Recd 3/20/08
Ashland

TETRA TECH

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March 17, 2008

Chris Saari
WDNR
2501 Golf Course Road
Ashland, WI 54806

Re: Remedial options for the Moose Junction Lounge site, 13195 State Highway 35 S, Dairyland, Douglas County, Wisconsin. **WDNR BRRTS #03-16-000301.** WDCOM #54830-9999-97A. Tetra Tech Project #1157332776.

Dear Mr. Saari:

This letter documents three possible remediation options at the Moose Junction Lounge site, Dairyland, Wisconsin in order to reduce the risk of groundwater contamination reaching the down gradient potable well.

Site History

The site is a tavern that formerly had gasoline sales. Soil and groundwater contamination was discovered at the site in October 1990 during a Phase II Environmental Assessment performed for the Wisconsin Department of Transportation (WDOT) on the State Highway (STH) 35 right-of-way. One 1,000-gallon gasoline underground storage tank (UST) and two pump islands were removed from the site in June 1993, along with approximately 672 cubic yards of contaminated soil. The excavated soil was transported off-site for thermal treatment. Significant soil contaminant concentrations remained at the sidewalls of the excavation, which was limited in size and depth due to the adjacent building and roadways.

Groundwater monitoring shows that petroleum constituents remain present off-site at concentrations exceeding NR 140 enforcement standards (ESs). Petroleum constituents continue to decrease in monitoring well MW-2. Mann-Kendal tests confirm the decreasing trend. Currently the downgradient potable and monitoring wells do not have petroleum constituent present exceeding Wisconsin Administrative Code NR 140 preventive action limits (PALs). However, volatile organic compounds (VOCs) have inconsistently been detected in the downgradient potable well.

There are three environmental factors as outlined in NR 746 including soil constituents exceeding Table 1 levels, the petroleum release is greater than 10 years old, and an ES exceedance within 1,000 feet of a potable well used to provide water for human consumption.

Remedial Options

We have evaluated three remedial alternative proposals based on information gathered to date. The three options are 1. Remediation by natural attenuation (two years groundwater monitoring), 2. Bi-monthly vacuum and groundwater pumping of monitoring well MW-2 and one year groundwater monitoring, 3. Potable well replacement and one year of groundwater monitoring.

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The three remedial alternatives with calculated costs for remediation at the site are:

- Remediation by natural attenuation - $12,564.00
- Bi-monthly pumping and one year groundwater monitoring - $11,887.00
- Potable well replacement and one year groundwater monitoring - $17,583.00

Tables itemizing the costs of Options 1, 2, and 3 are included.

Remediation by Natural Attenuation

Remediation by natural attenuation would consists of two years of quarterly groundwater monitoring of five monitoring wells and two potable wells. Groundwater samples from the monitoring wells will be analyzed for PVOC plus naphthalene. Samples collected from the potable wells will be analyzed for VOCs using EPA Method 524.2.

Bi-Monthly Vacuum and Groundwater Pumping from MW-2 and One Year of Groundwater Monitoring

The main function of a portable vacuum system is to treat contaminated soil and remove contaminated groundwater. Vacuum is applied to monitoring well MW-2 to induce subsurface air flow allowing gas-phase volatiles to diffuse through soil. The vacuum also enhances natural bioremediation by naturally occurring microbes. With groundwater pumping contaminated groundwater is removed (110 gallon per event). During this time conduct quarterly groundwater sampling from five monitoring wells and two potable wells. Groundwater samples from the monitoring wells will be analyzed for PVOC plus naphthalene. Samples collected from the potable wells will be analyzed for VOCs using EPA Method 524.2.

Potable Well Replacement and One Year Groundwater Monitoring

A new potable well will be installed at a location outside of the potential groundwater plume. The exact location of the well will be approve by a WDNR water supply specialist and can be installed west of south of its current location. To monitor groundwater quality one year of groundwater sampling from five monitoring wells and three potable wells will be completed. Groundwater samples from the monitoring wells will be analyzed for PVOC plus naphthalene. Samples collected from the potable wells will be analyzed for VOCs using EPA Method 524.2.

If you have any questions I can be reached at 715-832-0282.

Sincerely,

Michael K. Neal, Professional Hydrologist
Geomorphologist

cc: Trent E. Sprague, 2116 16 ½ Street, Rice Lake, WI 54868-9556

Will Myers, WDCOM, P.O. Box 8044, Madison, WI 53708-8044

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