 1969) was recorded in the south forty for thinning of cedar and cutting over-topping hardwoods.
2	6121 - Tamarack	Poletimber Poor	9.2	78	1-50	Stand not visited this YOE. Carried forward data from last field visit. Tamarack and spruce-fir that has been filling in over lowland brush, marsh and bog ground cover, bordering the Upper Manistee River.
4	6121 - Tamarack	Poletimber Poor	4.0	78	1-50	Stand not visited this YOE. Carried forward data from previous inventory. Tamarack and spruce-fir that has been filling in over lowland brush.
7	4139 - Aspen, Mixed Deciduous	Sapling Well	2.1	4	Immature	A-RM stand within the RP plantation was final harvested in 2014 (#003-09), cutting 2"+ DBH except oak. Regenerated to A-RM, with the mature oak scattered above. Passed regen check to A-MD.
8	4191 - Mixed Upland Deciduous with Conifer	Sapling Medium	71.5	17	1-50	Oak stand with RM-A-Pine was shelterwood harvested by 2001 (#048-98), cutting merch stems except oak or WP 16"+ DBH (cruised residual of 26 sq. ft.). A half-acre retention island from stand 6's 2014 harvest was added as an inclusion on the SW edge of this stand flanking Snake Trail (see Site Condition layer). Drier oak site on rolling terrain. Regen from the harvest is the featured canopy, with two sparser layers above: patches of WP-RP pole-sap-saw residual that was sub-merch at the time of harvest, & widely scattered xlog oak-WP. Most of the WO regen is single-stem, in dense patches. Species & age-class distribution vary widely across the stand. ORV trail crosses through.
9	4191 - Mixed Upland Deciduous with Conifer	Sawtimber Medium	19.9	99	81-110	Transition stand between the outwash valley & morains. Varying distribution in oak-pine-RM. The NPO & JP have largely died out. Old fire plow lines in south half. Some windthrow on west edge. A half-acre retention island from stand 6's 2014 harvest was added as an inclusion on the west-center edge of this stand (see Site Condition layer).
11	4191 - Mixed Upland Deciduous with Conifer	Sapling Poor	117.8	5	Immature	Mature oak stand with RM-A-WP-RP was final harvested in 2013/2014 (#033-09), cutting merch stems except the RP-WP and retention islands. Stand occupies a dissected ridge that slopes steeply down to the Manistee River valley. Retention islands in the stand's northwest that were heavily windthrown by a tornado were merged back into this stand. Regen is the featured canopy, but the cutting specs left variable distribution in small pole/large sap RM and all sizes of WP-RP above the regen from the cut. The older canopy RM could not be listed separately due to a current MiFI rule; it had to be merged into the regen as a split sapling/pole class, but the RM age was set to the harvest. Tops were left. A lot of deer use and browse on the margins, less interior. Pockets of SCRIP on the hillsides. Regen does not pass yet across a majority of the stand, but there is good potential to recruit.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
12	4199 - Other Mixed Upland Deciduous	Poletimber Well	70.8	38	51-80	Was final harvested in 1980 (#067-78A), cutting merch stems. W71-47 was submitted to cut residual stems except the clumps of RP-WP. On rolling to steep terrain. The drier valleys have less dense tree cover; the largest non-forested area on the flats was shifted to LDT stand 25. Site quality & canopy closure increase moving up out of the valleys. The oak stump sprouts and aspen have shifted further into the pole class than the RM. The residual pine component is unevenly distributed across the stand. Mature oak retention from the adjacent harvest windthrow into this stand's south edge. ORV trail crosses through.
13	4130 - Aspen	Poletimber Well	17.5	39	111-140	Was final harvested in 1979 (#11-78A), cutting merch stems. FTP W71-46 was submitted to cut residual stems after the harvest in order to expand the aspen clones. Regenerated well to aspen with a minor but good quality oak component.
14	4199 - Other Mixed Upland Deciduous	Sapling Medium	36.3	5	Immature	Mature oak stand with RM-A was final harvested in 2013 (#033-09), cutting merch stems except RP-WP and retention islands. Most of the saw-stature retention was subsequently windthrown. The triangle in the northeast was not part of the original stand or harvest area, but was added to the covertype after it was windthrown & salvaged. Regen is the featured canopy, but the cutting specs left ~15% of the cover in pole-sapling RM-RP-WP residual above it (had to combine the two distinct RM age classes due to a MiFI limitation, but set species age to the harvest). Light browse continues on the oak but a few main stems in each stump clump are recruiting. There is locally heavy cover in single-stem WO regen that is also recruiting. RP-WP seeding in post-harvest. A lot of DWD from the harvest slash & subsequent windthrow in the residual. Passes regen check to M.O. of "oak with mixture of natural species". Cover varies from full to poor stocking, hits moderate across a majority of the stand. Enough has grown past the deer browse line to be considered secure.
15	4130 - Aspen	Sapling Well	6.0	5	Immature	Aspen/oak stand was final harvested in 2013 (#033-09), cutting merch stems except RP-WP. Regenerated well to aspen, with a handful of large WP-RP left above. Passed regen check to M.O. of A-MD.
16	4123 - Red Oak	Sawtimber Well	96.5	99	81-110	Most of the stand was thinned in 2003 (#023-01), cutting merch RM-A and marked oak (cruised residual 80 sq. ft. of oak). Good quality oak above an understory heavy to RM, with sub-acre patches of aspen regen. Some windthrow on west edge overlooking the river valley. Traces of canopy RP & WP. The south six acres were not part of the harvest; the recorded canopy RM & traces of mature aspen occur there. Site becomes drier to the south. ORV trail crosses through. two oak wilt infections were identified in the stand (see OFS - Other points) and vibratory plow lines were established in 2011 under FTP C72-701 to stop underground spread of the fungus.
17	4123 - Red Oak	Sawtimber Medium	16.8	108	51-80	Was shelterwood harvested in 1991 (#072-88), cutting 2"+ DBH except green-marked (cruised 30-60 sq. ft. of oak). Site & oak quality decrease moving east through the stand, the proportion in understory RM vs. oak decreases, and the pine increases. Most of the aspen regen is in one dense clone in the middle of the stand. ORV trail crosses through stand.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
18	4130 - Aspen	Sapling Well	5.3	5	Immature	Marginal aspen/LDT stand was final harvested in 2013 (#033-09), cutting merch stems except RP-WP. Pockets that had the sparse LDT cover remain sparse. The rest regenerated well to A-RM, with residual pine & oak scattered above. Passed regen check to M.O. of A-MD.
19	42110 - Planted Red Pine	Poletimber Well	14.5	57	111-140	RP was planted in 1961* in a shallow valley. Was thinned in 2000 (#098-01), cutting every third row. RP still transitioning into the saw class. 2/3rds of BA swings below thinning threshold. Stand picks up most of its naturally-established misc species on the east edge. Small amount of windthrow at north end. Snowmobile & ORV trails cross through.
20	4199 - Other Mixed Upland Deciduous	Sapling Well	31.5	29	Immature	Was final harvested in 1989 (#073-88), cutting 2"+ DBH. RM-O-A regen from the cut, with WP-RP increasing to the N & W. On shallow rolling terrain. Traces of JP in the drier valleys. Mature oak scattered along the ORV trail. In addition to the oak stump sprouts, there are dense patches of single-stem oak.
21	4123 - Red Oak	Sawtimber Medium	18.8	106	51-80	Was thinned in 1989 (#073-88), cutting 2"+ DBH except green-marked oak. Good quality oak on level terrain. Growth increase following thinning maintained for a decade. RM-dominated understory with patches of BTA and traces of oak. Some of the RM-A regen has shifted into the pole class. ORV trail crosses through.
22	4199 - Other Mixed Upland Deciduous	Poletimber Well	26.9	39	81-110	Was final harvested in 1979 (#11-78A), cutting merch stems. FTP W71-46 was submitted to cut residual stems after the harvest in order to expand the aspen clones. Aspen regenerated heaviest in the stand's NW; the proportion in oak, RM & pine increases to the S & E. The stump origin oak is vigorous and clean-boled, weeding down to 3 or fewer stems per clump, some edging into the saw class. Traces of canopy PB & pin cherry. On shallow-rolling terrain. Stand regeneration was sparser in the shallow valleys to the east; RP-WP is concentrated around the frost pockets there. Snowmobile & ORV trails cross through.
23	4123 - Red Oak	Sawtimber Well	57.7	102	81-110	Most of the stand was thinned in 2000 (#042-98), cutting merch RM-A and marked oak (cruised residual of 70 sq. ft. oak). The stand includes narrow valleys and small depressions with sparser cover that were not part of the harvest area. ORV trail crosses through. Moderate quality oak with scattered pine on shallow rolling terrain. Site becomes drier moving south; ave oak diam decreases & RM understory becomes sparser. Locally heavy WP understory.
26	4130 - Aspen	Sapling Medium	9.4	5	Immature	A-RM stand with scattered RP from 1959 planting was final harvested in 2013 (#003-09), cutting 2"+ DBH except green-marked. Dense aspen clones separated by sparser RM regen. Scattered residual RP & xlog oak. Passed regen check to M.O. of A-MD meeting minimum stocking levels.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
27	4199 - Other Mixed Upland Deciduous	Poletimber Well	85.4	39	81-110	Most of the stand was final harvested in 1979 (#48-78A), spec'd to cut merch stems. Some of the residual was then cut in 1980 & 1981 (#58-80 & #94-80). W71-463 was submitted for post-harvest cutting of more residual stems to expand the aspen. Clumps of older residual saw are scattered across the stand, with the largest uncut pockets in the NW corner (acre of mature oak & super-canopy WP) and mature oak & aspen bordering the RP stand 28. Stand is on rolling terrain. Parts of it are aspen-dominated, others have varying proportions in oak, RM & WP. The stump-origin red oak is vigorous and weeding down to 3 or fewer stems per clump.
28	42110 - Planted Red Pine	Sawtimber Well	4.1	59	111-140	RP was planted fall 1959 in a shallow valley. Was thinned in 2000 (#098-01), cutting every third row. Despite 17 years passing since the row-thin, the stand is still pretty open due to early failures during stand establishment. The mature oak & aspen on the N & E plantation edges were uncut inclusions within adjacent stand 27.
29	4123 - Red Oak	Sawtimber Medium	70.4	103	51-80	Was thinned in 2000 (#009-99), cutting marked oak and A-RM-PB (cruised residual 60 sq. ft. of oak). Good quality oak stand on level terrain. Well-developed RM-A understory from harvest. Locally full WP & RP regen near the super-canopy seed trees. Stand picks sparse patches of the 1959 planted RP in the NW. Red tailed hawk nest within stand (OFS point didn't sync). BA's swing pretty widely between 50 & 110. ORV trail crosses through.
30	42110 - Planted Red Pine	Sawtimber Well	7.2	59	111-140	RP was planted fall 1959 in a shallow valley. Poor plantation row integrity due to deciduous competition. Widely varying RP stocking & diameter. Large cull RM clumps, open-grown oak & mature aspen are scattered across the plantation. Porcupine damage & poor form common in the RP (forks, crook, heavy limbs, etc.). RM understory gets heavier to the south. Was recommended last YOY to harvest and re-plant RP, but that Rx was dropped at Pre-Review.
34	42110 - Planted Red Pine	Sawtimber Well	5.9	59	111-140	RP was planted fall 1959 in a shallow valley. Most of it was thinned in 2000 (#098-01), cutting every third row. The north end had more deciduous competition (RM-A); RP is sparse there & the row-thin stopped short of it. Mortality during plantation establishment left short skips & gaps throughout. Some crook, forks, porcupine damage; not as bad as stand 30's.
36	4139 - Aspen, Mixed Deciduous	Sapling Well	22.8	27	Immature	Was harvested in 1991 (#072-88), spec'd to cut 2"+ DBH except green-marked oak. The regen is the featured canopy: aspen clones with stump sprout RM-O in between. The mature residual oak is concentrated in the stand's NE & E-center. The west peninsula wasn't cut as close to specs, leaving RP from the 1959 planting & scattered large pole RM.
37	4123 - Red Oak	Sawtimber Well	25.2	103	81-110	Was thinned in 1993 (#040-92) except for the NE edge, cutting marked oak and merch RM-A. Most of it was thinned again in 2000 (#49-98), cutting marked oak and merch RM (80 BA cruised residual). Good quality oak on shallow rolling terrain. Heavy RM understory with patches of aspen regen on the perimeter. Traces of stump sprout oak from the second harvest. The uncut acre in the NE on the flats has mature aspen and RM mixed in.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
38	42220 - Natural Jack Pine	Poletimber Medium	5.5	59	51-80	JP retention islands left from stand 6's 2014 harvest (#033-09). The NPO & older JP are dying out. Some windthrow.
39	4199 - Other Mixed Upland Deciduous	Sapling Medium	68.2	8	Immature	Mature Oak-RM-A stand was final harvested with retention in 2010 (#034-09), cutting 2"+ DBH except pine <4" DBH, trees marked with pink paint (scattered saw Oak-RP-WP-RM), and retention islands (now stand 40). Terrain is rolling. Regen was checked in 2012. The sprouting O-RM-A was found to be heavily browsed. FTP C72-719 was submitted for supplemental planting RP around the established regen. More recently, browse has been light, allowing most of the stump-sprout & root-sucker regen to grow past the deer browse line. The single-stem white oak component is seeing the most browse but even some of that has recruited. Although the stand is heavier to RM-A, there is a significant & vigorous oak component. There are sparser areas in valleys & on drier aspects, but the regen passes overall to mixed deciduous with oak.
40	4123 - Red Oak	Sawtimber Well	4.8	108	111-140	Mature oak retention islands left when stand 39 was final harvested in 2010 (#034-09). Mortality on edges appears to be shock-related (TLCB galleried).
41	42110 - Planted Red Pine	Poletimber Well	45.7	59	111-140	RP was planted in fall 1959. Was row-thinned in 2014 (#003-09). A small aspen patch was cut 2"+ DBH along Howes Lake Road, but doesn't meet minimum stand mapping rules. Stand occupies the valley bottom and has some depressions in the NE. Row spacing is tight. Small clumps of bark beetle-killed RP near clearcut inclusion patches.
42	4116 - Mixed N. Hardwood - Aspen	Sapling Poor	26.0	3	Immature	Mature oak with RM-A was harvested early 2015 (#024-13), cutting 2"+ DBH except 30% of the stand area was retained in islands for shelterwood purposes. Those islands were split out as stand 43. Stand occupies a ridge with rolling terrain. Regen heavy to RM with patches of BTA. A lot of the oak stumps didn't sprout. Widespread browse on branch tips across all species, leaving most of the height. Tops not chipped. Oak that is faring the best includes the pre-existing single-stem regen on the hillsides & stump sprouts protected by top bundles. Regen does not pass checks at this time; is not secure given the browse. Check again after two growing seasons. Slash would make supplemental planting difficult.
43	4123 - Red Oak	Sawtimber Well	12.1	99	111-140	Fair quality mature oak on rolling terrain. Originally part of stand 42, these islands were left uncut for shelterwood purposes within the 2015 harvest (#024-13). Some windthrow & shock-related mortality along the island edges; maintaining in the interior.
44	4123 - Red Oak	Sawtimber Well	63.0	99	51-80	Most of the stand was thinned in 1996 (#34-95), cutting orange-marked oak and BTA-RM 2"+ DBH, ave cruise residual of 60 sq. ft. The valley on the north-center edge (~5 acres) was excluded from the harvest, as was the 3-acre SE corner. Another inclusion is the sub-acre polyp in the southwest: that small patch of oak was thinned in 2014 (#3-09), cutting orange-marked oak and all RM, ave cruise residual of 70 sq. ft. Fair quality mature oak stand on rolling terrain. Well-developed RM understory from the harvest. The minor amount of overtopped oak stump sprouts are stagnating. Two larger BTA clones established up the middle of the stand; the rest of the aspen regen pockets are sub-acre. The poorer quality canopy oak & RM are concentrated in the harvest-excluded north valley.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
45	4199 - Other Mixed Upland Deciduous	Sapling Well	72.3	32	1-50	Oak-RM-A stand on a ridge was final harvested in 1986 (#013-85), cutting stems 4"+ DBH. NE peninsula shown on timbersale map was not cut. Small portion on the north side of Howes Lake Road did not regenerate as well as the bulk of the stand. O-RM-A regen still transitioning into the pole class, with the oak & BTA furthest along. Vigorous oak stump sprouts weeding down to fewer stems per clump & starting to overtop the RM. Small patches of planted RP on the west side, left when the rest of the plantation was final harvested.
47	4125 - Black, N. Pin Oak	Sawtimber Medium	3.6	100	51-80	Mature oak stand within the RP plantation was thinned in 2014 (#003-09), cutting orange-marked oak and all RM, ave cruise residual of 70 BA. A line of the planted RP crosses through.
48	4126 - White, Black, N. Pin Oak	Sawtimber Well	1.0	108	81-110	Oak retention island left from stand 14's 2013 harvest. The other islands were heavily windthrown; this one is mostly intact.
50	42290 - Natural Mixed Pine	Poletimber Medium	5.4	56	51-80	Designated retention islands left from stand 10's 2014 harvest (#033-09). JP with RP & oak; species distribution varies between islands. The NPO & overmature JP has largely died out.
51	4123 - Red Oak	Sawtimber Well	11.7	108	111-140	Mature oak retention islands left when stand 11 was final harvested in 2013/2014 (#033-09). Two of the islands in the harvest's NW experienced heavy windthrow, so they were merged back into stand 11. Rest of islands had light windthrow



Stand	Cover Type	Acres	Managed Site	General Comments:
3	500 - Water	10.9	No	Upper Manistee River with mudflat and forested island inclusions. A designated Natural River.
5	3301 - Low Density Deciduous Tree	1.1	No	Steep-sided depression within the RP plantation. Filling in with black cherry, quaking aspen and mixed oak. Scattered RP & JP.
6	3303 - Mixed Low Density Trees	37.4		Mixed JP-NPO-RP-WP stand was final harvested by 2014 (#033-09), cutting 2"+ DBH except for island retention. C72-766 was trenched in 2014 and planted to RP in 2015. Variance was approved to use herbicide if needed. Good RP seedling survivorship overall. Minor skips/gaps in rows. Some snow-pack breakage. Oak & cherry competition mostly below 5' tall. Defoliation on small number of seedlings scattered across the plantation (hung orange flagging). Note that there is a narrow strip of private property between this stand and Manistee River Road.
10	3303 - Mixed Low Density Trees	24.4		Mixed JP-NPO-RP-WP stand was final harvested by 2014 (#033-09), cutting 2"+ DBH except for island retention. C72-766 was trenched in 2014 and planted to RP in 2015. Variance was approved to use herbicide if needed. Trenches seedling over, scattered seedling mortality. Note that there is a narrow strip of private property between this stand and Manistee River Road. Continued illegal ORV use on planted-over/signed closed two-tracks.
24	3301 - Low Density Deciduous Tree	8.4	No	Marginal tree and shrub cover in a shallow valley: black cherry & serviceberry with RM, sub-acre aspen pole clumps, scattered pine & oak.
25	3303 - Mixed Low Density Trees	5.1	No	Was part of a larger stand that was final harvested in 1980 (#067-78A), cutting merch stems. W71-47 was submitted to cut residual stems except for the clumps of RP-WP. This area on the flats has upland brush cover (black cherry, serviceberry & hawthorn) with short, limby pine and oak scattered across it.
31	3303 - Mixed Low Density Trees	1.3	No	Was within an area final harvested in 1979 (#11-78A), but regeneration remained sparse in this shallow valley: cherry brush with serviceberry, scattered RP, & encroaching aspen & oak.
32	3301 - Low Density Deciduous Tree	8.2	No	Valley with black cherry, serviceberry & marginal tree cover (sub-acre patches of aspen, cull RM and scattered open-grown oak).
33	3301 - Low Density Deciduous Tree	3.4	No	Was within an area final harvested in 1979 (#48-78A), spec'd to cut merch stems. This area remained sparse post-harvest, with serviceberry, cherry brush & encroaching A-O-RM-Pine.
35	3301 - Low Density Deciduous Tree	9.8	No	RP plantation was final harvested in 2013 (#003-09), cutting 2"+ DBH except green-marked RP & BTA. Regenerated to cherry brush with scattered RM, oak & patches of aspen. Passes regen check for upland brush M.O.
46	3302 - Low Density Conifer Trees	1.6	No	Small frost pocket depression with black cherry, serviceberry and scattered trees (RP, WP, RM).
49	3303 - Mixed Low Density Trees	1.4	No	Frost pocket opening that was also used as a landing for stand 14's 2013 harvest. Cherry brush with encroaching pine & oak.



Stand	Cover Type	Acres	Managed Site	General Comments:
52	3303 - Mixed Low Density Trees	1.0	No	Failed area within the RP plantation. Trenched through but with only scattered surviving RP. Encroaching oak & cherry.
53	3301 - Low Density Deciduous Tree	13.8	No	RP plantation was final harvested in 2013 (#003-09), cutting 2"+ DBH except green-marked RP and a sub-acre island of oak that was thinned (now a polyp appended to stand 44). Patchy sprout regen of cherry brush, RM & aspen, with RP seedlings just getting established. Passed regen check to M.O. of U/nat regen.
54	3303 - Mixed Low Density Trees	3.0	No	Opening with black cherry and sparse tree cover (NPO, pine, RM). Includes a sub-acre patch in the northeast that was harvested in 2014 but excluded from the planting area.