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Date
April 17, 2017

Mr. John Durnin, P.E.
Environmental Engineer
New York State Department of
Environmental Conservation
(NYSDEC)
Division of Environmental
Remediation, Remedial Bureau B,
12th Floor
625 Broadway,
Albany NY 12233-7016

RE: Former Ozone Industries, Inc. Site
Site No. 2-41-033, Ozone Park, Queens, NY (site)
Groundwater Monitoring Opinion, Vapor Intrusion Assessment Plan, & Remedial Systems Rebound Testing
AECOM Project Number 60527976

Dear John,

On behalf of Endzone, Inc., AECOM is providing this letter providing site information and work plans as a result of a January 24, 2017 conference call with NYSDEC concerning the site, which was geared towards determining the path to site closure. Included herein is a groundwater evaluation opinion concerning remaining residual groundwater levels at the site, a vapor intrusion (VI) assessment plan, and a plan to monitor the site during system shut down and restart that will be required as part of the VI assessment work. Each is presented below in Sections 1.0 through 3.0.

Some of the proposed work is tentatively scheduled for May 2017, so approval from NYSDEC is requested for this month if possible.

1.0 Groundwater Evaluation Opinion

The discussion in the January 24, 2017 conference call included evaluating residual groundwater concentrations remaining above standards. In the call, NYSDEC requested that AECOM evaluate the current program of Monitored Natural Attenuation (MNA) and consider possible additional remedies to potentially address groundwater levels above standards.

Background and Proposed Remedy

The Remedial Investigation (RI) report (2009) for the site evaluated approximately 265 off-site grab and monitoring well groundwater samples collected between 1999 and 2006. Based upon the extensive data collected at the time, the Remedial Action Objective for the site groundwater is to "decrease dissolved-phase contaminants of concern (COC) concentrations attributed to Endzone, Inc. to below Water Quality Standards (WQS)." Groundwater monitoring activities to assess natural attenuation were proposed as the groundwater remedy (MNA) for the site until residual groundwater concentrations are found to be consistently below NYSDEC standards or have become asymptotic at an acceptable level over an extended period. As noted next, groundwater sampling at the site resumed in 2016 after soil remediation

(excavation and off-site removal) and construction of the remedial system (Soil Vapor Extraction [SVE] and Sub-slab Depressurization [SSD] remedial systems) was completed in the Bays (site).

2016 – 2017 Groundwater Sampling

As noted in the Interim Site Management Plan (July 2016) for the site, quarterly groundwater sampling is to be conducted for at least 2 years, until approval from NYSDEC to modify or end the monitoring is obtained. The remedial system at the site began operation in April 2016, and groundwater sampling rounds were conducted in May, August and December 2016, and February 2017. The next or fifth sampling round is scheduled for May 2017. The sampling includes a network of seven wells; upgradient, adjacent to, and downgradient of the site (Bays). The samples are analyzed for Volatile Organic Compounds (VOCs) and select MNA parameters.

The results of the groundwater monitoring have been provided to NYSDEC in three Quarterly Progress Reports that summarize the results of the Operation and Maintenance (O&M) of the remedial systems, the last report was submitted in February 2017.

Preliminary Evaluation of Groundwater Sampling Results and Feasibility of Additional Groundwater Remedy

As noted, the results of groundwater sampling have been provided to NYSDEC in progress reports in data tables that summarize results for each well from the first sample round (e.g., 2005) to present. A few of the current findings include:

- The COC concentrations (e.g., Trichloroethene [TCE]) attributed to the site appear to be stable or decreasing over time;

- There is evidence that MNA is working; and

- Levels Tetrachloroethene (PCE) in samples from four wells (MW-201S, MW-201D, PZ-09 and PZ-10) have increased from 2005 – 2006 levels, and in most samples are now above the groundwater quality standard of 5 micrograms per liter (ug/l). The range of levels detected in 2016 – 2017 include: 39 – 71 ug/l (MW-201S); 4.9 – 67 ug/l (MW-201D); 100 – 270 ug/l (PZ-09); and 24 – 68 ug/l (PZ-10).

AECOM currently does not believe that the PCE is from the site, due to the following:

- Concentrations of PCE in the numerous RI groundwater samples (grab and well samples) were rarely detected and never above the 5 ug/l standard in the 2005 – 2006 samples, except in samples from well MW-201D (ranging from 18 to 28 ug/l);

- Post-excavation soil sampling in 2013 at the site (Bays) consisting of 50 samples analyzed for VOCs, only detected PCE in 5 samples above the most stringent standard of 1.3 milligrams per kilogram (mg/kg) (unrestricted use soil cleanup objective), including levels of 2.3 mg/kg (two samples), 3.3 mg/kg, 4 mg/kg and 12 mg/kg.

- Pre-excavation soil sampling as part of the RI from borings beneath the Bays (8 – 15) in 2005 and 2006 did not detect PCE, or only at low levels (the highest concentration was 0.82 mg/kg).

- The current remedial operation is not “producing” PCE levels.

In regard to possible additional groundwater remediation using existing wells, AECOM does not currently believe that it is feasible, due to the following:

- The network of existing monitoring wells in the site vicinity is limited in regard to possible injections and the areal extent of groundwater impacts;

- Even single well injections would require extensive feasibility studies to determine the correct formula or type of material to inject, and possible additional wells to monitor;

- As noted above, the site COCs in groundwater appear to be stable or decreasing, and there is evidence that MNA is working for the site COCs; and

- The recent presence of PCE in groundwater near the site (Bays) possibly from an off-site source confounds the evaluation of groundwater level trends (i.e., PCE can degrade to TCE and the source is currently unknown), and the need and / or objective of further groundwater remediation.

Recommendation

Based upon the information presented herein, AECOM has the following request:

- Given that the planned May 2017 sampling round will be the fifth round, AECOM requests from NYSDEC that the quarterly monitoring program be altered to once or twice per year during system operation and shortly thereafter. A lot of recent data has been collected over a short period of time, and when looking at groundwater concentration trends over years, additional quarterly sampling may not provide much value. In addition, with the presence of PCE from a possible off-site source, additional quarterly data may not be very useful in regard to evaluating site COCs.

2.0 Vapor Intrusion Evaluation Work Plan

AECOM is submitting this VI evaluation work plan as discussed in the conference call on January 24, 2017, and is in compliance with the site July 2016 Interim Site Management Plan (ISMP) (Section 3.1.2). As noted in the ISMP, an off-site soil vapor sampling to assess potential VI near the adjacent structures is to be implemented after the SVE and SSD systems have been operating and their effectiveness has been documented. And that an off-site soil vapor sampling plan would be submitted for approval, which is contained herein.

The purpose of the work is to assess VI conditions under conditions of no remedial systems operating. Therefore, in addition to off-site work, this plan includes the first round of soil gas and indoor or ambient air sampling within the Bays to be performed while the remedial systems are off as discussed below in Section 3.0.

Previous Site-Related Soil VI Work

The RI for the site included soil vapor samples collected from beneath the site and off-site in 2005 and 2006. All samples, analyzed for VOCs, were collected between the depths of 4 and 8 feet below ground surface (bgs). Soil vapor sampling was also conducted in the vicinity of the site before the RI began, as early as 2002. The analytical results of TCE and *cis*-1,2-Dichloroethene (cis-1,2 DCE) in soil vapor for all

samples from 2002 to 2006 are presented in attached Figure 8 which was included in the ISMP. The results were used to delineate the source area and evaluate the potential for exposures via soil vapor intrusion. A concerted effort by Endzone, Inc., NYSDEC and the New York State Department of Health (NYSDOH) was made to obtain off-site indoor air and sub-slab vapor data but access was not been granted by property owners.

The 2006 on-site soil vapor sample analyses found sub-slab TCE contaminant levels in all eight Bays, as high as 675,000 ug/m3 (Bay 8). The 2006 offsite soil vapor samples were collected in the sidewalks outside the Bays and covered an area from 101st Avenue to below 103rd Avenue. The TCE soil vapor concentrations near 101st Avenue ranged from 252 ug/m3 to 5,960 ug/m3. South of the site, Bay 24 and Bay 28 were sampled (near 103rd Avenue). Bay 24 had TCE at 94,900 ug/m3 but Bay 28 was non-detect. Another four locations were sampled for soil vapor on 103rd Avenue and south toward Liberty Avenue and the all the 2006 results for TCE and cis-1,2 DCE were non-detect.

VI Evaluation Work Plan – 2017

It is expected that the remediation of shallow soils under the site (Bays 8 – 15) completed in 2013 and operation of the SVE and SSD systems have resulted in lower soil vapor levels at the site and likely in its immediate vicinity. The proposed sampling will occur after the SVE and SSD systems have been off for approximately 20 to 30 days, or when rebound has stopped occurring as noted in Section 3.0 below. To collect updated VI data at the site and immediate vicinity, AECOM proposes the following:

1. Collect five soil gas samples adjacent to the site, corresponding with previous sample locations from 2005 – 2006: LOC-24 through LOC-28 (three on 99th Street and two on 100th street);

2. Collect one upgradient soil gas sample (corresponding with LOC-22 sample location on 100th Street) and one downgradient soil gas sample on 99th Street, corresponding with previous sample location LOC-33.

3. Collect four soil gas samples from beneath the Bays.

4. On the same days that soil gas samples are collected in the Bays, collect indoor (ambient) air samples from each Bay, and up to two samples outside of the Bays (background).

5. Samples will be collected during one round with SUMMA canisters, and analyzed for select VOCs including TCE, tetrachloroethene (PCE), cis-1,2-DCE, trans-1,2-Dichloroethene, and Vinyl Chloride by EPA Method TO-15.

6. Each soil gas point (outside the Bays) will be advanced to approximately 4 and 8 feet bgs using a direct push-probe system (Geoprobe™). Each point will be fitted with a flush mounted curb box for subsequent sample rounds. Prior to the installation of the soil gas points, AECOM's subcontractor will communicate with "Call before You Dig New York" to get the appropriate utility clearance, in addition AECOM will clear each location with an air knife and ground penetrating radar (GPR) equipment. Sampling will be conducted 2 – 5 days after the sample point installations.

7. The four samples from the Bays would be collected from the existing vapor monitoring points. There are two vapor monitoring points in each Bay, so the sampling will consist of utilizing points near 99th Street in Bays 9 and 13, and points near 100th Street in Bays 11 and 15.

8. The indoor or ambient air samples will be collected over a period of 8 hours.

9. As noted above, the sampling will occur after the SVE and SSD systems have been off for approximately 20 to 30 days, or when rebound has stopped occurring as noted in Section 3.0 below.

10. It is expected that the work would be conducted in May, 2017.

The results will be reported to NYSDEC and NYSDOH in one of the remedial system quarterly reports. Additional rounds of off-site sampling will be considered based upon the findings of this round. However, it is expected that additional ambient or indoor air samples (Bays) and soil gas sampling in the Bays will be collected during system shut downs and rebound testing, which will be proposed in a separate plan developed by AECOM.

3.0 Remedial Systems Rebound Testing (after shut down)

Because the remedial systems will be off approximately 20 to 30 days prior to completing the VI assessment work discussed above, the following plan is presented to monitor the system when off, during rebound (if any) and after system re-start:

1. The remedial systems and vapor monitoring points within the bays will be monitored as typically done during each O&M visit;

2. The systems will then be turned off with total VOC readings collected at each vapor monitoring point collected approximately 1 hour after shut down;

3. Rebound monitoring will consist of collecting total VOC readings at vapor monitoring points in Bays at approximately 7 and 14 days after shut down. Readings will be compared against initial readings prior to operation of the systems and to readings collected after initial shut down and will continue to be collected on a weekly basis as necessary until they are stable (roughly within 20% on two consecutive readings). This may extend the time the systems are off and the actual timing of the sampling related to the VI assessment.

4. At the end of rebound period and once the VI assessment work is completed, restart remedial systems similar to how the systems were restarted in November 2016 and reported in the January 2017 *System Restart and Analytical Air and Groundwater Sampling Results Memorandum*. Beginning with the SSD system, and once confirmed to be working properly, then the SVE system. This will include measuring the vacuum influence and the VOC concentrations at monitoring points in the Bays.

5. Collect air samples for laboratory VOC analyses immediately after the system is restarted and confirmed working, and the week following the restart, once the system had run uninterrupted for a week. Samples will be collected at the SVE influent and SSD influent (before carbon treatment).

6. Report the data and findings in the subsequent quarterly O&M report.

If you have any questions concerning this submittal, please do not hesitate to contact the undersigned.
Sincerely,

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cc. Ted Coyle; Endzone, Inc.