

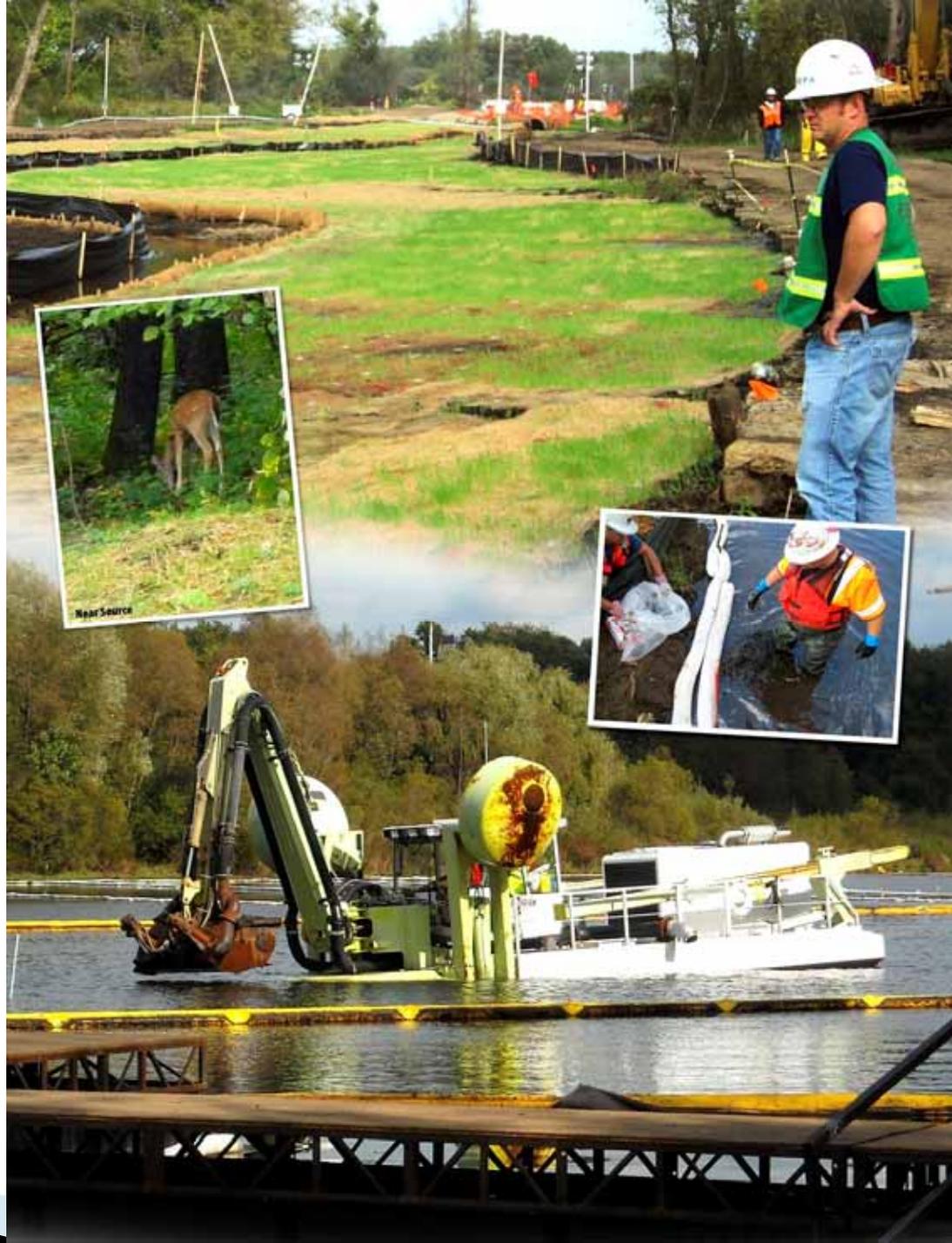
Appendix A: Photographs of the Areas Impacted by the Enbridge Line 6B Oil  
Discharges and of Response Actions  
from U.S. EPA presentations in 2010 and 2015



# Enbridge Line 6B Incident

## Public Update and Availability Session

October 14, 2010  
(Day 81)



# Pipeline Release Site

Division A



**Oil coming out of culvert on Talmadge Creek on first day of spill, July 26, 2010.**



**Exposed pipeline during the first week of the oil spill response.**



**Initial cleanup of a 5-acre contaminated zone in the pipeline break area. Photo shows a dewatering operation.**



**Second week of contaminated soil cleanup near the pipeline break.**



**After four weeks, contaminated land located by the pipeline break was backfilled with clean soil.**

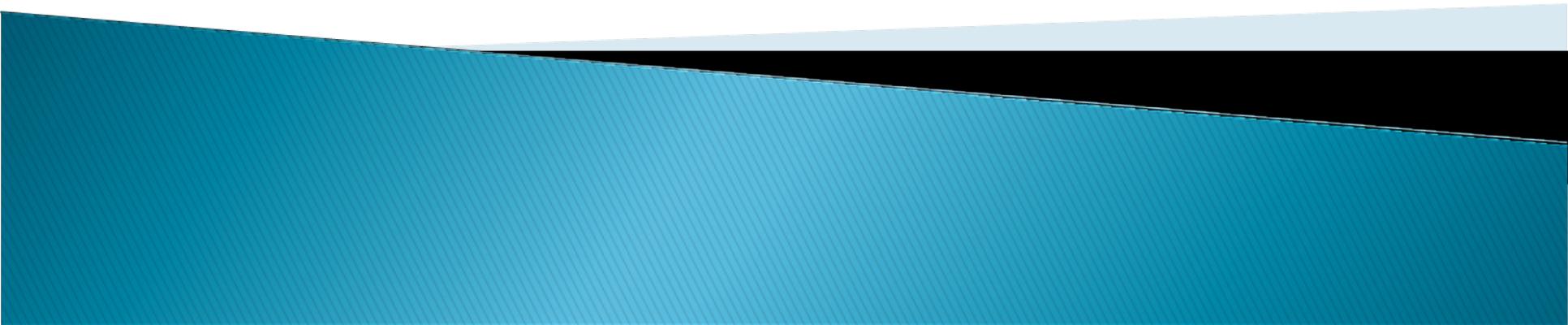


11 OCT 2010 13:08

**Restored and re-vegetated pipeline break area on Oct. 11, 2010.**

# Talmadge Creek

Division B





**Talmadge Creek day one: creek and floodplain completely oil-covered.**



**Initial containment measure in the creek includes skimmers, containment booms, and siphon dams.**



**Surface water was reduced to heavy sheen by the end of the response's first week.**



**To access the creek in order to remove contaminated soil, swamp mat roads were established. Note white oil pads placed to absorb oil.**



**Talmadge Creek after soil scrapping was completed. Contaminated soil staging pads visible on the right side of the picture.**

Photo type: Overview

Feature: NO SETTING



12 OCT 2010 13:09

Container: NO SETTING

W: 084 59' 43.33"  
N: 082 14' 57.45"

**Talmadge Creek following restoration, which included soil backfilling, coconut matting, vegetation seeding, and silt fencing.**



**View of Talmadge Creek on Oct. 14, 2010.**

# Kalamazoo River

Division C, D, & E



**Kalamazoo River on July 26, 2010, day one of the response: oil covered the river from bank to bank.**



**Within one week, presence of heavy oil reduced to a sheen.**



**In August 2010, most sheen production came from contaminated vegetation on the riverbanks and islands.**



**Example of sheening during week two and three of the response.**



**By mid-August, all contaminated islands were contained.**

Photo Type: Overview

Feature: NO SETTING



12 OCT 2010 13:17

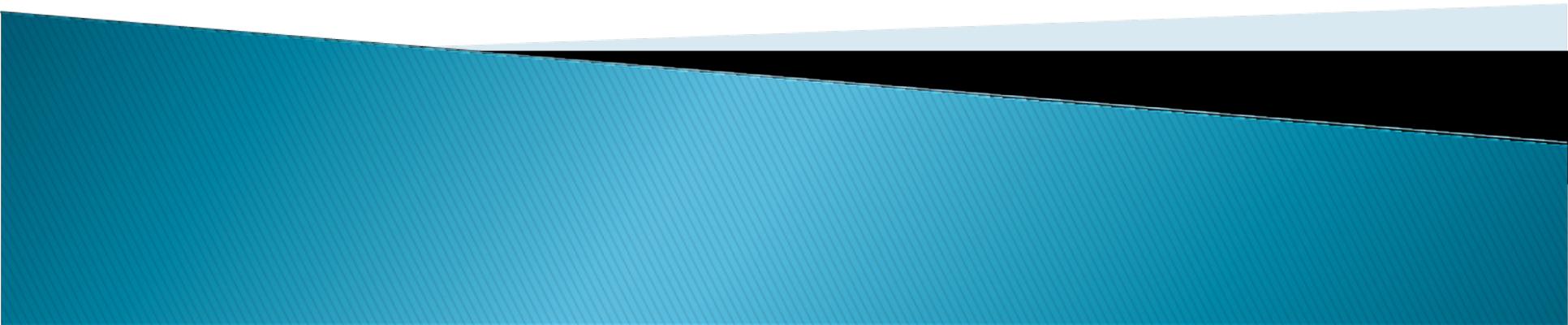
Container :NO SETTING

W:085 01' 25.53"  
N:042 15' 34.86"

**Some islands required soil removal.**

# Ceresco Dam

Division C





**July 26, 2010, Ceresco Dam: note the oil flowing over the dam.**



**By the end of the first week, oil reduced to a heavy sheen.**



**Oil caught in backwater vegetation just upstream from Ceresco Dam.**



**Containment booming established to control vegetation sheening upstream of Ceresco Dam.**



**October 2010: submerged oil cleanup started upstream of Ceresco Dam.**



**Condition of stream bank just downstream of Ceresco Dam in late July 2010.**



**Same location, late September 2010.**



11 OCT 2010 14:15

Morrow Lake, October 11, 2010.

# Sampling and Assessment



# Containment



08/07/2010

# Contamination Recovery



08/07/2010 09:30:03

Copyright of USEPA

# Staging



# Soil Removal



# Disposal



# Shoreline Cleanup



# Floodplain Cleanup

**Airlifting excavation  
equipment into an  
inaccessible  
floodplain.**



# Floodplain Cleanup



**Excavation of floodplain contamination & staging of one-ton waste bags.**

**Division C MP11.25, Airlift Staging**

# Decontamination



Decontamination of containment boom.

# Decontamination

Photo type-Overview

Feature: NO\_SETTING

Decontamination of containment boom.

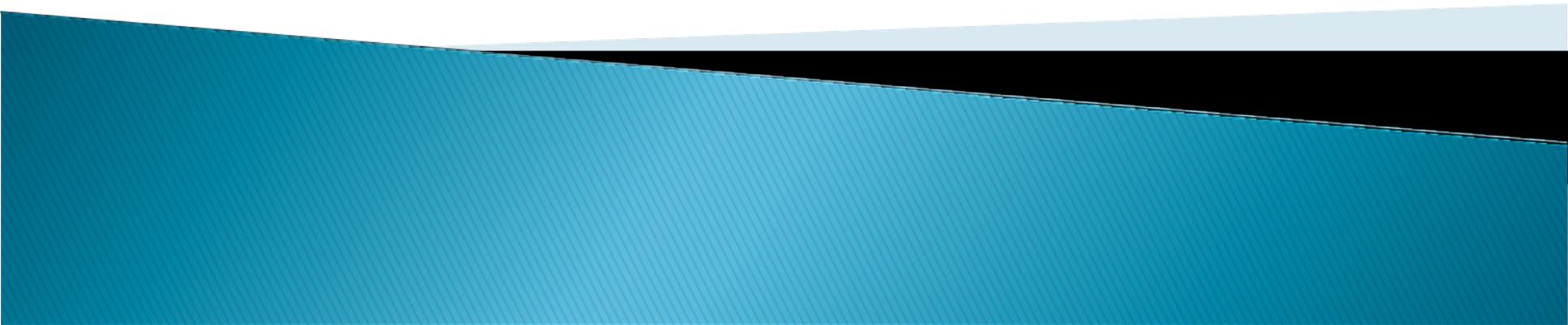


Dimension: 10 45 100

Source: US EPA  
40 42 36.64

# Submerged Oil

Dredging at Ceresco Dam





Feature: NO. 1001

11 OCT 2010 13 20

Source: US EPA  
11-095 06 00 51

Container: NS SETTING

**Ceresco Dam dredging operation and submerged oil aeration cells along the north bank.**



**Amphibex dredge used to remove approximately 18 inches of sediment from upstream of Ceresco Dam.**



13 OCT 2010 13:00

Source: US EPA

**Geotube filter system used to capture contaminated sediment.**



**Ceresco Dam dredging progress as of Oct. 12, 2010: green indicates completed areas and blue shows areas in progress.**

# Submerged Oil

Aeration, Flushing, Agitation

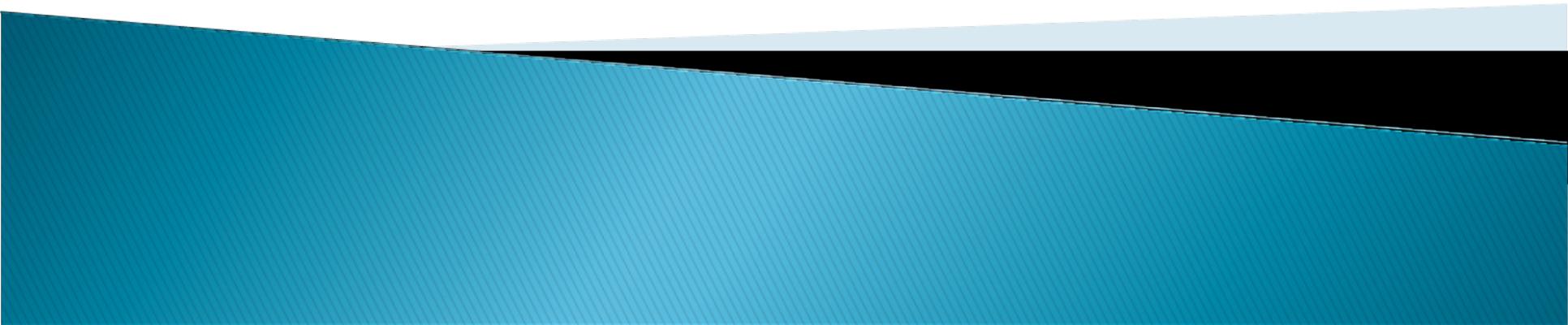


Photo type: Overview

Feature: NO SETTING



12 OCT 2010 13:38

N: 42° 11' 06.03"  
W: 85° 13' 29.99"

Container : NO SETTING

**Submerged oil recovery at "Mill Pond Area" in Battle Creek.**



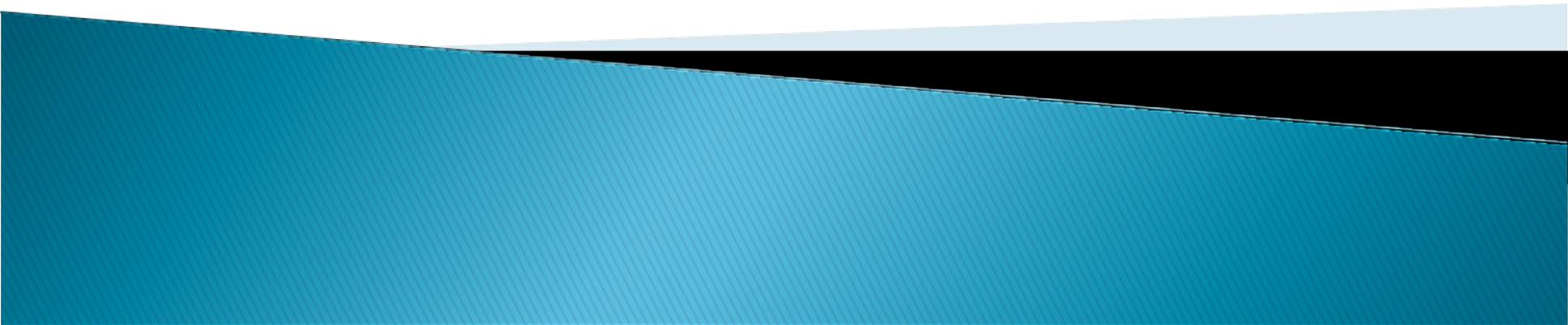
**Example of submerged oil aeration, flushing, and recovery. Sediment is agitated to reintroduce oil to the surface so it can be collected.**



**Close-up shot of aeration activities.**

# Operation and Maintenance

Long Term Activity





Source: US EPA

**Riverbank flushing activities.**



**Riverbank restoration and long-term containment . Some areas on river will be monitored over time for potential contamination.**



**Residual contamination on islands will be monitored over time.**

**Stains on trees and rocks will fade over time and do not present health or environmental risks.**



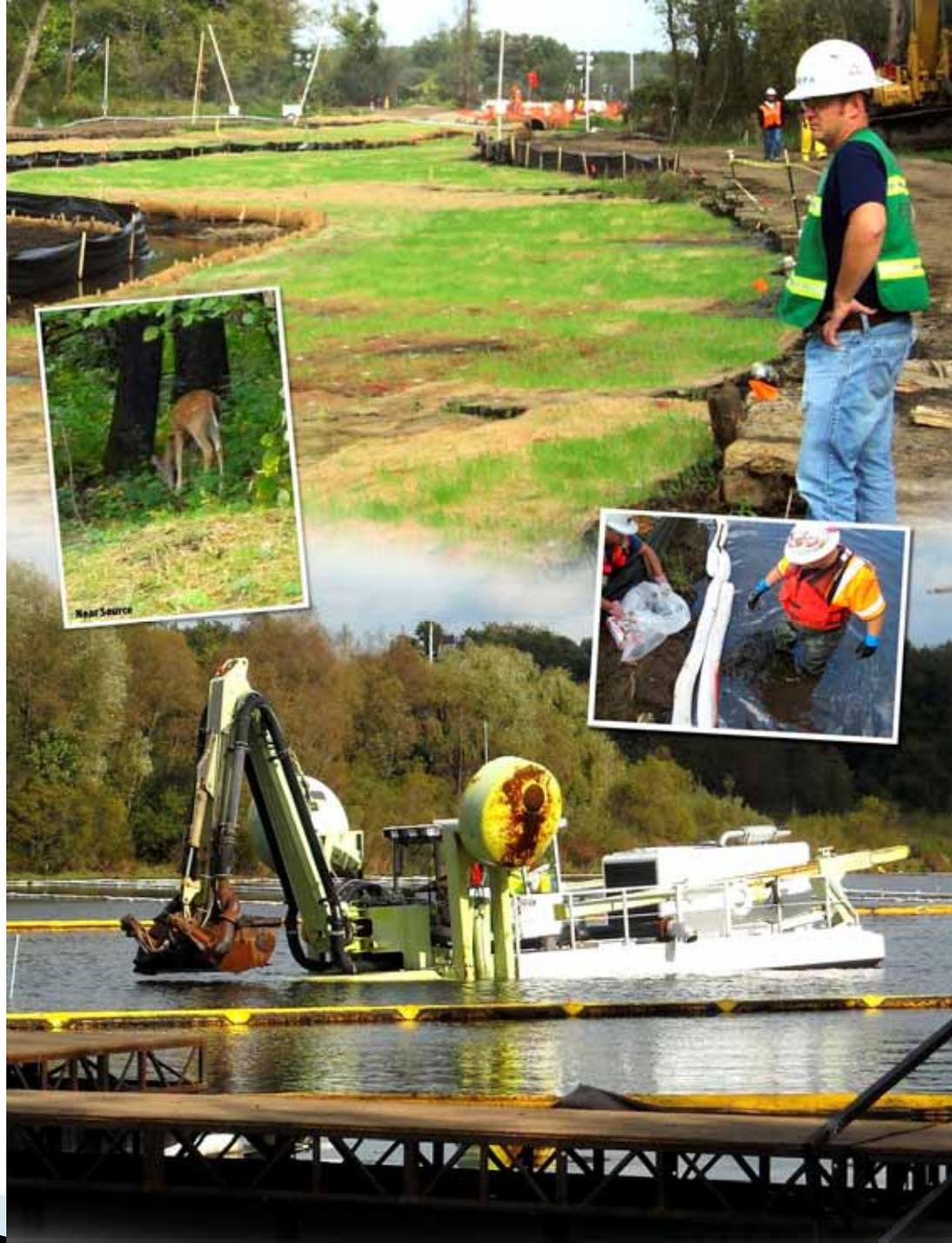
Source: U.S. EPA



**Other areas will require long-term operation and maintenance to continue to reduce contamination levels.**



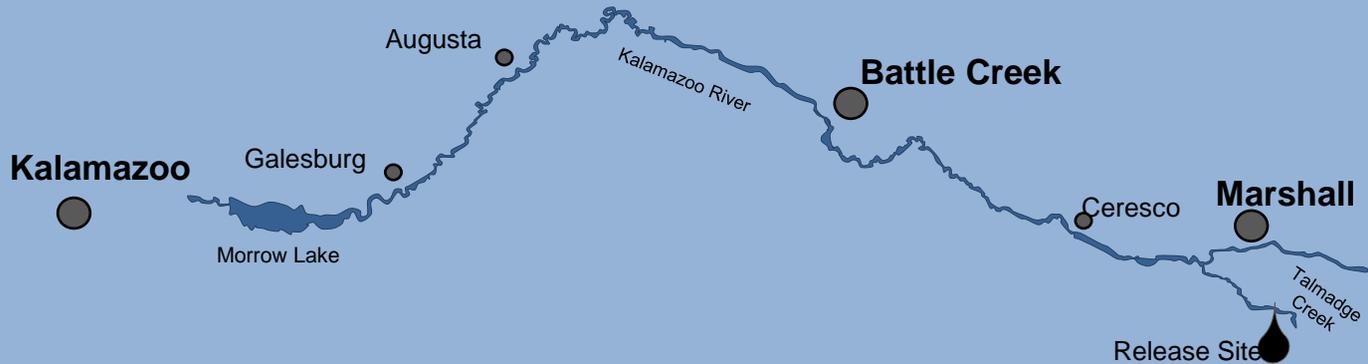
**Thank You**



U.S. EPA Presentation at No Spills Conference, January 2015



# Enbridge Oil Spill

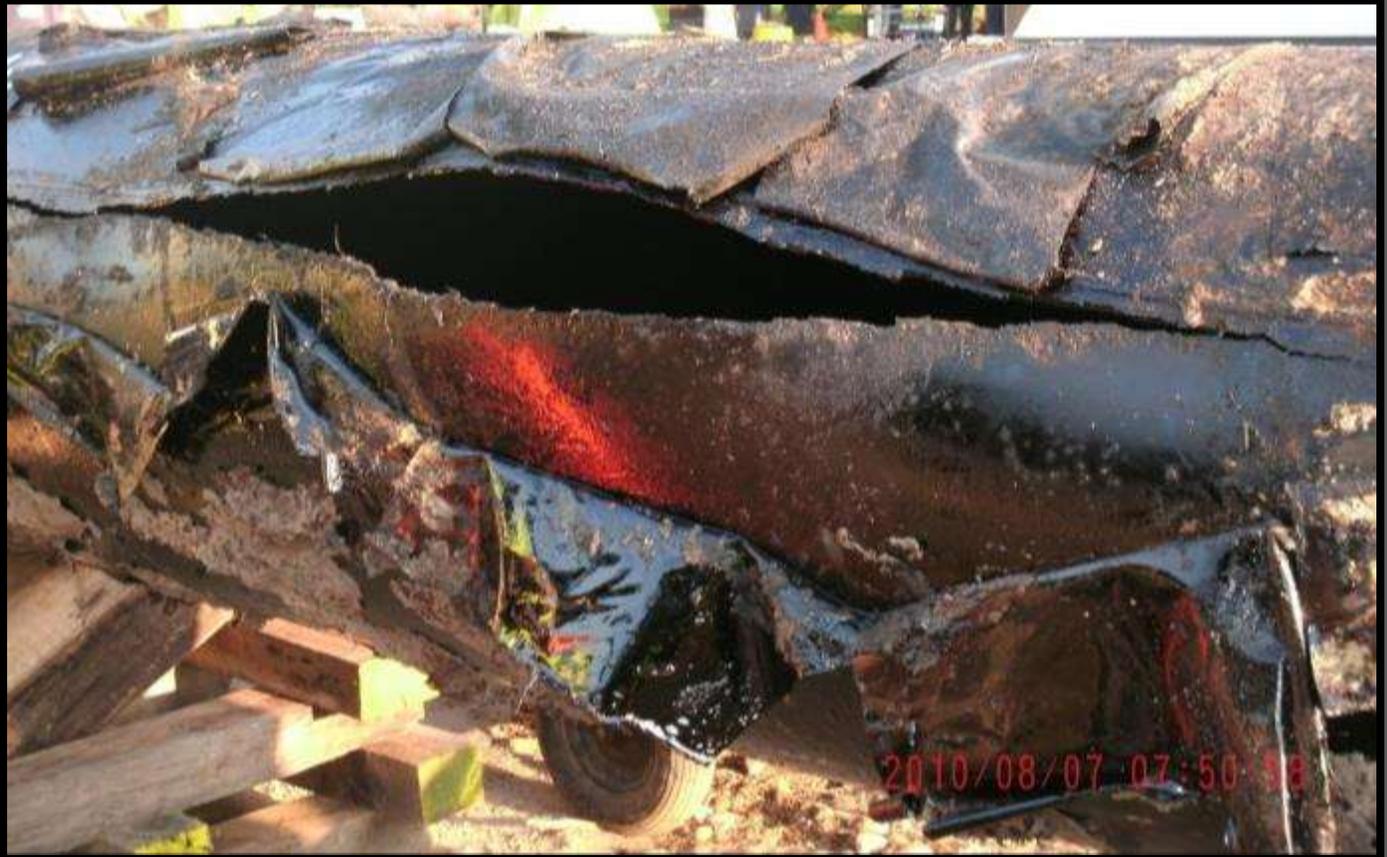


# Source Area



August 4, 2010

# Source Area



# Source Area



August 5, 2010

# Source Area



September 20, 2012

# Source Area



September 17, 2014

# Talmadge Creek



November 11, 2011

# Talmadge Creek



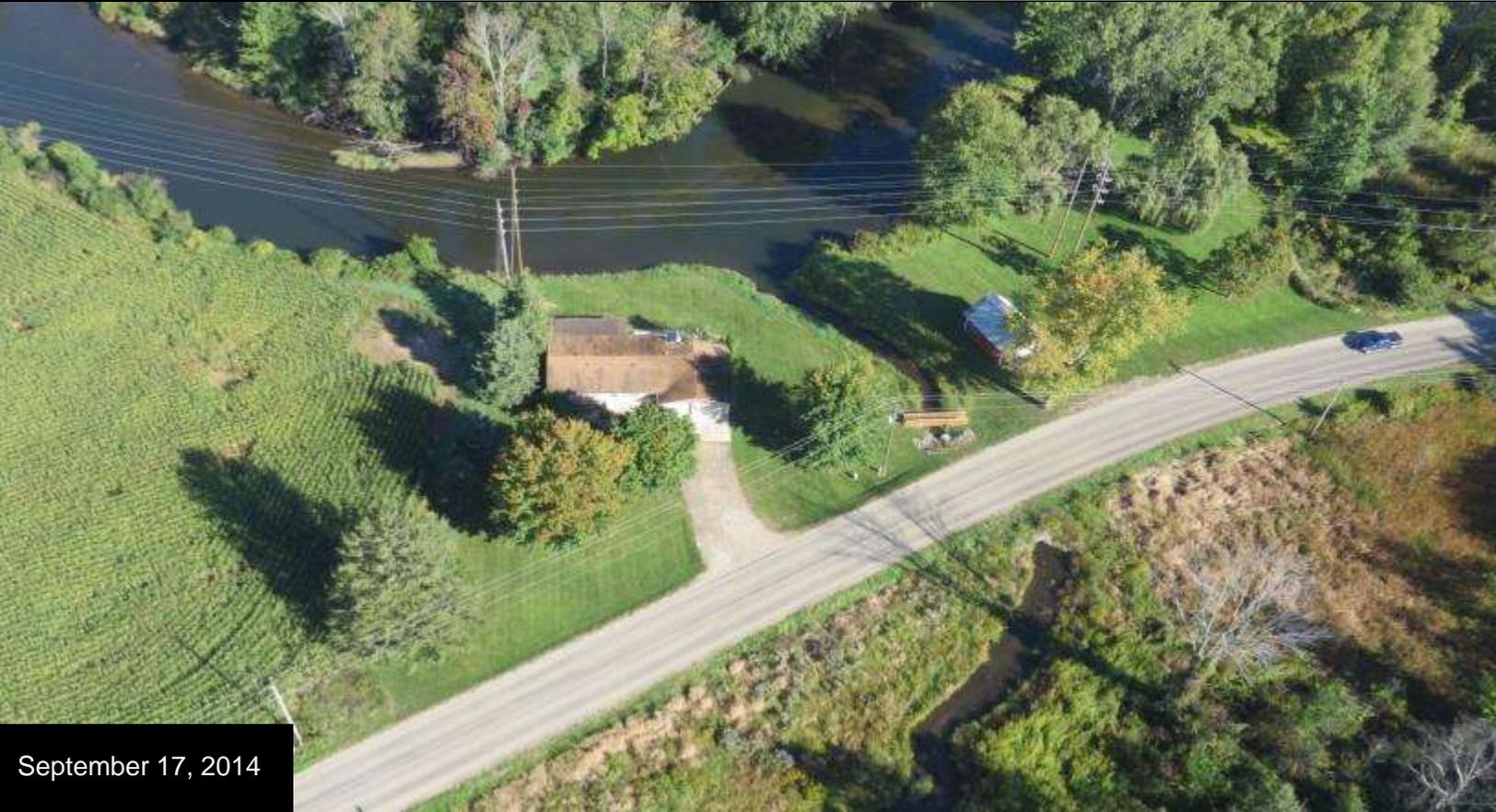
September 17, 2014

# Talmadge Creek and Kalamazoo River Confluence



March 5, 2012

# Talmadge Creek and Kalamazoo River Confluence



September 17, 2014

# Frac Tank City



September 17, 2014

# Island A



September 17, 2014

# MP 4.5 Overbank Excavation



September 17, 2014

# Ceresco



September 17, 2014

# Ceresco Dredge Pad



September 17, 2014

# MP 11.25 Overbank Excavation



September 17, 2014

# Mill Ponds



August 17, 2014

# Mill Ponds Dredge Pad



September 17, 2014

# MP 21.5 Sediment Trap



September 17, 2014

# Morrow Lake Delta



July 17, 2014

# E 3.5 Boat Launch and Staging Area



September 17, 2014

# Morrow Lake Dredge Pad



September 17, 2014

# Morrow Lake



September 17, 2014

# EPA Metrics Project Total



## Progress Under EPA Orders (as of 10/06/2014)

### - Waste shipped off site

- Haz Soil – 19,644 cubic yards
- Non-haz Soil – 327,669 cubic yards
- Non-Haz Soil and Debris – 64,815 cubic yards
- Haz Debris – 12,075 cubic yards
- Non-Haz Water – 11,934,503 gallons
- Haz Water - 3,594,579 gallons
- Oil (as recoverable crude) – 766,288 gallons
- Calculated oil total from all sources – 1,201,098 gallons