



**GRAYLING FOREST MANAGEMENT UNIT
COMPARTMENT REVIEW RESENTATION**

COMPARTMENT # 169 ENTRY YEAR: 2010

GIS Compartment Acreage: 1260 County: Crawford

Revision Date: September 12, 2008

Stand Examiner: Joan Charlebois

Legal Description: T28N R4W Sections 5 & 6
Frederic Township – North Part

Management Goals: To maintain 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 is flat to gently-rolling, except for a steep north-south ridge cutting through the center of section 5 and low ground associated with riparian areas. Rubicon and Kalkaska sands are the most common upland soil types, and saturated organic soils (primarily mucks) are predominant in the lowlands.

Ownership Patterns, Development, and Land Use in and Around the Compartment: The compartment encompasses two solid sections of State ownership. Most of the adjacent land is state-owned. The adjacent private property has seasonal/recreational and golf course development.

Unique, Natural Features: Part of the Upper Manistee, a designated Natural River, and Lost Lake are within the compartment. There is the potential for rare bird and reptile species to occur along the river corridor.

Archeological, Historical, and Cultural Features: Old railroad grades cross through the compartment and large, turn-of-the-century logging era pine stumps are common.

Special Management Designations or Considerations: That part of the compartment lying west of Manistee River Road is within the Deward Area, a designated special management area.

Watershed and Fisheries Considerations: The Upper Manistee, a designated Natural River, is a quality trout stream. The Lost Lake Outlet, flowing from the south end of Lost Lake into the Upper Manistee, is part of the Natural River designation. A sand trap (Sediment Basin #2) is maintained on the River, with stand 44 used for stock-piling the spoils.

Wildlife Habitat Considerations: The Deward Area's mosaic of aspen, grass, cedar and lowland & upland brush cover types provide potential habitat for a variety of game and non-game wildlife species, including deer, grouse, hare and opening-dependent songbirds.

Mineral Resource and Development Concerns and/or Restrictions: Surface sediments consist of ice-contact and glacial outwash sand and gravel and postglacial alluvium. The glacial drift thickness varies between 800 and 1,000 feet. Beneath the glacial drift is the Coldwater Shale. The Coldwater does not have a

current economic use. A gravel pit is located in Section 10 and potential is excellent on the upland areas. The compartment is leased and partially developed for Antrim Shale gas and Guelph (Niagaran) reefs. Six extraction wells exist within the compartment. In addition to flow lines linking those wells, a wide cleared pipeline corridor with several buried gas lines runs along the compartment's west edge (Great Lakes Gas Line).

Vehicle Access: Manistee River Road is the only county road within the compartment. Additional access is provided by two-tracks and gas well pipeline easement roads. By Director's Order, Deward Area roads are closed to motor vehicle traffic unless posted as open. In addition, snowmobiles cannot be operated within the Deward Area except on those posted-open roads. Illegal access, particularly along the Great Lakes pipeline corridor, is an ongoing concern. Law Enforcement Division continues to work with Forest, Mineral & Fire Management Division to monitor and enforce Deward Area road closures.

Survey Needs: None at this time.

Recreational Facilities and Opportunities: No designated trails or facilities occur within the compartment, but the habitat types provide good dispersed hunting opportunities. The Upper Manistee is a popular canoeing and fishing river and Lost Lake is noted for its pan fishing. An informal access site on the northeast edge of Lost Lake may need stabilization.

Fire Protection: The compartment is dominated by upland deciduous and lowland types. Gas wells and buried pipelines occur within the compartment, although none were identified as hydrogen sulfide hazards. Lost Lake and the Upper Manistee River are potential water sources.

LOTS Compartment Acreage: ___1254_____

- **The following 5 reports from the Operations Inventory System (OIPC) are attached:**
 - ◆ **Cover Type by Age Class**
 - ◆ **Cover Type by Management Objective**
 - ◆ **Compartment Volume Summary**
 - ◆ **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**
 - ◆ **Proposed treatments**
 - ◆ **Proposed road access system**
 - ◆ **Suggested potential old growth**

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Michigan Department of Natural Resources - Operations Inventory System
Individual Compartment Report

AUSABLE STATE FOREST

GRAYLING FOREST MGT UNIT

CRAWFORD COUNTY

COMPARTMENT: 169

Table 3

(acres shown in boxes)

STAND AGE CLASS

COVER TYPE	Not Coded	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	150-159	All Aged	Total
Aspen		32	102	100		161	113	45											553
Bog or Marsh	2																		2
Cedar										16		23	17						56
Grass	96																		96
Lowlnd Brush	130																		130
Mx Swmp Cnfr							13												13
Non Stocked	1																		1
Red Pine								186											186
Swamp Hrdwds									24		30								54
Upland Brush	74																		74
Upland Hdwds									20										20
Water	52																		52
White Pine							4	8					11						23
Total	355	32	102	100		161	130	239	44	16	30	23	28						1260

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Michigan Department of Natural Resources - Operations Inventory System
Individual Compartment Report

AUSABLE STATE FOREST

GRAYLING FOREST MGT UNIT

CRAWFORD COUNTY

COMPARTMENT: 169

Table 3A

(acres shown in boxes)

MANAGEMENT OBJECTIVE TYPE

COVER TYPE	A	S	V	C	G	H	J	I	L	P	N	Q	X	O	B	R	K	Y	F	E	T	D	U	M	Z	W	Total
A Aspen	553																										553
V Bog or Marsh			2																								2
C Cedar				56																							56
G Grass					96																						96
L Lowlnd Brush									130																		130
Q Mx Swmp Cnfr											13																13
X Non Stocked													1														1
R Red Pine															186												186
E Swamp Hrdwds																			54								54
U Upland Brush																								74			74
M Upland Hdwds														20													20
Z Water																									52		52
W White Pine																										23	23
Total	553		2	56	96				130			13	1	20	186				54				74		52	23	1260

AUSABLE STATE FOREST

GRAYLING FOREST MGT UNIT

CRAWFORD COUNTY

COMPARTMENT: **169**

Table 10 - COMPARTMENT VOLUME SUMMARY - ALL STANDS

COMPARTMENT SUMMARY			
TOTAL VOLUME		CUT VOLUME	
Hardwood	4209 Cds	Hardwood	1466 Cds
Hardwood	403 Mbf	Hardwood	118 Mbf
Softwood	1987 Cds	Softwood	336 Cds
Softwood	1282 Mbf	Softwood	240 Mbf
Sum TotVol	9566 Cds	Sum CutVol	2518 Cds
Total Cmpt Acres		Acres Proposed For Cut.....	185
1260			

Stand	Cover Type	Acres	Age	Site Index	Mgt Obj	Condition	Method Cut	Harvest Priority	Cultural Need	FDF Status
4	A6	33	52	65	aspen (upland)	old growth (potential or actual)	final harvest	1	natural regeneration	
<p>comnts Fmd : Old notes indicate that this was in an area K-G bladed in 1959. The stand has variable quality, health & stocking, with an older component that was not run over by the D-7. Mostly TA with some BTA, balsam fir, and short, contorted RM poles and cull saw. Top dieback is starting to occur in the codominant aspen stems and some clones are unthrifty as a result of black canker infection. Harvest now to regenerate the aspen before the decline becomes widespread. Retention: exclude the ~ 3 acres between the east side 2-track and the lake. Maintain at least a 150' uncut buffer along the lake. The stand includes lower ground north and east of the lake. Two informal lake access sites spur off from the east side two-track; the north one may need stabilizing. Used previous SI. SCA - Deward Area - a dedicated management area.</p>										
7	A6	11	49	65	aspen (upland)	old growth (potential or actual)	final harvest	1	natural regeneration	
<p>comnts Fmd : Old notes indicate that it was part of an area K-G bladed in 1959. Health is starting to decline in both the TA & BTA (false tinder fungus present and top mortality starting). There are a few very old aspen left from the K-G work. Harvest to regen the aspen -- it is being replaced by BF and RM. Retention: exclude that part of the stand on the sideslope down to stand 5. Used previous SI. SCA - Deward Area - a dedicated management area.</p>										
19	M6	20	68	62	oak	two aged	shelterwood-seed	3	natural regeneration	
<p>comnts Fmd : Two-aged low-quality northern hardwood type with a significant red oak component. This long, narrow stand occupies the east side of a relatively steep ridge that only becomes more shallow to the N1/4. The rubicon sand soils are at the lower end of sugar maple's site tolerance and that species exhibits poor form and health over most of the stand, with some improvement at the north end. The Kotar map indicates a PArVVb/AFO transition type. The stand appears to have been cut-over shortly before it was acquired in 1941. Residual from that cut is represented by large 18-24" DBH, wolfy red oak (~20 BA, 80+ years old), and scattered cull saw RM, sugar maple and beech (roughly 20 BA). The component regenerated by that cut is primarily stump-clump RM (mostly poles, with some stems reaching saw size), generally unthrifty hard maple (knobby, poorly-healed branch scars, some eutypella canker), and some beech poles. In addition to the wolf oak, there is a slightly younger cohort of smaller-diameter oak saw in their 70's that have straight, clean boles with tight bark - - really nice quality - - as well as large sap/small pole RO with the same very good form and vigor. Unevenly distributed across the stand is less than 10 BA of large TA and BTA. Beech and ironwood regen are most common in the understory. Previous SI was RM-1943-50. Based stand year of origin on the more common of the two age classes. Given the site quality, topography and condition of the hardwood stems available to work with, I would not recommend trying to selectively manage for northern hardwood sawtimber. The oak and aspen are well-suited to the site and the stand has good wildlife potential with its two hard-mast producers. To favor those species and maintain the aspen component, leave the oak and beech and harvest all aspen, RM and sugar maple. Mark some of the pioneer maple stems for girdling - many of them are dead-topped already. Harvest when the ground is frozen to minimize soil disturbance.</p>										
21	A5	42	60	55	aspen (upland)	high risk	final harvest	1	natural regeneration	
<p>comnts Fmd : Variable stand in terms of species mix, age, size, condition and stocking. TA & BTA ranging from vastly overmature cull saw to young poles. RM & HM cull saw (generally either branches-to-the-ground or with poorly-healed branch scars) and small poles (the HM unthrifty, knobby, eutypella present). The stand's N end has less hardwood, and the far NW has an inclusion of limby WP (~1 acre). Scattered very nice RO small saw and poles (tight bark, clean boles, healthy) but less than 10 BA. Ironwood present. Top-kill from hypoxylon and false-tinder fungus are present. The HM is surviving but not thriving. This is the lower end of the site tolerance for that species. Final harvest to regenerate the aspen. Leave all oak for mast. Retention: exclude the WP inclusion in the far NW corner and 2 aspen pockets (~0.5 and 0.25 acres in size) at the far N-center and NE ends. Also leave a half-acre island of aspen and larger-diam maple in the stand's center. Used previous SI.</p>										
26	R8	40	60	65	red pine	high risk	final harvest	1	planting	
<p>comnts Fmd : Old records indicate the area was planted with 2-year old RP, WP & JP in the fall of 1940. Unless it took the trees twice the usual amount of time to reach DBH, the trees cored are not that old (late 1940's & early 1950's). Previous SI on the JP component put the age at 1947. Possibly a supplemental planting was done later to fill in gaps. Odd species mix patterns other than R-W-J suggest that, such as R-R-R-W-J, W-W-W-R, and swaths of several rows that had only JP. There is also obviously younger WP & JP that recruited naturally into poorly-stocked areas and spread into the adjacent G, along with a few small pockets of TA. The planted JP component has significant mortality, the WP has almost universal poor form and high defect, and the RP is nice where the stocking stayed up. Previous SI on the JP was 45. RM, beech and ironwood seedlings in the understory. Hardwoods growing on the same soils to the N are just tolerating the site, so conversion to that that cover type is not recommended. RP is well-suited to the site. Final harvest and replant to RP. Retention: exclude that part of the stand that is west of the pipeline and gas well access road.</p>										

GRAYLING FOREST MGT UNIT

Proposed Treatments
With NO Limiting Factors

Compartment: 169 Entry Year: 2010

Stand	Cover Type	Acres	Age	Site Index	Mgt Obj	Condition	Method Cut	Harvest Priority	Cultural Need	fdf Status
39	A6	24	49	56	aspen (upland)	old growth (potential or actual)	final harvest	2	natural regeneration	
<p>comnts Fmd : Old records indicate it was part of an area K-G bladed in 1959. Cull WP & RM residual not run over by the cutter (~20 BA total) are saw-sized but generally not saw quality. The stems regenerated by the treatment include TA, nearly as much RM, and WP poles. A few hemlock poles were seen along the N side. TA clones still have some sub-merch stems. Hypoxylon and black canker are present. RM and WP are replacing the aspen. Final harvest in order to maintain the aspen component. Do not cut any hemlock. Retention: Leave 2-3 islands totalling 3/4 acre - encompassing hemlock where possible - and exclude from the stand's east boundary at least 100 feet deep along the defined channel (~1.5 ac). This drainage, Lost Lake Outlet, is part of the Upper Manistee's Natural River designation, making that area of the stand within 400 feet of the drainage an HCVA. A Natural River permit is required for crossing the drainage or for road work within 400 feet of it. Also is an SCA - Deward Area - a dedicated management area. Used previous SI</p>										
120	U2	12		50	upland brush	old growth (potential or actual)	final harvest	3	natural regeneration	
<p>comnts Fmd : Opening with cherry (some large cull pulp) and clumps of stump-origin RM (low-forking, limby pole and cull-saw). Rubus in more open areas, minor amounts of serviceberry and witchhazel. A scattering of small TA clones. Remove the RM and aspen when the adjacent stand's 4 & 7 are cut. SCA - Deward Area - a dedicated management area.</p>										
121	A6	3	60	66	aspen (upland)	mature	final harvest	1	natural regeneration	
<p>comnts Fmd : Small stand on a south-facing slope: Stand is characterized by overmature BTA (large pole and saw) with RM and some HW poles and a minor amount of TA saw. Conks and other signs of interior rot are present. This stand is on the same soils as stand 23, but was not cut along with that stand in 1991. Used stand 23's SI. Final harvest in order to maintain the aspen type. No retention is necessary given its small size.</p>										
Total Acres.....		185								

GRAYLING FOREST MGT UNIT

**Proposed Treatments
With Limiting Factors**

Compartment: 169 **Entry Year: 2010**

Stand	Cover Type	Acres	Age	Site Index	Mgt Obj	Condition	Method Cut	Harvest Priority	Cultural Need	FDI Status
10	A6	11	49	52	aspen (upland)	old growth (potential or actual)		0	natural regeneration	

TREATMENT LIMITING FACTORS: Too wet

comnts Fmd : Old records indicate this was part of an area K-G bladed in 1959. TA, some BTA, and scattered balsam fir on the high ground, grading into TA, BAM & more BF on the lower ground adjacent to stand 11. BF poles are a large component in the stand's S. Hypoxylon is present in the stand. A lot of hare activity in stand 11. Aside from the K-G blading with a D-7 dozer, there is no record of the stand having been commercially cut in recent history. Areas of low ground on possible access routes to the north, and Natural River segments to the south would limit hauling operations. Because of access problems, cut to regenerate portions of the stand through a Wildlife Division FTP. Maintain a 150' buffer along the lake. Used previous SI. SCA - Deward Area - a dedicated management area.

34	A5	34	49	60	aspen (upland)	old growth (potential or actual)		0	natural regeneration	
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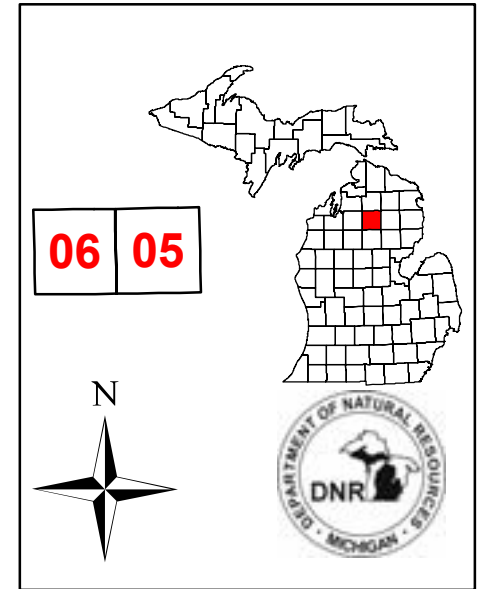
TREATMENT LIMITING FACTORS: Bridge needed (portable bridge not available or inadequate)

comnts Fmd : Old records indicate this was part of an area K-G bladed in 1959. The stand extends from Lost Lake to the Manistee River. TA health, growth and stocking improves in the stand's N1/2, although hypoxylon and black canker are still present in even the best clones. WP regen is heaviest in the stand's S1/2, giving way to upland brush understory in the N1/2. Small U/G inclusions occur throughout. Balsam fir is heavier along the edge against stand 35. Areas of low ground on a possible haul route to the north, and Lost Lake Outlet to the south, would limit hauling. Lost Lake Outlet is part of the Upper Manistee's Natural River designation, making that area of the stand within 400 feet of the drainage and the Upper Manistee River an HCVA. A Natural River permit is required for crossing the drainage or for road work within the 400' HCVA zone, in addition to needing a stream crossing permit from the DEQ. The stand is also an SCA - Deward Area - a dedicated management area. Because of these concerns, cut to regenerate portions of the stand through a Wildlife Division FTP. Maintain at least a 150' buffer along Lost Lake and at least a 175' buffer along the Upper Manistee & Lost Lake Outlet. Used previous SI.

Total Acres..... 45

Compartment 169
 T28N, R04W, Sec. 5, 6
 County: Crawford
 Unit: Grayling
 YOY: 2010
 Acres: 1,260 GIS Calculated
 Stand Examiner: Joan Charlebois
 Map Revised: 9/15/2008
 Map Phase: Pre-review

Cover Type and Treatment



44°52'0"N

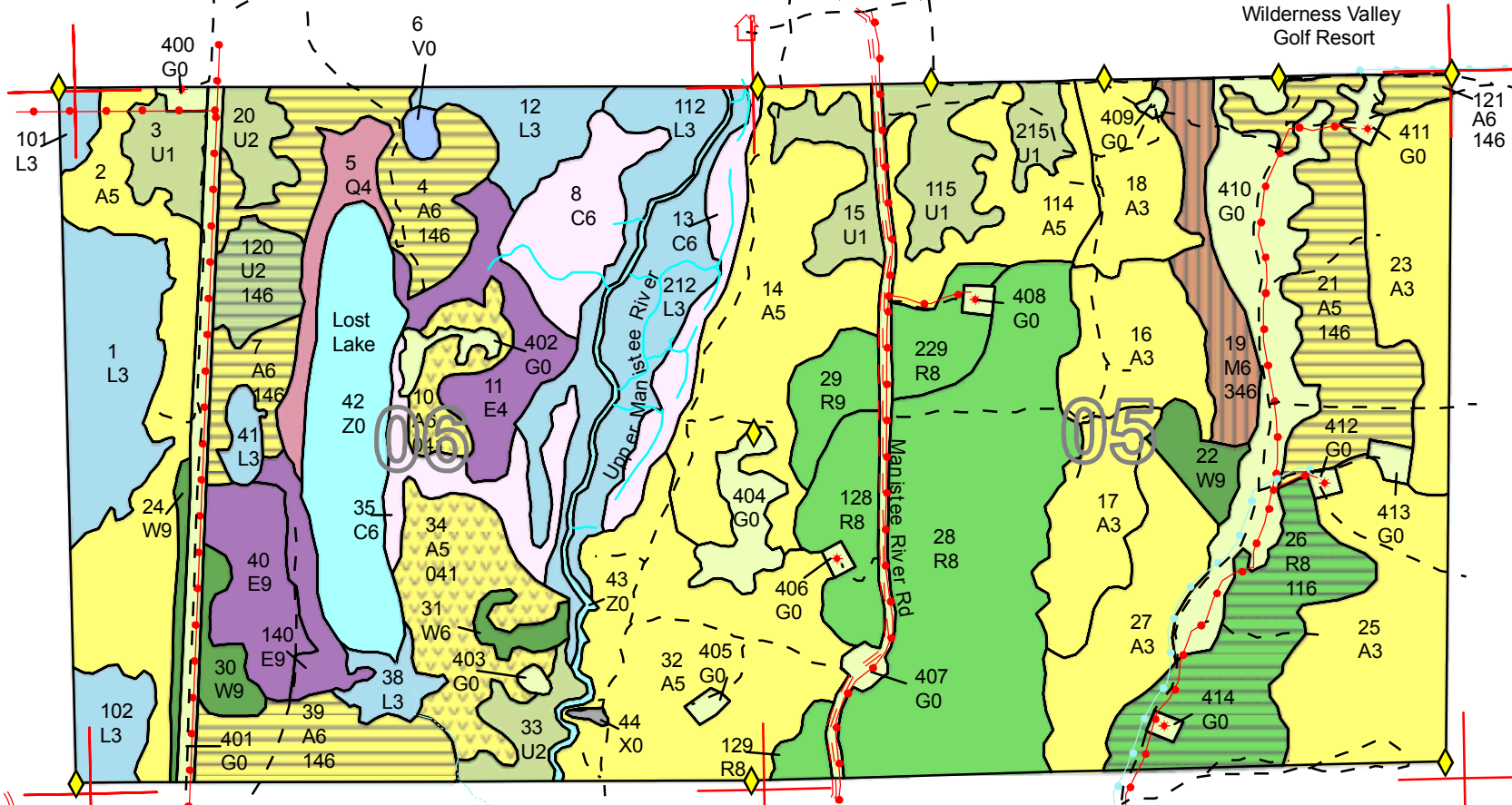
84°51'0"W 84°50'0"W 84°49'0"W 84°48'0"W 84°47'0"W

31

32

33

Deward Rd (Kalkaska County)



Legend

- ◆ RIs Corners
- Miris Corners
- - - County Gravel Roads
- - - Poor Dirt Roads
- Powerlines
- Pipelines
- Water Features
- - - Intermittent Streams
- ★ Well Sites
- 🏠 Buildings
- Stand Boundary
- 041 - Natural Regeneration/Hand Tools
- 116 - Final Harvest/Planting
- 146 - Final Harvest/Natural Regeneration
- 346 - Shelterwood - Seed/Natural Regeneration
- A - Aspen
- C - Northern White Cedar
- E - Swamp Hardwoods
- G - Grass
- L - Lowland Brush
- M - Northern Hardwoods
- Q - Mixed Swamp Conifers
- R - Red Pine
- U - Upland Brush
- V - Bog or Muskeg
- W - White Pine
- X - Non-Stocked
- Z - Water

01

06

05

12

07

08



84°51'0"W 84°50'0"W 84°49'0"W 84°48'0"W 84°47'0"W

44°51'0"N

44°51'0"N

Stand Boundary Map

Compartment 169
 T28N, R04W, Sec. 5, 6
 County: Crawford
 Unit: Grayling
 YOE: 2010
 Acres: 1,260 GIS Calculated
 Stand Examiner: Joan Charlebois
 Map Revised: 7/31/2008
 Map Phase: Pre-review

Legend

- RIs Corners
- Miris Corners
- County Gravel Roads
- Poor Dirt Roads
- Powerlines
- Pipelines
- Water Features
- Intermittent Streams
- Well Sites
- Buildings
- Stand Boundary

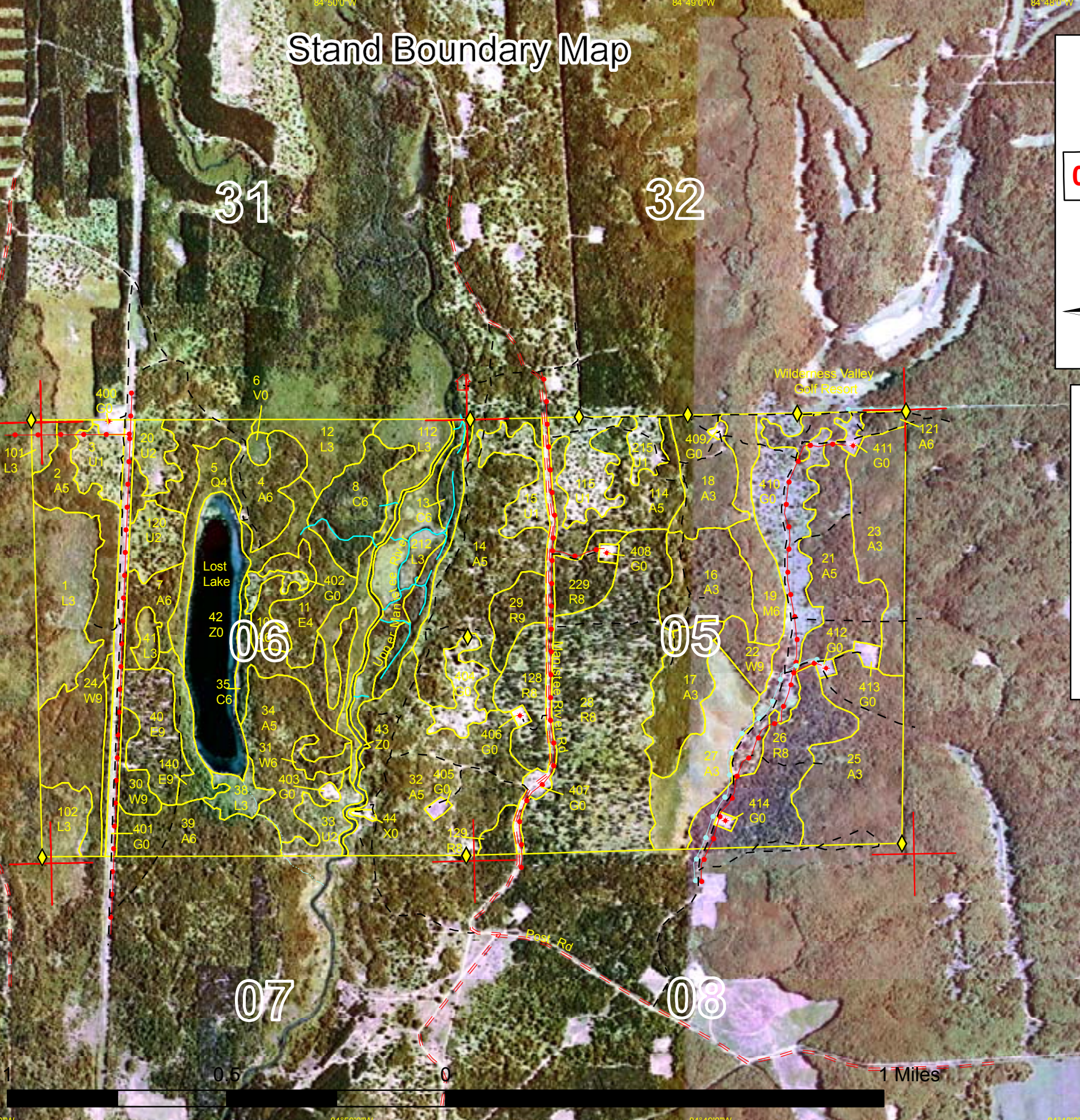
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02

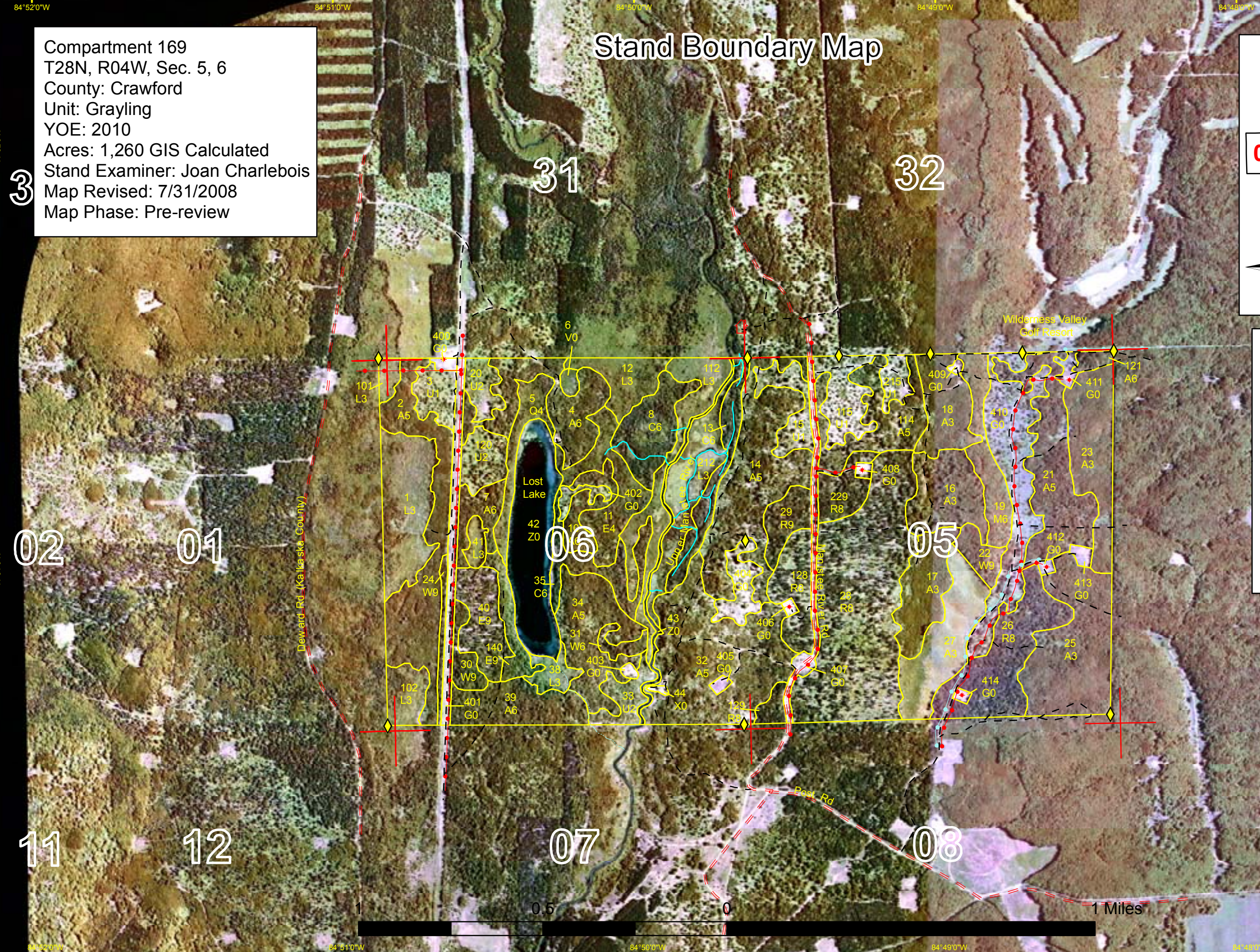
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



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Compartment 169
 T28N, R04W, Sec. 5, 6
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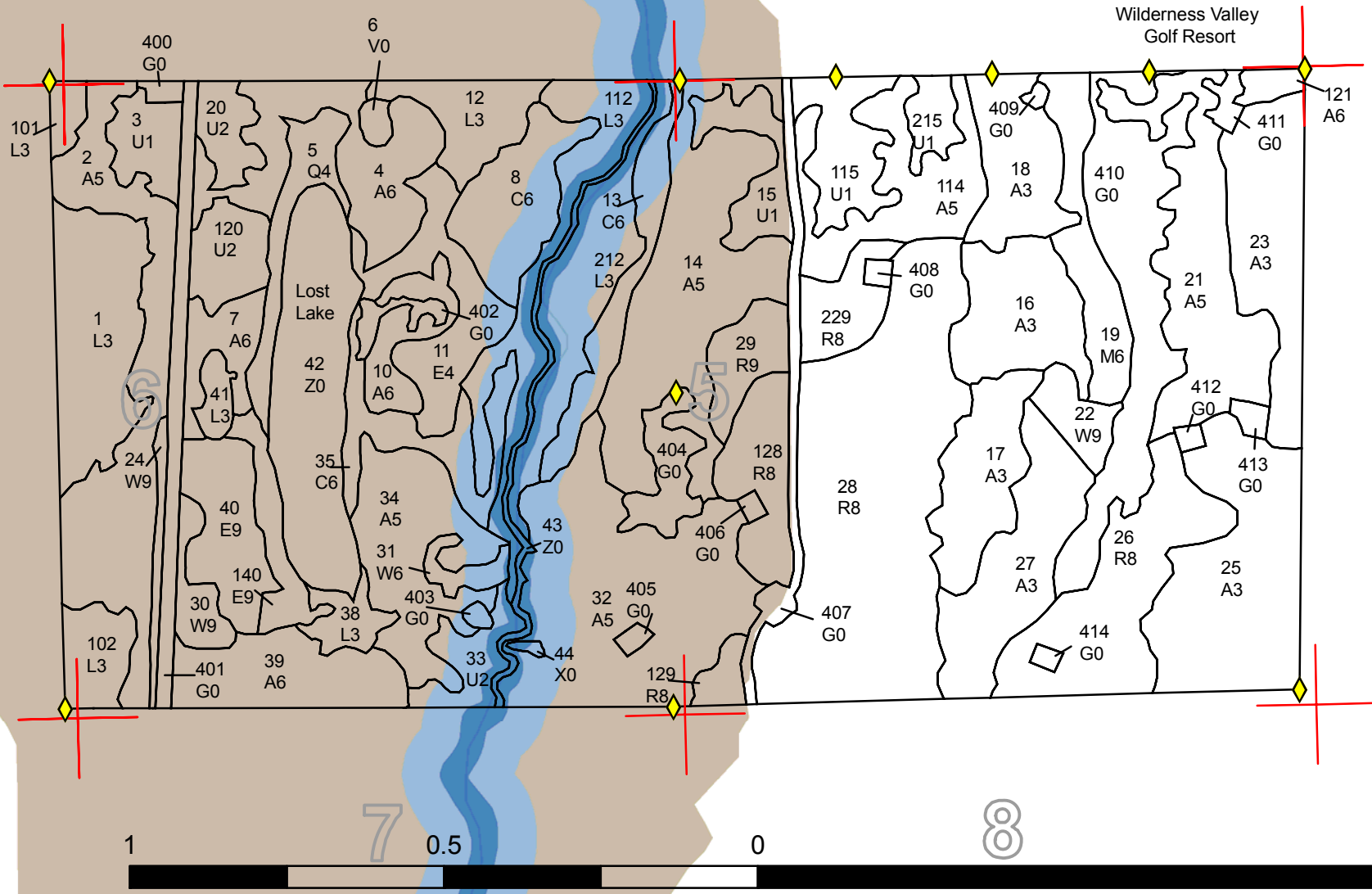
Dedicated & Proposed Special Conservation Area Map

Legend

-  RIs Corners
-  Miris Corners
-  Stand Boundary
- Dedicated SCA**
-  Cold Water Streams
-  Natural Rivers Vegetative Buffer
-  Natural Rivers Zoning District
-  Dedicated Management Areas



6 5

44°52'0"N

44°51'0"N

84°51'0"W

84°50'0"W

84°49'0"W

84°48'0"W

84°51'0"W

84°50'0"W

84°49'0"W

84°48'0"W



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.

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

Conservation Area	Type	Description
HCVA	Dedicated Management Areas	Such areas are dedicated by the DNR Director for specific management uses through the promulgation of rules, as governed by Part 5, Department of Natural Resources, of the NREPA (MCL 324.502(2) and 324.504). Section 38 of the Administrative Procedures Act (MCL 24.238) provides for public requests for the promulgation of rules. This is an active program, with one proposed site currently under review by the DNR.
HCVA	Natural Rivers	There are two Natural Rivers datasets which are derived from spatial buffers set from an established and approved distance from the river centerlines. The Natural Rivers Zoning District is a 400 foot buffer for most Natural Rivers. The Vegetative Buffer ranges from 25 to 100 feet. To view specific Zoning Districts and Vegetative Buffers for each Natural River see the table located on the I:\Documentation\GDSE data folder.
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 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.