



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

July 27, 2011

Enbridge Energy, Limited Partnership
c/o Mr. Rich Adams
Vice President, Operations
Superior City Centre
Second Floor
1409 Hammond Ave.
Superior, Wisconsin 54880

Re: U.S. EPA Notice of Disapproval of Enbridge Energy, Limited Partnership's July 20, 2011 Submittal in response to the Administrative Order issued by U.S. EPA on July 27, 2010, pursuant to §311(c) of the Clean Water Act (Docket No. CWA 1321-5-10-001) and Supplement to the Administrative Order issued by U.S. EPA on September 23, 2010

Dear Mr. Adams:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the following document submitted by Enbridge Energy, Limited Partnership, Enbridge Pipelines (Lakehead) L.L.C., Enbridge Pipelines (Wisconsin), and Enbridge Energy Partners, L.P. (herein collectively referred to as "Enbridge"):

Enbridge Line 6B MP 608, Marshall, MI Pipeline Release, Addendum to Quantify Submerged Oil – Second Supplement to the Response Plan for Downstream Impacted Areas and the Source Area Response Plan, Commonly Referred to as the "Work Plan for Supplemental Poling in Morrow Lake", Prepared for United States Environmental Protection Agency, Enbridge Energy, Limited Partnership; Submitted: July 20, 2011.

Pursuant to Paragraph 19 of the July 27, 2010 Order, U.S. EPA disapproves Enbridge's above-referenced *Addendum to Quantify Submerged Oil* ("QSO") submitted to U.S. EPA on July 20, 2011. Specific comments are set forth below and shall be incorporated into a revised QSO.

- 1) The QSO references the quantification of oil at locations where "moderate" and "heavy" submerged oil have been detected. The quantification of submerged oil shall include all locations of submerged oil, including light, moderate and heavy. Please make this change throughout the QSO.
- 2) There are numerous references to the "depth" of the sediment throughout the QSO. However, the implication is that the "thickness" of the oil-containing sediment is intended and/or used to estimate the volume of oil-containing sediment. Please clarify and distinguish Enbridge's use of sediment "depth" and "thickness" throughout the QSO.

- 3) Please provide details regarding how the thickness of oil-containing sediment will be determined at each area of known submerged oil.
- 4) Please add a section entitled “Statistical Evaluation of Total Petroleum Hydrocarbon (TPH) Data” and provide a statistical evaluation approach to include the following minimum components:
 - a. Determination if the available analytical data is representative of one or multiple populations, where different populations may be determined by lithology, depth/thickness, and/or other factors.
 - b. Definition of the discrete probability distribution of the population(s) through the determination of a probability mass function.
 - c. Calculation of the interquartile range, standard deviation and variance of the populations, where different populations may be determined by lithology, depth/thickness, and/or other factors.
 - d. Determine a method for applying the population mean and distribution as a method for approximating the total amount of oil present within the system and provide a confidence interval for such a calculation.
- 5) Section 1.0, second sentence: please add sediment physical and geotechnical parameters (i.e., sediment thickness) as model inputs.
- 6) Section 1.1, last sentence: please replace “...information on the bulk density of the...” with “...information on the bulk density of, and TPH concentration in the...”
- 7) Section 1.2.1, second paragraph:
 - a. Please clarify if the intent of QSO is to perform additional analyses (i.e., oil and grease) on existing samples or new samples to be collected; and
 - b. If analyses are to be performed on existing samples, please provide details regarding the status of holding times on existing samples and associated validity of data generated by the supplemental analyses.
- 8) Section 1.2.1.1:
 - a. First paragraph: please delete the second “were;” and
 - b. The last sentence of the first paragraph indicates that only intervals containing the “most” submerged oil were evaluated. Quantification of submerged oil shall include all submerged oil locations, including light, moderate and heavy.

9) Section 1.2.1.2

- a. First paragraph
 - i. First sentence: please delete “we;” and
 - ii. First sentence: please replace “depth” with “thickness,” or provide a detailed explanation of why depth (and not thickness) is appropriate. See Comment 2 above.
- b. Second sentence: please clarify which specific data (i.e., median, mean, maximum) will be used to represent data sets.
- c. Please clarify if areas determined not to contain submerged oil are included in the statistical data provided and, if so, provide justification for including the data in statistical data sets.
- d. For subcategories of light, moderate and heavy submerged oil: please provide mean, minimum and maximum total petroleum hydrocarbon (TPH) concentrations; and standard deviations.

10) Section 1.2.1.3

- a. The first sentence of the second paragraph indicates that only intervals containing the “most” impacted intervals of submerged oil were evaluated. Quantification of submerged oil shall include all submerged oil locations, including light, moderate and heavy.
- b. Second sentence of second paragraph: please clarify which specific data (i.e., median, mean, maximum) will be used to represent data sets.
- c. Please clarify if areas determined not to contain submerged oil are included in the statistical data provided and, if so, provide justification for including the data in statistical data sets.
- d. For subcategories of light, moderate and heavy submerged oil: please provide mean, minimum and maximum total petroleum hydrocarbon (TPH) concentrations; and standard deviations.

11) It appears that Sections 1.2.1.3 and 1.2.1.4 are redundant and discuss the same data set. Please review and consolidate if appropriate.

12) Section 1.2.1.5, first paragraph:

- a. Please clarify if the intent of QSO is to perform additional analyses (i.e., oil and grease) on existing samples or new samples to be collected;
- b. If analyses are to be performed on existing samples, please provide details

regarding the status of holding times on existing samples and associated validity of data generated by the supplemental analyses.

13) Section 1.2.2

- a. Please provide details for analyzing sediment samples from Talmadge Creek, in addition to those referenced for the Kalamazoo River, for bulk density.
- b. Sediment samples from all areas where submerged oil has been detected, not just from areas where submerged oil is “most common” (i.e., soft sediment), shall be analyzed for bulk density.
- c. Sediment samples from areas of reported light submerged oil shall also be analyzed for bulk density.

14) Section 1.2.3

- a. Please confirm that the referenced 214 areas of known submerged oil contains areas where light submerged oil has been detected, and modify if necessary.
- b. The second paragraph provides generalizations about the thickness of oil-containing sediments. One of the primary objectives of this QSO shall be the minimization of assumptions used to quantify submerged oil. Therefore, quantification of oil-containing sediment (light, moderate and/or heavy) shall be based on actual sediment thicknesses (not generalized averages) documented through qualitative and/or quantitative analyses.

15) Section 1.3:

- a. The mean TPH concentration used to quantify submerged oil shall not be a singular value. Rather, different mean TPH concentrations shall be determined and used for light, moderate and heavy submerged oil.
- b. The referenced variable of “D = Depth of oil impacted sediment layer (inches)” is not appropriate and a sediment thickness shall be used instead of depth.
- c. A universal assumed depth (i.e., thickness) of 6 inches is not acceptable. Please use actual thicknesses of oil containing sediments.
- d. In documents previously provided by Enbridge, Enbridge has identified several different materials as having been released from Line 6B (i.e., “Crude Oil”; “Heavy Crude Oil – Heavy Crude Oil / Diluent Mix - Christina Lake/Foster Creek”; “Heavy Crude Oil / Diluent Mix (Christina Lake / Foster Creek)”; “Crude Oil” and “Hydrocarbon Diluent”; “Heavy Crude Diluent Mix (i.e. Cold Lake)”; “Western Canadian Select” and “Cold Lake Blend”). The

QSO references density (i.e., P_{oil}) of "Cold Lake" oil. Please confirm that all of the released oil is "Cold Lake" as suggested by the referenced density of oil, or revise if necessary.

- e. Please describe whether the density of oil to be used in the model has been adjusted for the potential loss of volatile fractions.

16) Section 2.0: please state whether the schedule includes the collection and analyses of additional samples required by the QSO.

The revised QSO Plan (in printed form) and a comment log shall be submitted to U.S. EPA no later than 1700 hours Eastern, July 29, 2011. The document shall also be concurrently submitted electronically in Microsoft Word format.

If you have any questions regarding this letter, please contact me immediately at (231) 301-0559.

Sincerely,



Ralph Dollhopf
Federal On-Scene Coordinator and Incident Commander
U.S. EPA, Region 5

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