

Oil spill in Red Deer reservoir: 1000s of oil pipelines cross water sources

By WATER MATTERS — AUG 5, 2008

A pipeline rupture recently leaked up to 200 barrels of sweet crude oil in the Red Deer River, causing a popular recreation destination in Alberta, Gleniffer Lake, the reservoir of Dickson Dam south of Sundre, to close for eight days while efforts were made to contain and clean up the oil leak (Government of Alberta June 24, 2008). Although the reservoir is again open for swimming and withdrawing drinking water, the incident is not unique in Alberta and brings into question the wisdom of placing oil pipelines across water bodies.

Pembina Pipeline Corporation's sweet crude pipeline — "sweet" because it does not contain sour gas — began to leak on June 15 where it passes under the Red Deer River about five kilometres north of Sundre and 30 kilometres south of Gleniffer Lake. The spill was noticed at 9:30 pm Sunday, June 15th and the line was shut down an hour later. As much as 32,000 litres (200 barrels) leaked, according to Alberta Environment estimates — although the number is more likely between 75 and 125 barrels, according to Energy Resources Conservation Board (ERCB) (Kom June 18, 2008; ERCB, personal communication). By early afternoon the next day, a boom (oil-absorbing material) was spread across the mouth of the river at Gleniffer Reservoir to contain the oil to a 33 km stretch of the river. Another boom was also placed below Dickson Dam to catch any oil past the dam. Spring high water flows made initial inspection of the leak and efforts to clean up the spill difficult.

The failed segment of Pembina's pipeline (400 metres long) runs under the Red Deer River. The pipeline originally did not cross the river but went by it. However, about two years ago, the river was diverted to make way for a Trans Canada pipeline; the river now crosses Pembina's pipeline (Sheremata, personal communication). The pipeline, was however, deemed to meet the technical standards required of pipelines running beneath waterways. Pembina's six-inch, low-pressure pipeline was constructed in 2004 to carry sweet crude oil, and it was inspected twice during construction. (Wilton June 16, 2008).

Alberta Environment and the ERCB are now investigating the pipeline leak and may follow up with an enforcement action for the company, which could lead to more frequent inspections or a potential closure of the facility (Sheremata, personal communication; and Wilton June 17, 2008). To inspect and repair the rupture, Pembina Pipelines is diverting water, for which they have approval as long as they follow the *Code of Practice for Pipeline and Telecommunication Line Crossings* and work outside the restricted activity period to prevent disturbances of fish habitat at sensitive times of the year, which in the case of the Red Deer River is from September 1 to April 30 (Alberta Environment, personal communication).

Who was affected?

The spill forced downstream recreation communities on Gleniffer Reservoir to shut off their drinking water supply intake. Once the David Thompson Health Region determined that the water is safe, it allowed these two raw water intakes to reopen June 27, 2008. Before this date, Pembina Pipelines paid for water to be trucked into the communities. Those residents and communities downstream of Gleniffer Reservoir, including Innisfail and Red Deer, were thought not to be affected, although water quality testing is being done to verify this.

Pipeline rupture is not a rare occurrence in Alberta

This Red Deer River incident is not the only one in recent months. On April 30, 2008 a Penn West Energy pipeline ruptured and leaked into the Otawau River, part of the Lesser Slave and Athabasca system (Markusoff April 30, 2008). Up to 125 barrels leaked — as 125 barrels were being pumped through the pipeline daily — into the Otawau River, about 15 kilometres upstream of where the river meets the Lesser Slave River and 40 kilometres from the town of Smith where the Lesser Slave River joins the Athabasca River (ERCB April 30, 2008).

The spill near Smith was stopped 80 minutes after it was detected. Containment and recovery booms were placed across the Lesser Slave River near the Town of Slave River, but the water was too high with too much debris for the booms to be in place



longer than a few hours. The following day, an aerial survey detected oil sheens on the Athabasca River up and downstream of Smith, but again high water and debris prevented use of booms to contain the oil (ERCB May 1, 2008).

Towns of Smith and Athabasca stopped withdrawing water from the river, instead using water from their respective reservoirs, while water sampling for hydrocarbons continued. The ERCB is still investigating the Otauwau River incident.

Another incident in October 2006 caused oil from a ruptured Rainbow Pipe Line Company Ltd. pipeline, 10 km southwest of Slave Lake, to leak into a small creek in the area (EUB 2006). Over 1200 barrels of crude oil leaked, much of which was recovered. Booms and an inverted weir were placed on the creek to prevent movement of the oil downstream.

Neither Alberta Environment nor the ERCB could state how many oil pipeline leaks into water bodies there have been over recent years.

Is current regulation enough?

Although pipelines crossing waterways must meet certain technical requirements, including material type, thickness, and insulation, and must follow Alberta Environment's *Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body*, pipeline failures still occur (Sheremata, personal communication).

The ERCB's annual *Provincial Surveillance and Compliance Summary 2007* (released in mid June) revealed that 2007 had a record-low year for pipeline leaks at 2.1 leaks per 1000 kilometres of pipeline. This was a slight decrease from 2006's rate of 2.2 leaks per 1000 kilometres of pipeline. Alberta's pipelines carry crude oil, natural gas, sour gas, water (fresh or saline), and other types of substances.

Although there was a record-low rate of failures, in 2007 there were 941 inspections for pipeline failures; 60 were found to be in low risk noncompliance and 79 were found to be in high-risk noncompliance (ERCB 2008, Table 74, 54). The top reason for pipeline failure is internal corrosion, followed by external corrosion and construction damage (ERCB 2008, Figure 56, 89).

For crude oil pipelines there were 27 failures in 2007, which calculates to 1.5 failures per 1000 kilometres. For multiphase pipelines, which carry crude oil, minerals, salt water, or natural or sour gas, there were 6.5 failures per 1000 kilometres (calculated from the number of failures and total length of pipeline in ERCB 2008). How many of these leaks involved water bodies is unclear. Meanwhile, ERCB staff estimates oil pipelines cross water bodies thousands of places in Alberta.

The *Pipeline Act* is the primary piece of legislation governing pipelines in Alberta; however, it only minimally addresses pipeline impacts on water. Unlike pipelines near highways and roads, no regulatory rules apply to pipelines near water, except for the requirement to meet technical specifications (*Pipeline Act* and *Regulations*). The depth of 0.8 m is the same minimum depth for a pipeline to be buried, regardless of whether it is on land or crossing water (ERCB personal communication). Companies, however, generally take greater precaution around waterways by burying the pipelines more deeply as companies are responsible for any clean up due to leaks.

Alberta Environment also has some purview over pipelines around waterways. Alberta Environment's *Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body*, empowered by the *Water (Ministerial) Regulations* under the *Water Act*, specifies that pipeline owners must provide notification to Alberta Environment and meet certain specifications when constructing a pipeline across a water body. Design and construction standards include maintenance or restoration of the aquatic habitat that existed prior to the pipeline activity. The *Code* specifies the depth at which the line must be buried depending on the substance in the pipeline.

In the *Code*, the "class" of the water body (A, B, C, or D), where class A water bodies have much higher protection than B, C, or D, determines construction and maintenance requirements as well as restricted access periods. Class D water bodies have no restrictions.

Pipelines that traverse land where the surface is closely connected to groundwater receive no special consideration for the potential impact on groundwater.

Are these protections sufficient to prevent a harmful substance from entering into water bodies? With 1.5 failures per 1000 km in 2007 and the two recent leaks, these protections do not always work. What remains unclear is how prevalent is this problem. Where and how many oil pipeline waterway crossings are there in the province? How many leaks or spills have there been over recent years? How many more will there be as pipelines age and our pipeline networks increase?

What changes need to happen to ensure these accidents stop occurring and threatening human and ecological health?

Enforcement and regular inspection are a must. Constant vigilance is crucial, especially of pipelines crossing waterways. And perhaps we need to rethink where and how we transport our oil and gas.

Water is a critical resource in Alberta. Therefore, protection of water from oil and gas activities should be a top priority of government and all Albertans.

Sources:

The Canadian Press. June 21, 2008. "Property owners satisfied with oil spill cleanup". Red Deer Advocate.

ERCB (Energy Resources Conservation Board). 2008. ERCB Provincial Surveillance and Compliance Summary 2007.

ERCB. May 1, 2008. "Cleanup in closing stages at site of pipeline leak near Smith". News Release.

ERCB. April 30, 2008. "ERCB working with emergency services following crude oil effluent pipeline leak near Smith". News Release.

EUB (Energy Utilities Board). October 10, 2006. [EUB investigating pipeline failure near Slave Lake](http://www.ercb.ca/portal/server.pt/gateway/PTARGS_0_0_303_263_0_43/http%3BercbContent/publishedcontent/publish/ercb_home/news/news_releases/2006/nr2006_40.aspx) (http://www.ercb.ca/portal/server.pt/gateway/PTARGS_0_0_303_263_0_43/http%3BercbContent/publishedcontent/publish/ercb_home/news/news_releases/2006/nr2006_40.aspx) . News Release. (http://www.ercb.ca/portal/server.pt/gateway/PTARGS_0_0_303_263_0_43/http%3BercbContent/publishedcontent/publish/ercb_home/news/news_releases/2006/nr2006_40.aspx)

Government of Alberta. June 24, 2008. ["Gleniffer Lake re-opens for recreational use"](http://alberta.ca/acn/200806/23870BC084D6A-F6B8-56E6-A76E183119F23EA3.html) (<http://alberta.ca/acn/200806/23870BC084D6A-F6B8-56E6-A76E183119F23EA3.html>) . (<http://alberta.ca/acn/200806/23870BC084D6A-F6B8-56E6-A76E183119F23EA3.html>)

Kom, Joel. June 18, 2008. "Gleniffer oil spill estimate climbs: New leak totals challenged by company". Calgary Herald

Markusoff, Joseph. April 30, 2008. "Ruptured pipeline pollutes Lesser Slave River". Edmonton Journal.

Sheremata, Davis. Personal communication. Energy Resources Conservation Board.

Wilton, Suzanne. June 16, 2008. "Pipeline leaks 20,000 litres of crude into Alta. lake". Calgary Herald.

Wilton, Suzanne. June 17, 2008. "Oil spill closes Gleniffer Lake: Pipeline leak cuts off residents' drinking water". Calgary Herald.

Related Watersheds: [Red Deer River Sub-basin](#) ([/watershed/red-deer-river-sub-basin](#))

Related Topics: [Energy & Water](#) ([/topic/energy-and-water](#)) , [Water Allocation](#) ([/topic/water-allocation](#))