

Enbridge Line 6-B NRDA Lost Recreational Use Assessment Plan Interim Advanced Funding Claim

April 26, 2012

1. Introduction

On or about July 26, 2010, a 30-inch diameter pipeline owned by Enbridge Energy near Marshall, Michigan ruptured, discharging crude oil into a wetland adjacent to Talmadge Creek, which drains into the Kalamazoo River (hereafter referred to as the Spill). The discharged oil injured aquatic organisms, birds, wildlife and habitat, while also impacting recreational uses and services provided by these resources. As a result, the natural resource trustees¹ initiated a natural resource damage assessment (NRDA). As part of this assessment, the U.S. Fish & Wildlife Service (FWS) contracted with a nationally known NRDA consulting firm to assist the trustees' efforts to characterize and quantify public losses resulting from the oil spill.

On July 27, 2010, the river and associated access points were closed by the Calhoun and Kalamazoo County Public Health Departments in order to allow cleanup activities to occur and to protect the public from potential exposure to the released materials. The closure covers a two-mile stretch of Talmadge Creek, from the release site to the confluence with the Kalamazoo River, and a 38-mile stretch of the Kalamazoo River, from the confluence with Talmadge Creek to the dam at Morrow Lake. As of April 2, 2012, this closure was still in effect. In addition, the Michigan Department of Community Health issued a Precautionary Public Health Advisory. This ongoing advisory consists of a Fish Consumption Advisory, stating that people should not eat fish from the impacted stretch of river, and a Swimming Advisory, which advises people not to swim in or touch the water in the impacted area.

Due to the closure of the river, all water-based recreation activities have been prohibited since July 27, 2010. Water-based recreation includes fishing, motor-boating, paddling, floating, swimming, and boat-based hunting and trapping. Moreover, shoreline-based activities have been negatively impacted, as indicated by surveys of people at Linear Park in Battle Creek a few days after the Spill occurred. Shoreline-based activities include general recreational activities occurring at parks or other recreational areas along the shoreline such as walking, running, cycling, nature and wildlife observation, picnicking, and sightseeing.

This assessment plan (Plan) summarizes the objectives, scope, and methods for the collection and analysis of data to be used in assessing potential impacts to recreation use services resulting from the Spill. This Plan covers a period of 12 months, from April 1, 2012 through March 31, 2013. The Plan is intended to be flexible, allowing adaptation and adjustment, if warranted, as

¹ The Trustees include the Michigan Department of Environmental Quality (MDEQ), the Michigan Department of Natural Resources (MDNR), the Michigan Department of the Attorney General, the U.S. Department of Interior acting through the U.S. Fish and Wildlife Service (USFWS) and the Bureau of Indian Affairs, the U.S. Department of Commerce acting through the National Oceanic and Atmospheric Administration, the Nottawaseppi Huron Band of the Potawatomi, and the Match-E-Be-Nash-She-Wish Band of the Pottawatomi.

implementation progresses. As outlined below, implementation will proceed through three processes:

1. Data collection and analysis for the estimation of changes in recreational visitation that occurred following the Spill (i.e., actual visitation) relative to what would have occurred under baseline conditions (i.e., without the Spill)
2. Data collection and analysis for the estimation of the recreational loss in dollars (i.e., the reduction in consumer surplus resulting from the Spill)
3. Determination of adequate compensation for the quantified loss using value-to-cost scaling.

All work is being conducted in a manner consistent with the Oil Pollution Act (OPA) and the OPA NRDA Regulations.

2. Data Collection and Analysis

For injury quantification, information is needed in order to estimate baseline recreation use (i.e., the level of use that would have occurred but for the Spill), actual recreation use (i.e., the level of use that occurred with the Spill), and information on the value of recreation. Total damages will be determined using a site-specific travel cost model to estimate the change in value, or consumer surplus, between actual and baseline conditions. The recreation use injury assessment will collect data for three periods: pre-incident, closure/recovery, and baseline.

The study area is defined as all recreational sites and access points that may have been affected by the Spill, including sites where people may have gone because they could not use the Kalamazoo River in the impacted areas. A search will be made to ascertain the presence and usefulness of pre-incident recreation use data pertinent to the study area. It is expected that these data will be limited; however, some useful information may be uncovered. The primary information required to estimate recreation use losses will be obtained from people recreating within the study area during the closure and recovery period as well as from local residents who did not recreate within the study area during these periods. This information will be collected through two data gathering methods: an onsite count study and a site-specific recreation telephone survey.

The onsite count study will provide information about recreation use in the affected area, including number of trips, recreation activities, and distance traveled to the site. The telephone survey will gather similar information about recreation use in the affected area, plus information about when conditions have returned to baseline. The telephone survey will reach a broader population, including recreators who continue to avoid sites in the affected area or who recreate at private sites not included in the onsite count study.

Actual recreation use will be estimated using information from the onsite count study and telephone survey. This Plan is designed around the assumption that recreational use will return to baseline levels in 2012. If information and data suggest otherwise, revisions to this Plan will be necessary. Baseline recreation use in 2012 will be estimated by adjusting actual use to reflect information from the telephone survey about the number of affected trips over time (i.e., return to baseline, or the total number of trips that would have occurred but for the Spill). Baseline use estimates for 2010 and 2011 will be generated by adjusting the 2012 baseline for differences in weather, site availability, and any unique events that may have affected visitation. Once baseline

and actual use have been estimated, a site-specific travel cost model will be used to estimate the reduction in value resulting from the Spill.

Assuming that the return to baseline is reached in 2012, we anticipate that data collection would span the main recreation season from mid-April 2012 (or when the river is at least partially open) to mid-October 2012. If recreation does not return to baseline by the end of 2012, then the Trustees will consider whether the data collected by mid-October 2012 is sufficient.

2.1 Onsite Count Study

This onsite count study design is based on a review of aerial imagery and a preliminary site visit, recognizing that there is insufficient information on the levels, patterns, and variation in recreational use in the study area to base an assessment. This sampling design may be modified based on new information and discussion with the Trustees. The onsite counts will focus on water-based and shoreline-based recreation and will be collected using a combination of traffic counters and in-person counts.

2.2 Site-specific Recreation Telephone Survey

A telephone survey will be used to collect information about recreation use in the affected area, to gather information about return to baseline, and to support development of a site-specific travel cost model. Many questions in the telephone survey will be similar to the onsite surveys and to telephone surveys administered to support similar recreation use assessments for other cases. The telephone survey will address all forms of recreation activity, including hunting and trapping. Furthermore, the telephone survey will capture use of the river from privately owned locations. A survey of riverfront property owners could be used if additional data for this type of use are needed.

2.2.1 Analysis of telephone survey data

Data collected from the telephone survey will be used together with the onsite count study data to estimate actual recreation use. Information about the number of affected trips over time will be used to adjust actual use to estimate baseline recreation use. Lastly, a site-specific travel cost model will be estimated using information from the telephone survey to estimate the reduction in value between baseline and actual conditions.

3. Estimation of Lost Recreational Value

A site-specific travel cost model will be used to estimate the reduction in consumer surplus in dollars resulting from the Spill. The model will have two components: a pooled Poisson model to estimate the travel cost parameters for different activities and a RUM simulation to estimate changes in consumer surplus. The following summarizes the methods.

Estimates of baseline use and travel cost information will be compiled at the level of individual sites or access points or may be more aggregated. A pooled Poisson model on the baseline number of trips for each individual would be estimated for the purposes of obtaining travel cost parameters for the four main activities (motor-boating and boat-based fishing, paddling and floating, shore-fishing, and all other shoreline-based uses). A pooled Poisson model would estimate a single demand curve for all sites within the study area.

Second, a RUM framework would be used to simulate changes in recreational visitation to reflect actual recreation use and quantify the consumer surplus losses. Using the estimated travel cost parameter from the pooled Poisson model and the estimated baseline visitation to each site from the count study, we will adjust the set of baseline alternative-specific constants (ASCs) that reproduce aggregate visitation patterns. Next, we will adjust the with-spill ASCs that reproduce with-spill aggregate visitation patterns. Consumer surplus losses will be calculated using the baseline ASCs, the with-spill ASCs, and the travel cost parameter in the typical RUM formula.

The RUM framework would implicitly capture all potential sources of changes in recreational value, i.e., changes in recreational value due to changes in participation, substitution, and diminished-value trips. Therefore, a separate accounting of these potential effects would not be required. Different simulations would be run to represent different time periods as the site is reopened; this will appropriately capture the change in value if the availability and quality of sites changes over time.

4. Determination of Adequate Compensation

Compensation to the public for losses of recreational services will be provided through restoration projects. Two approaches that are commonly used to determine the appropriate amount of compensatory restoration for losses of recreation use services are value-to-value scaling and value-to-cost scaling. In value-to-value scaling, restoration projects would be selected such that the restoration benefits gained (i.e., the total recreational value of the projects measured in dollars) are at least equal to the total recreational value lost (also measured in dollars). In value-to-cost scaling, restoration projects would be selected such that the total costs of the projects (rather than the value that they generate) are at least equal to the total recreational value lost (measured in dollars). Since the Trustees are concerned with the additional time and cost associated with pursuing the value-to-value approach, we propose using the value-to-cost scaling method.

5. Schedule

Both the onsite counts and telephone survey sampling efforts will begin in mid-April 2012 or whenever the river is at least partially open (exact date to be determined by the Trustees and Enbridge). The telephone survey will be conducted concurrently with the field sample collection efforts until the appropriate number of completed surveys has been achieved. Preparations for sampling will begin in spring 2012, including developing and testing sampling materials, and hiring and training necessary personnel. It is anticipated that the sample collection effort will last through approximately October 2012. However, this Plan has been designed to follow an adaptive management approach. As data are collected they will be analyzed in real time to determine if modifications to the Plan and field methods are necessary and if the data being collected are adequate. The initial data analysis will be completed by December 2012 and an initial estimate of damages will be available by February 2013. This schedule puts Enbridge and the Trustees in a position for settlement as early as spring 2013. Table 1 provides a schedule of specific tasks to be completed over the course of 2012 and early 2013.

Table 1. Schedule of tasks

Month to complete task	Sampling effort	Task	Estimated cost
March-April 2012	Onsite count study	Draft sampling plan Develop draft sampling protocols Develop data forms Purchase and install traffic counters Hire/train staff Conduct pilot sampling Finalize sampling plan	\$35,772
	Telephone survey	Develop draft telephone survey instrument Identify/contract telephone survey firm Pretest survey instrument Finalize survey instrument	\$46,686
May-October 2012	Onsite count and telephone studies	Sampling	\$469,974
November–December 2012		Data analysis	\$54,273
January–February 2013		Develop preliminary estimate of damages (report)	\$29,774

6. Field Documentation and Data Management

Proper field documentation will be completed by each team member in a water-resistant field logbook with an indelible ink pen. The site identification (ID) number, time, and date of assessment will be recorded on each data sheet and in field logbooks (if utilized). Photographs of each site and the surrounding area will be collected and noted on the data sheets.

At the end of each field day, each team will provide their data to the Data Manager (to be determined). Data sheets and any field logbooks will be scanned. The original hard copies will be transferred to the USFWS (Lead Administrative Trustee for the incident) for filing. Electronic copies will be maintained by the Trustees and placed on an FTP site or website by the Data Manager. The actual field logbooks will not be turned in to the Data Manager until completely filled or at the end of the field study. Only notes pertaining to this field study will be included in the field logbooks. Electronic copies of photographs will be posted on the Trustee-maintained FTP site or website by the Data Manager. Email notice of the availability of newly posted information on the FTP site will be provided to the following Trustee representatives:

- Stephanie Millsap, USFWS, Stephanie_Millsap@fws.gov
- Nicole Zacharda, MDEQ, zachardan@michigan.gov.

7. Health and Safety Precautions

Areas where response actions occurred or are ongoing may contain potentially hazardous materials and should be treated with caution to minimize exposure to field personnel. Additional hazards include slips, trips, and falls; heat stress; insects; poison ivy and sumac; and boating hazards. Attire and field logistics will comply with the site-specific Health and Safety Plan. In addition, all field staff are required to be in compliance with the 2011 Enbridge safety course requirements.

The site-specific Health and Safety Plan must be reviewed to identify further hazards,

precautions, and safety procedures. A proper safe work permit must be obtained and signed by Enbridge daily prior to any field work being performed on that day and a daily tailgate safety meeting must be held prior to beginning any field work. A written record of the daily tailgate safety meeting, including signatures of all personnel present, will be maintained and provided to the Data Manager at the close of each field day when data are transferred.

8. Estimated Cost

Below, we provide Stratus's estimated costs to conduct the recreational use assessment activities described above. The costs are divided into 5 main tasks: Onsite study setup and management; telephone survey setup and management; data collection; data analysis; and developing a draft report. Estimated costs for each task are:

Task 1: Onsite study setup and management: \$85,085

Includes 768 hours of Stratus Consulting labor for \$65,058; supplies/copies/mail/FedEx for \$4,211; TRAFx counters (car counter devices) for \$7,001; Stratus Consulting travel for \$6,081; and 16 hours of expert labor for \$2,734.

Task 2: Telephone survey setup and management: \$142,625

Includes 420 hours of Stratus Consulting labor for \$49,666; a telephone survey for \$90,225; and 16 hours of expert labor for \$2,734.

Task 3: Data collection: \$324,722

Includes 648 hours of Stratus Consulting labor for \$55,864; supplies/copies/mail/FedEx for \$782; and 5,200 hours of field sampler labor and driving costs for \$268,076.

Task 4: Data analysis: \$54,273

Includes 500 hours of Stratus Consulting labor for \$50,045; and 24 hours of expert labor for \$4,228.

Task 5: Draft report: \$29,774

Includes 232 hours of Stratus Consulting labor for \$25,546; and 24 hours of expert labor for \$4,228.

The total estimated cost for the tasks described above is \$636,479.

9. Anticipated Deliverables

The following deliverables may be prepared:

- Draft sampling protocols, forms, and plans for each survey conducted
- Final sampling protocols, forms, and plans for each survey conducted
- Report with preliminary estimate of recreational damages
- Periodic reports (oral and/or written) of recreational use assessment activities
- Documents associated with settlement negotiations
- Coordination calls and meetings.