

Enbridge Line 6B MP 608  
Marshall, Michigan Pipeline Release  
Pipeline Trench Backfill Plan  
August 17, 2010

## **UNAFFECTED TRENCH BACKFILLING (WEST PORTION)**

### **OBJECTIVES**

The Company has developed objectives for the backfill operations at the repair trench in the leak source area to meet necessary response objectives. The western portion of the excavation was created for the purposes of complying with the PHMSA Order, and was not associated with the response. The objectives of the backfilling plan in this unaffected area are;

- Delineate a demarcation point within the excavation between the affected and unaffected areas to facilitate immediate backfilling of the unaffected excavation, and
- Backfill excavation in accordance with pipeline specifications.

Backfilling the excavation will need to be performed in a number of sequential steps. In summary, this portion of the excavation is outside of the area affected by the leak and would be backfilled with clean imported material.

### **IMPACT DEMARCATION**

A visual assessment of the trench will be conducted to determine an apparent demarcation point between the affected and unaffected areas. Adjacent to this location within the unimpacted area, three soil samples will be collected from the existing excavation. One soil sample will be collected from the floor of the excavation, and one soil sample from each of the two sidewalls. These soil samples will be analyzed by the on-site mobile laboratory for analysis of benzene, toluene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 2-methylnaphthalene (VOCs) and polynuclear aromatic hydrocarbons (PNAs). These results will be compared to Part 201 Criteria. If all analyzed parameters are less than Part 201 Criteria, the unaffected portion (west) of the excavation will be immediately backfilled following the procedures below.

### **SAMPLING RESULTS**

The impact demarcation sampling outlined above was conducted on August 17, 2010 as outlined above.

HA-35 North Wall at 2 feet below ground surface

HA-36 Immediately below the pipeline at approximately 8 feet below ground surface

HA-37 South Wall at 2 feet below ground surface

In reviewing these results, HA-36 and HA-37 showed no detectable concentrations. HA-35 exhibited a benzene concentration significantly below Part 201 Criteria for Csat and leaching to groundwater protective of groundwater/surface water interface. It is only slightly above leaching to groundwater criteria for drinking water. See the Table below:

**Table - Summary of Laboratory Analytical Results - Soil VOCs and PNAs**

Chemical Abstract Service Number	MDNRE OP Memo 2 TDL	Part 201 Generic Cleanup Criteria					Sample ID	HA-35	HA-36	HA-37
		Drinking Water Protection	Groundwater Surface Water Interface Protection	Soil Volatilization to Indoor Air Inhalation	Direct Contact	Soil Saturation Concentration Screening Levels	Sample Depth	2' bgs	8' bgs	2' bgs
							Date of Collection	8/17/2010	8/17/2010	8/17/2010
							Date of Extraction	8/17/2010	8/17/2010	8/17/2010
							Date of Analysis	8/17/2010	8/17/2010	8/17/2010
<b>VOCs</b>										
71432	50	100	4,000 (X)	1,600	180,000	400,000	Benzene (I)	110	ND	ND
100414	50	1,500	360	87,000	140,000 (C)	140,000	Ethylbenzene (I)	ND	ND	ND
91756	330	57,000	ID	ID	8,100,000	NA	2-Methylnaphthalene	ND	ND	ND
91203	330	35,000	870	250,000	16,000,000	NA	Naphthalene	ND	ND	ND
108883	100	16,000	2,800	250,000 (C)	250,000 (C)	250,000	Toluene (I)	68	ND	ND
95636	100	2,100	570	110,000 (C)	110,000 (C)	110,000	1,2,4-Trimethylbenzene (I)	ND	ND	ND
108678	100	1,800	1,100	94,000 (C)	94,000 (C)	94,000	1,3,5-Trimethylbenzene (I)	ND	ND	ND
<b>PNAs</b>										
83329	330	300,000	4,400	190,000,000	4,100,000	NA	Acenaphthene	ND	ND	ND
208968	330	5,900	ID	1,600,000	1,600,000	NA	Acenaphthylene	ND	ND	ND
120127	330	41,000	ID	1,000,000,000 (D)	230,000,000	NA	Anthracene	ND	ND	ND
56553	330	NLL	NLL	NLV	20,000	NA	Benzo(a)anthracene (Q)	ND	ND	ND
205992	330	NLL	NLL	ID	20,000	NA	Benzo(b)fluoranthene (Q)	ND	ND	ND
207089	330	NLL	NLL	NLV	200,000	NA	Benzo(k)fluoranthene (Q)	ND	ND	ND
191242	330	NLL	NLL	NLV	2,500,000	NA	Benzo(g,h,i)perylene	ND	ND	ND
50328	330	NLL	NLL	NLV	2,000	NA	Benzo(a)pyrene (Q)	ND	ND	ND
218019	330	NLL	NLL	ID	2,000,000	NA	Chrysene (Q)	ND	ND	ND
53703	330	NLL	NLL	NLV	2,000	NA	Dibenzo(a,h)anthracene (Q)	ND	ND	ND
206440	330	730,000	5,500	1,000,000,000 (D)	46,000,000	NA	Fluoranthene	ND	ND	ND
86737	330	390,000	5,300	580,000,000	27,000,000	NA	Fluorene	ND	ND	ND
193395	330	NLL	NLL	NLV	20,000	NA	Indeno(1,2,3-cd) pyrene (Q)	ND	ND	ND
91576	330	57,000	ID	NLV	8,100,000	NA	2-Methylnaphthalene	ND	ND	ND
91203	330	35,000	870	250,000	16,000,000	NA	Naphthalene	ND	ND	ND
85018	330	56,000	5,300	2,800,000	1,600,000	NA	Phenanthrene	ND	ND	ND
129000	330	480,000	ID	1,000,000,000 (D)	29,000,000	NA	Pyrene	ND	ND	ND

Notes:

All results are presented in parts-per-billion (µg/kg-dry)

NA - Not Applicable or Not Available

ND - Not Detected

Criteria has been met or exceeded/Result meets or exceeds Criteria  
 In combination with no data, indicates that the sample was not analyzed for the constituent.

Analytical Method EPA 8260 and 8270

## **BACKFILL**

Native material, currently stock piled adjacent to the excavation will be used to backfill the excavation to surface grade. The backfill will be completed in accordance with *Enbridge O&MP Book 3: 04-02-03*. No permitting or special considerations are required for this section of the excavation.

## **REQUEST FOR APPROVAL TO BACKFILL THE UNAFFECTED TRENCH**

Based on the laboratory results associated with the impact demarcation, the Company requests approval to backfill the unaffected portion of the excavation immediately.

## **AFFECTED TRENCH BACKFILLING (EAST PORTION)**

### **OBJECTIVES**

The Company has developed objectives for the backfill operations at the repair trench in the leak source area to meet necessary response objectives. Backfilling of this excavation is necessary to proceed with further response excavation activities in the immediate vicinity of the sheet pile. The objectives of the backfilling plan in this affected area are;

- Conduct in-place gross decontamination of sheet pile,
- Excavate additional visually impacted soil from the bottom of the excavation, removing groundwater as necessary to conduct excavation,
- Backfill excavation in accordance with pipeline specifications, and
- Conduct verification sampling to evaluate compliance with Part 201 Criteria. This information will become part of the decision factors to determine whether further remedial actions will be necessary.

Backfilling the excavation will need to be performed in a number of sequential steps. The intent would be to ensure that the excavation is free of free phase oil; as free from impacted material as possible; and then backfill with clean imported material.

## **SHEET PILE DECONTAMINATION**

The interior portion of the sheet pile has visible remnants of oil present. Gross decontamination will be conducted through manual scraping methods and washing methods. The material will be removed from the excavation and disposed as specified in the *Waste Treatment, Transportation, and Disposal Plan*.

## **ADDITIONAL EXCAVATION AT 6B**

As of August 16, 2010, the excavation at the source area is 16-feet wide by 182-feet long, and ranging from 8-feet to 12-feet deep within a sheet pile trench box. Much of this excavation is outside of the area of impact. The steel sheet piles extend to an approximate depth of 28 feet below ground surface. The excavation currently extends several feet below the static groundwater surface and is being dewatered with a series of pumping wells and/or vac trucks.

At this time, the extracted water is being containerized in frac tanks with other liquids collected during response activities along the Kalamazoo River.

The bottom of the excavation is currently covered with crushed stone to provide stability for workers conducting pipeline repair.

Work shall commence by excavating the crushed stone and the remaining visually impacted soils within the sheet pile. Limitations will exist on the structural integrity of the sheet pile and therefore excavation will not proceed to such a depth as would exceed the safety limit of the 4 existing sheet piling without an alternative plan in place. The excavated soil will be handled and disposed as specified in the *Waste Treatment, Transportation, and Disposal Plan*.

During backfilling, representatives will be on-site to observe and document the condition of the bottom of the excavation during these activities. This additional excavation is intended to remove the remaining impacted soil.

#### **VERIFICATION OF CLEANUP**

This verification of cleanup section is based on a conversation between Bob Steede of Enbridge and Frank Ballo of the Michigan Department of Natural Resources and Environment on August 18, 2010. This verification approach applies only to the pipeline trench addressed in this Backfill Plan.

After completion of the additional excavation activities above, soil samples will be collected from the floor of the excavation. The floor area within the sheet pile is approximately 3,400 square feet. Following MDNRE guidance, 6 samples are required to be collected for laboratory analysis (for excavation floors between 2,500 and 4,000 square feet). These soil samples will be analyzed by the on-site mobile laboratory for analysis of benzene, toluene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 2-methylnaphthalene (VOCs) and polynuclear aromatic hydrocarbons (PNAs). Because these soil samples will be collected from below the water table, the results will be compared only to MDNRE Part 201 Csat Criteria.

If these soil samples exhibit concentrations below Csat Criteria, the Company will backfill the excavation as described below. The results of these soil samples will be used to help aid in future decisions related to long term remedial investigation and/or remedial actions pursuant to Part 201.

#### **BACKFILL**

Once all impacted soil has been removed or the excavation has reached the maximum depth possible, imported sand material will be used to backfill against the interior walls of the trench box towards the pipe for approximately 6 ft., but will leave an area 60" wide underneath the pipe. The sand will be brought up to mid-pipe level.

Flowable fill will be used to backfill a width of 60" underneath the pipe. It is expected that the flowable fill will extend from the east end of the trench box for approximately 100 ft. to the west,

or the affected/unaffected demarcation point is reached. The flowable fill will be brought up to mid-pipe level.

Sand will be used to backfill the rest of the excavation to a point approximately 2 to 3 ft. below original grade to allow for final site restoration of the area. The backfill will be completed in accordance with *Enbridge O&MP Book 3: 04-02-03*. No permitting or special considerations are required for this section of the excavation.

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- Conduct verification sampling to evaluate compliance with Part 201 Criteria. This information will become part of the decision factors to determine whether further remedial actions will be necessary.

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existing sheet piling without an alternative plan in place. The excavated soil will be handled and disposed as specified in the *Waste Treatment, Transportation, and Disposal Plan*.

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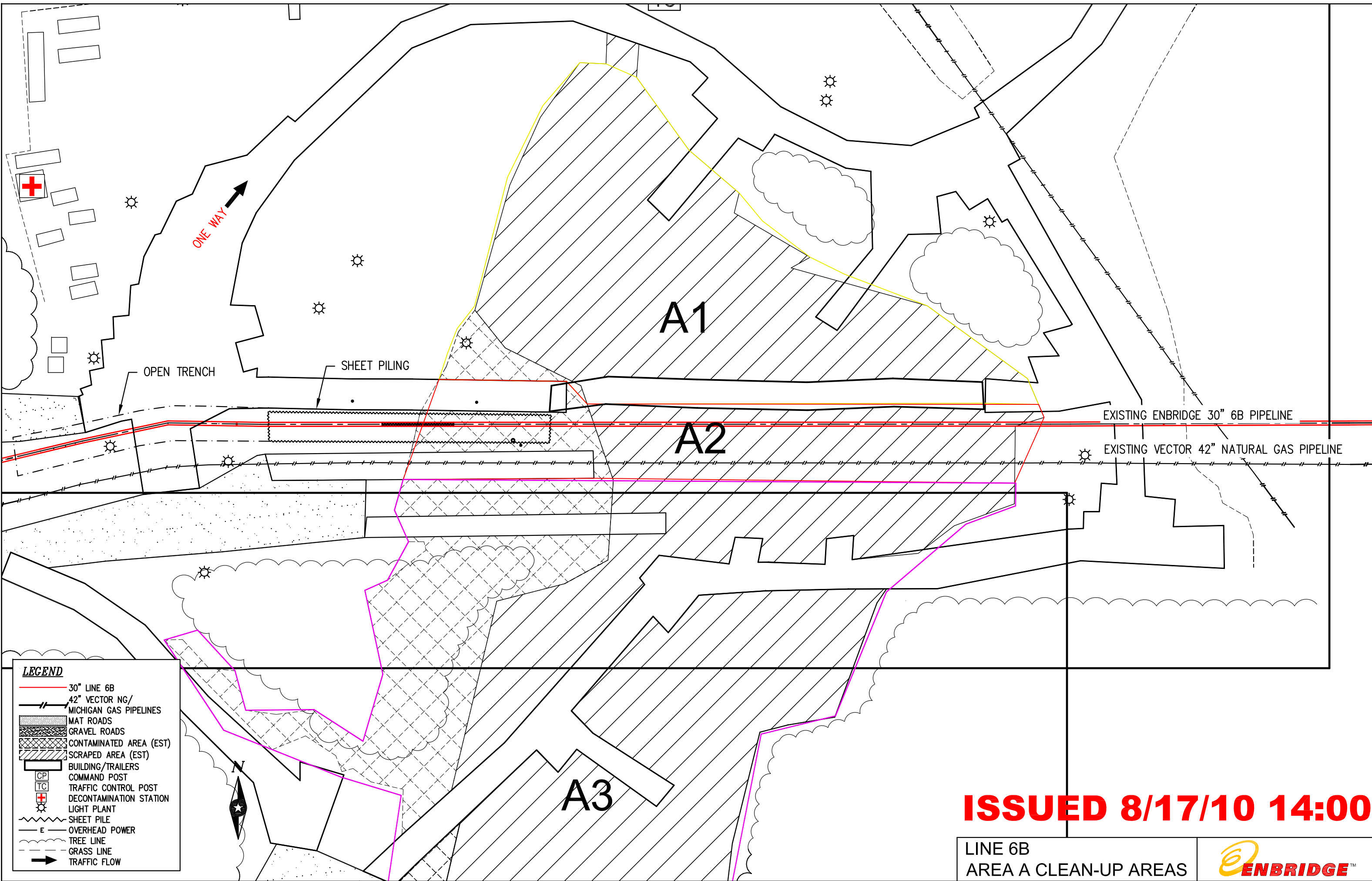
After completion of the additional excavation activities above, soil samples will be collected from the floor of the excavation. The floor area within the sheet pile is approximately 3,400 square feet. Following MDNRE guidance, 6 samples are required to be collected for laboratory analysis (for excavation floors between 2,500 and 4,000 square feet). These soil samples will be analyzed by the on-site mobile laboratory for analysis of benzene, toluene, ethylbenzene, xylenes, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, naphthalene, 2-methylnaphthalene (VOCs) and polynuclear aromatic hydrocarbons (PNAs). Because these soil samples will be collected from below the water table, the results will be compared only to MDNRE Part 201 Csat Criteria.

If these soil samples exhibit concentrations below Csat Criteria, the Company will backfill the excavation as described below. The results of these soil samples will be used to help aid in future decisions related to long term remedial investigation and/or remedial actions pursuant to Part 201.

#### **BACKFILL**

Once all impacted soil has been removed or the excavation has reached the maximum depth possible, imported sand material will be used to backfill against the interior walls of the trench box including under the pipe. Backfill will be completed in lifts no greater than 6" inches and compacted in accordance with Enbridge O&MP Book 3: 04-02-03. Sand will be used to backfill the rest of the excavation to a point approximately 2 to 3 ft. below original grade to allow for final site restoration of the area.



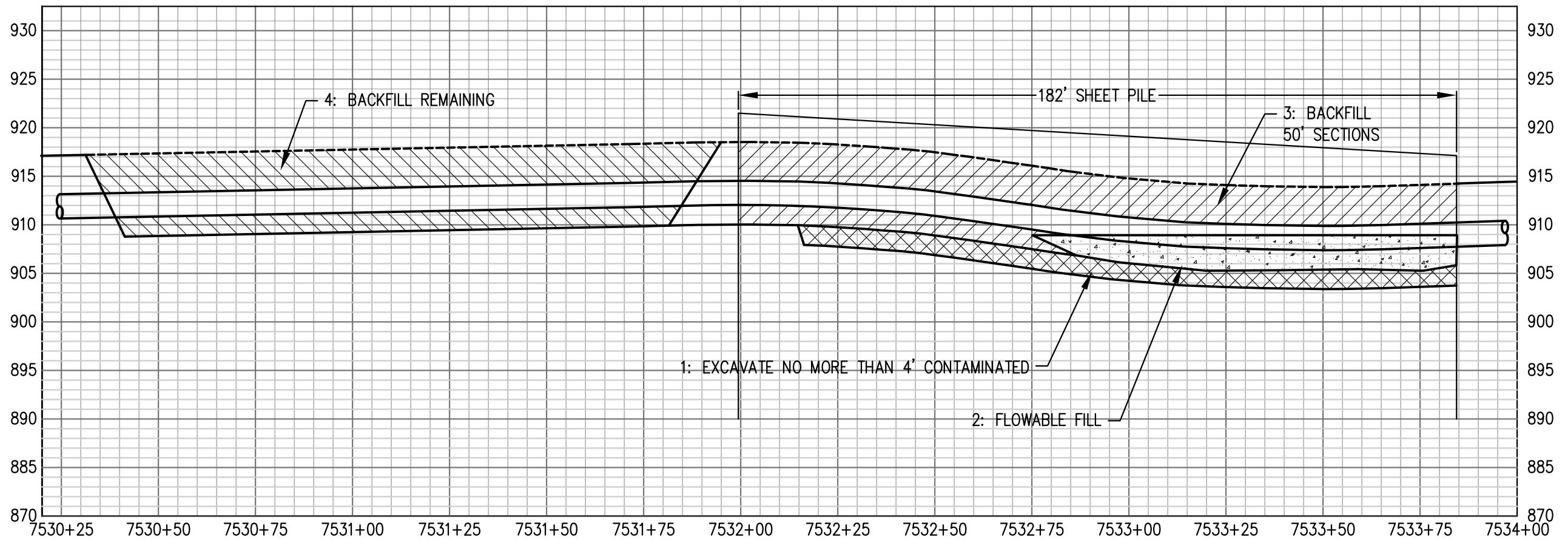
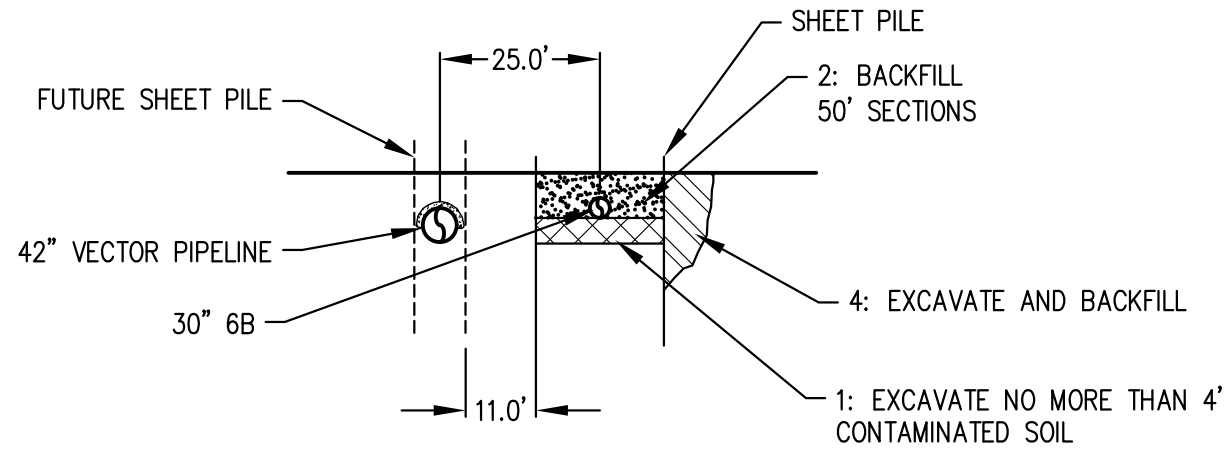


- LEGEND**
- 30" LINE 6B
  - 42" VECTOR NG/  
MICHIGAN GAS PIPELINES
  - ▨ MAT ROADS
  - ▨ GRAVEL ROADS
  - ▨ CONTAMINATED AREA (EST)
  - ▨ SCRAPED AREA (EST)
  - ▭ BUILDING/TRAILERS
  - CP COMMAND POST
  - TC TRAFFIC CONTROL POST
  - ⊕ DECONTAMINATION STATION
  - ⊙ LIGHT PLANT
  - ~ SHEET PILE
  - E OVERHEAD POWER
  - ~ TREE LINE
  - ~ GRASS LINE
  - ➔ TRAFFIC FLOW

**ISSUED 8/17/10 14:00**

LINE 6B  
AREA A CLEAN-UP AREAS





NO.	REVISION DESCRIPTION	DATE	BY	APP'D



LINE 6B  
PIPE BACKFILL PLAN





**New Age/Landmark**  
Mobile Laboratory Services

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**ANALYTICAL REPORT**

Superior Environmental  
1680 Marquette Ave.  
Bay City, MI 48706  
ATTN: Todd White

Project #: NAL10-067  
Project Site: Enbridge Pipeline Release  
Marshall, Michigan

Analytical results meet the requirements of NELAC Standards. The results reported apply solely to the sample analyzed and all results are reported on a dry weight basis unless stated otherwise. Any questions concerning this report should be directed to Scott D. Wall, President

\* = NAL is not certified for this compound by NELAC.

B = Analyte is found in the associated blank as well as in the sample.

D = Compound identified in an analysis at a secondary dilution factor.

E = Compound's concentration exceeds the calibration range of the instrument at this dilution.

X = Estimated value, some aspect of the test relative to this compound did not meet QC criteria. See batch narrative for explanation.

J = Estimated value, compound meets the identification criteria but the result is less than the limit of quantitation but greater than the MDL.

U = Non-detected

Lab ID:	Sample ID:	CAS #	ANALYTES	Results	QC	Units	RL	Sample Date	Prep. Date	Analysis Date	Matrix	DIL	Weight (g)	Vol (ml)	% Solid	Spike	% Rec	% RPD	Parent	Method	Data file	Batch ID
NAL10067B-472	HA-35	TRG 71-43-2	Benzene	110		ug/Kg	57	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313					SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	TRG 108-88-3	Toluene	68		ug/Kg	57	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313					SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	TRG 100-41-4	Ethylbenzene		U	ug/Kg	57	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313					SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	TRG XYLMP	p&m-Xylene		U	ug/Kg	114	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313					SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	TRG 95-47-6	o-Xylene		U	ug/Kg	57	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313					SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	TRG 108-67-8	1,3,5-Trimethylbenzene		U	ug/Kg	114	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313					SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	TRG 95-63-6	1,2,4-Trimethylbenzene		U	ug/Kg	114	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313					SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	TRG 91-20-3	Naphthalene		U	ug/Kg	285	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313					SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	TRG 91-57-6	2-Methylnaphthalene		U	ug/Kg	285	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313					SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	TRG	Total Purgable Organics		U	mg/Kg	2.8	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313					SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	SUR 1868-53-7	Dibromofluoromethane	45				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313	50	90%			SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	SUR 17960-07-0	1,2-Dichloroethane d4	44				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313	50	88%			SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	SUR 2037-26-5	Toluene d8	52				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313	50	104%			SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	SUR 48040-4	Bromofluorobenzene	44				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	87.75313	50	88%			SW8260B	NALJ5496	J081710CEEB
NAL10067B-472	HA-35	TRG 91-20-3	Naphthalene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 91-57-6	2-Methylnaphthalene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 208-96-8	Acenaphthylene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 83-32-9	Acenaphthene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 86-73-7	Fluorene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 85-01-8	Phenanthrene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 120-12-7	Anthracene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 206-44-0	Fluoranthene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 129-00-0	Pyrene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 56-55-3	Benzo (a) anthracene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 218-01-9	Chrysene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 205-99-2	Benzo (b) fluoranthene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 207-08-9	Benzo (k) fluoranthene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 50-32-8	Benzo (a) pyrene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 193-39-5	Indeno (1,2,3-cd) pyrene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 53-70-3	Dibenzo (a,h) anthracene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG 191-24-2	Benzo (g,h,i) perylene		U	ug/Kg	184	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	TRG	Total Extractable Organics (C10 - C38)		U	mg/Kg	55	8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313					SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	SUR 8165-60-0	Nitrobenzene-d5	15		ng		8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313	20	75%			SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	SUR 321-60-8	2-Fluorobiphenyl	15		ng		8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313	20	75%			SW8270C	NALX4722	X081710BTAS
NAL10067B-472	HA-35	SUR 1718-51-0	p-Terphenyl-d14	14		ng		8/17/2010	8/17/2010	8/17/2010	SO	1	31	5	87.75313	20	70%			SW8270C	NALX4722	X081710BTAS





**New Age/Landmark**  
**Mobile Laboratory Services**

160 Veterans Blvd. • South Haven, Michigan 49090  
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**ANALYTICAL REPORT**

Superior Environmental  
 1680 Marquette Ave.  
 Bay City, MI 48706  
 ATTN: Todd White

Project #: NAL10-067  
 Project Site: Enbridge Pipeline Release  
 Marshall, Michigan

Analytical results meet the requirements of NELAC Standards. The results reported apply solely to the sample analyzed and all results are reported on a dry weight basis unless stated otherwise. Any questions concerning this report should be directed to Scott D. Wall, President

\* = NAL is not certified for this compound by NELAC.

B = Analyte is found in the associated blank as well as in the sample.

D = Compound identified in an analysis at a secondary dilution factor.

E = Compound's concentration exceeds the calibration range of the instrument at this dilution.

X = Estimated value, some aspect of the test relative to this compound did not meet QC criteria. See batch narrative for explanation.

J = Estimated value, compound meets the identification criteria but the result is less than the limit of quantitation but greater than the MDL.

U = Non-detected

Lab ID:	Sample ID:	CAS #	ANALYTES	Results	QC	Units	RL	Sample Date	Prep. Date	Analysis Date	Matrix	DIL	Weight (g)	Vol. (ml)	% Solid	Spike	% Rec	% RPD	Parent	Method	Data File	Batch ID
NAL10067B-473	HA-36	TRG 71-43-2	Benzene		U	ug/Kg	59	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	85					SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	TRG 108-88-3	Toluene		U	ug/Kg	59	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388					SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	TRG 100-41-4	Ethylbenzene		U	ug/Kg	59	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388					SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	TRG XYLMP	p&m-Xylene		U	ug/Kg	118	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388					SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	TRG 95-47-6	o-Xylene		U	ug/Kg	59	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388					SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	TRG 108-67-8	1,3,5-Trimethylbenzene		U	ug/Kg	118	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388					SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	TRG 95-63-6	1,2,4-Trimethylbenzene		U	ug/Kg	118	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388					SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	TRG 91-20-3	Naphthalene		U	ug/Kg	295	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388					SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	TRG 91-57-7	2-Methylnaphthalene		U	ug/Kg	295	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388					SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	TRG	Total Purgable Organics		U	ug/Kg	3.0	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388					SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	SUR 1868-53-7	Dibromofluoromethane	41				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388	50	82%			SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	SUR 17060-07-0	1,2-Dichloroethane (d4)	40				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388	50	80%			SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	SUR 2037-26-5	Toluene d8	55				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388	50	110%			SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	SUR 460-00-4	Bromofluorobenzene	17				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	84.69388	50	94%			SW8260B	NALJ5494	J081710CEEB
NAL10067B-473	HA-36	TRG 91-20-3	Naphthalene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 91-57-6	2-Methylnaphthalene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 208-96-8	Acenaphthylene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 83-32-9	Acenaphthene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 86-73-7	Fluorene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 85-01-8	Phenanthrene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 120-12-7	Anthracene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 206-44-0	Fluoranthene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 129-00-0	Pyrene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 56-55-3	Benzo (a) anthracene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 218-01-9	Chrysene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 205-99-2	Benzo (b) fluoranthene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 207-08-9	Benzo (k) fluoranthene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 50-32-8	Benzo (a) pyrene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 193-39-5	Indeno (1,2,3-cd) pyrene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 53-70-3	Dibenzo (a,h) anthracene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG 191-24-2	Benzo (g,h,i) perylene		U	ug/Kg	182	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	TRG	Total Extractable Organics (C10 - C38)		U	ug/Kg	55	8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388					SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	SUR 4165-00-0	Nitrobenzene-d5	10		ug		8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388	20	90%			SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	SUR 321-60-8	2-Fluorobiphenyl	15		ng		8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388	20	75%			SW8270C	NALX47210	X081710BTAS
NAL10067B-473	HA-36	SUR 1718-51-0	p-Terphenyl-d14	14		ng		8/17/2010	8/17/2010	8/17/2010	SO	1	32.4	5	84.69388	20	70%			SW8270C	NALX47210	X081710BTAS





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Lab ID:	Sample ID:	CAS #	ANALYTES	Results	QC	Units	RL	Sample Date	Prep. Date	Analysis Date	Matrix	DIL	Wt (g)	Vol (ml)	% Sdld	Spk	% Rec	% RPD	Parent	Method	Data file	Batch ID
NAL10067B-474	HA-37	TRG	71-43-2 Benzene		U	ug/Kg	55	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	92					SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	TRG	108-88-3 Toluene		U	ug/Kg	55	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554					SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	TRG	100-41-4 Ethylbenzene		U	ug/Kg	55	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554					SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	TRG	XYLMP p&m-Xylene		U	ug/Kg	109	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554					SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	TRG	95-47-6 o-Xylene		U	ug/Kg	55	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554					SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	TRG	108-67-8 1,3,5-Trimethylbenzene		U	ug/Kg	109	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554					SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	TRG	95-63-6 1,2,4-Trimethylbenzene		U	ug/Kg	109	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554					SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	TRG	91-20-3 Naphthalene		U	ug/Kg	273	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554					SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	TRG	91-57-8 2-Methylnaphthalene		U	ug/Kg	273	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554					SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	TRG	Total Purgable Organics		U	ug/Kg	2.7	8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554					SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	SUR	1868-53-7 Dibromofluoromethane	32				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554	50	61%			SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	SUR	17060-07-0 1,2-Dichloroethane d4	33				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554	50	66%			SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	SUR	2037-26-5 Toluene d8	49				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554	50	98%			SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	SUR	460-00-4 Bromofluorobenzene	45				8/17/2010	8/17/2010	8/17/2010	SO	50	10.0	10.0	91.73554	50	90%			SW8260B	NALJ5495	J081710CEEB
NAL10067B-474	HA-37	TRG	91-20-3 Naphthalene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	91-57-6 2-Methylnaphthalene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	208-96-8 Acenaphthylene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	83-32-9 Acenaphthene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	86-73-7 Fluorene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	85-01-8 Phenanthrene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	120-12-7 Anthracene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	206-44-0 Fluoranthene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	129-00-0 Pyrene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	56-55-3 Benzo (a) anthracene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	218-01-9 Chrysene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	205-99-2 Benzo (b) fluoranthene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	207-08-9 Benzo (k) fluoranthene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	50-32-8 Benzo (a) pyrene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	193-39-5 Indeno (1,2,3-cd) pyrene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	53-70-3 Dibenzo (a,h) anthracene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	191-24-2 Benzo (g,h,i) perylene		U	ug/Kg	178	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	TRG	Total Extractable Organics (C10 - C38)		U	ug/Kg	53	8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554					SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	SUR	4165-00-0 Nitrobenzene-d5	10		ng		8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554	20	50%			SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	SUR	321-60-8 2-Fluorobiphenyl	14		ng		8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554	20	70%			SW8270C	NALX47210	X081710BTAS
NAL10067B-474	HA-37	SUR	1718-51-0 p-Terphenyl-d14	20		ng		8/17/2010	8/17/2010	8/17/2010	SO	1	30.6	5	91.73554	20	100%			SW8270C	NALX47210	X081710BTAS



Project Number: 22/13-1003  
 Project Name: MP 608 / Enbridge oil  
 Sample Origination State MI (use two letter postal state abbreviation)  
 COC Number: No 32018

										Number of Containers/Preservative				COC <u>1</u> of <u>1</u>									
										Water		Soil		Total Number of Containers	Project Manager: <u>KLG</u>								
Location	Start Depth	Stop Depth	Depth Unit (m./ft. or in.)	Collection Date (mm/dd/yyyy)	Collection Time (hh:mm)	Matrix		Type	VOCs (HCl) #1	SVOCs (unpreserved) #2	Dissolved Metals (HNO <sub>3</sub> )	Total Metals (HNO <sub>3</sub> )	General (unpreserved) #3			Diesel Range Organics (HCl)	Nutrients (H <sub>2</sub> SO <sub>4</sub> ) #4	VOCs (tared MeOH) #1	GRO, BTEX (tared MeOH) #1	DRO (tared unpreserved)	Metals (unpreserved)	SVOCs (unpreserved) #2	% Solids (plastic vial, unpres.)
1. <u>SE-A4</u>	-	-	-	<u>8/17/2010</u>	<u>12:45</u>	X		X		<u>3</u>	<u>-472</u>				<u>1</u>						<u>unpreserved</u>	<u>4</u>	<u>VOCs, DRO with silver gel cleanup</u> <u>TPH, Contact Mike</u> <u>upon receipt of samples to confirm analysis.</u> <u>Analysis for</u> <u>734-730-0269</u>
2. <u>HA-35</u>	<u>1.5</u>	<u>1.5</u>	<u>ft</u>	<u>8/17/2010</u>	<u>13:40</u>		X	X			<u>-472</u>					<u>1</u>	<u>✓</u>	<u>✓</u>	<u>3</u>	<u>3</u>	<u>4</u>		
3. <u>HA-36</u>	<u>1</u>	<u>1</u>	<u>ft</u>	<u>8/17/2010</u>	<u>14:00</u>		X	X			<u>-473</u>					<u>1</u>	<u>✓</u>	<u>✓</u>	<u>3</u>	<u>3</u>	<u>4</u>		
4. <u>HA-37</u>	<u>1.5</u>	<u>1.5</u>	<u>ft</u>	<u>8/17/2010</u>	<u>14:45</u>		X	X			<u>-474</u>					<u>1</u>	<u>✓</u>	<u>✓</u>	<u>3</u>	<u>3</u>	<u>4</u>		
5.																							
6.																							
7.																							
8.																							
9.																							
10.																							

**Common Parameter/Container - Preservation Key**  
 #1 - Volatile Organics = BTEX, GRO, TPH, 8260 Full List  
 #2 - Semivolatile Organics = PAHs, PCP, Dioxins, 8270 Full List, Herbicide/Pesticide/PCBs  
 #3 - General = pH, Chloride, Fluoride, Alkalinity, TSS, TDS, TS, Sulfate  
 #4 - Nutrients = COD, TOC, Phenols, Ammonia Nitrogen, TKN

Relinquished By: <u>[Signature]</u>	On Ice? <u>Y</u> N	Date <u>8/17/10</u>	Time <u>15:00</u>	Received by: <u>[Signature]</u>	Date <u>8/17</u>	Time <u>15:14</u>
Relinquished By:	On Ice? Y N	Date	Time	Received by:	Date	Time
Samples Shipped VIA: <input type="checkbox"/> Air Freight <input type="checkbox"/> Federal Express <input type="checkbox"/> Sampler <input type="checkbox"/> Other: _____				Air Bill Number:		