Restoration and Recovery of the Kalamazoo River following the 2010 Enbridge Line 6B Oil Spill
The Spill:

• Occurred July 25, 2010 - Enbridge Line 6B
• From 2010 – 2014, 1.2 million gallons oil recovered
• Pipeline rupture in Talmadge Creek near Marshall, MI
• Into the Kalamazoo River, 38 miles to Lake Morrow
• As many as 1,500 spill responders mobilized
• Largest inland oil spill in the United States
Natural Resource Damage Assessment and Restoration:

- Non-punitive! Compensatory, polluter pays

- Structured process defined in regulation:
  - Determination of natural resource injury
  - Assessment to restore resources and their services
  - Recover damages ($$) or define restoration via negotiated settlement or litigation
  - Implement and monitor efficacy

- Trustees oversee, on behalf of the public
The Trustee Representatives:

- The State of Michigan
  - MDNR: Jessica Mistak, Jay Wesley
  - MDEQ: Nicole Zacharda, Michelle Delong
  - MDAG: Polly Synk
- The Tribes:
  - Nottawaseppi: John Rodwan
  - Match-E-Be-Nash-She-Wish: Jeff Martin, Liz Binoniemi-Smith
- The Department of Commerce
  - NOAA: Jessica Winters, Julie Sims, Kate Barfield
- The Department of Interior
  - USFWS: Stephanie Millsap, Lisa Williams, Clark McCreedy
  - DOI SOL: Kelly Bakayza, Mary Lynn Taylor
con·sen·sus

Noun: general agreement

Synonyms: agreement, harmony, concurrence, accord, unanimity, unity, solidarity

Important Later...
Outcomes:

The State of Michigan

- Oak Savannah Restoration – Fort Custer Recreation Area
- Enhancement of Lakes – Fort Custer Recreation Area
- Kalamazoo River Large Woody Debris Replacement
- Kalamazoo River Floodplain Wetland Restoration
- Off-site Wetland Mitigation
FCRA Oak Savannah Restoration:

- Funded, Implementation on-going.
- 175 Acres To Be Treated Over Three Years
- Non-native Assessment, Treatments, Monitoring
- Girdling, Cut-stump and Foliar Herbicide Application
- Photo point monitoring
FCRA Lake Enhancement:

- Eagle Lake
- Jackson Lake
- Whitford and Lawler Lake
FCRA Lake Enhancement:

- Funded, Competitive RFP, Contractor Identified.
- Three Year Project
- Non-native Assessment, Treatments, Monitoring
- Monitoring of Recreational Use
- Outreach Related to Aquatic Non-natives
Large Woody Debris Replacement:

- Spill Response required substantial removal of LWD
- Locations and Attributes Recorded During Response
- Woody Material Not Oiled Stockpiled for Later Use
Large Woody Debris Replacement:

- Assessment of Wood Removal During Response
- Assessment of Interim Recruitment of Woody Material
- Characterization of Type & Orientation
- Identification of Most Appropriate Locations
- Large Woody Debris Replacement Work Plan
- Constructed, Barged, Placed, and Anchored
Large Woody Debris Replacement:

- Four Types of Structures
- Nearly 300 Large Wood Structures
- Anchored With Driven Posts, Cut into Banks
- Initiated June 2016, Completed October 2016
Kalamazoo River Wetland Restoration:

- Ensure Similar Degree of Vegetative Cover
- Ensure Similar Community Composition & Diversity
- Limit Invasive Species Cover to 10% or Less
- Limit Phragmites Cover to 10% or Less
Kalamazoo River Wetland Restoration:

Four Years Summary
Reports, Data Evaluation:

• Small Wetland Polygons
• Limited Access
• Islands Within Invasives

Not All Wetlands of Equal Conservation Value.
Kalamazoo River Wetland Restoration:

Priority Expansion Areas:

• Reduced Number and Wetland Acreage, but
• Wetland Areas Where Sustained Conservation Benefit is Most Likely to be Achieved
Wetland Mitigation / Compensation:

- Kalamazoo River Watershed – Eaton County
- 300 Acres of Off-site Wetland Restoration:
  - 129 Acres Emergent Wetland
  - 14 Acres Shrub/Scrub
  - 157 Acres Forested Wetlands
- Conservation Bank with Private Landowner
Outcomes:

The Tribes:

Wild Rice Assessment,
Characterization, Propagation, & Restoration

Watershed Cultural Resource Assessment & Traditional Ecological Knowledge Outreach

Michigan Ecological Services Field Office
Identification of Sustainable Wild Rice Beds, On-going Assessment, Inventory & Monitoring

Wild Rice Beds
AES Oblique Imagery 2013
NHBP Wild Rice Program

Wild Rice Restoration

Michigan Ecological Services Field Office
GIS – Based Data Management:

✓ Habitat Suitability
✓ Water Quality

Water Quality Monitoring
Genetic Characterization:

*Zizania aquatica* and two varieties of *Zizania palustris* thought to occur within St. Joe and Kalamazoo River watersheds.

On-going study to genetically evaluate occurrence of species and varieties.
Genetic Characterization:
Zizania aquatica
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thought to occur within St. Joe and Kalamazoo River watersheds.

On-going study to genetically evaluate occurrence of species and varieties.

Integrate Habitat Suitability, Water Quality, Species Distribution to Facilitate Restoration

Wild Rice Propagation & Transplantation

Michigan Ecological Services Field Office
Outcomes:

The Department of Interior

Tributary Fish Passage Projects (Brett Riser, CCD)

- Pigeon Creek
- Rice Creek

Rice Creek Floodplain Restoration

Turtle Recruitment, Demography, Habitat Use
Pigeon Creek
Rice Creek Floodplain Restoration:

- Entrenched– Banks with Berms of Dredge Spoils
- Berm Removal – Floodplain Reconnection
- Seasonal Ephemeral Wetlands
- 470 Linear Feet of Berm Removal
Turtle Recruitment in the Kalamazoo River
Dr. Jeanine Refsnider-Streby, University of Toledo

• Radio-track females
• Shoreline searching
• Protect & monitor nests
• Characterize in-situ thermal nest conditions
• Determine hatch success
• Movement of turtles
• Habitat use of turtles
- Leverage existing data
- 3,800 turtle captures during spill response
- All turtles marked during spill response
Outcomes:

**Enbridge Energy**

Ceresco Dam Removal – Channel Restoration (Scott Peyton)

Kalamazoo River Community Recreational Foundation (2.5M)

Five Recreational Access Projects:

• Angler’s Bend (Calhoun Conservation District)
• Ceresco Green
• Historic Bridge Park
• Paddler’s Grove (Calhoun Conservation District)
• Saylor’s Landing (Calhoun Conservation District)
Outreach:

Regional & National External Affairs Staff

• Development of a Communication Plan

• Web-based Outreach:
  ➢ Feature stories
  ➢ ESRI Story Map