Engineering our Environment

Presented By:

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Clinton River Watershed

8 Beneficial Use Impairments (BUIs)

- Restrictions on fish and wildlife consumption
- Eutrophication or undesirable algae
- Degradation of fish and wildlife populations
- Beach closings
- Degradation of aesthetics
- Degradation of benthos
- Restriction on dredging activities
- Loss of fish and wildlife habitat

- 760 Square Miles
- 81 Miles
- 4 Counties
- 1.5 Million People
- 72 Communities
Habitat Restoration Projects

Clinton River Spillway

Gloede Drain

McBride Drain

Sterling Relief Drain

Chapaton Basin
Case Study: Clinton River Spillway

In early 20th Century, communities experienced significant flooding from the Clinton River.

4 feet of water entered building
Flooding Solution:
USACE Construction of the Clinton River Spillway
2011 Planning and Design Grant – A First Step

**Great Lakes Restoration Initiative Funding:**
- $390,000 NOAA Grant
- $100,000 Match from Drainage Board/District

**Grant Recipient:**
Macomb County Public Works Office on behalf of the Clinton River Spillway Inter-County Drain Drainage Board

**Location:**
Clinton Township, Harrison Township

NOAA Fisheries, Restoration Center Great Lakes Regional Office under the Great Lakes Restoration Initiative
Funding Opportunity Number: NOAA-NMFS-HCPO-2011-2002872 NA14NMF4630364
Conceptual Design – 12 Million Dollar Plan
Grant Funding for Implementation - Phase 1

Great Lakes Restoration Initiative Funding:

$4,180,000

$1,500,000 – EPA

$2,680,000 - NOAA

Grant Recipient:

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Location:

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NOAA Fisheries, Restoration Center Great Lakes Regional Office under the Great Lakes Restoration Initiative
Funding Opportunity Number: NOAA-NMFS-HCPO-2011-2002872
NA14NMF4630364

EPA Number: 00E01488
Scaled-Down Design

Project Description:
• Creating off-channel spawning habitat
• In-channel wood and aquatic vegetation for northern pike and yellow perch
• Improving the density and diversity of native plant growth in submergent, emergent, riparian, and upland areas.

Deferred Improvements:
• Below water augmentations (pools, riffles, substrate, etc.)
• Channel meandering

https://www.youtube.com/watch?v=l-wptlhFFJc
Outcomes

- 96 acres of Invasive species control
- 13.8 ac. off-channel aquatic habitat
- 4,600 ft of bank stabilization
- 17,000 sft marsh enhancement
- 1,500 ft. of armored shoreline softened
- 1 fishing pier to reduce bank erosion
- Long term maintenance plan
Clinton River Spillway – Post Project
Drains and Habitat

**Perception:**

Drains = Impairments

- Only Water Conveyance
- Erosion and sedimentation
- Low Dissolved oxygen
- Limited habitat options

**Reality:**

Drains = Water Quality Assets

- Regulatory Authority
- Funding Source
- Public Accountability
- Long Term Maintenance
Gloede Drain- Partridge Creek Project Outcomes

- 52 acres of aquatic and terrestrial habitat restoration
- 5,500 lineal feet of multi-staged open channel restoration and enhancement
- 5 acres of wetland restoration
- Invasive species control

New Macomb County Typical Drain and Wetlands!
McBride Drain Project Outcomes

- 20,000 lineal feet of enhancement and restoration
- 10 acres of plant re-vegetation
- 1,500 feet of shoreline naturalization
- 10 acres of invasives control
- 10 acres of riparian buffer

New Macomb County Typical Drain
Sterling Relief Project Outcomes

• Retrofit ~1 mile of open channel to intercept and daylight lateral storm

• Create ~25 total acres of habitat through ecological restoration, including:
  • 6 acres open channel bottom: wet-mesic prairie/stormwater infiltration zone.
  • 9 acres channel slopes: Dry-mesic prairie + scrub/shrub.
  • 5 acres riparian tree canopy and low-profile prairie.
  • 5 acres lateral bioretention swales to retain and infiltrate local drainage.

• Intercept stormwater from 1,133 acre urban drainage area (46.6% impervious).

• Reduce urban runoff entering the Red Run by over 96.5 million gallons per year.
Chapaton Basin Coastal Wetland Project

- Construct 5 acres of coastal wetland and in-water aquatic habitat where the land meets the lake at the end of Chapaton’s property

- Create coastal habitat and reintroduction of reptile and amphibian species to the land-water interface, as the connection is currently cut off due to the seawall

- Store and filter up to 2 MG of stormwater to help reduce combined sewer overflows being dumped into Lake St. Clair

- Feasibility Study underway to create even greater storage.
Metro Beach Project Outcomes

• Using dogs that chase away geese to control E.coli levels
• Leads to cleaner water and safer beach conditions
• Full use of recreation area utilized
• Lake St. Clair ecosystem healthier
• Economic sustainability of park and local businesses increased
• Long term maintenance plan
Candice Miller Introduces Ellie the Goosebuster!
Quality of Life Investment

More than just habitat projects

- Local economic development
  - Small business opportunities
  - River centric development
- Environmental stewardship
  - Invasive control
  - Water quality improvement
- Social and cultural enhancement
  - Placemaking
  - Recreation linkages
Maintenance Strategy(ies)

Partnerships
HCMA – Trail Maintenance at Spillway Communities – Trails, Fishing Piers, Parking, Trash

MCPWO Staff
Improved knowledge base regarding natural channel design – leads to better maintenance practices

Contractual Services
Annual Performance Based Invasive Specie Management

Monitoring
MDNR – Fish and Wildlife monitoring sites CRWC – On going monitoring
Long Term Maintenance Success

Success will depend on

• Communication, Communication, Communication!!!
• Partnerships
• Collaboration
• Focusing on stakeholder value
Partnerships and Collaboration

Clinton River Area of Concern
Public Advisory Council

Charter Township of Clinton

Harrison Township

Sterling Heights

Clinton River Watershed Council

HRC 100 Years
Questions/Comments

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Thank You!