



Compartment Review Presentation

Grayling Forest Management Unit

Compartment 270

Entry Year 2016

Acreage: 1,751

County Crawford

Management Area: Kirtland's Warbler

Revision Date:

Stand Examiner: Thomas Barnes

Legal Description:

T28N R1W Sections 4, 5, & 6
Northeast Lovells Township, Crawford County

Identified Planning Goals:

The primary goal for this compartment is to provide Kirtland's Warbler habitat in accordance with the Kirtland's Warbler Management Plan. Another is to maintain species and structural diversity while managing for health, productivity, and sustainability throughout the compartment. Also provide multiple use opportunities and incorporate any visual management needed to optimize these uses.

Soil and topography:

The majority of the soil in this compartment is Grayling Sand. There is a large pocket of Graycalm-Grayling Sand in the center of Section 4. Other soil types within the compartment consist of Leafriver Muck, Tawas-Leafriver, Tawas-Lupton Muck and AuGres-Kinross-Croswell complex, all found within the two small drainages and a few small pockets throughout the compartment. Topography within the compartment for the most part is level to gently rolling terrain.

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

This compartment consists of solid state ownership. Along County Road 612 and south of Section 4 there are a couple of private residences. There is also a couple of private residences located along Twin Bridge Road on the west side of compartment.

Unique Natural Features:

The Kirtland's Warbler (*Kirtlandii dendroica*) and Secretive locust (*Appalachia arcane*) are two endangered or threatened species that may be seen within this compartment and need to be considered in the management of this compartment. Another concern when managing this compartment is the Bald Eagle. The extreme southwest corner is part of the Shupac Dry Sand Prairie ERA.

Archeological, Historical, and Cultural Features:

No Archeological, Historical, or Cultural Features known.

Special Management Designations or Considerations:

Most all of the compartment falls within part of the Lovell's Kirtland Warbler Management Area. The compartment consists of 5 Kirtland's Warbler Cutting Blocks. The planting pattern for habitat has changed within the past ten years. Instead of planting 10 rows of weaving Jack Pine separated by a narrow strip of grass, current habitat is being planted in an interweave pattern. Old OI coded out these small strips of jack pine as separate stands. This inventory lumped the multiple stands of small strips with the grassy strips as one stand dedicated to KW management and will be treated the Western area or block 49 kept the jack pine and grassy areas separate.

Watershed and Fisheries Considerations:

The West Branch of Big Creek traverses through the very southeast portion of the compartment. The West Branch of Big Creek is designated as a trout stream. This stream has been site conditioned with the appropriate vegetative buffer. No other watercourses or lakes are contained within the compartment. This project is being planned by a local angling groups, and seeks to improve fish habitat in the reach for all trout life stages, purge and contain excess sediment, keep the channel open by removing beaver dams, and serve as a demonstration project for riparian zone management. This will be accomplished through the construction and placement of various in-stream fish habitat structures, large woody debris, and brush bundles; repositioning of existing downed large woody material in the river; and vegetative management near certain sections of the stream as part of a demonstration project. Trees and shrubs may be cut from adjacent state land for structures. FTP 72-714 is in place for beaver dam removal in this reach, and additional FTPs will be obtained for the cutting of trees and vegetation management.

Wildlife Habitat Considerations:

The Kirtland's Warbler habitat creation is the primary management objective for the compartment. Leaving snags and a

few pockets of large super canopy Red Pine throughout the compartment will provide some diversity and habitat for other creatures.

Mineral Resource and Development Concerns and/or Restrictions

Surface sediments consist of glacial outwash sand and gravel and postglacial alluvium. The glacial drift thickness varies between 400 and 600 feet. Beneath the glacial drift is the Coldwater Shale. The Coldwater does not have a current economic use. The nearest gravel pit is located two miles to the south and potential is thought to be good on the upland areas. The Antrim Shale has been developed on some of the State minerals, but is near the southern limit of the Antrim Shale production. This is evidenced by several gas wells located throughout compartment.

Vehicle Access:

County Roads: F-97 – Twin Bridge Road, Big Creek Road, County Road 612, Jack Pine Plains Road, Shupac Trail along with a few two tracks off of these roads provide vehicle access to the compartment.

Survey Needs:

There are no survey needs within this compartment.

Recreational Facilities and Opportunities:

A designated snowmobile trail # 4 (Lovell's snowmobile trail), traverses through the very south portions of Sections 4 and 5 and then proceeds north up through Section 5 the compartment. Other recreational opportunities within this include fishing, bird-watching, and hunting.

Fire Protection:

The compartment falls under the fire protection of the Lovell's Volunteer Fire Department and the Grayling MDNR. Nearby water sources include Shupac Lake, North Branch of the Au Sable River, West Branch of Big Creek and the village of Lovells. For the most part, several county roads and two track roads surround or traverse into the compartment for fire protection accessibility.

Additional Compartment Information:

The following reports from the Inventory are attached:

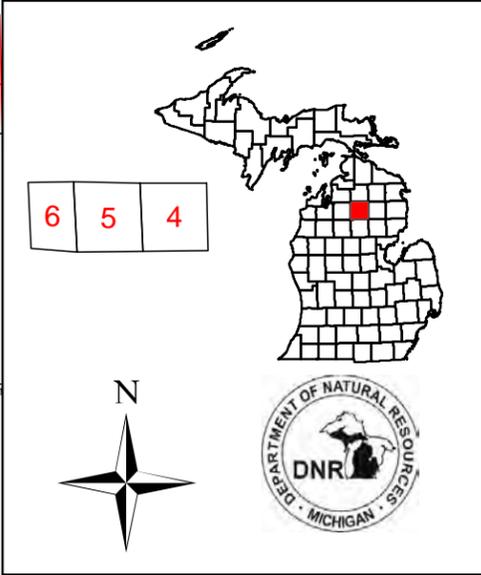
- Total Acres by Cover Type and Age Class**
- Cover Type by Harvest Method**
- Proposed Treatments – No Limiting Factors**
- Proposed Treatments – With Limiting Factors**
- Stand Details (Forested and Nonforested)**
- Dedicated and Proposed Special Conservation Areas**
- Site Condition Details**

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

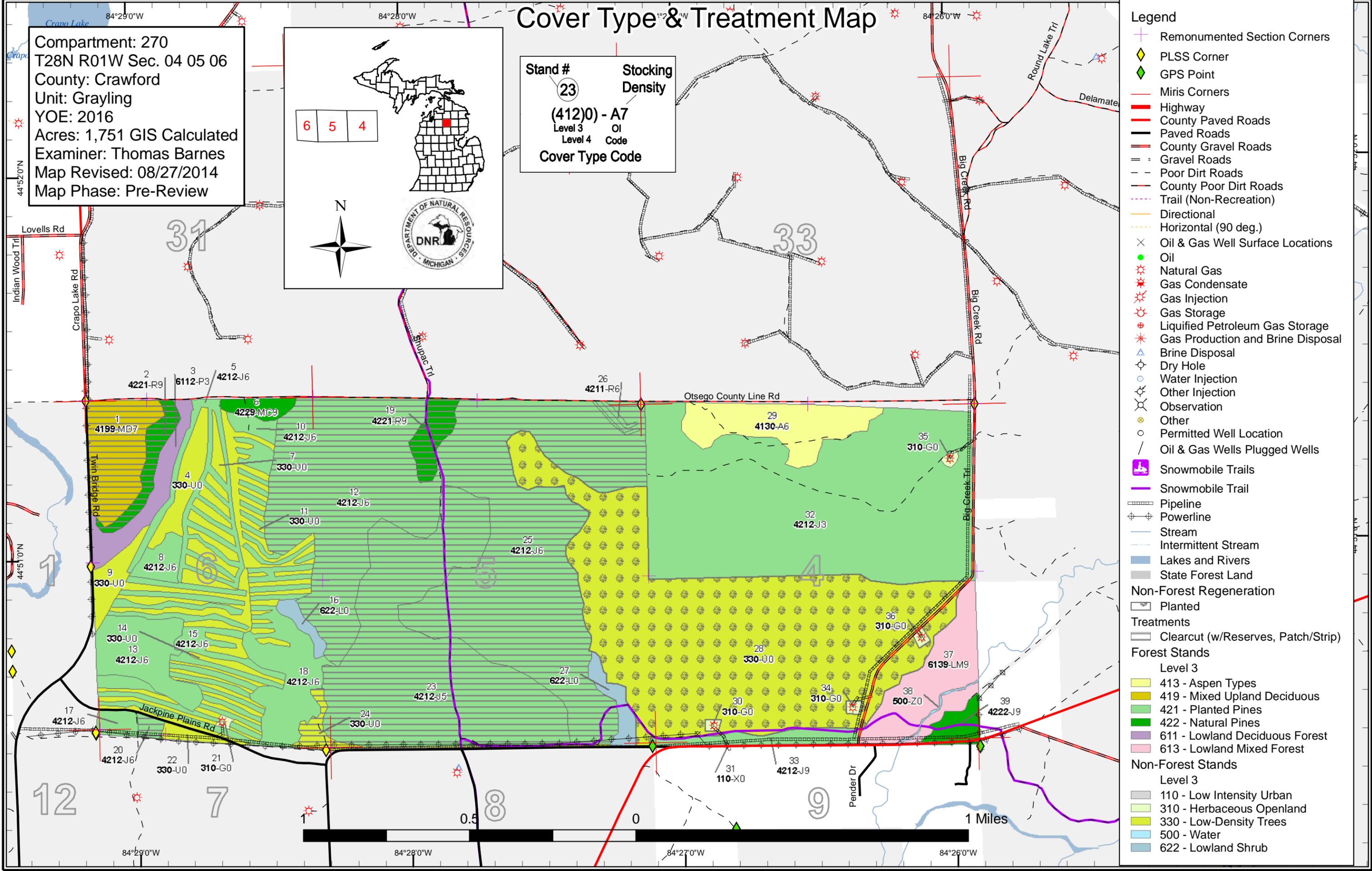
- Base feature information, stand boundaries, cover types, and numbers**
- Proposed treatments**
- Site condition boundaries**
- Details on the road access system**

Cover Type & Treatment Map

Compartment: 270
 T28N R01W Sec. 04 05 06
 County: Crawford
 Unit: Grayling
 YOE: 2016
 Acres: 1,751 GIS Calculated
 Examiner: Thomas Barnes
 Map Revised: 08/27/2014
 Map Phase: Pre-Review



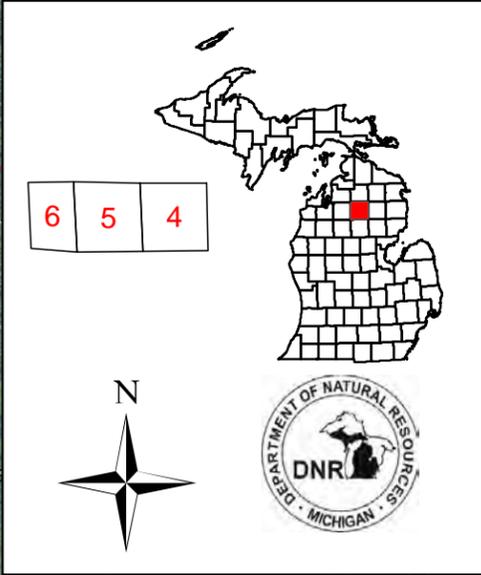
Stand #
 23
Stocking Density
 (4120) - A7
 Level 3 OI
 Level 4 Code
Cover Type Code



- Legend**
- ✦ Remonumented Section Corners
 - ◇ PLSS Corner
 - ◆ GPS Point
 - Miris Corners
 - Highway
 - County Paved Roads
 - Paved Roads
 - County Gravel Roads
 - Gravel Roads
 - Poor Dirt Roads
 - County Poor Dirt Roads
 - Trail (Non-Recreation)
 - Directional
 - Horizontal (90 deg.)
 - × Oil & Gas Well Surface Locations
 - Oil
 - ☀ Natural Gas
 - ☀ Gas Condensate
 - ☀ Gas Injection
 - ☀ Gas Storage
 - ☀ Liquefied Petroleum Gas Storage
 - ☀ Gas Production and Brine Disposal
 - ☀ Brine Disposal
 - Dry Hole
 - Water Injection
 - Other Injection
 - Observation
 - Other
 - Permitted Well Location
 - Oil & Gas Wells Plugged Wells
 - 🛷 Snowmobile Trails
 - Snowmobile Trail
 - Pipeline
 - Powerline
 - Stream
 - Intermittent Stream
 - Lakes and Rivers
 - State Forest Land
 - Non-Forest Regeneration**
 - ▭ Planted
 - Treatments**
 - ▭ Clearcut (w/Reserves, Patch/Strip)
 - Forest Stands**
 - Level 3
 - 413 - Aspen Types
 - 419 - Mixed Upland Deciduous
 - 421 - Planted Pines
 - 422 - Natural Pines
 - 611 - Lowland Deciduous Forest
 - 613 - Lowland Mixed Forest
 - Non-Forest Stands**
 - Level 3
 - 110 - Low Intensity Urban
 - 310 - Herbaceous Openland
 - 330 - Low-Density Trees
 - 500 - Water
 - 622 - Lowland Shrub

Stand Boundary Map

Compartment: 270
 T28N R01W Sec. 04 05 06
 County: Crawford
 Unit: Grayling
 YOE: 2016
 Acres: 1,751 GIS Calculated
 Examiner: Thomas Barnes
 Map Revised: 08/27/2014
 Map Phase: Pre-Review



Stand #
 23
Stocking Density
 (412)0 - A7
 Level 3 OI
 Level 4 Code
Cover Type Code

Legend

- ✚ Remonumented Section Corners
- Miris Corners
- ◆ PLSS Corner
- ◆ GPS Point
- Highway
- County Paved Roads
- Paved Roads
- County Gravel Roads
- Gravel Roads
- Poor Dirt Roads
- County Poor Dirt Roads
- Trail (Non-Recreation)
- Directional
- Horizontal (90 deg.)
- × Oil & Gas Well Surface Locations
- Oil
- ☀ Natural Gas
- ☀ Gas Condensate
- ☀ Gas Injection
- ☀ Gas Storage
- ⊕ Liquefied Petroleum Gas Storage
- ⊕ Gas Production and Brine Disposal
- ⊕ Brine Disposal
- ⊕ Dry Hole
- ⊕ Water Injection
- ⊕ Other Injection
- ⊕ Observation
- ⊕ Other
- Permitted Well Location
- / Oil & Gas Wells Plugged Wells
- Pipeline
- Powerline
- Stream
- Intermittent Stream
- ▭ Stand Boundaries

Forest Stands

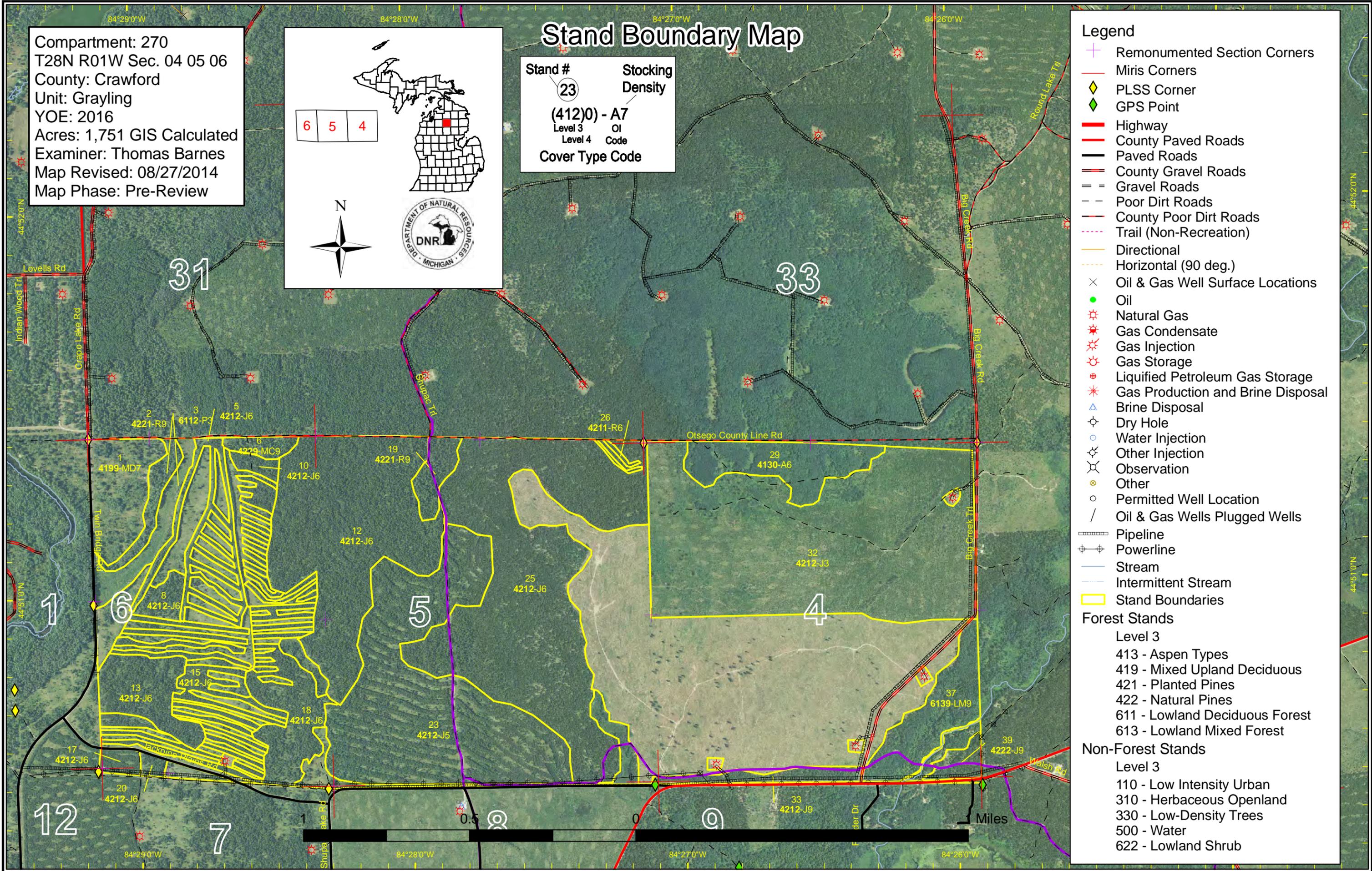
Level 3

- 413 - Aspen Types
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 611 - Lowland Deciduous Forest
- 613 - Lowland Mixed Forest

Non-Forest Stands

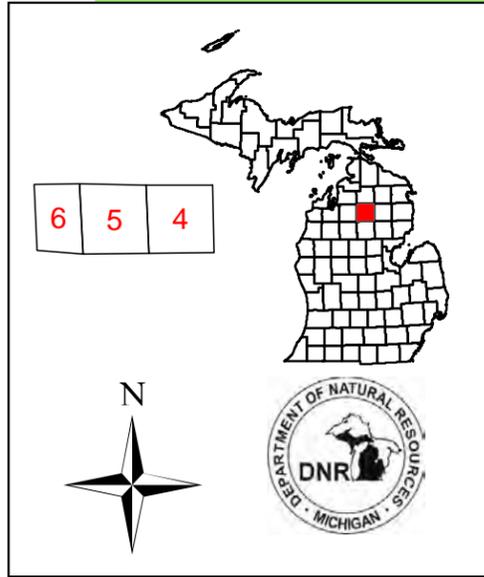
Level 3

- 110 - Low Intensity Urban
- 310 - Herbaceous Openland
- 330 - Low-Density Trees
- 500 - Water
- 622 - Lowland Shrub



Special Conservation Areas & Site Conditions Map

Compartment: 270
 T28N R01W Sec. 04 05 06
 County: Crawford
 Unit: Grayling
 YOE: 2016
 Acres: 1,751 GIS Calculated
 Examiner: Thomas Barnes
 Map Revised: 08/27/2014
 Map Phase: Pre-Review



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

Legend

- Remonumented Section Corners
- Miris Corners
- Stand Boundaries
- Site Condition Available
- Available w/ Constraints (Factor - Number)
- Unavailable (Factor - Number)

Site Condition Type

Available Factors W/ Constraints

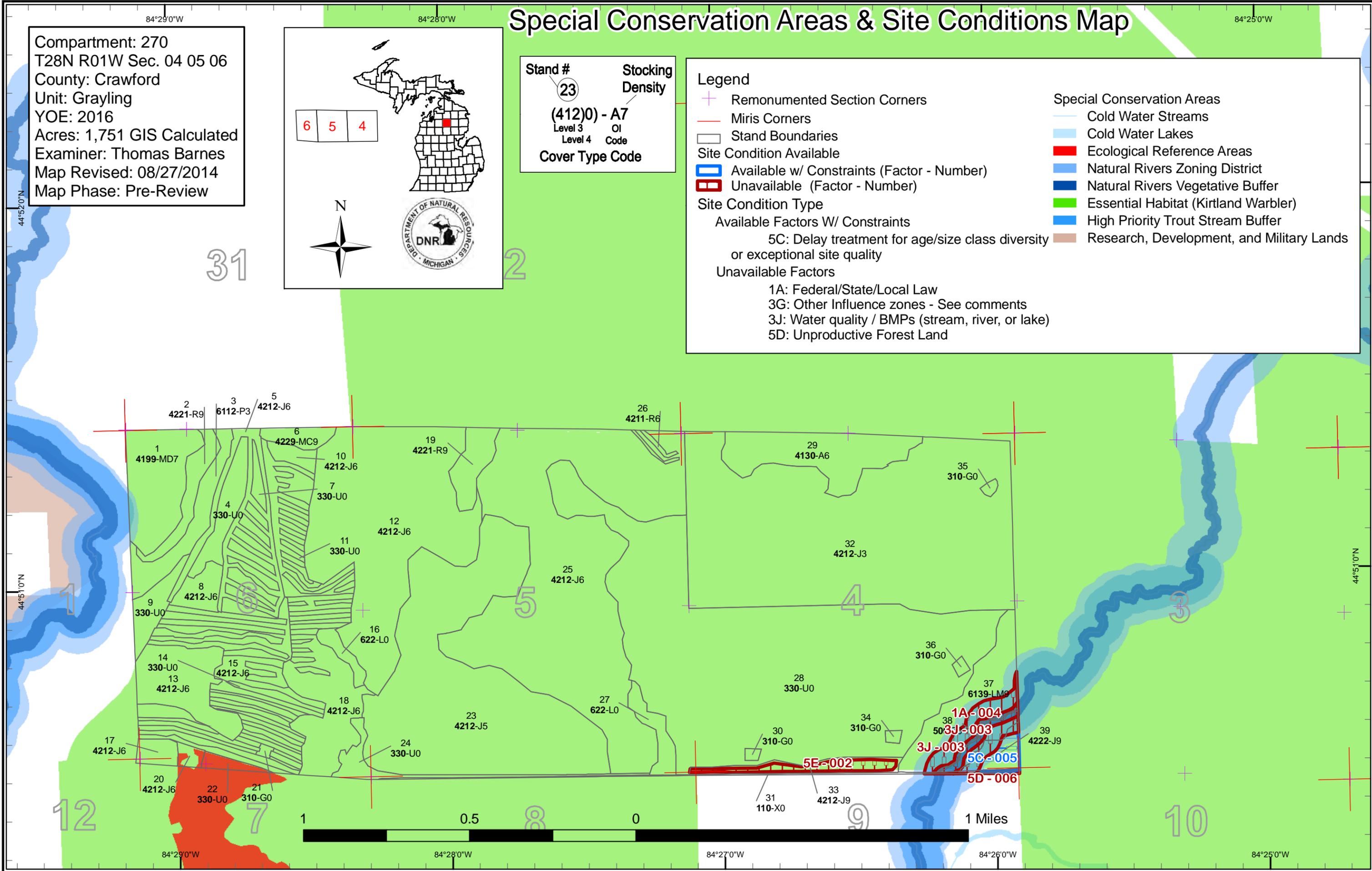
- 5C: Delay treatment for age/size class diversity or exceptional site quality

Unavailable Factors

- 1A: Federal/State/Local Law
- 3G: Other Influence zones - See comments
- 3J: Water quality / BMPs (stream, river, or lake)
- 5D: Unproductive Forest Land

Special Conservation Areas

- Cold Water Streams
- Cold Water Lakes
- Ecological Reference Areas
- Natural Rivers Zoning District
- Natural Rivers Vegetative Buffer
- Essential Habitat (Kirtland Warbler)
- High Priority Trout Stream Buffer
- Research, Development, and Military Lands



Report 1 – Total Acres by Cover Type and Age Class



	Age Class														Total
	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 +	Uneven Age	
Aspen	0	0	42	0	0	0	0	0	0	0	0	0	0	0	42
Herbaceous Openland	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Jack Pine	282	0	6	0	107	507	157	23	0	0	0	0	0	0	1083
Low-Density Trees	459	0	0	0	0	0	0	0	0	0	0	0	0	0	459
Lowland Aspen/Balsam Poplar	20	0	0	0	0	0	0	0	0	0	0	0	0	0	20
Lowland Mixed Forest	0	0	0	0	48	0	0	0	0	0	0	0	0	0	48
Lowland Shrub	15	0	0	0	0	0	0	0	0	0	0	0	0	0	15
Mixed Upland Deciduous	0	0	0	0	0	0	0	0	39	0	0	0	0	0	39
Natural Mixed Pines	0	0	0	0	0	7	0	0	0	0	0	0	0	0	7
Red Pine	0	0	0	0	0	2	0	0	12	13	0	0	0	0	27
Urban	4	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Water	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	786	0	48	0	155	516	157	23	0	51	13	0	0	0	1751



Report 2 – Proposed Treatment Summaries

Grayling Mgt. Unit
Year of Entry 2016

Compartment 270
Total Compartment Acres: 1,751

Acres by Treatment Type

Commercial Harvest - 659 Tree Planting - 617 Other - 0
 Habitat Cut - 0 Opening Maintenance - 0

Cover Type by Harvest Method

	<i>Clearcut</i>	<i>Selection</i>	<i>Seed Tree</i>	<i>Shelterwood</i>	<i>Thinning</i>	<i>Other - Specify</i>	<i>Total Acres</i>
Low-Density Trees	11	0	0	0	0	0	11
Mixed Upland Deciduous	39	0	0	0	0	0	39
Natural Pines	26	0	0	0	0	0	26
Planted Pines	584	0	0	0	0	0	584
Total	659	0	0	0	0	0	659



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Treatment Name	Acres	CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
1 72270001-Cut	39.0	4199 - Other Mixed Upland Deciduous	Low Density Log	94	1-50	Harvest	Clearcut	4191 - Mixed Upland Deciduous with Conifer	Cmpt. Review Proposal

Prescription Clear cut without reserves due to low density of trees, size of stand and to help facilitate planting operations. Specs to be included in this sale are low stumps and chipping. Woody Biomass guidelines does not need to be followed. Stand should be treated with adjacent stand 35 in Comp 9 of Otsego County.

Other Comments: This stand should have pockets of regeneration, plan is to allow natural regen then plant the rest of the area to red pine. This compartment is heavy to jack pine.

Next Steps: Monitor regenerations following harvest, should come back to a mixture of aspen, oak and other associated species with poor to moderate stocking levels. Conduct site prep as needed including herbiciding, trench and plant red pine around area of natural regeneration.

Proposed Start Date: 10/01/2015

2 72270002-Cut	12.4	42210 - Natural Red Pine	High Density Log	95	111-140	Harvest	Clearcut	4211 - Planted Red Pine	Cmpt. Review Proposal
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Prescription Clear cut without reserves due to stand size. Specs to be included in this sale are low stumps and chipping. Woody Biomass guidelines does not need to be followed.

Other Comments: This area is a narrow strip of mature red pine on a transition slope. Plan is to replant back to red pine when stand 1 is planted.

Next Steps: Trench and plant to red pine following harvest. Planting should be conducted when stand 1 is planted.

Proposed Start Date: 10/01/2015

12 72270012-Cut	157.1	42120 - Planted Jack Pine	High Density Pole	63		Harvest	Clearcut with Reserves	4212 - Planted Jack Pine	Cmpt. Review Proposal
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Prescription Clearcut with reserves follow stand retention guidelines. Retention should mimic the fire skip vortices. Add specs to protect survey corner found within this sale, it is roughly 120-140 south of two track. Specs to be included in this sale are low stumps and chipping. Woody Biomass guidelines does not need to be followed.

Other Comments: This stand is part of Block 48 of the Lovells KW Plan. There is a survey corner in this stand that need protection.

Next Steps: Site prep as needed trench and plant to jack pine as per the Lovells KW Plan.

Proposed Start Date: 10/01/2015

19 72270019-Cut	13.1	42210 - Natural Red Pine	High Density Log	102	111-140	Harvest	Clearcut	4212 - Planted Jack Pine	Cmpt. Review Proposal
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Prescription Final harvest without reserves do to small size of stand. Retain all super canopy red pine greater than 18" dbh. Snowmobile spec needs to be used. Specs to be included in this sale are low stumps and chipping. Woody Biomass guidelines does not need to be followed.

Other Comments: Snowmobile trail runs thru stand. This stand is part of the Lovells KW Plan Block 48.

Next Steps: Site prep as needed, trench and plant to jack pine as per the Lovells KW Plan.

Proposed Start Date: 10/01/2015



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Treatment Name	Acres	CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
20 72270020-Cut	3.1	42120 - Planted Jack Pine	High Density Pole	59		Harvest	Clearcut	4222 - Natural Jack Pine	Cmpt. Review Proposal

Prescription: Stand is already under contract to final harvest with no retention. Variance was granted in 2010. Stand is part of Shupac Barriens ERA.

Specs:

Other Comments: Stand is already under contract to be treated with stand 204 of comp 271, timbersale # 72-016-10-01. Stand is also part of FTP 72-636 for the Shupac Barriens Burn.

Next Steps: Prescribe Burn as per FTP # 72-636.

Proposed Start Date: 10/01/2015

23 72270023-Cut	188.2	42120 - Planted Jack Pine	Medium Density Pole	50		Harvest	Clearcut with Reserves	4212 - Planted Jack Pine	Cmpt. Review Proposal
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Prescription: Final harvest with reserves, follow stand retention guidelines. Retention should be focused along or near Jack Pine Plains Rd either as a strip along the road for fire vortices. Use snowmobile trail protection spec. Specs to be included in this sale are low stumps and chipping. Woody Biomass guidelines does not need to be followed.

Other Comments: Snowmobile trails run along the southern edge and thru the stand running north to south direction. Stand is part of Lovells KW Plan Block 48.

Next Steps: Site prep as needed trench and plant to jack pine as per the Lovells KW Plan.

Proposed Start Date: 10/01/2015

25 72270025-Cut	233.8	42120 - Planted Jack Pine	High Density Pole	58		Harvest	Clearcut with Reserves	4212 - Planted Jack Pine	Cmpt. Review Proposal
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Prescription: Final harvest with fire-skip simulated retention islands or strip of retention along Jack Pine Plains Rd, that would follow the standard retention guidelines. Use snowmobile trail protection spec. Specs to be included in this sale are low stumps and chipping. Woody Biomass guidelines does not need to be followed.

Other Comments: Snowmobile trails run along the southern edge. Stand is part of the Lovells KW Plan Block 48.

Next Steps: Site prep as needed trench and plant to jack pine as per the Lovells KW Plan.

Proposed Start Date: 10/01/2015

26 72270026-Cut	1.9	42110 - Planted Red Pine	High Density Pole	54	171-200	Harvest	Clearcut	4212 - Planted Jack Pine	Cmpt. Review Proposal
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Prescription: Final harvest without reserves do to stand size. Military specs need to be included in this sale as well as low stumps and chipping. Woody Biomass guidelines do not need to be followed.

Other Comments: Stand is part of Lovells KW Plan Block 48.

Next Steps: Site prep as needed trench and plant to jack pine as per the Lovells KW Plan.

Proposed Start Date: 10/01/2015



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Treatment Name	Acres	CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
24 NF_72270024-Cut	10.7	3302 - Low Density Conifer Trees				Harvest	Clearcut	4212 - Planted Jack Pine	Cmpt. Review Proposal

Prescription Final harvest without reserves do to size of stand. Use snowmobile trail protection spec. Specs to be included in this sale are low stumps and chipping. Woody Biomass guidelines does not need to be followed.

Other Comments: Snowmobile trails run along the southern edge and thru the stand running north to south direction. Stand is part of Lovells KW Plan Block 48.

Next Steps: Site prep as needed trench and plant to jack pine as per the Lovells KW Plan.

Proposed Start Date: 10/01/2015

Total Treatment Acreage Proposed: 659.2



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Treatment Name	Acres	CoverType	Size Density	Stand Age	BA Range	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
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#Type! #Type!

Prescription
Specs:

Other
Comment:

Next
Steps:

Proposed
Start Date: #Type!

Limiting Factor

**Total Treatment
Acreage Proposed: 0.0**

Report 5 – Site Conditions

Grayling Mgt. Unit

Thomas Barnes : Examiner

Compartment 270

Year of Entry 2016

Availability for Management

Availability for Management			Dominant Site Conditions						
Total Acres	Acres Available	Acres Not Available		No	5E	5D	5C	3J	1A
42	42		Aspen	42					
1082	1070	12	Jack Pine	1,065	8	0	5	3	
20	20		Lowland Aspen/Balsam Poplar	20					
48	30	18	Lowland Mixed Forest	30				13	5
39	39		Mixed Upland Deciduous	39					
7	7		Natural Mixed Pines	7					
27	27		Red Pine	27					
1,266	1,236	30	Total Forested Acres	1,231	8	0	5	17	5
	98%	2%	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
002	Not Available	5E: Long Term Retention	8				
Comments:							
003	Not Available	3J: Water quality / BMPs (stream, river, or lake)	17				
Comments: Buffer for high quality trout stream.							
004	Not Available	1A: Federal/State/Local Law	6	3J: Water quality / BMPs (stream, river, or lake)			
Comments: Natural Rivers Vegetative Buffer Strip.							

Report 5 – Site Conditions

Grayling Mgt. Unit

Thomas Barnes : Examiner

Compartment 270

Year of Entry 2016

005	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	6
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Comments:

Hold stand, much of the area has been clear cut in prior years. One third of stand is already limited due to RMZ for blue ribbon trout stream.

006	Not Available	5D: Unproductive Forest Land	1
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Comments:

Small sliver of forested land not commercially viable or large enough to support logging operation.



Report 6 – 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 7 – 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	Archaeological Site	An aquatic or terrestrial area of the State that contains physical remains of human occupation. These are sites of cultural and historical significance that may occur upon terrestrial areas and Great Lakes bottomlands. They include thousands of Native American settlements and burial sites, as well as French and British outposts, nineteenth century logging camps, mines and homesteads. Beneath the waters of the Great Lakes, there are shipwrecks and other remains documenting the maritime trade. Such sites may be identified by Natural heritage data from the State Historic Preservation Office. Proposed treatments in this compartment will be implemented in such a manner as to maintain the integrity of these sites. Due to the sensitive nature of this information, no further detail about location is available.
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.
ERA	Ecological Reference Areas	Ecological Reference Areas (ERAs) are high quality examples of natural communities that have been identified as Element Occurrences (EOs) by the Michigan Natural Features Inventory (MNFI) within the context of their natural community classification system. Element Occurrences with viability ranks of A (Excellent) or B (Good) and a Global (G) or State (S) element (rarity) ranking of endangered (1), threatened (2), or rare (3) serve as an initial base of ERAs. They may be located upon any ownership in the State. The system is comprised of individual or associations of natural community types that are managed for restoration and maintenance of natural ecological processes and values. The public may submit recommendations for lands as ERAs using the DNR Conservation Area Recommendation Form.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
1	4199 - Other Mixed Upland Deciduous	Low Density Log	39.0	94	1-50	Open grown oak with pockets of aspen. Oak is of poor form and sparsely scattered throughout stand, Age of stand is in the mid 90's stand needs to be treated. Site is PVCd, there is adequate acres of jack pine in the compartment and looking at surrounding stands of Red Pine I think red pine would do fine on this site.
2	42210 - Natural Red Pine	High Density Log	12.4	95	111-140	Long narrow stand of mature red pine along slope coming up from a lowland aspen stand. Does have some aspen mixed in as well. Southern half of stand is PVCd/PArVHa, rest is PVCd.
3	6112 - Lowland Aspen	High Density Sapling	20.2	3		Narrow stand of aspen, lowland drainage between two stands. Mature red pine found in stand. Was cut in Dec 2010 under 72-030-06-01. Kotar listed as unclassified lowland.
5	42120 - Planted Jack Pine	High Density Pole	27.8	44		Immature Jack Pine plantation (1ch strips) . Currently the stands average diameter is between 3-4 inches with a height average of 8 to 12 foot. Stand is part of the Lovells Kirtland Warbler Management Unit, Cutting Block 49 (2026). Western portion of stand are PVCd/PArVHa the rest is PVCd.
6	42290 - Natural Mixed Pine	High Density Log	7.2	59		Stand is super canopy red pine with jack, aspen and red pine in the pole size category as well. Stand is part of Block 49 of the Lovells KW Plan. Stand is PVCd.
8	42120 - Planted Jack Pine	High Density Pole	9.4	56		Stand is very similar to stand 15, pole to log size stand with 1-3 sticks per tree. This stand is among the experimental plants for KW habitat. Stand is also part of Block 49 of the Lovells KW Plan. Stand is PVCd/PArVHa.
10	42120 - Planted Jack Pine	High Density Pole	26.2	44		Immature Jack Pine Plantation. Stand is actually strips of Jack Pine 1chain (7-10 rows) with strips of Grass 1 chain wide between the Jack Pine. Experiment for Kirtlands Warbler. Stand is part of the Lovells Kirtland Warbler Management Unit, Cutting Block 49. (2027). The grassy strips are part of stand 31 no forested with low density trees. Diameters ranging from 4-10 inches and an average height of 1 to 2 8 foot sticks. Stand is PVCd.
12	42120 - Planted Jack Pine	High Density Pole	157.1	63		Pole to log size jack pine with some oak and red pine mixed in. Quality of jack pine varies across the stand. Stand is part of Block 48 for the Lovells KW Plan. Stand is PVCd.
13	42120 - Planted Jack Pine	High Density Pole	33.2	56		Stand is part of Lovell KW Plan Block 49. Jack pine is pole to log size with poor to fair quality. There really is not much for a sub canopy and snow depth prevented any ground cover documentation. Stand is PVCd/PArVHa.
15	42120 - Planted Jack Pine	High Density Pole	53.4	42		Immature Jack Pine Plantation. Stand is actually strips of Jack Pine 1chain (7-10 rows) with strips of Grass 1 chain wide between the Jack Pine. Experiment for Kirtlands Warbler. Stand is part of the Lovells Kirtland Warbler Management Unit, Cutting Block 49. (2027). The grassy strips are part of stand 23 no forested with low density trees. Diameters ranging from 4-10 inches and an average height of 1 to 2 8 foot sticks. Western portion of stand is PVCd/PArVHa, the rest is PVCd.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
17	42120 - Planted Jack Pine	High Density Pole	5.9	29		Kirtland Warbler management area. Planted in 1984. Tree size class is in between pole and sapling and looks healthy. Planted with stand 80 of compartment 269. Stand is PVCd/PArVHa.
18	42120 - Planted Jack Pine	High Density Pole	39.3	56		Mature stand of JP of marginal quality. Stand does have some open areas, but none are large enough for separate stands. Stand is within Block 49 of the Lovells KW Plan. Stand is PVCd.
19	42210 - Natural Red Pine	High Density Log	13.1	102	111-140	Mature stand of Red pine with a mixture of jack pine along with oak and aspen. Part of Lovells KW Management Plan Cutting Block 48. Stand is PVCd.
20	42120 - Planted Jack Pine	High Density Pole	3.1	59		Stand will be harvested along with the already-prescribed adjacent stand 204 in compt 271 in order to facilitate burning the Shupac Dry Sand Prairie ERA. Will be part of timbersale 720161001. This portion of compt 270 is part of the Prairie ERA management plan's restoration area. Stand is PVCd/PArVHa.
23	42120 - Planted Jack Pine	Medium Density Pole	188.2	50		Stand is actually strips of Jack Pine 1chain (7-10 rows) with strips of Grass 1 chain wide between the Jack Pine. Experiment for Kirtlands Warbler. Stand is part of the Lovells Kirtland Warbler Management Unit, Cutting Block 48 (2019). The open strips are combined with this stand which has lowered the canopy closure. Open area is approximately 89 acres in size. Diameters ranging from nonmerchantable to merchantable (4-10 inches) and an average height of 1 to 2 8 foot sticks. Some natural Jack Pine regeneration has developed within the grass strips in some areas. Close off road by planting. Stand is PVCd.
25	42120 - Planted Jack Pine	High Density Pole	233.8	58		Jack pine stand of poor to fair quality, 1-3 stick trees. Stand is part of Lovells KW Plan Block 48. Stand is PVCd.
26	42110 - Planted Red Pine	High Density Pole	1.9	54	171-200	Two strips of planted red pine, site index of 35. Roughly 5 planted rows. Part of Lovells KW Management Plan Cutting Block 48. Stand is PVCd
29	4130 - Aspen	High Density Pole	42.2	25		Young dense stand of aspen with a good mixture of oak and maple. There are red pine scattered throughout as well. Stand was final harvested in 1988. Stand is PArVHa/PArVVb.
32	42120 - Planted Jack Pine	High Density Sapling	281.9	9		Young jack pine plantation with two retention vortices and one gas well site. Dense stand of planted jp with a good component of oak regeneration. Appears to be some natural jack pine as well due to DBH size differences. Cut in 1998 KW Vortex block 72-012-96-01, SEEDED TO JACK PINE IN JUNE 2002, PROPOSAL NO. W72-413 Close off roads by planting. Under the same FTP, the area was planted to JP in 2004 after the seeding failed. Majority of stand is PArVHa/PArVVb, eastern third is PVCd.
33	42120 - Planted Jack Pine	High Density Log	14.0	73		This stand was left as retention for the timber harvest 72-021-10-01 and has been factor limited for that reason. Stand is sandwiched in between county rd 612 and snowmobile trail.

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Grayling Mgt. Unit

Report 8 – Forested Stands

Compartment: 270
Year of Entry: 2016



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
37	6139 - Mixed Lowland Forest	High Density Log	47.8	46		Stand has West Branch Big Creek, Snowmobile trail and portions of the former Big Creek State Forest Campground. Stand is composed of a variety of species dominated by aspen. Stand has super canopy red and white pine and prior OI listed stand as potential old growth. Didn't think the portion of large red pine was unique enough to make own stand. Roughly one third of this stand is factor limited due to the riparian management zone needed for Big Creek.
39	42220 - Natural Jack Pine	High Density Log	9.2	70		Stand is a mixture of jack and red pine with some oak and aspen mixed in. Stand is just entering the log size for dbh and mets the criteria for overall log size. There is an open area that was part of Big Creek State Forest Campground that appears is still being utilized for a fishing and deer camp sight. Signage trespass and potential gate and fence trespass. Snowmobile trail also runs thru this stand. Roughly one third of this stand is factor limited because of the RMZ for Big Creek.



Stand	Cover Type	Acres	Managed Site	Management Priority (Objective)	General Comments:
4	3302 - Low Density Conifer Trees	14.8	Yes	Low	Open area between KW plantings, part of block 49 of Lovells KW Plan.
7	3302 - Low Density Conifer Trees	20.3	No	Unspecified	Open area between KW plantings, part of block 49 of Lovells KW Plan. Stand is PVCd/PArVHa.
9	3302 - Low Density Conifer Trees	11.3	No	Unspecified	Open area between KW plantings, part of block 49 of Lovells KW Plan. Stand is PVCd/PArVHa.
11	3302 - Low Density Conifer Trees	27.0	No	Unspecified	Open area between KW plantings, part of block 49 of Lovells KW Plan. Stand is PVCd/PArVHa.
14	3302 - Low Density Conifer Trees	40.7	No	Unspecified	Open area between KW plantings, part of block 49 of Lovells KW Plan. Stand is PVCd/PArVHa. Western portion of stand is PVCd/PArVHa.
16	6229 - Mixed lowland shrub	5.1	No	Unspecified	Low land depression with associated lowland shrubs. Aspen is found around the perimeter.
21	3105 - Mixed Upland Herbaceous	0.9	No	Unspecified	Gas Well Site.
22	3302 - Low Density Conifer Trees	3.8	Yes	Medium	This stand is part of the Prairie ERA management plan.
24	3302 - Low Density Conifer Trees	10.7	No	Unspecified	Open area between KW plantings, part of block 49 of Lovells KW Plan. Stand is PVCd/PArVHa.
27	6229 - Mixed lowland shrub	9.4	No	Unspecified	Aspen clones/clumps are found along the perimeter and within the depression. Mixed lowland shrubs are found through depression.
28	3302 - Low Density Conifer Trees	330.8	Plantation	Jack Pine	Jack pine plantation planted in 2013. Site has mature residual red pine left as well as dead snags. Good regen of oak stumps.
30	3105 - Mixed Upland Herbaceous	1.0	No	Unspecified	Gas well site.
31	11 - Low Intensity Urban	4.4	No	Unspecified	County Road 612
34	3102 - Grass	1.1	No	Unspecified	Gas Well Site
35	3102 - Grass	1.1	No	Unspecified	Gas Well Site
36	3102 - Grass	1.1	No	Unspecified	Gas Well Site



Stand	Cover Type	Acres	Managed Site	Management Priority (Objective)	General Comments:
38	50 - Water	1.0	No	Unspecified	West Branch Big Creek.