Dermody Consulting

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February 5, 2020

Mr. Jared Donaldson
New York State Department
of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7015

Re: **Soil Vapor Intrusion Work Plan**
Former Elka Chemical Corporation Property
340 West Hoffman Ave.
Lindenhurst, Suffolk County, New York
NYSDEC Project No. 152239

Dear Mr. Donaldson:

As per your request, Eastern Environmental Solutions, Inc./Dermody Consulting is providing this revised Soil Vapor Intrusion Work Plan related to the above-referenced property.

To determine if either soil or groundwater contamination emanating from past discharges at the Former Elka Chemical property (Elka) is creating soil vapor and impacting the indoor air at the site building or the downgradient Spark Elementary School (Spark) (formerly Kid Esteem School) that is located 550 feet south-southeast of the Elka property at 175 S. 11th St., Lindenhurst, a soil vapor intrusion investigation will be performed at each of these buildings. Spark is located within a one-story commercial unit that is approximately 60 by 100 feet in size. The investigations will be performed in accordance with the NYSDOH's "Guidance for Evaluating Soil Vapor Intrusion in the State of New York" (2006) as amended. The sampling will be performed during the heating season. Figure 1 shows the locations of the sub-slab soil vapor, indoor air, and outdoor air sample locations at the two properties.

Two sub-slab soil vapor samples will be obtained from beneath the concrete floor of the Elka building and three sub-slab soil vapor samples will be obtained at the Spark Elementary School. This will entail using a Hilti TE-1 rotary hammer drill (or similar) to create a half-inch-diameter drillhole in the floor at each of the locations (Spark is not likely to contain a basement due to the shallow water table, but this will be confirmed prior to drilling). The drilling will be performed to a depth of approximately two inches below the base of the concrete. A length of food grade polyethylene tubing will be placed to the base of the hole and Morie No. 1 sized gravel will be placed in the drillhole around

the tubing to two inches below grade. The drillhole will be sealed at the surface with hydrated bentonite. The tubing will be connected to Summa Canisters and the samples will be obtained over an eight-hour period using a flow restrictor. The sampling period will coincide with standard business hours (approximately 9am to 5pm).

A chemical inventory of the two buildings will also be performed that will include a separate Building Questionnaire and Product Inventory for each building.

Prior to obtaining the sub-slab soil vapor samples, a helium tracer test will be performed at each of the four locations. The purpose of the testing is to assure that there is an adequate seal segregating the sub-slab area from excessive atmospheric infiltration. An inverted 5-gallon plastic bucket will be placed over each sub-slab sample location and the sample tubing will be passed through the top of the bucket through a drilled hole and will be connected to a 6-liter Summa Canister. The sample tubing will contain a purging port valve. A canister of helium will be used to introduce helium using a length of tubing attached to the helium canister at one end, and into the side of the bucket (through a drilled hole) at the other end. In addition, a hole will be created on the opposite side of the bucket to discharge excess helium to prevent the helium from creating excessive pressure in the bucket. 120 cubic centimeters of air (approximately 1.5 tubing volumes) will be slowly purged with a graduated Teflon syringe from the tubing through the purging port. After the purging, a helium meter will be attached to the purging port to obtain helium readings. If the helium concentrations in the sub-slab area are below 10 percent, sampling will commence. If the helium concentrations are above 10 percent, the concrete will be re-sealed around the sample tubing and re-tested until the concentrations are below 10 percent.

In addition, indoor air samples will be co-located with each of the total of five sub-slab soil vapor sample locations for the two buildings. One outdoor air sample will be obtained for each building with Summa Canisters. The outdoor samples will be obtained from the locations shown on Figure 1, however, if there is a discernable wind location, the outdoor samples will be located upwind of the buildings. The intakes of each Summa Canister will be set at a height of approximately 3 to 4 feet above grade. The initial and final pressure of the Summa Canisters will be recorded in the field book. The eight sample canisters will be delivered to a New York State ELAP-approved laboratory for the analysis of VOCs by Method TO-15 with Selected Ion Monitoring to achieve the NYSDEC-required detection limits (dichloroethene [1,1-DCE]; trichloroethene [TCE]; cis-1,2 dichloroethene [cis-1,2 DCE]; carbon tetrachloride, and; vinyl chloride will require laboratory detection limits of 0.20 micrograms per cubic [mcg/m3] or less). In addition, all results will be provided in mcg/m3. When the sampling is complete, the sub-slab drillholes will be sealed with concrete.

As an additional component of the soil vapor intrusion investigation, two shallow groundwater samples will be obtained. The samples will be obtained with a hand auger decontaminated in accordance with NYSDEC DER-10 procedures. The depth to groundwater is expected to be 4 to 5 feet below grade (based on the Elka site depth to water of five feet and the site elevation at the Spark school which is the same or slightly

lower than at the Elka property). The hand boring at both locations (G-1 and G-2 as shown on Figure 1) will be advanced to a depth of one foot below the water table. A dedicated length of one-inch-diameter PVC pipe with 0.010-foot slotted screen will be installed to a depth of one foot below the water table. Dedicated polyethylene tubing will be placed down the PVC pipe to the water table. The tubing will be connected to a low-flow sampling pump and a groundwater sample will be obtained from both G-1 and G-2. The samples will be laboratory analyzed (by York Analytical Laboratories, Inc.) for volatile organic compounds (VOCs) by Method 8260 with ASP B deliverables.

The purpose of the groundwater sampling is to determine if there are VOCs associated with the Elka site present in the shallow groundwater in the vicinity of the Spark building. Previous off-Site investigations performed by the Suffolk County Department of Health Services (as previously provided to the NYSDEC) have demonstrated that the plume that is emanating from the Elka site is descending in the water column and may not be present at the water table surface at the location of the Spark building (which is 550 feet downgradient of the Elka site). If there is no contamination present at the water table in the area of the Spark building, there is no physical mechanism for off-gassing of VOCs to the vadose zone and, therefore, no ability for the groundwater to generate soil vapor in this area.

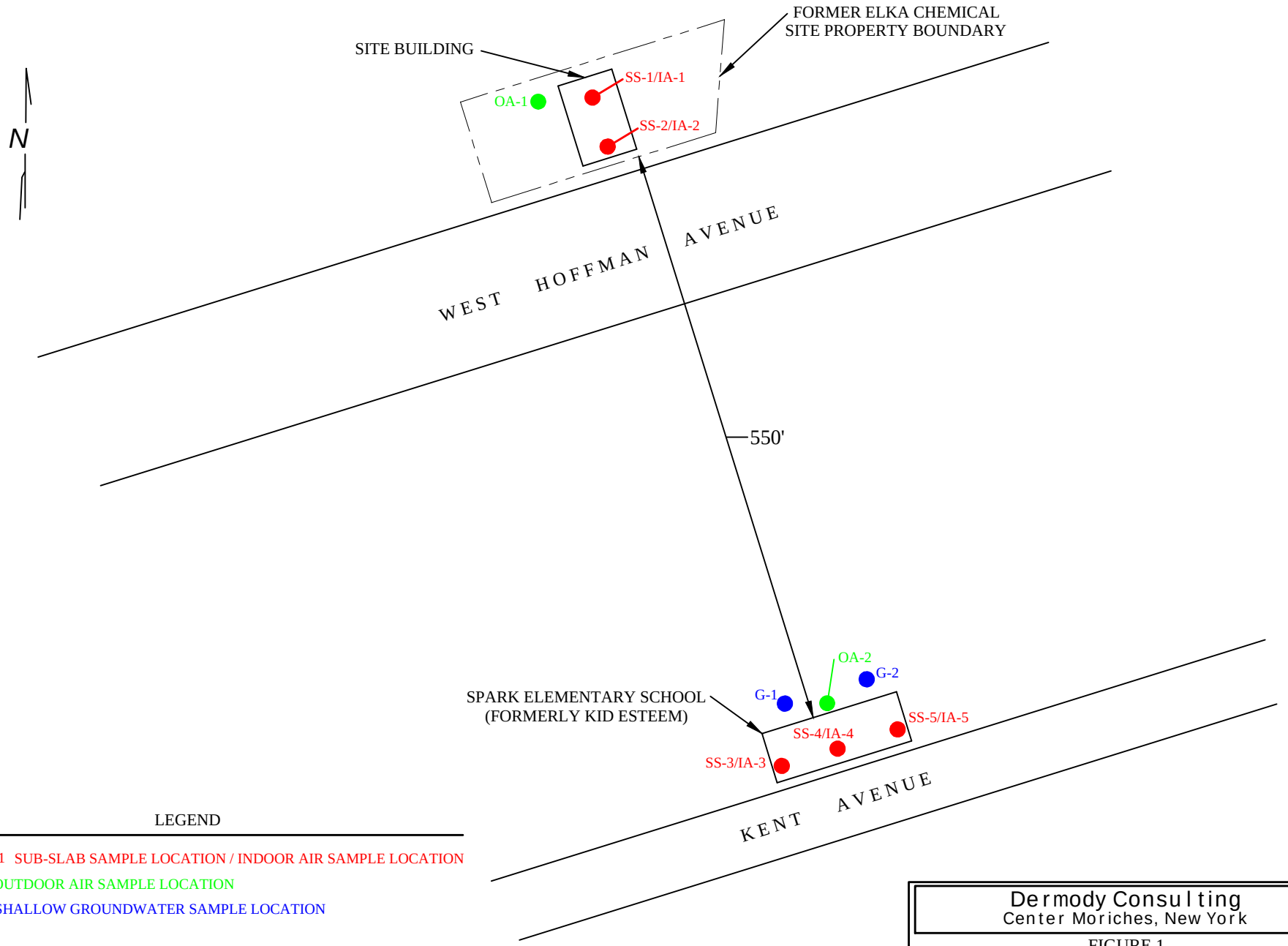
The results of the investigation will be provided in a report that includes sample procedures, laboratory analysis results, and an evaluation to determine if soil vapor intrusion is occurring and, if so, recommendations for further action, such as mitigation, will be provided. In addition, separate figures for each building will be provided that include the building layouts, locations of doorways, and other pertinent information. Photos of the interior of the buildings will also be provided. Also, the laboratory analytical results will be provided to NYSDEC within 48 hours of receipt along with the Building Questionnaire and Product Inventory.

Should you have any questions, please feel free to contact me.

Very truly yours,

Peter Dermody, C.P.G.
Principal Hydrogeologist

cc: James Mulvey
Barry Cohen, Esq.
Robert Corcoran
Renata Ockerby, NYSDOH
Charlotte Bethoney, NYSDOH



LEGEND

- SS-1/IA-1 SUB-SLAB SAMPLE LOCATION / INDOOR AIR SAMPLE LOCATION
- OA-1 OUTDOOR AIR SAMPLE LOCATION
- G-1 SHALLOW GROUNDWATER SAMPLE LOCATION

Dermody Consulting
Center Moriches, New York

FIGURE 1
SOIL VAPOR INTRUSION AND GROUNDWATER SAMPLING LOCATIONS
FORMER ELKA CHEMICAL SITE
340 WEST HOFFMAN AVENUE
LINDENHURST, NEW YORK