

US EPA ARCHIVE DOCUMENT

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION V  
POLLUTION/SITUATION REPORT #146



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

**US EPA ARCHIVE DOCUMENT**

**Submerged oil poling and sheen collection at MP 5.55 RDB**



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Cheryl Vosburg, City of Marshall  
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**From:** Ralph Dollhopf, U.S. EPA, Federal On-Scene Coordinator

**Date:** 05/22/2012

**Reporting/Operational Period:** 0700 hours 05/10/2012 through 0700 hours 05/17/2012

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

<b>Site Number:</b>	Z5JS	<b>Response Type:</b>	Emergency
<b>Response Authority:</b>	OPA	<b>Incident Category:</b>	Removal Action
<b>Response Lead:</b>	PRP	<b>NPL Status:</b>	Non-NPL
<b>Mobilization Date:</b>	7/26/2010	<b>Start Date:</b>	7/26/2010
<b>FPN#:</b>	E10527		

### ***2. Operations Section***

- The organizational response structure consisted of the following Branches: 1) Overbank; 2) Submerged Oil; 3) Containment; 4) River Opening; 5) Kalamazoo River System; 7) Air Operations; and 8) Waste Management.

#### **2.1 Overbank Branch**

##### ***2.1.1 OSCAR Group***

- No activities were conducted during the reporting period.

##### ***2.1.2 Overbank Science Group***

- Enbridge's Source Area Assessment Work Plan is currently under review by U.S. EPA.

##### ***2.1.3 Overbank Compliance Group***

- No activities were conducted during the reporting period.

##### ***2.1.4 Overbank Recovery Group***

- No activities were conducted during the reporting period.

### ***2.1.5 Overbank Monitoring Group***

- Enbridge continued to maintain an odor response team; however, no odor complaints were received during the operational period.
- Air monitoring and sampling information is included in Tables 1 and 2.

## **2.2 Submerged Oil Branch**

### ***2.2.1 Submerged Oil Assessment Group***

- Spring 2012 poling reassessment activities continued. The main areas of focus for the Spring 2012 reassessment were from the confluence of Talmadge Creek and the Kalamazoo (MP 2.25) to Ceresco Dam (MP 5.85) and the Morrow Lake Delta and Morrow Lake. Six to eight teams conducted poling reassessment activities during the period. The Submerged Oil Assessment Group met daily to review poling results from the Spring 2012 reassessment.
- Pursuant to the Emerging Oil Management Program (EOMP), Enbridge, U.S. EPA, and MDEQ continued to track the location, response, and sheen differentiation test results of each identified location of sheen. Teams recorded and documented sheen observations in the main channel and overbank areas, and conducted sheen testing as necessary. Sheen observations were reported back to Operations Section Chiefs for monitoring and response.

### ***2.2.2 Submerged Oil Science Group***

- Enbridge's re-submittal of the Morrow Lake Monitoring, Assessment, and Management Plan (re-submitted on May 16, 2012) is currently under review by U.S. EPA.
- Chemical fingerprinting analysis results from the Rock Tenn protective containment location determined that Enbridge Line 6B oil was present within the protective containment. Enbridge prepared a plan for addressing the contamination at the Rock Tenn intake.
- Enbridge's Kalamazoo River Hydrodynamic Transport Model Report containing baseline model calibration results (e.g. riverine and floodplain grids) and various baseline scenario results, and its addendum are currently under review by U.S. EPA.

### ***2.2.3 Submerged Oil Compliance Group***

- No activities were conducted.

### ***2.2.4 Submerged Oil Recovery Group***

- Implementation of sheen management activities continued. Response locations during this operational period included MP 10.75 LDB.

### ***2.2.5 Submerged Oil Monitoring Group***

- No activities were conducted.

## 2.3 Containment Branch

### 2.3.1 *Containment Science Group*

- The group submitted the hydrodynamic model outputs and HEC-RAS modeling outputs for the additional 14 sediment trap locations to the MDEQ in support of the permit application.
- The Group continued to develop strategies for evaluating and enhancing the planned sediment traps.

### 2.3.2 *Containment Compliance Group*

- Enbridge tracked an MDEQ permit application for enhanced sediment traps at 13 locations, based on a review of existing hydrodynamic model data and HEC-RAS modeling requirements set forth by MDEQ. The permit application is currently under review by MDEQ.

### 2.3.3 *Containment Recovery Group*

- Teams continued to maintain 1,450 feet of surface hard boom at 11 protective containment sites, and 3,475 feet of surface hard boom at 3 control points. Teams removed debris accumulated within the boomed areas and recorded observations and estimates of surface area of accumulated petroleum sheen at the 3 control points.

### 2.3.4 *Containment Monitoring Group*

- Teams continued to implement the EOMP. See Section 2.2.1 for additional details regarding the EOMP.
- Water level gauges were monitored at multiple locations along the Kalamazoo River, Morrow Lake Delta, and Morrow Lake. In addition, daily water and sediment temperature readings were collected at 10 locations.
- Two crews monitored control points, protective containment points, and tracked sheen observations in Talmadge Creek and the Kalamazoo River.
- Enbridge's re-submittal of the Sediment Trap Monitoring and Maintenance Plan is currently under review.

## 2.4 River Opening Branch

### 2.4.1 *River Opening Media Group*

- Media relations personnel ensured appropriate posting of kiosk materials and river signage in River Opening Segment 1 (Perrin Dam to Saylor's Landing). The Group also continued with development of media package materials for the opening of the Phase 2 river segments.

### 2.4.2 *River Opening Assessment Group*

- The Group continued preparing for the opening of Phase 2 river segments proposed to be opened after completion of the Spring 2012 Submerged Oil Reassessment.

### ***2.4.3 River Opening Implementation Group***

- Maintenance activities, acquisition, and staging of buoys and signage continued.
- Crews inspected and maintained buoys at the E4 control point, four sediment trap structure locations, and at all of the passive sediment collection devices.

### ***2.4.4 River Opening Monitoring & Security Group***

- Enbridge conducted routine monitoring of buoys and signage in River Opening Segment 1. Buoys were installed at MP 21.5 and MP 28.25 oxbows.

## **2.5 Kalamazoo River System Branch**

### ***2.5.1 Talmadge Creek/Kalamazoo River Remedial Investigation Group***

- Implementation of the Kalamazoo River Remedial Investigation (RI) Work Plan continued.

### ***2.5.2 Kalamazoo River Compliance Group***

- Restoration and stabilization activities were conducted at various Kalamazoo River Bank Erosion Assessment (KRBEA) sites.

### ***2.5.3 Kalamazoo River Remedial Action Group***

- No activities were conducted during the reporting period.

### ***2.5.4 Talmadge Creek/Kalamazoo River Monitoring Group***

- Monitoring of erosion control devices continued.
- The Spring 2012 Talmadge Creek Monitoring and Maintenance Plan is under review by U.S. EPA.

## **2.7 Air Operations Branch**

- One over-flight was conducted for situational awareness during this reporting period. Personnel reported observations of sheen to Operations for follow-up testing and or response consistent with the EOMP.
- Photographs were taken during the over-flights for presentation during Operations, Command and General Staff, and Multi-Agency Coordination (MAC) Group meetings.

## **2.8 Waste Management Branch**

### ***2.8.1 Decontamination Group***

- A summary of equipment and boom decontaminated during this reporting period is presented in Table 3.

### ***2.8.2 Transportation and Disposal Group***

- Enbridge continued to reduce the footprint of Frac Tank City, due to a decrease in the amount of waste being generated as a result of cleanup activities. Crews consolidated materials, continued gravel removal, and conducted restoration of disturbed areas.
- Contaminated soil, water, and debris continue to be transported to Frac Tank City. Samples are collected for oil recovery determination prior to off-site disposal.
- The total amount of recovered oil from the inception of the response has been estimated using actual waste stream volumes, analytical data, and physical parameters of oil-containing media. A summary of the estimated volume of recovered oil is presented in Table 8.
- Quantities of oil and debris shipped off-site during the reporting period are presented in Tables 4 through 7.

### ***2.8.3 Waste Management Characterization Group***

- Waste management characterization, manifesting, and coordination of transportation and disposal continued according to approved plans.

## ***3. Planning***

### **3.1 Situation Unit**

- Situation Unit personnel observed and documented progress in operational areas, and continued to assess areas of interest including locations of tar flecks, oil globules, and oil sheen consistent with the EOMP.
- Daily situation photo logs were prepared and distributed to project participants.
- Personnel implemented the EOMP. See Section 2.2.1 for additional details regarding the EOMP.

#### ***3.1.1 GIS Specialists***

- GIS personnel continued to support operations with the generation of site maps.

### **3.2 Environmental Unit**

- U.S. EPA continued coordination with United States Geological Survey (USGS) regarding the Kalamazoo River geomorphology evaluation and the impact on strategy and tactics for future oil recovery efforts.

### **3.3 Documentation Unit**

- Documentation Unit personnel continued organizing and archiving electronic and paper files.

### **3.4 Resource Unit**

- Personnel continued to produce Incident Action Plans (IAPs), support the planning efforts of operations, and provide information to Logistics personnel in order to properly prepare and procure resources.

## **4. Command**

### **4.1 Safety Officers**

- Safety personnel continued conducting work-site safety inspections and implementing the plan for integration of public safety and worker safety on the Kalamazoo River.
- One minor safety incident occurred during the reporting period. A tick was removed from a worker and first aid was administered.

### **4.2 Public Information**

- The number of public inquires reported by Enbridge for this period is presented in Table 9.

## **5. Landowner Environmental Issues**

- Landowner environmental issues, as reported by Enbridge, are presented in Table 10.

## **6. Finance**

- The current National Pollution Funds Center (NPFCC) ceiling is \$49.7 Million. Approximately 86.2% of the ceiling has been spent through May 13, 2012. The latest average 7-day burn rate was \$35,852. These cost summaries reflect only U.S. EPA-funded expenditures for the incident. A summary of these expenses is presented in Table 11.

## **7. Scientific Support Coordination Group (SSCG)**

- The Eco-Toxicity Subgroup has completed an interim version of a Net Environmental Benefits Analysis (NEBA) to assess the harm and benefits accompanying oil recovery efforts. The draft document will be submitted to the FOSC for review.
- The U.S. EPA's Environmental Response Team (ERT) completed studies with 14 and 28 day sample incubation periods that provide evidence of biodegradation of submerged oil. A report summarizing the findings is being prepared.
- The Chemistry Subgroup is preparing a work plan for sediment core collection specifically focused on the submerged oil quantification task.
- Interpretation of data from the oil fingerprinting samples analyzed by an off-site laboratory continues. Results from the analysis of oil globules and sheen make it easier to distinguish Enbridge oil from background interference found in the sediment.

## **8. Participating Entities**

- Entities participating in the MAC include:
  - U.S. Environmental Protection Agency
  - Michigan Department of Environmental Quality
  - Michigan Department of Community Health
  - City of Battle Creek
  - City of Marshall
  - Allegan County Emergency Management
  - Calhoun County Public Health Department
  - Calhoun County Emergency Management

- Kalamazoo County Health and Community Services 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 12.

### **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/>.

### **11. Clean-up Progress Metrics**

**Table 1 – Real Time Air Monitoring Counts Performed by Enbridge**

Monitoring Location	Total	May 2012						
		16	15	14	13	12	11	10
Odor Response	0	0	0	0	0	0	0	0
Work Area	21	4	5	5	0	0	3	4

**Table 2 – Samples Collected By Enbridge**

Sample Type	Total	May 2012						
		16	15	14	13	12	11	10
Surface Water	1	0	1	0	0	0	0	0
Private Well	0	0	0	0	0	0	0	0
Groundwater	5	0	0	0	0	0	3	2
Sediment	28	7	19	2	0	0	0	0
Soil	57	10	10	10	0	0	13	14
Dewatering	0	0	0	0	0	0	0	0
Air (Odor Complaint)	0	0	0	0	0	0	0	0
Air (Work Area)	0	0	0	0	0	0	0	0

**Table 3 - Equipment Decontamination**

Location/Media	Total	May 2012						
		16	15	14	13	12	11	10
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)	0	0	0	0	0	0	0	0
Yellow Iron (heavy)	0	0	0	0	0	0	0	0
Jon Boats	0	0	0	0	0	0	0	0
Air Boats	0	0	0	0	0	0	0	0
Vehicles	0	0	0	0	0	0	0	0
Boom (linear ft)	0	0	0	0	0	0	0	0
Miscellaneous Items	0	0	0	0	0	0	0	0

**Table 4 - Soil and Debris Shipped Off Site (as of 5/17/2012)**

<b>Waste Stream</b>	<b>Cumulative</b>	<b>Disposal Facility</b>
Haz Soil (yd <sup>3</sup> )	19,644	Envirosafe (Oregon, OH)
Non-Haz Soil & Debris (yd <sup>3</sup> ) (Excluding Ceresco Dredge)	75,883	SET/C&C
Non-Haz Soil & Debris (yd <sup>3</sup> ) (Excluding Ceresco Dredge)	64,815	Westside Recycling (Three Rivers, MI)
Non-Haz Soil (yd <sup>3</sup> ) (Ceresco Dredge Only)	5,562	EQ/Republic (Marshall, MI)
Haz Debris (yd <sup>3</sup> )	12,075	EQ/Michigan Disposal (Wayne, MI) and Republic (Marshall, MI)
Non-Haz Household Debris (ton)	1,676	SET/C&C
Non-Haz Impacted Debris (ton)	6,806	

Shaded items are discontinued waste streams.

**Table 5 – Oil/Water Collected by Location (as of 5/17/2012)**

<b>Location</b>	<b>Cumulative (gallons)</b>
Division A	5,356,315
Division B	5,111,479
Division C	2,096,998
Division D	121,106
Division E	52,631
Decontamination	2,370,969
Site A	322,924
Other Locations*	2,095,671
Subtotal	<b>17,528,093</b>
<b>Sludge**</b>	<b>474,215</b>
<b>Total Oil/Water</b>	<b>17,053,878</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 6 - Liquid Shipped Off-Site (as of 5/17/2012)**

<b>Stream</b>	<b>Destination Company</b>	<b>Destination Location</b>	<b>Cumulative Volume (gallons) †</b>
Non-Haz Water	Battle Creek POTW	Battle Creek, MI	1,143,280
Non-Haz Water	Dynecol	Detroit, MI	981,792
Non-Haz Water	Liquid Industrial Waste	Holland, MI	1,334,957
Non-Haz Water	Plummer	Kentwood, MI	360,892
<i>Hazardous Water</i>	<i>Dynecol</i>	<i>Detroit, MI</i>	<i>3,594,579</i>
<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>17,053,878</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 7 - Oil/Water Remaining On-Site (as of 5/17/2012)**

<b>Item</b>	<b>Cumulative (gallons)</b>
Oil/Water Collected	17,053,878
Oil/Water Shipped Off-Site	17,053,878
<b>Total Oil/Water Remaining On-Site</b>	<b>0</b>

**Table 8 – Estimated Recovered Oil (as of 5/14/2012)**

Waste Stream Containing Recovered Oil	Destination Company	Destination Location	Estimated Oil Volume in Waste Stream (gallons)
Soil - (Impacted Soil & Debris)	C&C Landfill	Marshall, MI	13,597
Soil - (Impacted Soil & Debris)	Envirosafe/ Westside RDF	Oregon, OH	278,665
Geotube Sediment - (Impacted Sediment)	Envirosafe/ Westside RDF	Oregon, OH	1,298
Debris - (Roll Off Boxes with Impacted Sorbents, boom, pads, plastic, PPE, vegetation, and biomass)	EQ Michigan	Belleville, MI	33,781
Frac Tank City - Influent to Carbon Filtration System	C&C Landfill	Marshall, MI	8,109
Frac Tank City - Water	Dynecol	Detroit, MI	46,175
	Liquid Industrial Waste Services, Inc.	Kentwood, MI	
	Plummers Env Inc.	Holland, MI	
	BC POTW	Battle Creek, MI	
Ceresco Pretreatment System	C&C Landfill	Marshall, MI	90
A-1 Pretreatment System	C&C Landfill	Marshall, MI	9
Oily Water - RPP	Enbridge Facility	Griffith, IN	766,288
<b>Total</b>	-	-	<b>1,148,013</b>

Shaded items represent discontinued waste streams

**Table 9 – Public Inquiries Received by U.S. EPA and Enbridge**

Location/Media	Total	May 2012						
		16	15	14	13	12	11	10
Marshall Community Center	8	2	2	2	0	0	2	0
Oil Spill Public Information Hotline	1	0	1	0	0	0	0	0
Website	0	0	0	0	0	0	0	0
<b>Total Public Inquiries</b>	<b>9</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>0</b>

**Table 10 – Landowner Environmental Issues (as of 5/17/2012)**

Issues this Period	Issues Undergoing Evaluation	Issues Considered Addressed
0	5	0

**Table 11 - Financial Summary**

Item	Expended (Cumulative) (as of 5/14/2012)
<b>ERRS Contractors</b>	
EQM (EPS50802) T057	\$ 1,199,522
T060	\$ 213,636
LATA (EPS50804) T019	\$ 1,161,082
ER LLC (EPS50905) T040	\$ <u>683,330</u>
<b>Total ERRS Contractors</b>	<b>\$ 3,257,571</b>
<b>Other Contractors</b>	
Lockheed Martin (EPW09031) – TAGA Support	\$ 184,971
T&T Bisso (EPA:HS800008)	\$ <u>882,087</u>
<b>Total Other Contractors</b>	<b>\$ 1,067,058</b>
<b>START Contractor – WESTON (EPS50604)</b> T030-Response	\$ 24,307,600
T032-Sampling	\$ 183,567
T037-Doc Support	\$ <u>1,571,779</u>
<b>Total START Contractor</b>	<b>\$ 26,062,946</b>
<b>Response Contractor Sub-Totals</b>	<b>\$ 30,387,575</b>
<b>U.S. EPA Funded Costs: Total U.S. EPA Costs</b>	<b>\$ 5,900,772</b>
<b>Pollution Removal Funding Agreements – Total Other Agencies</b>	<b>\$ 1,790,754</b>
Indirect Cost (16.00%)	\$ 3,598,252
Indirect Cost (8.36%)	\$ 1,159,352
<b>Total Est. Oil Spill Cost</b>	<b>\$ 42,836,705</b>
<b>Oil Spill Ceiling Authorized by USCG</b>	\$ 49,700,000
<b>Oil Spill Ceiling Available Balance</b>	<b>\$ 6,863,295</b>

Shaded items are discontinued

**Table 12 - Personnel On-Site**

Agency/Entity	May 2012						
	16	15	14	13	12	11	10
U.S. EPA	3	2	1	0	1	2	3
START	27	25	21	0	22	21	23
MDEQ	6	6	6	0	1	6	6
MDEQ Contractors	8	8	8	0	4	7	8
Calhoun County Public Health	0	0	0	0	0	0	3
Calhoun County (CC) EM	0	0	0	0	0	0	1
City of Battle Creek	0	0	0	0	0	0	0
City of Marshall	0	0	0	0	0	0	1
Village of Augusta	0	0	0	0	0	0	0
Kalamazoo County Public Health	0	0	0	0	0	0	1
Kalamazoo Sheriff	0	0	0	0	0	0	0
MDCH	0	0	0	0	0	0	1
USGS	1	1	0	0	0	0	1
Michigan State Police EMD	0	0	0	0	0	0	0
Allegan County Emergency Management	0	0	0	0	0	0	1
Michigan Department of Natural Resources	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	1
Enbridge – Operations Center	42	41	40	1	7	44	41
Enbridge – Kalamazoo River	41	40	39	0	13	35	39
Enbridge – Containment	11	14	11	0	9	13	13
Enbridge – Submerged Oil	44	41	42	0	32	41	42
Enbridge – Overbank	8	5	5	0	3	5	7
Enbridge – River Opening	1	1	1	0	0	1	1
Enbridge – Waste Management	18	18	18	0	4	20	18
Enbridge – Security & Flaggers	5	5	5	5	5	5	5
Enbridge – Communications Center	4	4	3	0	0	2	2
<b>Total</b>	<b>219</b>	<b>211</b>	<b>200</b>	<b>6</b>	<b>101</b>	<b>202</b>	<b>218</b>

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