

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.

Identified HCVA's and ERAs will be managed to conserve, protect, maintain, and/or enhance their defined conservation objectives or values. The management methods used will vary depending on the objective and type of designation. On DNR-managed lands, Ecological Reference Areas may be protected through a variety of mechanisms (refer to Conservation Area Management Guidance). Management activities or prescriptions in Ecological Reference Areas are highly restricted to those that maintain or enhance the defined attributes and values and protect the immediate natural resource values or human health and safety.

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 its 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.

SUMMARY: LOCATION MAP, MANAGEMENT RECOMMENDATIONS

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 2007 overview at <http://sites-conserveonline.org/dcs/projects/art10152.html> and the workbook at http://www.conserveonline.org/2003/07/s/ConPriMgmt_v4

SUMMARY

**Muskegon River/Green Creek North Floodplain Forest
Ecological Reference Area - 55 Acres
Gladwin Forest Management Unit
Clare County, Michigan, T19N, R06W, Sections 3, 4, 9, 10,**

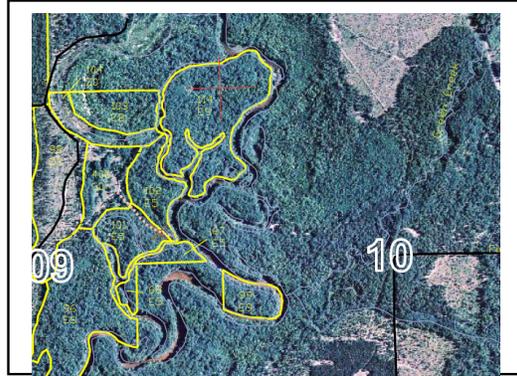
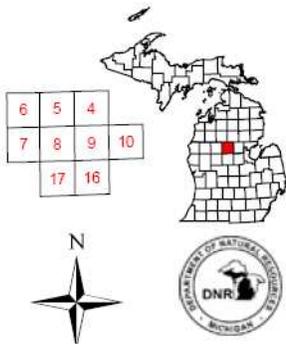
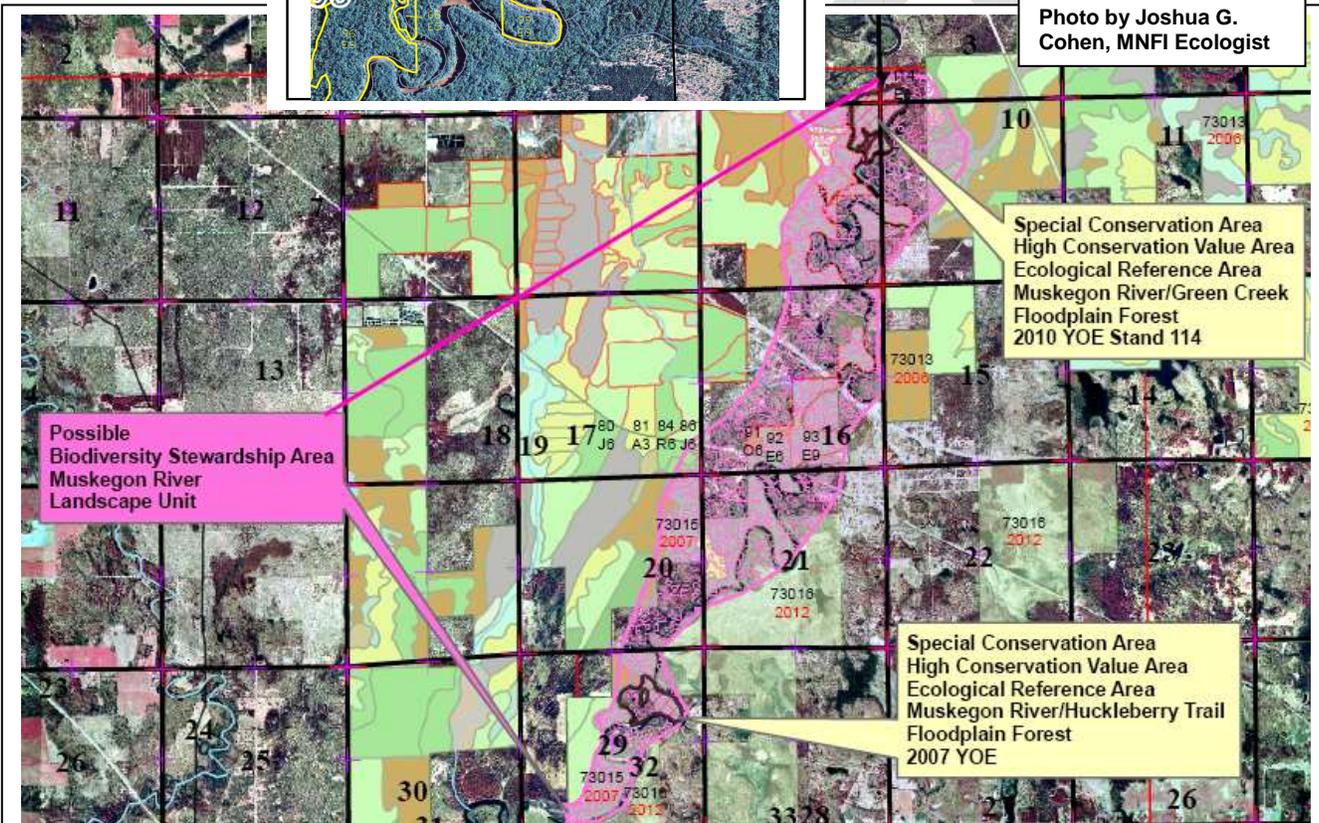


Photo by Joshua G. Cohen, MNFI Ecologist



RECOMMENDED MANAGEMENT GOALS AND ACTIVITIES (REPEATED FROM SECTION 4 AT END OF DOCUMENT)

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 1: Enhance and maintain Muskegon River Green Creek Flood Plain Forest and warm water attributes of the Muskegon River.

Objective 1: On state-land manage floodplain forest as old growth, letting natural processes take their course. There is currently 55% basal area of red maple with some silver maple, 33% basal area of green ash, @ 12% basal area of mixed hardwood beech, maple and super canopy white pine per 2010 FMFM Operation Inventory Data.

Task 1: If emerald ash borer is identified it is the professional opinion of staff that more damage would be incurred by any type of remedial treatment. Note a high percentage of the ash trees are hollow from the stump up to 40 feet high.

Objective 2: Control invasive plant species.

Task 1: Identify and work with a conservation group to develop and implement a control plan for invasive species.

Goal 2: Protect and riparian vegetation corridor from resource damage per the Muskegon River Watershed Assessment (O'Neal 1997)

Objective 1: Protect and preserve adequate river corridor forest, especially sensitive plant and animal communities. River corridor management includes maintenance of old growth forest corridors, prevention of wetland loss, protection of sensitive habitats and protection from over-development and intensive recreational use (O'Neal 1997).

Task 1: Request additional MNFI surveys for high quality floodplain forest up and downstream of the ERA.

Task 2: Based on the results of MNFI survey, work with conservation groups and DNR to acquire property or conservation easements up and down stream as the opportunity arises.

Task 3: Review for inclusion in the Muskegon Floodplain Landscape Unit possible Biodiversity Stewardship Area.

DRAFT

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"/> Legally Dedicated State Natural Area
<input checked="" type="checkbox"/> Ecological Reference Area:
Muskegon River Green Creek Floodplain Forest
<input type="checkbox"/> Endangered Species Management Area
<input type="checkbox"/> Kirtland Warbler
<input type="checkbox"/> Piping Plover
<input type="checkbox"/> Other: | <input type="checkbox"/> Environmental Area as defined by DEQ
<input type="checkbox"/> State Natural or Scenic River
<input type="checkbox"/> Quiet Area:
<input type="checkbox"/> Other: |
|---|--|

SPECIAL CONSERVATION AREA - LIST OTHER CATEGORIES BELOW

Special Conservation Area (SCA) designated for the Muskegon River Floodplain in Stand 96 and potentially for other floodplain stands via the 2010 Compartment Review Process

Possible Biodiversity Stewardship Area - Muskegon Floodplain Landscape Unit from Refined LU Analysis 2008
 @ 1,528 acres (See Summary Map)

B: SITE, CONTACT AND ADMINISTRATIVE INFORMATION

Site Name: Muskegon River Green Creek North Floodplain Forest		Other Names:	
Report Date Draft October 6, 2008	Forest Mgt Unit Gladwin Forest Management Unit	Compartment Number(s) 14 Stand Number(s) 114 2010 YOE	<input checked="" type="checkbox"/> Map Attached <input type="checkbox"/> Shape File in OI/IFMAP GDSE File Location/Name
County(ies): Clare		Township(s) Range(s) Section(s) ¼ Sec. Optional if mapped T19N, R06W, Sections 3, 4, 9, 10	
Name of individual completing this form (first and last) <input checked="" type="checkbox"/> Check if DNR Employee Kim Herman, Monitoring Specialist, Forest, Mineral, Fire Management Division (FMFMD), Escanaba Steve Nyhoff, Forester, FMFMD, Gladwin Tim Gallagher, Technician, FMFMD, Gladwin Richard Shellenbarger, Wildlife Biologist, Wildlife Division, Gladwin Richard ONeal, Fisheries Biologist, Fisheries Division, Cadillac		Telephone (906) 786-2351 ext 132 (989) 426-9205 ext 7642 (989) 426-9205 ext 7644 (989) 426-9205 ext 7630 (231) 788-6798	Email Address hermank@michigan.gov nyhoffs@michigan.gov gallaght@michigan.gov shellenr@michigan.gov onealr@michigan.gov
Additional contact information Name of individual providing information (first and last), if applicable Courtney Borgondy, FMU Manager, FMFM, Gladwin Tom Haxby, Inventory and Planning Specialist, Cadillac		Telephone (989) 426-9205 (231) 775-9727	Email Address borgondc@michigan.gov haxbyt@michigan.gov
Name of DNR/DEQ Program Contact if Applicable Theresa. Custodio, Bay City, Saginaw Bay District		Telephone (989) 686-8025	Email Address custodiot@michigan.gov
<input type="checkbox"/> Volunteer (s) Number of Volunteers: Name of Group: Contact Name:		Telephone ()	Email Address

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

- | | |
|--|---|
| <input checked="" type="checkbox"/> State Forest Land: Gladwin Forest Management Unit
<input type="checkbox"/> State Park/Recreation Area: | <input type="checkbox"/> State Game Area:
<input checked="" type="checkbox"/> Other or Private Land (describe): Multiple small ownerships |
|--|---|

D: CONSERVATION PARTNERS – FILL IN ALL KNOWN PARTNERS

Name of Organization: The Nature Conservancy Contact Name: Christine (Tina) Hall, Conservation Director Email Address: chall@tnc.org Telephone (906)225-0399 ext 12	Name of Organization Michigan Natural Areas Council Contact Name: Phyllis Higman Email Address: mnac@cyberspace.org Telephone (517) 373-6983
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Name of Organization: Michigan Gas Storage Co, Division of Consumer's Energy Contact Name: Kevin Andrews, Marion, MI Email Address: Telephone (231) 743-2342	Name of Organization: Contact Name: Email Address Telephone ()
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E: OTHER DOCUMENTS RELATED TO THIS HCVA – CITATION AND LOCATION WHERE STORED

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

Cohen, J.G., B.S. Slaughter, and M.A. Kost. 2008. Natural Community Surveys of Potential Ecological Reference Areas on State Forest Lands. Michigan Natural Features Inventory, Report Number 2008-04, Lansing, MI. 272 pp.

Kost, M.A., D.A. Albert, J.G. Cohen, B.S. Slaughter, R.K. Schillo, C.R. Weber, and K.A. Chapman. 2007. Natural Communities of Michigan: Classification and Description. Michigan Natural Features Inventory, Report No. 2007-21, Lansing, MI. [Floodplain Forest](#)

O'Neal, R. P. 1997 Fisheries Special Report 19. Muskegon River Watershed Assessment. Michigan Department of Natural Resources, Fisheries Division, Lansing, MI. 187 pp and Appendices

Tepley, A.J., J.G. Cohen, and L. Huberty. 2004. Natural community abstract for floodplain forest. Michigan Natural Features Inventory, Lansing, MI. 14 pp
http://web4.msue.msu.edu/mnfi/abstracts/ecology/floodplain_forest.pdf

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

A: BIODIVERSITY VALUES

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

1. **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
<input checked="" type="checkbox"/>	Floodplain Forest	S3	G3?	B

2. **Other information if known.**

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 checked="" type="checkbox"/>	Section VII. Northern Lacustrine Influenced Lower Michigan	7		
<input checked="" type="checkbox"/>	Subsection VII.2. Highplains	7	2	
<input checked="" type="checkbox"/>	Sub-subsection VII.2.2. Grayling Outwash Plain	7	2	2.2

3. **Ecological Systems**

List name(s) of Ecosystems/Natural Communities (based on MNFI Community Classification):

Overview from Kost et al 2007. Floodplain forest is a bottomland, deciduous or deciduous-conifer forest community occupying low lying areas adjacent to streams and rivers of third order or greater, and subject to periodic over-the-bank flooding and cycles of erosion and deposition. Species composition and community structure vary regionally and are influenced by flooding frequency and duration. Silver maple (*Acer saccharinum*) and green ash (*Fraxinus pennsylvanica*) are typically major overstory dominants. Floodplain forests occur along major rivers throughout the state, but are most extensive in the Lower Peninsula. Species richness is greatest in the southern Lower Peninsula, where many floodplain species reach the northern extent of their range.



Summary Site Description from Cohen et al 2008. Photos by Joshua G. Cohen, MNFI Ecologist

Muskegon River/Green Creek North

Natural Community Type: Floodplain Forest

Rank: G3? S3, vulnerable throughout range

Element Occurrence Rank: B

Location: Gladwin Forest Management Unit, Compartment 14

Element Occurrence Identification Number: 10646

Site Description: This floodplain forest occurs in a sandy outwash channel on an island in the Muskegon River. The soils are heterogeneous with sand and sandy loam occurring on the levees and second bottom and sandy clay loam and sandy loam occurring in the first bottom. Soils throughout the site occur over sands. Many shallow pools occur in the first bottom with water depth typically between 70 to 100 cm. Standing water is also prevalent in the meander scars and oxbows. This floodplain forest is characterized by dynamic erosional and depositional fluvial processes that generate diverse ecological zonation, including a levee, a first bottom, a second bottom, meander scars, an oxbow, and point bars. The site is characterized by high floristic diversity resulting from the complex ecological zonation and fine- and large-scale gradients in soil moisture and topography.

The first bottom is dominated by silver maple (*Acer saccharinum*) with green ash (*Fraxinus pennsylvanica*) and bur oak (*Quercus macrocarpa*). The levee and the second bottom are dominated by basswood (*Tilia americana*), American beech (*Fagus grandifolia*), sugar maple (*Acer saccharum*), and bitternut hickory (*Carya cordiformis*). The overall site is characterized by a tall, closed canopy with a sparse understory and a patchy, dense ground cover. Prevalent shrubs include buttonbush (*Cephalanthus occidentalis*) and tag alder (*Alnus rugosa*) with musclewood (*Carpinus caroliniana*), winterberry (*Ilex verticillata*), and nannyberry (*Viburnum lentago*). Characteristic ground cover species include sensitive fern (*Onoclea sensibilis*), fowl manna grass (*Glyceria striata*), side-flowering aster (*Aster lateriflorus*), false nettle (*Boehmeria cylindrica*), ostrich fern (*Matteuccia struthiopteris*), lake sedge (*Carex lacustris*), Gray's sedge (*C. grayi*), and wood nettle (*Laportea canadensis*).

Ecological processes – such as connectivity, hydrology, fire, wind events, flooding, pest and disease cycles;
Describe: This floodplain forest is characterized by dynamic erosional and depositional fluvial processes that generate diverse ecological zonation, including a levee, a first bottom, a second bottom, meander scars, an oxbow, and point bars. The site is characterized by high floristic diversity resulting from the complex ecological zonation and fine- and large-scale gradients in soil moisture and topography. (Cohen et al 2008).

Excerpted from Kost et al 2007 for all floodplain forest in Michigan: Direct interaction between terrestrial and aquatic ecosystems occurs in floodplain forests through the processes of over-the-bank flooding, bank cutting, and sedimentation. Over-the-bank flooding can directly cause tree-fall or indirectly lead to windthrow through increased soil saturation. Spring floodwaters often carry ice floes and debris that can scour trees, leading to the development of multiple-stemmed canopy trees. The input of organic matter from the floodplain forest provides sources of energy for aquatic organisms. Shade from streamside vegetation moderates temperature regimes in aquatic systems, preventing excessive warming of the river during summer months. Woody debris from floodplain vegetation influences the development of channel morphology and provides necessary habitat for many aquatic organisms. Riparian vegetation reduces overland water flow and sediment transport. Nutrient uptake by floodplain vegetation and denitrification by soil bacteria decrease terrestrial inputs of nutrients into aquatic systems. Such processes are especially important in landscapes dominated by agricultural or urban land cover, where nutrient input from upland ecosystems is typically high.

The dynamic process of channel migration creates a diversity of landscape features in floodplains. Hydrogeomorphic processes such as over-the-bank flooding, transport and deposition of sediment, and erosive and abrasive water movement cause the floodplains of large rivers to exhibit a variety of fluvial landforms, each of which is associated with a particular kind of vegetation. Such fluvial landforms are distinguished by their size, shape, elevation, soil characteristics, and location in relation to the stream channel. Several of the most characteristic fluvial landforms are natural levee, first bottom, backswamp, oxbow, and terrace. A key series of relationships link the physiography of the river valley with that of the upland landscape. Basin size, topographic relief, and geologic parent material of the upland landscape determine river discharge, river grade, sediment load, and sediment type. These factors strongly influence the formation of fluvial landforms through the hydrogeomorphic processes of erosion, deposition, and channel migration. The size, shape, and diversity of fluvial landforms in a river floodplain and their spatial pattern are the result of the interaction between a river and the local landscape.

Because physiographic systems are characterized by their topographic form and parent material, floodplains within different physiographic systems are characterized by differences in stream gradient, channel pattern, local hydrology, and fluvial landforms. When a river flows through a flat region, such as a broad outwash plain or a lakeplain, a wide, continuous floodplain develops. Within these wide floodplains, extensive lateral channel migration and the deposition of progressively finer-textured sediment with increasing distance from the river lead to the formation of a variety of fluvial landforms. With uniformly low topography and a relatively high water table, the broad first bottom of rivers within outwash plains and lakeplains is periodically inundated during the growing season. In contrast, both the higher topographic relief and finer-textured parent material of moraines encourage the development of narrow river valleys with more restricted floodplains and a reduced duration of flooding. The development of narrow valleys also occurs where rivers occupy narrow outwash channels situated between end moraines. The high topographic relief, relatively steep slope gradients, and fine-textured soil of morainal landscapes restrict lateral channel migration, resulting in narrow, sinuous floodplains that are frequently dissected by a series of higher terraces. The frequency of over-the-bank flooding in morainal landscapes is generally less than that in outwash plains and lakeplains. Instead, groundwater plays a stronger role, and constant soil saturation due to groundwater seepage often results in localized accumulations of organic soil.

- Underlying environmental features** – *such as soils, geology, topography, headwaters;*
Describe: This floodplain forest occurs in a sandy outwash channel on an island in the Muskegon River. The soils are heterogeneous with sand and sandy loam occurring on the levees and second bottom and sandy clay loam and sandy loam occurring in the first bottom. Soils throughout the site occur over sands. Many shallow pools occur in the first bottom with water depth typically between 70 to 100 cm. Standing water is also prevalent in the meander scars and oxbows..

- Environmental gradients** – *such as elevation, precipitation, temperature;*
Describe:

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

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

High quality or restorable floodplain forest has been identified within the Muskegon River Corridor to the southwest for approximately 4 linear miles. It is a possible Biological Stewardship Area - Muskegon River Floodplain Landscape Unit about 1,528 acres and includes the Muskegon River Huckleberry Trail Floodplain Forest Ecological Reference Area.

Green Creek is south of the Muskegon River Green Creek Floodplain Forest ERA in a defined narrow corridor. Green Creek is perennial stream with a lot of beaver activity.

- High quality natural communities nearby:**
Describe: The Muskegon River Huckleberry Trail Floodplain Forest Ecological Reference Area is approximately 3.5 miles southwest of the Muskegon River Green Creek Floodplain Forest ERA,

Large Block Size:

General Shape and Acres:

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).

Excerpted from Kost et al 2007. Large contiguous tracts of old-growth and mature floodplain forest provide important habitat for cavity nesters, species of detritus-based food webs, canopy-dwelling species, and interior forest obligates, including numerous neotropical migrants such as black-throated green warbler (*Dendroica virens*), scarlet tanager (*Piranga olivacea*), and ovenbird (*Seiurus aurocapillus*). Floodplain forests in Michigan support disproportionately large numbers of breeding bird species compared to upland landscapes and provide critical habitat for species closely associated with wetlands, including several rare species such as yellow-throated warbler (*Dendroica dominica*, state threatened), prothonotary warbler (*Protonotaria citrea*, state special concern), and Louisiana waterthrush (*Seiurus motacilla*, state special concern). Indiana bat (*Myotis sodalis*, federal/state endangered) establishes roosts and nurseries in standing snags within floodplain forests. Great blue heron (*Ardea herodias*) often construct rookeries within floodplain forests. Seasonally inundated portions of floodplains provide crucial habitat for reptiles and amphibians.

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

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

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

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

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.

Species:B: KNOWN SOCIAL/ECONOMIC VALUES

- Archaeological
- Historical: **Nearby**
- Recreational:
 - Camping :
 - Canoeing/Kayaking: **Moderate to heavy**
 - Fishing: Moderate fishing – **walleye, pike & bass**
 - Hiking/Backpacking:
 - Hunting/Trapping: **Deer and waterfowl, also beaver trapping along Green Creek.**
 - Photography
 - Scenic: **From the water**
 - Water (lake, river, stream): **Muskegon River**
 - 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:
- Marked boundaries
- Parking lot(s):
- Posted use rules
- Scenic Overviews
- Toilet(s)
- Trails/Boardwalks:
- Other:

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

<i>LIST CONSERVATION VALUE/TARGET FROM SECTION 2 – A, B OR C</i>	<i>LIST CATEGORY OF SIZE, CONDITION, OR LANDSCAPE CONTEXT</i>	<i>LIST KEY ATTRIBUTE</i>	<i>LIST INDICATOR</i>	<i>LIST CURRENT STATUS POOR, FAIR, GOOD, OR VERY GOOD</i>
FLOODPLAIN FOREST	CONDITION LANDSCAPE CONTEXT	HEALTHY WATERSHED FUNCTIONAL FLOODPLAIN NATURAL FLOOD EVENTS	UNIMPEDED MEANDERS NO HUMAN CAUSED BANK EROSION STRUCTURAL DIVERSITY HIGH FLORISTIC QUALITY	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:*
 - 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 :*
 - 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:
 - Shipping Lanes:
 - Trails:
 - 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: **Cranberry Gas Storage Field, Consumers Energy – Methane/Natural Gas Marion (Gas) Processing Plant 9 miles upstream – called locally “The Gas Plant”**
 - 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:
-
- 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.*
 - Scientific Research – *Ecosystem manipulations*

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.**

- F. Pollution** – Introduction of exotic and/or excess materials from point and non-point sources with **evidence of resource damage.**
- 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:
 - **Reed canary grass (*Phalaris arundinacea*) is a local dominant, especially in areas of open to partial canopy adjacent to the river. (Cohen et al. 2008)**
 - **Non-native earthworms, found during the MNFI survey, could alter the soil and nutrient regimes. (Cohen, et al. 2008)**
 - **Potential for Emerald Ash Borer**
 - Problematic Native Species: **Deer herbivory is impacting species composition and structure per MNFI (Cohen et al. 2008). The perceived impacts are partly influenced in scope by dense overstory per forestry staff.**
 - 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: Enhance and maintain Muskegon River Green Creek Flood Plain Forest and warm water attributes of the Muskegon River.

Objective 1: On state-land manage floodplain forest as old growth, letting natural processes take their course. There is currently 55% basal area of red maple with some silver maple, 33% basal area of green ash, @ 12% basal area of mixed hardwood beech, maple and super canopy white pine per 2010 FMFM Operation Inventory Data.

Task 1: If emerald ash borer is identified it's the professional opinion of staff that more damage would be incurred by any type of remedial treatment. Note a high percentage of the ash trees are hollow from the stump up to 40 feet high.

Objective 2: Control invasive plant species.

Task 1: Identify and work with a conservation group to develop and implement a control plan for invasive species.

Goal 2: Protect and riparian vegetation corridor from resource damage per the Muskegon River Watershed Assessment (O'Neal 1997)

Objective 1: Protect and preserve adequate river corridor forest, especially sensitive plant and animal communities. River corridor management includes maintenance of old growth forest corridors, prevention of wetland loss, protection of sensitive habitats and protection from over-development and intensive recreational use (O'Neal 1997).

Task 1: Request additional MNFI surveys for high quality floodplain forest up and downstream of the ERA.

Task 2: Based on the results of MNFI survey, work with conservation groups and DNR to acquire property or conservation easements up and down stream as the opportunity arises.

Task 3: Review for inclusion in the Muskegon Floodplain Landscape Unit possible Biodiversity Stewardship Area.