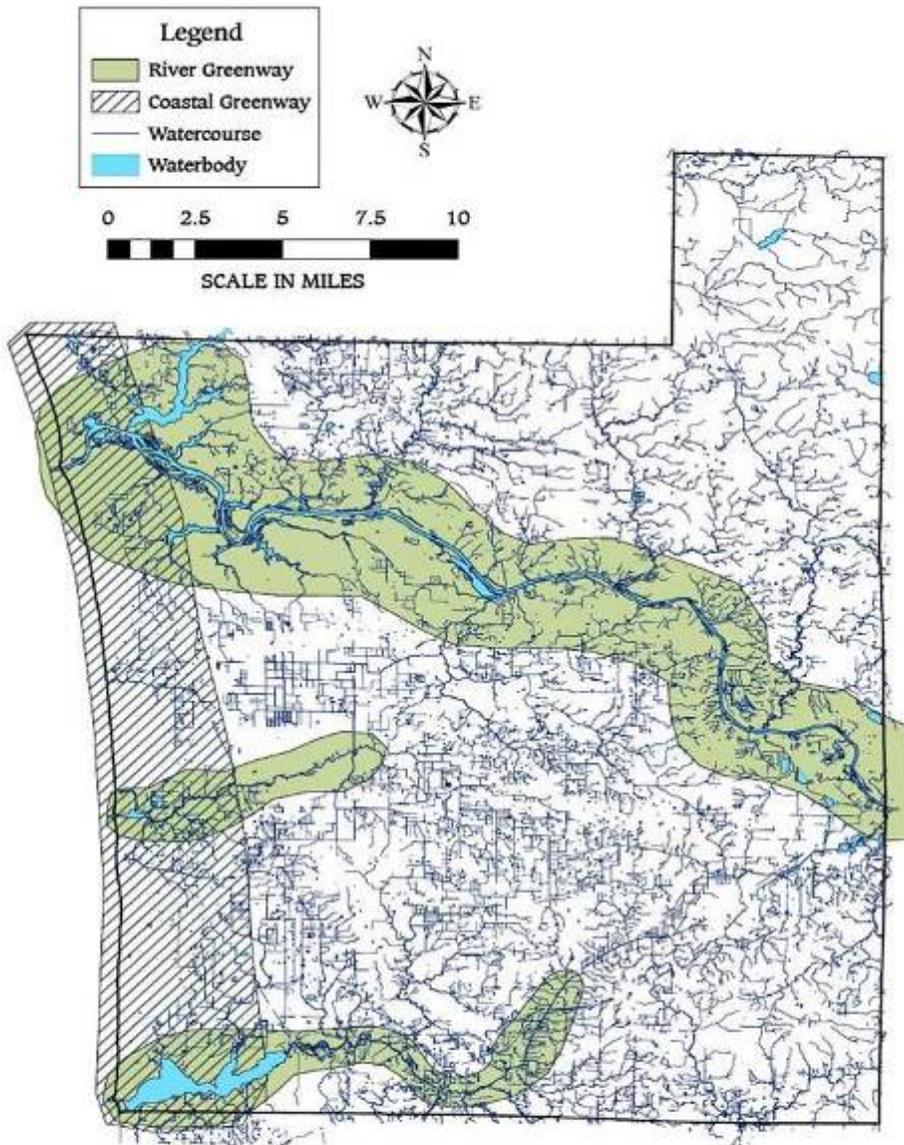


Upper Macatawa Natural Area

Impact on Water Quality





OTTAWA COUNTY GREENWAYS



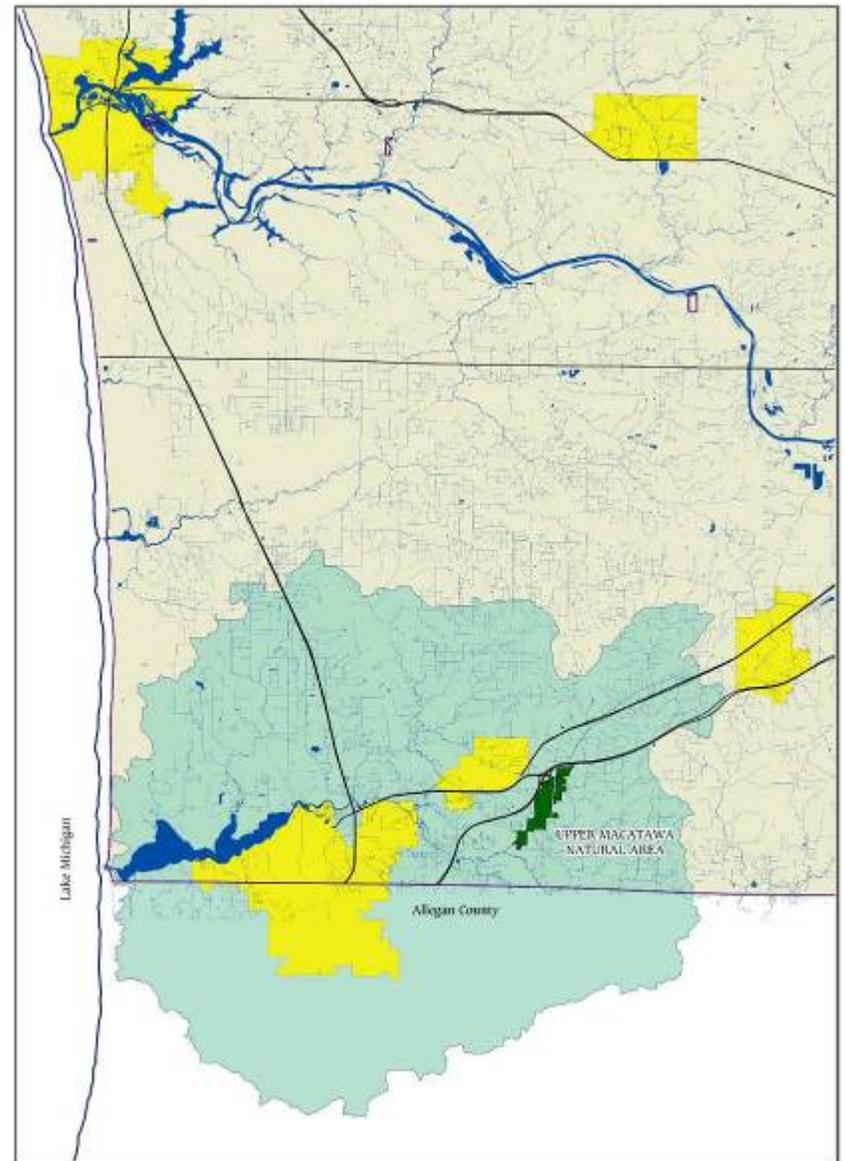
Greenways improve water quality by creating a natural buffer zone that protects streams and rivers; by preventing soil erosion; and by filtering pollution caused by agricultural and road runoff.



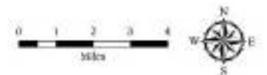
Upper Macatawa Natural Area

Four Major Goals

- Improve water quality (primarily phosphorus removal)
- Provide flood storage
- Increase wildlife habitat
- Provide recreational opportunities and preserve open space land



The Macatawa River Watershed



UPPER MACATAWA CONSERVATION AREA FEASIBILITY STUDY

Prepared for:

Ottawa County Parks & Recreation Commission

October, 2001

Prepared by:



**Resource
Management
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Grand Haven, Michigan 49417-0487
PHONE: 616-847-1680
FAX: 616-847-9970



**J.F. New &
Associates**

708 Roosevelt Road
P.O. Box 243
Walkerton, Indiana 46574
Phone: 219-526-3400
FAX: 219-526-3446



Site prior to
restoration



Flooding 1997

Phosphorus Removal Estimates:

- Approximately 257 acres removed from agriculture @ 0.184 pounds per acre per year* = 47.3 pounds
- Approximately 18,730 linear feet of buffer strips @ 0.00895 pounds per acre per year* = 168 pounds
- Approximately 128 acres of wetlands @ 126.8 pounds per acre per year* = 16,230 pounds

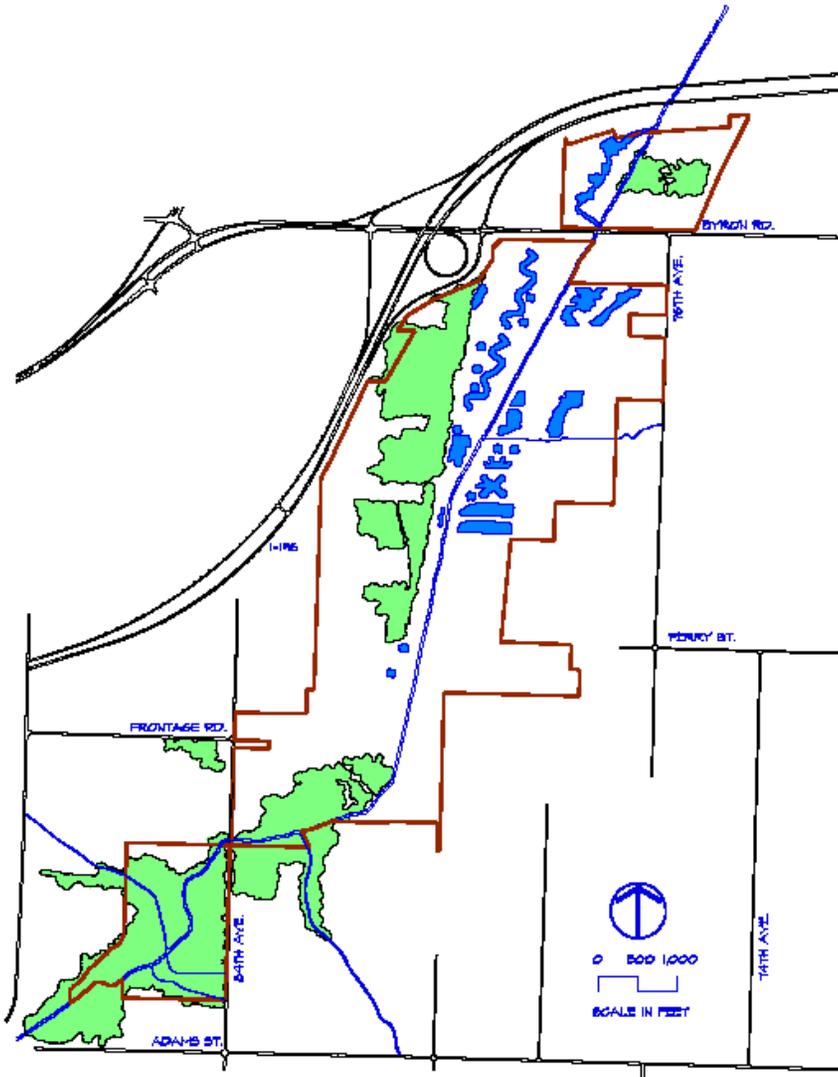
TOTAL ANTICIPATED PHOSPHORUS REMOVAL – 16,440 POUNDS ANNUALLY

*"Nonpoint Source Phosphorus Reduction Plan for the Macatawa Watershed, 1999 – 2009" Macatawa Area Coordinating Council, 2000

Upper Macatawa Natural Area Phase I Restoration



- Agricultural tiles broken
- Drainage ditches plugged
- Wetlands and wet meadows created
- Filter strips planted along river's edge
- Riparian tree buffer planted
- Native warm season grasses planted

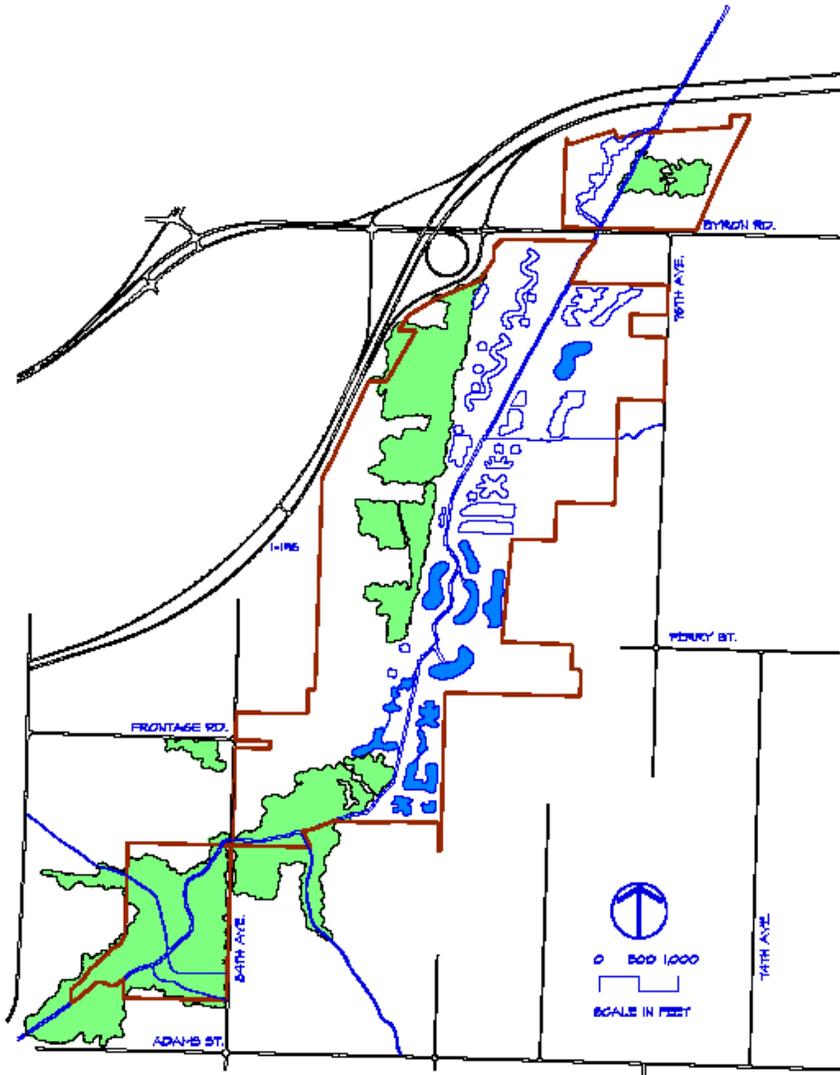


Phase One Construction



Upper Macatawa Natural Area Phase II Restoration

- 1,600 feet of the Macatawa River was realigned.
- A series of treatment wetlands were created.
- Off line channels and low serpentine berms with native vegetation remove sediment and phosphorus.
- Agricultural ditches were rerouted into a wetland basin for nonpoint source pollution reduction and flood storage.



River Rescue

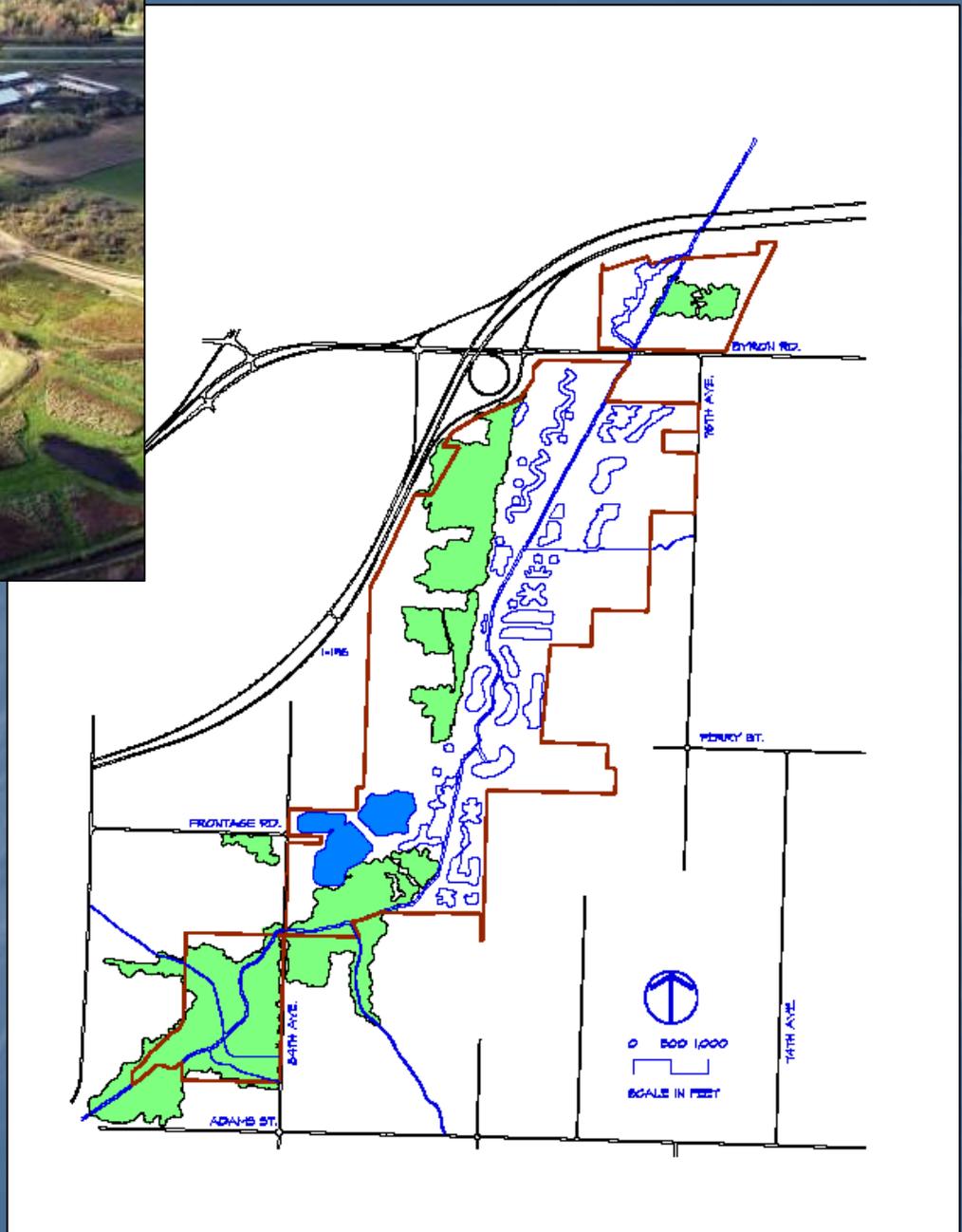


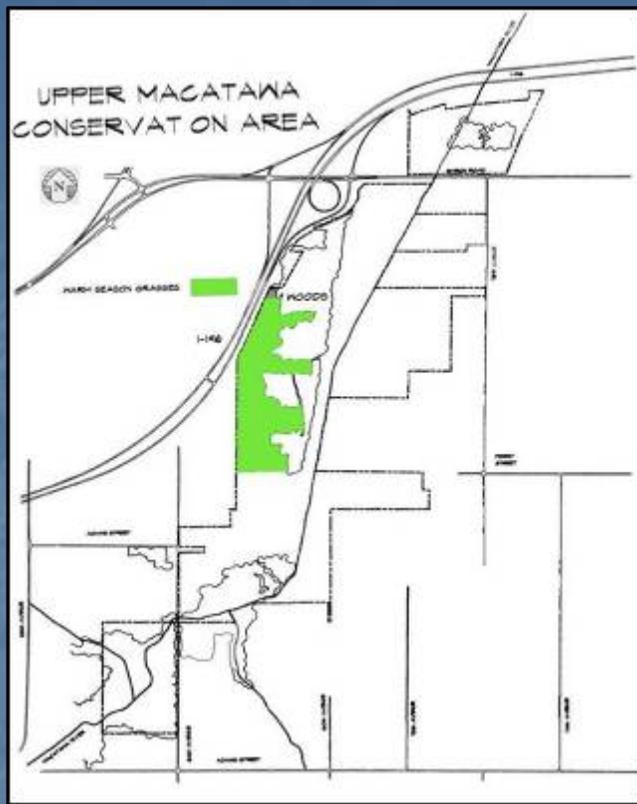
New Channel



Upper Macatawa Natural Area MDOT Mitigation

- 11.5 acres of forested wetland
- 7.0 acres of scrub/shrub wetland
- Rerouting of agricultural ditches
- Extensive wetland species planting





Upland Prairie Restoration



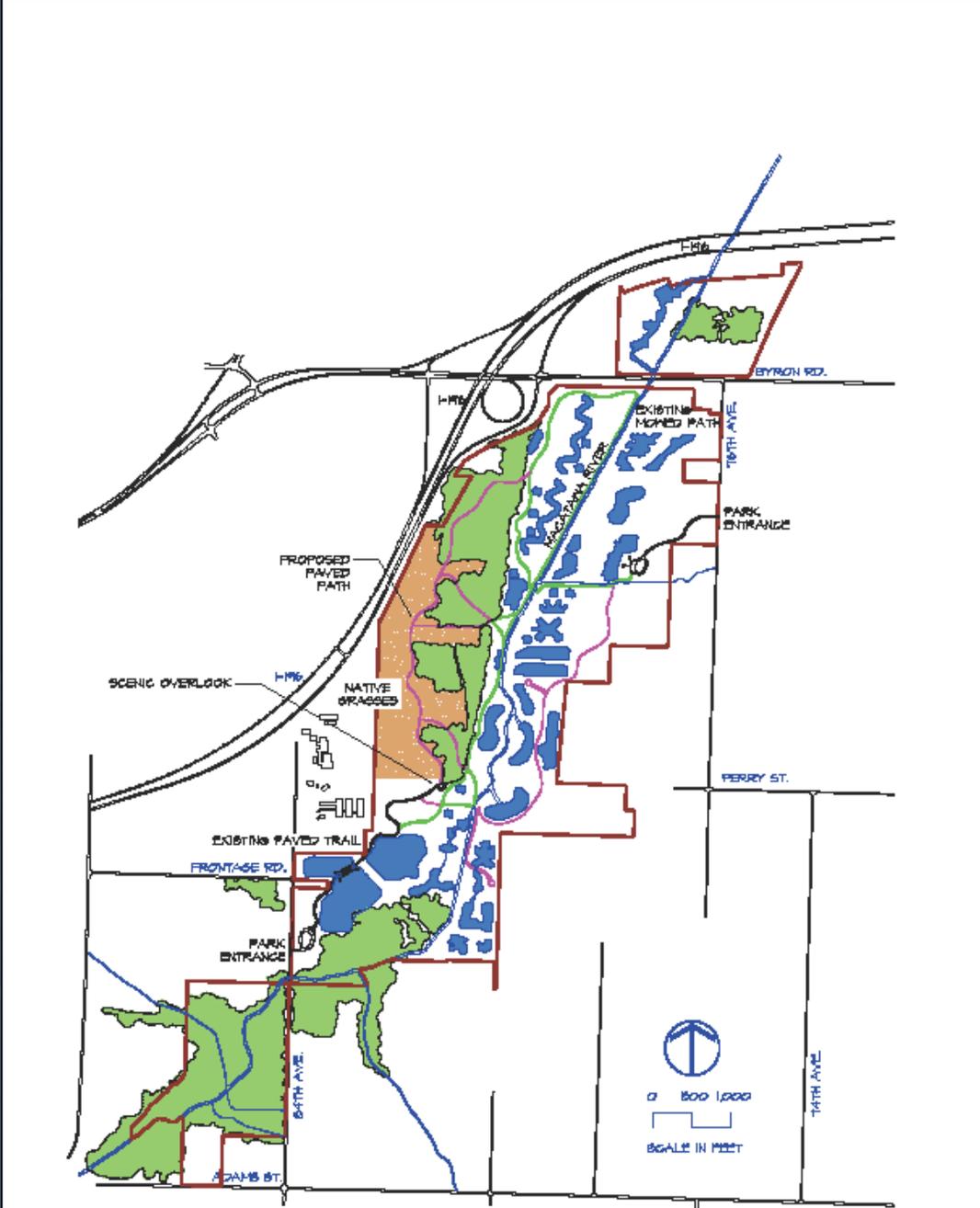
- Visitor Amenities
- Project Evaluation



Scenic Overlook



Wildlife Viewing 'Hide'



PROJECT PARTNERS

Macatawa Greenway Partnership – Helped conceive project and raised funds from area business to assist with both acquisition and restoration.

United States Department of Agriculture – Through NRCS provided restoration funding and expertise.

Michigan Department of Environmental Quality – Provided key grants to assist with acquisition (Coastal Restoration Grant) and restoration (CMI Non-point Source Pollution Control grant)

Land Conservancy of West Michigan – Holds conservation easement funded by EPA Clean Act Section 319 grant.

Michigan Department of Transportation – Constructed and maintain wetland mitigation project.

Ducks Unlimited - Provided funding assistance and technical expertise for habitat restoration.

Macatawa Watershed Project – Provided support and assistance with phosphorous reduction strategy and water quality research and education.

Holland Audubon - Conducts periodic bird inventories.

