Pembina Pipeline Corporation

Alberta Environment
Environmental Response Centre
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Edmonton, Alberta
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August 18, 2011

Attention: Director, Alberta Environment

Re: Crude Oil Release Report – (Moosehorn 8" Gathering Pipeline, 11-06-67-09 W5M)
AENV Reference # 249-789
ERCB FIS Incident # 2011-1497

Attached is a written follow up report regarding the above-referenced July 19, 2011 release originally reported to Alberta Environment on July 20, 2011. The release was also reported to the Alberta Energy Resources Conservation Board on July 20, 2011.

If you have any questions about this release, I can be reached directly at (403) 231-7501 or [redacted]@pembina.com.

Regards,

[redacted]
Supervisor, Environment

Cc [redacted]

Attachment

Alberta Environment (AENV) - Seven Day Report

Reference: AENV Reference # 249-789
ERCB FIS Incident # 2011-1497

Date of Incident: July 19, 2011
Time of Incident: 07:42 hrs

Location of Release: 11-6-67-09 W5M on the 8" gathering pipeline

Occurrence: Pembina Pipeline Corporation (Pembina) shut down its pipeline at 07:42 on July 19, 2011 after detecting a volume imbalance and initiated air and ground investigations. Pembina was notified by a third-party company that crude oil was observed on a Pembina right-of-way (ROW), into adjacent muskeg and an un-named creek.

Product Released: Crude Oil

Concentration/Composition: 100% Sweet Crude Oil

Volume of Release: 830-1,000 barrels estimated

Duration of Release: Unknown
Release Rate: Unknown

Agency Contacted: Alberta Energy Resources Conservation Board
Reported to: Field Centre
Date / Time: July 20, 2011 – 06:50 hrs

Agency Contacted: Alberta Environment
Reported to: Swan Hills area local office
Date / Time: July 20, 2011 – 02:00 hrs

Incident Description:

Immediate Cause: Failure of the 8" pipeline.

Pre Release Conditions: Prior to the release, the 8" line was pressurized (800-1,100 kPa) with sweet crude oil running from the Moosehorn Junction to the Swan Hills Terminal.

Response Details: A leak detection threshold limit was exceeded and Pembina's Segment Imbalance Protocol (decision flow chart) required that the pipeline segment be shut in. The ECC promptly notified Pembina's Swan Hills office from which field personnel were dispatched. An Atco company representative in the vicinity observed the release and notified a Devon representative, who in turn notified Pembina. Following this, emergency crews were dispatched (Pembina and third-party). The product released was observed to impact a nearby un-named creek. An inverted weir was placed in the unnamed creek. Vacuum trucks were used to recover product on the surface; absorbent pads were placed around the release area; an earthern berm was built downgradient of the release; installation of retention ponds, inverted weirs and containment using booms was completed.

Impact of Release: The crude oil surfaced to the ground surface in the ROW - a cleared, grass covered area. The surficial stain of the immediate release site is about 500 square metresand is expected to be limited to a depth of about 1 metre. The surficial oil

subsequently flowed off the ROW northwest into an un-named creek for approximately 3.6km. The Swan River is approximately 15km away from the nearest identified impacts. No residences or sources of drinking water are present in the immediate area.

Root Cause:

The cause of failure of the 8" pipeline is under investigation by Pembina. Initial investigations indicated that slope pressures may have resulted in a pipeline failure. Pembina is currently reviewing the adjacent 10" line and is effecting mitigative measures to prevent the potential failure of other lines.

Actions Taken

Containment:

A leak detection threshold limit was exceeded and Pembina's Segment Imbalance Protocol (decision flow chart) required that the pipeline segment be shut in. The ECC promptly notified Pembina's Swan Hills office from which field personnel were dispatched. Following identification of the release location, emergency crews were dispatched (Pembina and third-party). The product released was observed to impact a nearby un-named creek. An inverted weir was placed in the unnamed creek. Vacuum trucks were used to recover product on the surface; absorbent pads were placed around the release area; an earthern berm was built downgradient of the release; installation of retention ponds, inverted weirs and containment locations using booms was completed. Fencing and other protective/preventative measures have been incorporated to minimize fish and wildlife impacts.

Recovery of Product:

Excavation of the impacted vegetation and underlying soil is being conducted. Free product recovery was initiated with vacuum trucks as soon as possible; additional measures to collect product such as utilizing skimmers, Turner Valley gates, inverted weirs, booms, absorbent materials, and washing of affected areas in the un-named creek and near the release site towards collection points has been ongoing.

Clean up:

Following the planned remedial excavation, management of residual impacts areas (i.e. the un-named creek) will be completed as necessary following the guidance provided in the most current Alberta Environment *Tier I and II Soil and Groundwater Remediation Guidelines*. This includes continued actions as discussed in previous sections.

Future Steps to be taken:

This incident has been entered into the company wide incident reporting system, which sends notices to senior management and relevant staff. This incident will be reviewed by Pembina Operations and Engineering staff to determine what procedure and/or installation modifications need to be taken to prevent similar occurrences in the future.

The cause of failure of the 8" pipeline is under investigation by Pembina. Pembina is currently reviewing where lines are located on similarly sloped areas.

Summary:

On July 19, 2011 at about 07:42 hrs an imbalance of the Pembina 8" gathering pipeline was discovered and the line was shutdown. A resultant release (approximately 800-1,000 barrels) was discovered along the ROW in 11-06-67-09 W5M. The released oil flowed to the surface and off of the ROW towards an un-named creek. The product subsequently impacted approximately 3.6 km of a nearby un-named creek. The surficial stain at the release site is about 500 square metres and is expected to be limited to a depth of about 1 metre. Containment and recovery operations have been in place since the initial discovery – including

vacuum trucks, inverted weirs, booms, washing of impacted areas to collection points, absorbent materials, inverted weirs, Turner Valley gates. Wildlife and fish protection (e.g. fencing, deterrent products) has also been incorporated into the response plans.