

US EPA ARCHIVE DOCUMENT

**Enbridge Line 6B MP 608 Pipeline Release
Marshall, Michigan
Source Contamination Removal and Verification Summary Report
Talmadge Creek Section 2
Stationing 10+00L to 20+00L and 09+00R to 19+25R**

US EPA ARCHIVE DOCUMENT

**Enbridge Energy
September 22, 2010**

Talmadge Creek Source Contamination Removal and Verification Summary Report

Section 2 of 10 – Stationing (10+00L to 20+00L) and (09+00R to 19+25R)

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 2 of 10 (Stationing left bank of Talmadge Creek: 10+00L to 20+00L and Stationing right bank of Talmadge Creek: 09+00R to 19+25R).

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 linear clearance areas¹ (stationing) on both the left and right banks of Talmadge Creek as illustrated in Figure 2, (left and right banks are defined when oriented facing downstream). This summary report addresses Section 2 as described in the table below.

Section Number	Stationing
2	Left Bank: 10+00L to 20+00L Right Bank: 09+00R to 19+25R

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);

¹ One area on the right bank of Talmadge Creek was 25-feet in length.

- 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

Talmadge Creek Source Contamination Removal and Verification Summary Table: Section 2

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-hr Test Pit	Installation Time of 6-hr Test Pit	Method A 6-hr 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)
A5	2	10+00L - 10+50L	L	A	N	N	N	0.8	9/9/2010	1908	Y	9/9/2010	NR	Y
A5	2	10+50L - 11+00L	L	B	NA	NA	NA	NA	NA	NA	Y	9/10/2010	NR	Y
A5	2	11+00L - 11+50L	L	B	NA	NA	NA	NA	NA	NA	Y	9/10/2010	NR	Y
A5	2	11+50L - 12+00L	L	B	NA	NA	NA	NA	NA	NA	NA	9/10/2010	NR	Y
A5	2	12+00L - 12+50L	L	B	NA	NA	NA	NA	NA	NA	NA	9/10/2010	NR	Y
A5	2	12+50L - 13+00L	L	B	NA	NA	NA	NA	NA	NA	NA	9/10/2010	NR	Y
A5	2	13+00L - 13+50L	L	B	NA	NA	NA	NA	NA	NA	NA	9/10/2010	NR	Y
A5	2	13+50L - 14+00L	L	B	NA	NA	NA	NA	NA	NA	NA	9/18/2010	1020	Y
A6	2	14+00L - 14+50L	L	A	N	N	N	1.8	9/17/2010	1825	Y	9/17/2010	1825	Y
A6	2	14+50L - 15+00L	L	A	N	N	N	0.0	9/10/2010	930	Y	9/10/2010	1720	Y
A6	2	15+00L - 15+50L	L	B	NA	NA	NA	NA	NA	NA	NA	9/10/2010	NR	Y
A6	2	15+50L - 16+00L	L	B	NA	NA	NA	NA	NA	NA	NA	9/10/2010	NR	Y
A6	2	16+00L - 16+50L	L	C	NA	NA	NA	NA	NA	NA	NA	9/10/2010	1445	Y
A6	2	16+50L - 17+00L	L	B	NA	NA	NA	NA	NA	NA	NA	9/10/2010	NR	Y
A6	2	17+00L - 17+50L	L	B	NA	NA	NA	NA	NA	NA	NA	9/10/2010	NR	Y
A6	2	17+50L - 18+00L	L	B	NA	NA	NA	NA	NA	NA	NA	9/10/2010	NR	Y
A6	2	18+00L - 18+50L	L	B	NA	NA	NA	NA	NA	NA	NA	9/10/2010	NR	Y
A6	2	18+50L - 19+00L	L	A	N	N	N	ND	9/10/2010	935	Y	9/10/2010	940	Y
A6	2	19+00L - 19+50L	L	A	N	N	N	ND	9/10/2010	930	Y	9/10/2010	930	Y
A6	2	19+50L - 20+00L	L	A	N	N	N	ND	9/9/2010	1905	Y	9/9/2010	1910	Y

See endnotes for description of notations

Talmadge Creek Source Contamination Removal and Verification Summary Table: Section 2

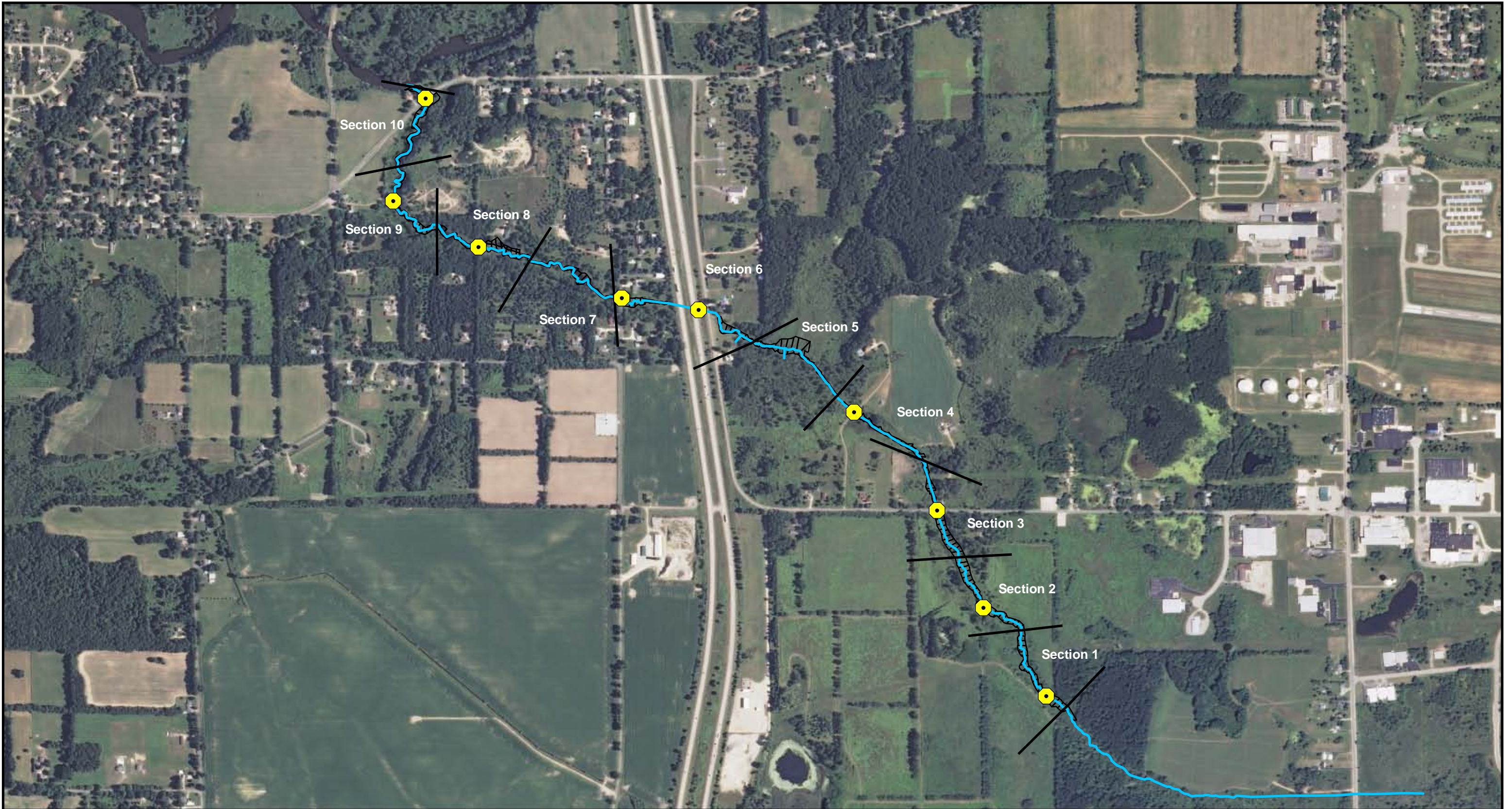
Division	Section Number	Station Number	Creek BankSide (L/R)	Final EPA Clearance Method (A, B, C)	Free Oil Observed (Y/N)	Odor (Y/N)	40 CFR Sheen Test Sheen Observed (Y/N)	PID Headspace (ppm)	Installation Date of 6-hr Test Pit	Installation Time of 6-hr Test Pit	Method A 6-hr Test Pit EPA Representative 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)
A5	2	9+00R - 9+50R	R	A	N	N	N	0.8	9/9/2010	843	Y	9/9/2010	848	Y
A5	2	9+50R - 10+00R	R	A	N	N	N	1.4	9/9/2010	904	Y	9/9/2010	907	Y
A5	2	10+00R - 10+50R	R	A	N	N	N	1.9	9/9/2010	918	Y	9/9/2010	935	Y
A5	2	10+50R - 11+00R	R	A	N	N	N	2.7	9/9/2010	953	Y	9/9/2010	956	Y
A5	2	11+00R - 11+50R	R	A	N	N	N	0.0	9/9/2010	1019	Y	9/9/2010	1021	Y
A5	2	11+50R - 12+00R	R	A	N	N	N	3.1	9/9/2010	1031	Y	9/9/2010	1031	Y
A5	2	12+00R - 12+50R	R	A	N	N	N	3.4	9/9/2010	1115	Y	9/9/2010	1121	Y
A5	2	12+50R - 13+00R	R	A	N	N	N	1.3	9/9/2010	1135	Y	9/9/2010	1138	Y
A5	2	13+00R - 13+50R	R	A	N	N	N	7.3	9/9/2010	1325	Y	9/9/2010	1325	Y
A6	2	13+50R - 14+00R	R	B	NA	NA	NA	NA	NA	NA	NA	9/21/2010	1120	Y
A6	2	14+00R - 14+50R	R	A	N	N	N	1.4	9/9/2010	1840	Y	9/9/2010	1848	Y
A6	2	14+50R - 15+00R	R	A	N	N	N	0.2	9/10/2010	1720	Y	9/10/2010	1720	Y
A6	2	15+00R - 15+25R	R	A	N	N	N	0.0	9/9/2010	1830	Y	9/9/2010	1832	Y
A6	2	15+25R - 15+75R	R	A	N	N	N	0.0	9/9/2010	1813	Y	9/9/2010	1815	Y
A6	2	15+75R - 16+25R	R	A	N	N	N	0.0	9/9/2010	1755	Y	9/9/2010	1758	Y
A6	2	16+25R - 16+75R	R	A	N	N	N	0.0	9/9/2010	1738	Y	9/9/2010	1740	Y
A6	2	16+75R - 17+25R	R	A	N	N	N	0.0	9/9/2010	1716	Y	9/9/2010	1716	Y
A6	2	17+25R - 17+75R	R	A	N	N	N	0.3	9/9/2010	1650	Y	9/9/2010	1650	Y
A6	2	17+75R - 18+25R	R	A	N	N	N	0.0	9/9/2010	1630	Y	9/9/2010	1632	Y
A6	2	18+25R - 18+75R	R	A	N	N	N	0.0	9/9/2010	1610	Y	9/9/2010	1612	Y
A6	2	18+75R - 19+25R	R	A	N	N	N	0.0	9/9/2010	1535	Y	9/9/2010	1540	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



0 500 1,000 Feet

Legend

-  Culverts
-  Section Lines
-  Talmadge Creek





SEPTEMBER, 2010

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



0 55 110 Feet

Legend

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

SEPTEMBER 2010

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

Field Photographs

Field Photographs – Section 2



10+00L – 10+50L: Looking toward Talmadge Creek at coir log installation
(September 14, 2010)



10+50L – 11+00L: Looking toward Talmadge Creek at seeding and mat placement
(September 14, 2010)

Field Photographs – Section 2



11+00L – 11+50L: Looking toward Talmadge Creek (September 19, 2010)



11+50L – 12+00L: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



12+00L – 12+50L: Looking toward Talmadge Creek prior to backfill
(September 13, 2010)



12+50L – 13+00L: Looking toward Talmadge Creek (September 14, 2010)

Field Photographs – Section 2



13+00L – 13+50L: Looking toward Talmadge Creek (September 19, 2010)



13+50L – 14+00L: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



14+00L – 14+50L: Looking toward Talmadge Creek (September 21, 2010)



14+50L – 15+00L: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



15+00L – 15+50L: Looking toward Talmadge Creek (September 19, 2010)



15+50L – 16+00L: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



16+00L – 16+50L: Looking toward Talmadge Creek (September 19, 2010)



16+50L – 17+00L: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



17+00L – 17+50L: Looking toward Talmadge Creek (September 19, 2010)



17+50L – 18+00L: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



18+00L – 18+50L: Looking toward Talmadge Creek (September 19, 2010)



18+50L – 19+00L: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



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



19+50L – 20+00L: Looking toward Talmadge Creek (September 9, 2010)

Field Photographs – Section 2



09+00R – 09+50R: Looking toward Talmadge Creek (September 19, 2010)



09+50R – 10+00R: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



10+00R – 10+50R: Looking toward Talmadge Creek (September 19, 2010)



10+50R – 11+00R: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



11+00R – 11+50R: Looking toward Talmadge Creek (September 19, 2010)



11+50R – 12+00R: Looking at 48-hour observation pit prior to backfill (September 15, 2010)

Field Photographs – Section 2



12+00R – 12+50R: Looking toward Talmadge Creek (September 19, 2010)



12+50R – 13+00R: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



13+00R – 13+50R: Looking toward Talmadge Creek (September 19, 2010)



13+50R – 14+00R: Looking toward Talmadge Creek (September 21, 2010)

Field Photographs – Section 2



14+00R – 14+50R: Looking toward Talmadge Creek (September 19, 2010)



14+50R – 15+00R: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



15+00R – 15+25R: Looking toward Talmadge Creek (September 19, 2010)



15+25R – 15+75R: Looking toward Talmadge Creek (September 19, 2010)

Field Photographs – Section 2



15+75R – 16+25R: Looking at 48-hour observation pit prior to backfill (September 14, 2010)



16+25R – 16+75R: Looking at 48-hour observation pit prior to backfill (September 14, 2010)

Field Photographs – Section 2



16+75R – 17+25R: Looking at 48-hour observation pit prior to backfill (September 14, 2010)



17+25R – 17+75R: Looking at 48-hour observation pit prior to backfill (September 14, 2010)

Field Photographs – Section 2



17+75R – 18+25R: Looking at 48-hour observation pit prior to backfill (September 14, 2010)



18+25R – 18+75R: Looking at 48-hour observation pit prior to backfill (September 14, 2010)

Field Photographs – Section 2



18+75R – 19+25R: Looking at 48-hour observation pit prior to backfill (September 14, 2010)

Field Notes

32

10

Project Name: Marshall Line 58 MP508 Pipeline Release

Project Number: 22131003

Date: 9-9-10

Completed By: DAH RODRIGUEZ

Creek Section	Photo ID	Method Used to Indicate Vertical Limit ¹	Free Phase Oil Observed	Odor ²	Sheen Test Rainbow Sheen Observed	Headspace ³ 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
9+00R ¹⁰	0851	ABC	Y (N)	(N) L M S	Y (N)	0.8	0843	232/9-10-10	0848	949	(SGA)	TUF
9+50R ¹⁰	0910	ABC	Y (N)	(N) L M S	Y (N)	1.4	0904	234/9-10-10	0907	950	(SGA)	TUF
10+00R ¹⁰	0914	ABC	Y (N)	(N) L M S	Y (N)	1.9	0918	235/9-10-10	0935	951	(SGA)	TUF
10+50R ¹⁰	0958	ABC	Y (N)	(N) L M S	Y (N)	2.7	0953	239/9-10-10	0956		(SGA)	TUF
11+00R ¹⁰	1022	ABC	Y (N)	(N) L M S	Y (N)	0.0	1019	240/9-10-10	1021		(SGA)	TUF
11+50R ¹⁰	1052	ABC	Y (N)	(N) L M S	Y (N)	3.1	1031 ^{ONE PIT}	242/9-10-10	1031 ^{PIT}		(SGA)	TUF
12+00R ¹⁰	1127	ABC	Y (N)	(N) L M S	Y (N)	3.4	1115	243/9-10-10	1121		(SGA)	TUF
12+50R ¹⁰	1139	ABC	Y (N)	(N) L M S	Y (N)	1.3	1135	244/9-10-10	1138		(SGA)	TUF
13+00R ¹⁰	1326	ABC	Y (N)	(N) L M S	Y (N)	7.3	1325 ^{ONE PIT}	1036/9-10-10	1325 ^{PIT}		(SGA)	TUF
13+50R ¹⁰		ABC	Y (N)	(N) L M S	Y (N)							
14+00R ¹⁰	1906	ABC	Y (N)	(N) L M S	Y (N)	1.4	1840	6 visit - excavation	1848		(SGA)	TUF
MAT ROAD												
14+50R¹⁰												
14+50R¹⁰												
14+50R¹⁰												

(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

10x50 - 11+00R - 48hr - murky, no f
 12x50 - 12+50R - 48hr. " "
 12x50 → 12+00R - " "
 13x50 → 13+50R " "

of B reached 10:27 am
 4/14/10
 9 re-visit
 9/16/10
 10:27 am

Project Name: Marshall Line 6B MP508 Pipeline Release Creek Section
 Date: 9/18/2010
 Project Number: 22131003 13150R to 1400S
 Completed By: Dave Borcham

Photo ID	Method Used to Indicate Vertical Limit	Photo ID	Free Phase Oil Observed		Odor					Shine Test (Rainbow Sheen Observed)		Headspace ppm	Time of Test PH	6-hour Follow-up Inspection Observations and Time (if Applicable)	Time of Trash Excavation	48-hour Follow-up Inspection Observations and Time (if Applicable)	EPA		EPA Approval	
			Y	N	N	L	M	S	Y	N	EPA						Enbridge			
	A/C		Y	N	N	L	M	S	Y	N										

Notes: Meeting with Adam Erickson, Patty McGowan, Dennis Metlock, and Dave Borcham concerning 13150R - 1400R. Decision was made to put a 48 hour trench in the area downstream of the road to address this section. The section was taken down to 8' in order during the excavation of 1400R - 1450R. This was done with EPA/water clearance.

~~SECRET~~

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

Project Name: Marshall Line 6B MPS03 Pipeline Release

Date: 9/17/10 Creek Section 13450 to 14700 L

Completed By: Robert Kosejak

6TH VP
98hr OP

Object Number: 22131003

Photo ID	Method Used to Indicate Vertical Link*	Photo ID	Free Phase Oil Observed	Odor	Sheen Test (Rainbow Sheen Observed)	Headspace 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
18:44	C		Y	N	N	18:10	18:10	1/2"	1/2"		EPA
18:44	C		Y	N	N	18:10	18:10	1/2"	1/2"		EPA

~~sample at 13470~~ No sample taken TP Fail 11:00 AM 9-18-10

One Fix failed berms. Original Pone on 9/10/10 8:00 am

STEEL CUTTING EXCAVATING TO B TVE - 4:00 pm 9-18-10

Photo 100-0025 - Digging to B @ 13450 → 14700 L Completed 1/2" excavation & vacuumed "dry" 2530pm

48hr Trench complete 9/18/10 10:20pm TVE

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

New Trench only.

9/19/10
 Tom Flaming / Dave Warkelz

Project Name: Marshall Line SB MPS08 Pipeline Release
 Project Number: 22131003

Date: 9/19/10
 Completed By: Tom Flaming / Dave Warkelz

Creek Section	Photo ID	Method Used to Indicate Vertical Limit ¹	Free Phase Oil Observed			Odor ²			Sheen Test Rainbow Sheen Observed	Headspace ³ ppm	Time of Test Pit Observations and Time Applicable	6-hour Follow-up Inspection Observations and Time Applicable	Time of Trench Excavation	48-hour Follow-up Inspection (if Applicable)		Backfill Approval	
			A	B	C	Y	N	N						L	M	S	EPA
14to02	14to02	A B C	Y	N	N	L	M	S	Y	N			0330				
Comments: confirm stationing. New trench @ bridge at A07A6 for 14to02 → 14to02. Original trench to right back filled 9/18/10 + 9/19/10 TRS 2 in daylight																	
Comments: 13to02 → 14to02 ok																	
Comments:																	
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

Add to original
 sheet

B-2-

Project Name: Marshall Line SB MP608 Pipeline Release

Date: 9/9/2010

Project Number: 22131003

Completed By: [Signature]

Creek Section	Photo ID	Method Used to Indicate Vertical Limit ¹	Free Phase Oil Observed	Odor ²	Sheen Test Rainbow Sheen Observed	Headspace ³ ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (if Applicable)	Time of Trench Excavation	Backfill Approval	
										EPA	Enbridge
1950 to 1950	8-33	A B C	Y N	N L M S	Y N	8.6	1850	257/9-10-10		SEA	TUR
1950 to 1950	00350	A B C	Y N	N L M S	Y N	0.8	1908	256/9/10/10		SEA	TUR
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						
		A B C	Y N	N L M S	Y N						

(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: 9/17/10

Completed By: Marvin Stedak

Creek Section	Photo ID	Method Used to Indicate Vertical Limit'	Free Phase Oil Observed	Odor'	Sheen Test Rainbow Sheen Observed	Headspace' ppm	Time of Test Pit	6-hour Follow-up Inspection Observations and Time (If Applicable)	Time of Trench Excavation	Backfill Approval	
										EPA	Enbridge
144501	27-29	A B C	Y (N)	(N) L M S	Y (N)	1.08	1825	MD 10:33 9/17/10			(N)
<p>Comments: Steel was prepared by USEPA. Once the pit was finished water was observed pouring into the pit. Once the sample location was exposed USEPA questioned why we needed to expose the gravel & sand surface to native soil. USEPA did not indicate disapproval. <i>per Anthony Facebana, per Anthony the use of Poly Mats was ok.</i></p>											
<p>Comments: Steel plates not available so a clean polyurethane mat was used. AF-rem checked w/ Anthony Facebana, per Anthony the use of Poly Mats was ok.</p>											
<p>Comments:</p>											

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

3

80

Project Name: Marshall Line 6B MP608 Pipeline Release

Project Number: 22131003

Date: 9/9/10

Completed By: David Morker

2/2

Creek Section	Photo ID	Method Used to Indicate Vertical Limit	Free Phase Oil Observed	Odor	Sheen Test Rainbow Sheen Observed	Headspace 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
16+25 to 15+75	3378	A B C	Y N	N L M S	Y N	0.0	1755	1021/9-10-10	1758	1755	SEA	JRP
15+75 to 15+25	3377	A B C	Y N	N L M S	Y N	0.0	1813	1022/9-10-10	1815	1815	SEA	JRP
15+25 to 15+00	3376	A B C	Y N	N L M S	Y N	0.0	1830	minor inspection	1832	1832	SEA	JRP
		A B C	Y N	N L M S	Y N			for Sturgeon up to Enbridge				
		A B C	Y N	N L M S	Y N			what to do with minor amount				
		A B C	Y N	N L M S	Y N			Ops =				
		A B C	Y N	N L M S	Y N			As seen				
		A B C	Y N	N L M S	Y N			Product				
		A B C	Y N	N L M S	Y N							
		A B C	Y N	N L M S	Y N							
		A B C	Y N	N L M S	Y N							
		A B C	Y N	N L M S	Y N							
		A B C	Y N	N L M S	Y N							
		A B C	Y N	N L M S	Y N							
		A B C	Y N	N L M S	Y N							
		A B C	Y N	N L M S	Y N							
		A B C	Y N	N L M S	Y N							
		A B C	Y N	N L M S	Y N							

David Morker 9/9/10

15+25 - 15+25 of = nearby

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

2

Project Name:

Marshall Line 68 MP608 Pipeline Release

Date: 9/18/2010

Creek Section

Project Number:

22131003

Completed By:

Dave Barham

B750R to 1400R

Photo ID	Method Used to Indicate Vertical Limit*	Photo ID	Free Phase Oil Observed	Odor*	Sheen Test (Neighbor Sheen Observed)	Headspace* (ppm)	Time of Trench Excavation	8-hour Follow-up Inspection Observations and Time (if Applicable)	48-hour Follow-up Inspection Observations and Time (if Applicable)	EPA Knowledge	Backfill Approval
	A/C		Y	N	N				9:21:10 11:00	SS	

Notes:

Meeting with Adam Erickson, Patty Maguire, Dennis Matlock, and Dave Barham concerning B750R - 1400R. Decision was made to put a 48 hour trench in the area downstream of the road to address this section. The section was taken down to 8' deep during the excavation of 1400R-1450R. This was done with EPA/wrecker clearance.

See D

- (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

10
 Project Name: Marshall Line 68 MP608 Pipeline Release
 Project Number: 22131003

Date: Sep 9 2010
 Completed By: David Markelz

Creek Section	Photo ID	Method Used to Indicate Vertical Limit*	Free Phase Oil Observed	Odor ²			Sheen Test Rainbow Sheen Observed	Headspace ³ 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	
				N	L	M						S	EPA	Enbridge	
R 23475 to 23725	3995	A B C	Y (N)	N	L	M	S	0.2	0930	1006 / 9-10-10	0934	Al 9/13/10	SEA	TIF	
R 23725 to 22775	3994	A B C	Y (N)	N	L	M	S	1.1	10:00	1004 / 9-10-10	10:05		SEA	TIF	
22775 to 22725	3993	A B C	Y (N)	N	L	M	S	0.3	10:30	1002 / 9-10-10	-		SEA	TIF	
22725 to 21750	3992	A B C	Y (N)	N	L	M	S	0.2	10:50	958 / 9-10-10	-		SEA	TIF	
21775 to 21425	3991	A B C	Y (N)	N	L	M	S	0.5	11:15	958 / 9-10-10	-		SEA	TIF	
21425 to 20775	3990	A B C	Y (N)	N	L	M	S	0.0	11:32	day	-		SEA	TIF	
20775 to 20425	3989	A B C	Y (N)	N	L	M	S	0.0	-	953 AM / 9-10-10	-		SEA	TIF	
20425 to 19775	3988	A B C	Y (N)	N	L	M	S	0.0	14:40	9MSAM / 9-10-10	14:40		SEA	TIF	
19775 to 19425	3987	A B C	Y (N)	N	L	M	S	-	-	948 AM / 9-10-10	-		SEA	TIF	
19425 to 18775	3986	A B C	Y (N)	N	L	M	S	0.0	15:35	1010 / 9-10-10	15:40		SEA	TIF	
18775 to 18425	3985	A B C	Y (N)	N	L	M	S	0.0	16:10	1013 / 9-10-10	16:12		SEA	TIF	
18425 to 17775	3982	A B C	Y (N)	N	L	M	S	0.0	16:30	1014 / 9-10-10	16:32		SEA	TIF	
17775 to 17425	3981	A B C	Y (N)	N	L	M	S	0.3	16:50	1015 / 9-10-10	16:50		SEA	TIF	
17425 to 16775	3980	A B C	Y (N)	N	L	M	S	0.0	17:16	1016 / 9-10-10	17:16		SEA	TIF	
16775 to 16425	3979	A B C	Y (N)	N	L	M	S	0.0	17:38	1019 / 9-10-10	17:40		SEA	TIF	

21+65 → 21+75 → to close to
 21+25 → 21+75 → mat per Staurer
 20+25 → 20+75
 20+25 → 20+75
 21+25 → 21+75 → mat per Staurer
 21+25 → 21+75
 20+25 → 20+75

TIF

1 page per Staurer

Talked to Dave Markelz
 Dave Markelz
 please get to day pit stop

- (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

Dave Markelz
 both were off pit in clay area

9-10-10

12

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

Date: 9/16/10
Completed By: Marcoin Special Account

MS
Pit filled in without a US letter inspection
Backfill Approval

Creek Section	Photo ID	Method Used to Indicate Vertical Limit*	Free Phase Oil Observed	Odor*	Sheen Test Rainbow Sheen Observed	Headspace* 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)	EPA	Enbridge
14+50 to 15+00	5410 355	B C	Y (N)	N L M S	Y (N)	0.0	0930*			9-13-10 09:10 MS		
14+75 to 15+00	756	B C	Y (N)	N L M S	Y (N)	0.2	0930*					
1500 to 16+50	1180	C	Y (N)	N L M S	Y (N)	4.1	No pit needed	MS				
1550 to 16+00	L ↓	A B C	Y (N)	N L M S	Y (N)	0.0	No pit needed	MS				
1600 to 1650	759	A B C	Y (N)	N L M S	Y (N)	—	No pit needed	MS				
1600 to 1350	800	A B C	Y (N)	N L M S	Y (N)	0.0	1325*	MS				
1350 to 1300	A B C	A B C	Y (N)	N L M S	Y (N)	17.8		MS				
1325 to 1300	A B C	A B C	Y (N)	N L M S	Y (N)	9.2	1043	MS				
1300 to 1250	A B C	A B C	Y (N)	N L M S	Y (N)	2.6		MS				
1250 to 1200	A B C	A B C	Y (N)	N L M S	Y (N)	71.6		MS				
1200 to 1150	A B C	A B C	Y (N)	N L M S	Y (N)	200		MS				
1150 to 1100	A B C	A B C	Y (N)	N L M S	Y (N)	3.4		MS				
1100 to 1050	A B C	A B C	Y (N)	N L M S	Y (N)			MS				
1050 to 1000	A B C	A B C	Y (N)	N L M S	Y (N)			MS				

* Per Western request.

US hr check 9/16 @ 1800.
17:00
18:00

Originally passed on 9/13.

Project Name: Marshall Line 6B MP608 Pipeline Release

Project Number: 22131003

Date: 9/9/10

Completed By: B. F. Allgeier

Creek Section	Photo ID	Method Used to Indicate Vertical Limit ¹	Free Phase Oil Observed	Odor ²	Sheen Test Rainbow Sheen Observed	Headspace ³ 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)
23+50L	0853	A B C	Y (N)	N L M S	Y (N)	ND	0835	1052 9-10-10	0837	(S) (S)
23+00L	0952	A B C	Y (N)	N L M S	Y (N)	-0.8	0835	FAILED SHEEN TEST H30 EXCAVATE TO (B)	0940	(S) (S)
22+50L	0957	A B C	Y (N)	N L M S	Y (N)	17.9	0948	1049 9-10-10	0955	(S) (S)
22+00L	1018	A B C	Y (N)	N L M S	Y (N)	ND	1006	1048 9-10-10	1008	(S) (S)
21+50L	NA	A B C	Y (N)	N L M S	Y (N)	480	NA	FAILED SHEEN TEST SCRAPE AND RE-TEST PASSED SECOND SHEEN TEST	1800	(S) (S)
21+00L	1840	A B C	Y (N)	N L M S	Y (N)	3.4	1825	1046 9-10-10	1800	(S) (S)
20+50L	1903	A B C	Y (N)	N L M S	Y (N)	22.5	1840	1040 9-10-10	1845	(S) (S)
20+00L	1922	A B C	Y (N)	N L M S	Y (N)	ND	1905	1038 9-10-10	1910	(S) (S)
		A B C	Y (N)	N L M S	Y (N)					
		A B C	Y (N)	N L M S	Y (N)					
		A B C	Y (N)	N L M S	Y (N)					
		A B C	Y (N)	N L M S	Y (N)					
		A B C	Y (N)	N L M S	Y (N)					
		A B C	Y (N)	N L M S	Y (N)					
		A B C	Y (N)	N L M S	Y (N)					
21+50L	1202	A B C	Y (N)	N L M S	Y (N)	ND	NA	(1)(B)	NA	(1)(B)

21+50 - 21+00 Fail trench test @ 11:37 AM 9-13-10

(S) (S)

(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 2 of 10
Stationing 10+00L to 20+00L and 09+00R to 19+25R**

The information below are responses to U.S. EPA's comments of Enbridge Energy's Talmadge Creek Section 2 of 10 Source Contamination Removal and Verification Summary Report:

13+50L – 14+00L EPA's comment: needs signature

Response: Original field log was signed for 48-hour observation and not the supplemental field log. Both field logs were provided in the original report submitted to EPA on September 22, 2010. A 6-hour observation signature is not required for this clearance area as Method B was applied as shown on field log.

14+50L – 15+00L EPA's comment: needs signature

Response: 6-hour signature was signed by EPA on September 25, 2010, field log attached.

15+50L – 16+00L EPA's comment: needs signature

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 22, 2010. A 6-hour observation signature is not required for this clearance area as Method B was applied.

Project Name: Marshall Line 60 MP608 Pipeline Release
 Project Number: 22131003
 Date: 9/16/10
 Completed By: Marcia Steele AECOM
 Pit Filled in adjacent area
 a 48 hr section

Creek Section	Photo ID	Method Used to Indicate Vertical Limit ¹	Free Phase Oil Observed	Odor ²	Sheen Test Rainbow Sheen Observed	Headspaces ³ 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
14+50 to 15+00	755	B C	Y (N)	N L M S	Y (N)	0.0	0930	J. Hester		9-5-10 0910		
14+70 to 15+00	756	A B C	Y (M)	N L M S	Y (N)	0.2	0930					
1500 to 16+50	757	B C	Y (N)	N L M S	Y (N)	4.1	No Pit Needed	J. Hester	No	J. Hester		
1550 to 16+00	758	A B C	Y (N)	N L M S	Y (M)	0.0	No Pit Needed		48	9/15 9:15		
1600 to 1650	759	A B C	Y (N)	N L M S	Y (N)		No Pit Needed	Past G. & B. Mike	Product will stop off after lunch 1000-1030			
1600 to 1650	760	A B C	Y (N)	N L M S	Y (N)	0.0	1325		48 hr	9/15 9:15		
1650 to 1700	761	A B C	Y (N)	N L M S	Y (N)	17.8						
1700 to 1750	762	A B C	Y (N)	N L M S	Y (N)	9.2	1030					
1750 to 1800	763	A B C	Y (N)	N L M S	Y (M)	2.6						
1800 to 1850	764	A B C	Y (N)	N L M S	Y (N)	71.6						
1850 to 1900	765	A B C	Y (N)	N L M S	Y (N)	200						
1900 to 1950	766	A B C	Y (N)	N L M S	Y (M)	3.4						
1950 to 2000	767	A B C	Y (N)	N L M S	Y (N)							
2000 to 2050	768	A B C	Y (N)	N L M S	Y (N)							
2050 to 2100	769	A B C	Y (N)	N L M S	Y (N)							
2100 to 2150	770	A B C	Y (N)	N L M S	Y (N)							

* per western request.
 originally passed on 9/13.
 48 hr check 9/16 @ 1800.
 17:00
 18:00