U.S. ENVIRONMENTAL PROTECTION AGENCY
POLLUTION/SITUATION REPORT
Mackinaw Bay Petroleum Sheens - Removal Polrep

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**
**Region VIII**

**Subject:** **POLREP #2**
**Dredging Begins and Removal Underway**
**Mackinaw Bay Petroleum Sheens**
**Z8DN**
**Whitefish, MT**
**Latitude: 48.4510090 Longitude: -114.3912010**

**To:**
**From:** Steven Merritt, On-Scene Coordinator
**Date:** 6/18/2012
**Reporting Period:** 06/04/2012 - 06/17/2012

## 1. Introduction

### 1.1 Background

| | | | |
|---|---|---|---|
| **Site Number:** | Z8DN | **Contract Number:** | |
| **D.O. Number:** | | **Action Memo Date:** | |
| **Response Authority:** | OPA | **Response Type:** | Time-Critical |
| **Response Lead:** | PRP | **Incident Category:** | Removal Action |
| **NPL Status:** | Non NPL | **Operable Unit:** | |
| **Mobilization Date:** | 5/14/2012 | **Start Date:** | 5/18/2012 |
| **Demob Date:** | | **Completion Date:** | |
| **CERCLIS ID:** | | **RCRIS ID:** | |
| **ERNS No.:** | | **State Notification:** | |
| **FPN#:** | E11801 | **Reimbursable Account #:** | |

#### 1.1.1 Incident Category

Transportation Related - Historical Train Derailment

#### 1.1.2 Site Description

This site involves EPA oversight of a responsible party, BNSF, removing residual contamination from an historical derailment of multiple leaking diesel fuel tank cars on July 31, 1989. The original spill event was followed by two different oil removal actions, one of which involved excavation of contaminated soils in the upland zone between the tracks and the shoreline, and the other involved recovery of the spilled diesel floating on the surface of the lake using absorbent materials and skimmers. Neither of these actions addressed the contaminated sediments in Mackinaw Bay and these residuals have not weathered away or naturally attenuated due to the cold lake temperatures and associated biological activity limitations. This project is being conducted on consent with BNSF and in coordination with the Montana Department of Environmental Quality (MTDEQ).

#### 1.1.2.1 Location

Mackinaw Bay is located approximately 3 miles to the north of the City of Whitefish on the west side of Whitefish Lake at GPS coordinates 48.451436, -114.389741. The bay is a well protected and relatively pristine with no development along the shoreline, other than the railroad track to the west, and native forest extending from the upland areas to the edge of the lake. The shorelines are steep and the bay has two sediment benches that are less than 15 feet deep extending approximately 30 feet into the lake before the water depth rapidly increases. The bottom of Mackinaw Bay is a mixture of sediments, some rocks and boulders, and numerous decomposing tree trunks and limbs.

#### 1.1.2.2 Description of Threat

The threat from residual diesel and weathered petroleum within Mackinaw Bay is to recreational boaters and the aquatic ecosystem of Whitefish Lake. The exposure pathways for human populations at the site include dermal and respiratory contact only when sediments are agitated. While the City of Whitefish and various private communities draw water from Whitefish Lake, there is very limited mobility of this contamination and measurable amounts are not expected to be detected at any intakes. The ecological threat from these residues in the sediments may inhibit the growth and development of aquatic organisms and benthic populations that serve as the food supply for fish and other species in the area.

#### 1.1.3 Preliminary Removal Assessment/Removal Site Inspection Results

The landowner on Whitefish Lake in Mackinaw Bay whose property was directly impacted by the original derailment observed and reported the presence of ongoing petroleum sheen originating in the sediments of the bay in the summer of 2010. The Whitefish Lake Institute and the City of Whitefish made the MTDEQ and EPA aware of the issues and requested assistance in getting the sediments cleaned up by BNSF. BNSF and its contractors, which have already been conducting another petroleum removal along the Whitefish River nearby, began investigating and sampling to assess the extent of contamination in the fall of 2010. BNSF provided their findings to EPA and MTDEQ by the winter of 2010 and conducted bathymetry surveys of Mackinaw Bay in 2011. KennedyJenks (KJ), a BNSF contractor, also conducted pilot-scale studies of air sparging techniques for non-invasive removal of petroleum residuals in the sediments, but ultimately ruled those out in favor of mechanical dredging and hauling in 2011. By late 2011, KJ had prepared and submitted a proposal for removing the sediments in the spring of 2012 to EPA and MTDEQ and a Work Plan was discussed and finalized to begin oil removal activites for 450 cubic yards of sediments in May 2012.

## 2. Current Activities

### 2.1 Operations Section

#### 2.1.1 Narrative

During this reporting period, final preparations were made within Mackinaw Bay to begin dredging the contaminated sediments, equipment was calibrated to enable the dredge to be GPS-guided throughout the removal action, dredging commenced, and significant progress was made toward removing the contaminated sediments.

#### 2.1.2 Response Actions to Date

***Monday, June 4, 2012***

USCG PST and EPA OSC at BNSF railyard and attend morning safety/operations brief with BNSF contractors. At Whitefish Lake, contractors pushed empty 3 section FlexiFloat barge to Mackinaw Bay and deployed/staged 1000 feet of silt curtain boom along the shoreline. The empty 3 section barge was taken apart in order to provide more stability to the excavator work platform. One FlexiFloat barge section was secured to the rear of the excavator barge and another section was secured to the starboard bow of the barge. Once the barges were secured the whole setup was pushed by tug boat to the area in Mackinaw Bay where the dredging will begin and the spuds were put down into the sediments to secure the excavator barge. The FlexiFloat barge with two empty 30 yard roll off boxes was pushed alongside the excavator barge and secured to the port bow.

EPA OSC and KennedyJenks conducted petroleum sheen probing along the shoreline at the high water mark to determine if there were any residual spots that needed to be dredged outside of the planned excavation limits. Two locations were marked and identified for dredging, although one exists beneath rip rap and large boulders that anchor the slope for the railroad grade. Soundings and other depth measurements were collected throughout Mackinaw Bay to ensure that the reach of the dredge could achieve the desired removal.

EPA OSC attended the Whitefish City Council Meeting to provide an update on the site progress and answer questions about the aquatic invasive species inspections done on all vessels brought in for the project.

***Tuesday, June 5, 2012***

USCG PST and EPA OSC at BNSF railyard and attend morning safety/operations brief with BNSF contractors. Arrived at Whitefish Lake and transited to Mackinaw Bay via small boat. Contractors deployed 200 feet of 15' silt curtain boom around the excavator work barge and deployed 700 feet of 5' silt curtain boom across Mackinaw Bay. Envirocon spent the entire work shift troubleshooting and calibrating the GPS-guided DredgePack system on the excavator. In addition, they constructed an anchor system to connect the excavator to the work platform by welding d-rings and cleats to the barge, and repositioning/reconnecting the stabilizing FlexiFloat barges to the work platform.

***Wednesday, June 6, 2012***

USCG PSTs and EPA OSC at BNSF railyard and attend morning safety/operations brief with BNSF contractors. Once on the lake, contractors fully deployed the rest of the 5' silt curtain boom surrounding the excavator barge assembly to enable the initial stability and capabilities testing of the excavator dredging operations from the work platform. The excavator was successfully able to reach the affected sediment in the water as well as the 30-yard roll off boxes on the adjacent barge. Due to high winds, heavy rain, and large waves, all operations were called off in Mackinaw Bay for the day at around noon. Two more FlexiFloat barge sections arrived at BNSF rail yard and were cleaned and inspected for AIS by MTFWP inspectors. These two barge sections along with the remaining barge section moored in Mackinaw Bay will be connected together to form the second transport barge that will haul a set of 30-yard roll off boxes.

***Thursday, June 7, 2012***

USCG PST and EPA OSC at BNSF railyard and attend morning safety/operations brief with BNSF contractors. Once on the lake, contractors fabricated and welded a protective cover for the GPS unit onto the bucket of excavator. They maneuvered the excavator around on its work barge and deployed the bucket in the water to test its capabilities and stability, along with confirming the calibration of the GPS-system. Two more FlexiFloat barge sections were transported from the railyard to City Beach, where they were lifted into the water, connected, and deployed to Mackinaw Bay by tug boat. The excavator began to dig for

sediment in first target area, but it had trouble loosening the compacted rocky sediment and was not capturing any sediment or debris inside bucket. The GPS unit gave the contractors some difficulty and they began troubleshooting equipment to make it operational once again. Once the GPS DredgePack unit was again operational, the excavator barge was maneuvered into another position and began digging for sediment. Operations slowed to determine a more effective method of extracting the sediment. Contractors sampled sediment to try and locate petroleum contaminated areas.

***Friday, June 8, 2012***

USCG PST at BNSF railyard and attend morning safety/operations brief with BNSF contractors. Repositioned excavator and barge sections approximately 100 feet to the right of original start position. New position has more sediment build up and the excavator is capable of penetrating the surface to remove sediment and debris. Repositioned spuds and contractors are working towards acquiring/fabricating longer spud rods. Loaded several excavator buckets of sediment into first two waste containers. Expected capacity of containers not met due to list of barge during the load out and current on scene stormy weather conditions. Approximately 1/2 to 3/4 of the container projected capacity filled. Container barge transported back to City Beach pier for swap out of loaded and unloaded containers. Tiny tug transported second barge section to pier and was outfitted with two additional containers. Envirocon tug and containers transited back to clean up site to continue sediment removal. Once on site, the tug boat prop/shaft became fouled with a section of the silt booms 15' skirt/chain, but no turbidity was observed outside of the containment area from this incident. Manually positioned container barge into position and investigated tug casualty. Crew was unable to free the tug's prop/shaft from the boom skirt and chain. Contractor diver will be on scene tomorrow to investigate the situation. Contractor crew set up the barge decks and equipment for tomorrows operations.

***Saturday, June 9, 2012***

USCG PST and EPA OSC at BNSF railyard and attend morning safety/operations brief with BNSF contractors. Launched boats from City Beach Pier and transported crew to Mackinaw Bay. Diver was put into the water to clear entangled boom from tug boat. Boom was cleared and no damage reported. Commenced digging operations. Loaded and transported 4 filled containers to pier for removal. Deployed pillow absorbents to excavator digging area to try and capture sheen. A strong odor of diesel fuel from the sediment recovered was noted. Two more containers filled that will be emptied on the next day of operations. Cumulative total of 4 containers offloaded at City Beach and 6 filled with contaminated sediments in Mackinaw Bay.

***Sunday, June 10, 2012***

No activities at the site.

***Monday, June 11, 2012***

USCG PST at BNSF railyard and attend morning safety/operations brief with BNSF contractors at the earlier start time of 6:00 AM from the previous start time of 7:00 AM. Transit to City Beach pier and launch small boats to shuttle crew to the excavator barge. Transported two filled containers from previous workday to pier for transfer. Made adjustments to spuds, deployed a diver to weld the underwater section of the spuds for securing a wire rope pulley system. Secured from spud welding and continued dredging sediment. Sheen noticed on surface of dredge area which appeared to be lighter than previous workdays sheen. Contractors applied more absorbent pillows to the affected area. 2 additional containers were filled and were not able to be offloaded due to time constraints. Filled 6 containers total for the day and offloaded 6 at the beach, which was busy throughout the day due to nicer weather. Cumulative total of 10 containers offloaded at City Beach and 12 filled with contaminated sediments in Mackinaw Bay.

Envirocon and KennedyJenks requested the Region 8 Regional Response Team (RRT) to consider permission to utilize a chemical solidifier to recover generated sheen and the EPA OSC arranged for a briefing of the RRT to weigh in on this request.

***Tuesday, June 12, 2012***

USCG PST at BNSF railyard and attend morning safety/operations brief with BNSF contractors. Transited to City Beach pier and launch small boats to shuttle crew to the excavator barge. Transported filled containers from previous workday to pier for transfer. Filled 4 containers total for the day and transported all filled containers back to pier. Excavator commenced digging to fill next set of containers but location was heavily laden with large boulders. Excavator was not able to dig in specific areas due to the large rip rap. Contractors welded a plug system onto each side of excavator barge to monitor the bilges for water. Repositioned boom and excavator barge to find a location along the shoreline with sediment. Deployed a plastic oil containment barrier to trap the sheen, product did not appear to have any effect on the sheen. Partially filled one container but sediment was difficult to dredge due to obstacles in the water. Concerned about undermining slope of railroad track by removing large rip rap and boulders. During movement the sediment curtain released some turbidity, which was measured at 16.95 NTUs at the time of the incident. Sediment curtain was secured and dredging postponed temporarily. New spud adjustment system works properly and allows for movement of the spuds in a more timely manner. Cumulative total of 16 containers offloaded at City Beach and 16 filled with contaminated sediments in Mackinaw Bay.

EPA OSC convened a call with the RRT to discuss the project and request permission to use the solidifier C.I. Agent to collect petroleum sheen generated during dredging activity within the containment area around the work platform. RRT members supported having the OSC evaluate the effectiveness of the agent in-situ and different deployment and recovery methods. Please see the documents section for the minutes from the call and the findings from the evaluation.

***Wednesday, June 13, 2012***

USCG PST at BNSF railyard and attend morning safety/operations brief with BNSF contractors. Transited to City Beach pier and launched small boats to shuttle crew to the excavator barge. Filled and transported 8 containers to the pier for disposal. Solidifying agent was deployed and tested in sock form, dissolvable packet and free powder on heavy sheen areas. The free powder works well but involves more work collecting materials from surface. Following consultations with the EPA OSC, permission given to utilize the product within the containment area as needed, with recovery immediately following use and before the end of the work day. Will continue to improve deployment methods for the solidifier and ensure that care is taken when it is used and when sediment curtain needs to be moved around work area.Filled 2 more containers for transport to the pier on next work day. Total containers filled is 10. Moved the barge to tomorrows start location and repared the deck for next day's operations and stowed gear. Cumulative total of 24 containers offloaded at City Beach and 26 filled with contaminated sediments in Mackinaw Bay.

***Thursday, June 14, 2012***

USCG PST at BNSF railyard and attend morning safety/operations brief with BNSF contractors. Transited to City Beach pier and launched small boats to shuttle crew to the excavator barge. Transported two filled containers from previous work day to pier for disposal. Filled and transported 8 more containers to the pier for disposal. Solidifying agent was deployed and tested in heavy sheen areas. Agent appears to be absorbing sheen from the water. Continued testing different methods of recovery agent from the water. Best method so far appears to be women's nylons fitted over a pool skimmer. Used 4 bags of CI Agent in sheen areas to mitigate the amount of sheen visible. Filled 2 more containers for transport to the pier on next work day. Total containers filled is 10. Contractors have survey equipment being shipped for next week to check the excavated areas. Removed sediment that has been disposed of in the rail yard pond will be surveyed to get an update on how much sediment has been removed. Moved the barge to tomorrows start location and prepared the deck for next day's operations and stowed gear. Cumulative total of 34 containers offloaded at City Beach and 36 filled with contaminated sediments in Mackinaw Bay. Confirmatory sampling began in five of the dredged grids. Two of the samples were rejected based upon the presence of sheen and smell of petroleum, but the other three were submitted to the lab for analysis. Contractor will over-dredge these areas before additional samples are collected.

***Friday, June 15, 2012***

USCG PST at BNSF railyard and attend morning safety/operations brief with BNSF contractors. Transited to City Beach pier and launched small boats to shuttle crew to the excavator barge. Transported two filled containers from previous work day to pier for disposal. Filled and transported 6 more containers to the pier for disposal. Filled 2 more containers for transport to the pier on next work day. Total containers filled is 8. Envirocon contractors sent email out on how many containers and sediment has been transported to disposal site. More information will be sent out tomorrow. Operations secured earlier than previous days due to high beach and vessel traffic. K/J Contractors continued collecting confirmation samples, all of which appeared satisfactory based upon visual and olfactory inspection, and were submitted to the laboratory for analysis. Moved the barge to tomorrows start location and prepared the deck for next day's operations and stowed gear. Cumulative total of 42 containers offloaded at City Beach and 44 filled with contaminated sediments in Mackinaw Bay.

***Saturday, June 16, 2012***

USCG PST at BNSF railyard and attend morning safety/operations brief with BNSF contractors. At City Beach pier and launched small boats to shuttle crew to the excavator barge. Transported 2 filled containers from previous work day to pier for offload and transport to treatment facility for eventual disposal. Filled and transported 4 more containers to the pier for disposal. Partially filled 2 more containers to complete the right side of the dig area. Will move boom and start working on outside area of left side of site on Monday. K/J Contractors continued taking survey samples from previous dig locations, all of which were submitted to the laboratory for analysis. Prepared the deck for next work day's operations and stowed gear around noon due to recreational activity at City Beach. Cumulative total of 48 containers offloaded at City Beach and 48 filled with contaminated sediments in Mackinaw Bay.

***Sunday, June 17, 2012***

No activities at the site. EPA OSC prepared POLREP and initiated notification of stakeholders to provide an update on progress. Additional preparations were made to brief the City Council Meeting on June 18, 2012.

**2.1.3 Enforcement Activities, Identity of Potentially Responsible Parties (PRPs)**

The PRP for this action is the Burlington Northern Santa Fe Railroad.

**2.1.4 Progress Metrics**

| ***Waste Stream*** | ***To Date Quantity Removed/Hauled*** | ***Projected Quantity to Remove/Haul*** | ***% Complete*** | ***Quantity Processed Through Treatment*** | ***Quantity Disposed of in ND Landfill*** |
|---|---|---|---|---|---|
| Petroleum Contaminated Sediments | 216 Cubic Yards | 450 Cubic Yards | 48.0 | 80.00 Cubic Yards | 0.00 Cubic Yards |
| Barge Loads (2 Dumpsters) Transported from Mackinaw Bay to City Beach | 25 Loads | 45 Loads | 48.0 | N/A | N/A |

| | | | | | |
|---|---|---|---|---|---|
| Truck Loads (1 Dumpster) Transported to BNSF Railyard | 48 Loads | 90 Loads | 48.0 | N/A | N/A |
| Railcar Loads Transported to ND Disposal Facility | 1 Loads | 10 Loads | 10.0 | N/A | N/A |

**2.2 Planning Section**

**2.2.1 Anticipated Activities**

To complete the project from this point, BNSF and its contractors are expected to complete the required dredging in Mackinaw Bay, process the contaminated sediments through the dewatering and waste treatment facility at the BNSF railyard, ship the treated sediments to a permitted disposal facility in North Dakota, demobilize all equipment used on the project, and reclaim areas impacted by the project.

**2.2.1.1 Planned Response Activities**

Dredging is expected to continue weekly, Monday through Saturday, from 6:00 AM to 5:00 PM, through June 30, 2012, if not sooner. Dredging will involve filling two lined dumpsters roughly one-third full of contaminated sediments behind floating turbidity curtain in Mackinaw Bay. Once filled to this amount, the barge with the two dumpsters on it will be pushed across Whitefish Lake to City Beach by tugboat. At City Beach, the dumpsters will be lifted off the barge using a 65-ton crane onto the ramp, where they can be loaded onto haul trucks. The trucks will then haul the loaded dumpsters to the BNSF railyard where the dewatering and waste treatment facility is located. At the dewatering facility, the contaminated sediments will be dumped into the lagoons for processing, the liner in the dumpster will be removed, disposed of, and replaced before being returned to the staging area at City Beach for loading onto the next barge. Once reloaded, the barge will be pushed back to Mackinaw Bay to support continued dredging. There will be approximately 4-6 round trips of barges being pushed by tugboat everyday on Whitefish Lake during active dredging. Each round trip is expected to haul approximately 10 cubic yards of contaminated sediment and take approximately 2 hours to complete.

**2.2.1.2 Next Steps**

Continue removal, hauling, and treatment of contaminated sediments from Mackinaw Bay.
Ship treated contaminated sediments to a permitted disposal facility in North Dakota by railcar.
Demobilize all equipment used in the project from Whitefish Lake and City Beach.
Reclaim and return to use all areas impacted by the project in accordance with local guidance.
Complete and distribute a final project report on the removal action.

**2.2.2 Issues**

If the contractors are able to achieve and sustain the dredging throughput of 40 to 60 cubic yards per day throughout the project, there should be no problem achieving demobilization on or before June 30. If there are weather delays because of high winds or mechanical issues during June, this deadline may be more difficult to achieve and contingency plans will need to be developed and coordinated with local stakeholders and the City of Whitefish.

Dredging and decanting of water in the dredge area has predictably caused the generation of petroleum sheens within the containment area around the excavator work platform. While none of these sheens have escaped containment, BNSF requested permission from EPA, MTDEQ, and the Region 8 Regional Response Team to utilize a solidifier product that chemically binds petroleum in an effort to recover this material from the environment. Permission was granted and this product has successfully been incorporated into the operation as a polishing step to maximize removal of mobilized petroleum from Mackinaw Bay during dredging operations.

**2.3 Logistics Section**

No information available at this time.

**2.4 Finance Section**

**Estimated Costs ***

| | Budgeted | Total To Date | Remaining | % Remaining |
|---|---|---|---|---|
| **Extramural Costs** | | | | |
| USCG Pacific Strike Team | $15,000.00 | $9,250.00 | $5,750.00 | 38.33% |
| **Intramural Costs** | | | | |
| USEPA - Direct | $35,000.00 | $26,000.00 | $9,000.00 | 25.71% |
| USEPA - Indirect | $15,000.00 | $2,000.00 | $13,000.00 | 86.67% |
| | | | | |

| | | | | |
|---|---|---|---|---|
| **Total Site Costs** | $65,000.00 | $37,250.00 | $27,750.00 | 42.69% |

* The above accounting of expenditures is an estimate based on figures known to the OSC at the time this report was written. The OSC does not necessarily receive specific figures on final payments made to any contractor(s). Other financial data which the OSC must rely upon may not be entirely up-to-date. The cost accounting provided in this report does not necessarily represent an exact monetary figure which the government may include in any claim for cost recovery.

### 2.5 Other Command Staff

No information available at this time.

## 3. Participating Entities

### 3.1 Unified Command

U.S. EPA Region 8
Burlington Northern Santa Fe Railroad
Montana Department of Environmental Quality
City of Whitefish

### 3.2 Cooperating Agencies

Montana Department of Fish, Wildlife and Parks
Whitefish Lake Institute
Flathead Basin Commission
Whitefish Lake and Lakeshore Protection Committee
Whitefish Police Department
Whitefish Fire Department

## 4. Personnel On Site

EPA OSC Steven Merritt
EPA ERT Fred Stroud
USCG Pacific Strike Team BM1 Karen Sinkey
MTDEQ Jessica Gutting
City of Whitefish Engineer Karin Hilding
BNSF Project Manager David Smith
Kennedy Jenks Project Engineer Rob Hagler
Envirocon Project Manager Chris Houck

## 5. Definition of Terms

No information available at this time.

## 6. Additional sources of information

### 6.1 Internet location of additional information/report

Please see bulletins, images and links sections on the project website at http://www.epaosc.org/mackinawbaypetroleumsheens for more frequently updated information and other reports on the project from local news outlets.

### 6.2 Reporting Schedule

The next POLREP will be published on July 2, 2012 and briefings will be provided to the Whitefish City Council at every meeting. Bulletins will be updated at least weekly and more frequently as project updates are needed/requested. Please continue to monitor the website for new information.

## 7. Situational Reference Materials

Please see the documents posted in the documents section of the project website at http://www.epaosc.org/mackinawbaypetroleumsheens for additional documents about the removal action.