

US EPA ARCHIVE DOCUMENT

U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION V  
POLLUTION/SITUATION REPORT #143



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



**Walling Tube Sampling Location**

**US EPA ARCHIVE DOCUMENT**

**To:** Susan Hedman, U.S. EPA Regional Administrator  
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 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:** 05/03/2012

**Reporting/Operational Period:** 0700 hours 04/19/2012 through 0700 hours 04/26/2012

**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**

- The OSCAR Group continued reviewing the Spring 2012 Shoreline and Overbank Reassessment Technique (SORT) results.

**2.1.2 Overbank Science Group**

- Review of close out reports for OB 13.40 RDB, OB 8.97 Island, OB 9.10 Island, and OB 10.37 RDB continued.

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

- No activities were conducted during this 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 this 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***

- Refinement of the 2012 Submerged Oil Recovery Tactical Plan continued. The Group presented the Tactical Plan to the River Opening Branch to ensure awareness of potential 2012 work areas in each river segment.

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

- On April 24, 2012, U.S. EPA disapproved Enbridge's Quantification of Submerged Oil Report.
- On April 25, 2012, U.S. EPA directed Enbridge to incorporate a minimum water temperature of 60 degrees F as one of the conditions required to perform future submerged oil assessment via poling, or other methods which rely on the liberation of oil from sediment in U.S. EPA-approved work plans.
- Enbridge's re-submittals of the Sediment Trap Monitoring and Maintenance Plan and the Morrow Lake Monitoring, Assessment, and Management Plan are currently under review.
- Enbridge collected oil sheen and globules from stored sediment samples for chemical fingerprinting analysis, at the request of the Scientific Support Coordination Group (SSCG).
- Enbridge collected oil sheen and globule samples from the Rock Tenn protective containment site for chemical fingerprinting analysis.
- Enbridge submitted the Hydrodynamic Model Report containing baseline model calibration results (e.g. riverine and floodplain grids) and various baseline scenario results, to U.S. EPA on April 20, 2012. The Report is currently under review.

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

- Enbridge developed and submitted a permit application for the Tool Box agitation techniques throughout the Kalamazoo River system. Permitted techniques include pumper boats, stingers, etc.

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

- Preparation for installation of sediment traps began.

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

- One crew continued daily submerged oil poling in the Morrow Lake Fan to monitor potential submerged oil movement.

### **2.3 Containment Branch**

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

- Enbridge continued refinement of a permit application for sediment trap structure placement at four locations based on HEC-RAS modeling requirements set forth by the MDEQ.
- Under the Group's guidance, Enbridge continued to prepare a modified permit application for 16 additional sediment trap locations. Enbridge is evaluating information and data requirements for permitting of the additional trap locations.
- The Group continued to develop strategies for evaluating and enhancing the planned sediment traps.

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

- Enbridge coordinated with MDEQ regarding the information requirements for the permit applications for the 20 proposed sediment collection structures in depositional areas of the Kalamazoo River.

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

- Teams continued to maintain 1,950 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 control points.

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

- 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.

### **2.4 River Opening Branch**

#### ***2.4.1 River Opening Media Group***

- Media relations personnel continued coordination regarding the river opening of River Segment 1 (Perrin Dam to Saylor's Landing), ensuring appropriate posting of kiosk materials and river signage.

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

- The Group conducted review of SORT data to determine potential remaining impacts for Segments 3 – 8 and 10.

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

- Maintenance activities, acquisition, and staging of buoys and signage continued.
- Crews installed new signage in River Opening Segment 1, directing boaters to exit at Saylor's Landing.

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

- Security personnel were stationed at the Perrin Dam and Saylor's Landing access locations for 12 hours per day. 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 RI Work Plan for Enbridge-owned properties between MP 5.8 to Morrow Lake Dam 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.
- Enbridge resubmitted the Spring 2012 Talmadge Creek Monitoring and Maintenance Plan to U.S. EPA.
- Monitoring of the confluence continued using a remote web-based camera and remote turbidity monitors. Additional monitoring was conducted according to the Spring 2012 Talmadge Creek Monitoring and Maintenance Plan.

### **2.7 Air Operations Branch**

- One over-flight was conducted for situational awareness during this reporting period.
- 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 removed all equipment and trailers from the northern end of the property, continued gravel removal, and conducted restoration of disturbed areas.
- Contaminated soil, water, and debris continue to be removed to staging areas. 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, oil sheen, and turbidity.
- 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*

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### 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. An Enbridge worker was struck by an unidentified object on the Kalamazoo River. First aid was administered and the employee returned to work.

### 4.2 Public Information

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

## 5. *Landowner Environmental Issues*

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

## 6. *Finance*

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- The current National Pollution Funds Center (NPFC) ceiling is \$49.7 Million. Approximately 84.6% of the ceiling has been spent through April 22, 2012. The latest average 7-day burn rate was \$36,368. 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)*

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- The Eco-Toxicity Subgroup is near completion of a Net Environmental Benefits Analysis (NEBA) to assess the harm and benefits accompanying oil recovery efforts. This effort is being integrated with the 2012 Tactical Plan for submerged oil recovery.
- 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.
- Interpretation of data from the oil fingerprinting samples analyzed by the off-site laboratory continues.



## **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	April 2012						
		25	24	23	22	21	20	19
Odor Response	0	0	0	0	0	0	0	0
Work Area	38	7	8	6	1	2	4	10

**Table 2 – Samples Collected By Enbridge**

Sample Type	Total	April 2012						
		25	24	23	22	21	20	19
Surface Water	1	0	1	0	0	0	0	0
Private Well	3	0	3	0	0	0	0	0
Groundwater	3	1	0	0	0	0	0	2
Sediment	10	2	1	5	0	0	0	2
Soil	67	19	22	2	0	0	15	9
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	April 2012						
		25	24	23	22	21	20	19
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	2	0	2	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 4/26/2012)**

<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)	1,653	SET/C&C
Non-Haz Impacted Debris (ton)	6,750	

Shaded items are discontinued waste streams.

**Table 5 – Oil/Water Collected by Location (as of 4/26/2012)**

<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*	2,050,954
Subtotal	<b>17,483,376</b>
<b>Sludge**</b>	<b>474,215</b>
<b>Total Oil/Water</b>	<b>17,009,161</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 4/26/2012)**

<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	1,306,157
Non-Haz Water	Plummer	Kentwood, MI	344,725
<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>17,008,911</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 4/26/2012)**

<b>Item</b>	<b>Cumulative (gallons)</b>
Oil/Water Collected	17,009,161
Oil/Water Shipped Off-Site	17,008,911
<b>Total Oil/Water Remaining On-Site</b>	<b>250</b>

**Table 8 – Estimated Recovered Oil (as of 4/23/2012)**

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>1,148,012</b>

Shaded items represent discontinued waste streams

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

Location/Media	Total	April 2012						
		25	24	23	22	21	20	19
Marshall Community Center	6	2	1	1	0	0	1	1
Oil Spill Public Information Hotline	12	2	3	4	0	0	1	2
Website	0	0	0	0	0	0	0	0
<b>Total Public Inquiries</b>	<b>18</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>3</b>

**Table 10 – Landowner Environmental Issues (as of 4/26/2012)**

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

**Table 11 - Financial Summary**

Item	Expended (Cumulative) (as of 4/22/2012)
<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	\$ 185,951
T&T Bisso (EPA:HS800008)	\$ <u>882,087</u>
<b>Total Other Contractors</b>	<b>\$ 1,068,038</b>
<b>START Contractor – WESTON (EPS50604)</b>	
T030-Response	\$ 23,797,327
T032-Sampling	\$ 183,567
T037-Doc Support	\$ <u>1,527,057</u>
<b>Total START Contractor</b>	<b>\$ 25,507,951</b>
<b>Response Contractor Sub-Totals</b>	<b>\$ 29,833,560</b>
<b>U.S. EPA Funded Costs: Total U.S. EPA Costs</b>	<b>\$ 5,867,107</b>
<b>Pollution Removal Funding Agreements – Total Other Agencies</b>	<b>\$ 1,622,624</b>
Indirect Cost (16.00%)	\$ 3,598,252
Indirect Cost (8.36%)	\$ 1,110,222
<b>Total Est. Oil Spill Cost</b>	<b>\$ 42,031,765</b>
<b>Oil Spill Ceiling Authorized by USCG</b>	<b>\$ 49,700,000</b>
<b>Oil Spill Ceiling Available Balance</b>	<b>\$ 7,668,235</b>

Shaded items are discontinued

**Table 12 - Personnel On-Site**

Agency/Entity	April 2012						
	25	24	23	22	21	20	19
U.S. EPA	2	2	1	0	2	4	5
START	21	17	15	0	11	20	21
MDEQ	6	6	6	0	0	6	6
MDEQ Contractors	6	6	5	0	0	6	6
Calhoun County Public Health	0	0	0	0	0	0	2
Calhoun County (CC) EM	0	0	0	0	0	0	1
City of Battle Creek	0	0	0	0	0	0	1
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	0
Kalamazoo Sheriff	0	0	0	0	0	0	1
MDCH	0	0	0	0	0	0	1
USGS	0	2	0	0	0	1	1
Michigan State Police EMD	0	0	0	0	0	0	0
Allegan County Emergency Management	0	0	0	0	0	0	0
Michigan Department of Natural Resources	0	0	0	0	0	0	0
Enbridge – Operations Center	47	45	44	2	2	48	51
Enbridge – Kalamazoo River	37	36	32	2	2	32	36
Enbridge – Containment	14	13	18	0	6	13	13
Enbridge – Submerged Oil	3	3	2	0	0	1	1
Enbridge – Overbank	10	10	4	0	0	4	4
Enbridge – River Opening	1	1	1	1	1	2	2
Enbridge – Waste Management	18	18	19	0	0	21	19
Enbridge – Security & Flaggers	5	5	5	4	5	5	5
Enbridge – Communications Center	3	3	3	0	0	5	5
<b>Total</b>	<b>173</b>	<b>167</b>	<b>155</b>	<b>9</b>	<b>29</b>	<b>168</b>	<b>182</b>

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