

**Modification dated September 7, 2010, to Source Area Response Plan**  
**Approach for Source Contamination Removal, Verification, and Backfill**  
**Talmadge Creek**  
**Enbridge Line 6B MP 608**  
**Marshall, Michigan**

## **INTRODUCTION**

The previously submitted and approved Enbridge Source Area Response Plan (SAR) and Sampling and Analysis Plan (SAP), dated 2 August 2010, revised 17 August 2010 was developed for cleanup activities within the affected geographical zone. The affected zone based system, referred to as divisions, have undergone considerable remediation during the initial source removal phase of the project; particularly, Divisions A and B. These divisions represent the source area and Talmadge Creek, the areas immediately impacted by the pipeline release. Removal efforts to date have included horizontal and vertical excavation of impacted soil, primarily above the water table.

Although considerable progress has been made to eliminate the pooled oil and heavy petroleum rainbow sheen, smaller pockets of occasional pooled oil and heavy sheen remain in the lateral excavation on each side of the Creek as identified by U.S.EPA, MDNRE, and Enbridge representatives. However, a detailed approach to identify and complete source removal has not been clearly defined or agreed upon by participating agencies and Enbridge.

## **PURPOSE**

The purpose of this document is to provide a more detailed and defined approach for Divisions A and B, whereby all parties are satisfied that initial phase source material removal has been achieved. This document shall be included as an amendment to the Enbridge 17 August 2010 SAP.

A standardized evaluation and completion process was developed by U.S.EPA, MDNRE, and Enbridge representatives during meetings held on-site during 6, 7 & 10 September 2010.

## **OBJECTIVES**

Prior to developing this evaluation and completion process, the following remedial objectives were identified to guide the development of the guidelines and procedures.

- Removal of free oil from the banks of Talmadge Creek
- Stabilization of the existing creek bed
- Identify that adjacent up bank areas are not a source of free oil

## **GUIDELINES AND PROCEDURES**

The following guidelines and procedures listed below shall be implemented to achieve source material removal. Note, these guidelines and procedures may be field adjusted with U.S. EPA approval.

1. Recovery areas will be defined for evaluation purposes as 50 foot linear intervals parallel to the creek, the width being the extent of contamination or current location of the mat road.
2. Excavation limit shall be defined as: A) the vertical depth of contamination as defined by no visible oil and interval passes sheen test<sup>1</sup>; OR B) vertical limit reached due to groundwater

(excavation to proceed vertically 6 inches into groundwater)<sup>1</sup>; OR C) vertical limit reached due to silt/clay confining layer<sup>1</sup>.

3. If necessary, a berm less than 6 feet wide, unless directed by EPA field personnel, can be placed along the creek to stabilize the bank<sup>2</sup>.
4. If the extent of excavation is determined by 2.A, a test pit will be excavated to groundwater or the silt/clay confining layer. The location of the test pit will be near the center of the interval. The size of the test pit will be one backhoe bucket in width and length.
5. If 2.A is the vertical limit, the excavation and test pit will remain open for 6 hours to allow time for project personnel to visually inspect the test pit for the presence of oil. If oil is observed, additional excavation as outlined in 2.A will be completed. If oil is not observed, backfill will proceed.
6. If necessary berms will be placed perpendicular to the creek to provide for isolation and prevention of cross contamination between intervals.
7. No waiting period is required for methods 2.B or 2.C and backfill will be placed immediately following excavation<sup>1</sup>.
8. Soil transport and disposal will proceed per approved Waste Treatment, Transportation and Disposal Plan.
9. An approximately 2 foot wide trench along the wall of the excavation boundary will remain open for a minimum of 2 days to allow site personnel to observe the potential accumulation of oil. Wing dams will be placed at 200 foot intervals to create isolated areas within the trench to prevent cross contamination. In intervals where the excavation boundary is shallower than the maximum depth of excavation, a test pit will be installed at the location of the trench in lieu of the trench. The depth of the test pit will exceed the maximum depth of the excavation. The trench (or test pit equivalent) will be constructed in a manner to ensure sloughing will not occur such that it exceeds the elevation of water within the trench. If low strength organic soils and/or groundwater flows result in an inability to maintain a trench and erosion of fill material then an observation culvert can be substituted. A minimum of one (with additional per request of EPA) 30 inch minimum vertical culvert will be placed within the cell. The culvert will be vertically perforated at sufficient intervals to allow groundwater and free phase oil (if present) to flow into the culvert to the prevailing static water level. All observations methods will remain open for a minimum of 2 days (additional time per request of EPA).

If no oil is noted, the trench (or test pit/observation culvert equivalent) will be backfilled. If oil is noted in the trench (or test pit/observation pit equivalent), then evaluation of its origin will be conducted and additional excavation may be performed, as required by U.S. EPA.

## DOCUMENTATION

Documentation will occur for every 50 foot interval and will include the following.

- Photo
- Identification of method used to dictate vertical limit [i.e. depth of contamination (A) , groundwater (B), or confining layer(C)]
- Visual observation of oil (Yes/No)
- Sheen test per 40 CFR App 1 to Subpart A of Part 435 (if applicable per method A) along with PID and odor
- Time of test pit and trench installations. Observations and time of follow up inspection after the required minimum time period.

<sup>1</sup> Collect MDNRE samples per approved work plans after completion of excavation and prior to backfilling.

<sup>2</sup> Samples will be collected from backfill material per MDNRE work plans.