

Michigan Department of Natural Resources, Forest, Mineral & Fire Management Division
**HIGH CONSERVATION VALUE AREA (HCVA) AND ECOLOGICAL REFERENCE AREA (ERA)
MANAGEMENT AND MONITORING FORMS PACKET**

Portions of this information are exempt from Michigan's Freedom of Information Act, 1976 PA 442, MCL 15.243



BACKGROUND AND INSTRUCTIONS

Prior to using this packet material and forms please refer to Work Instruction 1.4 Biodiversity Management on State Forestlands and the Conservation Area Management Guidelines available on line at:

http://www.michigan.gov/dnr/0,1607,7-153-30301_33360-144865--,00.html.

This packet is for each High Conservation Value Area (HCVA) without an existing management plan and all Legally Dedicated State Natural Areas, Ecological Reference Areas (ERA), Critical Dunes and Coastal Environmental Areas on state forest land.

Its purpose is to: 1.) document baseline information on each area and it's conservation values, threats, management goals and objectives, and 2.) to track changes in threats, when management activities are carried out, monitor if they are effective, and capture needed changes in management determined not to be effective.

Keep the original copies of these forms in the Compartment/Stand File within each FMU and send copies to respective DEQ and DNR program managers and the DNR, FMFM Forest Resource Management Section, Monitoring Specialist.

PART I: HCVA BASELINE INFORMATION, GOALS AND OBJECTIVES

- COMPLETE FOR EACH HCVA WITHOUT AN EXISTING MANAGEMENT PLAN
- PART I TO ACCOMPANY PART II

SECTION 1: SITE INFORMATION

- A. HCVA TYPE
- B. SITE, CONTACT AND ADMINISTRATIVE INFORMATION
- C. OWNERSHIP INFORMATION
- D. CONSERVATION PARTNERS
- E. OTHER DOCUMENTS RELATED TO THIS HCVA

SECTION 2: CONSERVATION VALUES (TARGETS)

- A. BIODIVERSITY VALUES
- B. SOCIAL/ECONOMIC VALUES
- C. INFRASTRUCTURE/FACILITIES VALUES

SECTION 3: CURRENT CONDITIONS (THREATS)

- A. VALUE OR TARGET VIABILITY (POOR, FAIR, GOOD, VERY GOOD)
- B. CURRENT PRIMARY THREATS

SECTION 4: MANAGEMENT GOALS AND OBJECTIVES

PART II: HCVA MONITORING

SECTION 5: COMPLIANCE MONITORING (WERE TASKS COMPLETED?)

SECTION 6: EFFECTIVENESS MONITORING AND RECOMMENDATIONS (HOW WELL DID MANAGEMENT WORK OR WERE OBJECTIVES ACHIEVED? WHAT ARE NEXT THE STEPS?)

SECTION 7: THREATS MONITORING FIELD FORM – STAND ALONE FORM (WHAT IS THE STATUS OF VALUES OR TARGETS?)

- MAY BE COMPLETED BY ANYONE FOR ANY HCVA
- OR PART OF MONITORING PACKET TO ACCOMPANY PART I AND PARTS II, SECTIONS 6, 7 AND PART III.

Helpful References:

Marqoluis, R. and N. Salafsky. 1998. Measures of Success. Island Press, Washington, DC.362 pp.

The Nature Conservancy. 2005. CAP (Conservation Action Planning) Toolkit - version 08-23-05.
See the 2007 overview at <http://sites-conserveonline.org/dcs/projects/art10152.html> and the workbook at http://www.conserveonline.org/2003/07/s/ConPrjMgmt_v4

PART I: HCVA BASELINE INFORMATION , GOALS AND OBJECTIVES

SECTION 1: SITE INFORMATION

A: HCVA TYPE – CHECK ALL THAT APPLY

- | | |
|---|---|
| <input type="checkbox"/> Critical Dune as defined by DEQ | <input type="checkbox"/> Environmental Area as defined by DEQ |
| <input type="checkbox"/> Legally Dedicated State Natural Area | <input type="checkbox"/> State Natural or Scenic River |
| <input checked="" type="checkbox"/> Ecological Reference Area | <input type="checkbox"/> Quiet Area: |
| <input type="checkbox"/> Endangered Species Management Area | <input checked="" type="checkbox"/> Other: TNC Natural Areas Registry |
| <input type="checkbox"/> Kirtland Warbler | |
| <input type="checkbox"/> Piping Plover | |
| <input type="checkbox"/> Other: | |

SPECIAL CONSERVATION AREA - LIST OTHER CATEGORIES BELOW

Proposed State Natural Area ; Coded as Stand Condition "8"

B: SITE, CONTACT AND ADMINISTRATIVE INFORMATION

Date:	Site Name:	Other Names		
	Crawford Red Pines Natural Area	Dyer Red Pine Proposed Natural Area		
ReportDate (mm/dd/yyyy)	Forest Mgt Unit	Compartment Number(s)	Stand Number(s)	<input type="checkbox"/> Map Attached
9/4/2007	Grayling	278 280	35 (12 acres) 11 (8 acres)	<input checked="" type="checkbox"/> Shape File in OI/IFMAP GDSE
County(ies)	Township(s)	Range(s)	Section(s)	File Location/Name FMFM-RAU
Crawford	Optional if mapped T27N	Optional if mapped R01W	¼ Sec. Optional if mapped 30, 31	
Name of individual completing this form (first and last)		Telephone		Email Address
<input checked="" type="checkbox"/> Check if DNR Employee Richard Hausler Kim Herman		(906) 786-2351		hermank@michigan.gov
Additional contact information		Telephone		Email Address
Name of individual providing information (first and last), if applicable Susan Thiel, Manager, Grayling Forest Management Unit, 1955 N. I-75 BL, Grayling, MI 49738 Elaine Carlson, Wildlife Biologist, Mio Joshua Cohen, Ecologist, Michigan Natural Features Inventory		(989)348-6371 ext 7440 (989) 826-3211 (517) 348-6371		THIELSJ@michigan.gov CARLSONE@michigan.gov cohenj@michigan.gov
Name of DNR/DEQ Program Contact if Applicable		Telephone		Email Address
Raymond Rustem, Natural Heritage Unit Mgr., Wildlife Division Amy Clark Eagle, Natural Areas Program, Wildlife Division		(517) 373-2457 (517) 241-1406		rustemr@michigan.gov eaglea@michigan.gov
<input type="checkbox"/> Volunteer (s)		Telephone		Email Address
Number of Volunteers: Name of Group: Contact Name:		()		

C: OWNERSHIP INFORMATION - CHECK ALL THAT APPLY AND INCLUDE NAME OF THE UNIT:

- | | |
|--|---|
| <input checked="" type="checkbox"/> State Forest Land: Grayling Forest Management Unit | <input type="checkbox"/> State Game Area: |
| <input type="checkbox"/> State Park/Recreation Area: | <input checked="" type="checkbox"/> Other or Private Land (describe): Camp Grayling, Military Reservation |

D: CONSERVATION PARTNERS – FILL IN ALL KNOWN PARTNERS

Name of Organization: The Nature Conservancy	Name of Organization Michigan Natural Areas Council
Contact Name: Tina Hall Director of Conservation Programs	Contact Name: Phyllis Higman
Email Address: chall@tnc.org	Email Address: higmanp@michigan.gov
Telephone: 906-225-0399	Telephone (517) 373-6983

Name of Organization	Name of Organization
Contact Name:	Contact Name:
Email Address	Email Address
Telephone ()	Telephone ()

E: OTHER DOCUMENTS RELATED TO THIS HCVA – CITATION AND LOCATION WHERE STORED

Chown, G.A., S.D. Kvarnberg, R.A. Politizer, S.J. Shipe, J.F. Welsh and C.G. Wertheim. 1986. Naturalarea management of old-growth red pine. Master.s Project, University of Michigan, Ann Arbor, MI. 179 pp. copy in FMFM Lansing office

Poole, Morgan, Voss, Edward G., et. al.,1984. Crawford Red Pine Reconnaissance Report; Michigan Natural Areas Council

Barnes, Burton V. 1989. Old-Growth Forests of the Northern Lakes States: A Landscape Ecosystem Perspective. Natural Areas Journal. 9(1): 45:57.

Cohen, J.G. 2002. Natural Community Abstract For Dry Northern Forest. Michigan Natural Features Inventory, Lansing, MI. 14 pp.

Michigan Natural Features Inventory Element Occurrence Record 2007. Dry Northern Forest-Crawford Red Pines.

DRAFT

SECTION 2: CONSERVATION VALUES/TARGETS - CHECK ALL THAT APPLY

A: BIODIVERSITY VALUES

here are a number of ways to describe biodiversity values - check all that apply.

• **Natural Communities** – Based on Michigan Natural Features Inventory Community Classification.

GO to: http://web4.msue.msu.edu/mnfi/data/MNFI_Natural_Communities.pdf; <http://web4.msue.msu.edu/mnfi/pub/abstracts.cfm>

Quality Rank comes from specific MNFI Element Occurrence Records (EOR) in the FMFM IFMAP Biodiversity Data Layer.

Chk Box	Community Name	State Rank	Global Rank	Quality Rank A,B,C,D	Chk Box	Community Name	State Rank	Global Rank	Quality Rank A,B,C,D
<input type="checkbox"/>	Alvar [Alvar grassland]	S1	G2?		<input type="checkbox"/>	Lakeshore cliff			
<input type="checkbox"/>	Bedrock glade				<input type="checkbox"/>	Basalt lakeshore cliff	S1	G3?	
<input type="checkbox"/>	Basalt bedrock glade	S2	G3		<input type="checkbox"/>	Sandstone lakeshore cliff	S2	G3	
<input type="checkbox"/>	Igneous bedrock glade	S2	G3G4		<input type="checkbox"/>	Volcanic conglomerate lakeshore cliff	S1	G3?	
<input type="checkbox"/>	Limestone bedrock glade [Alvar glade]	S2	G2?		<input type="checkbox"/>	Mesic northern forest [Northern hardwood forest; Hemlock-hardwood forest]	S3	G4	
<input type="checkbox"/>	Sandstone bedrock glade	S2?	G3G4		<input type="checkbox"/>	Mesic prairie	S1	G2	
<input type="checkbox"/>	Volcanic conglomerate bedrock glade	S2	G3		<input type="checkbox"/>	Mesic sand prairie	S1	G1?	
<input type="checkbox"/>	Bedrock lakeshore				<input type="checkbox"/>	Mesic southern forest [Southern hardwood forest]	S3	G3?	
<input type="checkbox"/>	Basalt bedrock lakeshore	S2	G3		<input type="checkbox"/>	Muskeg	S3	G4	
<input type="checkbox"/>	Igneous bedrock lakeshore	S2	G?		<input type="checkbox"/>	Northern bald [Krummholz ridgetop]	S1	GU	
<input type="checkbox"/>	Limestone pavement lakeshore [Alvar pavement]	S2	G3		<input type="checkbox"/>	Northern fen	S3	G3	
<input type="checkbox"/>	Volcanic conglomerate bedrock lakeshore	S2	G3		<input type="checkbox"/>	Northern shrub thicket	S5	G4	
<input type="checkbox"/>	Bog	S4	G3		<input type="checkbox"/>	Northern swamp	S3?	G4	
<input type="checkbox"/>	Boreal forest	S3	GU		<input type="checkbox"/>	Northern wet meadow	S4	G4	
<input type="checkbox"/>	Bur oak plains	SX	G1		<input type="checkbox"/>	Northern wet-mesic prairie	S1	GNR	
<input type="checkbox"/>	Cave	S1	G4?		<input type="checkbox"/>	Oak barrens	S1	G2?	
<input type="checkbox"/>	Cliff				<input type="checkbox"/>	Oak openings	S1	G1	
<input type="checkbox"/>	Dry acid cliff	S2?	G4		<input type="checkbox"/>	Oak-pine barrens	S2	G3	
<input type="checkbox"/>	Dry non-acid cliff	S2	G4		<input type="checkbox"/>	Open dunes	S3	G3	
<input type="checkbox"/>	Moist acid cliff	S2	G4		<input type="checkbox"/>	Patterned fen	S2	GU	
<input type="checkbox"/>	Moist non-acid cliff	S2	G4		<input type="checkbox"/>	Pine barrens	S2	G3	
<input type="checkbox"/>	Coastal plain marsh	S2	G2		<input type="checkbox"/>	Poor conifer swamp	S4	G4	
<input type="checkbox"/>	Cobble beach [Cobble shore]	S3	G3?		<input type="checkbox"/>	Poor fen	S3	G3	
<input checked="" type="checkbox"/>	Dry northern forest [Pine forest]	S3	G3?	B/C	<input type="checkbox"/>	Prairie fen	S3	G3	
<input type="checkbox"/>	Dry sand prairie	S2	G3		<input type="checkbox"/>	Relict conifer swamp	S3	G3	
<input type="checkbox"/>	Dry southern forest [Oak forest]	S3	G4		<input type="checkbox"/>	Rich conifer swamp	S3	G4	
<input type="checkbox"/>	Dry-mesic northern forest [Pine-hardwood forest]	S3	G4		<input type="checkbox"/>	Sand/gravel beach	S3	G3?	
<input type="checkbox"/>	Dry-mesic southern forest [Oak-hardwood forest]	S3	G4		<input type="checkbox"/>	Sinkhole	S2	G3G5	
<input type="checkbox"/>	Emergent marsh	S4	GU		<input type="checkbox"/>	Southern floodplain forest	S3	G3?	
<input type="checkbox"/>	Great Lakes barrens	S2	G3		<input type="checkbox"/>	Southern shrub-carr	S5	GU	
<input type="checkbox"/>	Great Lakes marsh	S3	G2		<input type="checkbox"/>	Southern swamp	S3	G3	
<input type="checkbox"/>	Hardwood-conifer swamp	S3	G4		<input type="checkbox"/>	Southern wet meadow	S3	G3?	
<input type="checkbox"/>	Hillside prairie	S1	G3		<input type="checkbox"/>	Submergent marsh	S4	GU	
<input type="checkbox"/>	Inland salt marsh	S1	G1		<input type="checkbox"/>	Wet prairie	S2	G3	
<input type="checkbox"/>	Interdunal wetland	S2	G2?		<input type="checkbox"/>	Wet-mesic prairie	S2	G2	
<input type="checkbox"/>	Intermittent wetland [Boggy seepage wetland]	S3	G2		<input type="checkbox"/>	Wooded dune and swale complex	S3	G3	
<input type="checkbox"/>	Inundated shrub swamp	S3	GU		<input type="checkbox"/>	Woodland prairie	S2	G3	
<input type="checkbox"/>	Lakeplain mesic sand prairie	S1	G1						

Other information if known.

2. **Ecological Systems** .Check Applicable Regional Landscape Ecosystem (Section), Subsection, and Sub-subsection from Albert, Dennis A. 1995. Regional landscape ecosystems of Michigan, Minnesota, and Wisconsin: a working map and classification. Gen. Tech. Rep. NC-178. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Forest Experiment Station. 250 pp

Check all that apply	Name	Section Number	Subsection Number	Sub-subsection Number
<input type="checkbox"/>	Section VIII. Northern Lacustrine-Influenced Upper Michigan and Wisconsin	8		
<input type="checkbox"/>	Subsection VIII.1. Niagaran Escarpment and Lake Plain	8	1	
<input type="checkbox"/>	Sub-subsection VIII.1.1. St. Ignace	8	1	8.1.1.
<input type="checkbox"/>	Sub-subsection VIII.1.2. Rudyard	8	1	8.1.2.
<input type="checkbox"/>	Sub-subsection VIII.1.3. Escanaba/Door Peninsula	8	1	8.1.3.
<input type="checkbox"/>	Subsection VIII.2. Luce	8	2	
<input type="checkbox"/>	Sub-subsection VIII.2.1. Seney Sand Lake Plain	8	2	8.2.1.
<input type="checkbox"/>	Sub-subsection VIII.2.2. Grand Marais Sandy End Moraine and Outwash	8	2	8.2.2.
<input type="checkbox"/>	Subsection VIII.3. Dickinson	8	3	
<input type="checkbox"/>	Sub-subsection VIII.3.1. Northern lake Michigan (Hermanville) Till Plain	8	3	8.3.1.
<input type="checkbox"/>	Sub-subsection VIII.3.2. Gwinn	8	3	8.3.2.
<input type="checkbox"/>	Sub-subsection VIII.3.3. Deerton	8	3	8.3.3.
<input type="checkbox"/>	Section IX. Northern Continental Michigan, Wisconsin, and Minnesota	9		
<input type="checkbox"/>	Subsection IX.1. Spread Eagle-Dunbar Barrens	9	1	
<input type="checkbox"/>	Subsection IX.2. Michigamme Highland	9	2	
<input type="checkbox"/>	Subsection IX.3. Upper Wisconsin/Michigan Moraines	9	3	
<input type="checkbox"/>	Sub-subsection IX.3.1. Brule and Paint Rivers	9	3	9.3.1.
<input type="checkbox"/>	Sub-subsection IX.3.2. Winegar Moraine	9	3	9.3.2.
<input type="checkbox"/>	Subsection IX.5. Lac Veaux Desert Outwash Plain	9	5	
<input type="checkbox"/>	Subsection IX.6. Bergland	9	6	
<input type="checkbox"/>	Sub-subsection IX.6.1. Gogebic-Penokee Iron Range	9	6	9.6.1.
<input type="checkbox"/>	Sub-subsection IX.6.2. Ewen	9	6	9.6.2.
<input type="checkbox"/>	Sub-subsection IX.6.3. Baraga	9	6	9.6.3.
<input type="checkbox"/>	Subsection IX.7. Keweenaw	9	7	
<input type="checkbox"/>	Sub-subsection IX.7.1. Gay	9	7	9.7.1.
<input type="checkbox"/>	Sub-subsection IX.7.2. Calumet	9	7	9.7.2.
<input type="checkbox"/>	Sub-subsection IX.7.3. Isle Royale	9	7	9.7.3.
<input type="checkbox"/>	Subsection IX.8. Lake Superior Lake Plain	9	8	
<input checked="" type="checkbox"/>	Section VII. Northern Lacustrine-Influenced Lower Michigan			
<input type="checkbox"/>	Subsection VII.1. Arenac	7	1	7.1
<input type="checkbox"/>	Sub-subsection VII.1.1. Standish	7	1	7.1.1
<input type="checkbox"/>	Sub-subsection VII.1.2. Wiggins Lake	7	1	7.1.2
<input type="checkbox"/>	Subsection VII.2. Highplains	7	2	7.2
<input type="checkbox"/>	Sub-subsection VII.2.1. Cadillac	7	2	7.2.1
<input checked="" type="checkbox"/>	Sub-subsection VII.2.2. Grayling Outwash Plain	7	2	7.2.2
<input type="checkbox"/>	Sub-subsection VII.2.3. Vanderbilt Moraines	7	2	7.2.3
<input type="checkbox"/>	Subsection VII.3. Newaygo Outwash Plain	7	3	7.3
<input type="checkbox"/>	Subsection VII.4. Manistee	7	4	7.4
<input type="checkbox"/>	Subsection VII.5. Leelanau and Grand Traverse Peninsula	7	5	7.5
<input type="checkbox"/>	Sub-subsection VII.5.1. Williamsburg	7	5	7.5.1
<input type="checkbox"/>	Sub-subsection VII.5.2. Traverse City	7	5	7.5.2
<input type="checkbox"/>	Subsection VII.6. Presque Isle	7	6	7.6
<input type="checkbox"/>	Sub-subsection VII.6.1. Onaway	7	6	7.6.1
<input type="checkbox"/>	Sub-subsection VII.6.2. Stutsmanville	7	6	7.6.2
<input type="checkbox"/>	Sub-subsection VII.6.3. Cheboygan	7	6	7.6.3
		7		

3. Ecological Systems

List name(s) of Ecosystems:

Dry Northern Forest - There are 14 documented occurrences of the dry northern forest community in Michigan dominated by red pine. Only six of those occurrences, constituting just over 600 acres, are high-quality representations of this type. This rare variation of this community constitutes less than 0.01% of the present vegetation of Michigan. (Cohen, 2002)

Ecological processes – some examples are connectivity, hydrology, fire, wind events, flooding, pest and disease cycles;

Describe: Frequent, low-intensity ground fires historically maintained red pine systems. The natural disturbance regime in dry northern forests is also influenced by wind, insect epidemics and periodic freezes.

Underlying environmental features - soils, geology, topography, headwaters;

Describe: pitted outwash landform, xeric sandy soils, flat terrain

Environmental gradients - elevation, precipitation, temperature;

Describe: flat to gently sloping terrain

Species and/or community structure – using during migration, during different life stages, or gradual species turnover across environmental gradients.

Describe: old growth red pine (150-200 yrs), some scattered old growth white pine, may be used occasionally as habitat by Kirtland's Warbler during migration.

Nested large and small natural communities linked by functional or restorable ecosystems:

ERA is bordered on two sides by lowland conifers and lowland hardwoods. Mature upland oak is to the east and a portion to the north was clear-cut and planted for Kirtland's warbler habitat about 10 years ago.

Nested communities nearby

Describe: ERA is bordered on two sides by lowland conifers and lowland hardwoods. Mature upland oak is to the east and a portion to the north was clear-cut and planted for Kirtland's warbler habitat about 10 years ago.

Large Block Size

General Shape and Acres: ERA is 14 acres in size and ovoid in shape, running SW to NE. ERA is small and fragmented by Dyer Truck Trail that bisects this ERA.

4. Species Assemblages – List types of species assemblage targets.

Major groupings of species - share common natural processes or have similar conservation requirements (e.g., freshwater mussels, forest-interior birds, essential pollinators).

Globally significant species aggregations (e.g. migratory shorebird aggregation).

ERA is known to have been used by Kirtland Warbler during their springtime migratory period, though it is adjacent to managed Kirtland Warbler areas.

5. Species - List types of species by common and scientific name.:

Focal species - keystone, wide-ranging (regional), providing linkages between ecosystems, and umbrella species.

Globally imperiled or state endangered or threatened native species - Ranked G1, G2, G3 by NatureServe, and S1, S2 by MNFI, state and/or federally listed or proposed for listing as Threatened or Endangered (MI and U.S.), and on the IUCN Red List (International).

Kirtland's Warbler, Listed as Endangered at Federal and State levels nearby in jack pine managed specifically for Kirtland's Warbler.

Species of Special Concern - Due to vulnerability, declining trends, disjunct distributions, or endemic status; Ranked S3 by MNFI

Other species of greatest conservation need - Identified as part of Michigan's Wildlife Action Plan due to declining populations or other characteristics that may make them vulnerable.

B: KNOWN SOCIAL/ECONOMIC VALUES

- Archaeological
- Historical: Example of old growth red pine
- Recreational:
 - Camping No camping occurs here - prohibited by Director's Order.
 - Canoeing/Kayaking
 - Fishing
 - Hiking/Backpacking:
 - Hunting
 - Photography
 - Scenic
 - Water (lake, river, stream)
 - Wildlife Viewing
 - Cross Country Skiing
 - Other
- Restorative/Spiritual
- Traditional Use/Gathering

C: EXISTING INFRASTRUCTURE/FACILITIES:

- American Disability Accessibility (ADA) Considerations
- Boat Launch(es)
- Bridge(s):
- Campground(s):
- Interpretive Displays: One sign "Dyer Red Pine"
- Marked boundaries
- Parking lot(s):
- Posted use rules
- Scenic Overviews
- Toilet(s)
- Trails/Boardwalks
- Other: ERA bisected by dirt road, known as Dyer Road Truck Trail

SECTION 3: CURRENT CONDITIONS

D. CURRENT STATUS/VIABILITY OF CONSERVATION VALUE/TARGET (FROM TNC CAP TOOL KIT)

STATUS DEFINITIONS – POOR - IMMINENT LOSS, FAIR – VULNERABLE, GOOD – MINIMUM INTEGRITY, VERY GOOD - OPTIMAL INTEGRITY

LIST CONSERVATION VALUE/TARGET FROM SECTION 2 – A, B OR C	LIST CATEGORY OF SIZE, CONDITION, OR LANDSCAPE CONTEXT	LIST KEY ATTRIBUTE	LIST INDICATOR	LIST CURRENT STATUS POOR, FAIR, GOOD, OR VERY GOOD
DRY NORTHERN FOREST	RANK G3/S3	NUMBER OF OCCURENCES IN STATE		
OLD GROWTH RED PINE COMMUNITY 150-200 YEARS OLD	CONDITION	REGENERATION OF RED PINE	INCREASING NUMBER OF RED PINE SEEDLINGS/M ²	POOR
			DECREASING NUMBER OF RED MAPLE SEEDLINGS	
OLD GROWTH RED PINE	AVERAGE SIZE OF TREES	DIAMETER AT BREAST HEIGHT AND HOW TALL THESE TREES ARE	MEASURE DBH IN CM OR INCHES, HEIGHT IN METERS OR FEET	GOOD

E. : INITIAL PRIMARY THREATS ASSESSMENT TO ESTABLISH BASELINE CONDITION

CHECK ALL THAT THERE IS ACTUAL EVIDENCE FOR AND DESCRIBE THE EVIDENCE BRIEFLY AND/OR ATTACH PHOTOS DO THIS INITIALLY FROM AERIAL PHOTOS, LOCAL KNOWLEDGE, AND EXISTING DATA FOLLOWED BY A SITE VISIT.

- A. Habitat Conversion & Degradation – Complete or substantial loss of or damage to natural habitats.**
- Altered Fire Regime Suppression or increase in fire frequency and/or intensity outside of its natural range of variation
Fire suppression is allowing Red Maple to dominate the understory and crowd out RP regeneration; Site will convert to Red Maple unless fire is reintroduced for ecosystem restoration.
 - Altered Hydrologic Regime Changing water flow patterns outside their natural range of variation (*surface water diversion, groundwater pumping, dam operations*)
 - Commercial & Industrial Development: *factories, stand-alone shopping centers, office parks, train yards, docks, ship yards, airports, landfills*)
 - Farms & Plantations Agricultural operations (*commercial farms, industrial plantations, feed lots, aquaculture*)
 - Housing & Urban Development Expansion of cities, towns, settlements, non-housing development (*urban areas, suburbs, villages, homes, shopping areas, offices, schools, hospitals*)
 - Military Activities Actions by formal or paramilitary forces (*military bases, defoliation, munitions testing* :
Camp Grayling Military Reservation; ERA was historically used as a parking lot for military vehicles and Dyer Road used frequently as part of transportation system for military vehicles.
 - Natural System Modifications Actions that convert or degrade habitat to "managing" natural systems for human welfare - *dam construction, land reclamation, wetland filling, rip-rap along shoreline, levees and dikes*)
 - Recreation Areas Recreation sites with a substantial footprint (*ski areas, golf courses, resorts, county parks*)
 - Other:

B. Transportation Infrastructure – Long narrow corridors **altering, fragmenting, and disturbing** natural habitat and species, including soil erosion/sedimentation, and providing routes for invasive or problematic species.

- Flight Paths :
- Railroads :
- Roads and Trails : ERA is split by Dyer Truck Trail dirt road which can be a vector for introducing invasive species that are currently in the surrounding landscape.
- Shipping Lanes :
- Trails: Illegal ORV use may occur in the ERA, potentially damaging red and white pine regeneration.
- Utility Lines .
- Stream Crossings - *culverts, bridges* :
- Other:

C. Energy & Mining – Production of non-biological resources **having negative impacts** to conservation values .

- Mining – *Exploring, developing, and producing.*
- Oil & Gas Drilling
- Renewable Energy – *Exploring, developing, and producing.*

D. Biological Resource Harvesting –Over or under consumption of “wild” resources **resulting in loss** of conservation values.

- Gathering – *Harvesting plants, fungi, and other non-timber/non-animal products for commercial, recreation, or subsistence purposes.*
- Grazing
- Hunting, Trapping & Fishing
- Timber Harvesting:
Recent Commercial Timber Sale Harvests of Jack Pine to the north of ERA, possibly increase possibility of windthrow damage; Also, scattered stumps of harvesting in the past. Dead oak was salvaged south of the road several years ago .

E. Recreation & Research – Non-consumptive uses of biological resources **resulting in damage** to natural resources .

- Human-Powered Recreation – *mountain bikes, hikers, backpackers, cross-country skiers, rock climbers, canoeists, kayakers, hang-gliders, birdwatchers, photographers*
- Motor-Powered Recreation - *Traveling outside of established transport corridors: off-road vehicles, motorcycles, motorboats, jet-skis, snowmobiles, ultra-light planes.*
May be some illegal ORV USE in ERA.
- Scientific Research – *Ecosystem manipulations*

F. Pollution – Introduction of exotic and/or excess materials from point and non-point sources with **evidence of resource damage**.

Key question is how do we measure damage for each of the criteria or do we rely on expert opinion from outside agencies?

- Chemicals & Toxins
- Greenhouse Gasses –*CO₂, methane*
- Light Pollution
- Noise Pollution
- Nutrient Loads
- Radioactive Materials
- Salt/Brine
- Solid Waste – *garbage, litter*
- Thermal Pollution
- Waste & Residual Materials – *dredge spoil, water treatment residuals, slash, mine tailings, excess sediment loads.*

G. Invasive & Other Problematic Species & Genes – Aquatic or terrestrial non-native and native species or genetic materials that have or are predicted to have harmful effects on biodiversity following their introduction, spread and/or increase in abundance.

List species, extent of infestation and fill out Forest Health Form .

- Introduced Genetic Material
- Invasive Species :
At this point in time, MNFI 2006 site surveyor stated that invasive plants not a problem, though should be monitored Given the site is surrounded and infiltrated by roads and trails introduction of certain invasive plants is a distinct possibility. Leafy spurge and spotted knapweed are known to exist in the surrounding landscape. Per the surveyor's notes, Canada bluegrass (*Poa compressa*) and Common St. Johnswort (*Hypericum perforatum*) like occur along the surrounding roads and skid trails..
- Problematic Native Species: conversion of site to red maple.
- Hybrid Species

H. Climate Change – Evidence of impacts from long-term changes linked to global warming and other climate issues.

- Climate Variability – Intensification and/or alteration of normal weather patterns - *droughts, high wind or rain event.*
- Habitat Shifting & Alteration

I. Other

SECTION 4: RECOMMENDED MANAGEMENT GOALS AND ACTIVITIES

LIST GOAL(S), FOR EACH VALUE, RELATED THREAT ABATEMENT, MAINTENANCE OR ENHANCEMENT NEED IDENTIFIED IN SECTIONS 2 AND 3

CHECK ALL GOAL CATEGORIES THAT APPLY

- NATURAL COMMUNITY MAINTENANCE OR ENHANCEMENT GOALS**
- ECOLOGICAL SYSTEMS MAINTENANCE OR ENHANCEMENT GOALS**
- SPECIES MAINTENANCE OR ENHANCEMENT GOALS**
- SPECIES RESTORATION GOALS**
- SOCIAL ECONOMIC GOALS**
- INFRASTRUCTURE/FACILITIES GOALS**
- ADMINISTRATIVE GOALS– PROTECTION STATUS; CAPACITY BUILDING; FUNDING, VOLUNTEERS**

GOAL # AND DESCRIPTION FROM SECTIONS 2 AND 3

Goal 1: Maintain and enhance this Red Pine dominated ecosystem; establish conditions favorable for likelihood of developing a red pine based understory to replace the old growth

Task 1: To achieve goal #1, the first task is to develop a restoration plan involving prescribe burning and/or mechanical treatments schedules.

Task 2 If the prescribed burn plan option is not able to be implemented, then serious consideration should be given to applying an herbicide such as Triclopyr (Garlon). For example, Triclopyr is a selective herbicide for broadleaf species only and can be applied on the lower 12 inches of hardwood sapling (basal spraying). This insures that the coniferous components of the understory remain unharmed. Instead of spraying, could also girdle trees.

Goal 2: Prevent introduction of invasive plants

Task 1: Initiate monitoring for invasive species along boundaries and trails.

Task 2: Continue posting the current director's order prohibiting camping and motor vehicle use.

Task 3 : Investigate possibilities for rerouting Dyer Truck Trail Road around this ERA and block the road where it enters the general range of the ERA.

Task 4: Monitor the ERA for illegal ORV use and issue tickets when this occurs.

Goal 3: Increase public knowledge and awareness of this ERA. Old growth red pine dominated stands are very rare in Michigan. This ERA and Roscommon Red Pines NA are generally considered the only two old growth red pine systems located in Michigan.

Goal 4: Enact protections and management to protect this ERA from windthrow.

Task 1: Be sure any treatments adjacent to the ERA do not increase the threat of windthrow damage to the ERA.

Goal 5: Examine if this area can be buffered or increase the size of this ERA to increase its Element Occurrence ranking from B/C to at least a solid "B", possibly to an "A:" over several decades.

Tasks 1: Work with Wildlife Division to examine surrounding areas for buffering or expansion of the ERA..

Goal 6: Determine adequacy of current protection level

Task 1: Work with State Natural Areas Program to determine potential for legal dedication as a state natural area.

Task 2: Work with Conservation Partners to develop State Natural Areas Program nomination based on review in Task 1.

Goal 7:

Goal 8:

Goal 9:

Goal 10