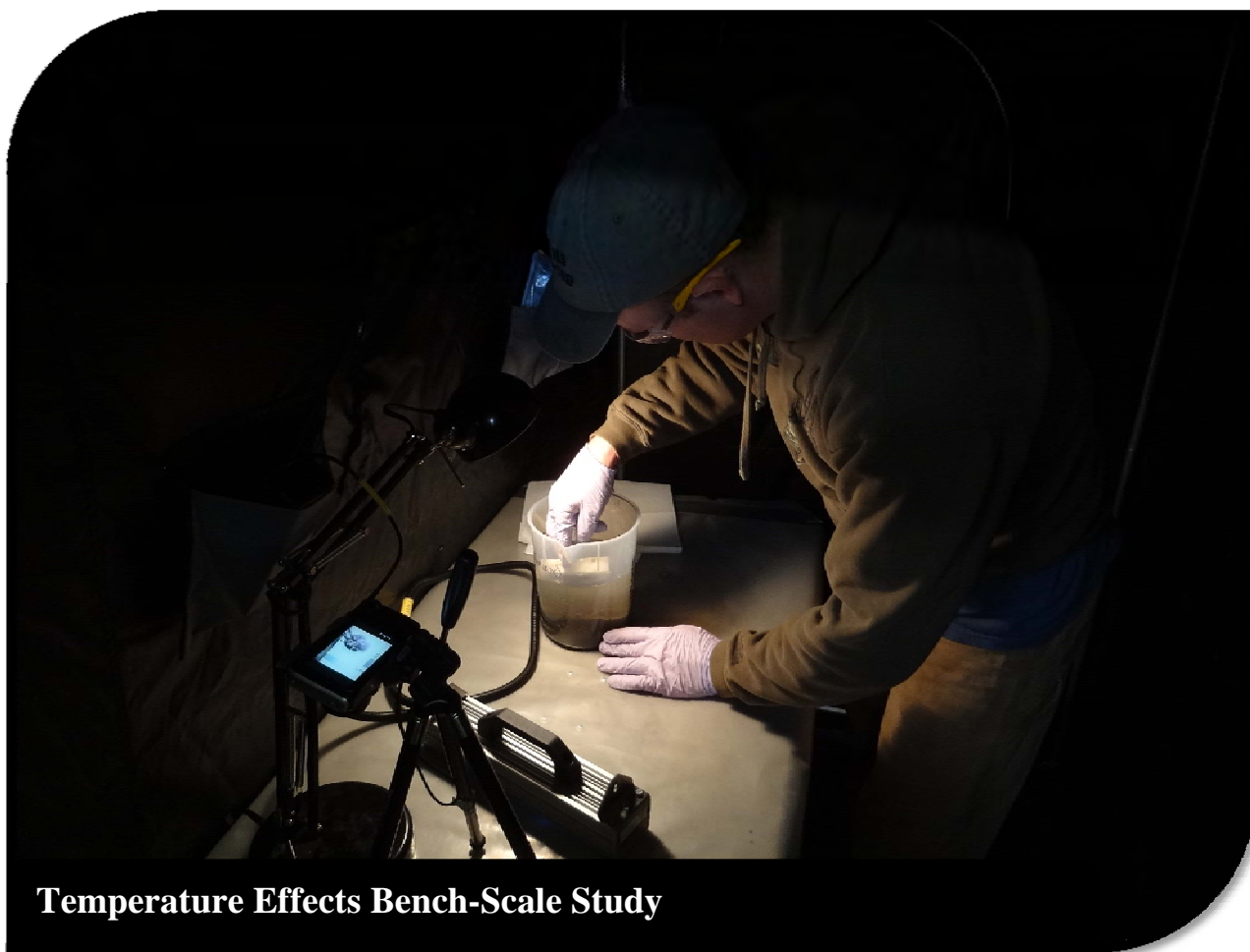


US EPA ARCHIVE DOCUMENT

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION V  
POLLUTION/SITUATION REPORT #129**



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



**Temperature Effects Bench-Scale Study**

**To:** Susan Hedman, U.S. EPA Regional Administrator  
 James Sygo, MDEQ  
 Mark DuCharme, MDEQ  
 Michelle DeLong, MDEQ  
 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  
 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:** 01/19/2012

**Reporting/Operational Period:** 0700 hours 1/5/2012 through 0700 hours 1/12/2012

### ***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) OSCAR; 5) Kalamazoo River; 6) Talmadge Creek; 7) Air Operations; and 8) Waste Management.

#### **2.1 Overbank Branch**

##### ***2.1.1 Overbank Science Group***

- The Group developed plans for Outstanding Sites Characterization and Reconciliation (OSCAR) sites, including OB 13.40 LDB, OB 9.10 RDB, and OB 8.97 I.

##### ***2.1.2 Overbank Compliance Group***

- The Group continued preparation of the permit for response actions at OB 9.10 RDB.

##### ***2.1.3 Overbank Recovery Group***

- Teams conducted pre-planning for recovery operations at OB 13.40 LDB.
- Teams continued site preparation for MP 2.00, including erosion control, site grading, and filter box installation.
- Teams executed work at OB 5.92 RDB, including pond-area dewatering, and pond-area excavation.

### ***2.1.4 Overbank Monitoring Group***

- Teams continued to conduct air monitoring and sampling at OB 5.92 RDB.
- Enbridge continued to maintain an odor response team; however, no odor complaints were received during this reporting period.
- Air sampling and monitoring information is included in Tables 1 and 2.

## **2.2 Submerged Oil Branch**

### ***2.2.1 Submerged Oil Science Group***

- Teams collected sediment samples from location SO 10.75 L2 for use in the proposed bioremediation study to be conducted by the EPA Environmental Response Team (ERT).
- The Group continued to support the OSCAR Branch during review of Late Summer 2011 Reassessment (LSR) sites.
- Teams continued review of hydrodynamic assessment data and generation of the hydrodynamic model to characterize the movement of submerged oil.
- The Group conducted the Temperature Effects on Submerged Oil bench-scale study.
- On January 10 and 11, 2012, the Group conducted review of all data input components for the Hydrodynamic Model to insure completeness and identify any data gaps.

### ***2.2.2 Submerged Oil Compliance Group***

- No activities were conducted during the reporting period.

### ***2.2.3 Submerged Oil Recovery Group***

- No activities were conducted during the reporting period.

### ***2.2.4 Submerged Oil Monitoring Group***

- No activities were conducted during the reporting period.

## **2.3 Containment Branch**

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

- The Group continued refining the hydrodynamic model concepts and developing the Plan for Preventing Migration of Oil Past the Morrow Lake Dam during Winter/Spring 2011-2012.
- The Group continued to develop subsurface containment strategies for depositional areas along the Kalamazoo.

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

- The Group commenced development of necessary permits for the above plans.

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

- Teams continued to maintain 13 protective containment sites and 2 control points and conduct debris removal from boomed areas. The total amount of control point and protective containment hard boom is presented in Table 3.

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

- Water level gauges were monitored at multiple locations along the Kalamazoo River, the Morrow Lake Delta, and Morrow Lake.

## **2.4 OSCAR Branch**

- The OSCAR Branch continued to consolidate and prioritize outstanding work sites. The Branch participated in data review, quality control, and site closure processes to ensure that all pending issues are addressed. During the reporting period, the OSCAR Branch reviewed data from several recently completed expedited RI sites along the Kalamazoo River to determine whether they are consistent with the U.S. EPA Order or whether further site plan development is necessary.
- The OSCAR Branch requested information for site determination, and oversaw the transfer of sites between the various Branches.
- Sites status information is presented in Table 4.

## **2.5 Kalamazoo River Branch**

### ***2.5.1 Kalamazoo River Remedial Investigation Group***

- Teams continued implementation and evaluation of the Kalamazoo River RI from MP 2.25 to MP 11.00.
- The Group continued development of the RI Work Plan for the next segment of the Kalamazoo River.

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

- The Group continued restoration and stabilization at various Kalamazoo River Bank Erosion Assessment Sites.

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

- Teams collected post-excavation verification samples at OB 5.92 RDB.

### ***2.5.4 Kalamazoo River Monitoring Group***

- Teams performed monthly surface water sampling at 27 locations along the Kalamazoo River and Morrow Lake.
- Refer to Table 2 for the total number of samples collected during this reporting period, as reported by Enbridge.

## **2.6 Talmadge Creek Branch**

### ***2.6.1 Talmadge Creek Remedial Investigation Group***

- The Group continued conducting the bulk sediment toxicity study.
- The Group collected supplemental soil and water samples at specific locations between Division Street and I-69.

### ***2.6.2 Talmadge Creek Compliance Group***

- The Group continued evaluation of RI data and Verification of Soil Remediation (VSR) data for MP 0.0 to MP 1.0.

### ***2.6.3 Talmadge Creek Remedial Action Group***

- Teams continued to operate and maintain the pump-around and GAC dewatering systems, and maintain soil erosion and sedimentation controls.
- Excavation, restoration, and post-excavation verification sampling continued from MP 0.5 through MP 1.0.

### ***2.6.4 Talmadge Creek Monitoring Group***

- Teams continued monitoring erosion control devices.
- Teams conducted water quality monitoring for excavation activities along Talmadge Creek.

## **2.7 Air Operations Branch**

- Two overflights were conducted for situational awareness during this reporting period.
- Photographs were taken during the overflights for presentation during various meetings.

## **2.8 Waste Management Branch**

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

- A summary of equipment and boom decontaminated during this operational period is presented in Table 5.

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

- Teams continued to haul contaminated soil, water, and debris to staging areas. Samples were collected for waste characterization and oil recovery determination prior to off-site disposal.
- Quantities of oil and debris shipped off-site during the reporting period are presented in Tables 6 through 9.
- 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 10.

### **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 oil sheen, turbidity, and ice formation.
- Daily situational 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**

- 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 in order to properly prepare and procure resources.

## **4. Command**

### **4.1 Safety Officers**

- Safety personnel continued to conduct work-site safety inspections, with a focus on seasonal weather changes and excavation activities at OB 5.92 and Talmadge Creek.
- Annual site safety training for all project personnel was held on January 5, 2012.
- Minor safety incidents including a motor vehicle incident and a slip/trip/fall occurred during the reporting period; however, no injuries were sustained.

### **4.2 Public Information**

- No activities were conducted during this reporting period.
- The number of public inquiries reported by Enbridge for this period is presented in Table 11.



### ***5. Landowner Environmental Issues***

- Landowner environmental issues, as reported by Enbridge, are presented in Table 12.

### ***6. Finance***

- The current National Pollution Funds Center (NPFC) ceiling is \$43.7 Million. Approximately 87.8% of the ceiling has been spent through January 8, 2011. The latest average 7-day burn rate was \$22,415. These cost summaries reflect only EPA-funded expenditures for the incident. A summary of these expenses is presented in Table 13.

### ***7. Participating Entities***

- The Multi-Agency Coordination (MAC) Group continues meeting twice per month to discuss the progress of the response. Entities participating in the MAC include:
  - U.S. Environmental Protection Agency
  - Michigan Department of Environmental Quality
  - City of Battle Creek
  - City of Marshall
  - Calhoun County Public Health Department
  - Calhoun County Emergency ManagementKalamazoo County Health and Community Services Department
  - Kalamazoo County Sheriff
  - Enbridge (Responsible Party).
- No MAC meetings were held during the reporting period.
- For a list of cooperating and assisting agencies and the congressional presence, 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 14.

### ***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 – Real Time Air Monitoring Counts Performed by Enbridge**

Monitoring Location	Total	January 2012						
		11	10	9	8	7	6	5
Odor Response	0	0	0	0	0	0	0	0
Work Area	90	20	19	18	0	11	11	11

**Table 2 – Samples Collected By Enbridge**

Sample Type	Total	January 2012						
		11	10	9	8	7	6	5
Surface Water	10	0	5	5	0	0	0	0
Private Well	0	0	0	0	0	0	0	0
Groundwater	1	0	0	1	0	0	0	0
Sediment	0	0	0	0	0	0	0	0
Soil	55	18	8	13	0	0	16	0
Air (Odor Complaint)	0	0	0	0	0	0	0	0
Air (Work Area)	18	3	3	3	3	0	3	3

**Table 3 – Deployed Containment Hard Boom Information**

	1/5 – 1/11
Total Surface Hard Boom (ft)	2,800
Control Point Surface Hard Boom (ft)	400

**Table 4 – OSCAR Site Status (as of 1/11/2012)**

Overbank Branch	4
Submerged Oil Branch	184
Containment Branch	5
Talmadge Creek Branch	1
Kalamazoo River Branch	9
Consistent with EPA Order and up for MDEQ Part 201 Program	1
<b>Total Sites</b>	<b>204</b>

**Table 5 - Equipment Decontamination**

Location/Media	Total	January 2012						
		11	10	9	8	7	6	5
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	2	2	0	0	0	0	0	0
Boom (linear ft)	900	0	0	0	0	900	0	0
Miscellaneous Items	161	11	89	16	0	20	23	2

**Table 6 - Soil and Debris Shipped Off Site (as of 1/11/2012)**

<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)	59,543	Terra/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)	1,144	EQ/Republic (Marshall, MI); C&C
Non-Haz Impacted Debris (ton)	6,464	

Shaded items are discontinued waste streams.

**Table 7 – Oil/Water Collected by Location (as of 1/11/2012)**

<b>Location</b>	<b>Cumulative (gallons)</b>
Division A	5,356,315
Division B	4,878,279
Division C	2,079,238
Division D	121,106
Division E	52,631
Decontamination	2,309,489
Site A	320,909
Other Locations*	1,709,109
Subtotal	<b>16,827,076</b>
Sludge**	<b>474,215</b>
<b>Total Oil/Water</b>	<b>16,352,861</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 8 - Liquid Shipped Off-Site (as of 1/11/2012)**

<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	986,480
Non-Haz Water	Dynecol	Detroit, MI	981,792
Non-Haz Water	Liquid Industrial Waste	Holland, MI	900,807
Non-Haz Water	Plummer	Kentwood, MI	250,825
<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>16,352,861</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 9 - Oil/Water Remaining On-Site (as of 1/11/2012)**

<b>Item</b>	<b>Cumulative (gallons)</b>
Oil/Water Collected	16,352,861
Oil/Water Shipped Off-Site	16,352,861
<b>Total Oil/Water Remaining On-Site</b>	<b>0</b>

**Table 10 – Estimated Recovered Oil (as of 1/9/2012)**

<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 - (Impacted Soil &amp; Debris)</b>	C&C Landfill	Marshall, MI	12,405*
<b>Soil - (Impacted Soil &amp; Debris)</b>	Envirosafe/ Westside RDF	Oregon, OH	278,665
<b>Geotube Sediment - (Impacted Sediment)</b>	Envirosafe/ Westside RDF	Oregon, OH	1,298
<b>Debris - (Roll Off Boxes with Impacted Sorbents, boom, pads, plastic, PPE, vegetation, and biomass)</b>	EQ Michigan	Belleville, MI	33,689
<b>Frac Tank City - Influent to Carbon Filtration System</b>	C&C Landfill	Marshall, MI	8,109
<b>Frac Tank City - Water</b>	Dynecol	Detroit, MI	46,120**
	Liquid Industrial Waste Services, Inc.	Kentwood, MI	
	Plummers Env Inc.	Holland, MI	
	BC POTW	Battle Creek, MI	
<b>Ceresco Pretreatment System</b>	C&C Landfill	Marshall, MI	90
<b>A-1 Pretreatment System</b>	C&C Landfill	Marshall, MI	9
<b>Oily Water - RPP</b>	Enbridge Facility	Griffith, IN	766,288
<b>Total</b>	-	-	<b>1,146,672</b>

Shaded items represent discontinued waste streams

\*Totals updated for analytical received after report generation.

\*\*Totals updated for analytical received after report generation and verification of 11-17-11 O&G analysis.

**Table 11 – Public Inquiries Received by EPA and Enbridge**

Location/Media	Total	January 2012						
		11	10	9	8	7	6	5
Marshall Community Center	12	2	4	5	0	0	1	0
Oil Spill Public Information Hotline	3	0	0	0	0	0	1	2
Website	0	0	0	0	0	0	0	0
<b>Total Public Inquiries</b>		2	4	5	0	0	2	2

**Table 12 – Landowner Environmental Issues (as of 1/11/2012)**

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

**Table 13 - Financial Summary**

Item	Expended (Cumulative) (as of 1/8/2012)
<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	\$ 21,103,659
T032-Sampling	\$ 183,567
T037-Doc Support	\$ 1,216,317
<b>Total START Contractor</b>	<b>\$ 22,503,543</b>
<b>Response Contractor Sub-Totals</b>	<b>\$ 26,829,152</b>
<b>EPA Funded Costs: Total EPA Costs</b>	<b>\$ 5,589,331</b>
<b>Pollution Removal Funding Agreements – Total Other Agencies</b>	<b>\$ 1,508,854</b>
<b>Sub-Totals</b>	<b>\$ 33,927,337</b>
Indirect Cost	\$ 4,434,083
<b>Total Est. Oil Spill Cost</b>	<b>\$ 38,361,421</b>
<b>Oil Spill Ceiling Authorized by USCG</b>	<b>\$ 43,700,000</b>
<b>Oil Spill Ceiling Available Balance</b>	<b>\$ 5,338,579</b>

Shaded items are discontinued

**Table 14 - Personnel On-Site**

Agency/Entity	January 2012						
	11	10	9	8	7	6	5
U.S. EPA	1	1	1	0	1	2	2
START	22	22	22	5	18	20	20
MDEQ	7	7	7	0	0	9	8
MDEQ Contractors	6	6	7	0	0	8	9
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
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	0
MDCH	0	0	0	0	0	0	0
USGS	3	3	0	0	0	0	0
Michigan State Police EMD	0	0	0	0	0	0	0
Enbridge – Operations Center	80	79	56	7	11	60	63
Enbridge – Talmadge Creek	68	65	60	4	50	51	45
Enbridge – Kalamazoo River	4	8	8	0	0	15	14
Enbridge – Containment	0	5	4	0	4	4	9
Enbridge – Submerged Oil	1	5	4	0	1	1	0
Enbridge – Overbank	32	25	25	3	25	28	33
Enbridge – Waste Management	31	32	25	0	28	27	24
Enbridge – Security & Flaggers	6	6	6	6	6	6	6
Enbridge –Communications Center	2	2	2	0	0	2	2
<b>Total</b>	<b>263</b>	<b>266</b>	<b>227</b>	<b>25</b>	<b>144</b>	<b>233</b>	<b>235</b>

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