

US EPA ARCHIVE DOCUMENT

**Enbridge Line 6B MP 608 Pipeline Release  
Marshall, Michigan  
Source Contamination Removal and Verification Summary Report  
Talmadge Creek Section 3  
Stationing 20+00L to 30+00L and 19+25R to 29+00R**

**US EPA ARCHIVE DOCUMENT**

**Enbridge Energy  
September 23, 2010**

# Talmadge Creek Source Contamination Removal and Verification Summary Report

## Section 3 of 10 – Stationing (20+00L to 30+00L) and (19+25R to 29+00R)

### Overview

The Enbridge Source Area Response Plan (SAR) and Sampling and Analysis Plan (SAP), dated 2 August 2010, revised 17 August 2010 was developed to prescribe response activities related to a release of crude oil from Enbridge Energy, Limited Partnership's Line 6B MP 608 pipeline in Marshall, Michigan. A detailed and defined approach to identify and complete source removal was subsequently developed and presented in the 13 September 2010 *Supplement to Source Area Response Plan Approach for Source Contamination Removal, Verification and Backfill, Talmadge Creek, Enbridge Line 6B MP 608*, and the *Notice of Approval of Modification* dated 14 September 2010. This report presents the results of the implementation of that approach for Section 3 of 10 (Stationing left bank of Talmadge Creek: 20+00L to 30+00L and Stationing right bank of Talmadge Creek: 19+25R to 29+00R).

### Supplemental SAR Objectives

The following remedial objectives were identified to develop guidelines and procedures to remove the source area contamination from Talmadge Creek:

- Remove free oil from the banks of Talmadge Creek;
- Stabilize the existing creek bed;
- Identify that adjacent up bank areas are not a source of free oil.

To meet these objectives, the response actions included the completion of the following activities along Talmadge Creek:

- Site clearing and grubbing of trees and vegetation to allow access road construction and implementation of free oil removal activities;
- Construction of temporary access roads into the affected area;
- Construction of flumes along Talmadge Creek to recover free oil;
- Oil and water recovery and subsequent disposal;
- Installation and maintenance of absorbent booms along Talmadge Creek;
- Soil removal, staging, and bulking of crude oil-impacted soil with eventual characterization, transport, and offsite disposal;
- Storm water management and erosion control;

- Interim source area restoration under guidance of Michigan Department of Natural Resources and Environment (MDNRE).

**Section Location**

For efficiency and clarity in implementation and reporting, Divisions A and B of Talmadge Creek were divided into 10 sections as illustrated in Figure 1. Each section was subsequently divided into approximately 20, 50-foot<sup>1</sup> linear clearance areas (stationing) on both the left and right banks of Talmadge Creek as illustrated in Figure 2, (left and right banks oriented facing downstream). This summary report addresses Section 3 as described in the table below.

Section Number	Stationing
3	Left Bank: 20+00L to 30+00L Right Bank: 19+25R to 29+00R

**Section Excavation Methods and Clearance Metrics**

Three methods for determining the vertical limit of excavation were developed and identified as A, B, or C. These three methods are defined as:

- A – No visible free oil and the clearance area passed the 40 CFR Appendix 1 to Subpart A of Part 435 - Static Sheen Test. A test pit was then constructed and inspected by the United States Environmental Protection Agency (U.S. EPA) representative after 6 hours. If free oil was observed in the 6-hour test pit, additional excavation was completed until clearance was obtained via method A, B, or C. If free oil was not observed, backfilling was completed.
- B – The vertical limit was reached due to groundwater (excavation proceeded vertically at least 6-inches into groundwater). No 6-hour test pit was required for clearance.
- C – The vertical limit was reached due to the silt/clay confining layer. No 6-hour test pit was required for clearance.

In addition, an approximately 2-foot wide 48-hour observation pit/trench was installed along the wall of the excavation boundary and remained open for a minimum of 48 hours to allow the EPA representative to observe potential accumulation of free oil. If oil was observed, an evaluation of the source was conducted and an XTex curtain was installed to separate the impacted area from the clean area. If no oil was observed, or the barrier curtain was installed, backfilling proceeded.

**Soil Sampling and Analysis**

Soil samples were collected from the area of excavation and analyzed pursuant to MDNRE approved work plans for the following analytical parameters:

- Total Petroleum Hydrocarbons (TPH):
  - Gasoline Range Organics (GRO);
  - Diesel Range Organics (DRO);

<sup>1</sup> One area on the right bank of Talmadge Creek was 75-feet in length.

- Oil Range Organics (ORO);
- Benzene;
- Toluene;
- Ethylbenzene;
- Xylenes;
- Polynuclear Aromatics (PNAs);
- 1,2,4-Trimethylbenzene;
- 1,3,5-Trimethylbenzene;
- Barium;
- Nickel;
- Vanadium;
- Iron.

The analytical results will be evaluated as part of future assessment and remediation activities.

#### **Deviations from SAP**

No deviations from the SAP were noted in this Section.

#### **Conclusion**

All completed work for this section met the U.S. EPA metrics in compliance with the SAR and the Supplement to the SAR. No additional cleanup is required to fulfill the U.S. EPA's requirements pursuant to the Removal Administrative Order issued by U.S. EPA on July 27, 2010 (Docket No. CWA 1321-5-10-001) pursuant to §311(c) of the Clean Water Act.

#### **Supporting Documentation**

The following documentation is included as attachments to this document:

- Location maps indentifying the subject section (Figures 1 and 2);
- Photographs;
- Field notes;
- A table summarizing the following information:

- Identification of final EPA clearance method used to dictate vertical limit (A, B, or C);
- Free oil observed (for Method A);
- Odor (for Method A);
- Sheen test per 40 CFR Appendix 1 to Subpart A of Part 435 (for Method A);
- Photoionization detector (PID) headspace (for Method A);
- Installation date and time of 6-hour test pit;
- EPA representative sign-off and approval of backfilling;
- Installation date and time of 48-hour observation pit/trench;
- 48-hour observation.

# Table

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Talmadge Creek Source Contamination Removal and Verification Summary Table: Section 3

Division	Section Number	Station Number	Creek Bank (L/R)	Final EPA Clearance Method (A, B, C)	Free Oil Observed (Y/N)	Odor (Y/N)	40 CFR Sheen Test Sheen Observed (Y/N)	PID Headspace (ppm)	Installation Date of 6-hour Test Pit	Installation Time of 6-hour Test Pit	Method A 6-hour Test Pit EPA Representative Sign-off (Y/N)	Installation Date of 48-hour Observation Trench/Pit	Installation Time of 48-hour Observation Trench/Pit	48-hour Observation Completed (Y/N)
A6	3	20+00L - 20+50L	L	A	N	N	N	22.5	9/9/2010	1840	Y	9/9/2010	1845	Y
A6	3	20+50L - 21+00L	L	A	N	N	N	3.4	9/9/2010	1825	Y	9/9/2010	1800	Y
A6	3	21+00L - 21+50L	L	B	NA	NA	NA	NA	NA	NA	NA	9/9/2010	NR	Y
A6	3	21+50L - 22+00L	L	A	N	N	N	ND	9/9/2010	1006	Y	9/9/2010	1008	Y
A6	3	22+00L - 22+50L	L	A	N	N	N	17.9	9/9/2010	0948	Y	9/9/2010	0955	Y
A6	3	22+50L - 23+00L	L	B	NA	NA	NA	NA	NA	NA	NA	9/9/2010	0940	Y
A6	3	23+00L - 23+50L	L	A	N	N	N	ND	9/9/2010	0835	Y	9/9/2010	0837	Y
A6	3	23+50L - 24+00L	L	A	N	N	N	0.25	9/8/2010	1930	Y	9/8/2010	1935	Y
A6	3	24+00L - 24+50L	L	A	N	N	N	0.05	9/8/2010	1827	Y	9/8/2010	1908	Y
A6	3	24+50L - 25+00L	DIVISION DRIVE											
B2	3	25+00L - 25+50L	L	B	NA	NA	NA	NA	NA	NA	NA	9/18/2010	2235	Y
B2	3	25+50L - 26+00L	L	A	N	N	N	1.5	9/12/2010	1734	Y	9/12/2010	NR	Y
B2	3	26+00L - 26+50L	L	A	N	N	N	3.4	9/12/2010	0904	Y	9/13/2010	NR	Y
B2	3	26+50L - 27+00L	L	A	N	Y	Y	34.1	9/14/2010	1750	N	9/14/2010	1755	Y
B2	3	27+00L - 27+50L	L	A	N	N	N	0.0	9/14/2010	1500	Y	9/14/2010	1506	Y
B2	3	27+50L - 28+00L	L	A	N	Y	Y	2.7	9/14/2010	1430	Y	9/14/2010	1443	Y
B2	3	28+00L - 28+50L	L	A	N	N	N	1.1	9/14/2010	1045	Y	9/14/2010	1053	Y
B2	3	28+50L - 29+00L	L	A	N	N	N	1.5	9/14/2010	1810	Y	9/14/2010	1815	Y
B2	3	29+00L - 29+50L	L	A	NR	NR	NR	NR	9/15/2010	NR	Y	9/15/2010	NR	Y
B2	3	29+50L - 30+00L	L	A	N	N	N	1.6	9/15/2010	0921	Y	9/15/2010	0921	Y

See endnotes for description of notations



Talmadge Creek Source Contamination Removal and Verification Summary Table: Section 3

Division	Section Number	Station Number	Creek Bank (L/R)	Final EPA Clearance Method (A, B, C)	Free Oil Observed (Y/N)	Odor (Y/N)	40 CFR Sheen Test Sheen Observed (Y/N)	PID Headspace (ppm)	Installation Date of 6-hour Test Pit	Installation Time of 6-hour Test Pit	Method A 6-hour Test Pit EPA Representative Sign-off (Y/N)	Installation Date of 48-hour Observation Trench/Pit	Installation Time of 48-hour Observation Trench/Pit	48-hour Observation Completed (Y/N)
A6	3	19+25R - 19+75R	R	C	NA	NA	NA	NA	NA	NA	NA	9/9/2010	NR	Y
A6	3	19+75R - 20+25R	R	A	N	N	N	0.0	9/9/2010	1440	Y	9/9/2010	1440	Y
A6	3	20+25R - 20+75R	R	C	NA	NA	NA	NA	NA	NA	NA	9/9/2010	NR	Y
A6	3	20+75R - 21+25R	R	A	N	N	N	0.0	9/9/2010	1132	Y	9/9/2010	NR	Y
A6	3	21+25R - 21+75R	R	C	NA	NA	NA	NA	NA	NA	NA	9/9/2010	NR	Y
A6	3	21+75R - 22+25R	R	A	N	N	N	0.2	9/9/2010	1050	Y	9/9/2010	NR	Y
A6	3	22+25R - 22+75R	R	A	N	N	N	0.3	9/9/2010	1030	Y	9/9/2010	NR	Y
A6	3	22+75R - 23+25R	R	A	N	N	N	1.1	9/9/2010	1000	Y	9/9/2010	1005	Y
A6	3	23+25R - 23+75R	R	A	N	N	N	0.2	9/9/2010	0930	Y	9/9/2010	0934	Y
B2	3	23+75R - 24+50R	R	B	NA	NA	NA	NA	NA	NA	NA	9/18/2010	2200	Y
B2	3	24+50R - 25+00R	R	A	N	N	N	1.5	9/12/2010	1640	Y	9/12/2010	1640	Y
B2	3	25+00R - 25+50R	R	A	N	N	N	4.4	9/12/2010	1620	Y	9/12/2010	1620	Y
B2	3	25+50R - 26+00R	R	A	N	N	N	2.3	9/12/2010	1555	Y	9/12/2010	NR	Y
B2	3	26+00R - 26+50R	R	A	N	N	N	7.9	9/12/2010	1528	Y	9/12/2010	NR	Y
B2	3	26+50R - 27+00R	R	A	N	N	N	1.9	9/12/2010	1510	Y	9/12/2010	NR	Y
B2	3	27+00R - 27+50R	R	A	N	N	N	2.8	9/14/2010	1330	Y	9/14/2010	1335	Y
B2	3	27+50R - 28+00R	R	A	N	N	N	7.9	9/14/2010	1355	Y	9/14/2010	1358	Y
B2	3	28+00R - 28+50R	R	A	N	N	Y	1.1	9/12/2010	1450	Y	9/12/2010	NR	Y
B2	3	28+50R - 29+00R	R	A	N	N	N	0.0	9/12/2010	1030	Y	9/12/2010	NR	Y

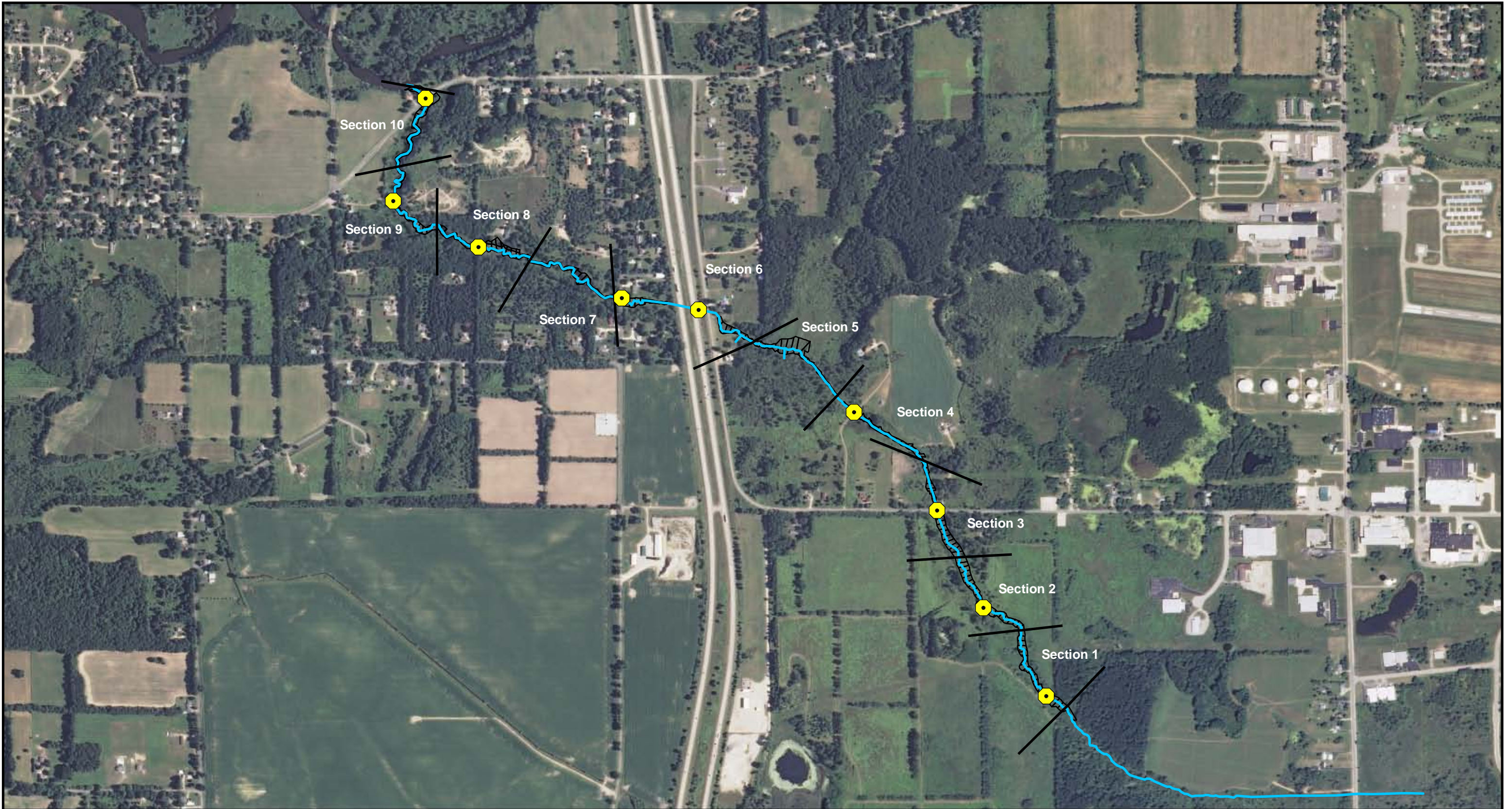
See endnotes for description of notations

Endnotes for Talmadge Creek Source Contamination Removal  
and Verification Summary Table

- NR – Information not recorded on field log, however, U.S. EPA representative sign-off obtained.
- NA – Metric not applicable to final site conditions after achieving 'B' or 'C' Method limits. Site conditions prior to achieving final excavation limits were recorded on field notes.
- ND – Not Detected
- PID – Photoionization detector
- ppm – Parts per million




# Figures

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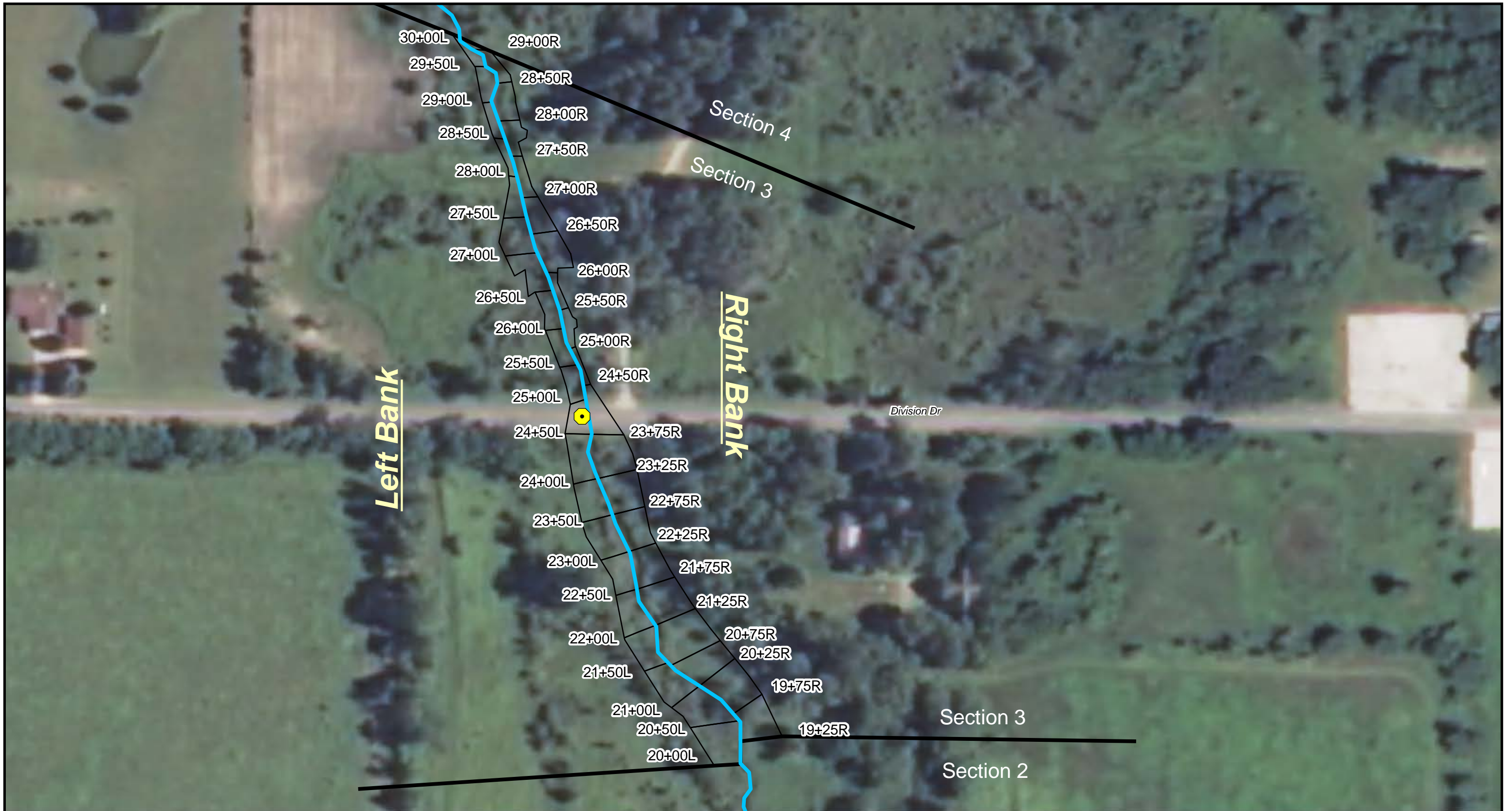
0 500 1,000 Feet

**Legend**

-  Culverts
-  Section Lines
-  Talmadge Creek





**FIGURE 1**  
**OVERALL SECTION LOCATION MAP**  
**LINE 6B MP 608**  
**MARSHALL, MICHIGAN**

SEPTEMBER, 2010



0 55 110 Feet

**Legend**

-  Culverts
-  Talmadge Creek
-  Section Lines
-  Environmental Clearance Area

01+00L

SEPTEMBER, 2010

**FIGURE 2**  
**SECTION 3 STATION LOCATIONS**  
**TALMADGE CREEK**  
**LINE 6B MP 608**  
**MARSHALL, MICHIGAN**

# Field Photographs

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## Field Photographs – Section 3



20+00L – 20+50L: Looking downstream (September 9, 2010)



20+50L – 21+00L: Looking downstream (September 10, 2010)

## Field Photographs – Section 3



21+00L – 21+50L: Looking upstream (September 9, 2010)



21+50L – 22+00L: Looking upstream (September 9, 2010)



## Field Photographs – Section 3



22+00L – 22+50L: Looking upstream (September 9, 2010)



22+50L – 23+00L: Looking upstream at area cleared for backfill (September 9, 2010)

## Field Photographs – Section 3



23+00L – 23+50L: Looking upstream at backfill (September 10, 2010)



23+50L – 24+00L: Looking downstream (September 8, 2010)

### Field Photographs – Section 3



24+00L – 24+50L: Looking downstream at Division Drive over Talmadge Creek  
(September 8, 2010)



24+50L – 25+00L: Looking toward Talmadge Creek (September 19, 2010)

### Field Photographs – Section 3



25+00L – 25+50L: Looking at 6-hour test pit (September 12, 2010)

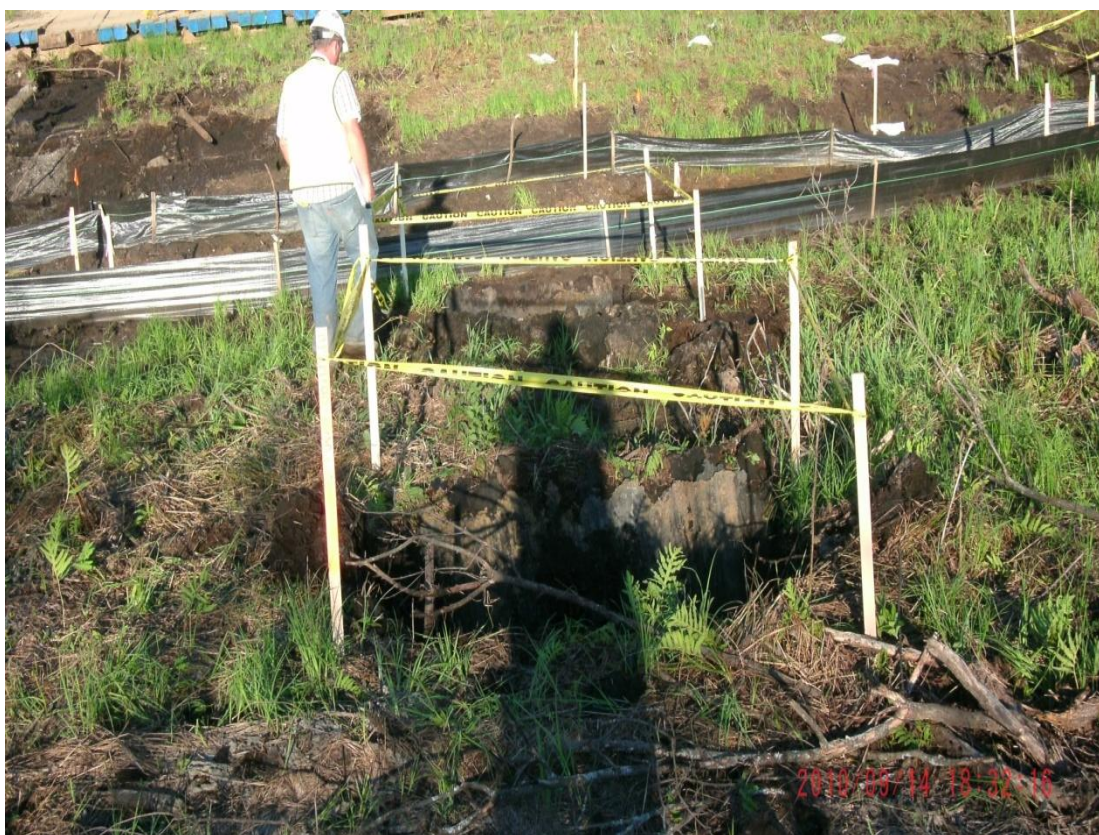


25+50L – 26+00L: Looking toward Talmadge Creek at 6-hour test pit (September 12, 2010)

### Field Photographs – Section 3



26+00L – 26+50L: Looking toward Talmadge Creek at 6-hour test pit (September 13, 2010)



26+50L – 27+00L: Looking toward Talmadge Creek (September 14, 2010)

## Field Photographs – Section 3



27+00L – 27+50L: Looking toward Talmadge Creek at 6-hour test pit (September 14, 2010)



27+50L – 28+00L: Looking toward Talmadge Creek (September 14, 2010)

## Field Photographs – Section 3



28+00L – 28+50L: Looking toward Talmadge Creek at 6-hour test pit (September 14, 2010)



28+50L – 29+00L: Looking toward Talmadge Creek at 6-hour test pit (September 14, 2010)

## Field Photographs – Section 3



29+00L – 29+50L: Looking toward Talmadge Creek (September 19, 2010)



29+50L – 30+00L: Looking toward Talmadge Creek at 6-hour test pit (September 15, 2010)



## Field Photographs – Section 3



19+25R – 19+75R: Looking downstream at 48-hour observation pit (September 10, 2010)



19+75R – 20+25R: Looking toward Talmadge Creek at area cleared for backfill (September 10, 2010)

## Field Photographs – Section 3

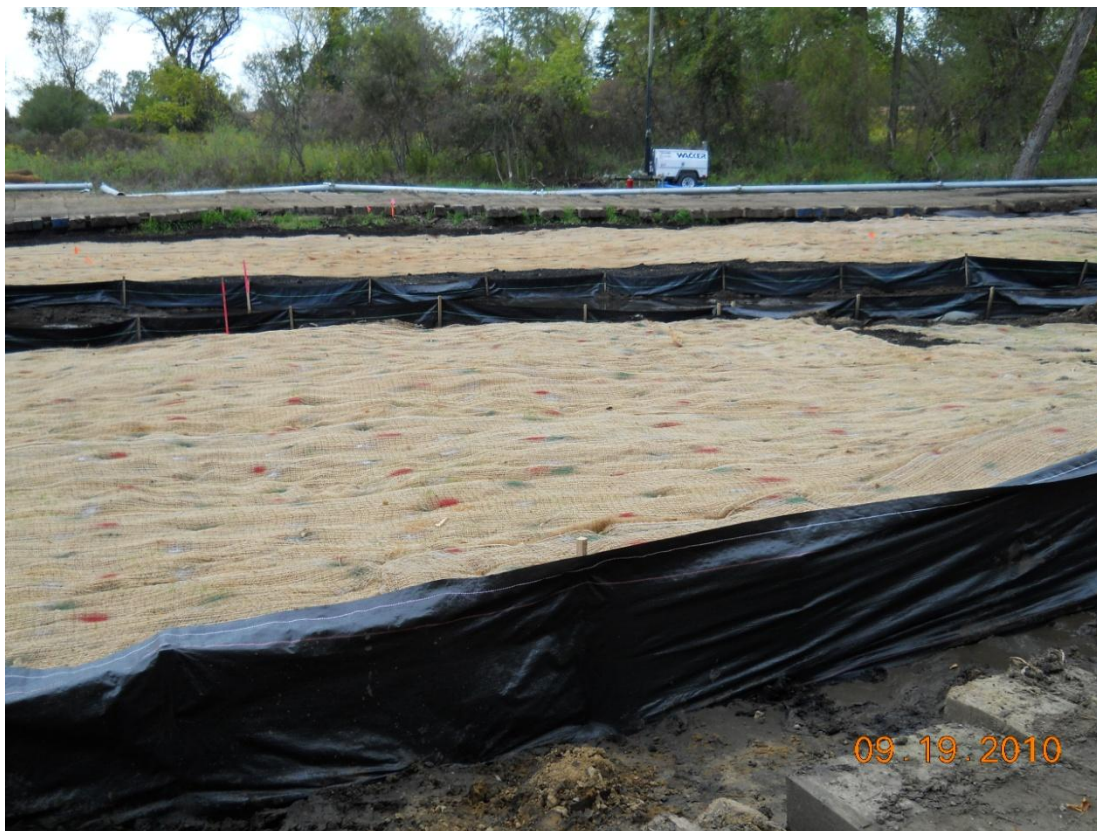


20+25R – 20+75R: Looking upstream (September 10, 2010)



20+75R – 21+25R: Looking downstream Talmadge Creek at excavated area after pumping (September 14, 2010)

## Field Photographs – Section 3



21+25R – 21+75R: Looking toward Talmadge Creek (September 19, 2010)



21+75R – 22+25R: Looking toward Talmadge Creek (September 19, 2010)

## Field Photographs – Section 3



22+25R – 22+75R: Looking toward Talmadge Creek (September 19, 2010)



22+75R – 23+25R: Looking toward Talmadge Creek (September 19, 2010)

### Field Photographs – Section 3



23+25R – 23+75R: Looking upstream at 48-hour observation pit (September 15, 2010)



23+75R – 24+50R: Looking toward Talmadge Creek at 6-hour test pit (September 19, 2010)

### Field Photographs – Section 3



24+50R – 25+00R: Looking toward Talmadge Creek at 6-hour test pit (September 12, 2010)



25+00R – 25+50R: Looking toward Talmadge Creek at 48-hour observation pit (September 17, 2010)

### Field Photographs – Section 3



25+50R – 26+00R: Looking toward Talmadge Creek (September 19, 2010)



26+00R – 26+50R: Looking toward Talmadge Creek at 6-hour test pit (September 12, 2010)

### Field Photographs – Section 3



26+50R – 27+00R: Looking at 6-hour test pit (September 12, 2010)



27+00R – 27+50R: Looking toward Talmadge Creek (September 19, 2010)



### Field Photographs – Section 3



27+50R – 28+00R: Looking at 48-hour observation pit (September 17, 2010)



28+00R – 28+50R: Looking toward Talmadge Creek at scraped area (September 12, 2010)

### Field Photographs – Section 3



28+50R- 29+00R: Looking at 48-hour observation pit (September 12, 2010)

# Field Notes

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Project Name: Marshall Line 6B MP608 Pipeline Release  
 Project Number: 22131003

Date: Sep 9, 2010  
 Completed By: David Markelz

1/2

Creek Section	Photo ID	Method Used to Indicate Vertical Limit <sup>2</sup>	Free Phase Oil Observed	Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed	Headspace <sup>2</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (If Applicable)	Time of Trench Excavation	Backfill Approval	
										EPA	Enbridge
R 23725 <sup>10</sup>	3995	A B C	Y (N)	N L M S	Y (N)	0.2	09:30	1006 / 9-10-10	09:34	SGA	TUR
R 23725 <sup>10</sup>	3994	A B C	Y (N)	N L M S	Y (N)	1.1	10:00	1004 / 9-10-10	10:05	SGA	TUR
R 22+75 <sup>10</sup>	3993	A B C	Y (N)	N L M S	Y (N)	0.3	10:30	1002 / 9-10-10	-	SGA	TUR
R 22+25 <sup>10</sup>	3992	A B C	Y (N)	N L M S	Y (N)	0.2	10:50	958 / 9-10-10	-	SGA	TUR
R 21+75 <sup>10</sup>	3991	A B C	Y (N)	N L M S	Y (N)	0.5	11:15	<del>958</del> / 9-10-10	-	SGA	TUR
R 21+25 <sup>10</sup>	3990	A B C	Y (N)	N L M S	Y (N)	0.0	11:32	<del>958</del> / 9-10-10	-	SGA	TUR
R 20+75 <sup>10</sup>	3989	A B C	Y (N)	N L M S	Y (N)	0.0	-	953 AM / 9-10-10	-	SGA	TUR
R 20+25 <sup>10</sup>	3988	A B C	Y (N)	N L M S	Y (N)	0.0	14:40	9MSAM / 9-10-10	14:40	SGA	TUR
R 19+75 <sup>10</sup>	3987	A B C	Y (N)	N L M S	Y (N)	-	-	948 AM / 9-10-10	-	SGA	TUR
R 19+25 <sup>10</sup>	3986	A B C	Y (N)	N L M S	Y (N)	0.0	15:35	1010 / 9-10-10	15:40	SGA	TUR
R 18+75 <sup>10</sup>	3983	A B C	Y (N)	N L M S	Y (N)	0.0	16:10	1013 / 9-10-10	16:12	SGA	TUR
R 18+25 <sup>10</sup>	3982	A B C	Y (N)	N L M S	Y (N)	0.0	16:30	1014 / 9-10-10	16:32	SGA	TUR
R 17+75 <sup>10</sup>	3981	A B C	Y (N)	N L M S	Y (N)	0.3	16:50	1015 / 9-10-10	16:50	SGA	TUR
R 17+25 <sup>10</sup>	3980	A B C	Y (N)	N L M S	Y (N)	0.0	17:16	1016 / 9-10-10	17:16	SGA	TUR
R 16+75 <sup>10</sup>	3979	A B C	Y (N)	N L M S	Y (N)	0.0	17:38	1019 / 9-10-10	17:40	SGA	TUR

21+65 → 21+75 → to close to  
 21+25 → 21+75 → want per Stauron  
 20+25 → 20+75 → ~~residual~~ residual

Talked to Dave Markelz  
 Dave Markelz was down to day. PA 11:00  
 Lash

1 page per Stauron  
 Dave Markelz  
 5-10-10

Depth of Contamination (A)  
 Groundwater (B)  
 Confining Layer (C)  
 None (N), Light (L), Moderate (M), Strong (S)  
 PID residuals in ppm above background  
 ND = No Detection

David Markelz:  
 both were off pot in clay area

side

Project Name: Marshall Line 6B MPE08 Pipeline Release

Date: 09/18/2010

Project Number: 22131003

Completed By: RAD FRANK

Creek Section	Photo ID	Method Used to Indicate Vertical Limit	Free Phase Oil Observed	Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed	Headspace <sup>3</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (if Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (if Applicable)	Backfill Approval	
											EPA	Enbridge
2575R-2456R 2456R-2476R 2476R-2496R	M14 9172	A ⊕ C	Y ⊕	⊕ L M S	Y ⊕	1.1	2200	one PIT 9:17:00		9-21-10 9-21-10		55
<p>Comments: REMOVED IMPACTED SOILS. CONSTRUCTED CLAY OR-IP PITS. (2200 start time) photo 18:22 #29</p>												
25700L to 25750L		A ⊕ C	Y ⊕	⊕ L M S	Y ⊕	0.10	2235	one PIT 9:17:00		9-21-10 9-21-10		55
<p>Comments: REMOVED IMPACTED SOILS. CONSTRUCTED CLAY OR-IP PITS. (2235 start time) photo 18:22 #30</p>												
<p>Comments:</p>												

(1) Depth of Contamination (A)  
Groundwater (B)  
Confining Layer (C)

(2) None (N), Light (L), Moderate (M), Strong (S)

(3) PID readings in ppm above background  
ND = No Detection

Project Name: Marshall Line 6B MP608 Pipeline Release

Project Number: 22131003

Date: 9/10/10  
Completed By: *Marko J.*

Creek Section	Photo ID	Method Used to Indicate Vertical Limit <sup>2</sup>	Free Phase Oil Observed	Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed	Headspace <sup>2</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (if Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (if Applicable)	Backfill Approval	
											EPA	Enbridge
2075 to 2075SR		A B C	Y N	N L M S	Y N							
1975 to 1975		A B C	Y N	N L M S	Y N							
0400 to 0500L		A B C	Y N	N L M S	Y N							
1060 to 1100L		A B C	Y N	N L M S	Y N							
1100 to 1150		A B C	Y N	N L M S	Y N							
1850 to 1900		A B C	Y N	N L M S	Y N							
to		A B C	Y N	N L M S	Y N							
to		A B C	Y N	N L M S	Y N							
to		A B C	Y N	N L M S	Y N							
to		A B C	Y N	N L M S	Y N							
to		A B C	Y N	N L M S	Y N							
to		A B C	Y N	N L M S	Y N							
to		A B C	Y N	N L M S	Y N							
to		A B C	Y N	N L M S	Y N							
to		A B C	Y N	N L M S	Y N							
to		A B C	Y N	N L M S	Y N							

*MS Affected on other page  
Duplicate from 0836 0836/10  
MS Affected on other page Duplicate from 0900*

(1) Depth of Contamination (A)  
Groundwater (B)  
Confining Layer (C)  
(2) None (N), Light (L), Moderate (M), Strong (S)  
(3) pID readouts in ppm above background  
ND = No Detection

2025-2075R  
1925-1975

Project Name: Marshall Line 6B MP608 Pipeline Release

Project Number: 22131003

Date: 9/12/10

Completed By: Marcia Steeb

Photo ID	Method Used to Indicate Vertical Limit <sup>1</sup>	Free Phase Oil Observed	Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed	Headspace <sup>3</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (if Applicable)	Time of Trench Excavation	Backfill Approval	
									EPA	Enbridge
2550 <sup>10</sup> 2550 Creek Section 9/11/10 FILLED 9/11/10 CJS	A B C	Y (N)	N L M S	Y (N)	4.9	1620	4/13/10 7 TVE MS	1620 MS	SR	TNR
2550 <sup>10</sup> 2550 FILLED 9/11/10 CJS	B C	Y (N)	N L M S	Y (N)	1.5	1640	9/13/10	1640 MS	SR	TNR
2550 <sup>10</sup> 2550 FILLED 9/11/10 CJS	B C	Y (N)	N L M S	Y (N)	1.5	1757	1715 MS	1715 MS	SR	TNR
2550 <sup>10</sup> 2550 FILLED 9/11/10 CJS	B C	Y (N)	N L M S	Y (N)	1.5	1757	9/14/10 3:26 pm	1715 MS	SR	TNR

- (1) Depth of Contamination (A) Groundwater (B) Confining Layer (C)
- (2) None (N), Light (L), Moderate (M), Strong (S)
- (3) PID readouts in ppm above background ND = No Detection

2550 → 2550 1706

9/17/10 @ 1332 due to too much settlement + unable to see surface. Passed @ 1415

Full Trickle 3:26 pm

One pit due to size of head area.

Project Name: Marshall Line 66 MPE08 Pipeline Release

Project Number: 22131003

Completed By: Marvin Staciak

Creek Section	Photo ID	Method Used to Indicate Vertical Limit <sup>1</sup>	Free Phase Oil Observed	Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed	Headspace <sup>3</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (if Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (if Applicable)	Backfill Approval	
											EPA	Enbridge
FLUG 011910 CP	09025	B	Y	N	Y	1.9	1510	9/13/10			SPR	
2700	2650	B	Y	N	Y	1.9	1510	9/13/10			SPR	
2650	2650	B	Y	N	Y	7.9	1510	9/13/10			SPR	
<p>Comments: possible pipe rupture causing water to enter pit</p> <p>9/16/10 6<sup>00</sup> failed due to rainbow that was observed outside the pit near the stream.</p> <p>FLUG 011910 CP</p> <p>7600</p> <p>1505</p> <p>Comments: 1505 - ACCOM + operations ready to move to next location however weather EIA rep. Eric Benson fell in the mud + went to change.</p>												

- (1) Depth of Contamination (A) Groundwater (B) Confining layer (C)
- (2) None (N), Light (L), Moderate (M), Strong (S)
- (3) PID readings in ppm above background ND = No Detection



Project Name: Marshall Line 6B MP608 Pipeline Release Date: 9/14/10  
 Project Number: 22131003 Completed By: Marcin Steciak

Creek Section	Photo ID	Method Used to Indicate Vertical Limit <sup>1</sup>	Free Phase Oil Observed	Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed	Headspace <sup>3</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (if Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (if Applicable)		Backfill Approval	
										EPA	Enbridge		
✓ R 2700 to 2750 Creek Section W/11/10 20 W/11/10 18	7-8	A B C	Y <input checked="" type="checkbox"/>	N L M S	Y <input checked="" type="checkbox"/>	2.8	13:35	9/17 10:58 No data			SS		
Comments													
Bodily fluid 18													
✓ R 2750 to 2800	9-10	A B C	Y <input checked="" type="checkbox"/>	N L M S	Y <input checked="" type="checkbox"/>	7.9	13:53	No data			SS		
Comments													
Bodily fluid 17, 20													
✓ R 2800 to 3050	11-12	A B C	Y <input checked="" type="checkbox"/>	N L M S	Y <input checked="" type="checkbox"/>	4.1	14:37 14:45	No data			SS		
Comments													

(1) Depth of Contamination (A)  
 Groundwater (B)  
 Confining Layer (C)  
 None (N), Light (L), Moderate (M), Strong (S)  
 PID readouts in ppm above background  
 ND = No Detection

Subject Name: Marshall Line 6B MP608 Pipeline Release

Date: 9/12/10

Project Number: 22131003

Completed By: Marvin Steciak

Creek Section	Photo ID	Method Used to Indicate Vertical Limit <sup>2</sup>	Free Phase Oil Observed	Odor <sup>2</sup>					Sheen Test Rainbow Sheen Observed	Headspace <sup>3</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (If Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (If Applicable)	Backfill Approval	
				Y	N	L	M	S							EPA	Enbridge
FILLED 9/11/10 DS																
2900 to 2850	0013 0014 0015	A B C	Y (N)					Y (N)	0.0	1030	9/12/10				SR	TN
Comments																
FILLED 9/11/10 DS																
2850 to 2800	0020 0021 0022	A B C		N	N	N	N	N	6.3	1450	9-17-10					
Comments: 1.5 - Grass area re-sampled. Top part of 2850 - 2875 R 1.2 - Sampled upper portion. Top part of 2850 - 2875 R 1.1 - Bottom portion 2nd sheen test conducted after scraping.																
2875				N	N	N	N	Y								
Comments: Portion of grass area re-sampled. This is the area shown in original sheen test was taken from.																
2100 to 2100																
Comments: Oil Pipeline. Waiting for representative to clear prior to digging. Enbridge Supervisor contacted company.																

(1) Depth of Contamination (A)  
Groundwater (B)  
Confining Layer (C)  
(2) None (N), Light (L), Moderate (M), Strong (S)  
(3) PID readings in ppm above background  
ND = No Detection

Map by NEW STATIONS



Project Name: Marshall Line 6B MP608 Pipeline Release  
 Project Number: 22131003  
 Date: 9/10  
 Completed By: B.W. ABIG

Creek Section	Photo ID	Method Used to Indicate Vertical Limit <sup>1</sup>	Free Phase Oil Observed	Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed	Headspace <sup>3</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (If Applicable)	Time of Trench Excavation	Backfill Approval	
										EPA	Enbridge
24150L to 24150M	1921	A B C	Y N	N L M S	Y N	0.05	1887	1055/9-10-10	1908	SSA	JNF
24100L to 24150L	1942	A B C	Y N	N L M S	Y N	0.25	1930	1056/9-10-10	1935	SSA	JNF
23150L to 23150M		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						
to		A B C	Y N	N L M S	Y N						

(1) Depth of Contamination (A)  
 Groundwater (B)  
 Confining Layer (C)  
 None (N), Light (L), Moderate (M), Strong (S)  
 PID readouts in ppm above background  
 ND = No Detection

(2)

Bill

9/12/10 + 9/13/10  
 Marcia Special

Project Name: Marshall Line 6B MP608 Pipeline Release  
 Project Number: 22131003

Date: 9/12/10 + 9/13/10  
 Completed By: Marcia Special

Creek Section 5414-11-10 9/17	Photo ID	Method Used to Indicate Vertical Limit <sup>1</sup>	Free Phase Oil Observed	Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed	Headspace <sup>3</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (If Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (If Applicable)	Backfill Approval	
											EPA	Enbridge
1550-1600L	430	B C	Y (N)	N L M S	Y (N)	1.5	1734	Added		9-17 14:18	53	
Comments: 9/17 - Failed due to inability to see surface due to settlement per Sandy Silver USEPA. Sandy passes the location @ 1418.												
2000-2050-430	430	A B C	Y (N)	N L M S	Y (N)	1.6	0904	9-15-10 10:15	0	9-15-10 10:16		HL
Comments: Product observed in the sheen test/sample. Area was scraped again. 09/13 6:45 Scraped + resampled. N/N No free product no rainbow observed												

- (1) Depth of Contamination (A) Groundwater (B) Confining Layer (C) None (N), Light (L), Moderate (M), Strong (S)
- (2) PID readings in ppm above background
- (3) ND = No Detection

Project Name: 4.2

Marshall Line 68 MP508 Pesticide Release

Project Number: 22-131002

Date: 1/9/10

Completed By: B. J. [Signature]

Creek Section	Photo ID	Method Used to Indicate Vertical Limit <sup>1</sup>	Free Phase Oil Observed	Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed	Headspace <sup>3</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (If Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (If Applicable)
22+50L	0853	A B C	Y (N)	N L M S	Y (N)	ND	0835	1052 9-10-10	2837	[Signature]
23+00L	0952	A B C	Y (N)	N L M S	Y (N)	0.8	0835	1052 9-10-10	0940	[Signature]
23+50L	0957	A B C	Y (N)	N L M S	Y (N)	17.9	0948	1049 9-10-10	0955	[Signature]
22+00L	1018	A B C	Y (N)	N L M S	Y (N)	ND	1006	1048 9-10-10	1008	[Signature]
21+50L	NA	A B C	Y (N)	N L M S	Y (N)	480	NA	FAILED SHEEN TEST SCRAPE AND RE-TEST		[Signature]
21+00L	1810	A B C	Y (N)	N L M S	Y (N)	3.4	1835	1046 9-10-10	1800	[Signature]
20+50L	1903	A B C	Y (N)	N L M S	Y (N)	32.5	1846	1040 9-10-10	1845	[Signature]
20+00L	1922	A B C	Y (N)	N L M S	Y (N)	ND	1905	1038 9-10-10	1910	[Signature]
21+50L	1902	A B C	Y (N)	N L M S	Y (N)	ND	NA			[Signature]

- (1) Depth of Contamination (A) Groundwater (B) Confining Layer (C)
- (2) None (N), Light (L), Moderate (M), Strong (S) PID readings in ppm above background
- (3) ND = No Detection

21+50 - 21+00 Fail trench dept  
 call 37m 9-13-10

[Signature]

Project Name: Marshall Line 6B MPS08 Pipeline Release Date: 09/14/2010  
 Project Number: 22131003 Completed By: RYAN FRANK

Creek Section Backfilled 9/17	Photo ID	Method Used to Indicate Vertical Limit <sup>1</sup>	Free Phase Oil Observed	Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed	Headspace <sup>3</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (if Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (if Applicable)	Backfill Approval	
											EPA	Enbridge
27+00 to 28+50	1332	A B C	Y (N)	N D M S	(N)	34.1	1750	A. S. S. S.	1755	9-17	SS	SS
Comments: REMOVED PRODUCT FROM TRENCH - 26T50L. Site hr approved 9/14 @ 10:40												
48 hr has to wait till permit steps.												
9/17 US EPA refused to clear the area due to western's records show this area has not been cleared per plan *												
29+00 to 28+50	1333	A B C	Y (N)	N D L M S	Y (N)	1.05	1816	A. S. S. S.	1815	9-17	SS	SS
Comments: BACKFILLED 9/17												
28+50 to 28+00	1335	A B C	Y (N)	N D L M S	Y (N)	0.26	1825	passed by Mike 9/16	1830	9-17	SS	SS
Comments: Duplicate exists - passed, 48 hr. inspection already.												

(1) Depth of Contamination (A) Groundwater (B) Confining Layer (C)  
 (2) None (N), Light (L), Moderate (M), Strong (S)  
 (3) PID readouts in ppm above background  
 ND = No Detection

Project Name: Marshall Line 6B MP608 Pipeline Release

Project Number: 22131003

Date: 09/14/2010

Completed By: RYAN FRANK

Creek Section	Photo ID	Method Used to Indicate Vertical Limit	Free Phase Oil Observed	Odor <sup>a</sup>	Sneen Test: Rainbow Sneen Observed	Headspace <sup>b</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (if Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (if Applicable)	Backfill Approval	
											EPA	Enbridge
BACKFILLED 9/17												
28+50L to 28+00L	1607	B C	Y	N L M S	Y (N)	1.1	1045	09-15-10 11:03	1053	09-17	SS	SS
Comments												
BACKFILLED 9/17												
28+00L to 27+50L	1608	B C	Y	N L M S	Y (N)	2.7 0.0	1430	09-14-10 14:12	1448	09-17	SS	SS
Comments												
BACKFILLED 9/17												
27+50L to 27+00L	1609	B C	Y	N L M S	Y (N)	0.0	1500	09-13-10 18:31	1500	09-17	SS	SS
Comments												

- (1) Depth of Contamination (A)  
Groundwater (B)  
Confining Layer (C)
- (2) None (N), Light (L), Moderate (M), Strong (S)
- (3) PID readings in ppm above background  
ND = No Detection

Project Name: Marshall Line 68 MPE608 Pipeline Release

Date: 9/19/10

Creek Section

Project Number: 22131003

Completed By: \_\_\_\_\_

29+00L to 29+50L

Photo ID	Method Used to Indicate Vertical Limit <sup>1</sup>	Photo ID	Free Phase Oil Observed		Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed			Headspace <sup>3</sup> ppm	Time of Test PI	6-hour Follow-up Inspection Observations and Time (if Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (if Applicable)	Backfill Approval	
			Y	N		N	L	M						S	Y
	C B C		Y	N	N	L	M	S	Y	N	9/17/10 1430	9/17/10 1430	9/17/10 1430	DJA	DR

Notes:

- (1) Depth of Contamination (A)  
Groundwater (B)  
Confined Layer (C)
- (2) None (N), Light (L), Moderate (M), Strong (S)
- (3) PID-readouts in ppm above background  
ND = No Detection



Project Name: Marshall Line 6B MP208 Pipeline Release  
 Project Number: 22131003

Date: 09/15/2010  
 Completed By: Brad Frank

Photo ID	Method Used to Indicate Vertical Limit <sup>1</sup>	Free Phase Oil Observed	Odor <sup>2</sup>	Sheen Test Rainbow Sheen Observed	Headspace <sup>3</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (if Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (if Applicable)	Backfill Approval	
										EPA	Enbridge
30100L <sup>10</sup> 29+504 0975	B C	Y	⊙ L M S	Y ⊙	1.6	TP 0921 0116	ROADSIDE	OP	9-17-10 4:30		SS
Comments: <b>BACKFILLED 9/17</b>											
30100L <sup>10</sup> 30+504 0978	B C	Y	⊙ L M S	Y ⊙	1.3	0921 0116	ROADSIDE		9-17-10 14:50		SS
Comments: <b>BACKFILLED 9/17</b>											
33450R <sup>10</sup> 33+000R	B C	Y	⊙ L M S	Y ⊙	6.8	0501 1050	ROADSIDE	1102	9-17-10 1713		MR
Comments:											

- (1) Depth of Contamination (A)  
Groundwater (B)  
Confining Layer (C)
- (2) None (N), Light (L), Moderate (M), Strong (S)
- (3) PID readouts in ppm above background  
ND = No Detection

**Response to EPA Comments for  
Source Contamination Removal and Verification Summary Report  
Enbridge Line 6B MP 608 Pipeline Release, Marshall, Michigan  
Talmadge Creek Section 3 of 10  
Stationing 20+00L to 30+00L and 19+25R to 29+00R**

The information below are responses to U.S. EPA's comments of Enbridge Energy's Talmadge Creek Section 3 of 10 Source Contamination Removal and Verification Summary Report:

1. 21+25L – 21+75L EPA's comment: signature crossed out

Response: EPA signature for 48-hour observation was provided on the field log for this clearance area and was provided in the original report submitted to the EPA on September 23, 2010. A 6-hour observation signature is not required for this clearance area as Method C was applied.

2. 24+50L – 25+00L EPA's comment: needs signature (appears to be gravel driveway)

Response: Field log for this clearance area was incorrectly labeled as Stationing 25+00L to 25+50L (Division Drive). AECOM did not revise the field log's clearance area stationing after the labeling error was identified. EPA did later sign this field log for Division Road on September 25, 2010, field log is attached.

Project Name: Marshall Line 6B MP608 Pipeline Release

Project Number: 27131003

Date: 09/18/2010  
 Completed By: RAD FRANK

Crest Section 2375 R - 2450 R 24+50R - 24+76R	Method Used to Indicate Vertical Limit	Free Phase Oil Observed	Odor			Sheen Test Rainbow Sheen Observed	Headspace <sup>3</sup> ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (If Applicable)	Time of Trench Excavation	48-hour Follow-up Inspection Observations and Time (If Applicable)	Backfill Approval	
			A	B	C							EPA	Enbridge
2200	A B C	Y	N	L	M	S	Y	N	1.1	2200	09/18/10 PIT 9:11:10	09/21/10	SS
REMOVED IMPACTED SOILS. CONSTRUCTED CLAY OP-IP PITS. (2200 start time) photo 18:22 # 29													
2235	A B C	Y	N	L	M	S	Y	N	0.10	2235	09/18/10 one PIT 9:12:00	09/21/10	SS
REMOVED IMPACTED SOILS. CONSTRUCTED CLAY OP-IP PITS. *Division Road (2235 start time) photo 18:22 # 30													
Comments:													

- (1) Depth of Contamination (A)  
 Groundwater (B)  
 Confining Layer (C)
- (2) None (N), Light (L), Moderate (M), Strong (S)
- (3) PID readouts in ppm above background  
 ND - No Detection