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October 1, 1999

Ms. Joan La Rue-van Es, M.Sc.
Environment Officer
Contaminated Sites
Manitoba Environment
123 Main Street, Suite 160
Winnipeg MB
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*received Oct. 22/99
Joan*

Dear Ms. La Rue-van Es:

**Re: West Souris Station
Remedial Action Plan**

Further to our recent discussions, and to your previous inquiries faxed to Enbridge on July 19, 1999, the following provides additional detail regarding the groundwater extraction system currently being constructed for West Souris Station:

System Operation & Maintenance

West Souris Station is an unmanned facility; however, Enbridge personnel are on site on a daily basis as part of pipeline operational responsibilities. Inspection, monitoring and maintenance of the remedial action system will become part of the daily operations role for the site. ✓

Sampling

Enbridge will sample the effluent from the primary granular activated carbon (GAC) adsorber as the principal control point to monitor when exhaustion of the activated carbon bed has occurred. When breakthrough occurs in the effluent of the primary vessel, spare adsorptive capacity is still available in the secondary or polisher vessel to ensure that the discharge criteria continue to be met. ✓

During the first two runs (i.e. exhaustion of the first two primary GAC adsorbers) samples will be collected according to the schedule below. The additional sampling points will be

used to obtain information regarding the loading rates of BTEX constituents onto the activated carbon and the adsorptive capacity of the carbon. The first two runs will provide indication of the variability of the quality of the input stream and the volumetric throughput of groundwater that can be treated prior to exhaustion of the primary adsorber. The sampling schedule may then be adjusted based on this information. This sampling approach has been successfully employed at other facilities using CG&S groundwater extraction and treatment systems.

Monitoring Point	Sampling Frequency
Absorbent Media Filter Influent	Every two weeks
Primary GAC Adsorber Influent	Every two weeks
Primary GAC Adsorber Effluent	Weekly
Secondary GAC Adsorber Effluent	Every two weeks

As West Souris Station is unmanned, Enbridge would prefer to maintain records of sampling results at nearby Glenboro station. Materials will be readily available for review by a Manitoba Environment Officer at that location or could be brought to West Souris Station at the request of Manitoba Environment.

System Operation

The system is designed to run on a continuous basis. Extraction of groundwater and/or hydrocarbons will be controlled by high and low levels switches in the sump. The system is designed to depress the groundwater table and induce a gradient towards the trench. High and low level switches will ensure that pumping continues on a 24-hour basis (as required) to ensure that the water table is maintained at the desired level.

It is difficult to project how long the system will run. The system is designed to remove free product and extract water with high dissolved hydrocarbon concentrations out from beneath the building and from the immediate impacted area. Based on site lithology and monitoring results, the approximate area of impact including the area beneath the building is projected to be approximately 700 m². Considering the design depth of the trench at 4m and a mean water table depth of approximately 2m this leaves a saturated thickness of approximately 1400m³ of soil. Assuming a soil porosity of 30% (likely higher than actual porosity) this would result in approximately 420m³ or 110,000 total gallons of impacted water to be treated. As the system is designed to draw water from the infiltration trench back towards the recovery trench, this volume of water will be treated several times as it flushes through the impacted soils.

Once the free product has been removed, and dissolved concentrations reduced to levels approved by Manitoba Environment, pumping will be terminated and a program of regular monitoring of groundwater quality will be implemented at the site.

Discharge of Treated Water

As indicated, treated water discharged to the infiltration trench will be drawn back towards the recovery trench due to the gradient induced by the recovery system. This will create a constant flushing of hydrocarbon-impacted soils beneath the building. Over time, the gradient towards the trench will flatten out due to addition of water through precipitation, infiltration etc. As such, the efficiency of the system will significantly decrease. In order to steepen this gradient and increase the efficiency of the system, water will periodically have to be removed from the "closed-loop" system by diverting treated water away from the infiltration trench and discharging it to surface away from the recharge area. This will result in the periodic surface discharges described in the CG&S remedial action plan dated May 14, 1999. Water discharged to surface will be treated through the system and, as such, the same monitoring program will be used for the intermittent discharge of effluent to surface as proposed above for the routine subsurface discharges of treated groundwater. The redundant capacity of the GAC polisher vessel provides the same safeguard to the protection of surface water as it does to groundwater. Treated effluent will not be stored prior to discharge. Surface water will be discharged so as to not to cause erosion or disturbance to adjacent agricultural properties.

Groundwater Quality

It is my understanding that Manitoba Environment currently does not have criteria for groundwater quality; however, concentrations of BTEX components should not exceed Canadian Drinking Water Quality Standards at the point of withdrawal. For West Souris Station, the nearest point of withdrawal is a farmhouse located approximately 0.5km south of the site. Review of published groundwater information indicates that groundwater wells in the area are typically completed either in the shallow unconfined sands/till or in deeper fractured shale bedrock below the till. Discussions with Paddock Drilling of Brandon, Manitoba suggest that while potential for pollution impacts (largely agricultural) are higher in the shallow unconfined aquifer, most wells are completed in this zone as deeper water is quite highly mineralized. ✓

Enbridge's recognition of the relative sensitivity of the area is demonstrated by our aggressive spill response, installation of a recovery trench, ongoing site monitoring, and present upgrade to an active groundwater recovery and treatment system. Once the system is running and indications of influent quality are obtained, Enbridge will undertake limited fate and transport modeling to assist in development of appropriate groundwater quality end points protective of off-site receptors. Once groundwater has reach approved criteria, system operations will be terminated and the network of 13 groundwater monitoring wells will be sampled with results reported to Manitoba Environment on a regular basis. ✓

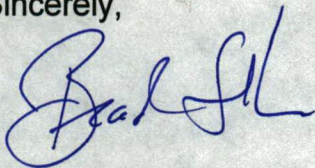
manitoba conservation will decide

Please do not hesitate to give me a call if you have any additional questions regarding the West Souris Station remedial action system. Based on the current schedule it appears

that construction of the groundwater treatment system will be completed by late October with installation to follow shortly thereafter.

If you or a Manitoba Environment representative from the Brandon office would like to visit the site during system installation please contact the undersigned at (780) 420 8607. Thanks again for your ongoing assistance with this project.

Sincerely,



Bradley Smith, P.Eng.
Sr. Environmental Engineer

cc: Michel Mantha – NEB
Brian Kefford
Greg Milne