

US EPA ARCHIVE DOCUMENT

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION V  
POLLUTION/SITUATION REPORT #162**



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



**Maintenance of the E4.0 system Boom Configuration**

**US EPA ARCHIVE DOCUMENT**

**To:** Susan Hedman, U.S. EPA Regional Administrator  
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James Rutherford, Calhoun County Public Health Department  
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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:** 10/3/2012

**Reporting/Operational Period:** 0700 hours 9/20/2012 through 0700 hours 9/27/2012

### *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) Submerged Oil; 2) Containment; 3) Kalamazoo River System; and 4) Waste Management.

#### **2.1 Submerged Oil Branch**

##### *2.1.1 Submerged Oil Science Group*

- Bi-weekly monitoring, including poling and cylindrical sampling device (CSD) sampling, was conducted at Phase II sediment trap locations.
- Enbridge and the U.S. EPA continued reviewing analytical results from the chemical and fingerprint analyses for the oil quantification pilot study. Results of the pilot testing will be used to evaluate the UV inspection process for evaluating sediment cores.
- Sediment cores collected during the agitation effects study and the submerged oil quantification program continue to be held in cold storage pending the results of the pilot testing to validate the UV inspection screening process.

##### *2.1.2 Submerged Oil Compliance Group*

- No activities were conducted during this operational period.

## **2.2 Containment Branch**

### ***2.2.1 Containment Compliance Group***

- No activities were conducted during this operational period.

### ***2.2.2 Containment Recovery Group***

- 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 response (when necessary). See Table 1 for information regarding the total number of sheen differentiation tests conducted, and the results of those tests.
- Daily sheen management activities continued with sheen sweep boats conducting routine recovery activities at Ceresco Dam (MP 5.25 to Ceresco control point), the Mill Ponds and the Morrow Lake Delta/Morrow Lake, along with other ongoing sheen sweep responses as determined necessary. See Table 2 for information regarding the total number of sheen responses by date.
- As of September 26, 2012, a total of 800 feet of surface hard boom is deployed at the Ceresco Control Point. Additionally, a total of 8,400 feet of surface hard boom and 5,350 feet of subsurface half curtain have been deployed at the E4 Containment system boom locations. Teams removed debris accumulated within the boomed areas and continued to monitor the E4 system boom locations using an underwater camera.
- Teams conducted monitoring (poling) and bathymetry measurements at upstream and downstream points along the E4 Containment system boom locations.
- Installation of 3 CSDs near Ceresco Dam has not been conducted and is pending property owner access permission.
- Teams performed weekly visual inspections of the 4 currently-installed Phase I enhanced sediment trap structure locations and the 3 currently-installed Phase II enhanced sediment trap structure locations.

## **2.3 Kalamazoo River System Branch**

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

- Enbridge resumed Kalamazoo River remedial investigation activities, including hydrocarbon fingerprint evaluation of overbank soils.

### ***2.3.2 Kalamazoo River Compliance Group***

- Restoration and stabilization activities were conducted at various Kalamazoo River Bank Erosion Assessment (KRBEA) sites.
- MDEQ submitted comments to Enbridge on the Source Area MDEQ permit and Enbridge is addressing the MDEQ comments.

### **2.3.3 Kalamazoo River Remedial Action Group**

- Excavation of impacted soil and regarding of the Source Area continued throughout the Operational Period.

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

- Monitoring of erosion control devices continued.
- Water level and flow rate information continued to be downloaded daily from three USGS gauging stations at Marshall, Battle Creek, and Comstock.
- Collection of daily water and sediment temperature readings continued at locations where operational tasks were being performed.
- Enbridge conducted weekly monitoring of buoys and signage along the Kalamazoo River.

### **2.5 Waste Management Branch**

- A summary of equipment and boom decontaminated during this reporting period is presented in Table 3.
- Quantities of soil, debris, and liquid shipped off-site during the reporting period are presented in Tables 4 and 5.
- 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 6.

## **3. Planning**

### **3.1 Situation Unit**

- Situation Unit personnel observed and documented progress in operational areas, documented locations of oil globules and oil sheen through field observations and weekly overflights. Personnel reported observations of sheen/product (globules) to Operations for follow-up testing and/or response, consistent with the EOMP. Specific observations during this period include the repeated observation of oil sheen and globules at Ceresco Dam (MP 5.25 to Ceresco control point), the north and south coves and the main channel of the Morrow Lake fan, and the Morrow Lake Delta. Due to cooler surface water temperatures, observed oil globules appear to be staying in the globule form longer, rather than dissipating into sheen quickly. See Section 2.2.2 for additional details regarding the EOMP.
- Photographs were taken and distributed to project participants during Operations, Command and General Staff, and Multi-Agency Coordination (MAC) Group meetings.

### **3.2 Environmental Unit**

- U.S. EPA and MDEQ continued discussions with Enbridge regarding U.S. EPA comments (provided to Enbridge on August 22, 2012) on the Kalamazoo River Hydrodynamic Transport Model Report. Further use of the HDM going forward to support Operational decisions will continue to be discussed with Enbridge.
- The pilot study for validation of the UV inspection process for sediment cores continued, including evaluation of the sediment cores for the possible presence of oil-mineral aggregate (OMA), which may not be visible using current core inspection/UV processes.

- Enbridge and MDEQ continued to review and track RI progress.

### **3.3 Documentation Unit**

- The Documentation Unit continued organizing and archiving electronic and paper files for post-incident use.

### **3.4 Resource Unit**

- The Resources Unit continued to support production of the Incident Action Plan (IAP), supported the planning efforts of operations, and provided information to Logistics personnel in order to properly prepare and procure resources. The resource unit continued the logistical preparation for relocation of the EPA ICP.

## ***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.

### **4.2 Public Information**

- The number of public inquires reported by Enbridge for this period is presented in Table 8.

## ***5. Finance***

- The current National Pollution Funds Center (NPFC) ceiling is \$52.7 Million. Approximately 89.7% of the ceiling has been spent through September 23, 2012. The latest average 7-day burn rate was \$29,686. These cost summaries reflect only U.S. EPA-funded expenditures for the incident. A summary of these expenses is presented in Table 9.

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

- Recommendations regarding the Net Environmental Benefits Analysis (NEBA), agitation effects study and quantification of submerged oil are being reviewed by the FOSC.
- SSCG and Enbridge forensic chemists continued periodic conference calls to examine the oil fingerprinting results and compare procedures for applying oil fingerprinting results to measuring Line 6B oil remaining in the Kalamazoo River sediments.

## ***7. 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).

**8. Personnel On-Site**

- Staffing numbers for the entities and agencies active in the response are presented in Table 10.

**9. Source of Additional Information**

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

**10. Clean-up Progress Metrics**

**Table 1 – Sheen Differentiation Test Results**

| Description                        | Total | September 2012 |    |    |    |    |    |    |
|------------------------------------|-------|----------------|----|----|----|----|----|----|
|                                    |       | 26             | 25 | 24 | 23 | 22 | 21 | 20 |
| Sheen Tests Performed              | 0     | 0              | 0  | 0  | 0  | 0  | 0  | 0  |
| Results Indicated Petroleum Source | 0     | 0              | 0  | 0  | 0  | 0  | 0  | 0  |
| Results Indicated Biogenic Source  | 0     | 0              | 0  | 0  | 0  | 0  | 0  | 0  |
| Inconclusive Test Results          | 0     | 0              | 0  | 0  | 0  | 0  | 0  | 0  |

**Table 2 – Sheen Responses**

| Description | Total | September 2012 |    |    |    |    |    |    |
|-------------|-------|----------------|----|----|----|----|----|----|
|             |       | 26             | 25 | 24 | 23 | 22 | 21 | 20 |
| Responses   | 46    | 10             | 9  | 9  | 0  | 0  | 9  | 9  |

**Table 3 - Equipment Decontamination**

| Location/Media      | Total | September 2012 |    |    |    |    |    |    |
|---------------------|-------|----------------|----|----|----|----|----|----|
|                     |       | 26             | 25 | 24 | 23 | 22 | 21 | 20 |
| 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 9/26/2012)**

| Waste Stream   | Cumulative | Disposal Facility  |
|--|------------|--|
| Haz Soil (yd <sup>3</sup> )  | 19,644     | Envirosafe (Oregon, OH)                                      |
| Non-Haz Soil (yd <sup>3</sup> )<br>(Excluding Ceresco Dredge)          | 78,138     | SET/C&C  |
| Non-Haz Soil & Debris (yd <sup>3</sup> )<br>(Excluding Ceresco Dredge) | 64,815     | Westside Recycling (Three Rivers, MI)                        |
| Non-Haz Soil (yd <sup>3</sup> )<br>(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)   | 1,767      | SET/C&C  |
| Non-Haz Impacted Debris (ton)  | 7,099      |  |

Shaded items are discontinued waste streams.

**Table 5 - Liquid Shipped Off-Site (as of 9/26/2012)**

| 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             | 1,376,757                     |
| Non-Haz Water                | Plummer                         | Kentwood, MI            | 416,726                       |
| <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>17,151,512</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.



**Table 6 – Estimated Recovered Oil (as of 9/24/2012)**

| <b>Waste Stream Containing Recovered Oil</b>   | <b>Destination Company</b>             | <b>Destination Location</b> | <b>Estimated Oil Volume in Waste Stream (gallons)</b> |
|--|--|-----------------------------|---|
| <b>Soil</b><br>Impacted Soil & Debris  | C&C Landfill                           | Marshall, MI                | 13,814*   |
|  | Envirosafe/<br>Westside RDF            | Oregon, OH                  | 278,665   |
| <i>Geotube Sediment - (Impacted Sediment)</i>  | <i>Envirosafe/<br/>Westside RDF</i>    | <i>Oregon, OH</i>           | 1,298   |
| <b>Debris - (Roll Off Boxes with Impacted Sorbents, boom, pads, plastic, PPE, vegetation, and biomass)</b> | EQ Michigan                            | Belleville, MI              | 34,348  |
| <i>Frac Tank City - Influent to Carbon Filtration System</i>   | <i>C&amp;C Landfill</i>                | <i>Marshall, MI</i>         | 8,109   |
| <b>Frac Tank City - Water</b>  | Dynecol                                | Detroit, MI                 | 46,176  |
|  | Liquid Industrial Waste Services, Inc. | Kentwood, MI                |   |
|  | Plummers Env. Inc.                     | Holland, MI                 |   |
|  | BC POTW                                | Battle Creek, MI            |   |
| <i>Ceresco Pretreatment System</i>   | <i>C&amp;C Landfill</i>                | <i>Marshall, MI</i>         | 90  |
| <i>A-1 Pretreatment System</i>   | <i>C&amp;C Landfill</i>                | <i>Marshall, MI</i>         | 9   |
| <b>Oily Water - RPP</b>  | Enbridge Facility                      | Griffith, IN                | 766,288   |
| <b>Total</b>   |  |                             | <b>1,148,797</b>                                      |

Shaded and *italicized* items represent discontinued waste streams

\*Not all analytical is available at the time of report generation

**Table 7 – Samples Collected By Enbridge**

| <b>Sample Type</b> | <b>Total</b> | <b>September 2012</b> |           |           |           |           |           |           |
|--------------------|--------------|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|
|                    |              | <b>26</b>             | <b>25</b> | <b>24</b> | <b>23</b> | <b>22</b> | <b>21</b> | <b>20</b> |
| Surface Water      | <b>0</b>     | 0                     | 0         | 0         | 0         | 0         | 0         | 0         |
| Private Well       | <b>3</b>     | 0                     | 0         | 0         | 0         | 0         | 0         | 3         |
| Groundwater        | <b>0</b>     | 0                     | 0         | 0         | 0         | 0         | 0         | 0         |
| Sediment           | <b>1</b>     | 0                     | 1         | 0         | 0         | 0         | 0         | 0         |
| Soil               | <b>23</b>    | 0                     | 0         | 7         | 0         | 0         | 10        | 6         |
| Product            | <b>0</b>     | 0                     | 0         | 0         | 0         | 0         | 0         | 0         |
| Dewatering         | <b>0</b>     | 0                     | 0         | 0         | 0         | 0         | 0         | 0         |
| Sheen              | <b>0</b>     | 0                     | 0         | 0         | 0         | 0         | 0         | 0         |

**Table 8 – Public Inquiries Received by U.S. EPA and Enbridge**

| Location/Med                         | Total     | September 2012 |          |          |          |          |          |          |
|--------------------------------------|-----------|----------------|----------|----------|----------|----------|----------|----------|
|                                      |           | 26             | 25       | 24       | 23       | 22       | 21       | 20       |
| Marshall Community Center            | 4         | 0              | 2        | 1        | 0        | 0        | 1        | 0        |
| Oil Spill Public Information Hotline | 6         | 0              | 1        | 2        | 0        | 0        | 1        | 2        |
| Website                              | 1         | 0              | 0        | 0        | 0        | 0        | 0        | 1        |
| <b>Total Public Inquiries</b>        | <b>11</b> | <b>0</b>       | <b>3</b> | <b>3</b> | <b>0</b> | <b>0</b> | <b>2</b> | <b>3</b> |

**Table 9 - Financial Summary (as of 9/23/2012)**

| Item  | Expended (Cumulative) |
|---|-----------------------|
| <b><i>ERRS Contractors</i></b>                            |                       |
| <i>EQM (EPS50802)</i>                                     |                       |
| T057  | \$ 1,199,522          |
| T060  | \$ 213,636            |
| <i>LATA (EPS50804)</i>                                    |                       |
| T019  | \$ 1,161,082          |
| <i>ER LLC (EPS50905)</i>                                  |                       |
| T040  | \$ 683,330            |
| <b>Total ERRS Contractors</b>                             | <b>\$ 3,257,571</b>   |
| <b><i>Other Contractors</i></b>                           |                       |
| <i>Lockheed Martin (EPW09031) – TAGA Support</i>          | \$ 198,379            |
| <i>Lockheed Martin (EPW09031) -Biodegradability Study</i> | 27,357                |
| <i>T&amp;T Bisso (EPA:HS800008)</i>                       | \$ 882,087            |
| <b>Total Other Contractors</b>                            | <b>\$ 1,107,823</b>   |
| <b>START Contractor – WESTON (EPS50604)</b>               |                       |
| T030-Response   | \$ 27,511,083         |
| T032-Sampling   | \$ 183,567            |
| T037-Doc Support  | \$ 1,742,461          |
| <b>Total START Contractor</b>                             | <b>\$ 29,437,111</b>  |
| <b>Response Contractor Sub-Totals</b>                     | <b>\$ 33,775,148</b>  |
| <b>U.S. EPA Funded Costs: Total U.S. EPA Costs</b>        | <b>\$ 6,116,069</b>   |
| <b>Pollution Removal Funding Agreements</b>               |                       |
| Total Other Agencies                                      | \$ 2,051,535          |
| Indirect Cost (16.00%)                                    | \$ 3,598,252          |
| Indirect Cost (8.36%)                                     | \$ 1,460,552          |
| Cost Documentation/Billing Admin Fee (2.93%)*             | \$ 285,545            |
| <b>Total Est. Oil Spill Cost</b>                          | <b>\$ 47,287,100</b>  |
| <b>Oil Spill Ceiling Authorized by USCG</b>               | <b>\$ 52,700,000</b>  |
| <b>Oil Spill Ceiling Available Balance</b>                | <b>\$ 5,412,900</b>   |

Shaded and *italicized* items are discontinued

\* Effective on EPA Enbridge costs billed to USCG for bills issued after 6/5/12.

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**Table 10 - Personnel On-Site**

| Agency/Entity                  | September 2012 |            |            |          |           |            |            |
|--------------------------------|----------------|------------|------------|----------|-----------|------------|------------|
|                                | 26             | 25         | 24         | 23       | 22        | 21         | 20         |
| U.S. EPA                       | 1              | 1          | 1          | 0        | 0         | 2          | 1          |
| START                          | 18             | 18         | 16         | 0        | 3         | 18         | 20         |
| MDEQ                           | 5              | 5          | 4          | 0        | 0         | 4          | 4          |
| MDEQ Contractors               | 3              | 4          | 3          | 0        | 0         | 2          | 4          |
| USGS                           | 1              | 1          | 0          | 0        | 0         | 0          | 0          |
| Calhoun County Public Health   | 0              | 0          | 0          | 0        | 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          |
| Kalamazoo County Public Health | 0              | 0          | 0          | 0        | 0         | 0          | 0          |
| Kalamazoo Sheriff              | 0              | 0          | 0          | 0        | 0         | 0          | 0          |
| MDCH                           | 0              | 0          | 0          | 0        | 0         | 0          | 0          |
| Michigan State Police EMD      | 0              | 0          | 0          | 0        | 0         | 0          | 0          |
| Allegan County Emergency Mgmt. | 0              | 0          | 0          | 0        | 0         | 0          | 0          |
| MDNR                           | 0              | 0          | 0          | 0        | 0         | 0          | 0          |
| Enbridge – Operations Center   | 37             | 37         | 40         | 0        | 3         | 35         | 38         |
| Enbridge – Kalamazoo River     | 19             | 18         | 15         | 0        | 0         | 22         | 27         |
| Enbridge – Containment         | 18             | 14         | 17         | 0        | 6         | 16         | 16         |
| Enbridge – Submerged Oil       | 15             | 15         | 9          | 0        | 0         | 17         | 27         |
| Enbridge – Waste Management    | 10             | 12         | 12         | 0        | 0         | 12         | 11         |
| Enbridge – Security & Flaggers | 4              | 4          | 4          | 4        | 4         | 4          | 4          |
| Enbridge – Communications Ctr. | 6              | 6          | 3          | 0        | 0         | 5          | 5          |
| <b>Total</b>                   | <b>137</b>     | <b>135</b> | <b>124</b> | <b>4</b> | <b>16</b> | <b>137</b> | <b>157</b> |

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