

# Environmental Resource Group

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June 24, 2014

Mr. James Fish  
Alaska Department of Environmental Conservation  
Contaminated Sites Program  
610 University Avenue  
Fairbanks, Alaska 99709

**RE:** Bentley Mall East Satellite, ADEC #102.38.122  
Fairbanks, Alaska

Dear Mr. Fish,

Environmental Resource Group, Inc. (ERG) has prepared this letter on behalf of The Bentley Mall and Krausze Companies Inc. In follow-up to ADEC's letters dated March 4 and April 22, 2013, the Corrective Action Plan (ERG, 2006) and the alternative ground water monitoring plan (ERG, May 27, 2011), this letter provides a Ground Water Quality Monitoring Plan and discusses the various measures that have been undertaken or will be done to reduce risk to indoor air.

## **GROUND WATER QUALITY MONITORING PLAN**

Ground water quality monitoring began in 2003 and since 2005 has been monitored on a quarterly and semi-annual basis. To date, over 300 ground water samples have been collected from monitor wells. Currently, there are 13 monitor wells and 16 air sparge wells from which ground water samples are collected. Ground water wells and sparge wells were last surveyed in October 2013, when MW-8 through MW-11 were found to be damaged by road construction in the 2013 sampling event.

Table 1 lists the frequency by which ground water quality will be monitored in the 29 monitor wells and air sparge wells. Per this plan, 11 wells will be monitored annually and 10 wells will be monitored biennially. The selection of these wells and the sampling frequency is based on the considerable amount of information that has already been collected from the Site and is consistent with the Alternate Cleanup Plan (ERG, May 27, 2011), which was approved in the ADEC letter dated August 31, 2011. In addition, 7 wells will be maintained but not sampled, 3 wells will be repaired, and 1 well will be abandoned.

### **Sampling and Analytical Methods**

Ground water in the monitoring well will be purged and sampled using low-flow techniques described in the "Low-Flow (Minimal Drawdown) Ground Water Sampling Procedures" (ASTM No 6771-02, 2002) and ADEC's *DRAFT Field Sampling Guidance* (May 2010). Equipment will include a peristaltic pump, multimeter, and a flow-through cell.

During purging, the following field parameters will be measured and recorded for stability:

- pH
- Dissolved Oxygen (DO)
- Depth to Water (DTW)

June 23, 2014  
Bentley Mall

- Specific Conductance (SC)
- Temperature
- Oxygen-Reduction Potential (ORP)

All ground water samples will be analyzed for halogenated volatile organic compounds (HVOCs) and 1,4-dioxane by EPA Method 8260.

In addition, to assess natural attenuation processes, on a biennial basis beginning in 2014, all ground water samples will be analyzed for:

- Total organic carbon (TOC) and carbon dioxide by E415.3
- Nitrate and sulfate by E300.0
- Sulfide by SM4500
- Ferrous iron by SM3500
- Dissolved iron by E6020
- Dissolved manganese II by E200.9
- Hydrogen (as possible, given constraints associated with timely access to a laboratory and costs)
- Methane, ethane, and ethene by RSK Method 175
- Chloride by E325.1

In order to preserve sample integrity and obtain high quality data, samples to be analyzed for dissolved constituents will be field-filtered using a disposable 0.45 micron in-line field filter. The filtered sample will be collected in an acid-preserved polyethylene bottle. All samples will be submitted to the laboratory under proper chain of custody protocol and prior to the expiration of any hold times.

## Reporting

Within 6 months following the completion of a ground water quality monitoring event, a technical monitoring report will be prepared that provides:

- Tabulated summary of all analytical data
- Discussion of quality control issues, if any, associated with the recent round of sampling
- Maps depicting ground water elevation, gradient direction, and the distribution of contaminants
- Conclusions and recommendations (if any)

In addition, as part of the report for the 2014 ground water quality monitoring event, the following additional items will be provided in the report:

- Standard operating procedures (SOPs) for collecting the ground water samples
- A DEC Laboratory Data Review Checklist
- A thorough evaluation of Monitored Natural Attenuation (MNA) in accordance with the DEC's *Monitored Natural Attenuation Guidance* using trend analysis and plume maps
- A thorough evaluation of the existing ground water quality data, including potential seasonal influences, elevation and gradient direction influences.

## VIP CLEANERS and the CONCEPTUAL SITE MODEL

An increasing concentration of tetrachloroethylene (PCE) has been noted in well MW-1, which is upgradient from the East Satellite Building and downgradient from the building housing VIP Cleaners. In July 2013, four ground water samples were collected from MW-1, MW-2, and SW-5 and analyzed using Compound Specific Isotope Analysis (CSIA). Based on these data, there are different sources of PCE to MW-1 and the MW-2/SW-5 pair. Consequently, it appears that the source of PCE to MW-1 is associated

June 23, 2014  
Bentley Mall

with VIP Cleaners and is not associated with rebound effects from the cessation of the vapor extraction system.

A valid and useful conceptual site model (CSM) requires knowledge about the operations and environmental conditions at the adjacent VIP Cleaners. Therefore, an updated CSM and analysis of Environmental Molecular Diagnostics (EMDs) will be deferred until such an investigation is performed and reported at VIP cleaners.

#### **MITIGATION MEASURES TO REDUCE RISK TO INDOOR AIR**

The following measures have been, or will be implemented to reduce the potential risk to indoor air at the Bentley Mall buildings along College Avenue:

- New building to be constructed (for AutoZone) where the McDonald's once stood
  - Geo-Seal® a passive vapor 3-layer membrane intrusion barrier will be installed underneath the building slab.
  - A passive sub-slab venting system will be installed
- East Satellite Building (presently unoccupied)
  - A retro-coat finish will be installed to encapsulate and seal the floor prior to occupancy.
- Wells Fargo Building
  - Active ventilation was installed in 2009 to establish negative pressure within the crawl space

Please call if you have any questions or comments, or if we can be of further assistance.

Sincerely,  
Environmental Resource Group, Inc.



Benjamin Wells  
President

Table 1  
Ground Water Quality Monitoring Plan and Rationale - to begin 2014  
Bentley Mall, Fairbanks, Alaska

<b>Well ID</b>	<b>Sampling Frequency</b>	<b>Rationale</b>
MW-1	Annual	Unstable concentrations/upgradient well
MW-2	Annual	Unstable concentrations
MW-3	Annual	Monitor deepest water-bearing zone
MW-4	Annual	Unstable concentrations
MW-5	Annual	Unstable concentrations
MW-6	Biennial	MW-5 is adjacent
MW-7	Biennial	Decreasing concentrations
MW-8	Abandon	Decreasing concentrations, damaged, to be abandoned
MW-9	Biennial	Unstable concentrations, requires well repair
MW-10	Annual	Unstable concentrations, requires well repair
MW-11	Biennial	Unstable concentrations, requires well repair
MW-12	Annual	Unstable concentrations
MW-13	Biennial	MW-12 is adjacent
SW-1	None	Non-detect in last two events
SW-2	Biennial	Unstable concentrations/nearest to source downgradient
SW-3	None	Non-detect in last two events
SW-4	Annual	Downgradient of source/upgradient of SW-5
SW-5	Annual	Unstable concentrations
SW-6	Biennial	SW-5 and SW-7 are adjacent
SW-7	Annual	Unstable concentrations
SW-8	Biennial	Unstable concentrations
SW-9	None	Non-detect in last three events
SW-10	Annual	Monitor 2nd deepest water-bearing zone
SW-11	None	Decreasing concentrations
SW-12	Biennial	Unstable low concentrations
SW-13	Biennial	Unstable low concentrations
SW-14	None	Non-detect in last three events
SW-15	None	Non-detect or J-flagged in last four events
SW-16	None	Non-detect in last three events