Approved

Enbridge Line 6B MP 608
Marshall, MI Pipeline Release

Fall 2012 E 4.0 Containment Removal Plan

Prepared for United States Environmental Protection Agency

Enbridge Energy, Limited Partnership

Originally Submitted: November 14, 2012

Resubmitted: November 16, 2012

Approved: November 16, 2012

FIGURES

LIST OF ACRONYMS

CSD	cylindrical sampling device
U.S. EPA	United States Environmental Protection Agency

1.0 INTRODUCTION

The objective of this Work Plan is to implement a strategy that ensures the safe and controlled removal of the currently installed containment associated with the E 4.0 Containment System. This includes all surface and subsurface containment installed within the Morrow Lake Delta and Neck (Segments A through F) as shown in *Figure 1*.

Considerations included in accomplishing this objective are:

- Personnel and public safety,
- Removal of surface and subsurface containment features associated with E4 prior to winter freeze up,
- Removal of surface and subsurface containment features in a controlled manner to ensure that any resulting sheen is recovered,
- Removal of subsurface containment features in a controlled manner to ensure that no turbidity exceedances occur.

Containment will be removed during Fall 2012 in a controlled systematic manner under the direction and approval of the United States Environmental Protection Agency (U.S. EPA).

The identified containment removal strategies identified in this Work Plan may be modified if any significant changes occur based on weather conditions, river characteristics, or any other factor that has the potential to create unsafe conditions.

1.1 E 4.0 Containment Removal Procedure

Containment removal will be executed in a controlled manner at the recommendation of the Containment Branch and the direction and approval of the U.S. EPA. Visual monitoring of sediment and sheen levels downstream of the containment during containment removal will be conducted. If visual levels of sheen are noted during monitoring, sheen collection will be performed using sheen sweep boats.

Prior to containment removal, additional elevation measurements will be completed at 50 foot intervals along each segment of the containment system that contains subsurface curtain. The elevation measurements will include both the top edge of the curtain and the water surface.

1.1.1 Monitoring

- Continuous sheen monitoring and subsequent sweeping (if required) by two vessels located between 50 feet and 200 feet downstream of the segment during subsurface and surface containment removal.
- Turbidity monitoring will be completed as per the *Water Quality Measurement Standard Operating Procedure* (Enbridge, 2011) approved by the Michigan Department of Environmental Quality on September 22, 2011. Turbidity monitoring will be completed 300 feet downstream and in the water flow path of each segment during subsurface containment removal operations. Turbidity readings will be collected at the surface and vertically at 2-foot intervals to the top of sediment at each location. If turbidity readings exceed 50 nephelometric turbidity units or two times background (whichever is greater), work will be stopped, notification will be provided, and action will be taken to correct the problem. Containment removal will continue once corrective actions have been successful.
- Subsurface curtain samples will be procured during curtain removal. Each sample will measure approximately 2.5 feet in length and 8 inches in width. Samples will be taken at the predetermined locations identified in *Figure 2*. The samples will be procured once the curtain has been extracted from the water and placed in the boat. The sample will be cut, then rolled up and placed into a sample container.
- Upon completion of the subsurface curtain removal, additional bathymetry readings will be taken at each segment. These locations will be equivalent to the previously utilized bathymetry points for each segment.
- The cylindrical sampling devices (CSDs) located within and downstream of the E 4.0 Containment System will be removed, sampled, and restocked prior to containment removal. The CSDs will then be removed and sampled upon completion of the subsurface containment removal.
- Post E 4.0 Containment System removal monitoring will be discussed with the U.S. EPA during the week of November 26 and a formal plan will be submitted within one week following the discussions. It is anticipated that the first round of monitoring will be conducted subsequent to an approved plan within the first two weeks of December provided no significant ice has accumulated in the monitoring areas.

Containment approved for removal shall be decommissioned as follows:

- Debris accumulated in the retention area of the boom shall be collected and properly disposed. Residual sheen in the contained area shall be removed.
- Subsurface containment removal will be completed in 25 foot sections. The extraction vessel will parallel the containment site and the curtain will be disconnected from the surface floatation boom. The curtain will then be lifted into the extraction vessel and transported to the shoreline (once vessels load limit is reached). Curtain will then be removed from the vessel and placed on a liner for ballast chain removal. Once the ballast chain is removed, the curtain will be placed within a roll-off for transport to an approved disposal facility. Ballast chain will be placed within containment bags for transport to a storage facility.
- Surface containment boom will then be released from its downstream anchor point. Each section of boom will be disconnected and towed to the E 4.0 boat launch where it shall be temporarily placed on a lined area to allow for folding and will then be placed within roll-off bins for transport to a disposal facility.
- Anchor posts will be removed utilizing the following methods depending on water depth and location of the anchor posts.
    - Cable attachments will be released from the top of the main anchor post. Vessels and winches will be utilized to extract the anchors. Extracted anchors will be placed within the vessels for transport to the E 4.0 boat launch.
    - In shallow areas inaccessible by vessels, an attempt will be made to remove the anchors by hand.
    - The use of containment rings (isolated cells) in conjunction with water stingers may be implemented to loosen the base of the anchors to enable removal by hand. Resulting turbidity will be controlled utilizing the containment rings. The containment rings will not be removed until the area within the ring has settled.
- Anchor posts will then be transported to the E 4.0 boat launch for transport to a storage facility.

1.2 Removal Priority

Containment removal will be initiated at the upstream containment point working from E 4.0 - A towards E 4.0 - F. Priority sequence for removal is as follows:

- E 4.0 - A through F subsurface containment (X-Tex Curtain),
- E 4.0 - A through F surface containment (Surface Boom), and
- E 4.0 - A through F anchor posts.

2.0 REFERENCES

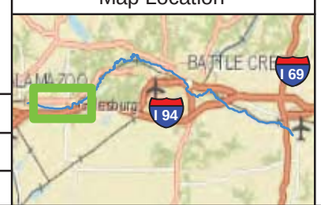
Enbridge, 2011. Enbridge Line 6B Marshall, MI Pipeline Release*; Water Quality Measurement Standard Operating Procedure,* September 22, 2011.

Figures

ENBRIDGE

Drawn:	NS	09/24/2012
Approved:	MS	09/24/2012
Project #:	60246209	

Map Location



Boom

- Half Curtain
- No Curtain
- Anchor Point

Quarter Mile Grid Segments

N

0 125 250 500

Scale in Feet

FIGURE 1
BOOM CONFIGURATION

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Z:\Work\GIS\2012_SO_Reassessment\MXDs\120823_E4_Boom_Configuration.mxd

Aerial Photography Date: April 2011

CS-E2-2
E2
CS-F2-2
F2
CS-E2-1
CS-F2-1
CS-E1-1
E1
CS-F1-1
F1
CS-F1-2
37:75
D
CS-D-1
D
37:50
C2
C1
CS-C2-1
37:25
B
CS-B-1
A
CS-A-1

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Drawn:	NS	11/16/2012
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Project #:	60246209	

Map Location

Boom
- Half Curtain
- No Curtain
- Anchor Point
- Curtain Sample Location

Quarter Mile Grid Segments

N

0 125 250 500

Scale in Feet

FIGURE 2
E 4.0 BOOM CONFIGURATION
CURTAIN SAMPLE LOCATIONS

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MARSHALL, MI PIPELINE RELEASE
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Aerial Photography Date: April 2011