

US EPA ARCHIVE DOCUMENT

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION V  
POLLUTION/SITUATION REPORT #113



**KALAMAZOO RIVER/ENBRIDGE SPILL – REMOVAL**  
**SITE # Z5JS**  
**MARSHALL, MICHIGAN**  
**LATITUDE: 42.2395273; LONGITUDE: -84.9662018**



Oil Recovery Operations in Morrow Lake

US EPA ARCHIVE DOCUMENT

**To:** Lt. Paul Baker, Kalamazoo County Sheriff's Office  
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Mike McKenzie, City of Battle Creek  
Susan Hedman, U.S. EPA Regional Administrator  
James Sygo, MDEQ  
Cheryl Vosburg, City of Marshall  
Christine Kosmowski, City of Battle Creek  
Linda Buzas, Kalamazoo County

**From:** Ralph Dollhopf, U.S. EPA, Federal On-Scene Coordinator

**Date:** 8/24/2011

**Reporting Period:** 0700 hours 8/15/2011 through 0700 hours 8/22/2011

### ***1. Site Data***

<b>Site Number:</b>	Z5JS	<b>Contract Number:</b>	
<b>D.O. Number:</b>		<b>Action Memo Date:</b>	
<b>Response Authority:</b>	OPA	<b>Response Type:</b>	Emergency
<b>Response Lead:</b>	PRP	<b>Incident Category:</b>	Removal Action
<b>NPL Status:</b>	Non-NPL	<b>Operable Unit:</b>	
<b>Mobilization Date:</b>	7/26/2010	<b>Start Date:</b>	7/26/2010
<b>Demobilization Date:</b>		<b>Completion Date:</b>	
<b>CERCLIS ID:</b>		<b>RCRIS ID:</b>	
<b>ERNS No.:</b>		<b>State Notification:</b>	
<b>FPN#:</b>	E10527	<b>Reimbursable Account:</b>	

### ***2. Previous Response Actions and Current Response Governance***

- Previous response actions performed to date may be found in SITREPs #1 through #112.
- Governance for the project is provided by the U.S. Environmental Protection Agency (U.S. EPA) Federal On-Scene Coordinator (FOSC) and the Michigan Department of Environmental Quality (MDEQ). The structure of the response is the Incident Command System (ICS), with the FOSC serving as the Incident Commander (IC).
- The Operational Periods covered in this report are: 0700 hours on 8/15/2011 through 0700 hours on 8/18/2011 and 0700 hours on 8/18/2011 through 0700 hours on 8/22/2011.

### ***3. Operations***

- This operational phase of the response consisted of: 1) Air Operations; 2) Waste Management; 3) Environmental Compliance including Control Point Management; 4) Response Action including Overbank Excavation, Overbank Surface Cleanup, and Submerged Oil Recovery in the Kalamazoo River; 5) Monitoring; 6) Wildlife Operations; and 7) River Reopening Coordination.

### 3.1 Air Operations Branch

- During the operational periods, six overflights were conducted for situational awareness.

### 3.2 Waste Management Branch

#### 3.2.1 Decontamination Unit

- Equipment and boom decontaminated during the operational periods are presented in Table 1.

#### 3.2.2 Transportation and Disposal Unit

- Waste management, characterization, and coordination of transportation and disposal continued according to approved plans. Quantities of oil and debris shipped off site during the reporting period are presented in Tables 2 through 5.
- EPA continued oversight of waste characterization, transportation, and disposal activities including composite sampling during live loading operations at the Mile Post (MP) 4.5 and MP 21.5 Oxbow excavation sites.

### 3.3 Environmental Compliance Branch

#### 3.3.1 Operations and Maintenance (O&M)

- During the operational periods, Enbridge continued inspections of control points, containment boom locations, and protective boom locations. Teams evaluated boom placement, boom effectiveness, and presence of accumulated visible oil or oil-saturated soils. Daily O&M activity and progress tracking information is presented in Table 6.
- O&M personnel continued to install and enhance surface and subsurface containment as necessary. Hard boom, X-Tex curtain, and absorbent boom were installed at existing and new locations throughout the Kalamazoo, the Morrow Lake Delta, and Morrow Lake. Teams also continued to perform sheen sweeps along the Kalamazoo River, the Morrow Lake Delta, and Morrow Lake.
- Teams installed an aqua dam at MP 5.80 South, below Ceresco Dam, to allow for dewatering and recovery in the concrete area.

### 3.4 Response Action Branch

#### 3.4.1 Overbank Surface Cleanup Unit

- During the operational periods, overbank surface cleanup work was conducted along the Kalamazoo River and islands within the Kalamazoo River. Enbridge focused on oil recovery in overbank ponded areas using stingers and tillers. Teams also removed tar patties using approved techniques to eliminate visible surface contamination. Overbank surface cleanup progress information is presented in Table 7.

#### 3.4.2 Overbank Excavation Unit

- During the operational periods, teams continued excavation, dewatered, and maintained erosion control and stabilization at MP 4.50 L1 and MP 21.50 Oxbow.
- Teams began site preparation and mobilization to the Islands E and F excavation sites.

### ***3.4.3 Submerged Oil Recovery and Cleanup Unit***

- Submerged oil recovery operations continued on the Kalamazoo River, Morrow Lake Delta including areas around the islands at the west end of Morrow Lake Delta. Recovery operations followed the approved submerged oil recovery tool box techniques including flushing and other mechanical agitation techniques.
- During the operational periods, teams conducted site preparation and recovery operations throughout the Kalamazoo River, focusing on the area above Ceresco, the Mill Pond, MP 22 to MP 30, the Morrow Lake Delta, and the Morrow Lake fan area. Submerged oil recovery and cleanup progress information is presented in Table 8.
- Teams began reassessment poling in areas where submerged oil recovery activities have been completed from the confluence of Talmadge Creek and the Kalamazoo River to Ceresco Dam, downstream of Ceresco dam, and downstream of the confluence of the Kalamazoo River and the Battle Creek River. Some light, moderate, and heavy areas of submerged oil remain throughout these areas.

## **3.5 Monitoring Branch**

### ***3.5.1 Surface Water and Sediment Sampling***

- Enbridge continued soil, sediment, and surface water sampling in accordance with the MDEQ Sampling and Analysis Plan (SAP). Samples collected as reported by Enbridge are provided in Table 9.
- Enbridge continued to conduct turbidity and dissolved oxygen monitoring throughout the Kalamazoo River, focusing on active submerged oil recovery work locations. Enbridge also continued qualitative analysis of submerged oil particulates using a gabion basket system.
- Additional analytical testing was conducted for the unknown substance found near MP 15.05 and MP 15.65 during previous operational periods. Results were inconclusive.

### ***3.5.2 Air Monitoring and Sampling***

- Enbridge continued to implement the 2011 Community Air Monitoring and Sampling Plan. Teams conducted air monitoring and sampling at work area locations for worker safety and maintained an odor response team. EPA performed oversight of air monitoring and sampling plan implementation. Air sampling and monitoring information is provided in Tables 9 and 10.

## **3.6 Wildlife Branch**

- The Wildlife Branch continued to provide medical health assessment, treatment, and release of rehabilitated wildlife under US Fish and Wildlife Service (USFWS) direction.
- Throughout the operational periods, the Wildlife Branch conducted turtle trapping and release along the Kalamazoo River. Trapping information is presented in Table 11.
- The Wildlife Branch performed fish relocation from submerged oil recovery and excavation sites based on dissolved oxygen and turbidity monitoring results.
- On August 16, 2011, approximately 40 small dead fish were collected from the MP 21.50 Oxbow area. The fish kill did not appear to be caused by low DO or high turbidity, but rather mechanical impacts.

### 3.7 River Reopening Coordination Branch

- Throughout the operational periods, EPA conducted O&M site closure assessments and conducted assessments of sites along the Kalamazoo River, including bleeding bank sites.

## 4. Planning

### 4.1 Situation Unit

- Situation Unit personnel observed and documented progress in all operational areas and continued to assess areas of interest including locations of oil sheen, oil removal, and decontamination activities. Significant observations during the operational periods include:
  - Remedial Investigation work continued along Talmadge Creek.
  - Enbridge continued Legacy Projects at 15 Mile Road, Wheatfield Road, and McCormick Street.
  - Woody debris removal and submerged oil recovery work continued at the Morrow Lake Delta and the fan of Morrow Lake. Enbridge continued using large pontoon mounted excavators for work in the area. Throughout the operational period, sediment was observed breaching containment and slight sheen was noted along the boom at E5 and E6.
  - Enbridge continued dewatering and excavation work at MP 4.5 and MP 21.25 Oxbow.
  - Enbridge began preparation for bridge construction, preparation for excavation, and sheet pile installation at the Island E excavation site.
  - Enbridge conducted oil recovery on private pond at MP 26.0.

### 4.2 Environmental Unit

- The Recovery Task Force conducted coordination of oil recovery activities including overbank surface recovery and submerged oil recovery activities.

### 4.3 Documentation Unit

- Documentation Unit personnel continued organization and archiving of electronic and paper files.

### 4.4 GIS Support

- During the operational periods, EPA GIS personnel continued to support operations with the generation of site maps.

## 5. Command

### 5.1 Safety

- Safety personnel continued to conduct work site safety inspections, focusing on activities at MP 4.5 and MP 21.50 Oxbow excavation sites. No major safety issues were observed.
- Throughout the operational periods, minor first aid incidents occurred, including a scrape, 3 cuts, a fall into the river, 2 ankle injuries, 4 insect stings, and 3 instances of poison ivy exposure. All the affected personnel returned to work.
- Field operations were shutdown at approximately 1300 hours on August 20, 2011 due to adverse weather conditions.

## 5.2 Public Information

- During these two operational periods, the Public Information Officer (PIO) coordinated media interviews, prepared for the public meeting, and maintained a booth at the Calhoun County Fair.
- On August 17, 2011, EPA held a public meeting at the Marshall Activity Center in Marshall, MI.
- The number of public inquires reported by EPA and Enbridge for this period is presented in Table 12.

### ***6. Landowner Environmental Issues***

- Landowner environmental issues reported by Enbridge for the operational periods are presented in Table 13.

### ***7. Finance***

- The current National Pollution Funds Center (NPFC) ceiling is \$35.7 Million. Approximately 91.1% of the ceiling has been spent through August 21, 2011. As of August 14, 2011, the latest average 7-day burn rate was \$91,991 per day. These cost summaries reflect only EPA-funded expenditures for the incident. A summary of these expenses is presented in Table 14.

### ***8. Participating Entities***

- The Multi-Agency Coordination (MAC) Group continues to meet weekly to discuss the progress of the response. Entities participating in the MAC include:
  - U.S. Environmental Protection Agency
  - Michigan Department of Environmental Quality
  - Michigan State Police Emergency Management Division
  - City of Battle Creek
  - City of Marshall
  - Calhoun County Public Health Department
  - Calhoun County Emergency Management
  - Kalamazoo County Public Health Department
  - Kalamazoo County Sheriff
  - Enbridge (Responsible Party)
- For a list of cooperating and assisting agencies and the congressional presence, see SITREP #51 (Sections 3.2 and 3.3).

### ***9. Personnel On-Site***

- Staffing numbers for the entities and agencies active in the response are presented in Table 14.

### ***10. Source of Additional Information***

- For additional information, refer to <http://www.epa.gov/enbridgespill>. For sampling analysis data, see <http://response.enbridge.com/response/main.aspx?id=13168>.

## 11. Clean-up Progress Metrics

**Table 1 - Equipment Decontamination**

Location/Media	Total	August 2011						
		21	20	19	18	17	16	15
Frac Tanks	0	0	0	0	0	0	0	0
Vac Trucks-Tankers	0	0	0	0	0	0	0	0
Roll-Off Boxes	0	0	0	0	0	0	0	0
Yellow Iron (light)	2	0	0	0	0	0	2	0
Yellow Iron (heavy)	3	0	0	3	0	0	0	0
Jon Boats	3	0	0	0	1	0	2	0
Air Boats	4	0	0	0	0	0	3	1
Vehicles	4	0	4	0	0	0	0	0
Boom (feet)	500	0	0	0	100	100	0	300
Miscellaneous Items	111	0	75	0	8	28	0	0

**Table 2 - Soil and Debris Shipped Off Site (as of 8/21/2011)**

Waste Stream	Cumulative	Disposal Facility
<i>Haz Soil (yd<sup>3</sup>)</i>	19,644	<i>Envirosafe (Oregon, OH)</i>
Non-Haz Soil & Debris (yd <sup>3</sup> ) (Excluding Ceresco Dredge)	33,675	Terra/C&C
<i>Non-Haz Soil &amp; Debris (yd<sup>3</sup>) (Excluding Ceresco Dredge)</i>	64,815	<i>Westside Recycling (Three Rivers, MI)</i>
<i>Non-Haz Soil (yd<sup>3</sup>) (Ceresco Dredge Only)</i>	5,562	<i>EQ/Republic (Marshall, MI)</i>
<i>Haz Debris (yd<sup>3</sup>)</i>	12,075	<i>EQ/Michigan Disposal (Wayne, MI) and Republic (Marshall, MI)</i>
Non-Haz Household Debris (ton)	943	EQ/Republic (Marshall, MI); C&C
Non-Haz Impacted Debris (ton)	3,781	

*Shaded and italicized* items are discontinued waste streams.

**Table 3 – Oil/Water Collected by Location (as of 8/21/2011)**

Location	Cumulative (gallons)
Division A	5,356,315
Division B	4,868,279
Division C	1,891,406
Division D	121,106
Division E	48,538
Decontamination	1,979,068
Site A	316,464
Other Locations*	1,337,625
Subtotal	<b>15,918,801</b>
Sludge**	<b>474,215</b>
<b>Total Oil/Water</b>	<b>15,444,586</b>

\* Wildlife Center Operations, Sediment Trap Cleaning, Hydro-Vacuuming.

\*\* Sludge collected is tracked as a liquid waste inbound; however, after stabilization, the sludge is disposed of as solid waste. Therefore, the volume of sludge is not included within the cumulative oil/water totals. Stabilized sludge is included in the solid waste disposal metrics.

**Table 4 - Liquid Shipped Off-Site (as of 8/21/2011)**

<b>Stream</b>	<b>Destination Company</b>	<b>Destination Location</b>	<b>Cumulative Volume (gallons) †</b>
Hazardous Water	Dynecol	Detroit, MI	3,594,579
Non-Haz Water	Battle Creek POTW	Battle Creek, MI	893,980
Non-Haz Water	Dynecol	Detroit, MI	913,642
Non-Haz Water	Liquid Industrial Waste	Holland, MI	309,307
Non-Haz Water	Plummer	Kentwood, MI	90,000
<i>Oil</i>	<i>Enbridge Facility</i>	<i>Griffith, IN</i>	<i>766,288</i>
<i>Other Material</i>			<i>1,405,525</i>
<i>Treated Non-Haz Water</i>	<i>Liquid Industrial Waste</i>	<i>Holland, MI</i>	<i>370,200</i>
<i>Treated Non-Haz Water</i>	<i>Plummer</i>	<i>Kentwood, MI</i>	<i>4,976,140</i>
<i>Hazardous Water</i>	<i>Safety Kleen<sup>a</sup></i>		<i>825</i>
<i>Treated Non-Haz Water*</i>	<i>Dynecol</i>	<i>Detroit, MI</i>	<i>150,700</i>
<i>Treated Non-Haz Water*</i>	<i>Battle Creek POTW</i>	<i>Battle Creek, MI</i>	<i>1,968,700</i>
<b>Total</b>			<b>15,439,886</b>

*Shaded and italicized* items are discontinued waste streams.

† Cumulative quantities may not reconcile with previous reports (due to auditing).

a New Age lab water and methanol mix generated by mobile laboratory.

\* Treated Non-Haz Water no longer sent to this location.

**Table 5 - Oil/Water Remaining On-Site (as of 8/21/2011)**

<b>Item</b>	<b>Cumulative (gallons)</b>
Oil/Water Collected	15,444,586
Oil/Water Shipped Off-Site	15,439,886
<b>Total Oil/Water Remaining On-Site</b>	<b>4,700</b>

**Table 6 – Daily Activity/Progress**

	<b>August 2011</b>						
	<b>21</b>	<b>20</b>	<b>19</b>	<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>
Parks Assessment Sites	3	3	3	3	3	3	3
Bridge Assessment Sites	21	21	21	21	21	21	21
High Use Access Points Assessment Sites	9	9	9	9	9	9	9
Operations & Maintenance Site	117	117	117	117	108	108	108
Boom Locations							
Control Points	12	12	12	12	12	12	12
Protective Containment Sites	35	35	35	35	34	37	34
River Erosion Sites	26	26	26	26	26	26	26
Total Surface Hard Boom (ft)	47,125	47,075	47,075	46,975	46,975	47,525	47,525
[Control Point Surface Hard Boom]	[31,400]	[31,350]	[31,350]	[31,350]	[31,350]	[31,350]	[31,350]

**Table 7 – Overbank Surface Cleanup Progress (as of 8/21/2011)**

	<b>Tar Patty Sites</b>	<b>Strike Sites</b>
Sites Identified for Cleanup	237	57
Cleanup Complete and Completeness Check Form Signed	174	16
Percent Complete	<b>73.4%</b>	<b>28.1%</b>

**Table 8 – Submerged Oil Recovery and Cleanup Progress (as of 8/21/2011)**

Sites Identified for Cleanup	210
Cleanup Complete and Completeness Check Form Signed	85
Percent Complete	<b>40.5%</b>

**Table 9 – Samples Collected By Enbridge**

Sample Type	Total	August 2011						
		21	20	19	18	17	16	15
Surface Water	26	0	0	0	16	0	10	0
Private Well	11	0	0	0	0	0	4	7
Groundwater	13	0	2	6	3	2	0	0
Sediment	43	0	9	25	0	0	9	0
Soil	99	0	15	25	53	0	6	0
Air (Community and Odor Complaint)	134	20	21	19	20	18	18	18

**Table 10 – Real Time Air Monitoring Counts By Enbridge**

Monitoring Location	Total	August 2011						
		21	20	19	18	17	16	15
Community	1974	144	125	354	347	363	351	290
Odor Response	20	4	4	12	0	0	0	0
Work Area	812	1	60	163	162	176	121	129

**Table 11 – Wildlife**

Location/Media	Total	August 2011						
		21	20	19	18	17	16	15
Turtles in Captivity	67	67	67	65	63	59	54	51
Returned from Binder Park	10	0	0	0	10	10	10	0
Hatchlings	39	39	39	30	10	10	4	0
Turtles Captured (Oiled) – Field Cleaned	82	15	15	7	11	3	11	20
Turtles Captured (Oiled) – Admitted to Wildlife Center	45	10	10	7	9	6	1	2
Turtles Captured (Un-oiled) – Field Released	133	21	21	21	16	18	17	19
Turtles Released from Captivity	18	0	0	10	5	0	3	0

**Table 12 – Public Inquiries Received by EPA and Enbridge**

Location/Media	Total	August 2011						
		21	20	19	18	17	16	15
Marshall Community Center	17	0	0	3	7	3	3	1
Oil Spill Public Information Hotline	24	0	0	4	3	6	7	4
Website	2	0	0	0	0	1	1	0
Calhoun County Fair Contacts	265	0	30	43	27	58	55	52
<b>Total Public Inquiries</b>	<b>308</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>5</b>

**Table 13 – Landowner Environmental Issues (as of 8/21/2011)\***

Issues this Period	Issues Undergoing Evaluation	Issues Considered Addressed
1	13	0

\*As reported by Enbridge. Additionally, EPA is in the process of addressing 2 landowner environmental issues.

**Table 14 - Financial Summary**

Item	Expended (Cumulative) as of 8/21/2011)
<b>ERRS Contractors</b>	
EQM (EPS50802) T057	\$ 1,199,522
T060	\$ 213,636
LATA (EPS50804) T019	\$ 1,161,082
ER LLC (EPS50905) T040	\$ 683,330
<b>Total ERRS Contractors</b>	<b>\$ 3,257,571</b>
<b>Other Contractors</b>	
Lockheed Martin (EPW09031) – TAGA Support	\$ 185,951
T&T Bisso (EPA:HS800008)	\$ 882,087
<b>Total Other Contractors</b>	<b>\$ 1,068,038</b>
<b>START Contractor – WESTON (EPS50604)</b> T030-Response	\$ 15,579,861
T032-Sampling	\$ 183,597
T037-Doc Support	\$ 944,294
<b>Total START Contractor</b>	<b>\$ 16,707,752</b>
<b>Response Contractor Sub-Totals</b>	<b>\$ 21,033,361</b>
<b>EPA Funded Costs: Total EPA Costs</b>	<b>\$ 5,181,937</b>
<b>Pollution Removal Funding Agreements – Total Other Agencies</b>	<b>\$ 1,823,682</b>
<b>Sub-Totals</b>	<b>\$ 28,038,980</b>
Indirect Cost (16.00%)	\$ 4,486,237
<b>Total Est. Oil Spill Cost</b>	<b>\$ 32,525,217</b>
<b>Oil Spill Ceiling Authorized by USCG</b>	<b>\$ 35,700,000</b>
<b>Oil Spill Ceiling Available Balance</b>	<b>\$ 3,174,783</b>

Shaded items are discontinued

**Table 15 - Personnel On-Site**

Agency/Entity	August 2011						
	21	20	19	18	17	16	15
U.S. EPA	0	4	6	8	6	6	5
START	6	50	55	52	52	50	46
MDEQ	0	1	3	6	7	4	4
MDEQ Contractors	0	7	10	10	9	10	9
Calhoun County Public Health	0	0	0	2	0	0	0
Calhoun County (CC) EM	0	0	0	0	0	0	0
City of Battle Creek	0	0	0	0	0	0	0
City of Marshall	0	0	0	0	0	0	0
Village of Augusta	0	0	0	0	0	0	0
Kalamazoo County Public Health	0	0	0	1	0	0	0
Kalamazoo Sheriff	0	0	0	1	0	0	0
MDCH	0	0	0	1	0	0	0
USGS	0	0	0	0	0	0	0
Michigan State Police EMD	0	0	0	0	0	0	0
Enbridge – Operations	43	126	187	194	198	203	194
Enbridge – Field	108	604	585	575	618	634	594
Enbridge – Security & Flaggers	7	7	7	7	7	7	7
Enbridge – Wildlife and Comm.	8	13	17	18	22	19	17
<b>Total</b>	<b>172</b>	<b>812</b>	<b>870</b>	<b>875</b>	<b>919</b>	<b>933</b>	<b>876</b>

\*Enbridge Operations and Field include Enbridge and contractors as reported by Enbridge