



**VIA OVERNIGHT MAIL**

January 21, 2014

Ms. Ellen Jackson  
Central Region Section Head, Remediation and State-Lead Division  
Maryland Department of the Environment - Oil Control Program  
1800 Washington Boulevard  
Suite 620  
Baltimore, Maryland 21230-1719

Subject: Case No. 91-2100-BA, Hess Gasoline Station No. 20204, Facility I.D. No. 545  
Ridgely Manor Park Contingency Plan  
Towson, Baltimore County, Maryland

Dear Ms. Jackson:

The groundwater collection system for the future Ridgely Manor Park was designed as a part of the Corrective Action Plan (CAP) and CAP Addendum approved by the Maryland Department of the Environment (MDE) in letters dated September 24 and November 22, 2013, respectively. A key function of the groundwater collection system is to contain residual gasoline downgradient of the Hess gasoline Station No. 20204 located at 1613 East Joppa Road in Towson, Baltimore County, Maryland. This contingency plan was prepared in response to the modifications of the CAP required by the CAP Addendum approval letter. The plan specifies actions that will be taken if future sampling shows that concentrations of gasoline constituents above specified standards are being discharged from the groundwater collection system into the storm sewer.

**Background**

The former homes constructed along Yakona Road are downgradient from the Hess gasoline Station. A French drain installed at the time of construction of the homes (circa early 1950's) was likely intended to prevent groundwater from entering the basements beneath the homes and to prevent seeps onto Yakona Road. The drain, located behind the former homes, discharged to the 24-inch diameter onsite storm sewer. Over time it is assumed that this French drain became plugged and/or damaged preventing it from operating as designed, which allowed groundwater to enter basements and seep onto Yakona Road. However, lesser amounts of groundwater continued to discharge to the storm sewer, which contained residual concentrations of gasoline.

Groundwater collected in sumps within the basements of the former residences was pumped to the roadway drainage and discharged through a curb inlet to the same storm sewer. The water within the former sumps also contained residual concentrations of gasoline, although at lower concentrations than the discharge from the French drain. The flow from both the French drain and the water discharged to the curb flowed into the same 24-inch storm sewer.

Based on sample data from the onsite monitoring wells provided by EMS Environmental, Inc. (EMS), it has been estimated that the concentrations of constituents of concern in the future groundwater collection system should be less than the following discharge standards:

- Benzene - 5 micrograms per liter (ug/L)
- Total Benzene, Toluene, Ethylbenzene, and Xylene (Total BTEX) - 100 ug/L
- Total Petroleum Hydrocarbons (TPH) - 15,000 ug/L

A subsurface vault will be installed in-line with the collection system. The vault will allow for the installation of treatment equipment if it is necessary based on the following contingency plan.

### **Contingency Plan**

The groundwater discharging from the collection system shall be monitored in accordance with the Corrective Action Plan and the State discharge permit. In the event one or more parameters exceed the listed standards the following actions shall be taken:

#### **Action 1. Evaluate the Potential Exceedance**

The data from the laboratory will be reviewed and the quality assurance/quality control (QA/QC) procedures shall be verified to ensure the data are representative of the flow from the system. If the data are considered valid, the specific compounds exceeding the listed criteria will be evaluated and compared to the monitoring well data for the Site.

A brief letter summarizing the evaluation shall be submitted to MDE within 1 calendar week of the verified exceedance. The letter will notify the MDE of the excursion, compare the data to the historical monitoring well data used for the design assumptions of the collection system, verify the actions that will be taken, and provide a schedule for the implementation of the actions.

#### **Action 2. Resample Discharge**

A. The second action shall be to verify the potential exceedance. The outfall sample shall be recollected to verify the concentrations no later than 15 business days after receipt and verification of the data suggesting an exceedance. MDE will be given notice of the date of the proposed resampling event in the Action 1 letter.

If the data from the resampling event meet the discharge criteria, a letter shall be provided to MDE within 1 calendar week of the receipt of the laboratory analytical report verifying that the initial sample represented an anomaly or a transient excursion.

B. If the data are no more than one order of magnitude over any of the discharge criteria, the outfall will be monitored monthly for a period of 6 months. This monitoring is intended to determine if the exceedances are intermittent or part of a greater trend of water quality. If half of the sample results (i.e., at least three) or more are below the discharge criteria, the data will be assessed to determine if there is an overall trend in constituent of concern concentrations and if that trend is stable, increasing or decreasing. If the trend shows that the concentrations are stable or decreasing after 6 months, the excursions do not likely warrant any further action. If the trend is increasing, Action 3 will be implemented.

If there are more than half (i.e., at least four) of the monthly samples over the discharge criteria, Action 3 will be implemented.

- C. A summary letter with the results of each subsequent sampling event shall be submitted to MDE within 1 calendar week of the receipt of the laboratory analytical reports. The letter will notify the MDE of the results of the resampling, verify the actions that will be taken, and provide a schedule for the next steps.

### **Action 3. Sampling Outfall, Monitoring Wells and Manholes**

If the second data set confirms that the exceedance is more than one order of magnitude above the criteria or the criteria are exceeded at least 4 out of 6 months of monthly monitoring, a round of samples will be collected from the outfall and each manhole in the system in an attempt to isolate the source of the exceedance. Data from the regular sampling of the monitoring well network will also be used for this Action. MDE will be given 5 calendar days' notice of the date of the proposed sampling event. These samples will be collected no later than 30 calendar days after receipt of the resample data, or the verification that the criteria was exceeded during the 6 month monitoring event associated with Action 2. The data to be collected include:

- Estimated flow at each manhole
- Field parameters – water color, water odor, temperature, pH, dissolved oxygen (DO), specific conductance, turbidity, and oxidation/reduction potential
- Benzene, BTEX, and TPH

A brief letter of the sampling and evaluation shall be submitted to MDE within 2 calendar weeks of receipt of the data from the laboratory. The letter will notify the MDE of the results of the sampling, provide a figure that includes the locations of the constituents in each sample (manholes and monitoring wells) and provide a schedule for the alternative analysis as part of Action 4.

### **Action 4. Alternatives Analysis**

An analysis of the sources and concentrations of the constituents exceeding the applicable discharge criteria listed and evaluate the field parameters collected from each sample location will be performed. The analysis shall include:

- A summary of all data collected from the system;
- Trend analyses showing the changes (if any) in concentration across the data collection period;
- An analysis of the source(s) of the concentrations causing the exceedance;
- An analysis of the mass and concentrations in excess of the applicable discharge standards contrasted to the initial design criteria; and
- An alternatives evaluation of the possible remedial available and implementable for reduction of the concentrations in the discharge (see Action 5).

The alternatives analysis will be submitted to MDE within 60 calendar days of the receipt of laboratory analytical reports of the final data set from the outfall, monitoring wells, and manholes along the groundwater collection system.

### **Action 5. Groundwater Treatment Actions**

WSP designed the system to accelerate the removal of residual gasoline constituents from the groundwater system below Ridgely Manor Park. The data available from EMS have been analyzed and indicate that the discharge criteria should not be exceeded. However, the system was designed to allow implementation of groundwater treatment (i.e., installation of a

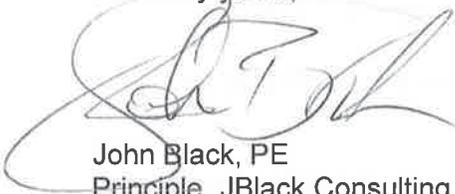
subsurface vault), without significant disruption to the park.. The technologies that will be evaluated in the analysis include, but are not limited to:

- A. Weir Plates Installed within Manhole(s) – This alternative will be used for relatively low concentrations close to the discharge standards. The weir plates cause simple aeration within the system, which may be sufficient to lower concentrations. The system has sufficient grade to allow installation of several 12-inch high, v-notch weir plates that will provide a vertical drop and aeration within the manholes.
- B. Bioaugmentation Socks Installed in Manhole(s) – The introduction of additional nutrients and oxygen along the system should accelerate the breakdown of the organic compounds before they reach the outfall.
- C. Air Sparge in Manholes – The introduction of diffusers in the manholes prior to the discharge will allow transformation of the constituents from the liquid to the vapor phase and will accelerate breakdown.
- D. Bioaugmentation – Depending on the sources and concentrations of constituents of concern in the collection system, it may be appropriate to conduct in-situ bioremediation. This would likely consist of bench-scale, field-scale, and full-scale treatment if required. Treatment would likely be implemented using direct push technology to introduce the selected amendments into the groundwater.
- E. Granular Activated Carbon (GAC) Treatment – The design includes a treatment system vault, piping and electrical conduit sized to allow installation of a series of GAC units to filter and treat the flow in the system.

A detailed analysis of the available technologies will be conducted to determine the most feasible alternative available to meet the discharge criteria (Action 4). The technologies will be evaluated against the seven risk factors included in the CAP and compared on the basis of the time required to implement, time required to achieve compliance, and the long-term effect on the site conditions. Since several of the potential remedies require time sensitive analyses, the selected treatment will be implemented within 120 calendar days after MDE approval of the selected remedy.

Please feel free to contact us with any questions you may have regarding the contingency plan for the potential treatment of the discharge from the Ridgely Manor Park groundwater collection system.

Sincerely yours,



John Black, PE  
Principle, JBlack Consulting, LLC

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Keith E. Green  
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cc: Ms. Jenny Herman, MDE  
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