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*WORK PLAN FOR
ADDITIONAL REMEDIATION AT THE
FORMER CANTOR BROTHERS SITE
50 ENGINEERS LANE
FARMINGDALE, NEW YORK
NYSDEC SITE 152021*

Prepared by:

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Project: 97810

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Figure 1: Site Plan

**CANTOR BROTHERS INC. SITE
50 ENGINEERS LANE
FARMINGDALE, NEW YORK
NYSDEC SITE NO. 152021
ADDITIONAL WORK PLAN**

I. INTRODUCTION

This Work Plan is written to comply with the New York State Department of Environmental Conservation's request to perform additional remediation at the former Cantor Brothers site.

The Work Plan includes the following:

- (a) A description of the Scope of Work to excavate and remove contaminated soils near the former trash dumpster at the site;
- (b) A general description of the Scope of Work to modify, install, test, operate and maintain the existing soil vapor extraction (SVE) system at the site; and
- (c) A chronological description of the anticipated remedial activities, together with a schedule for the performance of these activities.

II. BACKGROUND

a. Site Description

The Cantor Bros. site is located at 50 Engineers Lane, Farmingdale, Suffolk County, New York and encompasses 3.2 acres. The Cantor Bros. site is a former chemical repackaging and paint product manufacturing facility and is located in a heavily industrial and commercial area of western Suffolk County. Surrounding businesses include small machine shops, warehouses, and transportation service companies. The site is bounded on the north by the Hygrade Metal Moulding Manufacturing Corp. (Hygrade) which is listed on the NYSDEC Inactive Hazardous Site Registry as Site No. 1-52-147. A site plan for the Cantor Brothers site is shown as Figure 1. The Hygrade site is currently undergoing an IRM cleanup under supervision of the NYSDEC. The Cantor site is bounded to the east by the Shorewood Packaging Corp. facility. The site is bounded directly to the south by Engineers Lane and continuation of the Shorewood property further south. Various commercial and small manufacturing properties are located west of the Cantor site.

EEA, Inc. performed a subsurface closure investigation during June 2000 and submitted a report on September 2000. The results indicated contamination in the areas of the existing SVE wells had been remediated. Additional contamination was discovered in areas of the facility which had not been previously investigated.

b. Hydrogeologic Setting

Regional Hydrogeology

Three major aquifers have been identified to exist beneath the site. These deposits together are approximately 1,200 feet thick in the vicinity of the site. Crystalline bedrock exist beneath the lowest aquifer. The lowest aquifer is the Lloyd aquifer which consists of unconsolidated sediments of the Cretaceous age. Depth to the Lloyd aquifer in the vicinity of the site is about 900 feet (P.W. Grosser, 1996). The Lloyd aquifer is separated from the overlying Magothy aquifer by approximately 175 feet of the Raritan clay. The Magothy aquifer is the primary water supply source for Long Island. The Magothy aquifer typically consists of fine to coarse sand with interbedded lenses and layers of light to dark clay and is approximately 600 feet thick. The site is directly underlain by the Upper Glacial aquifer. The water table at the site exists within the Upper Glacial aquifer at approximately 40 feet below grade. The Upper Glacial and Magothy aquifers are in direct hydraulic connection with only interspersed fine silt and clay layers separating the bottom of the Upper Glacial aquifer and the top of the Magothy aquifer.

c. Site Specific Hydrogeology

Site specific hydrogeologic information was obtained from the current and past subsurface investigations at the Cantor Bros. site and from information obtained during the subsurface investigations performed on the adjacent and hydraulically upgradient Hygrade site. Based on this information, the Cantor Bros. site is underlain by a medium brown fine to coarse sand, with fine to medium gravel. The approximate thickness of this Upper Glacial aquifer has been determined to be about 105 feet (P.W. Grosser, 1996). The water table typically exists at approximately 40 feet and therefore the upper Glacial aquifer has a saturated thickness of about 65 feet. Near the water table, the sediments become less sandy and the gravel is well rounded.

During the NYSDEC Phase II investigation, slug tests were performed on the four groundwater monitoring wells installed during the investigation. The average hydraulic conductivity in the Upper Glacial aquifer was reported to be 7.38×10^{-2} centimeters per second (cm/sec). Groundwater flow was inferred to flow to the southeast. The groundwater flow velocity for the Upper Glacial Aquifer is reported to be approximately 0.48 ft/day in the horizontal direction and 0.049 ft/day in the vertical direction (P.W. Grosser, 1996).

III. WORK PLAN ELEMENTS

1. Introduction and General Description of Soil Vapor Extraction System

In accordance with the Court Order, a soil vapor extraction system was installed within the former factory area. Two SVE wells were required in the former chemical processing area and one at the former trash dumpster.

The basic Soil Vapor Extraction System was designed that was capable of achieving a flow of 360 SCFM @ 6" Hg vacuum inlet. The Soil Vapor Extraction System was skid-mounted for ease in deployment and operation. The blower is a positive displacement, belt-driven unit with OSHA approved belt guards. The motor was sized for the required performance and was explosion proof. The SVE package included an appropriately sized vacuum relief valve, inlet filter/silencer, an air dilution valve, and a discharge muffler. A full compliment of approximately sized gauges was installed to adequately measure vacuum, pressure, and temperature. A 55-gallon Air/Water Separator was installed on the inlet line immediately before the blower to knock out any liquid entrained in the vapor stream. The separator was equipped with a Liquid Level Sight Tube, a manual drain, and a High Liquid Level Shutdown that will automatically shutdown the SVE Blower if a high water level develops in the separator. This will prevent water from entering into the positive displacement blower and causing damage to that unit. The controls for the SVE Package are NEMA 7 and mounted on the skid with the blower and separator. The final design P&ID was included with the Operations and Maintenance Manual, along with a Skid Layout Drawing, and a complete wiring schematic of the controls. EEA will continue to use the same SVE blower, close the three existing wells and install two new SVE wells to address the newly discovered area of contamination.

Modification of the SVE system will include:

The soil vapor extraction system (SVE) will be reconfigured. The three existing extraction wells will be disconnected from the system. Each well will be backfilled with a concrete mix. Two new wells will be installed in the vicinity of B-7 and B-9, as shown in Figure 1 and EEA's Subsurface Investigation Report dated September 2000.

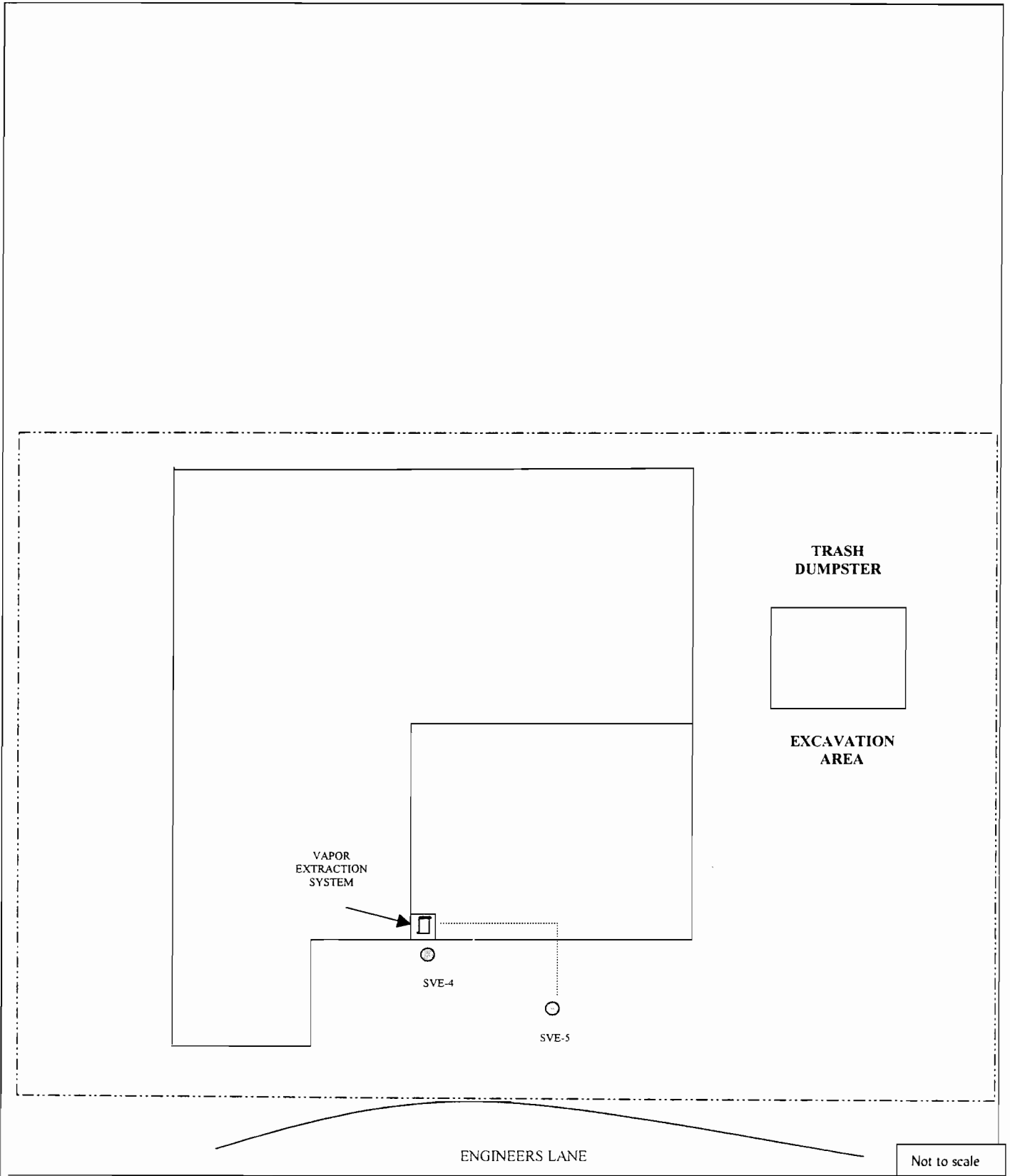
The specifications for the wells and description of the components are the same as presented in the original Design Report (EEA's Design Report dated March 1998). However, the well screen will be limited to a five-foot section extending from about six inches above the water table.

The extraction wells will be installed flush with the surface. The ducting to the SVE system located in the building will be trenched so as to be below the surface. The ducting from the two new wells will be connected to the existing system.

The system will be balanced by adjusting the valves that control the flow from each well. The valves will be located at the inlet to the system. In addition, the system has a clean air inlet that can be adjusted to control the additional air that will be needed to balance and optimize the system.

The system will be balanced by adjusting the valves that control each individual well and at the system manifold. In addition, the system has a clean air inlet that can also be adjusted.

After the system is balanced, the system will operate for 24 hours prior to initial testing of the system. The VOC vapor concentration will be measured by utilizing low flow sampling pumps. The air is drawn onto a charcoal sorbent tube at a rate of 40 to 50 ml/mm. This media has been



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Property Located at:
 Cantor Brothers Site
 50 Engineers Lane
 Farmingdale, New York

SAMPLE COLLECTION LOCATIONS

Figure 1

successfully employed for the last eighteen months at the site. The details of the testing protocol are presented in the original Design Report (Page 6).

2. Dumpster Soil Remediation - Scope of Work

The following procedure will be completed in the area of the former trash dumpster. Weather conditions can also alter the schedule of soil remediation. Predictions of significant rain events will postpone all soil removal until dry weather is expected.

- EEA, Inc. will notify the NYSDEC of the anticipated remedial cleanup as per NYSDEC regulations. EEA, Inc. will coordinate all work with the NYSDEC.
- Remove the asphalt in the area of the trash dumpster (approximately 20 x 40 feet). Excavate the soils using a backhoe excavator. The soil removal will continue to a depth of approximately four feet. The excavated soils will be placed in a bermed dewatering containment area made with plastic sheeting.
- The excavation created to remove the soil will then be backfilled to the original surface grade using clean fill sand.
- The contaminated soils will then be transported by a NYSDEC licensed transporter to a NYSDEC approved facility for disposal or recycling. All trucks will be weighed at a DOT certified weigh station, and the weight ticket will be included with each manifest.
- The attached site plan shows egress and exit areas, equipment parking areas, and material (soils) staging areas.
- EEA, Inc. will prepare a closure report for submittal to the NYSDEC and other required regulatory parties.
- The tentative work schedule and work sequence will proceed as follows:

Day 1

- Mobilize equipment: backhoe, excavator, loader dump truck, to site.
- Construct lay down area for excavated materials to drain - berm or dike as necessary.
- Remove asphalt and stockpile on site.
- Excavate soils and place in dump truck for transfer to staging area.

- Backfill excavation with sandy gravel fill at the end of each day.

Day 1 through Completion

- Cover excavated material at the end of each workday. Cordon off open excavations.

At Completion of Excavation

- At the completion of excavation, collect samples for disposal characteristics and TCLP analysis and submit to ELAP-certified laboratory for two-week turnaround time.
- Upon receipt of laboratory analysis, determine appropriate disposal destination and arrange for off-site transport of stockpiled materials. Notify all truck drivers of requirement for DOT-certified scale tickets. It is likely that the soils will be transported to a NYSDEC approved Beneficial Use Determination (BUD) facility.
- Re-grade excavations, compact soils and patch asphalt to pre-existing conditions when weather permits.

3. Abandonment of Existing Soil Vapor Extraction Wells - Scope of Work

The following procedure will be followed in the abandonment of the existing three SVE wells. These wells will be sealed in accordance with NYSDEC regulations in the following manner:

- The entire casing, including the riser pipe and annular space between the casing, shall be filled with a cement/bentonite grout. The cement/bentonite grout shall not contain more than six gallons of water per bag. The grout shall be placed under pressure through pipes to the bottom of the space to be filled in order to prevent dilution of grout. The placing of the grout shall be continuous until grout appears at the top of the casing, at which time, the grout pipe may be withdrawn.

4. Chronological Description of Activities

The following project activity schedule is proposed to implement all phases of this remedial action in a timely fashion.

Immediately after NYSDEC approval of the Work Plan:

- A modification of the design plan for the Soil Vapor Extraction System Plan will be submitted for NYSDEC review within thirty days, if required.

- Excavation of the contaminated soils in the former trash dumpster area will be completed within three weeks of NYSDEC approval of the Work Plan (weather permitting).
- Abandonment of the three PVC SVE wells will be completed within three weeks of approval by NYSDEC of the Work Plan (weather permitting).