



Huron
River
Watershed
Council

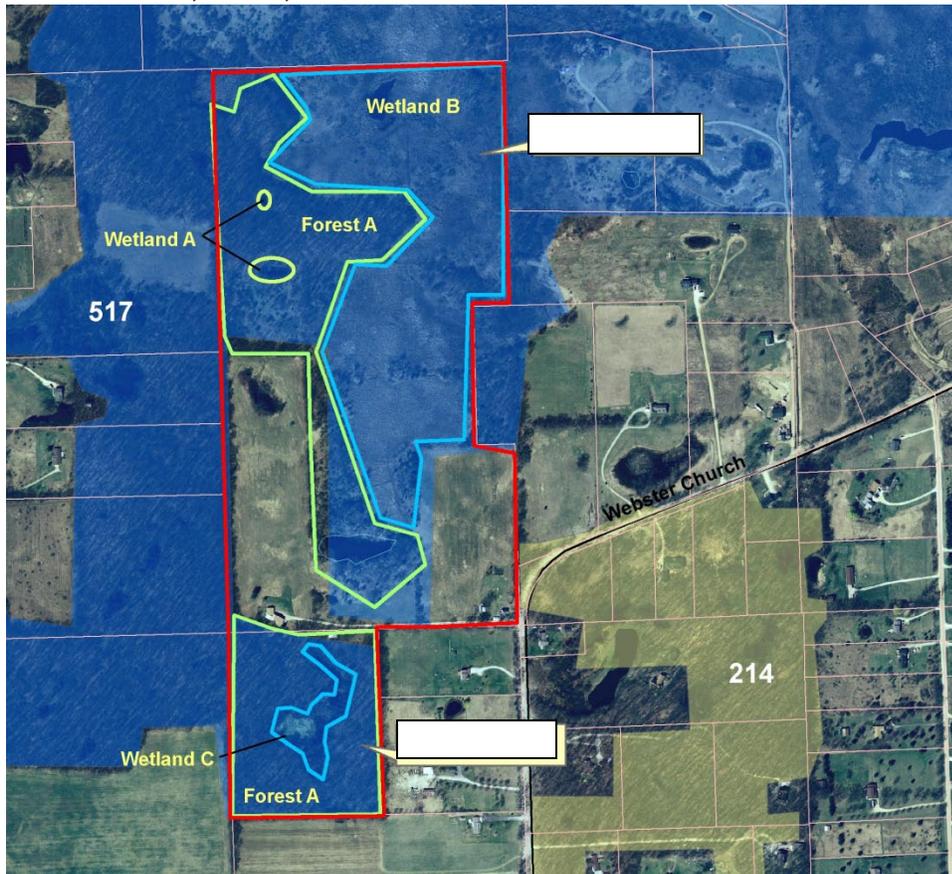
Protecting the river since 1965

HRWC Bioreserve Site Assessment

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Site: Parcels xx-xxx-xxx-xxx, about 95 acres of the 331-acre Bioreserve Site #517:
[Webster517xxxxx].

I. Site Location, Route, and Natural Areas Assessed:



II. Bioreserve Map and Field Assessment Score:

The site receives scores based on the GIS model behind the Bioreserve Map and based on the field assessment.

The first column in the table on page 3 lists how the Bioreserve Map ranks the site for 15 ecological criteria. Rankings for each criteria range from 0 to 100.

The total score is **616**, which places it in the **highest-range** [lower range: 25-366; mid-range: 366-591; highest range: 591 – 1224] of all the Bioreserve Sites in the watershed ranging from 25 – 1244. See “Bioreserve Map Method” for more details on how the sites were scored on the Bioreserve Map.

The next two columns give scores for each type of natural area visited by the field assessment team. For each answer a team could enter on the worksheet, the site receives a certain number of points. For instance, for each plant a team checks off on the plant list, the site receives 5 points. If invasive species are listed as dominant, the site receives fewer points than if native species are checked as dominant. Each ecosystem within the natural area receives two scores, one for ecological integrity and one for level of disturbance.

Potential maximum points each type of natural area could receive:

Ecosystem Type	Ecological Integrity (higher score indicates higher quality site)	Level of Disturbance (higher score indicates higher level of disturbance on site)
Wetlands		
Bog or fen	255	100
Other wetlands	171	110
Forests	144	154
Grasslands	126	239
Waterways	51	n/a

III. Scores for the Natural Area:

SITE NO. 517			
	Entire site's GIS scores	This parcel's field scores	
Ranking Criteria	Site #517 Ranking	Ecological integrity	Level of disturbance
Rank for Size	25		
Rank for Core Size	25		
Rank for Water	100		
Rank for Wetlands	100		
Rank for Groundwater	0		
Rank for Remnant Ecosystems	25		
Rank for Glacial Diversity	33		
Rank for Topography	25		
Rank for Connectedness Count	33		
Rank for Connectedness%	50		
Rank for Potentially Unchanged %	50		
Rank for Potentially Unchanged Area	25		
Rank for Restorability	75		
Rank for MNFI Communities	0		
Rank for Biorarity	50		
Final Rank	616		
This parcel's natural area sites:			
	Forest A:	90.5	42
	Wetland A:	39.8	0
	Wetland B:	71	14
	Wetland C:	56	0

IV. Site Landscape Context:

Landscape of the 1800s: Nearly the entire site is located in a former Inland Wet Prairie community type with the exception of the southern portion containing Wetland C and the southern extent of the Forest. This southern portion was covered in a White Oak/Hickory hardwood forest. The Inland Wet Prairie ecosystem type has undergone drastic reductions as the area has been settled and is considered an endangered ecosystem.

Glacial geology: fine textured glacial till to the south, and outwash sand/gravel and postglacial alluvium to the north

V. Field Assessment:

The volunteer team visited the site on 8/3/2009 and spent about 3 hours assessing the site.

For the purposes of the assessment, the team delineated 4 different ecosystems on aerial photos of the site: 3 different wetlands (A, B, C); and 1 forest.

VI. Site Overview:

The glacial landscape in this area is flat and gently rolling with a mosaic of diverse community types. Overall, the team found very little disturbance of the site; only some fencing was noted. Invasive species were found in only isolated pockets of a single community, Forest A. The team reported many signs of wildlife, including carcasses, and deer and deer tracks, and droppings. Wildlife observed included Frogs and toads, ground-nesting birds, migratory waterfowl, raptors, small mammals, songbirds and salamanders.

A. Wetland A:

Ecological Integrity Score: 39.8 out of 171 possible

Disturbance Score: 0 out of 100 possible

Two small vernal ponds measuring less than ½ acre are located in the northern portion of the site within the forest. Standing water was observed by the team but the source of water was not apparent. The area appears to occasionally flood as evidenced by bare muddy ground. Where soil was exposed from a tree tip-up or animal digging, the team observed smooth mucky soils. The vegetation structure is characterized as distinct areas of open-water and forest. Native trees are dominant, including red maple, swamp white oak and cottonwood. Native grasses such as sedges and native forbs such as lady fern are common. No invasive species or signs of human disturbance were observed.

Wetland B:

Ecological Integrity Score: 71 out of 171 possible

Disturbance Score: 14 out of 100 possible

This wetland is fed by groundwater and occupies a large portion of the site, measuring approximately 31 acres. Standing water was observed by the team. The vegetation structure can be characterized as distinct areas of emergent marsh, wet meadow, forbs and dense tall shrub. Inland Wet Prairie occupied this part of the site prior to settlement and appears to remain relatively intact here. Soils here also are smooth muck. Native grasses, such as tussock sedge, bulrushes, and other sedges, and forbs, such as cinnamon ferns, Joe-pye weed, and skullcaps, are dominant. Native emergent plants, such as buttonbush, are common. Native shrubs, such as shrubby cinquefoil, gray dogwood, red-osier dogwood, and poison sumac, also are common. A few elm trees were observed as well. Invasive species glossy buckthorn and reed canary-grass occur in isolated pockets in small numbers, but left unchecked they will increase rapidly. No signs of human disturbance were observed.

Wetland C:

Ecological Integrity Score: 56 out of 171 possible

Disturbance Score: 0 out of 100 possible

This buttonbush swamp is ringed with silver maple within Forest A at the southern end of the site, and measures approximately 2.5 acres. The source of water was not apparent but the team did observe standing water in the wetland as well as bare muddy ground. The soil here was smooth muck as in the other wetlands. Vegetation is clumped in distinct patches of open-water, emergent marsh, dense tall shrub and forest. Native emergent plants, such as buttonbush, and native trees, such as silver maple, swamp white oak and ash, are dominant. Native grasses and sedges and native forbs are common. Neither invasive species nor human disturbance was observed.

Forested Swamp Overview:

A swamp is any wetland dominated by woody plants. Swamps are characterized by saturated soils during the growing season, and standing water during certain times of the year. The highly organic soils of swamps form a thick, black, nutrient-rich environment for the growth of water-tolerant trees. Some swamps are dominated by shrubs, such as Buttonbush or Smooth Alder. Many plants, birds, fish, and invertebrates require the habitats provided by swamps. Many rare species depend on these ecosystems as well.

Functions & Values of Forested Swamps:

Swamps serve vital roles in flood protection and nutrient removal. Floodplain forests are especially high in productivity and species diversity because of the rich deposits of alluvial soil from floods. Many upland creatures depend on the abundance of food found in the lowland swamps, and valuable timber can be sustainably harvested to provide building materials for people.

Status of Forested Swamps:

Due to the nutrient-rich soils present in swamps, many of these fertile woodlands have been drained and cleared for agriculture and other development. Over 70% of the Nation's floodplain forested swamps have been lost. Historically, swamps have been portrayed as frightening no-man's-lands. This perception led to the vast devastation of immense tracts of swampland over the past 200 years.

Source: U. S. Environmental Protection Agency

Functional Values of Wetlands

Smaller wetlands isolated from lakes and streams can serve as many ecological functions as larger wetlands.

Water quality protection

Acting as living filters, wetlands filter pollutants from rain water and snow melt that flows off of developed areas and farm fields. Wetland plants remove phosphorus and nitrogen from the water. Wetlands also adsorb bacteria, toxic metals, pesticides, and grease.

Protection from shoreline/streambank erosion

Wetland plant roots stabilize soil and help prevent soil erosion. Vegetation dampens wave action along lakes and moderates the current of rivers.

Wildlife and plant habitat

Over half of Michigan's wildlife depends upon wetlands for food, shelter, or nesting habitat, including endangered and threatened species like the bald eagle, osprey, loon and sandhill crane. Wetlands support some of the most diverse plant communities of all ecosystems. Nearly all fish species and amphibians require wetlands for food and shelter, and they are the preferred habitat of muskrat, otter, beaver, mink and raccoon.

Aesthetics and recreation

Wetlands provide recreation such as hiking, birdwatching, nature photography, canoeing, hunting, fishing, and trapping, and generate revenues to the local community through these activities. Wetlands greatly enhance the value of neighboring properties.

Flood and stormwater control

Wetlands hold rainwater and snow melt during wet times, decreasing flooding. They release the water gradually in dry times, thus helping streams maintain steady flows.

Groundwater recharge

Just as wetlands can hold water in wet times, they become sources of water during dry periods. They can serve as recharge areas to local aquifers, keeping our groundwater supply constant.

Source: Huron River Watershed Council, Ann Arbor, MI, 2002

B. Forest A:

Ecological Integrity Score: 90.5 out of 144 possible

Disturbance Score: 42 out of 154 possible

The forest occupies approximately 30 acres of the site and runs the length of the site from north to south. Its general structure includes a mix of tree sizes, standing dead trees, fallen trees and branches, and tree tip-up mounds. Evidence of wetland conditions is indicated by bare, muddy areas. Where soils were exposed by animal burrows and fallen trees, the team observed light tan or brown soils.

Tree species observed include: ash, basswood, black cherry, red maple, silver maple, sugar maple, swamp white oak, white oak, red oak, and black oak of all sizes. On the ground, the team observed native grasses and sedges, trillium, wild ginger, poison ivy and witch-hazel. The team also found invasive species such as autumn olive, common and glossy buckthorn, garlic mustard, and Oriental bittersweet, growing along the forest edge and trails, within the forest interior and in isolated pockets. The team found signs of mild human disturbance to the site in the form of ATV/off-road vehicle trails and fences.

Forest Overview:

A healthy forest is a complex, interdependent community of plants, animals and soil. Each layer of the forest provides diverse habitats and helps to protect clean water. The canopy is the forest's top layer. It shades and protects animals and plants below, while also intercepting and slowing rainfall. Beneath the canopy is the understory, a second layer made up of smaller trees and shrubs. As older trees die and leave gaps in the canopy, younger trees grow to replace them. The next layer, the forest floor, is populated by vines, grasses, mosses, worms, insects, fungi, bacteria and other small plants and animals. They continually decompose leaves, wood and other organic material that falls to the forest floor so that it may be reused by larger plants. This layer is also a storehouse of nutrients. The litter on the forest floor protects the soil, the bottom layer of the forest. Healthy forests often contain more living biomass in the soil below ground than on the surface.

Values & Functions:

Forests protect clean water:

Similar to wetlands, forests act as giant sponges that absorb and slowly release pollutants like nutrients and sediment from stormwater runoff. Forests store, clean and slowly release about two-thirds of the water that maintains stream flow and replenishes groundwater. Riparian forests that buffer streams significantly reduce the amount of excess nitrogen and phosphorus that enters a water body, sometimes by as much as 30 to 90 percent. Forests protect and filter drinking water for people. Mature trees provide deep root systems that hold soil in place, helping to stabilize stream banks and reduce erosion.

Forests provide habitat for wildlife:

Healthy forests provide food, shelter, nesting sites and safe migration paths for critters in the water and on the land. Riparian forests shade the water beneath their canopies, maintaining

cooler water temperatures in summer, an important factor for spawning fish. Decaying leaves and wood on the forest floor are also essential links in the food web.

Forests clean the air:

Forests absorb and trap nitrogen, particulates and other pollutants released into the atmosphere by cars, industries, agriculture and construction. Forests retain more than 85 percent of the nitrogen deposited on them from the air. Trees also produce the oxygen that we breathe.

Source: Chesapeake Bay Program

VII. Species List:

Wetland A:

Grasses/Sedges

Bulrush
Sedges spp.
Grass spp.1
Grass spp. 2

Forbs

Hedge nettle
Lady fern
Joe-pye weed
Mad dog skullcap
Sensitive fern

Trees

Red maple
Cottonwood
Swamp white oak

Wetland B:

Grasses/Sedges

Tussock sedge
Sedges uncertain
Bulrush

Forbs

Joe-pye weed
Cinquefoil, shrubby
Skullcaps
Cinnamon fern
Tall goldenrod
Common milkweed
Sensitive fern
Mint spp.
Nettle spp.
Boneset
Marsh bellflower
Narrow-leaved mountain mint
Water smart weed
Goldenrod

Nettle spp.2
Aster spp. 2
Thistle spp.
Swamp milkweed
Valerian spp.
Jewelweed
Curly dock
Deadly nightshade
Whorled loosestrife
Marsh skullcap

Trees

Elm
Black willow

Shrubs/Vines

Buttonbush
Grey dogwood
Red-osier dogwood
Poison sumac

Shrubby willow
Grape
Currant

Wetland C:

Grasses/Sedges

Sedges (3 spp.)
Grass spp.

Forbs

Lady fern spp.
Nettle spp.
Sensitive fern
Wild ginger
Northern bugleweed
Self heal
Bedstraw
Iris
Violet

Forest:

Grasses/Sedges

Forest sedges spp.2
Bottlebrush grass
Smooth brome grass
Woodland sedge (Pennsylvania)
Timothy grass

Groundcover

Wild ginger
Witch hazel
Hog peanut
Non-common milkweed
Clear weed
Trillium
May-apple
Heartleaf aster
Indian pipe
Bedstraw spp.
Violet
Jack-in-the-pulpit
Yarrow
Avens
Jumpseed
Ragweed
Small flower agrimone
Common milkweed

Invasives

Buckthorn, glossy
Reed canary-grass
Cat-tail

Trees

Silver maple
American Elm
Swamp white oak
Ash

Shrubs/Vines

Swamp buttonbush

Invasives

Reed canary- grass

Burdock
Wild rose
Aster
Nightshade
Meadow rue
Queen Anne's lace
Daisy fleabane
Purple clover
Self heal
Solomon's seal
Tall goldenrod

Trees

Basswood
Ash
Sugar maple
Silver maple
Black oak
White oak
Black cherry
Red maple
Swamp white oak
White oak
Ironwood
Service berry
Sassafras

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Shagbark hickory
Wild cherry, black
American elm
Red oak
Cedar
Cottonwood
Non-shagbark hickory
Sweet cherry
Slippery elm

Shrubs/Vines

Poison ivy
Rubus
Moonseed

Black raspberry
Virginia creeper
Grey dogwood
Ribes (currant)
Prickly ash

Invasives

Glossy buckthorn
Garlic mustard
Oriental bittersweet
Autumn olive
Common buckthorn
Multi-flora rose

A note about invasive species and their management:

Most properties in southeast Michigan have at least some invasive plant species growing on them. Invasive plants are plants which grow quickly and aggressively, spreading and displacing other plants. Invasives are usually introduced by people either accidentally or intentionally, into a region far from their native habitat. Whether your property is found to be minimally or pervasively covered with invasive species now is the time to understand which species grow there and what management options you have to control and, if possible, eradicate them. The following practical steps for managing invasive plants are from the Pennsylvania Department of Conservation and Natural Resources.

What Can I Do about Invasive Plants?

The best insurance against future problems is to avoid the use of known invasive plants and educate others about the problems of invasives. This web site lists many of the plants that are invasive in Pennsylvania. Plants on this list should be avoided because they can escape cultivation and aggressively move into surrounding ecosystems. One way to avoid invasives is to choose plants that are native to your area. Natives often are adapted to a specific environmental niche, and have natural controls that keep them in balance.

Minimize landscape disturbance. Invasive plants thrive on bare soil and disturbed ground where the native plant community has been displaced. The key to controlling invasives is to protect healthy native plant communities.

Use fertilizers wisely. Proper site preparation begins with a soil test before applying fertilizer. High nitrogen levels sometimes give an advantage to invasive species that are better adapted to using plentiful nutrients for explosive growth. For soil fertility, try using organic, slow-decomposing compost and mulches

Have a land management plan for maintenance over time. It makes sense when designing a property to plan for future maintenance. Lawns are maintained by weekly mowing, while gardens are often hand-weeded. Meadows in Pennsylvania may need to be mowed every year. Woodlands are probably the lowest-maintenance landscape, but they too will need to be monitored and invasive plants removed.

Scout your property annually for invasives or other problems. The best way to control invasives is prevention, and prevention can only happen through vigilance. Listed on this web site are resources to help property owners.

Remove invasives before they are a problem. Effective scouting or monitoring means that problems are found while they are still small and easily controllable. For instance, do not let invasive plants go to seed. Mechanical removal through digging or cutting is preferred. Large

populations of invasives may need to be stopped chemically with spot applications of herbicide by trained individuals or by homeowners carefully following label instructions.

Replace invasive plants with native or noninvasive species. Invasives are good at exploiting bare soil and empty niches. When you remove an invasive plant, unless there is another plant substituted, the invasive will tend to come right back. What grows in the future depends largely on what is there now; so it is important to fill that niche with a desirable plant that will provide seed for the future.

Remove invasives first when their densities are low. This gives the most immediate success because invasive plant control works best where there is a functioning native plant community still in place which can move right into the empty niche.

- Avoid using known invasive plants
- Minimize landscape disturbance
- Protect healthy native plant communities
- Use fertilizers wisely
- Have a land management plan for maintenance over time
- Scout regularly
- Remove invasive plants when they are present in low numbers or when they are confined to a small area before they become a problem
- Dispose of removed invasive plants wisely
- Replace invasive plants with native or noninvasive species
- Clean equipment that has been used in an area having invasive plants

Disclaimer: The Rapid Ecological Assessment (Assessment) provides on-the-ground field assessment of a natural area. The Assessment provides detailed information about the ecological quality of a site for the purposes of the HRWC Bioreserve Project and is conducted by a team of trained volunteers. The Assessment is not a professional ecological inventory and should not be interpreted as a scientifically complete ecological inventory or plant list.