GRAYLING FOREST MANAGEMENT UNIT
COMPARTMENT REVIEW RESENTATION

COMPARTMENT # 168 ENTRY YEAR: 2012

GIS Compartment Acreage: 1953 County: Crawford

Revision Date: August 20, 2010

Stand Examiner: Joan Charlebois

Legal Description: T27N R4W Sections 10, 11, 14, 15, 22, 23, 24
Frederic Township – South Part

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

Soils and Topography: The terrain begins with a dissected ridge on the compartment's west edge, then levels out onto outwash plains to the east with stream terraces and floodplains around the river corridor and swamp complex. Soils on the outwash plains vary from excessively well drained sands (Grayling & Rubicon) to moderately well drained sands (Croswell). The low ground is characterized by saturated organic soils (Tawas-Lupton, Leafriver & AuSable Bowstring Mucks).

Ownership Patterns, Development, and Land Use in and Around the Compartment: The compartment is made up of solid State ownership, the majority of which (1585 acres) was purchased from the MacArthur estate in 1988. The compartment borders state land to the west, private to the south, and a mix of state and private property along its north edge.

Unique, Natural Features: The mainstream of the AuSable, a designated Natural River, and Sand Hill Lake are within the compartment. There is the potential for rare bird and reptile species to occur along the river and lakeshore.

Archeological, Historical, and Cultural Features: Old railroad grades cross through the compartment and large, turn-of-the-century-logging era pine stumps are common. Remains of the old MacArthur cabin site and water tower can be seen at the southwest edge of the lake.

Special Management Designations or Considerations: The AuSable River is a High Conservation Value Area (HCVA).

Watershed and Fisheries Considerations: The mainstream of the AuSable is a designated Natural River and a quality trout stream. The river runs through the middle of the compartment, from north to south. Sand Hill Lake's out-flow stream empties into the AuSable.

Wildlife Habitat Considerations: The compartment's wide range of cover types -- from oak, aspen, mast-producing shrub and mixed herbaceous openlands, to conifer swamp, lowland brush and super-canopy stature pine -- provide potential habitat for a wide variety of game and non-game wildlife species. The cedar-dominated conifer swamp complex is part of a historic deer yard along the AuSable River corridor.

Mineral Resource and Development Concerns and/or Restrictions: Surface sediments consist of glacial and ice-contact 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. There is not an economic use for the Coldwater Shale. The nearest gravel pit is one and one half miles to the east, and gravel potential is thought to be good on the upland areas. None of the State land in the compartment has been leased for oil and gas. The Antrim Shale is the producing formation in the area, but does not produce this far south.

Vehicle Access: There are no county roads within the compartment. The only open state forest road crosses the railroad tracks from the east and ends at a parking lot roughly 600 feet short of the river. Vehicle access is restricted on the rest of the existing two-track system by either gates, guardrail barricades or berms. When this property was acquired, the intent was to merge it with other parcels to the south and minimize vehicle access to the area in an effort to protect the AuSable River corridor and provide a non-motorized opportunity. The parcel directly south of this tract was not acquired as planned, so the development of a written plan and associated Director's Order for this larger area was put on hold. The unit is still maintaining the original intent of minimizing vehicle access through closure of newly developed illegal trails and any trails created by logging operations.

Survey Needs: None at this time.

Recreational Facilities and Opportunities: Aside from the Natural Resources Trust Fund developed parking lot, no designated recreational trails or facilities occur within the compartment. The diverse habitat types provide good opportunities for wildlife viewing and hunting. The AuSable is a popular canoeing and fishing river and Sand Hill Lake is noted for its pan fishing.

Fire Protection: West of the river, the compartment is dominated by upland deciduous tree cover and non-forested types. East of the river, red pine and white pine predominate, along with aspen, red maple and oak.

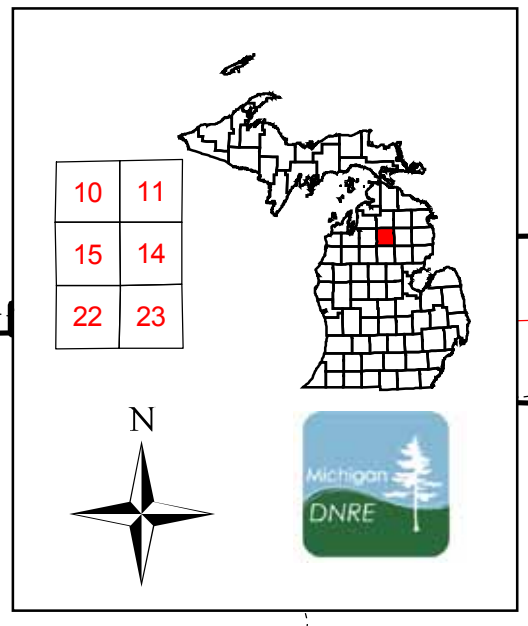
LOTS Compartment Acreage: 1,951 acres

- **The following reports are available:**
  - **Cover Type by Age Class**
  - **Proposed Treatment Summaries**
  - **Dedicated Conservation Area Details**
  - **Listing of Forested Stands**
  - **Listing of Non-Forested Stands**
  - **Proposed Treatments – No Limiting Factors**
  - **Proposed Treatments – With Limiting Factors**

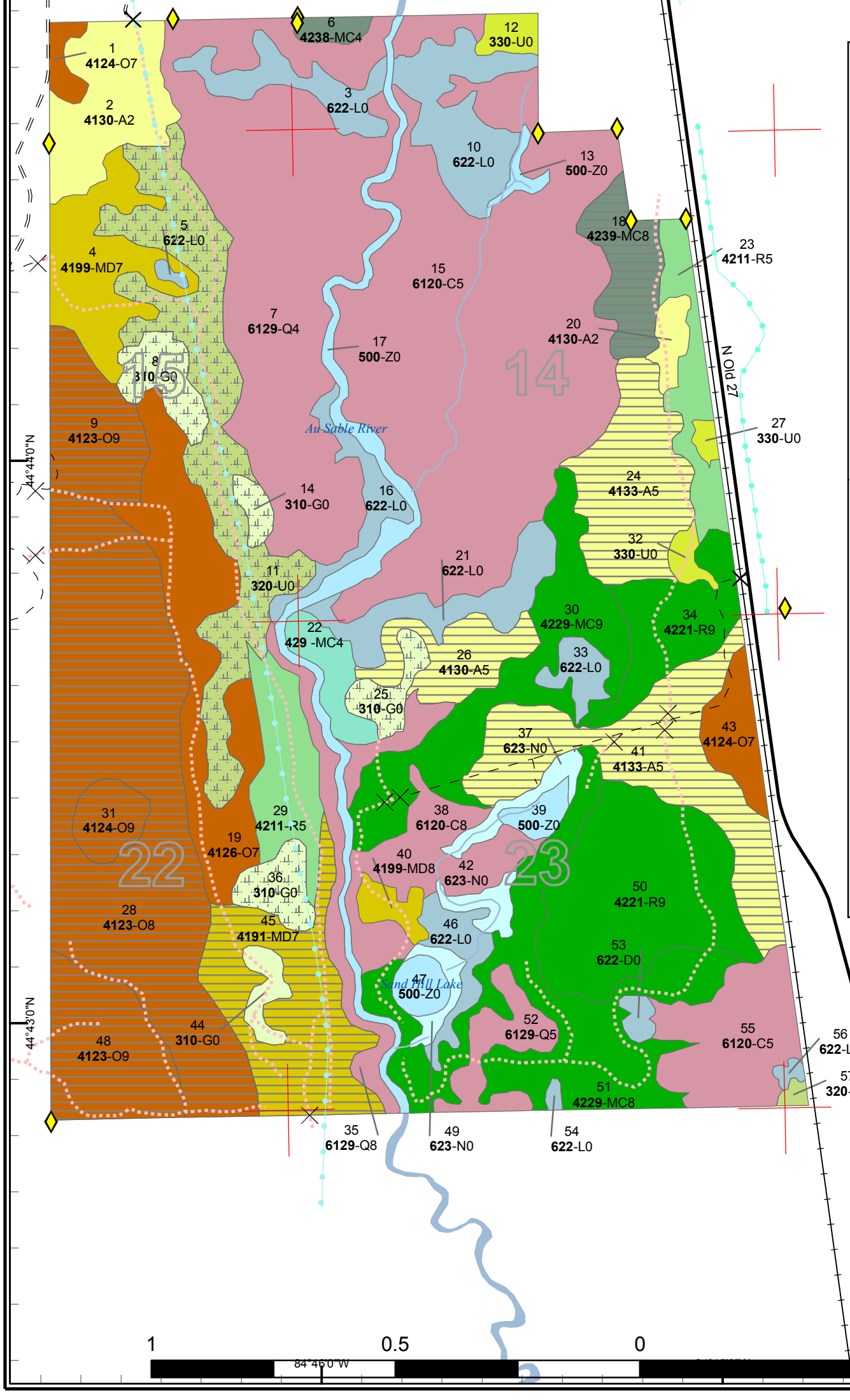
- **The following information is displayed, where pertinent, on the attached compartment maps:**
  - **Base feature information, stand numbers, cover types, recreation trails and facilities**
  - **Proposed treatments**
  - **Proposed road access system**
  - **Special Conservation areas**

Cover Type & Treatment Map

Compartment 168
T27N, R04W, Sec. 10, 11, 14, 15, 22, 23
County: Crawford
Unit: Grayling
YOE: 2012
Acres: 1,953 GIS Calculated
Stand Examiner: Joan Charlebois
Map Revised: 9/07/2010
Map Phase: Pre-Review



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



Legend

- RIs Corners
- Miris Corners
- Paved Roads
- Gravel Roads
- Poor Dirt Roads
- Closed Roads
- Gate
- Power
- Railroads
- Intermittent Stream/Drain
- Stream
- Lakes and Rivers

Treatments

- Clearcut (w/Reserves, Patch/Strip)
- Other Treatment - See Comments

Forest Stands

Level 3

- 412 - Oak Types
- 413 - Aspen Types
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
- 422 - Natural Pines
- 423 - Other Upland Conifers
- 429 - Mixed Upland Conifers
- 612 - Lowland Coniferous Forest

Non-Forest Stands

Level 3

- 310 - Herbaceous Openland
- 320 - Upland Shrub
- 330 - Low-Density Trees
- 500 - Water
- 622 - Lowland Shrub
- 623 - Emergent Wetland

Stand Boundary Map

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T27N, R04W, Sec. 10, 11, 14, 15, 22, 23
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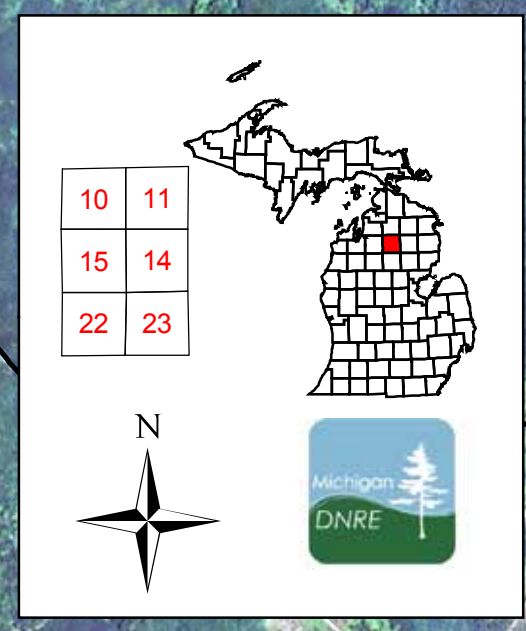

Stand # 23 — Stocking Density
(412)0) - A7
Level 3 Level 4 — OI Code
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- Paved Roads
- Gravel Roads
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- Intermittent Stream/Drain
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- Gate
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Forest Stands

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84°46'0"W 84°45'0"W 84°44'0"W
44°45'0"N 44°44'0"N 44°43'0"N
N Howes Lake Rd
N Old 27
Au Sable River
Sand Hill Lake

1 4124-O7 | 2 4130-A2 | 3 622-L0 | 4 4199-MD7 | 5 622-L0 | 6 4238-MC4 | 7 6129-Q4 | 8 622-L0 | 9 4123-O9 | 10 622-L0 | 11 320-U0 | 12 330-U0 | 13 500-Z0 | 14 310-G0 | 15 6120-C5 | 16 622-L0 | 17 500-Z0 | 18 4239-MC8 | 20 4130-A2 | 21 622-L0 | 22 429-MC4 | 23 4211-R5 | 24 4133-A5 | 25 310-G0 | 26 4130-A5 | 27 330-U0 | 29 4211-R5 | 30 4229-MC9 | 31 4124-O9 | 32 330-U0 | 33 622-L0 | 34 4221-R9 | 35 6129-Q8 | 37 623-N0 | 38 6120-C8 | 39 500-Z0 | 40 4199-MD8 | 41 4133-A5 | 42 623-N0 | 43 4124-O7 | 44 310-G0 | 45 4191-MD7 | 46 622-L0 | 47 500-Z0 | 48 4123-O9 | 49 623-N0 | 50 4221-R9 | 51 4229-MC8 | 52 6129-Q5 | 53 622-D0 | 54 622-L0 | 55 6120-C5 | 56 622-L0 | 57 320-U0

1 0.5 0 1 Miles

Dedicated & Proposed Special Conservation Area Map

Compartment 168
T27N, R04W, Sec. 10, 11, 14, 15, 22, 23
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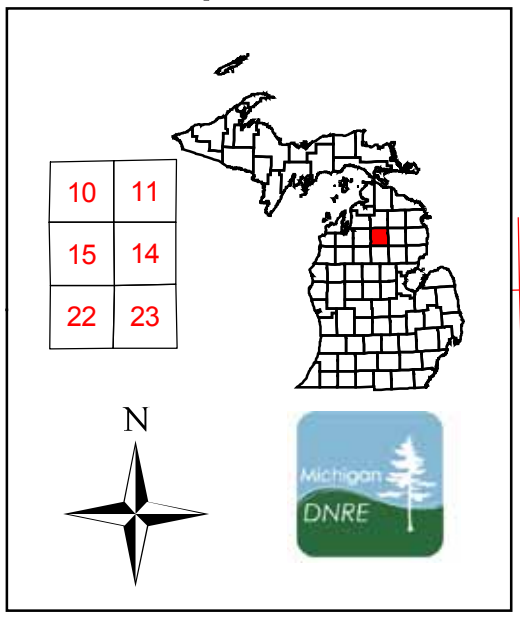

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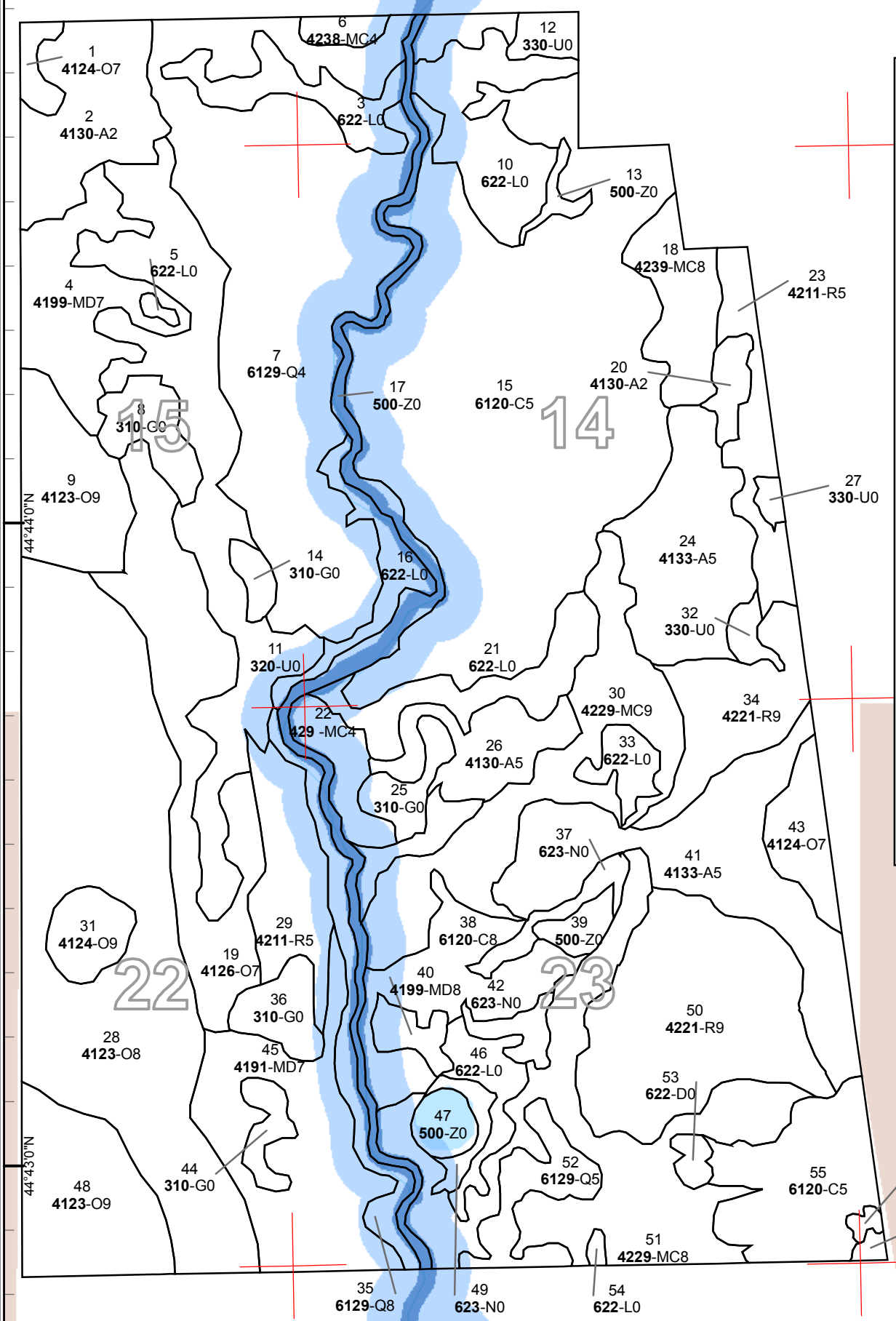
Level 3 / Level 4 — OI Code
Cover Type Code



Legend

- Miris Corners
- Stand Boundaries

Dedicated Special Conservation Areas

- Cold Water Streams
- Cold Water Lakes
- Research, Development, and Military Lands
- Natural Rivers Zoning District
- Natural Rivers Vegetative Buffer

Forest Stands

Level 3

- 412 - Oak Types
- 413 - Aspen Types
- 419 - Mixed Upland Deciduous
- 421 - Planted Pines
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Table 1 – Total Acres by Cover Type and Age Class

Grayling Mgt. Unit **Compartment 168 Year of Entry 2012**

Data updated before 2:00 PM

Age Class

	Non-Forested	1-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89	90-99	100-109	110-119	120 +	Uneven Age	Total
Aspen	0	48	0	0	0	147	0	0	0	0	0	0	0	0	0	**195**
Cedar	0	0	0	0	0	0	0	0	0	0	257	81	0	0	0	**338**
Herbaceous Openland	49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**49**
Low-Density Trees	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**13**
Lowland Conifers	0	0	0	0	0	0	0	0	0	0	0	0	206	0	29	**235**
Lowland Shrub	118	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**118**
Marsh	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**19**
Mixed Upland Deciduous	0	0	0	0	0	0	0	0	7	0	0	0	0	0	103	**110**
Natural Mixed Pines	0	0	0	0	0	0	0	0	0	0	0	0	63	92	0	**155**
Oak	0	0	0	0	0	0	0	0	0	258	88	0	0	0	16	**362**
Red Pine	0	0	0	0	23	30	117	0	0	0	0	0	0	0	0	**169**
Treed Bog	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**
Upland Conifers	0	0	0	0	0	5	0	0	0	0	0	0	0	0	38	**43**
Upland Shrub	92	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**92**
Water	53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**53**
Total	**347**	**48**	**0**	**0**	**23**	**182**	**117**	**0**	**7**	**258**	**345**	**81**	**269**	**92**	**185**	**1953**

Table 2 – Proposed Treatment Summaries

Data updated before 2:00 PM

Grayling Mgt. Unit
Year of Entry 2012

Compartment 168
Total Compartment Acres: 1953

Acres by Treatment Type

Commercial Harvest - 504	Site Prep - 0	Tree Planting - 0	Prescribed Burn - 0	Other - 0
Habitat Cut - 0	Opening Maintenance - 13	Tree Seeding - 0	Pesticide - 0	

Cover Type by Harvest Method

	Clearcut	Selection	Seed Tree	Shelterwood	Thinning	Other - Specify	Total Acres
Aspen	147	0	0	0	0	0	**147**
Mixed Upland Deciduous	62	0	0	0	0	0	**62**
Oak	270	0	0	0	0	0	**270**
Upland Conifers	24	0	0	0	0	0	**24**
Total	**504**	**0**	**0**	**0**	**0**	**0**	**504**

Table 3 -- Treatments Prescribed with No Limiting Factor

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
9	72168009_ccr	33.6	4123 - Red Oak	High Density Log	84	Harvest	Clearcut with Reserves	Other Mixed Upland Deciduous	Cmpt. Review Proposal

Prescription Specs: Through compt review for 2009 YOE compt 177, this stand was prescribed to be treated with the rest of the type in compt 177 (stand 42). Remove the oak overstory except for within leave islands; prioritize retention on the hillside. Leave all pine. Consider: shortwood operation, leave tops, winter cut.

Other Comments: Treatment objective comments: maintain an oak component through stump-sprout regeneration.

Next Steps:

18	72168018-ccr	24.5	42390 - Mixed Non-Pine Upland Conifers	Medium Density Log	73	Harvest	Clearcut with Reserves	Non Pine Upland Conifer, Mixed Deciduous	Cmpt. Review Proposal

Prescription Specs: Cut merchantable stems, excluding the xlog WP. In addition, leave two half-acre islands. Apply snowshoe hare specs. Winter cut & leave tops.

Other Comments:

Next Steps:

24	72168024_ccr	50.0	4133 - Aspen, Mixed Pine	Medium Density Pole	47	Harvest	Clearcut with Reserves	Aspen, Mixed Deciduous	Cmpt. Review Proposal

Prescription Specs: Cut to maximize aspen regen, consider leaving pockets of aspen E of the 2 track, also leave retention islands encompassing the small wetland inclusions. Leave the xlog oak? Run west edge into swamp roughly a chain, apply snowshoe hare specs. Winter cut & leave tops.

Other Comments:

Next Steps:

26	72168026_ccr	24.0	4130 - Aspen	Medium Density Pole	46	Harvest	Clearcut with Reserves	Aspen, Mixed Deciduous	Cmpt. Review Proposal

Prescription Specs: Final harvest, leaving retention islands to encompass/buffer the small wetland inclusions. Winter cut, leave tops.

Other Comments:

Next Steps:

28	72168028_seed	180.0	4123 - Red Oak	Medium Density Log	83	Harvest	Clearcut with Reserves	Other Mixed Upland Deciduous	Cmpt. Review Proposal

Prescription Specs: Remove the oak overstory except for within leave islands; prioritize retention on the hillside. Leave all pine. Consider: shortwood operation, leave tops, winter cut.

Other Comments: Treatment Objective comments: maintain an oak component through stump-sprouting and releasing the existing regen.

Next Steps:

Table 3 -- Treatments Prescribed with No Limiting Factor

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
31	**72168031_ccr**	12.8	4124 - Red with White Oak	High Density Log	90	Harvest	Clearcut with Reserves	Other Mixed Upland Deciduous	Cmpt. Review Proposal

Prescription Specs: Remove the oak overstory except for within leave islands; prioritize retention on the hillside. Leave all pine. Consider: shortwood operation, leave tops, winter cut.

Other Comments: Treatment objective comments: maintain an oak component through stump sprouting.

Next Steps:

41	**72168041_ccr**	73.5	4133 - Aspen, Mixed Pine	Medium Density Pole	45	Harvest	Clearcut with Reserves	Aspen, Mixed Deciduous	Cmpt. Review Proposal

Prescription Specs: Cut to regenerate aspen, leave premier oak wildlife trees, and leave retention islands to encompass/buffer wetland inclusions. Winter cut & leave tops.

Other Comments:

Next Steps:

45	**72168045_ccr**	61.9	4191 - Mixed Upland Deciduous with Conifer	Low Density Log	87	Harvest	Clearcut with Reserves	Natural Pine, Mixed Deciduous	Cmpt. Review Proposal

Prescription Specs: Leave the white oak, RP & WP, mark some of the healthier NRO to leave. Observe Natural Rivers 150' buffer on east edge.

Other Comments:

Next Steps:

48	**72168048_ccr**	43.9	4123 - Red Oak	High Density Log	84	Harvest	Clearcut with Reserves	Other Mixed Upland Deciduous	Cmpt. Review Proposal

Prescription Specs: Remove the oak overstory except for within leave islands; prioritize retention on the hillside. Leave all pine. Consider: shortwood operation, leave tops, winter cut.

Other Comments: Treatment Objective: maintaining an oak component through stump-sprouting.

Next Steps:

8	**NF_72168008_WLO**	14.7	Non-Forested		0	Non-Forest Management	Other - Specify	Mixed Upland Herbaceous	Cmpt. Review Proposal

Prescription Specs: Opening maintenance.

Other Comments:

Next Steps:

Table 3 -- Treatments Prescribed with No Limiting Factor

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
11	NF_72168011-U	90.2	Non-Forested		0	Non-Forest Management	Other - Specify	Mast Producing Shrub	Cmpt. Review Proposal

Prescription Specs: U-type maintenance: cut back some of the encroaching tree cover.

Other Comments:

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
14	NF_72168014_WLO	4.8	Non-Forested		0	Non-Forest Management	Other - Specify	Mixed Upland Herbaceous	Cmpt. Review Proposal

Prescription Specs: Opening maintenance.

Other Comments:

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
25	NF_72168025_WLO	9.8	Non-Forested		0	Non-Forest Management	Other - Specify	Mixed Upland Herbaceous	Cmpt. Review Proposal

Prescription Specs: Opening maintenance.

Other Comments:

Next Steps:

Stand	Treatment Name	Acres	Stage1 CoverType	Size Density	Stand Age	Treatment Type	Treatment Method	Cover Type Objective	Approval Status
36	NF_72168036_WLO	12.2	Non-Forested		0	Non-Forest Management	Other - Specify	Mixed Upland Herbaceous	Cmpt. Review Proposal

Prescription Specs: Opening maintenance.

Other Comments:

Next Steps:

Total Treatment Acreage Proposed: 635.9

Grayling Mgt. Unit

Data updated before 2:00 PM

Table 4 -- Treatments Prescribed with a Limiting Factor

Compartment: 168
Year of Entry 2012

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

Prescription Specs:

Other Comment:

Next Steps:

Limiting Factor and No Treatment Reason

Total Treatment Acreage Proposed: **0**

Data updated before 2:00 PM

Out of YOE -- Treatments Prescribed with No Limiting Factor

Year of Entry: 2012

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

Prescription Specs:

Other Comments:

Next Steps:

Total Treatment Acreage Proposed: **0**

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
1	4124 - Red with White Oak	Low Density Log	5.5	91	51-80	RM, aspen & marked oak cut in 2004 under 720250201. NRO & WO saw over regen from the harvest: RM, BTA in the N, TA in the S, and oak. Most of the oak regen is less than 3' tall & not recordable in the sub-canopy. Some epicormic branching, fine branch dieback, & previously suppressed stems dropping out, but the dominant overstory oak are generally maintaining decent vigor.
2	4130 - Aspen	Medium Density	41.0	6		Regen from 2003 harvest (720250201): trembling aspen, cherry, red maple & a little oak, along with residual from the harvest: large sap/small pole TA, cherry, RM & oak. Small openings are mixed in, with serviceberry & prairie willow. There is a small inclusion of thinned oak on the stand's west edge, near the N1/4 corner of section 15, part of the same harvest area that also extended into compt 177 to the west. Aspen blotch leafminer present, but aspen vigor good overall.
4	4199 - Other Mixed Upland Deciduous	Low Density Log	40.6	Uneven Age	1-50	Near universal open-grown form in the tree cover, oaks wolfy, wide-crowned, low forks. RM multiple-stem, twisted cull saw. Similar to mast-producing shrub stand to E but with low-density tree cover. Locally high stocking in oak regen, but averaging only the low end of medium across the stand. NPO breaking up. Restricted access allowing better recruitment & retention of snags & DWD. TA & BTA in small clumps. Terrain dotted with small kettlehole bogs (OFS points).
6	42380 - Non Pine Upland Conifer, Mixed Deciduous	Low Density Pole	4.9	44	1-50	Ground close to water table but not lowland. Balsam fir, red maple, black spruce & paper birch, with a trace of JP, aspen, cedar, oak & cherry. Small upland opening included with scattered JP, balsam fir & trembling aspen. Log-sized balsam fir dying out, heartrot. Canopy cover toward upper end of 25-50% range. Understory high stocking except where pruned/trimmed south of private deer blind.
7	6129 - Mixed Coniferous Lowland Forest	Low Density Pole	187.6	114	51-80	Lowland conifer stand between the uplands and the AuSable River. Northern white cedar is most common, but its distribution is variable across the type, ranging from dense cedar pockets, to sparser cedar overtopped by black spruce & tamarack. Cedar shares the islands of slightly higher low ground with red maple and black ash. Tag alder and balsam fir inclusions occur throughout, along with widely-scattered off-site super-canopy WP. West edge on the transition zone to the upland has roughly a chain band of black spruce poles. Relatively rich site - diverse forb, fern & shrub layers - but the high water table appears to be limiting tree growh & survivorship. Cedar dieback & mortality increases on the lowest of the low ground, particularly closer to the river (pinkish color on 2005 NAIP imagery is dying cedar). Included within this stand are approximately 7 acres on the east side of the AuSable River; this polygon was not field checked.
9	4123 - Red Oak	High Density Log	33.6	84	81-110	NRO & WO on decent site, with RM pole clumps reaching into the bottom of the canopy. Ave NRO codom small saw relatively clean-boled & small-crowned, with fine branch dieback occurring. Minority larger dominant NRO saw maintaining better vigor. Stand occupies ridge overlooking outwash plains & managed wildlife opening to E. Oak quality decreases to the S where the terrain levels out onto the flats. Locally medium stocking in RP & WP saps there but not recordable stand-wide. BTA mostly to S, & not making 2% cover.

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
15	6120 - Lowland Cedar	Medium Density Pole	256.5	97	111-140	Cedar-dominated mixed conifer swamp on low & lower ground. The higher of the low ground supports the densest & healthiest northern white cedar cover, with a relatively open understory. This ground was also the focus of logging several decades ago; the network of skid trails is still visible on the 1938 air photos. On the saturated black muck lower ground, the cedar cover is sparser, with more die-back & a higher proportion of Q/E mixed in, giving way to spindley spruce inclusions. The lower ground also has heavy tag alder & balsam fir understory cover. On the upland transition edge of the stand, there is black spruce, balsam fir, & occasional supercanopy white pine & hemlock saw/poles. On the 2005 NAIP imagery, grey/mauve=fading cedar, pink=cedar mortality. Cedar seedlings only seen making it above the snow line within jack-strawed cedar windthrow areas. Did not field-check that portion of the stand within the confluence of the AuSable River and its NE tributary.
18	42390 - Mixed Non-Pine Upland Conifers	Medium Density Log	24.5	Uneven Age	51-80	Variable spruce/fir/white pine/red maple/trembling aspen/cherry stand starting on the uplands and occupying the transition zone down to the cedar swamp. There are very large super-canopy white pine on the stand's east edge over limbs-to-ground black spruce, breaking up balsam fir saw, white pine poles, cull aspen, red maple multiple-stem clumps and saw-sized contorted black cherry. To the west, the pine/deciduous cover decreases and the spruce/fir component increases as the ground gradually slopes down to the cedar swamp. On terrain close to the water table, with patches of dry-ground tag alder, but upland overall. Slash accumulations are from balsam fir and black spruce snapping off and root-tipping. Canopy closure is also variable, with small upland opening inclusions and patches with subcanopy representation.
19	4126 - White, Black, N. Pin Oak	Low Density Log	70.1	92	1-50	Most of the stand was seed-tree cut in late 2004 under 720140201, also removing all RM & aspen within the 3 harvest blocks. On outwash plains. Residual overstory of mostly multiple-stem (often cull) NPO saw clumps, along with hybridized NRO, & WO. The WO & NRO are epicormic branching, but for the most part are not exhibiting the accelerating dieback of the NPO. Standing dead oak snags common. Dieback consistent with decline due to genetics, age & site, not oak wilt. Occasional RP, WP, RM, JP poles & large saps. Regen from the harvest includes RM, aspen & oak sprouts, along with localized pockets of pre-existing oak saps, all averaging at the high end of the low stocking range. Overstory cover is at the low end of 25-50% range.
20	4130 - Aspen	Medium Density	6.9	4		Aspen regen from 2006 harvest (720690501), along with cherry & red maple sprouts & white pine saps. Small U/G inclusion to west with lower-density sprout coverage. Aspen leafminer heaviest along the road & stand edges.
22	429 - Mixed Upland Conifers	Low Density Pole	13.6	Uneven Age	1-50	A string of very large white pine hugging the river's edge have progressively been seeding in the upland opening between the river & the maintained WL opening. The stand is multi-storied & variable, with all size-classes of WP (majority cover in poles, saps and small logs), along with cull RM multiple-stem clumps, RP of all size classes, and small amounts of oak, paper birch, spruce & aspen. The stand's cover is thinner & younger to the east, where pockets of as-yet uncolonized U/G still occur. The stand is upland, with a small cedar/tag alder inclusion at the river's edge.

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
23	42110 - Planted Red Pine	Medium Density Pole	22.6	39	111-140	This long narrow stand along the RR tracks consists of red pine aproaching 40 years old that was planted in openings around pockets of variable, naturally-established red pine. The plantation accounts for two-thirds of the stand area, the natural red pine patches cover one-quarter of the area, and the remainder is attributed to two small inclusions: roughly an acre each of A3 and aspen/red maple poletimber. The plantations were third-row thinned in 2006-07 under 720690501 and most of the natural red pine patches had the aspen, red maple, jack pine, oak and a small amount of marked red pine removed. The planted pine is showing continued growth response to the thinning,
24	4133 - Aspen, Mixed Pine	Medium Density Pole	50.0	47	51-80	Upland aspen & red maple; half of the stand with significant conifer components in the canopy & subcanopy. The stand's southeast has the heaviest pine competition; it's west edge picks up most of the balsam fir competition. There are scattered upland openings in the stand's north half, and small wetland inclusions in the south half (OFS points). The aspen is a two-aged mix, with a minority overmature cull saw class.
26	4130 - Aspen	Medium Density Pole	24.0	46	51-80	Aspen stand wrapping around the maintained wildlife opening. Clones in the NW are breaking up the fastest, being replaced by white pine, cherry & balsam fir. There is better health aspen in the east half, along with mature RM & WP. The stand is primarily upland ground with lowland interface along its N & SW margins, along with currently-dry tag alder inclusions (OFS points). There is a half-acre upland opening (OFS point) to the NE of the WL opening.
28	4123 - Red Oak	Medium Density Log	180.0	83	51-80	Thinned in 2004 under 720140201. All RM, aspen & marked oak were removed down to 70 BA. Sub-canopy "oaks" combines the NRO & WO stump sprouts in order to reach the low stocking level. Oak stump sprouts browsed. A little better than half of the oak stump-clumps making it above the browse line; the rest eaten back to <3' tall or died. Epicormic branching & fine-branch dieback in ~ half of the overstory oak. Growth prior to cut: 1-2 mm/yr, after the cut: 2-3 mm/yr. Stand occupies a ridge that slopes down to the outwash plains to the east.
29	42110 - Planted Red Pine	Medium Density Pole	30.2	40	111-140	Long, narrow RP plantation dissected by road & powerline corridors. Between the high amount of edge & skips/gaps in rows, the stand is quasi-released. Was planted around oak & RM multi-stem clumps. Two planting events: the majority is 40 yrs old, with a few rows along the two-track planted earlier (45 yrs old). On the east edge, against the Q-type, there is a naturally-established R9 inclusion with RP saw/large poles in their mid-80's, and WP saw mixed in. Also included along the NE edge is a narrow strip of low-density RM & oak, too small to type out. The stand's SW edge picks up scattered pine cover. BA swings are from within the planted area, not the naturally-established inclusions.

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
30	42290 - Natural Mixed Pine	High Density Log	63.2	110	171-200	Large red pine & white pine on upland and transition-zone ground, wrapping around & bordered by lowlands. The stand is similar to the super-canopy dominated stand (pre-inv 69); it was likely passed-over as pre-commercial during the turn-of-the-century logging era and survived the subsequent fires because of its proximity to the lowlands where fire intensity dropped. The terrain is close enough to the water table that cedar & hemlock poles are found in portions of the subcanopy. Scattered hemlock saw reach into the bottom of the main canopy. Red maple & large cull aspen stems are mixed in and occur in small pockets with paper birch, black spruce and cedar along the stand's lowland transition zone. White pine regen is concentrated along that zone also. A narrow band of cedar separates the type from the AuSable River and the stand encompasses the river access parking lot.
31	4124 - Red with White Oak	High Density Log	12.8	90	81-110	Uncut island within 2004 harvest area. NRO-NPO & WO saw over largely suppressed oak & RM poles. Sub-canopy RP & WP were combined under the "pines" category in order to meet the low coverage threshold. RP concentrated to N circa lone seed source SCRP. Stand occupies ridges & valleys. Fine-branch dieback common in the oak.
34	42210 - Natural Red Pine	High Density Log	33.1	56	111-140	Red pine small saw/large poles in their mid-50's with scattered large RP & WP sawtimber. The xlog pine are relatively open-grown, achieving the diameter but not the height of the supercanopy-stature pine type (stand 30) that rims the lowlands, and most of it at an earlier age (around 90 years old). The younger red pine class occurs in dense patches; mixed within those patches & at higher densities in between are cull aspen stems, red maple clumps, large open-grown oak, and white pine & jack pine poles/small saw. White pine saplings occur in locally-dense pockets. Ten acres in the stand's NE against the RR tracks had the aspen, red maple, jack pine & a small amount of red pine removed in early 2008 under 720690501.
35	6129 - Mixed Coniferous Lowland Forest	Medium Density Log	28.6	Uneven Age		Narrow lowland stand on floodplain and terrace with small upland inclusions. Most of the stand borders the west edge of the AuSable River, with a small portion on the east side of the river that wraps around the south edge of the maintained wildlife opening. Primary canopy of cedar along with red maple, black spruce, balsam fir, paper birch, black ash & hemlock, with super-canopy WP saw above. Canopy closure is variable; swinging from dense cedar cover, to E/Q, to sparse white pine over tag alder. Locally full understory coverage in tag alder, balsam fir & black spruce; other areas open below. Numerous hillside seeps flow into the river. Slash accumulations are from cedar, spruce & fir root-tipping.
38	6120 - Lowland Cedar	Medium Density Log	37.7	107	141-170	Pockets of dense cedar cover separated by lower-density swaths of cedar mixed with E, Q & L (mostly tag alder). Hemlock occurs with the cedar near the river, & super-canopy white pine are scattered throughout. The understory is variable; open below the densest cedar pockets, with balsam fir & WP filling in elsewhere. The stand also picks up small drier ground pockets with red maple, paper birch & WP cover. Slash accumulations from root-tipped cedar. Cedar mortality concentrated where the water level fluctuates along drains & beaver floodings.

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
40	4199 - Other Mixed Upland Deciduous	Medium Density Log	7.0	77	51-80	Small upland deciduous stand with considerable swamp interface - fingers of Q extend into the stand from all edges. The stand is largely stump- or root-sprout origin, with multiple-stem clumps of RM & paper birch, along with aspen, balsam fir, & scattered oak, RP & WP. Age-related decline & dieback are occurring in the balsam fir, aspen, paper birch & red maple.
41	4133 - Aspen, Mixed Pine	Medium Density Pole	73.5	45	51-80	Small aspen clones (trembling and bigtooth) separated by U/G along with red pine & white pine of all size classes, red maple, very large open-grown oak, & mature-to-overmature jack pine. Locally heavy understory stocking in WP large saps/small poles. The aspen has an overmature component that is breaking up, and even the younger aspen is starting to contend with black canker, heart rot & hypoxylon. The stand's patchy overstory cover swings between the low & the high ends of the 50-75% range, with a thinly-stocked upland brush inclusion north of the beaver-flooding. The road to the river-access parking lot runs through the stand. Four rows of RP were planted along the N side of the road in the mid-60's. The stand has small wetland inclusions (see OFS points).
43	4124 - Red with White Oak	Low Density Log	16.1	Uneven Age	1-50	Shelterwood cut by early 2005 under 720260301, all red maple, aspen & marked trees down to 40 BA. Large, open-grown northern red oak & white oak with scattered red pine small saw/large poles making it into the canopy along with some large white pine poles. Oak diameters decrease toward the stand's south end. Variable height white pine & red pine saps/poles below, along with aspen & red maple sprout regen from the cut. A handful of dead red oak (OFS point) first noted 3 years ago; pocket does not appear to be spreading like oak wilt. Mid-August & no adjacent live trees are wilting or bronzing, just fine-branch defensive die-back. No sprouts seen from the very large diameter oak stumps, and butted-off culverts are common alongside. Aside from some fine-branch die-back & the noted handful of dead oak, the dominant open-grown oak are maintaining decent vigor considering their age.
45	4191 - Mixed Upland Deciduous with Conifer	Low Density Log	61.9	Uneven Age	51-80	Oak-dominated era ending, beginning to cycle back through the pine stage. Terrible quality/health NPO dying out, minority WO & NRO holding on better, scattered WP & RP saw have been seeding in the future overstory. RM in mostly multiple stem cull clumps. Where WP regen the thickest, starting to see branch flagging & mortality consistent with Diplodia scrobiculata. Oak regen relegated to the groundcover - not recruiting. East edge of stand, bordering riparian corridor, picks up less oak and more RM & large RP, WP & very overmature JP. WP regen along that lowland transition edge makes high coverage. Canopy cover is variable, but near the high end of the 25-50% range.
48	4123 - Red Oak	High Density Log	43.9	84	111-140	NRO & WO saw over largely suppressed oak & RM poles. RM reaches into bottom of canopy but doesn't account for much of the cover from above. Swath of xlog WP & some log RP to W edge with full stocking in WP saps, but across the stand the WP sub-canopy cover is near the low end of medium. Some fine branch dieback, but a majority of the dominant stems have decent vigor. Stand on rolling terrain. Small frost-pocket openings in the S, also poorer quality, greater NPO-influence in the S end.

Stand	Level 4 Cover Type	Size Density	Acres	Stand Age	BA Range	General Comments:
50	42210 - Natural Red Pine	High Density Log	83.6	57	111-140	Instead of being dominated by super-canopy pine, as is the the adjacent stand 51, this stand's majority younger red pine cover is punctuated by super-canopy-stature pine that occur singley or in small pockets. The red pine small saw/large pole pine class occurs in dense patches; mixed within them & at higher densities in between are cull aspen stems, red maple clumps, large open-grown oak, and white pine & jack pine poles/small saw. White pine saplings occur in locally-dense pockets. A patchy, low-volume removal of aspen, red maple, jack pine & oak occurred in 2005 (720700501) along the stand's NW edge, resulting in small pockets of aspen regen with variable sap-to-saw red and white pine cover. The recorded subcanopy aspen regen is concentrated on that edge of the stand and faces considerable suppression from the residual pine.
51	42290 - Natural Mixed Pine	Medium Density Log	91.5	124	141-170	The stand is characterized by super-canopy stature white pine & red pine on upland & lowland transition zone ground with extensive wetland interface. These pines were likely pre-commercial when the turn-of-the-century logging era ended and they survived the subsequent extensive fires because of their location - fire intensity typically dropped around the lowlands. The stand's west edge borders the AuSable River, to the southeast it wraps around a series of small swamp stands, and to the northeast it borders Sand Hill Lake and the associated string of inflow stream wetlands. Cedar, black spruce, red maple, paper birch, aspen, oak & jack pine are mixed in below and occur in small inclusions, often on the transition zone with the lowland edge. The WP understory is patchy - it occurs the heaviest where the mature pine overstory is thinner. The stand includes the former cabin site near Sand Hill Lake.
52	6129 - Mixed Coniferous Lowland Forest	Medium Density Pole	18.3	114	81-110	String of small, interconnected swamp stands: cover alternating between dense cedar, scattered Q over tag alder, and treed bog with spindly black spruce and numerous pitcher plants. Slash from root-tipping.
55	6120 - Lowland Cedar	Medium Density Pole	43.5	105	81-110	The swamp's drier ground (perimeter transition zone & interior islands) is dominated by dense cedar cover, which rapidly thins out as the ground drops onto the saturated muck soils. There, the understory is heavy to tag alder & balsam fir, and the cedar is spindly, with dieback & root tipping more common. Black spruce & tamarack are mixed in throughout & occur in locally-dense pockets. White pine sawtimber is concentrated on the transition zone with the uplands, particularly on the stand's N edge. There is a small pond in the stand's SW (OFS point). In the stand's NE, up against the RR tracks, there is a small lowland brush inclusion and a small upland island with large white pine & red pine (OFS points).

Stand	Cover Type	Acres	Gen Cmts:
3	6220 - Alder/willow	19.3	Tag alder with scattered low-density swamp conifer coverage in cedar, tamarack, balsam fir & black spruce.
5	6229 - Mixed lowland shrub	1.3	Leatherleaf & bog birch with sandbar willow, spiraea. Rimmed with aspen. Powerline crosses over one end.
8	3102 - Grass	14.7	Maintained WL opening with mostly grass cover, sparser areas filling in with rubus, knapweed, St. John's wort & that new weed (goldenrod-like foliage with panicle of small white flowers). Scattered NPO, cherry & serviceberry.
10	6220 - Alder/willow	34.4	As seen from across the tributary: lowland brush dominated by tag alder, with scattered Q (spindly spruce & tamarack saps/poles). Visible on the aerial imagery are numerous seeps feeding into the trib, as well as small pockets of dying cedar.
11	3204 - Mast Producing Shrub	90.2	Dry outwash terrain with black cherry shrubs (including non-commercial pole-sized stems), serviceberry, prairie willow & hawthorn clumps over hairgrass, sedge, sweetfern, sand cherry, blueberry & rubus groundcover. Also scattered patches of big & little bluestem, small trembling aspen clones with black canker, occasional NPO cull saw and open-grown RP & JP. See OFS points - small wetland inclusions. Stand's east edge bordering the lowland complex is a little richer (better soils, moisture).
12	3302 - Low Density Conifer Trees	6.0	Small upland opening with grass/brackenfern groundcover, scattered white pine, black cherry, trembling aspen, and rimmed with balsam fir & black spruce. Cedar pocket in NE, old barbwire fence along N & E edges.
13	50 - Water	3.5	Small flooding on tributary, water level down ~1.5' from maximum. Now-dry edge rimmed with marsh grass/sedges & cedar snags.
14	3102 - Grass	4.8	Maintained WL opening. Mostly grass, with some rubus, sweetfern. Small patches of knapweed, St. John's wort & that latest weed (goldenrod-like foliage, with panicle of tiny white flowers).
16	6220 - Alder/willow	14.1	Lowland shrub type between the river floodplain & the conifer swamp. Dominated by tag alder, but also including spiraea, ninebark.
17	50 - Water	35.9	The AuSable River, with emergent wetland fragments encompassed by braided portions of the channel.
21	6220 - Alder/willow	24.7	Lowland brush (tall tag alder) with low-density Q/E (cedar, black ash, red maple, balsam fir, black spruce).
25	3105 - Mixed Upland Herbaceous	9.8	Maintained wildlife opening. Mainly grass & brackenfern cover. Trace of St Johns wort & knapweed. Black cherry brush in islands and rimming the opening.
27	3301 - Low Density Deciduous Tree	2.3	Cut in late 2007 under 720690501, removing mostly jack pine, red pine & red maple. Regen from harvest continuing to fill in (aspen, red maple, cherry & oak) along with advanced white oak & white pine larger saps. Borders the RR tracks.

Stand	Cover Type	Acres	Gen Cmts:
32	3303 - Mixed Low Density Trees	4.3	Small upland opening where mostly jack pine had been removed in late 2007 under 720690501. Trembling aspen sprouting in from E & S edges, scattered cherry sprouts, & white pine saps/poles.
33	6229 - Mixed lowland shrub	8.5	Lowland brush being colonized by tamarack from east to west. NWC rimming the E edge. Peninsula to the west just alder/willow, uncolonized as of yet. Separated alder/willow wetland to west (OFS point).
36	3105 - Mixed Upland Herbaceous	12.2	Maintained WL opening with thin grass cover & spotted knapweed filling in, along with some mullen, St. John's wort. The stand's upland opening type picks up an unmaintained perimeter of grass, Cladina, sweetfern & blueberry groundcover with cherry brush & scattered NPO.
37	6233 - Wet Meadow	7.5	Sedge & marsh grass cover bordering beaver flooding and the stream below the dam. Numerous snags, recent draw-down in the water level. OFS points: phragmites & purple loosestrife.
39	50 - Water	6.0	Beaver flooding, numerous snags. Dam lacking recent maintenance, water down ~1.5' from maximum. Yellow pond lilly. Lots of frogs & minnows, shore littered with good-sized freshwater clam shells. Wood duck nest boxes. See OFS points: two loosestrife plants & a patch of phragmites.
42	6239 - Mixed Emergent Wetland	6.3	Old beaver flooding on stream, draw-down from lack of recent dam maintenance. Primarily rushes & sedges in the still-flooded core of the stand along the stream.
44	3101 - Poverty Grass, Cladonia	7.2	A string of small, interconnected frost-pocket openings, being colonized by JP & WP. Scattered mature NPO clumps & cherry brush.
46	6220 - Alder/willow	12.7	Tag alder floodplain over marsh grass that surrounds four sub-acre islands of higher ground. The islands have patchy E/Q cover. Tamarack is colonizing the L-type from the N & E.
47	50 - Water	7.3	Sand Hill Lake, rimmed with white water lilly, sedge, rushes & low shrubs.
49	6233 - Wet Meadow	5.4	Sedge, marsh grass, rushes and patches of lowland shrubs (tag alder, potentilla) surrounding Sand Hill Lake & its in-&-out flow steams. The 1978 air photos show a pond having been dug on the stream just before it empties into the lake. OFS point is the spoils pile. Near the lake's outflow, roughly an acre of marsh near the cabin site is encompassed by the remains of a fence.
53	6224 - Treed Bog	3.5	Leatherleaf, labrador tea & bog rosemary over sphagnum with scattered spindly black spruce, tamarack & off-site white pine.
54	6220 - Alder/willow	1.2	Low swale with tall tag alder & salix.
56	6220 - Alder/willow	1.7	Tag alder with scattered Q (mostly tamarack, black spruce).

Stand	Cover Type	Acres	Gen Cmts:
57	3204 - Mast Producing Shrub	1.7	Upland opening with black cherry & white pine saps/poles over rubus, sweetfern & brackenfern. Black spruce rims the lowland edge.

7 – PROPOSED SPECIAL CONSERVATION AREA* (SCA) DETAILS

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

Data updated before 2:00 PM

Stand	SCA Type	SCA Name	Acres	Comments

8 – DEDICATED CONSERVATION AREA DETAILS

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

Data updated before 2:00 PM

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.
HCVA	Natural Rivers	There are two Natural Rivers datasets which are derived from spatial buffers set from an established and approved distance from the river centerlines. The Natural Rivers Zoning District is a 400 foot buffer for most Natural Rivers. The Vegetative Buffer ranges from 25 to 100 feet. To view specific Zoning Districts and Vegetative Buffers for each Natural River see the table located on the I:\Documentation\GDSE data folder.
SCA	Research and Military Areas	These areas provide facilities and lands specifically dedicated for research, or other purposes. They include the 5,847 acre Forest Fire Experiment Station, the 12,000 acre Houghton Lake Wildlife Research Area, the Beaver Islands Archipelago Wildlife Research Area (that includes most of Garden Island, all of High and Hog Islands, all state owned land on Beaver, South Fox and North Fox Islands), the Cusino Wildlife Research Area, the 3,000 acre Hunt Creek Fisheries Research Station, the 125 acre Wyman Nursery, and over 144,000 acres of Military Lands.