

FACT SHEET – GREAT LAKES RESTORATION

Muskegon Lake Area of Concern Habitat Restoration Project Under the American Recovery and Reinvestment Act April 2010

Background

Muskegon Lake is part of the Great Lakes coastal wetlands ecosystem which provides more habitat for wildlife than just about any other Great Lakes ecosystem. Due to filling, development and pollution, Great Lakes wetlands are listed by the U.S. Fish and Wildlife Service as “Imperiled Ecosystems.” In 1987 Muskegon Lake was designated as a Great Lakes Area of Concern (AOC) due to historic filling of open water, wetlands and pollution discharges that contaminated the lake bottom. The Muskegon River flows into Muskegon Lake and then through a harbor channel to Lake Michigan. Muskegon Lake is also part of one of the world’s largest assemblages of freshwater sand dunes. The lake provides habitat for fish and wildlife that reside in Lake Michigan and the Muskegon River.



Problem to be addressed

Sawmill, industrial and commercial demolition material has filled 798 acres of shallow water and wetlands in Muskegon Lake (see image, below left). Approximately 74 percent of the shoreline has been hardened with broken concrete, foundry slag, sheet metal, slab wood, saw dust and other materials. This has resulted in the loss, isolation and fragmentation of shallow water and wetland habitats and their protective buffer zones, with the associated degradation of fish and wildlife populations. This loss has prevented public access to the lake’s natural resources, degraded the quality of life for residents and hampered efforts to attract tourism and businesses to the area. By addressing these problems, the project will generate both ecological and economic benefits for the community.



Nature of the habitat restoration area

Habitats proposed for restoration include shoreline ecotone, littoral zone, emergent marsh, and White Pine/White Oak protective zones along stream corridors. Fish and wildlife populations have been impaired by the filling of open water and emergent wetlands and shoreline hardening. Historical data indicate populations of lake sturgeon, walleye and white bass have been significantly impaired in the system. The following are fish and wildlife populations that are present in the lake and likely impaired by the loss of habitat:

- **Fish:** Lake Sturgeon (Michigan Threatened Species), White Bass, Muskellunge, Northern Pike, Yellow Perch, Brown Trout, Rainbow Trout, Black Crappie, Bluegill, Walleye, Smallmouth Bass, Largemouth Bass, Flathead Catfish, and numerous forage species

(continued)

- **Reptiles:** Spotted Turtle (Michigan Threatened Species), Wood Turtle (MI Special Concern), Blanding’s Turtle (MI Special Concern), Eastern Box Turtle (MI Special Concern identified as Rare/Declining by USFWS), Snapping Turtle, Painted Turtle, Musk Turtle, Red-eared Slider, Map Turtle, and Spiny Soft-shell Turtle
- **Amphibians:** Bull Frog, Green Frog, Wood Frog, Spring Peepers, Northern Leopard Frog, American Toad, Salamanders and Skinks
- **Marsh birds:** Black-crowned Night Heron (MI Special Concern), Sedge Wren, Common Moorhen, American Bittern (MI Special Concern), Black Tern (MI Special Concern and USFWS Rare/Declining), Caspian Tern (Michigan Threatened), Green Heron, Great Blue Heron, Belted Kingfisher, Spotted Sandpiper, American Coot
- **Waterfowl:** Trumpeter Swan (Michigan Threatened Species), Peregrine Falcon (Michigan Endangered Species and Endangered Federal Trust Species), Canvasbacks, Blue-winged Teal, Lesser Scaup (Continental Concern)
- **Mammals:** Mink, Otter, Muskrat, Fox, other fish-eating mammals

Specific restoration sites

The map below shows the specific sites to be restored.

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|----------------------------------------------------------|------------------------------------------------------------------------|
| 1. Edgewater – Private Landowner | 6. Hartshorn Peninsula/Michigan Steel |
| 2. Grand Trunk – MDNRE | 7. YMCA |
| 3. Ruddiman Creek and Lakeshore Trail – City of Muskegon | 8. Heritage Landing Circle – Muskegon County |
| 4. Amoco Peninsula – City of Muskegon | 9. Heritage Landing Bay – Muskegon County |
| 5. Kirksey Investments | 10. South Branch of Muskegon River at Richards Park – City of Muskegon |



Amount of shoreline and aquatic habitat to be restored

The project will remove 182,826 metric tons (136,566 cubic yards) of unnatural fill to restore aquatic natural resources on 23.6 acres and restore 10,007 linear feet of hardened shoreline with native wetland vegetation. It will create or restore 11.6 acres of emergent wetland and 15.6 acres of open-water wetland. This will accomplish approximately 40 percent of the remaining restoration work needed to remove the Loss of Fish and Wildlife Habitat Beneficial Use Impairment (BUI) and ensure that the target for the Degraded Benthos BUI is met within the project period.

The project will achieve the following restoration criteria established for the Muskegon Lake AOC: a) Hardened Shoreline Softened—42% / 10,007 linear feet; b) Emergent Wetland and Riparian Corridor Restored—16% / 11.6 acres; c) Open Water Wetland Restored—82% / 15.6 acres; and d) Unnatural Lake Fill Removed or Improved—19% / 23.6 acres. When combined with proposed NOAA Partnership program and previously completed restoration actions, the restoration project will meet a) 54% of the hardened shoreline criteria; b) 27% of the emergent and upland wetlands criteria; c) 86% of the open water wetland criteria; and d) 34% of the unnatural fill criteria.

Key dates

Current schedule: **March:** (under construction) – Grand Trunk and South Branch at Richards Park; **April – June:** (construction bids & construction) – Edgewater, YMCA and Heritage Landing Circle; **July – October:** (construction bids & construction) – Kirksey Investments, Amoco Peninsula, Ruddiman Creek Lakeshore & Heritage Landing Bay.

Goals and economic benefits

The goals of the project are to restore and protect fisheries and wildlife habitat; improve public access; create and retain jobs; and achieve long-term socioeconomic benefits related to improved habitat for fish and wildlife populations in Muskegon Lake, the Muskegon River and Lake Michigan.

This is a particularly timely project for a region hard-hit by the current recession and larger structural changes to its key industries. Restoration will address both economic and environmental concerns. The long-term socioeconomic outcomes include increased jobs and local business opportunities; enhanced ecosystem services for wetlands and fish and wildlife habitat; and recreational activities that promote tourism and increased local property values.

The Muskegon Lake Habitat Restoration Project will lead to increased property values and enhanced recreational opportunities, which generate local and regional tourism, business opportunities and jobs. The project will generate an estimated 36,933 labor hours and create or retain 125 jobs. The current unemployment rate in the City of Muskegon is 20.7 percent and Muskegon County is at 16.3 percent, two of the highest rates in the state and in the nation.

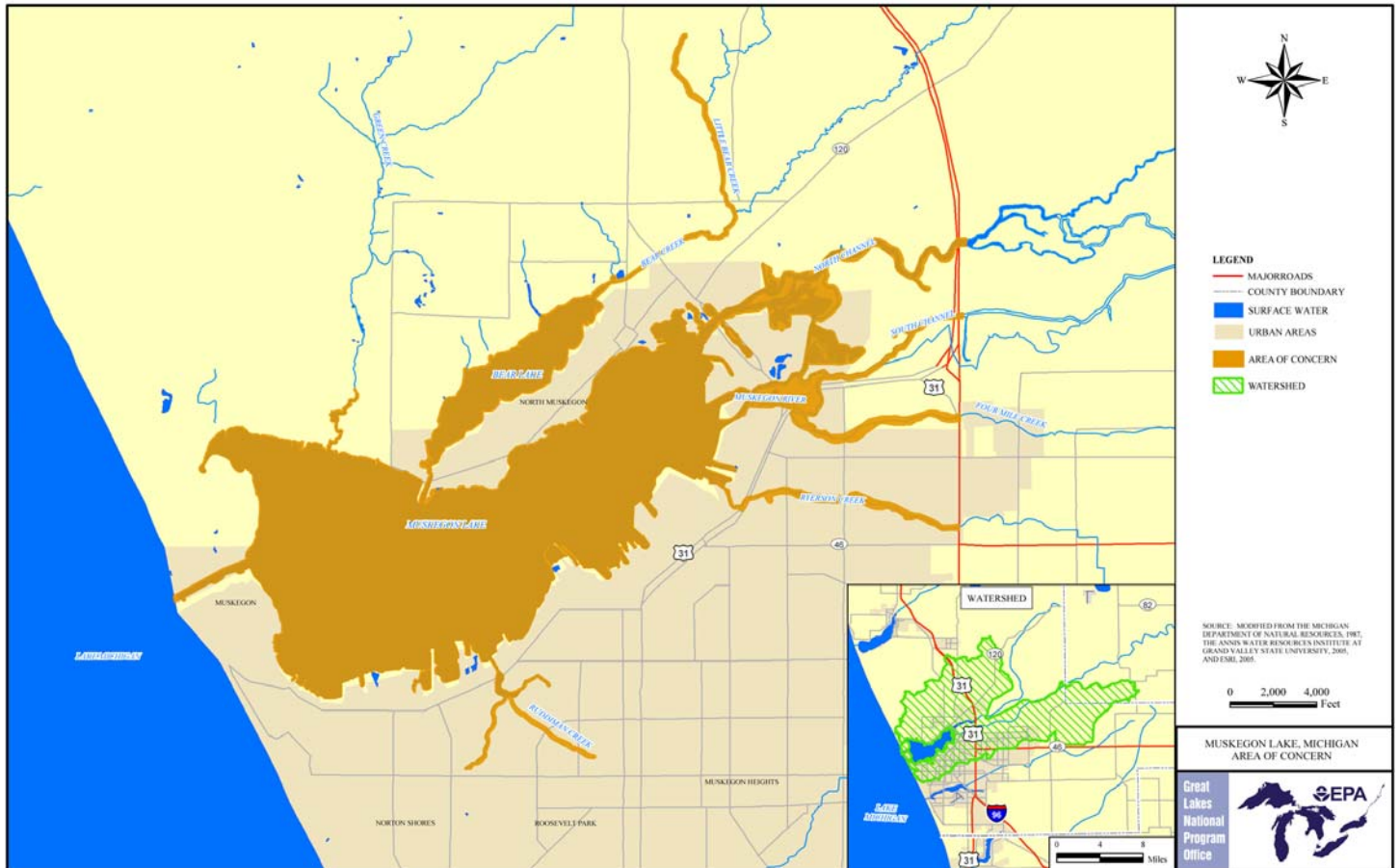
The project price tag is over \$30 million, with a federal contribution of \$10 million. Additional funding and in-kind support is provided by the Great Lakes Commission and several local entities, as well as the value of shoreline property put into permanent conservation easements. The anticipated short-term economic impact of between \$53 million and \$89 million (calculated using a standard multiplier of 1.5 to 2.5 times the original spending). This estimate includes economic activity in the Muskegon Lake region generated by contractors and their employees.

It is anticipated that the restoration of aquatic habitat and coastal wetlands will increase the economic value of ecosystem services associated with these restored wetlands by a conservative estimate of \$65,000-\$200,000 a year (Annis Water Resources Institute 2007), which will promote local tourism. For example, \$1.2 million was contributed to the economy by Muskegon Lake anglers in 2008 – a figure that is likely to grow as a result of the proposed habitat restoration. Ecosystem services included in the value estimate are wetland fish and wildlife habitat (Woodward and Wui 2001) and recreational activities such as fishing, hiking and wildlife viewing (Farber and Costanza 1987; Kreutzweiser 1981; Whitehead et al 2006). Similarly, the removal of the AOC's designated BUIs and ultimate delisting is anticipated to increase adjacent property values (Braden 2006). These restoration activities will complement and build on a 1998 comprehensive brownfield environmental baseline assessment designed to prepare for ecological restoration and economic growth along Muskegon Lake's former industrial shoreline.

Broad economic benefits from restoring Areas of Concern in the Great Lakes

The Muskegon Lake habitat restoration project will contribute substantially to delisting the Muskegon Lake AOC and realizing the associated environmental and economic benefits. According to a 2007 report from The Brookings Institution, *Healthy Waters, Strong Economy*, the economic impact of delisting all the Great Lakes AOCs would yield \$10 billion in increased property values. The economic benefit for the Muskegon Lake AOC is \$27 million (holding constant the decline in property values from 2008-present and completing other delisting activities). The proposed project will contribute significantly to capturing this overall economic benefit.

Muskegon Lake Area of Concern boundary map



Partners in the Muskegon Lake Habitat Restoration Project



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