

US EPA ARCHIVE DOCUMENT

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION V  
POLLUTION/SITUATION REPORT #150**



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



**Removal of E4 Sediment Curtain**

**To:** Susan Hedman, U.S. EPA Regional Administrator  
James Sygo, MDEQ  
Mark DuCharme, MDEQ  
Michelle DeLong, MDEQ  
Dr. Linda Dykema, MDCH  
Lt. Barry Reber, Michigan State Police, Emergency Management  
Deb Cardiff, Kalamazoo County  
Lt. Paul Baker, Kalamazoo County Sheriff's Office  
James Rutherford, Calhoun County Public Health Department  
Durk Dunham, Calhoun County Emergency Management  
Scott Corbin, Allegan County Emergency Management  
Mike McKenzie, City of Battle Creek  
Cheryl Vosburg, City of Marshall  
Christine Kosmowski, City of Battle Creek

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

**Date:** 7/2/2012

**Reporting/Operational Period:** 0700 hours 6/14/2012 through 0700 hours 6/21/2012

### ***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***

- No activities were conducted during the reporting period.

##### ***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 submerged oil poling reassessment activities were completed during this operational period. This information will be used to establish locations for collection of sediment cores that will be used to estimate the amount of Line 6B submerged oil remaining in the Kalamazoo River system.
- Monitoring of submerged oil in Morrow Lake continued according to the Morrow Lake Monitoring, Assessment, and Management Plan.
- 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. See Table 3 for information regarding the total number of sheen differentiation tests conducted, and the results of those tests.
- Monthly sampling and monitoring of sediment trap cylindrical sampling devices continued.
- Under USGS oversight, Enbridge collected velocity data from Morrow Lake, and the Morrow Lake Delta. The data will be utilized for the development of containment strategies to prevent the continued migration of oil, oil sheen, submerged oil and oil containing sediments into the Morrow Lake fan, and for refinement of the hydrodynamic model.

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

- Walling Tube sample compilation and sample selection were completed and samples were submitted for laboratory analysis following the new analytical protocol. Thirty seven Walling Tubes remain in place. The next round of sampling will be conducted in July.
- 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.
- U.S. EPA and Enbridge continued discussions regarding interpretation of oil fingerprinting data for samples collected from Morrow Lake and from below the Morrow Lake Dam.

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

- No activities were conducted.

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

- Daily sheen management activities continued with sheen sweep boats conducting routine recovery activities at Ceresco Dam, Mill Ponds, and the Morrow Lake Delta, along with other ongoing sheen

sweep responses as sheen is identified. See Table 4 for information regarding the total number of sheen responses by date.

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

- No activities were conducted.

## **2.3 Containment Branch**

### **2.3.1 *Containment Science Group***

- The Group continued to develop strategies for evaluating and enhancing the planned sediment trap locations. Alternate placement of structures is being evaluated through additional hydrodynamic model runs at 6 of the additional 14 sediment trap locations. Partial results were received on June 18, 2012 and are currently under review by the US EPA.
- U.S. EPA and Enbridge continued discussions regarding appropriate alternatives to the installation of Control Point E4.5 to prevent the further migration of oil in Morrow Lake. A revised plan was presented to the FOSC that involves reconfiguration of the E4 control point in the Morrow Lake Delta neck, along with the installation of additional subsurface and surface containment structures in the Morrow Lake Delta.

### **2.3.2 *Containment Compliance Group***

- Enbridge tracked an MDEQ permit application for enhancements (e.g. structures) and monitoring tools at 14 sediment trap 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 pending completed submittal of the sediment trap model rerun results.

### **2.3.3 *Containment Recovery Group***

- Teams continued to maintain 100 feet of surface hard boom at 1 protective containment site (MP 5.85 South), and 1,550 feet of surface hard boom at 1 control point (E4). Teams removed debris accumulated within the boomed areas and recorded observations and estimates of surface area of accumulated petroleum sheen at the 1 control point.
- Boom was removed from 3 protective containment sites (MP 10.75 LDB, MP 11.75 L2, MP 21.5 Oxbow) and 2 control points (MP 5.75 Ceresco Dam, MP 15.65 BC Dam), following a review of data for each location and a consensus among the Operations Chiefs that the boom could be removed.

### **2.3.4 *Containment Monitoring Group***

- Teams continued implementation of the EOMP process. See Section 2.2.1 for additional details regarding the EOMP.
- Teams performed weekly inspection of the 6 currently-installed sediment trap locations, including visual inspection and limited poling within the sediment traps. Teams performed monthly visual inspections of the sediment sampling devices and sample retrieval from selected samplers. Sample results will be used to evaluate and verify the effectiveness of the sediment traps.
- 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 tracked sheen observations in Talmadge Creek and the Kalamazoo River.

## **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 and for the Press Release and Press Conference scheduled for June 21, 2012 to announce river opening.

### ***2.4.2 River Opening Assessment Group***

- The Group continued preparing for the opening of Phase 2 river segments (Segments 2-10) 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.
- The Group prepared all Phase 2 river segments for river opening scheduled for June 21, 2012. All buoys were set via the MDNR Buoy Permits for Calhoun and Kalamazoo Counties.

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

- Enbridge conducted routine monitoring of buoys and signage in River Opening Segment 1.

## **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. As of June 19, 2012, the RI is in progress for 36.31% of the system.

### ***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***

- Quarterly potable water sampling was conducted.
- Monitoring of erosion control devices continued.



## 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. See Section 2.2.1 for additional details regarding 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

- As a result of the decrease in the amount of waste being generated from cleanup activities, the Decontamination, Transportation and Disposal, and Waste Management Characterization Groups were consolidated into a single Waste Management Branch.
- 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. Waste management characterization, manifesting, and coordination of transportation and disposal continued according to approved plans.
- A summary of equipment and boom decontaminated during this reporting period is presented in Table 5.
- Quantities of soil, debris, and liquid shipped off-site during the reporting period are presented in Tables 6 and 7.
- 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.

## 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 oil globules and oil sheen consistent with the EOMP. See Section 2.2.1 for additional details regarding the EOMP.
- Daily situation photo logs were prepared and distributed to project participants.

#### 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.
- Two safety incidents occurred during the reporting period. The first incident was a car/deer incident, in which no injuries were sustained. The second incident occurred when an Enbridge contractor required first aid remove foreign material from his eye.

### 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 (NPFC) ceiling is \$49.7 Million. Approximately 88.7% of the ceiling has been spent through June 17, 2012. The latest average 7-day burn rate was \$40,105. 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)*

- Individuals in the Eco-Toxicity Subgroup continue to use the interim version of a Net Environmental Benefits Analysis (NEBA) to assess the harm and benefits accompanying oil recovery efforts. The draft recommendation document is near completion and will be submitted to the FOSC for review upon incorporation of Spring 2012 poling results.
- The U.S. EPA's Environmental Response Team (ERT) is preparing a report documenting studies with 14 and 28 day sample incubation periods that evaluate the potential biodegradability of submerged oil.

## 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, 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	June 2012						
		20	19	18	17	16	15	14
Odor Response	<b>0</b>	0	0	0	0	0	0	0
Work Area	<b>19</b>	1	1	4	0	6	4	3

**Table 2 – Samples Collected By Enbridge**

Sample Type	Total	June 2012						
		20	19	18	17	16	15	14
Surface Water	<b>1</b>	0	0	1	0	0	0	0
Private Well	<b>0</b>	0	0	0	0	0	0	0
Groundwater	<b>10</b>	5	5	0	0	0	0	0
Sediment	<b>5</b>	1	4	0	0	0	0	0
Soil	<b>56</b>	10	9	5	0	0	12	10
Dewatering	<b>0</b>	0	0	0	0	0	0	0
Sheen	<b>1</b>	0	0	0	0	0	1	0
Air (Odor Complaint)	<b>0</b>	0	0	0	0	0	0	0

**Table 3 – Sheen Differentiation Test Results**

	Total	June 2012						
		20	19	18	17	16	15	14
Sheen Tests Performed	<b>4</b>	1	2	0	0	0	1	0
Results Indicated Petroleum Source	<b>1</b>	0	1	0	0	0	0	0
Results Indicated Biogenic Source	<b>3</b>	1	1	0	0	0	1	0
Inconclusive Test Results	<b>0</b>	0	0	0	0	0	0	0

**Table 4 – Sheen Responses**

Total	June 2012						
	20	19	18	17	16	15	14
<b>9</b>	1	3	1	0	3	0	1

**Table 5 - Equipment Decontamination**

Location/Media	Total	June 2012						
		20	19	18	17	16	15	14
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)	1200	300	300	200	0	0	200	200
Miscellaneous Items	2	2	0	0	0	0	0	0

**Table 6 - Soil and Debris Shipped Off Site (as of 6/21/2012)**

Waste Stream	Cumulative	Disposal Facility
Haz Soil (yd <sup>3</sup> )	19,644	Envirosafe (Oregon, OH)
Non-Haz Soil & Debris (yd <sup>3</sup> ) (Excluding Ceresco Dredge)	76,403	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)	1,710	SET/C&C
Non-Haz Impacted Debris (ton)	7,012	

Shaded items are discontinued waste streams.

**Table 7 - Liquid Shipped Off-Site (as of 6/21/2012)**

Stream	Destination Company	Destination Location	Cumulative Volume (gallons) †
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	1,358,457
Non-Haz Water	Plummer	Kentwood, MI	392,526
<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>17,109,012</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 8 – Estimated Recovered Oil (as of 6/18/2012)**

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	13,813
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	33,783*
Frac Tank City - Influent to Carbon Filtration System	C&C Landfill	Marshall, MI	8,109
Frac Tank City - Water	Dynecol	Detroit, MI	46,176
	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>1,148,230</b>

\* Not all analytical is available at the time of report generation.  
Shaded items represent discontinued waste streams

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

Location/Media	Total	June 2012						
		20	19	18	17	16	15	14
Marshall Community Center	27	11	6	4	0	0	3	3
Oil Spill Public Information Hotline	6	1	4	0	0	0	0	1
Website	0	0	0	0	0	0	0	0
<b>Total Public Inquiries</b>	<b>33</b>	<b>12</b>	<b>10</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>4</b>

**Table 10 – Landowner Environmental Issues (as of 6/21/2012)**

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

**Table 11 - Financial Summary**

Item	Expended (Cumulative) (as of 6/17/2012)
<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	\$ 25,374,155
T032-Sampling	\$ 183,567
T037-Doc Support	\$ <u>1,608,491</u>
<b>Total START Contractor</b>	<b>\$ 27,166,213</b>
<b>Response Contractor Sub-Totals</b>	<b>\$ 31,490,842</b>
<b>U.S. EPA Funded Costs: Total U.S. EPA Costs</b>	<b>\$ 5,956,515</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%)	\$ 1,256,245
<b>Total Est. Oil Spill Cost</b>	<b>\$ 44,092,608</b>
<b>Oil Spill Ceiling Authorized by USCG</b>	\$ 49,700,000
<b>Oil Spill Ceiling Available Balance</b>	<b>\$ 5,607,392</b>

Shaded items are discontinued

**Table 12 - Personnel On-Site**

Agency/Entity	June 2012						
	20	19	18	17	16	15	14
U.S. EPA	2	2	2	0	1	2	2
START	25	30	27	0	22	26	27
MDEQ	6	6	6	0	0	6	6
MDEQ Contractors	7	3	3	0	0	7	7
Calhoun County Public Health	2	0	0	0	0	0	3
Calhoun County (CC) EM	0	0	0	0	0	0	0
City of Battle Creek	0	0	0	0	0	0	1
City of Marshall	0	0	0	0	0	0	1
Kalamazoo County Public Health	2	0	0	0	0	0	0
Kalamazoo Sheriff	1	0	0	0	0	0	0
MDCH	0	0	0	0	0	0	2
USGS	1	1	0	0	0	1	1
Michigan State Police EMD	0	0	0	0	0	0	1
Allegan County Emergency Management	0	0	0	0	0	0	1
MDNR	0	0	0	0	0	0	0
Other Agencies	0	0	0	0	0	0	3
Enbridge – Operations Center	51	50	47	1	11	45	51
Enbridge – Kalamazoo River	40	41	40	0	17	38	41
Enbridge – Containment	10	12	12	0	7	13	14
Enbridge – Submerged Oil	55	62	61	0	59	63	60
Enbridge – Overbank	4	4	4	0	1	4	4
Enbridge – River Opening	2	2	2	0	0	2	2
Enbridge – Waste Management	8	8	7	0	1	6	6
Enbridge – Security & Flaggers	5	5	5	5	5	5	5
Enbridge – Communications Center	4	4	4	0	0	4	2
<b>Total</b>	<b>225</b>	<b>230</b>	<b>220</b>	<b>6</b>	<b>124</b>	<b>222</b>	<b>240</b>

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