



Compartment Review Presentation

Gaylord Forest Management Unit

Compartment 52004

Entry Year 2017

Acreage: 1,342

County Otsego

Management Area: AuSable Outwash

Revision Date: 2015-05-12

Stand Examiner: Lucas Merrick

Legal Description:

T29N, R1W, Sec. 16, 17 & 18

Identified Planning Goals:

To provide for the protection, integrated management and responsible use of a healthy, productive, and undiminished forest resource base for the social, recreational, environmental, and economic benefit of the State of Michigan.

Soil and topography:

Major soils are 80% Roselawn Sand, 15% Roselawn-Rubicon Sand with pitted outwash plains and subdued moraines. 5% Rifle Peat-Carbondale Muck. Water table near or at surface. Terrain is level with some ridges adjacent to the wetlands.

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

Antrim gas development has been extensive in the compartment with 21 active gas well sites including a facility. A network of buried gas pipelines associated with the gas wells throughout compartment. Private ownership includes 200 acres of private in section 16, 40 acres of private in both sections 17 & 18.

Unique Natural Features:

The headwaters of Crapo Creek is located in section 16 which flows southwest.

Archeological, Historical, and Cultural Features:

None noted at this time.

Special Management Designations or Considerations:

This compartment is not in the Kirtland Warbler Management Area, but Compartment 5 immediately south of the boundary is a designated KW area.

Watershed and Fisheries Considerations:

This compartment contains Carpenter Creek, a tributary to Crapo Creek in the North Branch Au Sable River watershed. Best management practices should be followed.

Wildlife Habitat Considerations:

Treatments in this compartment will maintain age class diversity in jack pine while creating early successional habitat benefiting deer, grouse, wild turkey and woodcock. Rare bird species will benefit from Jack pine plantings. Some openings are prescribed to be maintained to provide open habitats for the species listed above.

Mineral Resource and Development Concerns and/or Restrictions

Surface sediments consist of glacial outwash sand and gravel and postglacial alluvium. Glacial drift thickness varies between 800 and 1,000 feet. The Mississippian Coldwater Shale subcrops below the glacial drift. The Coldwater does not have an economic use. The nearest gravel pit is located two miles to the north and potential appears to be limited. The compartment appears to be completely developed for Antrim Shale gas production and is located at the southern margin of the Niagaran reef trend. All of the state mineral rights in the compartment are currently under lease.

Vehicle Access:

Vehicle access is good with Big Creek Road, Crapo Lake Road, and Little Crapo Lake Road. There is also a network of gas pipeline trail roads that provide good access throughout compartment. No road closures are needed at this time.

Survey Needs:

None needed at this time.

Recreational Facilities and Opportunities:

The North Branch Snowmobile Trail, ORV Trail, and ORV Route are located throughout this compartment.

Fire Protection:

Cover types are prone to large fire events. Lowland areas have potential to become equipment limiting. Pipelines from oil and gas infrastructure are a safety hazard. The power line and Old State Road provide good fuel breaks.

Additional Compartment Information:

The following reports from the Inventory are attached:

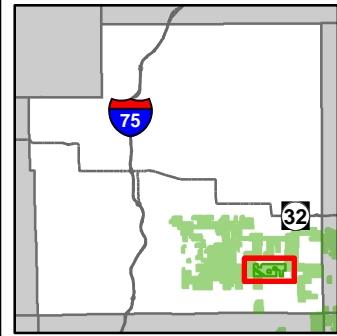
- Total Acres by Cover Type and Age Class**
- Cover Type by Harvest Method**
- Proposed Treatments – No Limiting Factors**
- Proposed Treatments – With Limiting Factors**
- Stand Details (Forested and Nonforested)**
- Dedicated and Proposed Special Conservation Areas**
- Site Condition Details**

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

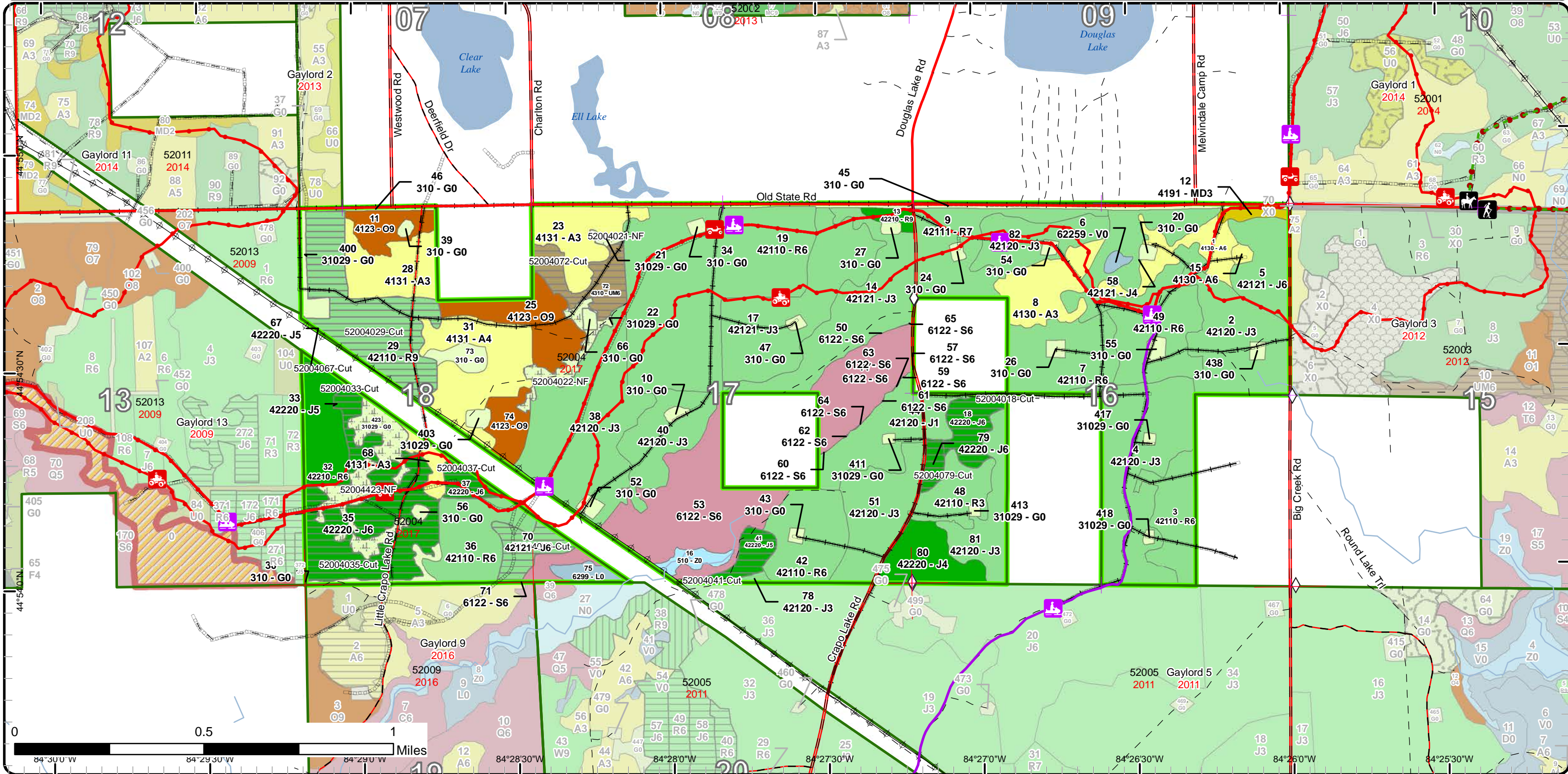
- Base feature information, stand boundaries, cover types, and numbers**
- Proposed treatments**
- Site condition boundaries**
- Details on the road access system**

Cover Type & Treatments Map

Compartment: 4
 T29N,R01W, Sec. 16-18
 County: Otsego
 Unit: Gaylord
 Mgmt Area: AuSable Outwash
 YOE: 2017
 Acres: 1342 GIS Calculated
 Examiner: Lucas Merrick
 Map Revised: 3/24/2016
 Map Phase: Post-Review

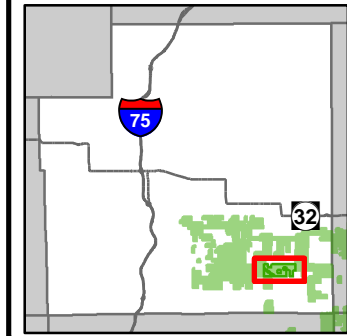


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|--|--|--|
| <ul style="list-style-type: none"> — Miris Corners — Remonumented Section Corners ◇ Field Grade GPS Corners 👤 Hiking Trails 🐎 Horse Trails 🛵 ORV Trails 🛵 ORV Routes 🏠 Snowmobile Trails — Designated Hiking Trails ● Designated Equestrian Trails — ORV License & Trail Permit | <ul style="list-style-type: none"> — Designated ATV — Designated ORV Routes — Designated Snowmobile Trails — County Paved Roads — County Gravel Roads — Poor Dirt Roads — County Poor Dirt Roads — Railroads — Rivers — Pipeline — Powerline — Compartment Boundary — Clearcut (w/Reserves) — Other Treatment - See Comments | <p>Forest Covertype</p> <ul style="list-style-type: none"> 412 - Oak Types 413 - Aspen 419 - Mixed Upland Deciduous 421 - Planted Pines 422 - Natural Pines 430 - Upland Mixed Fores 612 - Lowland Coniferous Forest <p>Non-Forest Covertype</p> <ul style="list-style-type: none"> 310 - Herbaceous Openland 500 - Water 622 - Lowland Shrub Lakes |
|--|--|--|

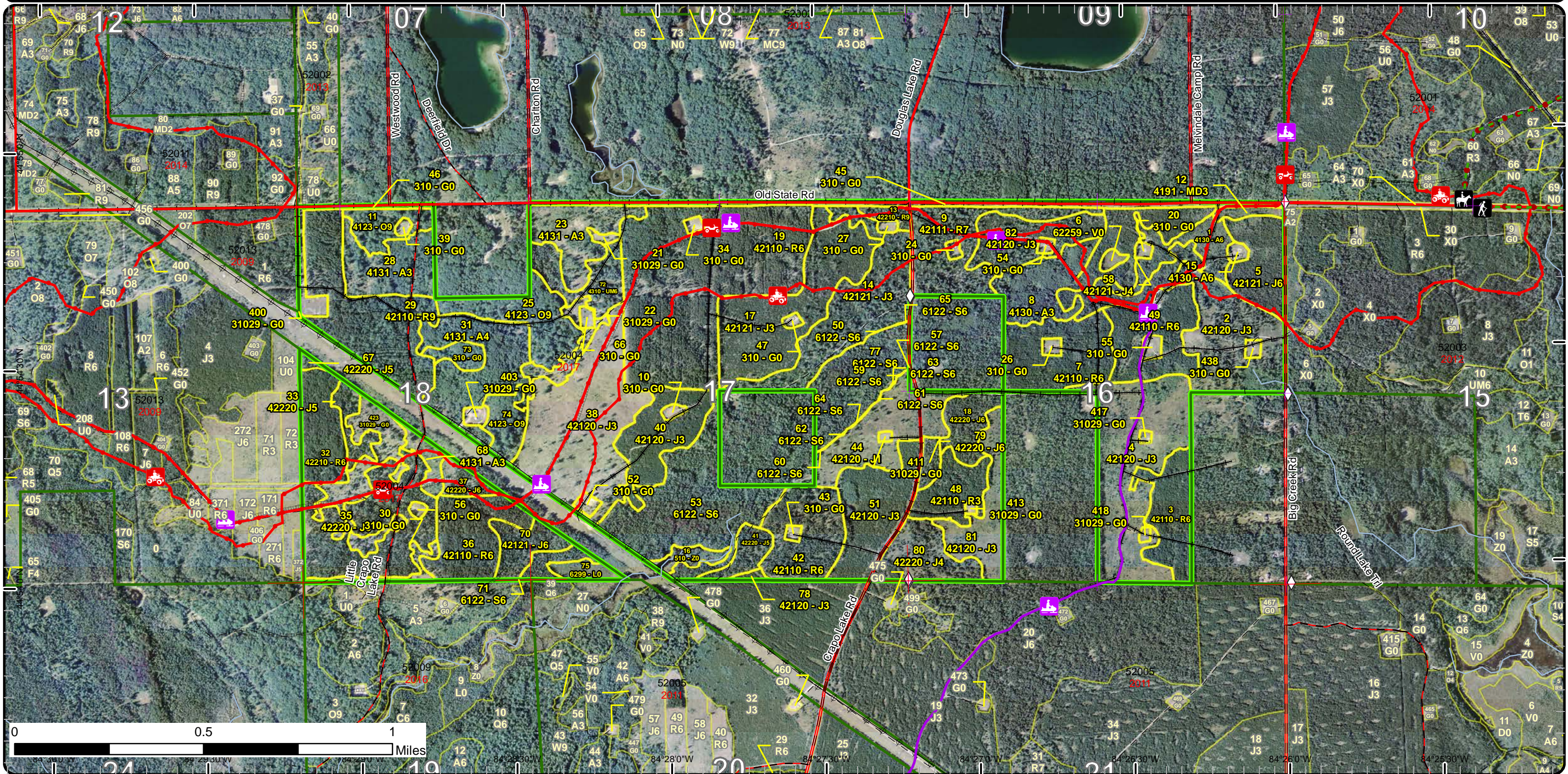


Stand Boundary Map

Compartment: 4
 T29N,R01W, Sec. 16-18
 County: Otsego
 Unit: Gaylord
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 Examiner: Lucas Merrick
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 Map Phase: Post-Review

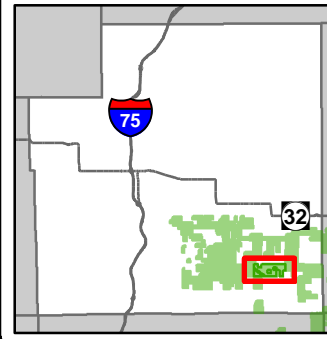


- Miris Corners
- + Remonumented Section Corners
- ◇ Field Grade GPS Corners
- Hiking Trails
- Horse Trails
- ORV Trails
- ORV Routes
- Snowmobile Trails
- - - Designated Hiking Trails
- Designated Equestrian Trails
- ORV License & Trail Permit
- Designated ATV
- - - Designated ORV Routes
- Designated Snowmobile Trails
- County Paved Roads
- County Gravel Roads
- - - Poor Dirt Roads
- County Poor Dirt Roads
- Railroads
- Rivers
- - - Pipeline
- ⊕ Powerline
- Compartment Boundary
- Stand Boundaries
- 412 - Oak Types
- 413 - Aspen
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 430 - Upland Mixed Fores
- 612 - Lowland Coniferous Forest
- 310 - Herbaceous Openland
- 500 - Water
- 622 - Lowland Shrub



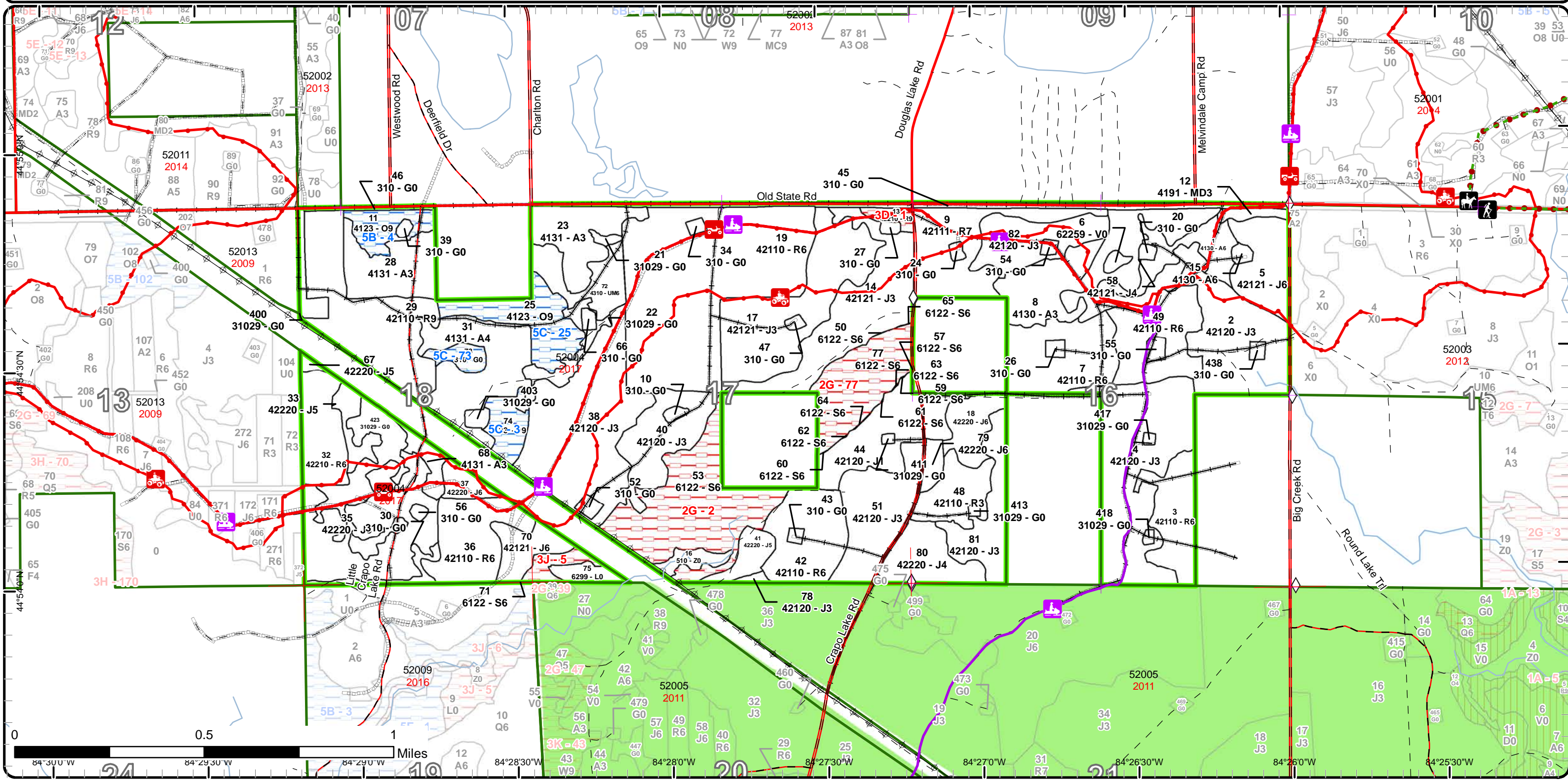
Special Conservation Areas & Site Conditions Map

Compartment: 4
 T29N,R01W, Sec. 16-18
 County: Otsego
 Unit: Gaylord
 Mgmt Area: AuSable Outwash
 YOE: 2017
 Acres: 1342 GIS Calculated
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- Miris Corners
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- Horse Trails
- ORV Trails
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- County Gravel Roads
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- County Poor Dirt Roads
- Railroads
- Rivers
- Pipeline
- Powerline
- Compartment Boundary
- Available w/ Constraints
- Unavailable
- 5B: Maintain for regeneration purposes

5C: Delay treatment for age/size class diversity or exceptional site quality
 2G: Too wet (sensitive soils, does not include access issues)
 3D: Recreational / Scenic values
 3J: Water quality / BMPs (stream, river, or lake)
 Stand Boundaries
 Special Conservation Areas
 Kirtland Warbler Habitat
 Cold Water Streams
 Other SCA (No Category Assigned)



Report 1 – Total Acres by Cover Type and Age Class



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	29	23	23	55	0	0	0	0	0	0	0	0	0	0	0	0	0	130
Bog	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Herbaceous Openland	88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	88
Jack Pine	0	157	22	156	54	21	80	16	0	0	0	0	0	0	0	0	0	69	575
Lowland Shrub	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Lowland Spruce/Fir	0	0	0	0	0	0	0	90	0	6	0	0	0	0	0	0	0	0	96
Mixed Upland Deciduous	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Oak	0	0	0	0	0	0	0	0	0	45	0	0	0	0	0	0	0	0	45
Red Pine	0	0	0	28	71	0	0	240	33	0	3	0	0	0	0	0	0	0	375
Upland Mixed Forest	0	0	0	0	0	0	0	16	0	0	0	0	0	0	0	0	0	0	16
Water	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Total	100	189	45	207	180	21	80	362	33	51	3	0	0	0	0	0	0	69	1340



Report 2 – Treatment Summary

Gaylord Mgt. Unit

Compartment 4

Year of Entry:

Acres of Harvest

Total Compartment Acres: 1,342

Commercial Harvest - 167
 Harvests with Site Condition - 0
 Next Step Harvest - 48
 Habitat Cut - 0

Cover Type by Harvest Method

	Clearcut	Selection	Patch Clearcut	Seed Tree	Shelterwood	Thinning	Overstory Removal	Salvage	Other	Total Acres
Jack Pine	100	0	0	0	0	0	0	0	0	100
Red Pine	51	0	0	0	0	0	0	0	0	51
Upland Mixed Forest	16	0	0	0	0	0	0	0	0	16
Total	167	0	0	0	0	0	0	0	0	167

Proposed and Next Step Treatments by Method

	Harvest	Site Prep	Planting	Seeding	Burning	Pesticide	Monitoring	Other	Non-Forest Mgt.	Total Acres
Current	167	0	0	0	0	0	0	32	0	199
Next Step	48	110	59	0	0	51	278	0	0	547
Total	215	110	59	0	0	51	278	0	32	746



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
18	52004018-Cut	13.0	42220 - Natural Jack Pine	Poletimber Well	49	1-50	Harvest	Clearcut with Retention	4211 - Planted Red Pine	Even-Aged	Draft Field Boundary

Habitat Cut: No **Site Condition:**

Prescription Final harvest and consider leaving the few trees on north side of road for retention. Chip harvest specs preferred for re-planting to red pine.

Specs: Stand can be combined with other jack pine stands to be cut in compartment.

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

Acceptable Regen: Monitor success of red pine artificial regeneration after planting.

Other Comment: Access road leads to a gas well facility and timber producer should notify gas company during logging operation and follow protocol for pipelines. NOTE: Prescription to plant red pine was agreed upon at mid-year review. Old next step comments:

Proposed Start Date: 10/01/2016

21	52004021-NF	1.3	31029 - Grass (OI)	Nonstocked		Unspec ified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		Draft Field Boundary
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Habitat Cut: No **Site Condition:**

Prescription Plant to food and cover crops for wildlife or maintain grasses using mechanical methods or fire as funding allows.

Specs:

Next Step Treatments:

Acceptable Regen:

Other Comment: Old next step comments:

Proposed Start Date: 05/01/2015

22	52004022-NF	8.3	31029 - Grass (OI)	Nonstocked		Unspec ified	NonForestMgt	Other - Specify	31022 - Warm Season Grass		Draft Field Boundary
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Habitat Cut: No **Site Condition:**

Prescription Maintain grasses using mechanical methods or fire as funding allows.

Specs:

Next Step Treatments:

Acceptable Regen:

Other Comment: Old next step comments:

Proposed Start Date: 10/01/2016

29	52004029-Cut	51.2	42110 - Planted Red Pine	Sawtimber Well	66	111-140	Harvest	Clearcut with Retention	4211 - Planted Red Pine	Even-Aged	Draft Field Boundary
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Habitat Cut: No **Site Condition:**

Prescription Final harvest stand with the exception of creating retention in the southwest corner where there is smaller poles = R6 between the power line & opening grassy stand 400. NOTE: Establish the private blue line along Consumer's Power line. Leave all oak.

Specs:

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

Acceptable Regen: Well stocked red pine plantation with intermixed natural oak.

Other Comment: Follow-up treatment will include site prep with herbicide, trench, plant, & monitor. Old next step comments:

Proposed Start Date: 10/01/2016



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
33	52004033-Cut	7.4	42220 - Natural Jack Pine	Poletimber Medium	59	51-80	Harvest	Clearcut	4222 - Natural Jack Pine	Even-Aged	Draft Field Boundary

Habitat Cut: No**Site Condition:**

Prescription Final harvest with no reserves due to small stand and adjacent jack pine being left in stand 423. Protect ORV & snowmobile trail with signage
Specs: and contract specifications. Private blue line will need to be established along the consumers power line.

Next Step
Treatments:

Acceptable Natural jack pine to resemble jack pine barrens.
Regen:

Other Monitor natural jack pine regeneration to determine if this stand regenerates adequately to imitate a natural jack pine barrens ecosystem.
Comment: Protect adjacent grassy openings as much as possible during logging operations. Old next step comments:

Proposed Start Date: 10/01/2016

35	52004035-Cut	48.1	42220 - Natural Jack Pine	Poletimber Well	59	51-80	Harvest	Clearcut with Retention	4222 - Natural Jack Pine	Even-Aged	Draft Field Boundary
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Habitat Cut: No**Site Condition:**

Prescription Final harvest and follow standard retention guidelines. Protect and sign the ORV trail and snowmobile trails with contract specifications.
Specs: Minimize the disturbance in the adjacent openings as much as possible during logging operations.

Next Step Harvest, Clearcut with Retention; Monitoring, Natural Regen (Intermediate)
Treatments:

Acceptable Natural jack pine and natural oak regeneration is acceptable.
Regen:

Other Monitor success of natural regeneration. Old next step comments:
Comment:

Proposed Start Date: 10/01/2016

37	52004037-Cut	6.1	42220 - Natural Jack Pine	Poletimber Well	57	1-50	Harvest	Clearcut	4211 - Planted Red Pine	Even-Aged	Draft Field Boundary
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Habitat Cut: No**Site Condition:**

Prescription Final harvest with no retention due to small acreage & artificial regeneration. Establish private blue boundary along consumers power line.
Specs: Protect & sign ORV trail and snowmobile trail during logging operation with contract specifications.

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

Acceptable Planted red pine with a mix of natural oak.
Regen:

Other Next steps include trench & plant red pine. Old next step comments:
Comment:

Proposed Start Date: 10/01/2016

41	52004041-Cut	8.1	42220 - Natural Jack Pine	Poletimber Medium	43	1-50	Harvest	Clearcut with Retention	4211 - Planted Red Pine	Even-Aged	Draft Field Boundary
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Habitat Cut: No**Site Condition:**

Prescription Final harvest stand and leave balsam fir on west edge for retention to protect hillside below ridge. Plant red pine.
Specs:

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

Acceptable planted red pine with mix of natural oak
Regen:

Other Access from Crapo Lake Road and consumers powerline. Old next step comments:
Comment:

Proposed Start Date: 10/01/2016



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
67	52004067-Cut	1.2	42220 - Natural Jack Pine	Poletimber Medium	56	1-50	Harvest	Clearcut	4222 - Natural Jack Pine	Even-Aged	Draft Field Boundary

Habitat Cut: No**Site Condition:**

Prescription Final harvest stand with no retention due to small acreage. Private blue line will need to be established along consumers power line.

Specs:

Next Step
Treatments:

Acceptable natural jack pine with mixed deciduous. Sparse regen acceptable.

Regen:

Other Small stand can combine harvest efforts in adjacent stands 37 & 70. Old next step comments:

Comment:

Proposed Start Date: 10/01/2016

70	52004070-Cut	12.0	42121 - Planted Jack Pine, Mixed Deciduous	Poletimber Well	61	51-80	Harvest	Clearcut with Retention	4211 - Planted Red Pine	Even-Aged	Draft Field Boundary
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Habitat Cut: No**Site Condition:**

Prescription Final harvest jack pine and create minimal reserves on stand edge adjacent to swamp stand 71 to east. Protect the ORV and snowmobile trails with signage and contract specifications.

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

Treatments:

Acceptable Planted red pine with natural regeneration of existing oak intermixed.

Regen:

Other Trench and re-plant with red pine. Establish private boundary adjacent to consumers power line. Old next step comments:

Comment:

Proposed Start Date: 10/01/2016

72	52004072-Cut	16.1	4310 - Pine, Oak Mix	Poletimber Well	61	51-80	Harvest	Clearcut with Retention	42221 - Natural Jack Pine, Mixed Deciduous	Even-Aged	Draft Field Boundary
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Habitat Cut: No**Site Condition:**

Prescription Final harvest with reserves. Retention will include leaving the minor component of existing red pine & white oak. In addition, a few healthy red oak can be marked to leave where the red pine & white oak retention exists to create small clumps of 2- 3 oak & pine per clump with approximately 1 clump per acre. (This will occur primarily on the east half of stand.)

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

Treatments:

Acceptable Planted red pine with a mix of natural oak regeneration.

Regen:

Other Trench & re-plant west half of stand to red pine. Note: Adjacent stand has been planted with red pine in open areas and it increased the site productivity. East half of stand with natural Oak residual will not be planted to red pine. Protect gas well adjacent to this stand during logging operation. Old next step comments:

Proposed Start Date: 10/01/2016

79	52004079-Cut	4.0	42220 - Natural Jack Pine	Poletimber Well	65	51-80	Harvest	Clearcut	4211 - Planted Red Pine	Even-Aged	Draft Field Boundary
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Habitat Cut: No**Site Condition:**

Prescription Final harvest with no retention due to small stand size.

Specs:

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

Treatments:

Acceptable Planted red pine with a mix of natural oak regeneration.

Regen:

Other Trench and plant red pine along with adjacent stand 18. Old next step comments:

Comment:

Proposed Start Date: 10/01/2016



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
423	52004423-NF	22.2	31029 - Grass (OI)	Nonstocked		Unspecified	NonForestMgt	Other - Specify	310 - Herbaceous Openland		Draft Field Boundary

Habitat Cut: No

Site Condition:

Prescription Brush, mow, plant, burn and/or herbicide to maintain opening. Planting of hard and soft mast.

Specs:

Next Step

Treatments:

Acceptable

Regen:

Other Protect recreational trail during operations. Old next step comments:

Comment:

Proposed Start Date: 10/01/2016

Total Treatment Acreage Proposed: 198.9

Report 5 – Site Conditions

Gaylord Mgt. Unit
Lucas Merrick : Examiner

Compartment: 4
Year of Entry: 2017

Availability for Management

Total Acres	Acres Available	Acres Avail		Dominant Site Conditions					
		With Condition	Not Available		5B	5C	2G	3D	3J
129	129	0	0	Aspen		0			
2	2	0	0	Bog					
88	83	5	0	Herbaceous Openland		5			
577	577	0	0	Jack Pine					
5	5	0	0	Lowland Shrub					
95	0	0	95	Lowland Spruce/Fir			90		6
3	3	0	0	Mixed Upland Deciduous					
45	0	45	0	Oak	11	34			
376	372	0	3	Red Pine				3	
16	16	0	0	Upland Mixed Forest		0			
5	5	0	0	Water					
1,342	1,193	51	99	Total Forested Acres	11	39	90	3	6
	89%	4%	7%	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	3D: Recreational / Scenic values	4	3G: Other Influence zones - See comments	Unspecified	Unspecified	Unspecified
<p>Comments: Unique, small stand of red pine located at the intersection of Old State Rd. & Crapo Lake Rd. with a snowmobile trail running through it. One of the only small patches of large red pine left in compartment for aesthetics & visual along a travel influence. Most of compartment is in various stages of younger development.</p>							
2	Unavailable	2G: Too wet (sensitive soils, does not include access issues)	59	3D: Recreational / Scenic values	Unspecified	Unspecified	Unspecified
<p>Comments:</p>							

Report 5 – Site Conditions

Gaylord Mgt. Unit
Lucas Merrick : Examiner

Compartment: 4
Year of Entry: 2017

3	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	11	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Red oak in stand remains healthy. Most of compartment has been harvested previously with overall younger age classes. Hold until adjacent stand 31 is ready for harvest and combine harvest effort. Oak provides winter deer mast.							
4	Available	5B: Maintain for regeneration purposes	11	5C: Delay treatment for age/size class diversity or exceptional site quality	Unspecified	Unspecified	Unspecified
Comments: Stand was species thinned in 1998 creating aspen & oak advanced regeneration. Hold one more decade for age class diversity. Oak is currently healthy and removing this over story will cause too much damage to the advanced regeneration & remove valuable mast producers.							
5	Unavailable	3J: Water quality / BMPs (stream, river, or lake)	6	3G: Other Influence zones - See comments	Unspecified	Unspecified	Unspecified
Comments: Riparian zone							
25	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	24	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Red oak in stand remains healthy. Most of compartment has been harvested previously with overall younger age classes. Hold until adjacent stand 31 is ready for harvest and combine harvest effort. Oak provides winter deer mast.							
73	Available	5C: Delay treatment for age/size class diversity or exceptional site quality	5	Unspecified	Unspecified	Unspecified	Unspecified
Comments: Red oak in stand remains healthy. Most of compartment has been harvested previously with overall younger age classes. Hold until adjacent stand 31 is ready for harvest and combine harvest effort. Oak provides winter deer mast.							

Report 5 – Site Conditions

Gaylord Mgt. Unit
Lucas Merrick : Examiner

Compartment: 4
Year of Entry: 2017

77	Unavailable	2G: Too wet (sensitive soils, does not include access issues)	31	3D: Recreational / Scenic values	Unspecified	Unspecified	Unspecified
Comments:							

Mgt. Unit

Compartment: #Type!

Year of Entry:



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	Cold Water Stream	A coldwater stream has temperature and dissolved oxygen conditions that allow naturally-reproduced or stocked trout populations and those of other coldwater fish species (e.g., slimy sculpin) to persist from year to year. Coldwater streams in Michigan typically provide these conditions due to substantial contributions of groundwater to their stream flows. Such streams are established by Director's action and designated as trout resources by Fisheries Order 210.
HCVA	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.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
1	4130 - Aspen	Poletimber Well	16.2	39	1-50	Young aspen 38 yrs. old just entering into pulpwood size with 1 stick average. . Sled and cycle trails run through.
2	42120 - Planted Jack Pine	Sapling Well	41.1	5	Immature	Final harvest was completed in 2008. Re-planted to jack pine in 2011. High success on planted jack pine as well as mix of natural j. pine regeneration established. Planted j. pine = 3-4' height. Natural j. pine = 4 -5' height. Note: Retention included some red pine, oak, and jack pine left in small patches.
3	42110 - Planted Red Pine	Poletimber Well	22.3	32	81-110	Well stocked red pine plantation, healthy, just entering into merchantable pulpwood. 30 - 32' height, 1 -2 pulp stick average.
4	42120 - Planted Jack Pine	Sapling Well	62.8	5	Immature	Final harvest completed in 2008. Jack pine planted in 2011 with good regeneration success. Planted J.pine = 3 -4' height Natural J. pine = 5' height.
5	42121 - Planted Jack Pine, Mixed Deciduous	Poletimber Well	21.2	37	51-80	Jack Pine plantation with intermixed clones of quaking aspen. Stand is developing into 1 merchantable pulp stick per tree, 4 - 5" dbh.
7	42110 - Planted Red Pine	Poletimber Well	32.3	32	81-110	Young Red pine plantation with some intermixed j. pine, quaking aspen, and overtopping mixed oak.
8	4130 - Aspen	Sapling Well	22.6	27	Immature	COMMERCIAL HARVEST 1989 Young, dense aspen stand with scattered white pine on edge adjacent to wetland, spruce, and river corridor.
9	42111 - Planted Red Pine, Mixed Deciduous	Sawtimber Poor	32.7	71	1-50	Low density red pine and oak left from previous harvest that removed aspen & j. pine in 1993. Ave. BA = 26 sq.ft./ac. Stand was underplanted with jack pine in 1997 where the canopy was broken. Abundant regeneration with a variety of species as listed in the sub-canopy. Planted j. pine also doing well.
11	4123 - Red Oak	Sawtimber Well	11.3	89	51-80	Selection cut completed in 1998 removing aspen, red maple, & jack pine. All Oak was left. Stand has visual benefit along Old State Road.
12	4191 - Mixed Upland Deciduous with Conifer	Sapling Well	3.2	8	Immature	Final harvested in 2008 & allowed to regenerate naturally. Good mix of natural j. pine, aspen, and oak.
13	42210 - Natural Red Pine	Sawtimber Well	3.5	91	81-110	Unique, small stand of red pine that provides aesthetic value along intersection of Old State Road and Crapo Lake Road. Stand was left as retention from previous harvests. Snowmobile trail runs through stand also. Very small area with older growth pine in a compartment that is primarily in various stages of younger development.
14	42121 - Planted Jack Pine, Mixed Deciduous	Sapling Well	43.7	22	Immature	Jack pine plantation overtopped by scattered.oak sawlogs. Some of the scattered dead oak has been cut over the years under firewood permits by former Pastor Spiekerman. Stand has lots of species diversity as noted in canopy species. Noted: Red pine high site quality evident in NWSE, Sec. 17 with 7 -8 stick red pine at entrance of this private forty.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
15	4130 - Aspen	Poletimber Well	1.5	39	1-50	Young aspen 38 yrs. old just entering into pulpwood size with 1 stick average. . Sled and cycle trails run through.
17	42121 - Planted Jack Pine, Mixed Deciduous	Sapling Well	52.7	22	Immature	PLANTED JACK PINE SPRING1994 & SURVIVAL LOOKS GOOD Some scattered oak & red pine left as minor retention. There is natural jack pine regeneration throughout.
18	42220 - Natural Jack Pine	Poletimber Well	13.0	49	1-50	Jack pine density ranges from 30 - 80 sq. ft. BA/ac. with an average of 47 sq. ft./ac. 1 -3 pulp sticks per tree. Lower density on east edge. Some mortality noted in stand. Private boundary along north side of road with very little to cut on north side of road.
19	42110 - Planted Red Pine	Poletimber Well	112.2	66	81-110	Thinning done in 2000 to remove jack pine, aspen, & every third row of red pine. Stand was released adequately. 21 plots taken throughout with an average of 109 sq. ft. BA/AC. Pole stand with some 12 - 14" dbh red pine developing. Red pine is currently growing at an optimum density.
23	4131 - Aspen, Oak	Sapling Well	22.5	6	Immature	Harvest completed in 2010. Left red, white pine and scattered oak for retention and as a visual buffer along Old State Rd. Some red pine seedlings in south edge of stand that appear to have been planted. Regeneration looks good with variety of species.
25	4123 - Red Oak	Sawtimber Well	23.7	89	51-80	Red maple, aspen, & j. pine cut out of this stand in 1998. Oak was left for retention remains healthy with an average of 12"- 14" d.b.h. Hold and consider cutting with stand 31 in future when aspen matures.
28	4131 - Aspen, Oak	Sapling Well	23.3	18	Immature	1998: Clearcut completed, scattered oak and red pine left.
29	42110 - Planted Red Pine	Sawtimber Well	51.2	66	111-140	Excellent red pine site. 6 stick average. Thinning completed in 1999 - 15 years ago. Majority of stand has developed into a sawlog stand 12 - 14" dbh. Scattered Oak 20"+ dbh are decadent. Stand density = 127 sq.ft BA./AC. average.
31	4131 - Aspen, Oak	Poletimber Poor	36.7	39	1-50	Young aspen stand that is non-merchantable at this time. Some intermixed inclusions of upland brush with wildlife shrubs. Average density = 26 sq.ft BA/AC.
32	42210 - Natural Red Pine	Poletimber Well	20.7	61	111-140	Red Pine plantation currently part of open contract, #52-020-11- 01 Last Second Pine. ORV trail runs along south part of stand.. Red pine 9-10" dbh. This stand eventually responded in growth by reaching the water table and developed into merchantable stand with 9"-12" dbh red pine established. Residual BA after thinning = 119 sq.ft. BA/ac. NOTE: Due to the treatment being locked from old O.I., I was unable to update next step treatments. The comments from O.I. were actually from inventory over a decade ago & no longer pertinent.
33	42220 - Natural Jack Pine	Poletimber Medium	7.4	59	51-80	Jack pine stand with variable stand density ranging from J4 to J6. Merchantable height is also variable with 1- 4 pulp sticks per tree. Overall stand density = 60 sq.ft. BA/ac. ORV trail runs through this stand, and snowmobile trail is south of it.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
35	42220 - Natural Jack Pine	Poletimber Well	48.1	59	51-80	Jack pine stand with variable stand density ranging from J4 to J6. Merchantable height is also variable with 1- 4 pulp sticks per tree. Overall stand density = 70 sq.ft. BA/ac. Snowmobile and ORV trail runs through this stand.
36	42110 - Planted Red Pine	Poletimber Well	27.5	66	111-140	Red pine stand is under open contract, #52-020-11-01 with an expiration of 6 -30-2015. Contract requirement to thin out jack pine and marked red pine. Rec trails run through. Red pine residual once thinning has been completed = 94 sq.ft.BA/ac. Red pine range from 9" dbh - 12" dbh, Jack pine is dying out of stand with mortality noted. NOTE: Due to treatment being locked in old O.I., we were unable to add next step treatments. Update once sale is closed.
37	42220 - Natural Jack Pine	Poletimber Well	6.3	57	1-50	Developing as an uneven-aged patchy stand ranging from J4 to J6, averaging a J5. Pulpwood height ranges from 1-4 sticks per tree. ORV Trail runs through stand.
38	42120 - Planted Jack Pine	Sapling Well	67.7	4	1-50	Jack pine cut in 2010, planted with jack pine in 2012. Regeneration check is: Very successful planting with fully stocked jack pine including dense patches of natural jack pine regeneration.
40	42120 - Planted Jack Pine	Sapling Well	25.5	26	Immature	Dense jack pine plantation 20' - 22' height. 3-4" dbh. This stand includes about 2 acres of relic red pine on the east side along the boundary with private.
41	42220 - Natural Jack Pine	Poletimber Medium	8.1	43	1-50	Lowly stocked jack pine with evidence of mortality starting. West edge has young balsam fir where stand transitions into adjacent spruce swamp conifer stand. Access stand from Crapo Lake Road west on consumers power line.
42	42110 - Planted Red Pine	Poletimber Well	28.6	61	81-110	Red pine plantation. Jack pine & aspen species thinned out along with some marked red pine in 2008. Past thinning opened up stand adequately. Protected oak and the few relic red pine. Thinning opened up stand with an average density = 110 sq.ft./ac. taken on 14 plots.
44	42120 - Planted Jack Pine	Sapling Poor	31.5	8	Immature	Jack pine stand was harvested in 2008. Planted spring, 2011. Good success on planting survival. Planted j. pine = healthy 3-4' height. Natural j. pine = 5' height.
48	42110 - Planted Red Pine	Sapling Well	16.4	32	81-110	Overall well stocked red pine plantation, healthy, 6-7 " dbh. 22-25' height. Planted in 1984.
49	42110 - Planted Red Pine	Poletimber Well	28.2	29	Immature	Well stocked red pine plantation, healthy 1-2 pulp stick average. 6" average dbh : Sled trail & ORV trails run through this stand which has resulted in some high recreational use along the cleared pipelines in the north.
50	6122 - Black Spruce	Poletimber Well	0.0	61	51-80	Lowland swamp conifer with an average of 52 sq.ft.BA/ac. Lots of deer evidence. Crapo Creek runs through stand.
51	42120 - Planted Jack Pine	Sapling Well	33.0	22	Immature	well stocked jack pine plantation established in 1994. Thick J3 stand appears healthy.



Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
53	6122 - Black Spruce	Poletimber Well	59.0	61	51-80	Variable density with a mix of swamp conifer species. Average BA= 52 sq.ft./ac. Overall black spruce is 6" dbh & still healthy in Crapo Creek corridor. Standing water and tag alder noted in NW corner. Winter deer yard. Fisheries requested protection of creek & riparian zone for any future mgt. Noted two large old legacy white pine up to 42" dbh on north side of creek. Also, some scattered old relic red pine along the north tip of stand adjacent to private Spiekerman property.
57	6122 - Black Spruce	Poletimber Well	0.0	61	51-80	Lowland swamp conifer with an average of 52 sq.ft.BA/ac. Lots of deer evidence. Crapo Creek runs through stand.
58	42121 - Planted Jack Pine, Mixed Deciduous	Poletimber Poor	33.2	37	1-50	Well established jack pine plantation with clones of aspen throughout. Rec trails run through.
59	6122 - Black Spruce	Poletimber Well	0.0	61	51-80	Lowland swamp conifer with an average of 52 sq.ft.BA/ac. Lots of deer evidence. Crapo Creek runs through stand.
60	6122 - Black Spruce	Poletimber Well	0.0	61	51-80	Lowland swamp conifer with an average of 52 sq.ft.BA/ac. Lots of deer evidence. Crapo Creek runs through stand.
61	6122 - Black Spruce	Poletimber Well	0.0	61	51-80	Lowland swamp conifer with an average of 52 sq.ft.BA/ac. Lots of deer evidence. Crapo Creek runs through stand.
62	6122 - Black Spruce	Poletimber Well	0.0	61	51-80	Lowland swamp conifer with an average of 52 sq.ft.BA/ac. Lots of deer evidence. Crapo Creek runs through stand.
63	6122 - Black Spruce	Poletimber Well	0.0	61	51-80	Lowland swamp conifer with an average of 52 sq.ft.BA/ac. Lots of deer evidence. Crapo Creek runs through stand.
64	6122 - Black Spruce	Poletimber Well	0.0	61	51-80	Lowland swamp conifer with an average of 52 sq.ft.BA/ac. Lots of deer evidence. Crapo Creek runs through stand.
65	6122 - Black Spruce	Poletimber Well	0.0	61	51-80	Lowland swamp conifer with an average of 52 sq.ft.BA/ac. Lots of deer evidence. Crapo Creek runs through stand.
67	42220 - Natural Jack Pine	Poletimber Medium	1.3	56	1-50	Stand 67 is developing as an uneven-aged patchy stand ranging from J4 to J6, averaging a J5. Jack pine ranges from 1 - 4 pulp sticks per tree. NOTE: Establish private blue line along consumers powerline.
68	4131 - Aspen, Oak	Sapling Well	6.3	6	Immature	Final harvest completed in 2010. Some Red Oak marked to leave for mast. A few scattered red pine left also. Rec trails run through. Well stocked regeneration of aspen, red oak, white oak, & some jack pine.
70	42121 - Planted Jack Pine, Mixed Deciduous	Poletimber Well	12.0	61	51-80	Jack pine stand of mixed density with some quaking aspen and red maple. Noted some mortality in jack pine. Red maple located primarily along the eastern swamp conifer transition. The stand density ranges from 40 - 90 sq.ft BA/ac. with an average of 62 sq.ft. BA/ac.



	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
71	6122 - Black Spruce	Poletimber Well	5.6	86	51-80	Lowland swamp conifer located within a riparian zone of Crapo Creek. Fisheries Division requests that a buffer be maintained along the creek.
72	4310 - Pine, Oak Mix	Poletimber Well	16.1	61	51-80	Mixed stand with mature jack pine on the west half and mix of oak & pine in the east. Scattered old relic red pine along with some on a hillside on east half of stand. Remnants of private blue line established on west boundary last decade.
74	4123 - Red Oak	Sawtimber Well	10.5	89	51-80	Oak was retained in harvest done in 1998 which removed aspen, j. pine, and red maple. Current stand is healthy Oak which provides valuable mast for wildlife as well as stand structure diversity with the compartment heavily weighted with younger trees.
77	6122 - Black Spruce	Poletimber Well	30.7	61	51-80	Lowland swamp conifer with an average of 52 sq.ft.BA/ac. Lots of deer evidence. Crapo Creek runs through stand.
78	42120 - Planted Jack Pine	Sapling Well	1.2	22	Immature	Young jack pine plantation appears healthy & well stocked.
79	42220 - Natural Jack Pine	Poletimber Well	4.0	65	51-80	Mature jack pine with some mortality noted. Average stand density = 60 sq. ft. BA/ac.
80	42220 - Natural Jack Pine	Poletimber Poor	19.5	56	1-50	Scattered pockets of jack pine, usually open grown. 20 BA average and one stick may be generous. Better in east and small patch in north. Stand is healthy. Scattered brush and jack pine regen. Let it go for diversity. Note: Small inclusion of planted young j. pine in SW corner.
81	42120 - Planted Jack Pine	Sapling Well	21.6	8	Immature	HARVESTED 2008. PLANTED 5/2011. Good planting success with planted j. pine = 3-4' height. Natural j. pine = 5' height. Mix of oak natural regeneration also.
82	42120 - Planted Jack Pine	Sapling Well	22.4	19	Immature	Jack pine plantation with scattered overtopping oak logs some of which is dying out of stand. Noted winter storm damage broke some of young planted j. pine off.



Stand	Cover Type	Acres	Managed Site	General Comments:
6	62259 - Bog (OI)	1.6	No	Bog
10	310 - Herbaceous Openland	1.2	No	
16	510- Water (OI)	5.1	No	Crapo Creek and its associated wetland.
20	310 - Herbaceous Openland	1.1	No	Gas well site.
21	31029 - Grass (OI)	1.3	No	Opening with pockets of encroaching jack pine.
22	31029 - Grass (OI)	8.3	Yes	Opening with pockets of encroaching jack pine.
24	310 - Herbaceous Openland	1.0	No	
26	310 - Herbaceous Openland	1.4	No	Gas well site
27	310 - Herbaceous Openland	1.1	No	Gas well site.
30	310 - Herbaceous Openland	4.5	No	Opening adjacent to natural jack pine stand.
34	310 - Herbaceous Openland	1.1	No	Gas well site
39	310 - Herbaceous Openland	1.0	No	gas well
43	310 - Herbaceous Openland	1.0	No	Gas well site
45	310 - Herbaceous Openland	16.9	No	Buried gas pipelines adjacent to Old State Road.
46	310 - Herbaceous Openland	2.2	No	Buried gas pipelines adjacent to Old State Road.
47	310 - Herbaceous Openland	1.0	No	Gas well site
52	310 - Herbaceous Openland	1.8	No	gas well
54	310 - Herbaceous Openland	1.0	No	gas well



Stand	Cover Type	Acres	Managed Site	General Comments:
55	310 - Herbaceous Openland	1.9	No	gas well
56	310 - Herbaceous Openland	1.0	No	gas well
66	310 - Herbaceous Openland	1.2	No	Gas well site in natural opening.
73	310 - Herbaceous Openland	5.2	No	Gas well site in the middle of a natural opening.
75	6299 - Lowland Shrub (OI)	5.1	No	Lowland brush part of the Crapo Creek riparian zone.
400	31029 - Grass (OI)	5.3	No	Gas well & associated cleared pipeline.
403	31029 - Grass (OI)	1.9	No	FMD: GAS WELL
411	31029 - Grass (OI)	0.6	No	FMD: GAS WELL
413	31029 - Grass (OI)	0.6	No	FMD: GAS WELL
417	31029 - Grass (OI)	0.6	No	FMD: GAS WELL
418	31029 - Grass (OI)	0.7	No	FMD: GAS WELL
423	31029 - Grass (OI)	22.2	Yes	: Jack pine is encroaching. Motocross and snowmobile trail runs through. This opening is going to be maintained as part of a jack pine barrens ecosystem. Logging will be done on adjacent jack pine stands and the intent is to leave this area as undisturbed as possible during logging operation.
438	310 - Herbaceous Openland	1.2	No	gas well site