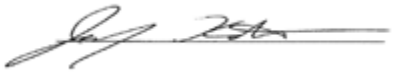
SITE CHARACTERIZATION REPORT

Former Elka Chemical Company
340 West Hoffman Avenue
Lindenhurst, New York

Site Code # 152239
WA # D006130-29

PREPARED BY:

HRP ASSOCIATES, INC.
dBA HRP Engineering P.C.
1 FAIRCHILD SQUARE SUITE 110
CLIFTON PARK, NY 12065



Jennifer Kotch
Senior Project Geologist

Nancy Garry, PE
Project Manager

Submitted: June 2015

HRP Associates, Inc.

SITE CHARACTERIZATION REPORT

Former Elka Chemical Company
340 West Hoffman Avenue
Lindenhurst, New York, 11757

TABLE OF CONTENTS

TABLE OF CONTENTS, continued

FIGURES

LIST OF TABLES

LIST OF APPENDICES

Data on the CD

Meteorology and Photo ionic Detector Tables
QA/QC Evaluation Results (DUSRs) DUSR report

Site Characterization Report

For

Former Elka Chemical Company
340 West Hoffman Avenue
Lindenhurst, New York, 11757
(Site Code # 152239)
(WA # D006130-29)

CERTIFICATION

I, Nancy Garry, PE, certify that I am currently a Qualified Environmental Professional as defined at 6 Part NYCRR Part 375 and that this report, Site Characterization Report, was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER -10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Nancy Garry, PE

Project Manager

SITE CHARACTERIZATION REPORT

Former Elka Chemical Company
340 West Hoffman Avenue
Lindenhurst, New York, 11757

1.0 INTRODUCTION

This report presents the results of the Site Characterization (SC) completed by HRP Associates dBA HRP Engineering, P.C. (HRP), during the period of July 2013 through April 2015 in connection with the Former Elka Chemical Company (Elka) Site at 340 West Hoffman Avenue in the City of Lindenhurst, Suffolk County, New York (Site # 152239), referred to herein as the Site (See Figure 1). The on-site and off-site SC was completed for the New York State Department of Environmental Conservation (NYSDEC).

Interpretations presented within this report are based primarily on the investigations described herein. Previous limited investigations completed by others on-site and Elka and off-site at adjacent properties have been reviewed by HRP. Applicable data from these reports have been included in sections of this report.

1.1 PURPOSE

The purpose of this Engineering Services Standby Contract Work Assignment (WA) (WA number D600130-29) was to conduct a SC to investigate on-site and off-site media potentially impacted by past operations. The primary objectives of the SC's Scope of Work (SOW) were to:

- Perform such necessary field investigations to determine the extent to which the release or threat of release poses a threat to human health and/or the environment and the types of response actions that should be considered;

- Determine the extent that historical Site activities have impacted subsurface soil, surface soil, soil vapor, and groundwater at the Site and to determine the extent, if any, of the remediation that would be required to address the impacted media;

- Evaluate subsurface soil, surface soil, groundwater, and soil vapor quality to assess if chemical concerns exist relative to NYSDEC standards and guidelines.

- Obtain geologic and hydrogeologic data from the Site.

- Verify previous on-site data generated by other consultants. The specific information that was verified includes: soil types (or fill) and analytical results from one on-site soil boring. Data gaps were identified from existing data and were addressed by the sampling locations included in the SC;

- Evaluate on-site and off-site soil, groundwater, and soil vapor quality to assess if chemical concerns exist relative to the NYSDEC and New York State Department of Health (NYSDOH) standards and guidance's. Previous investigations off-site have revealed groundwater and soil contamination above NYSDEC and NYSDOH standards and guidance values;

- Compile data generated by previous investigations and produce a base map of the Site and adjacent area with previous sampling results;

- Delineate the vertical and horizontal extent of contaminated media (e.g. soil, groundwater, and soil vapor); and

- Determine remedial options for the contamination found in the sampling media on-site and off-site.

1.2 BACKGROUND

1.2.1 Site Description

The Site is located on the north side of West Hoffman Avenue in the Town of Lindenhurst (Babylon), Suffolk County, New York. The Site is approximately 0.25 acres in size and is improved by an approximately 4,000-square foot, slab on grade, one-story building. The Site is zoned Commercial/Industrial, and is identified with section/lot/block number 103.9-1-81. The Site was used as a chemical re-packaging facility from the 1920's until its abandonment in 1985. From approximately 1985 to 2013, the facility was used as a Volvo dealership (Roy's Auto Repair). From approximately October 2013, the on-site building was utilized as a gymnasium. Since approximately October 2014 the building is being used as a church. The Site and surrounding area is generally flat and featureless, and is located approximately 20 feet above mean sea level (MSL). At present, the areas surrounding the property include:

North: Bruce Transformer and Motor Co., then Akron Street
West: unimproved lot is currently being used for vehicle storage, then Knight's Auto Service
South: Long Island Rail Road (MTA), then West Hoffman Avenue
East: New York Avenue, then Bullet Proof Transmissions

1.2.2 Site History

Operations at the Site have resulted in the on-site contamination of soil and groundwater with volatile organic compounds (VOCs). Based on our review of historical data potential contaminants primarily include: benzene, ethylbenzene, toluene, and total xylenes (BTEX), as well as iron, at levels exceeding NYSDEC standards and guidance.

In July 2001, a consultant performed a property assessment at a property located approximately 200-feet south of the Site. The property assessment was returned In July 2002, Suffolk County reportedly installed two monitoring wells to the north side of Akron Street and 100-feet west of New York Avenue, both reportedly upgradient on the Site. Groundwater samples analyzed from 5-10' bgs and 20-25' bgs showed no xylene in the groundwater. According to Suffolk County Department of Health narrative describing the history of NYSDEC Spill # 06-50126, which is located at 340 West Hoffman Avenue, Lindenhurst, NY, on the Site "hundreds of solvents drums and a xylene tank were stored on the property".

An on-site subsurface investigation was completed by Eastern Environmental Solutions, Inc. (Eastern) of Manorville, NY for the Site owner occurred in October 2012 to determine the presence, if any, of VOCs and target analyte list (TAL) metals in subsurface soils. Fourteen (14) soil borings were proposed to be installed to varying depths at the subject Site to investigate the subsurface, however, analytical results and field notes provided data for one boring (SB-2 8-10' below ground surface [bgs]). Various requests sent to the Site owner as well as to Eastern to obtain additional information regarding the subsurface investigation were not successful.

An off-site subsurface investigation was completed by Impact Environmental (Impact) of Kings Park, NY for the NYSDEC occurred in December 2000 and January through February 2001 to investigate NYSDEC Spill # 06-50126 , located north of the Site, and to determine the presence, if any, of VOCs and metals. Additional subsurface and groundwater sampling occurred in November 2001 and April 2002 based on the contamination levels noted in the analytical results from the previous sampling events. In June 2011, the Suffolk County Department of Health Services installed twelve (12) soil borings, which were found to be impacted by xylenes, trimethylbenzene, isopropylbenzene and n-propylbenzene.

An off-site subsurface investigation of the Site completed by Environmental Assessment and Remediation's (EAR) of Patchogue, NY for the NYSDEC occurred in January and March 2012 to investigate NYSDEC Spill # 06-50126 and to determine the presence, if any, VOCs. Eleven (11) soil borings were proposed to be installed to varying depths

down gradient of the subject Site to investigate the subsurface soil and groundwater. In addition, one soil vapor monitoring point was installed for sample collection and analysis by EPA Method TO-15.

The laboratory results from the surface and subsurface soil samples collected during the Impact and EAR investigations indicated that elevated levels of organic contaminants existed at the Site above Part 375 Unrestricted and NYSDEC TOGS 1.1.1 GW Standards levels (standard since revised). Several of these organics, specifically total xylene, is readily attributed to gasoline. Soil vapor analysis indicated that the levels of organic compounds were not elevated.

1.2.2 Previous Investigations

A review of the Sanborn Fire Insurance Maps for the City of Lindenhurst for the years 1915, 1925, 1933, 1949, and 1968 gives a history of the Site during those years. Below is a description of each Sanborn Fire Insurance Map depicting the Site.

1915 Sanborn Fire Insurance Map

According to the 1915 Sanborn Fire Insurance Map for the City of Lindenhurst, the Site is not fully depicted on the map. To the north of the subject site across 4th Street (Grant Avenue, currently Akron Street), the map depicts a two structures, labeled "Sheds", and two additional buildings not fully defined. Across Madison Street (currently New York Avenue) to the east is unimproved. Additional details listed as "no exposure" are not included on the map due to the limitations of the available map sheets within the collection.

1925 Sanborn Fire Insurance Map

According to the 1925 Sanborn Fire Insurance Map for the City of Lindenhurst, the Site is not fully shown but does not appear to have been improved. The Site to the north of 4th Street (Akron Street) is identified as Suffolk Plating Works. Across Thusnelda Avenue (currently New York Avenue) to the east is unimproved. Additional details are not included on the map.

1933 Sanborn Fire Insurance Map

According to the 1933 Sanborn Fire Insurance Map for the City of Lindenhurst, the Site is not depicted on the Sanborn Fire Insurance Map and is listed as "no exposure". To the north of Akron Street is an unidentified building. To the south of the Site is West Hoffman Avenue, then Long Island Rail Road, follow by the Imperial Machine and Foundry Corp. (admittance refused), to the east and the west is

not depicted on the Sanborn Fire Insurance Map the areas are listed as “no exposure”.

1949 Sanborn Fire Insurance Map

According to the 1949 Sanborn Fire Insurance Map for the City of Lindenhurst, the Site is improved with a hollow concrete brick building constructed of a concrete floor, steel beams, and plastered walls. Attached to the west of the main building is a concrete room. The auto repair facility on the west side of building and the unidentified building to the north of Akron Street do not exist, but the Imperial Machine and Foundry Corp. (admittance refused) is shown in the same way as on the 1933 Sanborn Fire Insurance Map.

1968 Sanborn Fire Insurance Map

According to the 1968 Sanborn Fire Insurance Map for the City of Lindenhurst, the building located at the Site has not changed. Included to the west of but not attached to the main building is a small out building adjacent to West Hoffman Avenue. The unidentified building to the west of the Site is shown and is constructed with hollow concrete blocks, concrete floors, and steel posts and beams. The areas to the east and northwest of the Site are not depicted on the 1968 Sanborn Fire Insurance Map. Russell Corp. Reinforced Plastics machine shop and a loft are depicted to the south of the Site.

1915, 1925, 1933, 1949, and 1968 Sanborn Fire Insurance Maps

According to the 1915 through 1968 Sanborn Fire Insurance Maps for the City of Lindenhurst, the Site is improved with concrete building that houses manufactures ink preservative and point products, and an additional room exists to the west side of the building. To the north and east are “no exposure areas” not depicted on the Sanborn Fire Insurance Map, to the south is West Hoffman Street, the Long Island Rail Road followed by miscellaneous businesses. To the west is an unidentified structure.

1.3 REPORT ORGANIZATION

The text of this report is divided into five (5) sections. References tables, figures and appendices immediately following the text. A brief summary of is provided below.

Section 2.0 Study Area Investigation: Summarizes field activities associated with the remedial investigation, including surficial and subsurface soil investigations, groundwater investigations, soil vapor investigation, and geological investigations. Technical correspondence documenting field activities are also summarized in this section.

Section 3.0 Physical Characteristics of the Study Area: Includes results of field activities to determine physical characteristics, including surface features, geology, soils, hydrogeology, demography and land use.

Section 4.0 Nature and Extent of Contamination: Presents the analytical results of SC. The results are for the following media: subsurface soils, surface soils, soil vapor, and groundwater.

Section 5.0 Conclusions: Summarizes the results and findings of the SC.

2.0 STUDY AREA INVESTIGATIONS

Study area investigations were completed to evaluate the surface and subsurface environmental conditions and to provide data pertaining to the degree and extent of contamination on-site and off-site. A description of the study area investigations conducted during this SC is presented in this section.

This Site Characterization (SC) report was completed in accordance with the scope of work described in the letter issued to HRP from the NYSDEC, "Work Assignment Issuance/Notice to Proceed, NYSDEC Site Code: 152239," dated August 13, 2013. The scope of work for the Site was prepared by the NYSDEC, Division of Environmental Remediation. Deviations, based on field conditions are noted in Section 2.1.7. The investigation tasks described in the field activities plan utilized the NYSDEC's DER-10 (DER-10), Technical Guidance for Site Investigation and Remediation, dated May 2010 for guidance. As required by the NYSDEC, the scope of work incorporated the following Site specific components:

- Site Specific Scope of Work Summary (SOWS);
- Quality Assurance Project Plan (QAPP);
- Health and Safety Plan (HASP); and
- Community Air Monitoring Plan (CAMP).

Field work for this SC was conducted in several mobilizations to the Site and included the following tasks:

- Initial Site inspection (August 2013);
- Ground Penetrating Radar (GPR) (December 6, 2013);
- Access from Site owner given (January 14, 2014)
- Advancement of soil borings and installation of monitoring wells using a direct push rig and the collection and submittal for analysis of select soil and grab groundwater samples (March 31 through April 14, 2014 and February 17, 2015);
- Development of groundwater monitoring wells (April 14, 2014);
- Global Positioning System (GPS) survey of groundwater monitoring wells (April 23, 2014);
- Sampling of groundwater monitoring wells and submittal for analysis (April 23, 2014);
- Relative groundwater monitoring well elevation survey (May 14, 2014); and
- Soil Vapor (SV) investigation (February 18-19, 2015).

2.1 Field Activities Associated with the SC

To determine the degree and extent of possible on-site and off-site contaminants from the Former Elka Chemical Company Site, HRP advanced soil borings and installed permanent groundwater piezometer wells as presented in the Site Specific Scope of Work Summary. Groundwater and surface and subsurface soil samples were collected from these points and submitted to a NYS certified laboratory for analysis. Sampling procedures are discussed throughout Section 2.1.5 (Soil Boring Installation and Sampling). The analytical results for each medium are discussed in Section 3.0 (Physical Characteristics of the Site). The Data Usability Summary Report (DUSR) is included in Appendix B.

2.1.1 Surface Features: Natural and Manmade Features

HRP conducted an initial Site visit in August 21, 2013 to inspect the Site and review features described in previous reports listed in section 1.2.3 (Previous Investigations) of this report. During the field activities in March and April 2014, HRP collected field data to verify the locations of the natural and manmade features on-site. The following paragraphs describe the natural and manmade features identified during the field activities.

The Site is located on the north side of West Hoffman Avenue and is improved with an occupied one story concrete and metal structure. From approximately October 2013 to May 2014, the facility had been used as a gym, for which the interior of the building was renovated for the new use in the summer of 2013. The inside of the structure was full of gym equipment and included a majority of the concrete floor covered was mostly with a foam style gym mat during the field investigation. From approximately October 2014 the Site building is being used as a church. A concrete pad exists on the northern, middle end of the parking lot. The former use of the concrete pad is unknown.

With regards to topography, the Site is generally flat, with the regional grade to the south.

2.1.2 Contaminant Source Investigations

Ground Penetrating Radar Survey

In order to clear the proposed locations of soil borings and monitoring wells of subsurface utilities, including the potential existence of any undocumented structures, Diversified Geophysics Inc. completed ground penetrating radar (GPR) survey on December 6, 2013. GPR is a non-destructive and non-intrusive geophysical exploration

technique that uses radar waves to detect subsurface metallic objects. A Noggin 250®, coupled with a 250 MHz antenna was used to provide an instant graphic printout during the survey. XY grid patterns were utilized for the surveys conducted on Site. The XY grid pattern had a line spacing of 4 feet in both directions.

2.1.3 Meteorological Observations

Throughout HRP's on-site subsurface investigation, visual and thermal observations (i.e. ambient temperature readings) were noted and recorded in field logs. Other meteorological observations were conducted as part of the Community Air Monitoring Program (CAMP).

2.1.4 Geological Investigations

HRP observed the advancement of soil borings and the installation of groundwater monitoring wells using a 7822 DT direct push rig, and recorded soil mineralogy and grain size, per the Udden-Wentworth Scale (1922), in boring logs. The soil boring logs and monitoring well construction logs are provided in Appendix A. Information on the boring log includes borehole location, drilling information, sample intervals, percent recovery, and sample description information. Information on monitoring well construction logs includes total well depth, screened interval, sand pack interval, bentonite seal interval, and well completion information. Soil boring and monitoring well installations were conducted by Zebra Environmental Services (Zebra) of Lynbrook, New York, a New York State Licensed drilling company.

2.1.5 Soil Boring Installation and Sampling

To evaluate the condition of the Site's subsurface soils, HRP and Zebra mobilized to the Site on March 31 through April 15, 2014 and on April 18, 2014 and February 17, 2015 and installed a total of twelve soil borings (SB-1 through SB-12) with three monitoring wells being installed (PZ-1/SB-3, PZ-2/SB-5, PZ-3/SB-8). Ultimately, the goal was to install borings to 70 feet below ground surface (bgs) including the installation of three monitoring wells to orient groundwater flow direction. The borings were advanced and continuous soil samples were collected using 5-foot Macrocore acetate liners. The soil boring locations were proposed in the Work Assignment (WA) and were only slightly modified in the field due to limited access due to parking space placement and Site conditions.

Four surface soil samples were also collected from four locations in the are between the building and the property line to the east and

south of the building. Samples were collected at areas where contamination was noted, both at the soil groundwater interface and at the top of the aquatard (~45' bgs). Surface soil samples collected from four locations were in the area between the building and the property line to the east and south of the building.

The soil boring locations are shown on Figure 5 and are summarized below. Soil Boring Logs can be found in Appendix A.

During soil boring advancement activities, continuous soil samples were collected from the ground surface to the desired depth using 5-foot Macrocore acetate liners. Sample depths and amount of samples taken at each soil boring varied due to subsurface conditions and recovery. The samples were collected by the attending HRP geologist, placed in polyethylene bags, labeled, and preserved on ice in a cooler. Each sample was then reviewed for physical evidence of contamination (i.e. odor, staining).

In addition, a small portion (1-2 oz.) was also placed in a polyethylene bag, allowed to attain ambient temperature, and then subjected to a headspace analysis via a photoionization detector (PID).

All non-disposable soil sampling equipment was decontaminated between samples using an Alconox wash followed by a clean water rinse. All investigation derived waste (IDW) was stored in labeled, approved 55-gallon drums for proper disposal.

Based on the results of the field screening and observations, HRP would normally select two soil sample, one sample from the groundwater interface and the second sample exhibiting the highest PID reading from each subsurface soil boring for laboratory analysis. Since limited elevated PID readings were observed on-site at most borings, the soil sample that corresponded with the water table interface was generally selected for sampling. Elevated PID readings were observed at each of the soil boring locations, with the highest frequency of readings found on the boring on the north side of the Site at and around the groundwater interface. The highest reading observed on-site was 1,766 parts per million (ppm) at soil boring SB-7 at a depth of 6' to 10' bgs, with a second highest reading of 637 ppm at soil boring SB-10 at a depth of 10 to 15' bgs. One soil sample interval from each boring was selected for analysis with the exception that three samples from different intervals were sent from SB-7 at the southeast corner of the building and SB-9 at both of the storm drains location. HRP submitted a total of 24 subsurface soil samples, four surface soil samples, and one duplicate sample for analysis.

The soil samples identified and sample depths that were submitted and analyzed are listed below. Each sample was sent to Chemtech, of Mountainside, New Jersey, an NYSDOH ELAP approved laboratory, for analysis.

Soil Boring ID	Sample Type	Sample Location	Analysis
SB-01	Subsurface	Northeast Corner of Property	All Samples analyzed for VOCs (via USEPA 8260B).
SB-02	Subsurface	Northwest Corner of Building	
SB-03	Subsurface	Northwest Corner of Property	
SB-04	Subsurface	North of Building in Center of Asphalt Area	
SB-05	Subsurface	Southeast corner in parking lot	
SB-06	Subsurface	Northwest corner of building	
SB-07	Subsurface	South side of Site in parking lot	
SB-08	Subsurface	Southeast corner of Building	
SB-09	Subsurface	Southeast Center of Building	
SB-10	Subsurface	West side of Building	
SB-11	Subsurface	Center of Length of Floor Drain	
SB-12	Subsurface	Off-site to the West of Site in adjacent lot	
SS-1	Surface	Next to SB-8	
SS-2	Surface	Next to SB-11	
SS-3	Surface	North of SB-9	
SS-4	Surface	Next to SB-10	

2.1.6 Groundwater Investigations

2.1.6.1 Groundwater Piezometer: Well Installation, Development, Sampling

To evaluate the condition of on-site groundwater, HRP and Zebra mobilized to the Site during the period of March 31 through April 15, 2014 installed three overburden piezometer wells (PZ-1 through PZ-3).

In concurrence with the installation of soil borings, three of the 12 boreholes were converted to permanent, flush-mounted groundwater piezometer wells. Piezometer well locations were selected by HRP and approved by the NYSDEC.

Piezometer Well ID	Location	Justification
PZ-1	SB-3	To assess the presence, identity, and concentration of VOCs, SVOCs, TAL metals at strategic locations surrounding the Former Elka Chemical Company property.
PZ-2	SB-5	
PZ-3	SB-8	

Methods of Installation – Overburden Piezometers

Overburden piezometer wells were installed at the Site within unconsolidated material in order to allow for the monitoring of groundwater elevation and acquisition of groundwater samples for laboratory testing. Three 1.0-inch diameter PVC piezometer wells with pre-packed screens were installed in the shallow saturated zone beneath the Site. The overburden monitoring wells were installed using the procedures described below:

- Soil borings were driven to the desired depth;
- The 1.0-inch diameter Schedule 40 PVC with pre-packed sand well screen (0.010-inch slot) and riser pipe were inserted and placed on the bottom of the borehole. The riser was capped to prevent well construction materials from entering the well;
- Washed silica was poured into the annular space between the well material and the borehole sidewall. The sand pack continued to at least two-feet above the top of the screen section;
- Above the sand, a seal (bentonite pellets) was formed in the borehole. The bentonite seal extended at least two feet above the top of the sand pack section;
- Clean water was periodically added to the borehole to hydrate the pellets. The pellets were then allowed to hydrate for at least 30 minutes;
- The well riser was cut to approximately 2-inches below grade and flush-mounted curb boxes were installed and grouted in place; and
- A lockable gripper plug was inserted onto the top of each piezometer casing and locked.

Methods of Groundwater Development

On April 14 and 15, 2014, HRP developed the three recently installed groundwater piezometer wells. HRP removed water from each of the wells utilizing new Teflon lined polyethylene bailer. This method was chosen as the appropriate well development method based on water depth, well productivity, and sediment content of the water. Non-

disposable equipment (i.e. water level indicator) was decontaminated prior to use in each well. Care was taken not to introduce contaminants to the equipment during installation. All development waters were emptied into a clean 5-gallon pail for approximate volume measurement and was containerized in 55-gallon non-hazardous labeled steel drums. The volume of water, depth to bottom of the well, and other visual observations were recorded in a field notebook. Piezometer development logs can be found in Appendix A.

Piezometer development was discontinued when field parameters met the following conditions:

- Well water had achieved a turbidity value of less than 50 NTU; and
- Well development was supplemented by measurements of temperature, pH, and specific conductance. Development was complete when these parameters stabilized for a minimum of three consecutive readings at 10 percent variability or less; or
- Greater than six (6) well volumes were removed from each location.

Methods of Groundwater Sampling

To evaluate the groundwater quality beneath the Site, groundwater samples were collected from each of the three (3) installed piezometer monitoring wells, and grab groundwater samples were also collected from at 10-foot intervals from each of the soil boring locations. To collect representative groundwater samples, monitoring wells were adequately purged prior to sampling. A minimum of 48 hours elapsed following the development of each piezometer prior to groundwater sampling, however the borings were sampled upon installation. Low flow sampling equipment and procedures were used to purge and sample the monitoring wells. Purging required removing water from the well at a rate of at least 250 milliliters per minute, but not exceeding 1 liter per minute for a sufficient length of time for water quality parameters to stabilize (at least 30 minutes). Drawdown did not exceed ten percent of the standing water column. Sampling commenced immediately after purging, without adjusting the flow rate or water intake depth.

Groundwater samples were collected from each well, including a duplicate and matrix spike/matrix spike duplicate (MS/MSD) sample. A matrix spike is an aliquot of a field sample, which is fortified with the analyte(s) of interest and analyzed to monitor

measurement bias associated with the sample matrix. A matrix spike and matrix spike duplicate are performed for every analytical batch.

Previously installed monitoring wells discussed in the Work Assignment Issuance could not be located for this sampling event and are presumed to have been destroyed.

Each sample was sent to Chemtech Laboratory, an NYSDOH ELAP approved laboratory, for analysis.

The following list describes the well purging and sampling procedures that were utilized on April 14, 2014 and April 23, 2014:

- All field instruments were calibrated as indicated by manufacturer's standards at the beginning of each work day.
- Monitoring well covers were unlocked and carefully removed to avoid having any foreign material enter the well.
- The water level was measured below the top of casing using an electronic water level indicator. With knowledge of the total depth of the well, it was possible to calculate the volume of water in the well. The tape and probe of the water level indicator was cleaned with an Alconox and water soaked paper towel while reeling in.
- New teflon lined polyethylene tubing was installed into the well and the end of the tubing was set to approximately the midpoint of the groundwater column inside the well.
- The teflon lined polyethylene tubing was attached to a Geopump peristaltic pump. Another section of tubing was attached to the effluent side of the pump.
- The tubing was attached to a flow-through cell water quality monitor (YSI 600xl).
- The pump was turned on and set to a relatively low discharge rate (less than 1-liter per minute) and drawdown rate was monitored using a water level indicator.
- The wells were purged while collecting water quality measurements (pH, Specific Conductivity, Temperature, Dissolved Oxygen, Oxidation/Reduction Potential, and Turbidity) and water level measurements were collected every 3 to 5-minutes.
- After water quality conditions stabilized and well purging was completed, a groundwater sample was collected into the appropriate containers.
- The VOC sample containers were filled first. The discharge tubing was directed toward the inside wall of the sample container to minimize volatilization. VOC sample containers

were filled so that no headspace (air bubbles) was present.

- Each sample bottle was labeled in the field using a waterproof permanent marker and placed in a cooler with ice.
- All non-disposable equipment was decontaminated with alconox and water, and then rinsed with deionized water prior to and after each use.
- Monitoring well sampling data was recorded in a groundwater sampling data sheet (provided in Appendix A).

2.1.7 Monitoring Well Survey

HRP obtained the services of YEC Engineering, P.C. (YEC) of Valley Cottage, New York to complete the survey portion of the SC. A Site survey was conducted in order to properly locate all sampling points. The field survey included establishing project horizontal and vertical control and the collection of planimetric and topographic. Horizontal coordinate values were based on the North American Datum (NAD) of 1983. Vertical coordinate (elevation) values were based on the North American Vertical Datum (NAVD) of 1988. YEC was on-site May 14, 2014 to collect geophysical and Site data for the survey needed to be completed in accordance with the Site specific field activities plan. The sampling survey plots are attached in Appendix A.

2.1.8 Temporary Soil Vapor Probes: Installation and Vapor Sampling

Soil vapor samples were collected from six (6) temporary soil vapor probe installations, and two (2) ambient locations on February 19, 2015. All sampling activities were logged in field notebooks. Locations were chosen based on prior operations within each building area. Each location was also approved by the NYSDEC prior to sampling activities.

Soil Vapor /Outdoor Air ID	Sample location	Justification
SVP-1	PZ-1/SB-3, adjacent to the concrete pad on north side of the Site	To assess the presence, identity, and concentration of volatile organic compounds (VOCs).
SVP-2	PZ-2/SB-5 and SB-7, adjacent to the storm drains on southeast side of the Site	
SVP-3	PZ-3/SB-8, adjacent to the corner of the building on south side of the Site	
SVP-4	PZ-8, adjacent to the corner of the building on west side of the Site	
SVP-5	SB-9, adjacent to the corner of the building on southwest side of the Site	
SVP-6	SB-10, adjacent to the middle of the	

Soil Vapor /Outdoor Air ID	Sample location	Justification
	building on west side of the Site	
Outdoor Air AA-1	SB-10, adjacent to the middle of the building on west side of the Site	
Outdoor Air AA-2	East boundary of the Site	

Each soil vapor sample was completed and sampled in accordance with NYSDOH's Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006. Each probe was placed 2-3 inches below the bottom of a concrete slab. A hand held drill was used to facilitate the collection of the soil vapor samples by boring a hole through the black top and into the soil below the slab. The following procedures were followed during soil vapor sampling:

- Soil vapor samples were collected using ½-inch diameter by six-inch long polyethylene tubing.
- Porous backfill material (quartz filtration media) was used to create a sampling zone 1 to 2-feet in length around the polyethylene tubing.
- Soil vapor probes were sealed above the sampling zone with modeling clay.
- A tracer gas, helium, was used prior to soil vapor sample collection to verify that a tight seal was achieved during the sampling point installation. Further discussion about tracer gas is provided below.
- If it was determined that an adequate seal had been achieved, sampling commenced.
- Soil vapor samples were collected into 1-liter Summa canisters provided by the analytical laboratory.

Tracer Gas

When collecting soil vapor samples, a tracer gas serves as a quality assurance/quality control device to verify the integrity of the soil vapor probe seal. Without the use of a tracer gas, there is no way to verify that a soil vapor sample has not been diluted by surface air.

HRP used balloon-grade helium as a tracer gas for this SC. After the soil vapor probe was set and the surface hydrated powered bentonite clay was in place, a stainless steal dome provided by the analytical laboratory was placed over the implant tubing. The dome was sealed along its base with modeling clay, creating an air tight seal to the slab, while allowing the tubing to protrude from

the enclosure. Next the tracer gas was introduced into the enclosure up to a concentration of 50% helium. A gas detector was used to determine if any helium was detected escaping through the protruding tubing. If high concentrations of the tracer gas were noted by the MGD-2002 helium detection meter, the seal of the probe would have been re-evaluated. When high concentrations of tracer gas did not exist within the implant, and it was determined that an adequate seal had been established, sampling commenced.

A 1-liter summa canister was directly attached to the tubing. The summa canister valve was then opened and allowed to fill. When the pressure gauge on the summa canister neared ambient level or after a time of approximately 24-hours had elapsed, the valve was closed, and the sampling setup was disassembled.

All sampling equipment was removed from the borehole. Soil vapor boreholes were abandoned (backfilled) using a combination of sand and concrete.

An outdoor air sample was collected using a 1-liter summa canister. The canister was checked for initial pressure prior to opening the valve and collecting the indoor air sample over the 24-hour time period. After the 24-hour sampling time, the sampling valve was closed, and the pressure reading recorded.

The summa canisters were appropriately labeled and stored in a shipping container. The canisters were then shipped to Centek laboratory for analysis by USEPA Method TO-15.

2.1.9 Ecological Investigations

In the original scope of work HRP was not tasked with completing a Fish and Wildlife Impact Analysis (FWIA) through Step II. The NYSDEC directed HRP that the FWIA would not be required.

2.1.10 Deviations from Workplan

During the course of the SC there were deviations from the original scope of work. Listed below are the deviations:

- During soil boring and piezometer installation, utilities to the east and south of the building limited the soil boring locations

in these areas. The boring locations were slightly relocated on-site.

- Groundwater parameters wells were developed until water was clear and six well volumes were removed. See groundwater sampling sheets in Appendix A for water sampling parameters.

Of note, the proposed indoor air soil vapor samples were not collected as access to the building was not granted by the tenant or the owner of the building. There were no other deviations from the work plan.

2.2 Technical Correspondence

No technical correspondence documenting field activities were identified between HRP and the NYSDEC. Correspondence was generally limited to conversations on-site, e-mails, and telephone conversations.

3.0 PHYSICAL CHARACTERISTICS OF THE SITE

The following section discusses the results of field activities to determine physical characteristics.

3.1 Results of Field Activities

3.1.1 Surface Features

The Site is located on the north side of West Hoffman Avenue in the Town of Lindenhurst (Babylon), Suffolk County, New York. The Site is approximately 0.25 acres in size and is improved by an approximately 4,000-square foot, slab on grade, one-story building. The Site is zoned Commercial/Industrial, and is identified with section/lot/block number 103.9-1-81. The Site and surrounding area is generally flat and featureless, and is located approximately 20 feet above mean sea level.

3.1.2 Meteorology

Throughout HRP's on-site investigations, the weather on-site varied due to seasonal temperature changes and precipitation. Visual and thermal observations (i.e. ambient temperature readings) were noted and recorded in field notebooks and in the weather station itself.

3.1.3 Geology

Surficial Geology

Surficial geological materials were encountered throughout the Site and surrounding area to varying depths below grade. Regolith (overburden) was consistent across the Site and generally consisted of tan sand and some gravel. Boring logs prepared during this investigation are presented in Appendix A.

According to the Surficial Geology Map of New York – Lower Hudson Sheet (1989), the site's underlying material is coastal plain deposits (Km). Recent deposits consist of materials generally confined to floodplains . This group includes silty clay, glaucontic sandy clay, sand and gravel and thickness variable from 1-2,000 feet. The material observed off-site closely resembled lacustrine silt and clay. HRP's observations are consistent with the mapped descriptions.

Bedrock Geology

According to the NYS Geological Survey, Bedrock Geology of NYS (1999), bedrock underlying the Site and surrounding area is classified as the Magothy Formation. The Magothy Formation in this area is classified as Sand, fine- to coarse grained, locally very gravelly (pebbles less than 1.3 cm (0.5 in) in diameter) especially in updip areas, typically cross stratified, massive, horizontally bedded. Bedrock was not encountered during the subsurface investigation.

3.1.4 Subsurface Soils

Surficial soils encountered at the Site were similar, and generally consisted of brown to tan coarse sand and gravel.

3.1.5 Hydrogeology

Groundwater in Soil Borings
During the installation of piezometer wells, groundwater was encountered at depths on average ranging from 7 to 9-feet bgs.

Groundwater in Piezometer wells
Groundwater was observed in piezometer wells at depths ranging from 4.90 to 5.55 feet bgs during the April 23, 2014 piezometer sampling. No odor, sheen, or free product was observed in any other piezometer wells.

HRP conducted a relative groundwater elevation survey between on-site wells on April 23, 2014. A review of the groundwater flow direction was determined based on the April 23, 2014 findings and based on other reports reviewed in association with this SC. The groundwater levels recorded during the event are as follows.

Overburden Well ID	**Groundwater Measurements April 23, 2014**	
	Depth to Water (feet below top of casing)	*Groundwater Elevation (feet)*
PZ-1	5.55	25.01
PZ-2	4.90	28.15
PZ-3	5.1	27.35

Based on the results of the groundwater elevation survey, flow in the monitoring wells was generally to the south-southeast.

3.1.6 Investigation Derived Waste

During the installation of monitoring wells, non-hazardous investigation derived waste (IDW) was generated, which consisted of soil and drill cuttings. The IDW was placed into 55-gallon steel drums and stored inside the gate at the Site, adjacent to New York Avenue. During the length of the remedial investigation, two drums of IDW were generated.

The IDW drums were sampled and the analytical results were profiled for Toxic Characteristic Leaching Procedures (TCLP). Based on the representative samples of cuttings and spoils that were analyzed it was determined that the materials would be classified as non-regulated material. The drums were then transported off-site using non-hazardous waste manifests. HRP subcontracted with TMC Environmental of Franklin Massachusetts to arrange for the removal and transportation of the IDW to properly permitted treatment, storage, or disposal facility. The following drums were taken off-site and properly disposed:

Date removed	Material removed	Number of drums	Total quantity (lbs.)
7/29/14	Non-regulated material (soil), Non RCRA/Non DOT	2	1,300

The IDW was disposed of at Cycle Chem Inc. of 217 South First Street, Elizabeth, New Jersey (EPA ID#NJD00200046).

Groundwater was discharged to the shallow aquifer of origin as directed by the NYSDEC.

3.1.7 Demography and Land Use

West Hoffman Avenue is located on the western side of Lindenhurst, New York, with the Great South Bay located approximately 2.0 miles to the south. The property is zoned for commercial or industrial use. According to the United States census of 2010, there were 27,253 people and 8,638 households residing in the city. The population density was 7,248.1 people per square mile (2,864.3/km^2).

3.1.8 Ecology

A Fish and Wildlife Impact Analysis (FWIA) was not included in the original Scope of Work and was not completed for the Site.

4.0 NATURE AND EXTENT OF CONTAMINATION

In order to identify the nature and extent of contamination from the Former Elka Chemical Company, HRP submitted subsurface and surface soil and groundwater samples, and soil vapor samples, to a certified laboratory for analysis. The various media samples were analyzed for one or more of the following including: volatile organic compounds (VOCs); semi-volatile organic compounds (SVOCs); and Target Analyte List (TAL) Metals.

Chemtech of Mountainside, New Jersey provided the analytical laboratory services for the soil and groundwater analysis. Nancy Potak of Greensboro, Vermont, provided data validation services for this project. Data qualifiers and their definitions, as defined by Nancy Potak are included in Appendix B. The presentation of results, within this text, does not include data qualifiers. However, the data qualifiers are shown on the Tables included with this report. Detected chemical compounds in the various media sampled as part of the SC and the analytical results are presented in Tables 1 through 6. A general description of the various media sampled and analyzed is provided below.

- Subsurface soil samples (SB-1 through SB-11), surface soils samples (SS-1 through SS-4), and soil vapor samples (SVP-1 through SVP-6 and AA-1 and AA-2) were collected on-site and subsurface soil sample (SB-12) was collected off-site.

- One round of groundwater samples were collected from piezometer wells (PZ-1 through PZ-3).

- One round of soil vapor samples (SVP-1 through SVP-6 and outdoor air AA-1 and AA-2) were collected onsite.

Compounds detected in the various media tested during this SC were compared to the following NYS criteria guidance documents and standards:

- Groundwater: NYSDEC Division of Water Technical and Operational Guidance Series (TOGS 1.1.1); Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations dated October 1993; Revised June 1998; ERRATA Sheet dated January 1999; and Addendum dated April 2000 (NYSDEC Class GA).

- NYSDEC Regulation, 6 NYCRR Subpart 375-6, "Remedial Program Soil Cleanup Objectives" which applies to the development and implementation of the remedial programs for soil and other media set forth in subparts 375-2 through 375-4 [Inactive Hazardous Waste Disposal Site Remedial Program, Brownfield Cleanup Program, and Environmental Restoration Program] and includes the soil cleanup objective tables developed pursuant to ECL 27-1415(6).

- NYSDEC, Division of Environmental Remediation, DER-10, "Technical Guidance For Site Investigation and Remediation", dated May 2010.

- NYSDOH Soil Vapor Guidance for Evaluating Soil Vapor Intrusion in the State of New York dated October 2006 prepared by New York State Department of Health, Center of Environmental Health, Bureau of Environmental Exposure Investigation.

Soil analytical results for this investigation were compared against Unrestricted, Restricted Residential, Commercial, and Industrial Soil Cleanup Objectives (SCOs).

4.1 Results of Remedial Investigation

This section presents the results of SC, both natural chemical components and contaminants in some, but not necessarily all, of the following media:

4.1.1 Sources

Based on the results of the previous subsurface investigations on-site at Former Elka Chemical Company, the principal contaminants of concern at the Site includes the following BTEX. Media impacted by the contaminants of concern include subsurface soil and groundwater, and soil vapor. BTEX concentrations were detected in the samples for one or more of the above described media at levels exceeding NYSDEC standards and guidance. No other VOCs, SVOCs or metals were detected above NYSDEC standards and guidance.

4.1.2 Soils

4.1.2.1 Subsurface Soils

Subsurface Sample Submittal

A total of 27 subsurface soil samples were collected at 12 locations during the SC field work between March 31 and April 14, 2014 and February 17, 2015. All 27 soil samples were analyzed for VOCs (via USEPA 8260B). VOC results for subsurface soil samples collected are listed in Table 1 and Figure 3.

Summary – Subsurface soils

In summary, seven VOCs were detected above NYSDEC SCOs among four of the samples from three of the boring locations the 27 samples analyzed.

DUSR – subsurface soils
The analytical results were reviewed by Nancy Potak for overall usability issues. The DUSR Report (Appendix B) found several changes of data in various samples due to low initial and continuing calibration RRF values. The dilution sample results were not used with several exceptions noted in the tables.

4.1.2.2 Surface Soils

Surface Sample Submittal
Four surface soil samples were collected at four locations during the SC on April 23, 2014. All four surface soil samples were analyzed for VOCs (via USEPA 8260B). VOC results for surface soil samples collected are listed in Table 2.

Summary – Surface soils
In summary, VOCs were not detected above NYSDEC SCOs among the four samples analyzed.

DUSR – Surface soils
The analytical results were reviewed by Nancy Potak for overall usability issues. The DUSR Report (Appendix B) found several changes of data in various samples due to low initial and continuing calibration RRF values.

4.1.3 Groundwater

Groundwater – grab sample submittal
84 grab groundwater samples were collected from the 12 soil boring locations at ten-foot intervals on March 31 through April, 15, 2015 and February 17, 2015 and three (3) groundwater samples were collected on April 23, 2014 from newly installed piezometer wells PZ-1 through PZ-3. All samples from the soil borings were analyzed for VOCs (via USEPA 8260B). The three (3) samples from the piezometers (PZ-1 through PZ-3) were analyzed for SVOCs (via USEPA 8270C) and TAL Metals (via USEPA 6010C).

Analytical Results for VOCs
VOCs were detected above NYSDEC TOGS 1.1.1 Class GA Criteria in all the samples analyzed. The VOC results for the groundwater samples are listed in Table 3 and on Figures 3 through 5.

Analytical Results for SVOCs

One SVOC (Bis(2-ethylhexyl)phthalate) was detected above NYSDEC TOGS 1.1.1 Class GA Criteria in one groundwater samples analyzed and numerous other detections below criteria were observed. The SVOC results for the groundwater samples are listed in Table 4.

Analytical Results for TAL Metals

All three groundwater samples collected were analyzed for TAL metals. A total of two (2) metals (iron and sodium) exceeded NYDEC TOGS 1.1.1 Class GA Criteria in all groundwater samples collected and numerous other detections below criteria were observed. The metal results for this groundwater samples are listed in Table 5.

Summary

In summary, among the groundwater samples tested, numerous VOCs were detected at levels that exceed the NYSDEC TOGS 1.1.1 Class GA Criteria value for these parameters. Additional exceedances above the TOGS values in submitted groundwater samples includes one SVOC and two TAL metals.

DUSR

The analytical results were reviewed by Nancy Potak for overall usability issues. The DUSR Report found several changes of data in various samples due to low initial and continuing calibration RRF values. The dilution sample results were not used with several exceptions noted in the tables. The Data Usability Summary Report can be found in Appendix B, the full DUSR report can be found on the enclosed CD.

4.1.4 Soil Vapor

The installation of six soil vapor and two ambient air sample locations and the collection and analyses of samples from these locations was completed throughout the Site. Two soil vapor samples were to be sub-slab samples, two vapor samples were to be in-door air samples, and six samples were to be taken from around the perimeter of the Site from within the asphalt paved areas and the landscaped grass areas. At the time of the soil vapor sampling activities, the building access was not granted by the current occupant.

Soil vapor sample submittal

Soil vapor samples were collected February 19, 2015 and submitted for analytical testing from a total of eight locations on site (see Figure 7). In addition, two ambient indoor air samples were

collected. The soil vapor samples, ambient air samples, and duplicate sample were analyzed for VOCs via EPA TO-15 analysis.

Findings

The results of the soil vapor analysis indicated that there were a total of thirty-five VOC compounds detected across the six soil vapor (SV) locations, and two ambient air sampling locations (for a total of eight samples). These include low levels of chlorinated compounds (commonly associated with degreasing and parts cleaning), and elevated levels of several non-chlorinated compounds. NYSDOH has air guideline values for Tetrachloroethene (PCE), Trichloroethene (TCE), Methylene Chloride (also referred to as dichloromethane), polychlorinated biphenyls, tetrachlorodibenzo-p-dioxin.

Soil vapor results and a complete list of parameters are listed in Table 6.

Summary

The on-site soil gas survey conducted yielded detection of compounds that include chlorinated and non-chlorinated compounds. Volatilized contamination from groundwater is expected to migrate as soil gas with in the soil horizon above the groundwater table. Migration of soil gas contaminated with VOCs is less predictable than groundwater migration due to subsurface heterogeneities. The soil vapor results show the soil vapor media has been marginally impacted on-site due to historical operations.

4.1.5 Sample Exceedances

The investigation sample results revealed that subsurface and surface soil and groundwater samples collected and analyzed only exceeded standards and guidances in metals criteria. Please note, only samples with exceedances are listed on Table 6.

4.1.6 Air Monitoring

A Community Air Monitoring Plan (CAMP) was included in the scope of work as presented and approved in the site specific field activity plan. Real-time monitoring was conducted for volatile organic compounds (VOCs) and particulates (i.e., dust) at the downwind perimeter of each designated work area when ground intrusive activities were being conducted, including soil borings and

monitoring wells installation. Its intent was to provide a measure of protection for the downwind community (i.e., off-site receptors including residences and businesses and on-site workers not directly involved with the subject work activities) from potential airborne contaminant releases as a direct result of investigative and remedial work activities. Additionally, the CAMP helps to confirm that work activities did not spread contamination off-site through the air.

VOCs were monitored at the downwind perimeter of the immediate work area (i.e., the exclusion zone) on a continuous basis during intrusive work or as otherwise specified. Upwind concentrations were measured at the start of each workday and periodically thereafter to establish background conditions. The monitoring work was performed using a Mini Rae 2000 photo ionization detector (PID) equipped with a 10.6 eV bulb. The PID was calibrated to manufacture's standards daily for the contaminant(s) of concern or for an appropriate surrogate. The PID was placed in a weather proof box that sat on a tripod approximately four feet off the ground. The downwind PID readings did not exceed 5 ppm during the field activities.

Particulate concentrations were monitored continuously at the upwind and downwind perimeters of the exclusion zone at temporary particulate monitoring stations during intrusive work. The particulate monitoring was performed using a Quest Dust Trak 8520, a real-time monitor capable of measuring particulate matter less than 10 micrometers in size (PM-10) and capable of integrating over a period of 15 minutes (or less) for comparison to the airborne particulate action level. The Dust Trak was routinely zero (0) checked and was placed in a weather proof box that sat on a tripod approximately four feet off the ground. The equipment was equipped with an audible alarm to indicate exceedance of the action level. In addition, fugitive dust migration was visually assessed during all work activities. The particulate readings were below 100 mcg/m^3 during all field activities. All tables for VOCs and particulates concentration readings can be found on the included CD.

5.0 CONCLUSIONS, DATA LIMITATIONS, AND RECEOMMENDATIONS

5.1 Conclusions

The purpose of this Site Characterization (SC) is to characterize on-site and off-site media potentially impacted by past Site operations and to preliminarily delineate the vertical and horizontal extent of contaminated media. This SC identified contamination in each medium shown below which were assessed at levels exceeding applicable criteria.

Based on our findings to date, the following conclusions are offered.

Nature and Extent of Contamination

- According to the EDR Database Elka Chemical was used as a chemical re-packaging facility for approximately 65 years. Presumably, operations at Elka resulted in contamination of the soil and groundwater, located at the northern perimeter of the site and the western side of the Site building, with Volatile Organic Compounds (VOCs), primarily BTEX and its breakdown products.

- In April 2014 and February 2015, HRP collected and analyzed groundwater samples from the newly installed soil borings (at various depths) for a total of 84 groundwater samples. Based on the analytical results, there were ten VOCs (1,2-Dichlorobenzene, benzene, cis-1-2,Dichloroethylene, Dichlorodifluoromethane, Ethylbenzene, Isopropylbenzene (Cumene), Tetrachloroethylene (PCE), Toluene, Trichloroethylene (TCE), and Total-Xylene) detected in the groundwater at concentrations above NYSDEC TOGS values.

- Twenty-seven (27) subsurface soil samples were collected from the soil borings installed on-site, from depths of 4 to 55 feet bgs. Twenty-two (22) detections of VOCs were noted. However, five (5) VOCs (1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, acetone, n-butylbenzene, and n-propylbenzene) exceeded NYSDEC Unrestricted SCOs. No additional exceedances over SCOs were detected.

- Four (4) surface soil samples showed low levels of VOCs were detected at concentrations exceeding the Unrestricted or Commercial SCOs.

- Since the Site is zoned Commercial/Light Industrial, the surface soil results compared specifically to Subpart 375-6 SCOs for Commercial and Industrial did not have any exceedances for VOCs.

- One (1) SVOCs and two (2) Metals were detected at concentrations that slightly exceed NYSDEC Class GA Criteria in groundwater samples collected during the soil boring and monitoring well installations.

- Twenty-two VOCs were detected at concentrations exceeding NYSDEC TOGS (1.1.1) groundwater standards. Of those 22, ten VOC compounds exceeded the standards from the grab groundwater samples collected during the soil boring installation. In addition, thirteen VOC compounds exceeded the groundwater standards within the groundwater samples collected and analyzed from installed monitoring wells.

- The groundwater flow direction as determined by a survey of the installed monitoring wells and field groundwater depth to water readings indicates the flow is south southeast.

- Soil vapor analysis indicated that there were a total of various (35) VOC compounds detected across the three soil vapor and one indoor air sampling locations. These include low levels of chlorinated compounds and non-chlorinated compounds.

- Based on the site characterization investigation findings, soil and groundwater media have concentrations exceeding NYSDEC standards and guidance.

- Based on the results of the site characterization investigation, the soils at the Site have been impacted on-site due to past operations. However, the soil concentrations of VOC detected in the subsurface soil do not exceed the NYSDEC Part 375-6 SCOs for Commercial or Industrial values. The site is currently zone commercial/light industrial.

- Based on the results of the site characterization investigation, the groundwater has been impacted on site due to past operations. The groundwater has the highest contaminant concentrations on the north and west side of the Site. Based on groundwater flow and the close approximation of the Site's property line, further investigation is warranted at this time to further delineate potential further impacts off-site in the area of SB-12 and downgradient of the Site.

Fate and Transport

Soil

Low concentrations of VOCs were detected in the soil samples submitted for volatile organic analysis. These concentrations exceeded the Unrestricted Use SCO, but were well below the Commercial Use SCO. The concentrations in subsurface soils detected across the Site, are not expected to impact soil vapor on-site. Exposure to subsurface soils is minimal due to the development at the Site (i.e. existing on-site building and paved parking areas). Exposure through dermal contact and ingestion is low due to the presence of the impervious surfaces and buildings. Exposure through inhalation is considered low since no intrusive activities occur on-site that disturb soils and generate inhalable dust. At present, the exposure to subsurface soils is minimal since the Site is completely developed.

During future development, specifically disturbance of soils, the potential for exposures to contaminated soils would increase for on-site workers, utility workers, trespassers and visitors.

Groundwater

Groundwater samples exhibited elevated levels of miscellaneous VOCs, which were detected above the TOGS Values within ten of the groundwater samples collected. The VOC, BTEX and its chemical breakdown products detected within the groundwater in this remedial investigation can be attributed to the former chemical repackaging operations of Elka. The highest levels of VOCs were detected in groundwater samples collected from points west abutting the current building, indicating that the contamination has migrated down gradient. High levels of VOCs were detected in groundwater sampled collected from points to the northeast side of the Site, indicating the possible presence of an upgradient spill. There is potential for groundwater contamination to migrate even further down gradient and possibly to the surrounding properties.

Soil Vapor

Human health risks associated with exposure to soil vapor intrusion were examined by the utilizing the NYSDOH's guidance for evaluating soil vapor intrusion in the State of New York, dated October 2006.

The concentrations of soil vapor for PCE were compared to the NYSDOH guidance for soil vapor intrusion. Based on this matrix, the action recommended by the NYSDOH is to take no further action at all the soil vapor sampling locations at the Site.

Risk Assessment

Groundwater

Exposure associated with encountering contaminated groundwater is possible but risk is low to minimal. The Site and surrounding area utilize municipal water and there are no known uses of shallow contaminated groundwater in the Site vicinity.

Soils

Exposure to subsurface and/or surface soils through dermal contact and ingestion is low to minimal due to the Site being fully developed with buildings and asphalted parking areas. Exposures risks would increase during any future development, specifically disturbance of soils, for on-site workers, utility workers, trespassers, and visitors.

Soil Vapor

Exposure to soil vapor through inhalation is low to minimal due to the Site being fully developed with buildings and asphalted parking areas and the contamination being found at intervals not directly under the building. Indoor air quality was not evaluated during this SC due to access to the inside of the building not being given. Exposures risks would increase during any future development, specifically disturbance of soils, for on-site workers, utility workers, trespassers, and visitors.

5.2 Data Limitations

Data limitations were not identified in the course of HRP's investigations.

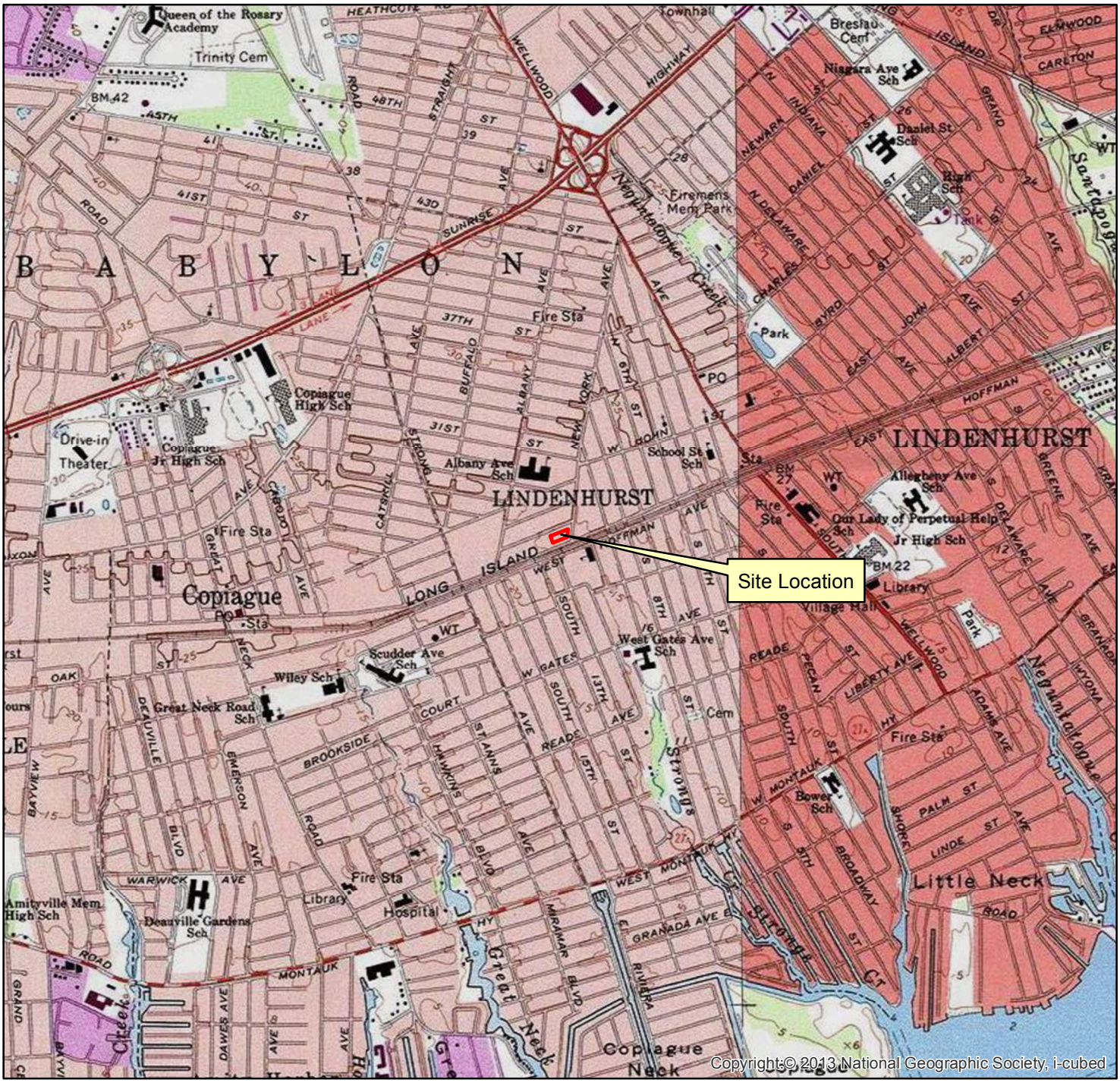
5.3 Recommendations for Future Work

Based on HRP's findings, the nature of the contamination does pose a possible threat to human health and the environment. The on-site contamination which includes VOCs identified in the groundwater and soil. identified in surface and subsurface soils and groundwater appears to exist to the north and west the Site. The extent of the contamination is unknown at this time.

HRP recommends additional investigation to further delineate the contamination of VOCs in the soil and groundwater within Elka. The additional investigation should include, but would not be limited to:

- Installation of additional overburden monitoring wells or borings to deeper depths for proper groundwater flow information;
- Collection of additional soils and groundwater samples from the additional soil borings.

Data limitations were not identified in the course of HRP's investigations.



0 1,000 2,000 4,000 6,000 8,000

Feet

1 inch = 2,000 feet

N

USGS Quadrangle Information
Quad ID: 40073-F4
Name: Amityville, New York
Date Rev: 1977
Date Pub: 1979

Figure 1
Site Location
Former ELKA Chemical Company
Site# 152239
340 West Hoffman Avenue
Lindenhurst, New York
HRP# NEW9630.P2
Scale 1" = 2,000'

HRP Associates, Inc.
Environmental/Civil Engineering & Hydrogeology
Creating the Right Solutions Together
Offices in CT, SC, NY, FL, MA, TX and PA
1 Fairchild Square, Suite 110
Clifton Park, NY 12065
Ph:(518)877-7101 Fax:(518)877-8561
www.hrpassociates.com

Path: S:\Data\NNEWEN - NY STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\FORMER ELKA CHEMICAL COMPANY, 340 WEST HOFFMAN AVENUE, LINDENHURST, NY\NEW9630P2\GIS\Site

0 15 30 60 Feet

1 inch = 30 feet

N

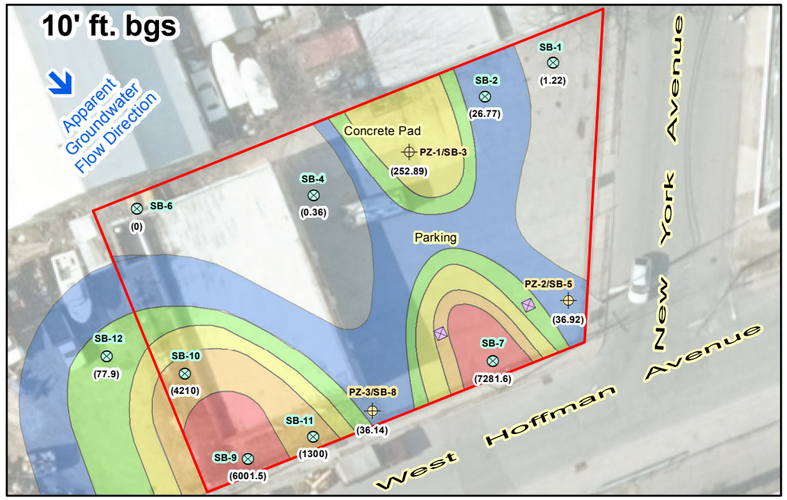
Legend

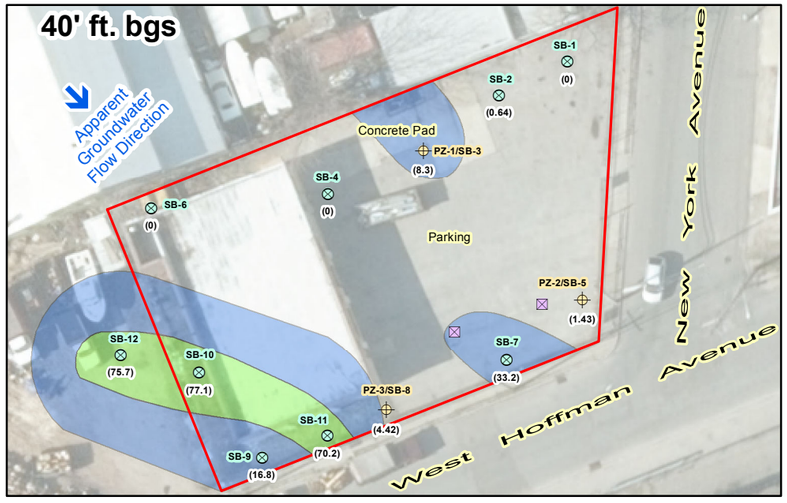
- Approximate Property Boundary
- Piezometers
- Storm Drain
- Soil Boring

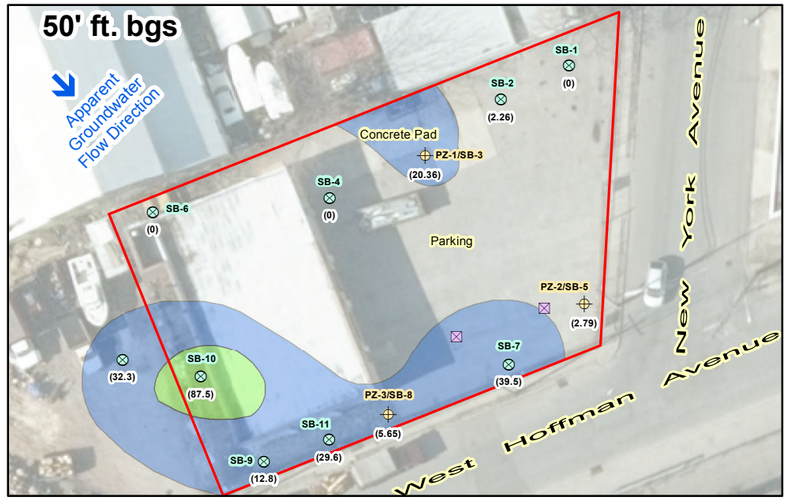
Figure 2
Site Plan
Former ELKA Chemical Company
Site# 152239
340 West Hoffman Avenue
Lindenhurst, New York
HRP# NEW9630.P2
Scale 1" = 30'

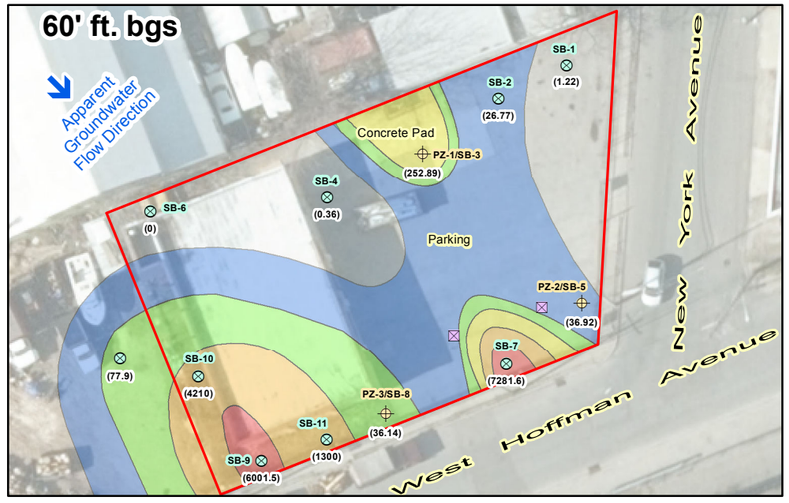
HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

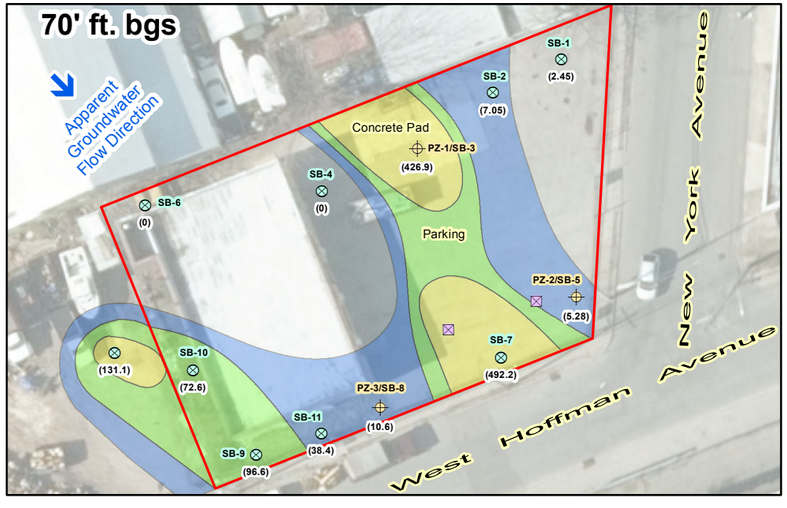
Path: S:\Data\NNEWEN - NY STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\FORMER ELKA CHEMICAL COMPANY, 340 WEST HOFFMAN AVENUE, LINDENHURST, NY\NEW9630P2\GIS\Site Plan.mxd











Legend

- Piezometers
- Soil Boring
- Storm Drain
- Approximate Property Boundary
- ft. bgs Feet below ground surface

N

1 inch = 50 feet

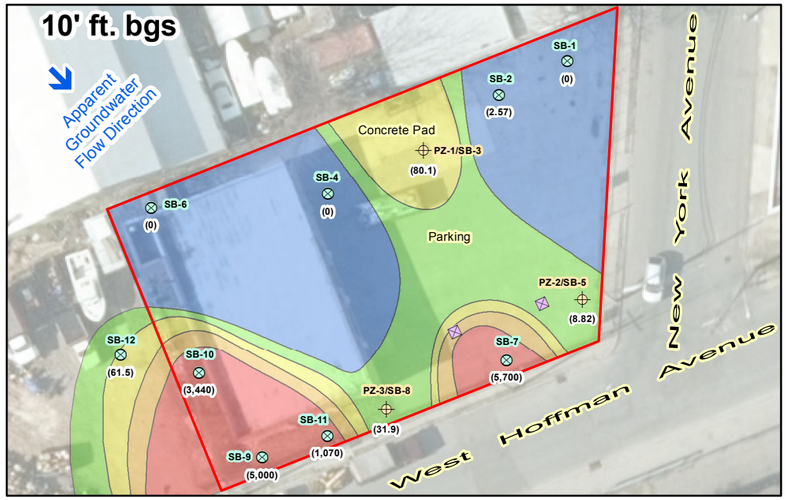
0 25 50 100 Feet

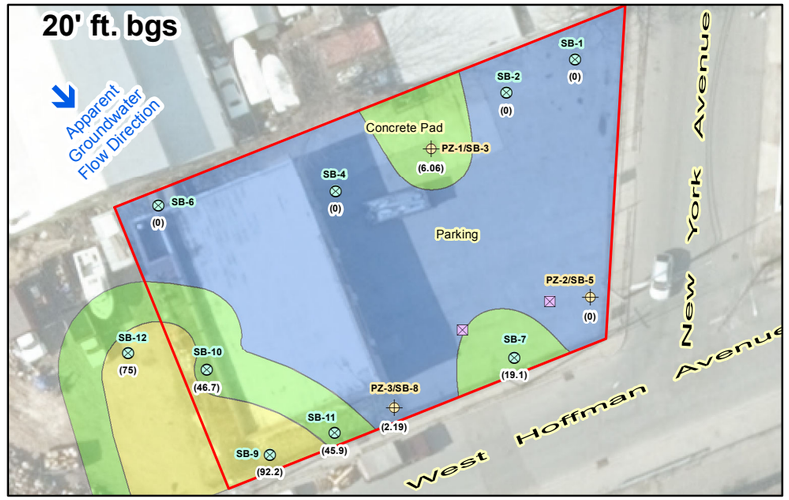
BTEX Concentrations (ug/L)

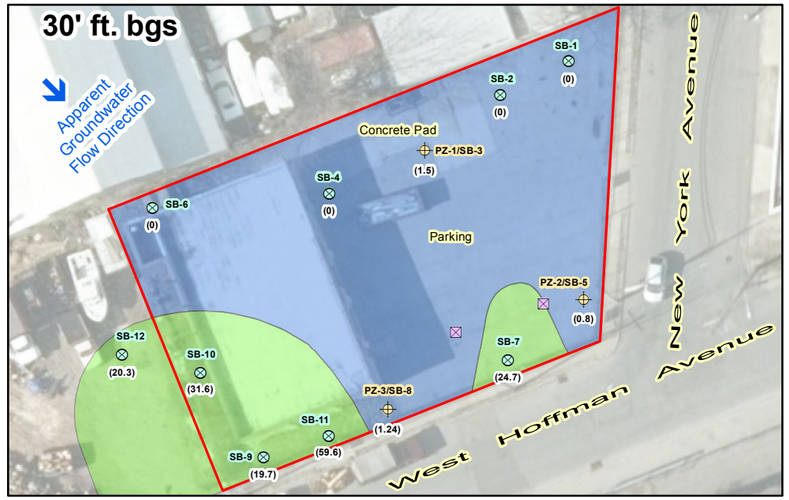
- 5-50
- 50-100
- 100-1000
- 1000-5000
- >5000

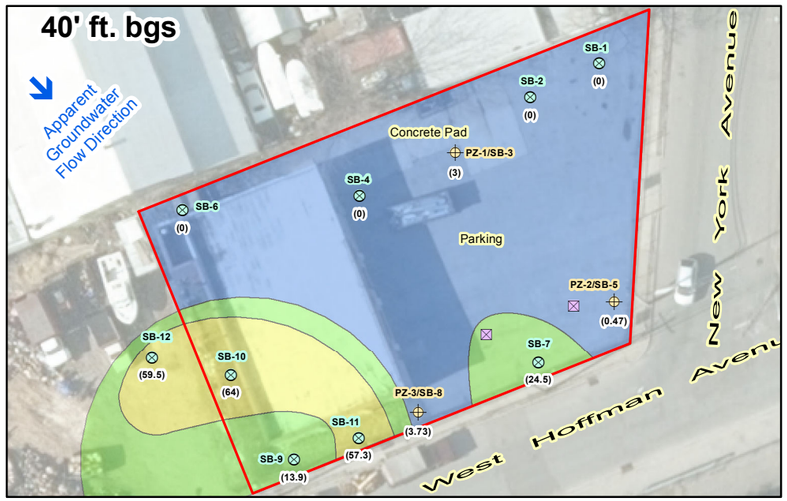
Figure 3
Site Plan with BTEX Concentrations in Soil
Former ELKA Chemical Company
Site# 152239
340 West Hoffman Avenue
Lindenhurst, New York
HRP# NEW9630.P2
Scale 1" = 50'

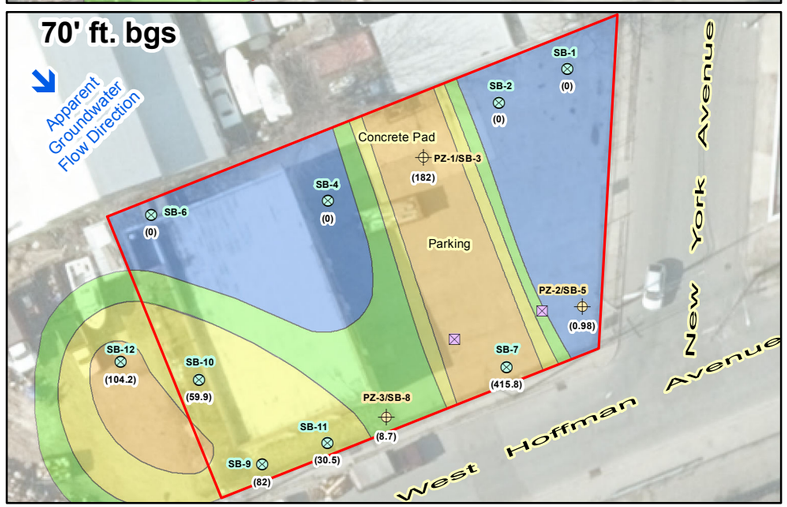
HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM











Legend

- Piezometers
- Soil Boring
- Storm Drain
- Approximate Property Boundary
- ft. bgs Feet below ground surface

Xylene Concentrations (ug/L)

- <5
- 5-50
- 50-100
- 100-1,000
- >1,000

N

1 inch = 50 feet

0 25 50 100 Feet

Figure 4
Site Plan with Total Xylene Concentrations in Soil
Former ELKA Chemical Company
Site# 152239
340 West Hoffman Avenue
Lindenhurst, New York
HRP# NEW9630.P2
Scale 1" = 50'

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

0 20 40 80 Feet

1 inch = 40 feet

Legend

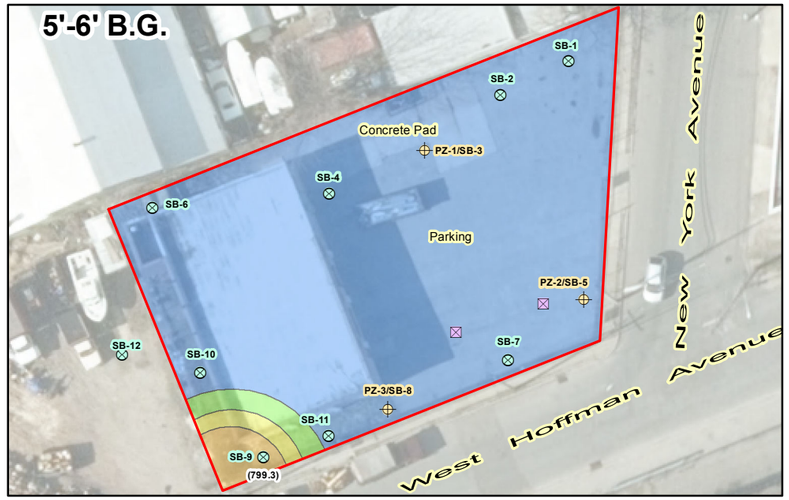
- Piezometers
- Soil Boring
- Storm Drain
- Approximate Property Boundary
- Xylene Off-Site - 5
- Xylene Off-Site - 5-50
- Xylene Off-Site - 50-100
- Xylene Off-Site - 100-1000
- Xylene Off-Site - 1000

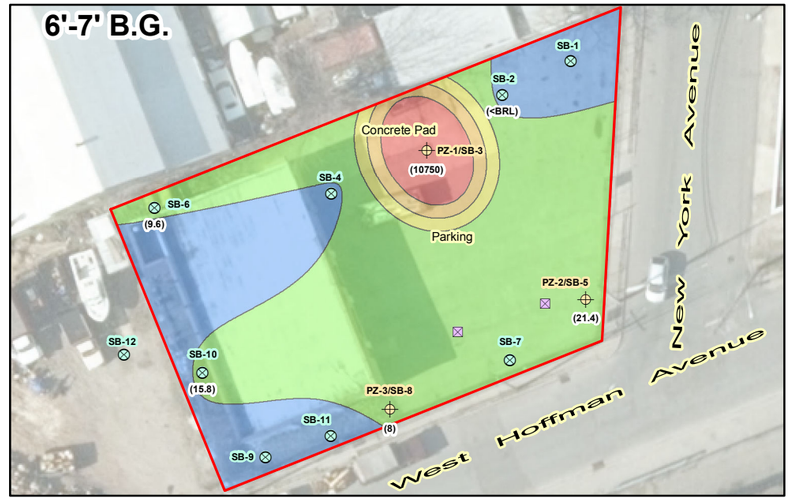
ft. bgs Feet below ground surface

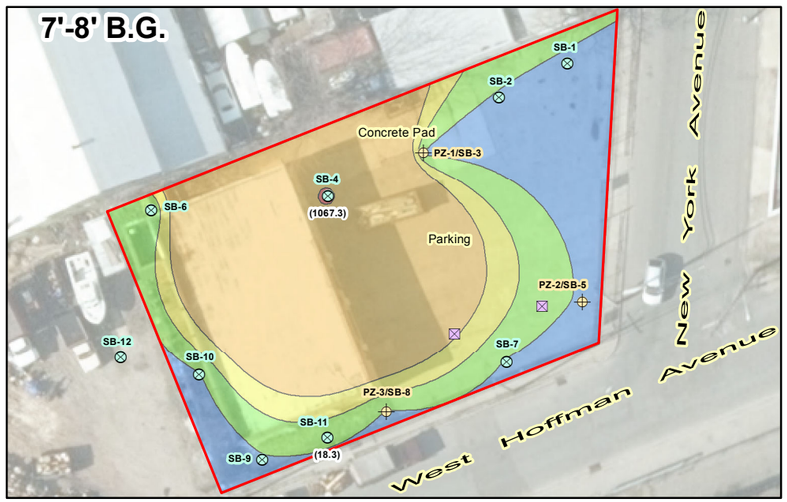
Figure 5
On-site/Offsite
Former ELKA Chemical Company
Site# 152239
340 West Hoffman Avenue
Lindenhurst, New York
HRP# NEW9630.P2
Scale 1" = 40'

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

Path: S:\Data\NEWEN - NY STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\FORMER ELKA CHEMICAL COMPANY, 340 WEST HOFFMAN AVENUE, LINDENHURST, NY\NEW9630P2\GIS\20150313-V1-Fig5.mxd







Legend

- Piezometers
- Soil Boring
- Storm Drain
- Approximate Property Boundary

Total VOCs Concentrations (ug/L)

- Piezometers
- <5
- 5-50
- 50-100
- 100-1000
- >1000

0 25 50 100 Feet

1 inch = 50 feet

N

Figure 6
Site Plan with Total VOC Concentrations in Soil
Former ELKA Chemical Company
Site# 152239
340 West Hoffman Avenue
Lindenhurst, New York
HRP# NEW9630.P2
Scale 1" = 50'

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

0 15 30 60 Feet

1 inch = 30 feet

N

Legend

- Ambient Air Sample
- **SVI Locations**
- Approximate Property Boundary
- Piezometers
- Storm Drain
- Soil Boring

Figure 7
SVI Locations
Former ELKA Chemical Company
Site# 152239
340 West Hoffman Avenue
Lindenhurst, New York
HRP# NEW9630.P2
Scale 1" = 30'

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

Table 1
FORMER ELKA CHEMICAL COMPANY - SITE NUMBER 152239
340 West Hoffman Avenue
Lindenhurst, New York 11757
March 31 - April 15, 2014 and February 17, 2015
375-6 SCO - Protection of Public Health - Unrestricted, Residential, Commercial, and Industrial
Soil Samples - Analyzed for Volatile Organic Compounds (VOCs)
(Only detected constituents are listed)

Soil Sample ID		SB-1		SB-2		SB-3		SB-4		SB-5		SB-6		SB-7			375-6 SCO - Protection of Public Health Unrestricted	375-6 SCO - Protection of Public Health - Residential	375-6 SCO - Protection of Public Health - Commercial	375-6 SCO - Protection of Public Health - Industrial
Sample Depth (ft. BGS)		4-5	9-10	4-5	6-7	4-5	6-7	4-5	7-8	4-5	6-7	4-5	6-7	4-5	9-10	45-50				
Date Collected		3/31/2014		3/31/2014		4/1/2014		4/2/2014		4/2/2014	4/3/2014	4/8/2014		4/10/2014	4/9/2014	4/10/2014				
SOIL-8260B (µg/kg)	CAS #																			
1,2,4-Trimethylbenzene	95-63-6	**36.9 J**	40000 J	**9.7 J**	NA	9500 J	6700 J	**16.5 J**	**570 J**	**2.6 J**	**1.8 J**	**6.5 J**	NA	**3.1 J**	**580 J**	**2.1 J**	3,600	52,000	190,000	380,000
1,3,5-Trimethylbenzene	108-67-8	**14.2 J**	31800 J	**1.7 J**	NA	10100 J	**1100 J**	**5.6 J**	**210 J**	NA	**1.3 J**	**4.2 J**	NA	**1.5 J**	**330 J**	NA	8,400	52,000	190,000	380,000
1H-Indene, 2,3-dihydro-1,1,5-trime	040650-41-7	NA	NA	**21.2 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
1-Methylnaphthalene	90-12-0	NA	NA	**42.7 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
2-Butanone (MEK)	78-93-3	<26.4 U	(<3100) U	**25 J**	<28.4 U	(<2600) U	(<2900) U	<26.9 U	<27.5 U	<28.5 U	<27 U	<27.1 U	<28.3 U	<28.2 U	(<1400) U	<31.5 U	120	100,000	500,000	1,000,000
2-Methylnaphthalene	91-57-6	NA	NA	**27.3 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
2-Propenal, 3-(4-methylphenyl)-	001504-75-2	NA	NA	**15.3 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
Acetone	67-64-1	<26.4 U	(<3100) U	280	<28.4 U	(<2600) U	(<2900) U	<26.9 U	**19.5 J**	<28.5 U	<27 U	<27.1 U	<28.3 U	**21 J**	(<1400) U	<31.5 U	50	100,000	500,000	1,000,000
Benzene, 1-methyl-2-(2-propenyl)-	001587-04-8	NA	NA	**15.4 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
Benzene, 4-(2-butenyl)-1,2-dimethyl-	54340-86-2	NA	NA	**14.3 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
Carbon disulfide	75-15-0	<5.3 U	<620 U	**1.6 J**	<5.7 U	<520 U	<570 U	<5.4 U	<5.5 U	<5.7 U	<5.4 U	<5.4 U	<5.7 U	<5.6 U	<280 U	<6.3 U	NE	NE	NE	NE
Ethylbenzene	100-41-4	**1.7 J**	<620 U	<5.4 U	<5.7 U	12700	**370 J**	**3.4 J**	**21.8**	**1.3 J**	<5.4 U	**25.1**	<5.7 U	**3.2 J**	<280 U	**2.1 J**	1,000	41,000	390,000	780,000
Isopropylbenzene	98-82-8	<5.3 U	**13700**	<5.4 U	<5.7 U	**2400**	**140 J**	**1.9 J**	**39.6**	<5.7 U	<5.4 U	**2.4 J**	<5.7 U	<5.6 U	**120 J**	<6.3 U	NE	NE	NE	NE
m/p-Xylenes	179601-23-1	<10.6 U	<1200 U	<10.9 U	<11.4 U	**5500**	**210 J**	**1.3 J**	**7.5 J**	<11.4 U	**1.4 J**	**100**	<11.3 U	**17.8**	**290 J**	**9.8 J**	NE	NE	NE	NE
Methyl isobutyl ketone (MIBK)	108-10-1	**4.6 J**	<3100 U	**10.7 J**	<28.4 U	<2600 U	<2900 U	<26.9 U	<27.5 U	<28.5 U	**9.3 J**	**8 J**	**8.1 J**	<1400 U	**12.4 J**	NE	NE	NE	NE	NE
Methylcyclohexane	108-87-2	<5.3 U	**9900**	<5.4 U	<5.7 U	**3700**	**340 J**	**2.3 J**	**94.8**	<5.7 U	<5.4 U	**7**	<5.7 U	<5.6 U	**2500**	<6.3 U	NE	NE	NE	NE
Methylene chloride (Dichloromethane)	75-09-2	<5.3 U	(<620) U	<5.4 U	<5.7 U	(<520) U	(<570) U	**1.5 J**	<5.5 U	<5.7 U	<5.4 U	**1.9 J**	**1.5 J**	**1.5 J**	(<280) U	<6.3 U	50	100,000	500,000	1,000,000
Naphthalene	91-20-3	**1.1 J**	**10600 J**	**7.1 J**	NA	**4000 J**	**260 J**	NA	**9.9 J**	NA	**1.5 J**	NA	NA	NA	**290 J**	NA	12,000	100,000	500,000	1,000,000
Naphthalene, 1,2,3,4-tetrahydro-1-	001559-81-5	NA	NA	**28.9 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
Naphthalene, 1,2,3,4-tetrahydro-6-	001680-51-9	NA	NA	**19.4 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
Naphthalene, 2-ethyl-1,2,3,4-tetra	032367-54-7	NA	NA	**17.1 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NE	NE	NE	NE
n-Butylbenzene	104-51-8	**1.4 J**	29100 J	**1.3 J**	NA	**2900 J**	NA	NA	NA	NA	**2.1 J**	NA	NA	NA	NA	NA	12,000	100,000	500,000	1,000,000
n-Propylbenzene	103-65-1	**7.4 J**	25400 J	**2.2 J**	NA	11000 J	**840 J**	**2.4 J**	**57.4 J**	NA	**1.2 J**	**4.4 J**	NA	**1.4 J**	**470 J**	NA	3,900	100,000	500,000	1,000,000
o-Xylene	95-47-6	<5.3 U	<620 U	<5.4 U	<5.7 U	**780**	<570 U	<5.4 U	<5.5 U	<5.7 U	<5.4 U	**31.8**	<5.7 U	**6**	<280 U	**3.3 J**	NE	NE	NE	NE
Tetrachloroethylene	127-18-4	<5.3 U	<620 U	<5.4 U	<5.7 U	<520 U	<570 U	<5.4 U	<5.5 U	<5.7 U	<5.4 U	**36.6**	<5.7 U	<5.6 U	<280 U	<6.3 U	1,300	19,000	150,000	300,000
Toluene	108-88-3	<5.3 U	<620 U	<5.4 U	<5.7 U	<520 U	<570 U	<5.4 U	<5.5 U	<5.7 U	<5.4 U	**5 J**	<5.7 U	<5.6 U	<280 U	<6.3 U	700	100,000	500,000	1,000,000
trans-1,2-Dichloroethylene	156-60-5	<5.3 U	(<620) U	<5.4 U	<5.7 U	(<520) U	(<570) U	<5.4 U	<5.5 U	<5.7 U	<5.4 U	<5.4 U	<5.7 U	<5.6 U	(<280) U	<6.3 U	190	100,000	500,000	1,000,000
Trichloroethylene	79-01-6	<5.3 U	(<620) U	<5.4 U	<5.7 U	(<520) U	(<570) U	<5.4 U	<5.5 U	<5.7 U	<5.4 U	**8.6**	<5.7 U	<5.6 U	<280 U	<6.3 U	470	21,000	200,000	400,000
Vinyl chloride	75-01-4	<5.3 U	(<620) U	<5.4 U	<5.7 U	(<520) U	(<570) U	<5.4 U	<5.5 U	<5.7 U	<5.4 U	<5.4 U	<5.7 U	<5.6 U	(<280) U	<6.3 U	20	900	13,000	27,000
Xylene-Total		<BRL	<BRL	<BRL	<BRL	**6280**	**210 J U**	**1.3 J U**	**7.5 J U**	<BRL	**1.4 J U**	**131.8**	<BRL	**23.8**	**290 J U**	**13.1 J**	260	100,000	500,000	1,000,000
Total BTEX		**1.7**	<BRL	<BRL	<BRL	**18980**	**580**	**4.7**	**29.3**	**1.3**	**1.4**	**161.9**	<BRL	**27**	**290**	**15.2**	NE	NE	NE	NE
Total VOCs		**69**	**160500**	**540.9**	<BRL	87840	**10750**	**40.9**	**1067.3**	**5.2**	**21.4**	**535.2**	**9.6**	**87.4**	**4870**	**42.8**	NE	NE	NE	NE

Soil Sample ID		SB-8		SB-9			SB-10		SB-11		SB-12						375-6 SCO - Protection of Public Health Unrestricted	375-6 SCO - Protection of Public Health - Residential	375-6 SCO - Protection of Public Health - Commercial	375-6 SCO - Protection of Public Health - Industrial
Sample Depth (ft.)		4-5	6-7	4-5	5-6	40-45	4-5	6-7	4-5	7-8	12-14	38-40	54-55							
Date Collected		4/10/2014		4/11/2014			4/14/2014		4/15/2014		02/17/15									
SOIL-8260B (µg/kg)	CAS #																			
1,2,4-Trimethylbenzene	95-63-6	NA	NA	**8.8 J**	**420 J**	**8.3 J**	**1.7 J**	**1.6 J**	**2.5 J**	**1.6 J**	<.580	<0.059	<0.059				3,600	52,000	190,000	380,000
1,3,5-Trimethylbenzene	108-67-8	NA	NA	**4.2 J**	**240 J**	**1.9 J**	NA	NA	NA	**1.1 J**	<.580	<0.059	<0.059				8,400	52,000	190,000	380,000
1H-Indene, 2,3-dihydro-1,1,5-trime	040650-41-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				NE	NE	NE	NE
1-Methylnaphthalene	90-12-0	NA	NA	NA	NA	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				NE	NE	NE	NE
2-Butanone (MEK)	78-93-3	<26.7 U	<28.5 U	<27.3 U	<27.4 U	<27.6 U	<28.1 U	<28.8 U	<27.1 U	<27.7 U	<.580	<0.059	<0.059				120	100,000	500,000	1,000,000
2-Methylnaphthalene	91-57-6	NA	NA	NA	NA	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				NE	NE	NE	NE
2-Propenal, 3-(4-methylphenyl)-	001504-75-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				NE	NE	NE	NE
Acetone	67-64-1	<26.7 U	<28.5 U	<27.3 U	<27.4 U	**16.1 J**	<28.1 U	<28.8 U	<27.1 U	<27.7 U	<.580	<0.059	**14.3**				50	100,000	500,000	1,000,000
Benzene, 1-methyl-2-(2-propenyl)-	001587-04-8	NA	NA	NA	NA	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				NE	NE	NE	NE
Benzene, 4-(2-butenyl)-1,2-dimethyl-	54340-86-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				NE	NE	NE	NE
Carbon disulfide	75-15-0	<5.3 U	<5.7 U	<5.5 U	<5.5 U	<5.5 U	<5.6 U	<5.8 U	<5.4 U	<5.5 U	<.580	<0.059	<0.059				NE	NE	NE	NE
Ethylbenzene	100-41-4	<5.3 U	<5.7 U	**2.6 J**	**2.7 J**	<5.5 U	<5.6 U	<5.8 U	<5.4 U	<5.5 U	<.580	<0.059	<0.059				1,000	41,000	390,000	780,000
Isopropylbenzene	98-82-8	<5.3 U	<5.7 U	<5.5 U	**11**	<5.5 U	<5.6 U	<5.8 U	<5.4 U	<5.5 U	<.580	<0.059	**3.7**				NE	NE	NE	NE
m/p-Xylenes	179601-23-1	<10.7 U	<11.4 U	**10.9**	**17.9**	<11 U	<11.2 U	<11.5 U	<10.8 U	<11.1 U	<.580	<0.059	**1.3**				NE	NE	NE	NE
Methyl isobutyl ketone (MIBK)	108-10-1	<26.7 U	**8 J**	<27.3 U	<27.4 U	**11.5 J**	**19 J**	**14.2 J**	**15.7 J**	**15.6 J**	<.580	<0.059	<0.059				NE	NE	NE	NE
Methylcyclohexane	108-87-2	<5.3 U	<5.7 U	<5.5 U	**3.5 J**	<5.5 U	<5.6 U	<5.8 U	<5.4 U	<5.5 U	**16.1**	<0.059	**9.6**				NE	NE	NE	NE
Methylene chloride (Dichloromethane)	75-09-2	<5.3 U	<5.7 U	<5.5 U	<5.5 U	**1.5 J**	<5.6 U	<5.8 U	**2.6 J**	<5.5 U	<.580	**0.0019**	<0.059				50	100,000	500,000	1,000,000
Naphthalene	91-20-3	NA	NA	NA	NA	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				12,000	100,000	500,000	1,000,000
Naphthalene, 1,2,3,4-tetrahydro-1-	001559-81-5	NA	NA	NA	NA	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				NE	NE	NE	NE
Naphthalene, 1,2,3,4-tetrahydro-6-	001680-51-9	NA	NA	NA	NA	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				NE	NE	NE	NE
Naphthalene, 2-ethyl-1,2,3,4-tetra	032367-54-7	NA	NA	NA	NA	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				NE	NE	NE	NE
n-Butylbenzene	104-51-8	NA	NA	**1.2 J**	NA	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				12,000	100,000	500,000	1,000,000
n-Propylbenzene	103-65-1	NA	NA	**3 J**	**69.7 J**	NA	NA	NA	NA	NA	<.580	<0.059	<0.059				3,900	100,000	500,000	1,000,000
o-Xylene	95-47-6	<5.3 U	<5.7 U	**2.9 J**	**8.3**	<5.5 U	<5.6 U	<5.8 U	<5.4 U	<5.5 U	<.580	<0.059	<0.059				NE	NE	NE	NE
Tetrachloroethylene	127-18-4	<5.3 U	<5.7 U	**1.6 J**	<5.5 U	<5.5 U	<5.6 U	<5.8 U	<5.4 U	<5.5 U	<.580	<0.059	<0.059				1,300	19,000	150,000	300,000
Toluene	108-88-3	<5.3 U	<5.7 U	<5.5 U	<5.5 U	<5.5 U	<5.6 U	<5.8 U	<5.4 U	<5.5 U	<.580	<0.059	<0.059				700	100,000	500,000	1,000,000
trans-1,2-Dichloroethylene	156-60-5	<5.3 U	<5.7 U	<5.5 U	<5.5 U	<5.5 U	<5.6 U	<5.8 U	<5.4 U	<5.5 U	<.580	<0.059	<0.059				190	100,000	500,000	1,000,000
Trichloroethylene	79-01-6	<5.3 U	<5.7 U	<5.5 U	<5.5 U	<5.5 U	<5.6 U	<5.8 U	<5.4 U	<5.5 U	<.580	<0.059	<0.059				470	21,000	200,000	400,000
Vinyl chloride	75-01-4	<5.3 U	<5.7 U	<5.5 U	<5.5 U	<5.5 U	<5.6 U	<5.8 U	<5.4 U	<5.5 U	<.580	<0.059	<0.059				20	900	13,000	27,000
Xylene-Total		<BRL	<BRL	**13.8 J**	**26.2**	<BRL	<BRL	<BRL	<BRL	<BRL	<BRL	<BRL	<BRL				260	100,000	500,000	1,000,000
Total BTEX		<BRL	<BRL	**16.4**	**28.9**	<BRL	<BRL	<BRL	<BRL	<BRL	<BRL	<BRL	**1.3**				NE	NE	NE	NE
Total VOCs		<BRL	**8**	**49**	**799.3**	**39.3**	**20.7**	**15.8**	**20.8**	**18.3**	**23**	**0.0019**	**28.9**				NE	NE	NE	NE

Soil Cleanup Objectives = NYSDEC 6 NYCRR Part 375-6

Bold	Sample is Above Non-Detect Value but Below Objective	J	Indicates and estimated value	ft BGS	Feet Below Ground Surface
Bold	Sample Exceeds Unrestricted Objective	U	Undetected. Analyte included in the analysis, but not detected	SB	Soil Boring
Bold	Sample Exceeds Residential Objective	CAS	Chemical Abstract Servies	ug/kg	Micrograms per Kilogram
Bold	Sample Exceeds Commercial Objective	<BRL	below recording level	VOCs	Volatile Organic Compounds
Bold	Sample Exceeds Industrial Objective				

Table 2
FORMER ELKA CHEMICAL COMPANY - SITE NUMBER 152239
340 West Hoffman Avenue
Lindenhurst, New York 11757
April 23, 2014
375-6 SCO - Protection of Public Health - Unrestricted, Residential, Commercial, and Industrial
Surface Soil Samples - Analyzed for Volatile Organic Compounds (VOCs)
(Only detected constituents are listed)

Surface Soil Sample ID		SS-1	SS-2	SS-3	SS-4	375-6 SCO - Protection of Public Health Unrestricted	375-6 SCO - Protection of Public Health -Residential	375-6 SCO - Protection of Public Health - Commercial	375-6 SCO - Protection of Public Health - Industrial
Sample Depth (ft. BGS)		0 - 6"	0 - 6"	0 - 6"	0 - 6"				
Date Collected		4/23/2014	4/23/2014	4/23/2014	4/23/2014				
SURFACE SOIL-8260B (µg/kg)	CAS #								
Tetrachloroethylene	127-18-4	**7.8**	**4.9 J**	**5.9**	<5.2 U	1,300	19,000	150,000	300,000
Trichloroethylene	79-01-6	**8.4**	**5.9**	**6.4**	**1.5 J**	470	21,000	200,000	400,000

Soil Cleanup Objectives = NYSDEC 6 NYCRR Part 375-6

Bold	Sample is Above Non-Detect Value but Below Objective
Bold	Sample Exceeds Unrestricted Objective
Bold	Sample Exceeds Residential Objective
Bold	Sample Exceeds Commercial Objective
Bold	Sample Exceeds Industrial Objective
ug/kg	Micrograms per Kilogram
VOCs	Volatile Organic Compounds
ft BGS	Feet Below Ground Surface
SS	Surface Soil
J	Indicates and estimated value
U	Undetected. Analyte included in the analysis, but not detected
CAS	Chemical Abstract Servies

Table 3
FORMER ELKA CHEMICAL COMPANY - SITE NUMBER 152239
340 West Hoffman Avenue
Lindenhurst, New York 11757
3/31-4/15/2014 and 2/17/2015
Grab Groundwater Samples - Analyzed for EPA Method VOCs 8260 B (ug/L)
(Only detected constituents are listed)

Sample (Boring) Idintification	Sample Depth (feet below ground surface)	Date Collected	1,1-Dichloroethane	1,1-Dichloroethene	1,2-Dichlorobenzene	Acetone	Benzene	Carbon Disulfide	Chlorobenzene	Chloroform	Chloromethane	Cis-1,2-Dichloroethylene	Cyclohexane	Dichlorodifluoromethane	Ethylbenzene	Isopropylbenzene (Cumene)	Methyl Ethyl Ketone (2-Butanone)	Methylcyclohexane	Tert-Butyl Methyl Ether	Tetrachloroethylene (PCE)	Toluene	Trichloroethylene (TCE)	Xylene Total	Total BTEX	Total VOCs
SB-1(10)	10		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**2.9**	ND<0.2	ND<0.2	ND<0.2	**5.8**	**9.9 J**	ND<0.2	**0.87 J**	**140**	ND<1.3	**17.8**	ND<0.35	**15.8**	**0.35 J**	**5.2**	ND<0.4	1.22	198.62
SB-1(20)	20		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**2.3**	ND<1.3	**0.86 J**	ND<0.35	**1.6**	ND<0.2	ND<0.2	ND<0.4	<BRL	4.76
SB-1(30)	30		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	**0.63 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**1.4**	ND<1.3	ND<0.2	ND<0.35	**1.2**	ND<0.2	ND<0.2	ND<0.4	<BRL	3.23
SB-1(40)	40	**03/31/14**	ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	**0.7 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**2.1**	ND<1.3	ND<0.2	ND<0.35	**1.2**	ND<0.2	ND<0.2	ND<0.4	<BRL	4
SB-1(50)	50		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.48 J**	ND<0.2	**1**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**4**	ND<1.3	**1.5**	ND<0.35	**1.6**	ND<0.2	ND<0.2	ND<0.4	<BRL	8.58
SB-1(60)	60		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**1**	ND<0.2	**0.79 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**28.3**	ND<1.3	**3.3**	ND<0.35	**2.6**	**0.28 J**	ND<0.2	ND<0.4	0.28	36.27
SB-1(70)	70		ND<0.2	ND<0.2	ND<0.2	**27.4 J**	**0.75 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**1.5 J**	**0.5 J**	**58.3 J**	**6 J**	**2.1 J**	ND<0.35	**3.2 J**	**1.2 J**	ND<0.2	ND<0.4	2.45	100.95
SB-1(70)D	70		ND<0.2	ND<0.2	ND<0.2	**19.3 J**	**0.39 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.85 J**	**0.26 J**	**34.2 J**	**3.8 J**	**1.1 J**	ND<0.35	**1.6 J**	**0.6 J**	ND<0.2	ND<0.4	1.25	62.1
SB-2(10)	10		ND<0.2	ND<0.2	ND<0.2	ND<0.5	**0.8 J**	**0.3 J**	ND<0.2	ND<0.2	ND<0.2	**0.7 J**	**14.3**	ND<0.2	**23.4**	**5.1**	ND<1.3	**32.8**	ND<0.35	**0.97 J**	ND<0.2	**0.4 J**	**2.57 J**	26.77	81.34
SB-2(20)	20		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.33 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.63 J**	ND<0.2	ND<1.3	**1.9**	ND<0.35	**0.65 J**	ND<0.2	ND<0.2	ND<0.4	0.63	3.51
SB-2(30)	30		ND<0.2	ND<0.2	ND<0.2	**5.8**	ND<0.2	ND<0.2	ND<0.2	**1.2**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.41 J**	ND<0.2	ND<1.3	**0.92 J**	ND<0.35	**1**	ND<0.2	ND<0.2	ND<0.4	0.41	9.33
SB-2(40)	40	**04/01/14**	ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.77 J**	ND<0.2	**1.1**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.64 J**	ND<0.2	ND<1.3	**1.5**	ND<0.35	**0.77 J**	ND<0.2	ND<0.2	ND<0.4	0.64	4.78
SB-2(50)	50		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**1.4**	ND<0.2	**1.1**	ND<0.2	ND<0.2	**1.9 J**	ND<0.2	**1.8**	**0.52 J**	ND<1.3	**4.2**	ND<0.35	**1**	ND<0.2	ND<0.2	**0.46 J**	2.26	12.38
SB-2(60)	60		ND<0.2	ND<0.2	ND<0.2	**8.8**	**0.38 J**	**3.8**	ND<0.2	0.85 J	ND<0.2	ND<0.2	**4.3 J**	**1.6**	**5.1**	**1.4**	ND<1.3	**8.9**	ND<0.35	**1.5**	**0.32 J**	**0.37 J**	**1.68 J**	7.48	38.15
SB-2(70)	70		ND<0.2	ND<0.2	ND<0.2	**9.2**	**0.4 J**	**4.5**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**4.3 J**	**6.9**	**6.3**	**1.7**	ND<1.3	**9.7**	ND<0.35	**1.2**	**0.35 J**	ND<0.2	**1.77 J**	8.82	46.32
SB-3(10)	10		ND<0.2	ND<0.2	ND<0.2	ND<0.5	**1.2**	**0.74 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**170 J**	ND<0.2	**150 J**	**19.1**	ND<1.3	**710 E**	ND<0.35	**3**	**0.49 J**	**0.7 J**	**101.2 J**	252.89	1156.43
SB-3(10)D	10		ND<2	ND<2	ND<2	ND<5	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	**140 JD**	ND<2	**120 JD**	**15.9 D**	ND<13.2	**590 D**	ND<3.5	**2.8 JD**	ND<2	ND<2	**78.1 JD**	198.1	946.8
SB-3(20)	20		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.77 J**	ND<0.2	**24.2 J**	ND<0.2	**8 J**	**1.7**	ND<1.3	**93.4**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**6.06 J**	14.06	134.13
SB-3(30)	30		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	**1.7**	ND<0.2	ND<0.2	**10.5 J**	ND<0.2	**2.1 J**	**0.55 J**	ND<1.3	**28.7**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**1.5 J**	3.6	45.05
SB-3(40)	40		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**23.1 J**	ND<0.2	**5.3 J**	**1.2**	ND<1.3	**68.9**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**3 J**	8.3	101.5
SB-3(50)	50	4/2/2014	ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.54 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**53.9 J**	ND<0.2	**12 J**	**3**	ND<1.3	**200 E**	ND<0.35	**0.55 J**	ND<0.2	ND<0.2	**8.36 J**	20.36	278.35
SB-3(50)D	50		ND<1	ND<1	ND<1	ND<2.5	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	**40.9 JD**	ND<1	**11.5 JD**	**3.1 JD**	ND<6.6	**170 D**	ND<1.8	ND<1	ND<1	ND<1	**7.6 JD**	19.1	233.1
SB-3(60)	60		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.64 J**	**0.43 J**	ND<0.2	ND<0.2	ND<0.2	**110 J**	**1.8**	**62.9 J**	**13.9**	ND<1.3	**510 E**	ND<0.35	**2.3**	**0.44 J**	**1.5**	**50.9 J**	114.24	754.81
SB-3(60)D	60		ND<2	ND<2	ND<2	ND<5	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	**73.3 JD**	ND<2	**41.8 JD**	**10.8 D**	ND<13.2	**370 D**	ND<3.5	**2.6 JD**	ND<2	ND<2	**32.3 JD**	74.1	530.8
SB-3(70)	70		ND<0.2	ND<0.2	ND<0.2	**23.8 UJ**	**1.4**	**0.92 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**180 J**	**8.5**	**220 E**	**33.9**	ND<1.3	**830 E**	ND<0.35	**0.88 J**	**1.2**	ND<0.2	**204.3**	426.9	1504.9
SB-3(70)D	70		ND<2	ND<2	ND<2	ND<5	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	**150 JD**	ND<2	**200 JD**	**33.5 D**	ND<13.2	**610 D**	ND<3.5	ND<2	ND<2	ND<2	**180 JD**	380	1173.5
SB-4(10)	10		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**1.1**	ND<0.2	**4.5**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.36 J**	**0.7 J**	ND<1.3	**23.2**	ND<0.35	**0.34 J**	ND<0.2	ND<0.2	ND<0.4	0.36	30.2
SB-4(20)	20		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.74 J**	ND<0.2	**0.47 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<1.3	ND<0.2	ND<0.35	ND<0.2	ND<0.2	ND<0.2	ND<0.4	<BRL	1.21
SB-4(30)	30		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**1.2**	ND<0.2	**0.91 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<1.3	ND<0.2	ND<0.35	**0.41 J**	ND<0.2	ND<0.2	ND<0.4	<BRL	2.52
SB-4(40)	40	4/3/2014	ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.83 J**	ND<0.2	**1.4**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<1.3	ND<0.2	ND<0.35	ND<0.2	ND<0.2	ND<0.2	ND<0.4	<BRL	2.23
SB-4(50)	50		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.56 J**	ND<0.2	**0.88 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<1.3	ND<0.2	ND<0.35	ND<0.2	ND<0.2	ND<0.2	ND<0.4	<BRL	1.44
SB-4(60)	60		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.52 J**	ND<0.2	**1.1**	ND<0.2	ND<0.2	ND<0.2	**3.7**	ND<0.2	ND<0.2	ND<1.3	**0.36 J**	ND<0.35	**0.23 J**	ND<0.2	ND<0.2	ND<0.4	<BRL	5.91
SB-4(70)	70		**3.2**	ND<0.2	ND<0.2	**4.2 J**	ND<0.2	**0.47 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**21.8**	ND<0.2	ND<0.2	ND<1.3	**0.37 J**	**0.62 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.4	<BRL	30.66
SB-5(10)	10		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.24 J**	**1.6**	**9.1 J**	ND<0.2	**31.1**	**8.7**	ND<1.3	**27**	ND<0.35	**3.1**	ND<0.2	**1.5**	5.82 J	36.92	88.16
SB-5(20)	20		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	0.45 J	0.23 J	ND<1.3	**1.3**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	ND<0.4	0.45	1.98
SB-5(30)	30		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	**0.55 J**	**0.31 J**	ND<0.2	ND<0.2	ND<0.2	**0.6 J**	**0.33 J**	ND<1.3	**1.3**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**0.8 J**	1.4	3.89
SB-5(40)	40	4/7/2014	ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.26 J**	ND<0.2	**0.55 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.96 J**	**0.45 J**	ND<1.3	**2.2**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**0.47 J**	1.43	4.89
SB-5(50)	50		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.28 J**	ND<0.2	**0.59 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**2**	**0.99 J**	ND<1.3	**4.2**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**0.79 J**	2.79	8.85
SB-5(60)	60		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.39 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.34 J**	**3.7**	**1.6**	ND<1.3	**7**	ND<0.35	**2.5**	ND<0.2	**1.2**	**1.3 J**	5	18.03
SB-5(70)	70		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.49 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**3.6**	**4.3**	**1.6**	ND<1.3	**6.3**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**0.98 J**	5.28	17.27
SB-6(10)	10		ND<0.2	ND<0.2	ND<0.2	**3.2 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<1.3	ND<0.2	ND<0.35	**1.7**	ND<0.2	ND<0.2	ND<0.4	<BRL	4.9
SB-6(20)	20		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	**0.22 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<1.3	ND<0.2	ND<0.35	**0.28 J**	ND<0.2	ND<0.2	ND<0.4	<BRL	0.5
SB-6(30)	30		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	**0.65 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<1.3	ND<0.2	ND<0.35	ND<0.2	ND<0.2	ND<0.2	ND<0.4	<BRL	0.65
SB-6(40)	40	4/8/2014	ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	**0.42 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<1.3	ND<0.2	ND<0.35	ND<0.2	ND<0.2	ND<0.2	ND<0.4	<BRL	0.42
SB-6(50)	50		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.27 J**	ND<0.2	**0.33 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<1.3	ND<0.2	ND<0.35	ND<0.2	ND<0.2	ND<0.2	ND<0.4	<BRL	0.6
SB-6(60)	60		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.55 J**	ND<0.2	ND<0.2	**0.26 J**	ND<0.2	ND<0.2	**0.58 J**	ND<0.2	ND<0.2	ND<1.3	ND<0.2	ND<0.35	**0.81 J**	ND<0.2	**0.35 J**	ND<0.4	<BRL	2.55
SB-6(70)	70		**1.8**	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.45 J**	ND<0.2	ND<0.2	ND<0.2	**0.51 J**	ND<0.2	**5.4**	ND<0.2	ND<0.2	ND<1.3	ND<0.2	ND<0.35	**2.6**	ND<0.2	**1.5**	ND<0.4	<BRL	12.26
SB-7(10)	10		ND<0.2	ND<0.2	ND<0.2	ND<0.5	**1.6**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**170 J**	ND<0.2	**1200 E**	**65.9**	ND<1.3	**480 E**	ND<0.35	**1.2**	**380 E**	ND<0.2	**5700 E**	7281.6	7998.7
SB-7(10) D	10		ND<8	ND<8	ND<8	ND<20	ND<8	ND<8	ND<8	ND<8	ND<8	ND<8	**210 DJ**	ND<8	**1300 D**	**82.8 D**	ND<52.8	**420 JD**	ND<14	ND<8	**480 D**	ND<8	**8400 JD**	10180	10892.8
SB-7(20)	20		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**4.1**	**0.54 J**	ND<1.3	**12.9 J**	ND<0.35	ND<0.2	**1.3**	ND<0.2	**19.1**	24.5	37.94
SB-7(30)	30		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**4.9**	**0.54 J**	ND<1.3	**7.3 J**	ND<0.35	ND<0.2	**1.7**	ND<0.2	**24.7**	31.3	39.14
SB-7(40)	40	4/9/2014	ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.21 J**	ND<0.2	**0.51 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**6.6**	**0.74 J**	ND<1.3	**9.2 J**	ND<0.35	ND<0.2	**2.1**	ND<0.2	**24.5**	33.2	43.86

Table 3
FORMER ELKA CHEMICAL COMPANY - SITE NUMBER 152239
340 West Hoffman Avenue
Lindenhurst, New York 11757
3/31-4/15/2014 and 2/17/2015
Grab Groundwater Samples - Analyzed for EPA Method VOCs 8260 B (ug/L)
(Only detected constituents are listed)

SB-7(50)	50		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.22 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**9**	**0.93 J**	ND<1.3	**11.9 J**	ND<0.35	ND<0.2	**2.6**	ND<0.2	**27.9**	39.5	52.55
SB-7(60)	60		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.42 J**	**0.77 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.51 J**	**29.5**	**2.9**	ND<1.3	**25 J**	ND<0.35	**2.7**	**8.2**	**1.4**	**128.3**	166	199.7
SB-7(70)	70		**0.47 J**	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.74 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**7.1 J**	**62.3**	**5.8**	ND<1.3	**57.4 J**	ND<0.35	ND<0.2	**14.1**	ND<0.2	**415.8**	492.2	563.71
SB-8(10)	10		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**1.7**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**44.5**	ND<0.2	**3.9**	**240 E**	ND<1.3	**55.8**	ND<0.35	ND<0.2	**0.34 J**	ND<0.2	**31.9**	36.14	378.14
SB-8(10)D	10		ND<2	ND<2	ND<2	ND<5	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	ND<2	**260 D**	ND<13.2	**55.9 D**	ND<3.5	ND<2	ND<2	ND<2	ND<4	<BRL	315.9
SB-8(20)	20		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.96 J**	ND<0.2	**0.32 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.47 J**	**5.3**	ND<1.3	**4.3**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**2.19**	2.66	13.54
SB-8(30)	30	4/10/2014	ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.71 J**	ND<0.2	**0.68 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.34 J**	**0.61 J**	ND<1.3	**1.8**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**1.24 J**	1.58	5.38
SB-8(40)	40		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**1.1**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.58 J**	**0.64 J**	**1.3**	ND<1.3	**3.7**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**3.78 J**	4.42	11.1
SB-8(50)	50		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**1**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**1.2**	**0.85 J**	**1.6**	ND<1.3	**4**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**4.8**	5.65	13.45
SB-8(60)	60		**0.98 J**	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**1.7**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**4.6**	**1.4**	**2.5**	ND<1.3	**4.5**	ND<0.35	ND<0.2	**0.52 J**	ND<0.2	**7.9**	9.82	24.1
SB-8(70)	70		**1.8**	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.53 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**8.8**	**1.5**	**2.2**	ND<1.3	**4.6**	ND<0.35	ND<0.2	**0.4 J**	ND<0.2	**8.7**	10.6	28.53
SB-9(10)	10		ND<0.2	ND<0.2	**1.2**	ND<0.5	ND<0.2	**0.46 J**	ND<0.2	ND<0.2	ND<0.2	**8.2**	**110 J**	ND<0.2	**1000 E**	**490 E**	ND<1.3	**380 E**	ND<0.35	**0.66 J**	**1.5**	**0.67 J**	**5000**	6001.5	6992.69
SB-9(10) D	10		ND<8	ND<8	ND<8	ND<20	ND<8	ND<8	ND<8	ND<8	ND<8	ND<8	ND<8	ND<8	**930 D**	**490 D**	ND<52.8	**310 JD**	ND<14	ND<8	ND<8	ND<8	**5400**	6330	7130
SB-9(20)	20		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**26.2 J**	ND<0.2	**16.8**	**79.9**	ND<1.3	**99.4 J**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**92.2**	109	314.5
SB-9(30)	30	4/11/2014	ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**3.8**	**10**	ND<1.3	**26.6 J**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**19.7**	23.5	60.1
SB-9(40)	40		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**2.9**	**7**	ND<1.3	**19.6 J**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**13.9**	16.8	43.4
SB-9(50)	50		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.24 J**	ND<0.2	**0.4 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**3.1**	**6.7**	ND<1.3	**17.4 J**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**9.7**	12.8	37.54
SB-9(60)	60		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.3 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.63 J**	**8.1**	**16.4**	ND<1.3	**37.1 J**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**34**	42.1	96.53
SB-9(70)	70		**1.3**	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.69 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**10.3 J**	**14.6**	**29**	ND<1.3	**64.8 J**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**82**	96.6	202.69
SB-10(10)	10		ND<0.2	ND<0.2	**3**	ND<0.5	ND<0.2	**0.96 J**	ND<0.2	ND<0.2	ND<0.2	**0.45 J**	**180 J**	ND<0.2	**770 E**	**520 E**	ND<1.3	**530 E**	ND<0.35	**0.87 J**	ND<0.2	**1.7**	**3440**	4210	5446.98
SB-10(10)D	10		ND<8	ND<8	ND<8	ND<20	ND<8	ND<8	ND<8	ND<8	ND<8	ND<8	**220 DJ**	ND<8	**710 D**	**570 D**	ND<52.8	**550 D**	ND<14	ND<8	ND<8	ND<8	**3530**	4240	5580
SB-10(20)	20		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.41 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**33 J**	ND<0.2	**9.7**	**140**	ND<1.3	**200**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**46.7**	56.4	429.81
SB-10(30)	30	4/14/2014	ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.34 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**16.4 J**	ND<0.2	**6.9**	**37.3**	ND<1.3	**120**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**31.6**	38.5	212.54
SB-10(40)	40		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.52 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**20.5 J**	ND<0.2	**13.1**	**61.8**	ND<1.3	**150**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**64**	77.1	309.92
SB-10(50)	50		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.49 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**21.3 J**	ND<0.2	**15.6**	**69**	ND<1.3	**160**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**71.9**	87.5	338.29
SB-10(60)	60		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.5 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**19.9 J**	**0.6 J**	**18.3**	**67.9**	ND<1.3	**130**	ND<0.35	**0.74 J**	ND<0.2	ND<0.2	**88.8**	107.1	326.74
SB-10(70)	70		**1.8**	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.45 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**14 J**	**7**	**12.7**	**49**	ND<1.3	**87.3**	ND<0.35	**1.3**	ND<0.2	**0.78 J**	**59.9**	72.6	234.23
SB-11(10)	10		ND<4	ND<4	ND<4	ND<10	ND<4	ND<4	ND<4	ND<4	ND<4	ND<4	ND<4	ND<4	**230**	**160**	ND<26.4	**290**	ND<7	ND<4	ND<4	ND<4	**1070**	1300	1750
SB-11(20)	20		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.24 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**25.7 J**	ND<0.2	**9.6**	**58.1**	ND<1.3	**140**	ND<0.35	**0.4 J**	ND<0.2	ND<0.2	**45.9**	55.5	279.94
SB-11(30)	30		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.32 J**	ND<0.2	**0.54 J**	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**13.1**	**20.2**	ND<1.3	**91.8**	ND<0.35	ND<0.2	ND<0.2	ND<0.2	**59.6**	72.7	185.56
SB-11(40)	40	4/15/2014	ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.32 J**	ND<0.2	**0.48 J**	**0.23 J**	ND<0.2	**10 J**	ND<0.2	**12.9**	**17.5**	ND<1.3	**70.5**	ND<0.35	**0.33 J**	ND<0.2	ND<0.2	**57.3**	70.2	169.56
SB-11(50)	50		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	**0.28 J**	ND<0.2	**0.35 J**	**0.22 J**	ND<0.2	ND<0.2	**0.21 J**	**7.7**	**9.1**	ND<1.3	**34.6**	ND<0.35	**0.59 J**	ND<0.2	ND<0.2	**21.9**	29.6	74.95
SB-11(60)	60		ND<0.2	ND<0.2	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**0.5 J**	**7.9**	**8**	ND<1.3	**19.8**	ND<0.35	**0.63 J**	ND<0.2	ND<0.2	**31**	38.9	67.83
SB-11(70)	70		**2.5**	**1**	ND<0.2	ND<0.5	ND<0.2	ND<0.2	ND<0.2	ND<0.2	ND<0.2	**1.4**	ND<0.2	**6.7**	**7.9**	**7.4**	ND<1.3	**13.8**	ND<0.35	**2.1**	ND<0.2	**1.6**	**30.5**	38.4	74.9
SB-12(10)	10		ND<1	ND<1	7.5	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	**2.5**	33.6	ND<1	**16.4**	**96**	ND<1	**170**	ND<1	**0.9**	ND<1	**1.3**	**61.5**	77.9	389.7
SB-12(20)	20		ND<1	ND<1	12.6	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	**0.66**	17.4	ND<1	**20.1**	**100**	ND<1	**96.2**	ND<1	**1.3**	ND<1	**4.4**	**75**	#VALUE!	327.66
SB-12(30)	30		ND<1	ND<1	2.9	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	19	ND<1	**5.7**	**52.6**	ND<1	**120**	ND<1	ND<1	ND<1	ND<1	**20.3**	#VALUE!	220.5
SB-12(40)	40	2/17/2015	ND<1	ND<1	6.9	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	28.6	ND<1	**16.2**	**110**	ND<1	**170**	ND<1	**0.43**	ND<1	ND<1	**59.5**	#VALUE!	391.63
SB-12(50)	50		ND<1	ND<1	2.7	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	ND<1	17.6	ND<1	**7.2**	**46.6**	ND<1	**120**	ND<1	**0.31**	ND<1	ND<1	**25.1**	#VALUE!	219.51
SB-12(60)	60		ND<1	ND<1	5.4	ND<1	ND<1	0.34	ND<1	ND<1	ND<1	ND<1	24.2	ND<1	**14.7**	**84.8**	ND<1	**170**	ND<1	**0.53 J**	ND<1	ND<1	**54.7**	#VALUE!	354.14
SB-12(70)	70		ND<1	ND<1	9.9	ND<1	ND<1	0.48	ND<1	ND<1	ND<1	ND<1	28.7	ND<1	**26.9**	**130**	ND<1	**180**	ND<1	**0.76**	ND<1	ND<1	**104.2**	#VALUE!	480.94
NYSDEC Class GA Criteria			**5**	**5**	**3.0**	**50**	**1**	**60**	**5**	**7**	**5**	**5**	**NE**	**5**	**5**	**5**	**50**	**NE**	**10**	**5**	**5**	**5**	**5**	**NE**	**NE**

NYSDEC class GA criteria are from NYSDEC Technical and Operational Guidance Series (TOGS 1.1.1), Ambient water quality, class GA standards/guidance values from Table 1.

Bold Sample Exceeds NYSDEC Class GA Criteria
Bold Sample is above Non-Detect Value but Below NYSDEC Class GA Criteria
ND<### Sample is Non-Detect at Laboratory
SB Soil Boring
NA Not Analyzed
NE Not Established

ug/l micrograms per liter
VOCs Volatile Organic Compounds
J Detected but below the Reporting Limit or Method Detection Limit (lowest calibration standard); therefore, result is an estimated concentration (CLP J-Flag).
D indicates all compounds identified in an analysis at a secondary dilution factor.
<BRL below recording level

Table 4
FORMER ELKA CHEMICAL COMPANY - SITE NUMBER 152239
340 West Hoffman Avenue
Lindenhurst, New York 11757
April 23, 2014
NYSDEC Class GA Criteria
Groundwater Samples Analytical Results: SVOCs 8270 C
(Only detected constituents are listed)

WATER-8270C (ug/L) Date Collected	PZ-1 04/23/14	PZ-2 04/23/14	PZ-3 04/23/14	NYSDEC Class GA Criteria
Bis(2-ethylhexyl)phthalate	**5.2 J**	(<11.1) U	(<10.3) U	5
Dimethyl phthalate	**5.3 J**	3.9 J	11.4	50
1,1-Biphenyl, 3,4-dimethyl-	**4.4 J**	NA	NA	NE
Decane, 5-propyl-	**4.3 J**	NA	NA	NE
Hexadecane, 2,6,10-trimethyl-	**8.5 J**	NA	NA	NE
Hexane, 3,3,4-trimethyl-	**4.6 J**	NA	NA	NE
Hexanoic acid, 4-methyl-	**5.3 J**	NA	NA	NE
Naphthalene, 1-(2-propenyl)-	**6.1 J**	NA	NA	NE
Naphthalene, 2,3,6-trimethyl-	**5.8 J**	NA	NA	NE
Pentadecane, 2,6,10,14-tetramethyl	**5.2 J**	NA	NA	NE
Undecane, 6-ethyl-	**4.3 J**	NA	NA	NE
unknown10.16	**4.3 J**	NA	NA	NE
unknown4.90	**91.3 J**	NA	NA	NE
Hexanedioic acid, bis(2-ethylhexyl	NA	**2.4 J**	NA	NE
unknown4.94	NA	**100 J**	**91.7 J**	NE
2-Pentanone, 4-hydroxy-4-methyl-	NA	NA	**2.2 J**	NE
Phthalic acid, 2-hexyl ester	NA	NA	**3.2 J**	NE
Tetradecanoic acid	NA	NA	**10.5 J**	NE
Tridecanoic acid	NA	NA	**7.9 J**	NE

NYSDEC class GA criteria are from NYSDEC Technical and Operational Guidance Series (TOGS 1.1.1), Ambient water quality, class GA standards/guidance values from Table 1.

Bold	Sample Exceeds NYSDEC Class GA Criteria
Bold	Sample is above Non-Detect Value but Below NYSDEC Class GA Criteria
( )	Indicates the stated minimum detectable level exceeds an RSR criteria.
PZ	Piezometer
NE	Not Established
NA	Not analyzed
ug/l	micrograms per liter
SVOCs	Semi Volatile Organic Compounds
J	Indicates and estimated value
U	Undetected. Analyte included in the analysis, but not detected

Table 5
FORMER ELKA CHEMICAL COMPANY - SITE NUMBER 152239
340 West Hoffman Avenue
Lindenhurst, New York 11757
April 23, 2014
NYSDEC Class GA Criteria
Groundwater Samples - Analyzed for Target Analyte List (TAL) Metals
(Only detected constituents are listed)

WATER-Metals (mg/L) Date Collected	PZ-1 04/23/14	PZ-2 04/23/14	PZ-3 04/23/14	NYSDEC Class GA Criteria
Aluminum, Total	**0.279**	**0.605**	**5.65**	**NE**
Barium	**0.0235 J**	**0.0179 J**	**0.034 J**	**1**
Calcium	**24.10**	**15.40**	**17.30**	**NE**
Chromium, Total	**0.00314 J**	**0.00258 J**	**0.0226**	**0.05**
Copper	**0.00398 J**	<0.010 U	**0.0119**	**0.2**
Iron	**2.050**	**0.866**	**9.530**	**0.3**
Lead	<0.006 U	<0.006 U	**0.00804**	**0.025**
Magnesium	**3.71**	**2.60**	**3.53**	**35**
Manganese	**0.0926**	**0.0164**	**0.159**	**0.3**
Nickel	<0.020 U	<0.020 U	**0.00528 J**	**0.1**
Potassium, Total	**2.34**	**2.14**	**2.31**	**NE**
Sodium, Total	**26.40**	**18.30**	**21.40**	**20**
Vanadium	<0.020 U	<0.020 U	**0.00954 J**	**NE**
Zinc	0.00802 J	<0.020 U	**0.0304**	**2**

NYSDEC class GA criteria are from NYSDEC Technical and Operational Guidance Series (TOGS 1.1.1), Ambient water quality, class GA standards/guidance values from Table 1.

Bold	Sample Exceeds NYSDEC Class GA Criteria
Bold	Sample is above Non-Detect Value but Below NYSDEC Class GA Criteria
( )	Indicates the stated minimum detectable level exceeds an RSR criteria.
PZ	Piezometer
NE	Not Established
mg/l	milligrams per liter
J	Indicates and estimated value
U	Undetected. Analyte included in the analysis, but not detected

Table 6
FORMER ELKA CHEMICAL COMPANY - SITE NUMBER 152239
340 West Hoffman Avenue
Lindenhurst, New York 11757
19-Feb-15
Soil Vapor Samples Analytical Results: TO-15
(Only detected constituents are listed)

Vapor Sample ID		NYSDOH	AA-1	AA-2	DUP	SVP-1	SVP-2	SVP-3	SVP-4	SVP-5	SVP-6
Date Collected		Guidance	2/19/2015	2/19/2015	2/19/2015	2/19/2015	2/19/2015	2/19/2015	2/19/2015	2/19/2015	2/19/2015
AIR-TO15 (µg/m3)	CAS #	Values									
1,1,1-Trichloroethane	71-55-6	**100**	<0.19 UD	<0.19 UD	<0.19 UD	<82 UD	**1.3 D**	**1.5 D**	**4.8 D**	<0.55 UD	<0.55 UD
1,1,2-Trichloroethane	79-00-5	NE	<0.19 UD	<0.19 UD	<0.19 UD	**1400 D**	<0.55 UD	<0.55 UD	<0.55 UD	<0.55 UD	<0.55 UD
1,1-Dichloroethane	75-34-3	NE	<0.14 UD	<0.14 UD	<0.14 UD	**120 D**	<0.4 UD	<0.4 UD	<0.4 UD	<0.4 UD	<0.4 UD
1,2,4-Trimethylbenzene	95-63-6	NE	**0.24 D**	**0.26 D**	**0.3 D**	<74 UD	<0.49 UD	<0.49 UD	**0.66 D**	<0.49 UD	<0.49 UD
2-Butanone (MEK)	78-93-3	NE	<4.1 U	<4.1 U	<4.1 U	**81000 D**	<12 U	<12 U	<12 U	<12 U	<12 U
2-Hexanone (Methyl butyl ketone/MBK)	591-78-6	NE	**0.16 D**	**0.2 D**	**0.24 D**	<61 UD	<0.41 UD	<0.41 UD	<0.41 UD	<0.41 UD	**0.42 D**
Acetone	67-64-1	NE	**17 D, L-05, V-06**	**15 D, L-05, V-06**	**20 D, L-05, V-06**	<1400 U	79 D, L-05, V-06	76 D, L-05, V-06	99 D, L-05, V-06	50 D, L-05, V-06	66 D, L-05, V-06
Benzene	71-43-2	NE	**0.91 D**	**1.1 D**	**1.3 D**	**1100 D**	**1.9 D**	**1.9 D**	**1.4 D**	**2 D**	**1.8 D**
Carbon disulfide	75-15-0	NE	<1.1 UD	<1.1 UD	<1.1 UD	<470 U	<3.1 U	<3.1 U	5.2 D	<3.1 U	<3.1 U
Carbon tetrachloride	56-23-5	NE	**0.43 D**	**0.43 D**	**0.41 D**	<94 UD	<0.63 UD	<0.63 UD	<0.63 UD	<0.63 UD	<0.63 UD
Chloroethane	75-00-3	NE	<0.092 UD	<0.092 UD	<0.092 UD	**150 D**	<0.26 UD	<0.26 UD	<0.26 UD	<0.26 UD	<0.26 UD
Chloromethane	74-87-3	NE	**0.86 D**	**0.89 D**	**0.88 D**	<62 UD	**0.43 D**	<0.41 U	**0.44 D**	**0.46 D**	**0.75 D**
Cyclohexane	110-82-7	NE	**0.21 D**	**14 D**	**9.5 D**	**96000 D**	**3.3 D**	**0.39 D**	**0.5 D**	**4.4 D**	**0.83 D**
Dichlorodifluoromethane	75-71-8	NE	**1.6 D**	**1.6 D**	**1.6 D**	<74 UD, L-03	**2.8 D**	**2.3 D**	**2.1 D**	**2.2 D**	**2.2 D**
Ethanol	64-17-5	NE	**6.1 D**	**5.6 D**	**7.6 D**	<1100 UD, L-03, V-05	**76 D**	**100 D**	**75 D**	**95 D**	**120 D**
Ethyl Acetate	141-78-6	NE	**0.72 D**	<0.13 UD	<0.13 UD	**120 D**	**2.1 D**	**1.1 D**	**1.6 D**	**1 D**	**1.2 D**
Ethylbenzene	100-41-4	NE	**0.3 D**	**0.29 D**	**0.3 D**	<65 UD	<0.43 UD	<0.43 UD	<0.43 UD	<0.43 UD	<0.43 UD
Heptane	142-82-5	NE	**0.35 D**	**1.8 D**	**1.3 D**	**14000 D**	**1.4 D**	**0.98 D**	**1.1 D**	**1.4 D**	**1 D**
Hexane	110-54-3	NE	<4.9 U	**16 D**	**11 D**	**83000 D**	<14 U	<14 U	<14 U	<14 U	<14 U
m/p-Xylenes	179601-23-1	NE	**1 D**	**1 D**	**1.1 D**	<130 UD	<0.87 U	**0.89 D**	**1.1 D**	**0.96 D**	**1.1 D**
Methylene chloride (Dichloromethane)	75-09-2	**60**	<1.2 U	**1.9 D**	<1.2 U	(<520) U	<3.5 U	<3.5 U	<3.5 U	<3.5 U	<3.5 U
o-Xylene	95-47-6	NE	**0.32 D**	**0.34 D**	**0.34 D**	<65 UD	<0.43 UD	<0.43 UD	<0.43 UD	<0.43 UD	<0.43 UD
Propene	115-07-1	NE	<2.4 UD	<2.4 UD	<2.4 UD	<1000 U	**100 D**	**19 D**	**20 D**	<6.9 U	<6.9 U
Tetrachloroethylene (PCE)	127-18-4	**30**	**0.41 D**	**0.47 D**	**0.4 D**	**130 D**	**0.9 D**	<0.68 UD	<0.68 UD	<0.68 UD	<0.68 UD
Tetrahydrofuran	109-99-9	NE	<0.1 UD	<0.1 UD	<0.1 UD	<44 UD	**0.77 D**	**0.63 D**	**0.65 D**	**0.57 D**	**0.63 D**
Toluene	108-88-3	NE	**3 D**	**2.4 D**	**2.9 D**	<57 UD	**2.9 D**	**3.2 D**	**3.5 D**	**3.3 D**	**4 D**
Trichloroethylene (TCE)	79-01-6	**5**	<0.19 UD	<0.19 UD	<0.19 UD	(<81) UD	**1.3 D**	<0.54 UD	<0.54 UD	<0.54 UD	<0.54 UD
Trichlorofluoromethane	75-69-4	NE	**1.5 D**	**1.6 D**	**1.4 D**	<340 UD	<2.2 U	<2.2 U	<2.2 U	<2.2 U	<2.2 U
Vinyl acetate	108-05-4	NE	<2.5 UD	<2.5 UD	<2.5 UD	**29000 D**	<7 UD	<7 UD	<7 UD	<7 UD	<7 UD
Vinyl chloride	75-01-4	NE	<0.089 UD	<0.089 UD	<0.089 UD	**120 D**	<0.26 UD	<0.26 UD	<0.26 UD	<0.26 UD	<0.26 UD
Xylene-Total		NE	**1.32 D**	**1.34 D**	**1.44 D**	<BRL	<BRL	**0.89 D UD**	**1.1 D UD**	**0.96 D UD**	**1.1 D UD**

Legend

1	Parameter reported at a concentration greater than applicable regulatory standard/criterion
( )	Indicates the laboratory reporting limit is greater than one or more applicable comparison criteria
BRL	Parameter consists of multiple isomers and were not detected above the laboratory reporting limit
1	Bold indicates parameter detected above reporting limit

µg/m3 = micrograms per cubic meter
NE = None Established
D = Data reported from a dilution
U = Undetected. Analyte included in the analysis, but not detected.
UD = Undetected at a dilution
CAS # = Chemical Abstract Service Number
L-05 + Laboratory fortified blank / laboratory control sample recovery is outside of control limits.
Reported value for this compound is likely to be biased on the high side.
V-06 = Continuing calibration did not meet method specifications and was biased on the high side for this compound.
Increased uncertainty is assocaited with the reported value which is likely to be biased on the high side.

APPENDIX A

FIELD DATA (SOIL BORING LOGS, GROUNDWATER WELL PURGE FORM, GROUNDWATER SAMPLING SHEETS, WELL LOGS, etc.)

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-1
Job Number: NEW9630.P2	**Date:** 3/31/14
Drilling Company: Zebra Environmental	**Time:** 9:00
Location:	
GPS Coordinates **N:** 40 deg 41.007' **W:** 73 deg. 22.984'	

Sample Interval (ftbg) Top	Sample Interval (ftbg) Bottom	Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
0	5	2.5	Dry	0 to 0.5 Asphalt 0.5 to 5 SAND, medium; some gravel; tan; loose; no odor or staining	0.0
5	10	2.7	Moist Wet @9'	5 to 9 SAND, medium; some gravel; tan; loose; no odor or staining 9 to 10 SAND, medium; some gravel; tan; loose; strong fuel oil odor; stained grey	0.0 575
10	15	5	Wet	SAND, coarse; some gravel; tan; loose; slight fuel oil odor; slight grey staining from 12 to 13 feet	10'-33 13'-85 15'-7.6
15	20	5	Wet	Coarse sand and medium gravel; tan; loose; no odor or staining	1.9
20	25	5	Wet	Coarse sand and medium gravel; tan; loose; no odor or staining	6.7 3.6
25	30	5	Wet	Coarse sand and medium gravel; tan; loose; slight chemical odor; no staining	36.8
30	35	4.5	Wet	SAND, medium little gravel; tan; loose; very slight chemical odor	8.6
35	40	5	Wet	SAND, medium little gravel; tan; loose; very slight chemical odor	23.6
40	45	2.3	Wet	SAND, medium little gravel; tan; loose; very slight chemical odor	3.8
45	50	5	Wet	SAND, medium little gravel; tan; loose; very slight chemical odor	7.4
50	55	5	Wet	SAND, medium little gravel; tan; loose; very slight chemical odor	22.0
55	60	5	Wet	SAND, medium little gravel; tan; loose; very slight chemical odor	2.2
60	65	5	Wet	SAND, medium little gravel; tan; loose; no odor or staining	1.1
	65			End of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-1 (4-5)	9:10
SB-1 10' through SB-1 70'	Misc	SB-1 (9-10)	9:15
Sampling Method: EPA 8260			
Description of Water: clear to silty			

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-10
Job Number: NEW9630.P2	**Date:** 4/14/14
Drilling Company: Zebra Environmental	**Time:** 9:00

Location:

GPS Coordinates **N:** 40 deg 41.049' **W:** 73 deg. 23.005'

Sample Interval (ftbg)		Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
Top	Bottom				
0	5	0.2	Dry	0.5 to 5 SAND, coarse; some gravel; red-brown; loose; no odor or staining	0.0
5	10	2.1	Wet @6'	5 to 6 SAND, coarse; some gravel; tan; loose; no odor or staining 6 to 10 SAND, coarse; some gravel; red-brown; loose; gasoline odor; stained grey	128 765
10	15	5	Wet	SAND, coarse; some gravel; tan; loose; gasoline odor; stained grey	1212
15	20	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	1028 75.3
20	25	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	14.2
25	30	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	2.8
30	35	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	5.3
35	40	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	12.4
40	45	5	Wet	SAND, coarse; some gravel; tan; loose; slight chemical odor; no staining	14.8
45	50	5	Wet	SAND, coarse; some gravel; tan; loose; slight chemical odor; no staining	3.2
50	55	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.0
55	60	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.0
60	65	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.0
	65			End of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-10 (4-5)	9:30
SB-10 10' through SB-10 70'	misc	SB-10 (6-7)	9:35
Sampling Method: EPA Method 8260			
Description of Water: Clear to silty			

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-11
Job Number: NEW9630.P2	**Date:** 4/15/14
Drilling Company: Zebra Environmental	**Time:** 9:00
Location:	
GPS Coordinates **N:**	**W:**

Sample Interval (ftbg) Top	Sample Interval (ftbg) Bottom	Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
0	5	0.2	Dry	0.5 to 5 SAND, coarse; some gravel; red-brown; loose; no odor or staining	0.0
5	10	2.1	Wet @8'	5 to 8 SAND, coarse; some gravel; tan; loose; no odor or staining 8 to 10 SAND, coarse; some gravel; red-brown; loose; gasoline odor; stained grey	45.7 255
10	15	5	Wet	SAND, coarse; some gravel; tan; loose; gasoline odor; stained grey	1081
15	20	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	3.9
20	25	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	2.4
25	30	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	5.4
30	35	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	1.4
35	40	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	1.7
40	45	5	Wet	SAND, coarse; some gravel; tan; loose; slight chemical odor; no staining	5.0
45	50	5	Wet	SAND, coarse; some gravel; tan; loose; slight chemical odor; no staining	4.5
50	55	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	3.4
55	60	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.0
60	65	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.0
	65			End of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-11 (4-5' bgs)	9:10
SB-11 10'bgs through SB-11 70'bgs	Misc	SB-11 (7-8' bgs)	9:20
Sampling Method: EPA Method 8260			
Description of Water: clear to silty			

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-12
Job Number: NEW9630.P2	**Date:** 2/17/15
Drilling Company: Zebra Environmental	**Time:** 9:30

Location: West of the building, former shed area

GPS Coordinates **N:** **W:**

Sample Interval (ftbg)		Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
Top	**Bottom**				
0	5	3.1	Dry	0.5 to 5 SAND, coarse; some gravel; red-brown; loose; no odor or staining	0.0
5	10	5	Wet @8'	5 to 8 SAND, coarse; some gravel; tan; loose; no odor or staining 8 to 10 SAND, coarse; some gravel; red-brown; loose; gasoline odor; stained grey	0.0 1,111
10	15	5	Wet	SAND, coarse; some gravel; tan; loose; gasoline odor; stained grey	1,270
15	20	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	41.7
20	25	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	183
25	30	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	115
30	35	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	185
35	40	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	284
40	45	5	Wet	SAND, coarse; some gravel; tan; loose; slight chemical odor; no staining	30.3
45	50	5	Wet	SAND, coarse; some gravel; tan; loose; slight chemical odor; no staining	111.3
50	55	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	259
55	60	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	85.7
60	65	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining; Till in tip of macrocore	9.4
65	69	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining; Till in tip of macrocore	11.7
	69			Refusal, end of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-12 (12-14' bgs)	10:20
SB-12 10'bgs through SB-12 70'bgs	Misc	SB-12 (38-40' bgs)	10:30
Sampling Method: Grab w/peristaltic pump		SB-12 (54-55' bgs)	10:50
Description of Water: clear to silty			

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-2
Job Number: NEW9630.P2	**Date:** 3/31/14
Drilling Company: Zebra Environmental	**Time:** 13:45

Location:

GPS Coordinates **N:** 40 deg 41.074' **W:** 73 deg. 22.989'

Sample Interval (ftbg) Top	Sample Interval (ftbg) Bottom	Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
0	5	2.4	Dry	0 to 0.5 Asphalt 0.5 to 5 SAND, medium; some gravel; Little silt; tan; loose; no odor or staining	8.5
5	10	3.6	Moist	5 to 6 SAND, medium; some gravel; tan; loose; no odor or staining	8.9
			Wet @7'	6 to 10 SAND, medium to coarse; some gravel; tan; loose; no odor or staining	0.9
10	15	5	Wet	10 to 11 SAND, medium to coarse; some gravel; tan; loose; no odor or staining	1.8
				11 to 15 Coarse sand and medium gravel; tan; loose; no odor or staining	0.0
15	20	5	Wet	Coarse sand and medium gravel; tan; loose; no odor or staining	0.0
20	25	5	Wet	Coarse sand and medium gravel; tan; loose; no odor or staining	0.0
25	30	5	Wet	Coarse sand and medium gravel; tan; loose; no odor or staining	0.0
30	35	5	Wet	Coarse sand and medium gravel; tan; loose; no odor or staining	0.4
35	40	5	Wet	Coarse sand and medium gravel; tan; loose; no odor or staining	0.0
40	45	5	Wet	Coarse sand and medium gravel; tan; loose; no odor or staining	0.0
45	50	5	Wet	SAND, medium; some gravel; tan; loose; no odor or staining	1.6
50	55	5	Wet	SAND, medium; some gravel; tan; loose; no odor or staining	0.9
55	60	5	Wet	SAND, medium; some gravel; tan; loose; no odor or staining	1.1
60	65	5	Wet	SAND, medium; some gravel; tan; loose; no odor or staining	0.0
65	70	5	Wet	SAND, medium; some gravel; tan; loose; no odor or staining; till in tip	0.0
	70			End of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-2 (4-5)	14:00
SB-2 10' through SB-2 70'	Misc	SB-2 (6-7)	14:10
Sampling Method: EPA Method 8260			
Description of Water: clear to silty			

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-3 - PZ-1
Job Number: NEW9630.P2	**Date:** 4/1/14
Drilling Company: Zebra Environmental	**Time:** 13:00
Location:	
GPS Coordinates **N:** 40 deg 41.073' **W:** 73 deg. 22.995'	

Sample Interval (ftbg) Top	Sample Interval (ftbg) Bottom	Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
0	5	2.5	Dry	0 to 0.5 Asphalt 0.5 to 5 SAND, medium; some gravel; Little silt; tan; loose; slight gasoline odor; no staining	0.0 236
5	10	3.3	Wet @7'	SAND, medium; some gravel; Little silt; tan; loose; slight gasoline odor; no staining	177
10	15	5	Wet	10 to 12.5 SAND, medium; some gravel; Little silt; tan; loose; slight gasoline odor; stained grey 12.5 to 15 SAND, coarse; some gravel; loose; tan; no odor or staining	994 23.7
15	20	5	Wet	SAND, coarse; some gravel; loose; tan; no odor or staining	94.3
20	25	5	Wet	SAND, coarse; some gravel; loose; tan; no odor or staining	17.0
25	30	5	Wet	SAND and GRAVEL; light brown; loose; no odor or staining	1.4
30	35	5	Wet	SAND and GRAVEL; light brown; loose; no odor or staining	2.4
35	40	5	Wet	SAND, coarse; some gravel; loose; tan; no odor or staining	0.7
40	45	5	Wet	SAND, coarse; some gravel; loose; tan; no odor or staining	0.9
45	50	5	Wet	SAND, coarse; some gravel; loose; tan; no odor or staining	2.7
50	55	5	Wet	SAND, coarse; some gravel; loose; tan; no odor or staining	1.4
55	60	5	Wet	SAND, coarse; some gravel; loose; tan; no odor or staining	0.0
60	65	5	Wet	SAND, coarse; some gravel; loose; tan; no odor or staining; till in tip	0.0
	65			End of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-3 (4-5)	13:25
SB-3 10' through SB-3 70'	Misc	SB-3 (6-7)	13:30
Sampling Method: EPA Method 8260			
Description of Water: clear to silty			

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-4
Job Number: NEW9630.P2	**Date:** 4/2/14
Drilling Company: Zebra Environmental	**Time:** 14:00

Location:

GPS Coordinates **N:** 40 deg 41.072' **W:** 73 deg. 23.001'

Sample Interval (ftbg) Top	Sample Interval (ftbg) Bottom	Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
0	5	2.5	Dry	0 to 0.5 Asphalt 0.5 to 5 SAND, medium; some gravel; little silt; tan; loose; slight gasoline odor; no staining	0.0 0.1
5	10	3.1	Wet @8'	SAND, medium; some gravel; little silt; tan; loose; slight gasoline odor; no staining	230
10	15	5	Wet	SAND, medium to coarse; some gravel; tan; loose; slight gasoline odor; stained grey	132
15	20	5	Wet	15 to 17 SAND, medium to coarse; some gravel; tan; loose; slight gasoline odor; stained grey 17 to 20 SAND, medium; some gravel; little silt; tan; loose; slight gasoline odor; no staining	22 1.6
20	25	5	Wet	SAND, medium; some gravel; little silt; tan; loose; slight gasoline odor; no staining	2.0
25	30	5	Wet	SAND and GRAVEL; light brown; loose; no odor or staining	8.8
30	35	5	Wet	SAND and GRAVEL; light brown; loose; no odor or staining	0.9
35	40	5	Wet	SAND, medium; some gravel; little silt; tan; loose; slight gasoline odor; no staining	1.3
40	45	5	Wet	SAND, medium; some gravel; little silt; tan; loose; slight gasoline odor; no staining	0.8
45	50	5	Wet	SAND, medium; some gravel; little silt; tan; loose; slight gasoline odor; no staining	0.9
50	55	5	Wet	SAND, medium; some gravel; little silt; tan; loose; slight gasoline odor; no staining	2.8
55	60	5	Wet	SAND, medium; some gravel; little silt; tan; loose; slight gasoline odor; no staining	1.6
60	65	5	Wet	Till and grey clay, weathered rock	0.0
	65			End of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-4 (4-5)	14:10
SB-4 10' through SB-4 70'	Misc	SB-4 (7-8)	14:20
Sampling Method: EPA Method 8260			
Description of Water: clear to silty			

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-5 - PZ-2
Job Number: NEW9630.P2	**Date:** 4/3/14
Drilling Company: Zebra Environmental	**Time:** 14:00
Location:	
GPS Coordinates **N:** 40 deg 41.066' **W:** 73 deg. 23.984'	

Sample Interval (ftbg) Top	Sample Interval (ftbg) Bottom	Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
0	5	2.7	Dry	0 to 0.5 Asphalt 0.5 to 5 SAND, medium; some gravel; little silt; tan; loose; no odor or staining	0.0 0.0
5	10	3.1	Wet @6'	5 to 6 SAND, medium; some gravel; little silt; tan; loose; no odor or staining 6 to 10 SAND, medium; some gravel; little silt; tan; loose; no odor; stained grey	0.0 327
10	15	5	Wet	10 to 12.5 SAND, medium; some gravel; little silt; tan; loose; no odor; stained grey 12.5 to 15 SAND, medium to coarse; some gravel; tan; loose; no odor or staining	58.3 9.1
15	20	5	Wet	SAND, medium to coarse; some gravel; tan; loose; no odor or staining	1.2
20	25	5	Wet	SAND and GRAVEL; light brown; loose; no odor or staining	0.0
25	30	5	Wet	SAND and GRAVEL; light brown; loose; no odor or staining	8.6
30	35	5	Wet	SAND, medium to coarse; little gravel; tan; loose; no odor or staining	1.6
35	40	5	Wet	SAND and GRAVEL; light brown; loose; no odor or staining	8.6
40	45	5	Wet	SAND, medium to coarse; some gravel; tan; loose; no odor or staining	0.9
45	50	5	Wet	SAND, medium to coarse; some gravel; tan; loose; no odor or staining	0.4
50	55	5	Wet	SAND, medium to coarse; some gravel; tan; loose; no odor or staining	0.0
55	60	5	Wet	SAND, medium to coarse; some gravel; tan; loose; no odor or staining	4.1
60	64.5	5	Wet	SAND, medium to coarse; some gravel; tan; loose; no odor or staining	0.0
	64.5			Refusal, End of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-5 (4-5) + MS/MSD	14:10
SB-5 10' through SB-5 70'	misc	SB-5 (6-7)	14:20
Sampling Method: EPA Method 8260			
Description of Water: Clear to Silty			

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-6
Job Number: NEW9630.P2	**Date:** 4/8/14
Drilling Company: Zebra Environmental	**Time:** 9:09
Location:	
GPS Coordinates **N:** 40 deg 41.071' **W:** 73 deg. 23.015'	

Sample Interval (ftbg) Top	Sample Interval (ftbg) Bottom	Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
0	5	1.1	Dry	0 to 1 SAND, medium; some gravel; some silt; loose; brown; no odor or staining 1 to 1.5 Concrete 1.5 to 2 SAND, medium; some gravel; some silt; loose; brown; no odor or staining 2 to 2.5 Concrete 2.5 to 5 SAND, medium; some gravel; little silt; tan; loose; no odor or staining	0.0 0.0 0.0 0.0 1.0
5	10	3.1	Wet @7.5'	SAND, medium; some gravel; little silt; tan; loose; no odor; grey staining at 7.5 to 10	76.6 588
10	15	5	Wet	SAND, medium; some gravel; little silt; tan; loose; no odor; grey staining	215
15	20	5	Wet	SAND, medium; some gravel; little silt; tan; loose; no odor; grey staining from 15 to 17.5	158 17.0
20	25	5	Wet	SAND, medium; some gravel; little silt; tan; loose; no odor or staining	3.6
25	30	5	Wet	SAND, medium; some gravel; little silt; tan; loose; no odor or staining	4.0
30	35	5	Wet	SAND, medium; some gravel; little silt; tan; loose; no odor or staining	7.6
35	40	5	Wet	SAND, medium; some gravel; little silt; tan; loose; no odor or staining	4.0
40	45	5	Wet	SAND, medium; some gravel; little silt; tan; loose; no odor or staining	1.8
45	50	5	Wet	SAND, medium; some gravel; little silt; tan; loose; no odor or staining	1.4
50	55	5	Wet	SAND, medium; some gravel; little silt; tan; loose; no odor or staining	1.4
55	60	5	Wet	SAND, medium; some gravel; little silt; tan; loose; no odor or staining	1.9
60	65	5	Wet	SAND, medium; some gravel; little silt; tan; loose; no odor or staining. Till in tip	0.0
	65			End of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-6 (4-5)	10:00
SB-6 10' through SB-6 70'	Misc	SB-6 (6-7)	10:05
Sampling Method: EPA Method 8260			
Description of Water: clear to silty			

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-7
Job Number: NEW9630.P2	**Date:** 4/9/14
Drilling Company: Zebra Environmental	**Time:** 8:00

Location:

GPS Coordinates **N:** 40 deg 41.062' **W:** 73 deg. 22.991'

Sample Interval (ftbg)		Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
Top	Bottom				
0	5	3.1	Dry	0 to 0.5 Asphalt 0.5 to 5 SAND, medium; little gravel; brown; loose; no odor or staining	0.0 0.0
5	10	2.2	Wet @7.5'	5 to 6 SAND, medium; little gravel; brown; loose; no odor or staining 6 to10 SAND, medium to coarse; little gravel; loose; tan; slight gasoline odor; stained grey	0.0 1766
10	15	5	Wet	10 to 12.5 SAND, medium to coarse; little gravel; loose; tan; slight gasoline odor; stained grey 12.5 to 15 SAND, medium; little gravel; brown; loose; no odor or staining	125 14.8
15	20	5	Wet	SAND, medium; little gravel; brown; loose; no odor or staining	3.5
20	25	5	Wet	SAND, coarse; some gravel; little silt; tan; loose; no odor or staining	4.6
25	30	5	Wet	SAND, coarse; some gravel; little silt; tan; loose; no odor or staining	4.4
30	35	5	Wet	SAND, coarse; some gravel; little silt; tan; loose; no odor or staining	1.6
35	40	5	Wet	SAND, medium; little gravel; brown; loose; no odor or staining	1.8
40	45	5	Wet	SAND, medium; little gravel; brown; loose; no odor or staining	0.0
45	50	5	Wet	SAND, medium; little gravel; brown; loose; slight chemical odor; no staining	13.5
50	55	5	Wet	SAND, medium; little gravel; brown; loose; no odor or staining	0.0
55	60	5	Wet	SAND, medium; little gravel; brown; loose; no odor or staining	0.0
60	65	5	Wet	SAND, medium; little gravel; brown; loose; no odor or staining	0.9
	65			End of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-7 (4-5)	9:15
SB-7 10' through SB-7 70'	misc	SB-7 (8-9)	9:20
Sampling Method: EPA Method 8260		SB-7 (45-50)	10:50
Description of Water: clear to silty			

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-8 - PZ-3
Job Number: NEW9630.P2	**Date:** 4/10/14
Drilling Company: Zebra Environmental	**Time:** 9:00
Location:	
GPS Coordinates **N:** 40 deg 41.060' **W:** 73 deg. 22.997'	

Sample Interval (ftbg) Top	Sample Interval (ftbg) Bottom	Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
0	5	Hand Cleared	Dry	0.5 to 5 SAND, coarse; little gravel; red-brown; loose; no odor or staining	0.0
5	10	2.2	Wet @7'	5 to 7 medium SAND and GRAVEL; tan; loose; no odor or staining 7 to 10 SAND, medium;; loose; tan; slight gasoline odor; stained grey	4.0 324
10	15	5	Wet	10 to 12.5 SAND, medium;; loose; tan; slight gasoline odor; stained grey 12.5 to 15 SAND, coarse; some gravel; tan; loose; no odor or staining	225 17.5
15	20	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.0
20	25	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.6
25	30	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.8
30	35	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	1.4
35	40	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	1.4
40	45	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	2.6
45	50	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	1.3
50	55	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.2
55	60	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	1.1
60	65	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.1
	65			End of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-8 (4-5)	9:15
SB-8 10' though SB-8 70'	misc	SB-8 (6-7)	9:20
Sampling Method: EPA 8260			
Description of Water: Clear to silty			

HRP Engineering, P.C.

Creating the Right Solutions Together

Project: Former Elka Chemical Company	**Boring I.D.:** SB-9
Job Number: NEW9630.P2	**Date:** 4/11/14
Drilling Company: Zebra Environmental	**Time:** 9:00
Location:	
GPS Coordinates **N:** 40 deg 41.049' **W:** 73 deg. 23.005'	

Sample Interval (ftbg) Top	Sample Interval (ftbg) Bottom	Recovery (ft)	Moisture	Description (grain size, color, compaction, staining, odor)	PID (PPM)
0	5	0.2	Dry	0.5 to 5 SAND, coarse; some gravel; red-brown; loose; no odor or staining	0.0
5	10	2.1	Wet @6'	5 to 6 SAND, coarse; some gravel; red-brown; loose; no odor or staining 6 to 10 SAND, coarse; some gravel; red-brown; loose; gasoline odor; stained grey	47.9 1248
10	15	5	Wet	SAND, coarse; some gravel; tan; loose; gasoline odor; stained grey	1548
15	20	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	44
20	25	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	16.3
25	30	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	3.5
30	35	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	3.1
35	40	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.9
40	45	5	Wet	SAND, coarse; some gravel; tan; loose; slight chemical odor; no staining	86.6
45	50	5	Wet	SAND, coarse; some gravel; tan; loose; slight chemical odor; no staining	50.0
50	55	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.3
55	60	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	10.6
60	65	5	Wet	SAND, coarse; some gravel; tan; loose; no odor or staining	0.1
	65			End of boring	

Well Screen:		**Soil Samples Collected:**	**Time**
Water Sample ID	Time	SB-9 (4-5)	9:20
SB-9 10' through SB-9 70'	Misc	SB-9 (5-6)	9:25
Sampling Method: EPA Method 8260		SB-9 (40-45)	10:50
Description of Water: Clear to Silty			

HRP Associates, Inc.
Environmental/Civil Engineering & Hydrogeology

GROUNDWATER SAMPLING PURGE FORM

Development

Project: NEW9630.P2	WAS #: NYSDEC#2	HRP Personnel: Mark Wright
Location: Fromer Elka Chemical	Well ID.:PZ-3	Weather: Sunny, windy
Sounding Method:Steel Tape and chalk	Gauge Date:4/14/14	Measurement Ref: TOC
Stick Up/Down (ft):	Gauge Time:10:10	Well Diameter (in): 1"

Purge Date:	4/14/2014	Purge Time:	10:10
Purge Method:	Surge and Pump	Field Technician:	Mark Wright

1) Well Depth (ft): 32.45	4) Well Diameter (in): 1"	7) Five Well Volumes (gal): 5.5
2) Depth to Water (ft):4.98	5) Well Volume / Foot (gal) (d^2x.0408): 0.041	Depth/Height of Top of PVC:
3) Height of H_2O Column (1-2) (ft): 27.47	6) Total Well Volume (gal) (3x5):1.1	Pump Type: Peristaltic

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (liters)	Rate (Lpm)	pH (pH units)	ORP (mV)	remperatur (oC)	Gonductivit: (uS/cm)	DO (ug/L)	Turbidity (ntu)

Total Quantity of Water Removed (gal):	6 gal	Sampling Time:	N/A
Samplers:	N/A	Split Sample With:	N/A
Sampling Date:	N/A	Sample Type:	N/A

COMMENTS AND OBSERVATIONS:	No parameters taken water clear at end of development.

HRP Associates, Inc.
Environmental/Civil Engineering & Hydrogeology

GROUNDWATER SAMPLING PURGE FORM

Development

Project: NEW9630.P2	WAS #: NYSDEC#2	HRP Personnel: Mark Wright
Location: Fromer Elka Chemical	Well ID.:PZ-2	Weather: Sunny, windy
Sounding Method:Steel Tape and chalk	Gauge Date:4/14/14	Measurement Ref: TOC
Stick Up/Down (ft):	Gauge Time:10:30	Well Diameter (in): 1"

Purge Date:	4/14/2014	Purge Time:	10:30
Purge Method:	Surge and Pump	Field Technician:	Mark Wright

1) Well Depth (ft): 33.05	4) Well Diameter (in): 1"	7) Five Well Volumes (gal): 5.5
2) Depth to Water (ft):4.78	5) Well Volume / Foot (gal) (d^2x.0408): 0.041	Depth/Height of Top of PVC:
3) Height of H_2O Column (1-2) (ft): 28.27	6) Total Well Volume (gal) (3x5):1.1	Pump Type: Peristaltic

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (liters)	Rate (Lpm)	pH (pH units)	ORP (mV)	remperatur (oC)	Gonductivit: (uS/cm)	DO (ug/L)	Turbidity (ntu)

Total Quantity of Water Removed (gal):	6 gal	Sampling Time:	N/A
Samplers:	N/A	Split Sample With:	N/A
Sampling Date:	N/A	Sample Type:	N/A

COMMENTS AND OBSERVATIONS:	No parameters taken water clear at end of development.

HRP Associates, Inc.
Environmental/Civil Engineering & Hydrogeology

GROUNDWATER SAMPLING PURGE FORM

Development

Project: NEW9630.P2	WAS #: NYSDEC#2	HRP Personnel: Mark Wright
Location: Fromer Elka Chemical	Well ID.:PZ-1	Weather: Sunny, windy
Sounding Method:Steel Tape and chalk	Gauge Date:4/14/14	Measurement Ref: TOC
Stick Up/Down (ft):	Gauge Time:11:30	Well Diameter (in): 1"

Purge Date:	4/14/2014	Purge Time:	11:30
Purge Method:	Surge and Pump	Field Technician:	Mark Wright

1) Well Depth (ft): 30.56	4) Well Diameter (in): 1"	7) Five Well Volumes (gal): 5.0
2) Depth to Water (ft):5.46	5) Well Volume / Foot (gal) (d^2x.0408): 0.041	Depth/Height of Top of PVC:
3) Height of H_2O Column (1-2) (ft): 25.10	6) Total Well Volume (gal) (3x5):1.0	Pump Type: Peristaltic

Water Quality Parameters

Time (hrs)	DTW (ft btoc)	Volume (liters)	Rate (Lpm)	pH (pH units)	ORP (mV)	remperatur (oC)	Gonductivit: (uS/cm)	DO (ug/L)	Turbidity (ntu)

Total Quantity of Water Removed (gal):	6 gal	Sampling Time:	N/A
Samplers:	N/A	Split Sample With:	N/A
Sampling Date:	N/A	Sample Type:	N/A

COMMENTS AND OBSERVATIONS:	No parameters taken water clear at end of development.

HRP Engineering, P.C. 1 Fairchild Square, Suite 110 Clifton Park, NY 12065 (518) 877-7101	FIELD SOIL VAPOR SAMPLING FORM	

Project:	Former Elka Chemical Site	Building I.D.	
WAS #:	Site # 052239	Vapor I.D. #:	**AA-1**
Date:	2/18-2/19/2015	Sampler:	Mark Wright
Location:	340 West Hoffman Ave, Lindenhurst, NY	PID Meter used:	Minirae 2000

SUMMA Canister Record:

SOIL VAPOR POINT		DUPLICATE SAMPLE (IF COLLEC I ED)	
Flow Regulator No.:	3465	Flow Regulator No.:	3461
Canister Serial No.:	1956	Canister Serial No.:	1952
Start Date/Time:	2/18/2015 13:20	Start Date/Time:	2/18/2015 13:20
Start Pressure: (inches Hg)	30	Start Pressure: (inches Hg)	28
Stop Date/Time:	2/19/2015 12:59	Stop Date/Time:	2/19/2015 12:59
Stop Pressure: (inches Hg)	9	Stop Pressure: (inches Hg)	5
Sample ID:	**AA-1**	Sample ID:	**DUP-1**

Other Sampling Information:

Helium percentage achieved in enclosure for Tracer Gas Test	NA	Depth to sample point	NA
Tracer Gas test result (% of Helium):	NA	Nearest Groundwater Elevation:	8 ftbg
Noticeable Odor?	No		
Purge Volume PID Reading (ppb)	NA		
Duplicate Sample?	Yes		
Outdoor Ambient Temperature:	High 20 low 0		
Wind Direction:	Swirling	Additional Info:	

Comments:

HRP Engineering, P.C. 1 Fairchild Square, Suite 110 Clifton Park, NY 12065 (518) 877-7101	FIELD SOIL VAPOR SAMPLING FORM	

Project:	Former Elka Chemical Site	Building I.D.	
WAS #:	Site # 052239	Vapor I.D. #:	**AA-2**
Date:	2/18-2/19/2015	Sampler:	Mark Wright
Location:	340 West Hoffman Ave, Lindenhurst, NY	PID Meter used:	Minirae 2000

SUMMA Canister Record:

SOIL VAPOR POINT		DUPLICATE SAMPLE (IF COLLEC I ED)	
Flow Regulator No.:	3694	Flow Regulator No.:	
Canister Serial No.:	1939	Canister Serial No.:	
Start Date/Time:	2/18/2015 13:26	Start Date/Time:	
Start Pressure: (inches Hg)	28	Start Pressure: (inches Hg)	
Stop Date/Time:	2/19/2015 13:09:00 PM	Stop Date/Time:	
Stop Pressure: (inches Hg)	6	Stop Pressure: (inches Hg)	
Sample ID:	**AA-2**	Sample ID:	

Other Sampling Information:

Helium percentage achieved in enclosure for Tracer Gas Test	NA	Depth to sample point	NA
Tracer Gas test result (% of Helium):	NA	Nearest Groundwater Elevation:	8 ftbg
Noticeable Odor?	No		
Purge Volume PID Reading (ppb)	NA		
Duplicate Sample?	Yes		
Outdoor Ambient Temperature:	High 20 low 0		
Wind Direction:	Swirling	Additional Info:	

Comments:

HRP Engineering, P.C. 1 Fairchild Square, Suite 110 Clifton Park, NY 12065 (518) 877-7101	FIELD SOIL VAPOR SAMPLING FORM	

Project:	Former Elka Chemical Site	Building I.D.	
WAS #:	Site # 052239	Vapor I.D. #:	**SVP-1**
Date:	2/18-2/19/2015	Sampler:	Mark Wright
Location:	340 West Hoffman Ave, Lindenhurst, NY	PID Meter used:	Minirae 2000

SUMMA Canister Record:

SOIL VAPOR POINT		DUPLICATE SAMPLE (IF COLLEC I ED)	
Flow Regulator No.:	3090	Flow Regulator No.:	
Canister Serial No.:	1959	Canister Serial No.:	
Start Date/Time:	2/18/2015 13:21	Start Date/Time:	
Start Pressure: (inches Hg)	29	Start Pressure: (inches Hg)	
Stop Date/Time:	2/19/2015 13:08	Stop Date/Time:	
Stop Pressure: (inches Hg)	6	Stop Pressure: (inches Hg)	
Sample ID:	**SVP-1**	Sample ID:	

Other Sampling Information:

Helium percentage achieved in enclosure for Tracer Gas Test	50	Depth to sample point	5 ftbg
Tracer Gas test result (% of Helium):	0	Nearest Groundwater Elevation:	8 ftbg
Noticeable Odor?	Yes, gasoline		
Purge Volume PID Reading (ppb)	1,115		
Duplicate Sample?	No		
Outdoor Ambient Temperature:	High 20 low 0		
Wind Direction:	Swirling	Additional Info:	

Comments:

HRP Engineering, P.C. 1 Fairchild Square, Suite 110 Clifton Park, NY 12065 (518) 877-7101	FIELD SOIL VAPOR SAMPLING FORM	

Project:	Former Elka Chemical Site	Building I.D.	
WAS #:	Site # 052239	Vapor I.D. #:	**SVP-2**
Date:	2/18-2/19/2015	Sampler:	Mark Wright
Location:	340 West Hoffman Ave, Lindenhurst, NY	PID Meter used:	Minirae 2000

SUMMA Canister Record:

SOIL VAPOR POINT		DUPLICATE SAMPLE (IF COLLEC I ED)	
Flow Regulator No.:	3091	Flow Regulator No.:	
Canister Serial No.:	1091	Canister Serial No.:	
Start Date/Time:	2/18/2015 13:21	Start Date/Time:	
Start Pressure: (inches Hg)	30	Start Pressure: (inches Hg)	
Stop Date/Time:	2/19/2015 13:07	Stop Date/Time:	
Stop Pressure: (inches Hg)	5	Stop Pressure: (inches Hg)	
Sample ID:	**SVP-2**	Sample ID:	

Other Sampling Information:

Helium percentage achieved in enclosure for Tracer Gas Test	57	Depth to sample point	5 ftbg
Tracer Gas test result (% of Helium):	0	Nearest Groundwater Elevation:	8 ftbg
Noticeable Odor?	No		
Purge Volume PID Reading (ppb)	4		
Duplicate Sample?	No		
Outdoor Ambient Temperature:	High 20 low 0		
Wind Direction:	Swirling	Additional Info:	

Comments:

HRP Engineering, P.C. 1 Fairchild Square, Suite 110 Clifton Park, NY 12065 (518) 877-7101	FIELD SOIL VAPOR SAMPLING FORM	

Project:	Former Elka Chemical Site	Building I.D.	
WAS #:	Site # 052239	Vapor I.D. #:	**SVP-3**
Date:	2/18-2/19/2015	Sampler:	Mark Wright
Location:	340 West Hoffman Ave, Lindenhurst, NY	PID Meter used:	Minirae 2000

SUMMA Canister Record:

SOIL VAPOR POINT		DUPLICATE SAMPLE (IF COLLEC I ED)	
Flow Regulator No.:	3417	Flow Regulator No.:	
Canister Serial No.:	1309	Canister Serial No.:	
Start Date/Time:	2/18/2015 13:21	Start Date/Time:	
Start Pressure: (inches Hg)	30	Start Pressure: (inches Hg)	
Stop Date/Time:	2/19/2015 13:05	Stop Date/Time:	
Stop Pressure: (inches Hg)	7	Stop Pressure: (inches Hg)	
Sample ID:	**SVP-3**	Sample ID:	

Other Sampling Information:

Helium percentage achieved in enclosure for Tracer Gas Test	50	Depth to sample point	5 ftbg
Tracer Gas test result (% of Helium):	0	Nearest Groundwater Elevation:	8 ftbg
Noticeable Odor?	No		
Purge Volume PID Reading (ppb)	15		
Duplicate Sample?	No		
Outdoor Ambient Temperature:	High 20 low 0		
Wind Direction:	Swirling	Additional Info:	

Comments:

HRP Engineering, P.C. 1 Fairchild Square, Suite 110 Clifton Park, NY 12065 (518) 877-7101	FIELD SOIL VAPOR SAMPLING FORM	

Project:	Former Elka Chemical Site	Building I.D.	
WAS #:	Site # 052239	Vapor I.D. #:	**SVP-4**
Date:	2/18-2/19/2015	Sampler:	Mark Wright
Location:	340 West Hoffman Ave, Lindenhurst, NY	PID Meter used:	Minirae 2000

SUMMA Canister Record:

SOIL VAPOR POINT		DUPLICATE SAMPLE (IF COLLEC I ED)	
Flow Regulator No.:	3530	Flow Regulator No.:	
Canister Serial No.:	1472	Canister Serial No.:	
Start Date/Time:	2/18/2015 13:20	Start Date/Time:	
Start Pressure: (inches Hg)	30	Start Pressure: (inches Hg)	
Stop Date/Time:	2/19/2015 13:04	Stop Date/Time:	
Stop Pressure: (inches Hg)	10	Stop Pressure: (inches Hg)	
Sample ID:	**SVP-4**	Sample ID:	

Other Sampling Information:

Helium percentage achieved in enclosure for Tracer Gas Test	59	Depth to sample point	5 ftbg
Tracer Gas test result (% of Helium):	0	Nearest Groundwater Elevation:	8 ftbg
Noticeable Odor?	No		
Purge Volume PID Reading (ppb)	3.0		
Duplicate Sample?	No		
Outdoor Ambient Temperature:	High 20 low 0		
Wind Direction:	Swirling	Additional Info:	

Comments:

HRP Engineering, P.C. 1 Fairchild Square, Suite 110 Clifton Park, NY 12065 (518) 877-7101	FIELD SOIL VAPOR SAMPLING FORM	

Project:	Former Elka Chemical Site	Building I.D.	
WAS #:	Site # 052239	Vapor I.D. #:	**SVP-5**
Date:	2/18-2/19/2015	Sampler:	Mark Wright
Location:	340 West Hoffman Ave, Lindenhurst, NY	PID Meter used:	Minirae 2000

SUMMA Canister Record:

SOIL VAPOR POINT		DUPLICATE SAMPLE (IF COLLEC I ED)	
Flow Regulator No.:	3531	Flow Regulator No.:	
Canister Serial No.:	1724	Canister Serial No.:	
Start Date/Time:	2/18/2015 13:20	Start Date/Time:	
Start Pressure: (inches Hg)	30	Start Pressure: (inches Hg)	
Stop Date/Time:	2/19/2015 13:03	Stop Date/Time:	
Stop Pressure: (inches Hg)	8.5	Stop Pressure: (inches Hg)	
Sample ID:	**SVP-5**	Sample ID:	

Other Sampling Information:

Helium percentage achieved in enclosure for Tracer Gas Test	56	Depth to sample point	5 ftbg
Tracer Gas test result (% of Helium):	2450 ppm	Nearest Groundwater Elevation:	8 ftbg
Noticeable Odor?	No		
Purge Volume PID Reading (ppb)	3.0		
Duplicate Sample?	No		
Outdoor Ambient Temperature:	High 20 low 0		
Wind Direction:	Swirling	Additional Info:	

Comments:

HRP Engineering, P.C. 1 Fairchild Square, Suite 110 Clifton Park, NY 12065 (518) 877-7101	FIELD SOIL VAPOR SAMPLING FORM	

Project:	Former Elka Chemical Site	Building I.D.	
WAS #:	Site # 052239	Vapor I.D. #:	**SVP-6**
Date:	2/18-2/19/2015	Sampler:	Mark Wright
Location:	340 West Hoffman Ave, Lindenhurst, NY	PID Meter used:	Minirae 2000

SUMMA Canister Record:

SOIL VAPOR POINT		DUPLICATE SAMPLE (IF COLLEC I ED)	
Flow Regulator No.:	3466	Flow Regulator No.:	
Canister Serial No.:	1625	Canister Serial No.:	
Start Date/Time:	2/18/2015 13:20	Start Date/Time:	
Start Pressure: (inches Hg)	30	Start Pressure: (inches Hg)	
Stop Date/Time:	2/19/2015 13:01	Stop Date/Time:	
Stop Pressure: (inches Hg)	8	Stop Pressure: (inches Hg)	
Sample ID:	**SVP-6**	Sample ID:	

Other Sampling Information:

Helium percentage achieved in enclosure for Tracer Gas Test	50	Depth to sample point	5 ftbg
Tracer Gas test result (% of Helium):	0	Nearest Groundwater Elevation:	8 ftbg
Noticeable Odor?	No		
Purge Volume PID Reading (ppb)	2.7		
Duplicate Sample?	No		
Outdoor Ambient Temperature:	High 20 low 0		
Wind Direction:	Swirling	Additional Info:	

Comments:

APPENDIX B

QA/QC EVALUATION RESULTS (DUSRs)

DATA USABILITY SUMMARY REPORT
Former Elka Chemical Company

Soil and Water Volatile Organic Analyses by Method SW846 8260B
Samples Collected: March 31st through April 3, 2014
Samples Received at Chemtech on April 4, 2014
Sample Delivery Group: F1889
Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix	Date Collected
F1889-01	SB-4(4-5)	Soil	4/02/14
F1889-02	SB-4(7-8)	Soil	4/02/14
F1889-03	SB-4(70)	Water	4/03/14
F1889-04	SB-4(60)	Water	4/03/14
F1889-05	SB-4(50)	Water	4/03/14
F1889-06	SB-4(40)	Water	4/03/14
F1889-07	SB-4(30)	Water	4/03/14
F1889-08	SB-4(20)	Water	4/03/14
F1889-09	SB-4(10)	Water	4/03/14
F1889-10	SB-5(4-5)	Soil	4/02/14
F1889-10 RE	SB-5(4-5) RE	Soil	4/02/14
F1889-11	SB-5(4-5)MS	Soil	4/02/14
F1889-12	SB-5(4-5)MSD	Soil	4/02/14
F1889-13	SB-2(4-5)	Soil	03/31/14
F1889-13 RE	SB-2(4-5) RE	Soil	03/31/14
F1889-14	SB-2(6-7)	Soil	03/31/14
F1889-15	SB-2(70)	Water	03/31/14
F1889-16	SB-2(60)	Water	04/01/14
F1889-17	SB-2(50)	Water	04/01/14
F1889-18	SB-2(40)	Water	04/01/14
F1889-19	SB-2(30)	Water	04/01/14
F1889-20	SB-2(20)	Water	04/01/14
F1889-21	SB-2(10)	Water	04/01/14
F1889-22	SB-5(6-7)	Soil	04/03/14

Soil and water samples were validated for analyses of volatile organics by the US EPA Region II data validation SOP (HW-24, Revision 2, 2008). Data were reviewed for usability according to the following criteria:

* - Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
* - Laboratory Blanks
Trip Blank
- Surrogate Compound Recoveries
- Internal Standard Recoveries
- Matrix Spike
- Laboratory Control Samples
* - Compound Identification
* - Compound Quantitation

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The problems with the surrogate recoveries, laboratory control samples, internal standards and calibrations should be noted. These are discussed in detail below

Holding Times

All of the samples were analyzed within 14 days of collection.

Tunes

No problems were detected with the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the quality assurance limits with the following exceptions:

Lab Sample ID	Field Sample ID	S1	S2	S3	S4
F1889-01	SB-4(4-5)				171%
F1889-10	SB-5(4-5)	131%			
F1889-10 RE	SB-5(4-5) RE	136%			
F1889-12 MSD	SB-5(4-5)MSD	129%			
F1889-13 RE	SB-2(4-5) RE	145%			

Detected compounds in these samples were flagged with the "J" qualifier and are estimated values.

High recoveries do not affect the use of undetected data.

Calibrations

Three initial calibrations were analyzed with this sample delivery group.

All of the %RSDs in the 4/8 initial calibration were less than 20% with the exception of bromomethane (27%).

This initial calibration was associated with the analyses of the following soil samples:

F1889-01	SB-4(4-5)
F1889-02	SB-4(7-8)
F1889-10 RE	SB-5(4-5) RE
F1889-13 RE	SB-2(4-5) RE
F1889-14	SB-2(6-7)

This compound was not detected in any of the samples and the high %RSD did not affect the use of the data.

All of the %RSDs in the 4/5 initial calibration were less than 20%..

All of the %RSDs in the 3/24 initial calibration were less than 20% with the exception of cyclohexane (33%), 1,2,4-trichlorobenzene (38%) and 1,2,3-trichlorobenzene.

This initial calibration was associated with the analyses of the following water samples:

F1889-03	SB-4(70)
F1889-04	SB-4(60)
F1889-05	SB-4(50)
F1889-06	SB-4(40)
F1889-07	SB-4(30)
F1889-08	SB-4(20)
F1889-09	SB-4(10)
F1889-15	SB-2(70)
F1889-16	SB-2(60)
F1889-17	SB-2(50)
F1889-18	SB-2(40)
F1889-19	SB-2(30)
F1889-20	SB-2(20)
F1889-21	SB-2(10)

When cyclohexane was detected in a sample it was flagged with the "J" qualifier and is an estimated value.

Neither dichlorobenzene was detected in any of the samples.

All of the percent differences in the 4/8 continuing calibration GC/MS F were less than 20% with the exceptions of acetone (41%), bromochloromethane (28%), bromoform (25%) and 2-butanone (36%).

This continuing calibration was associated with the analyses of the following soil samples:

F1889-10	SB-5(4-5)
F1889-13	SB-2(4-5)
F1889-22	SB-5(6-7)

All of the percent differences in the 4/4 continuing calibration were less than 20% with the exceptions of 1,4-dioxane (25%), 2-hexanone (22%), carbon disulfide (23%), cyclohexane 25% and trichlorofluoromethane (23%).

This continuing calibration was associated with the analyses of the following water samples:

F1889-03	SB-4(70)
F1889-04	SB-4(60)

All of the percent differences in the 4/7 continuing calibration were less than 20% with the exceptions of styrene (25%) and 1,2,4-trichlorobenzene (26%).

This continuing calibration was associated with the analyses of the following water samples:

F1889-05	SB-4(50)
F1889-06	SB-4(40)
F1889-07	SB-4(30)
F1889-08	SB-4(20)
F1889-09	SB-4(10)
F1889-15	SB-2(70)
F1889-16	SB-2(60)
F1889-17	SB-2(50)
F1889-18	SB-2(40)
F1889-19	SB-2(30)
F1889-20	SB-2(20)
F1889-21	SB-2(10)

The data for the compounds in all of the continuing calibrations were flagged with the “J” qualifier and are estimated values.

All of the relative response factors (rrfs) were greater than 0.05 with the one exception of 1,4-dioxane (<0.006).

This compound was not detected in any of the samples and the 1,4-dioxin data were flagged with the "R" qualifier and technically rejected.

Matrix Spike

The laboratory’s in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

Soil sample F1889-10 / SB-5(4-5) was used as the first matrix spike and matrix spike duplicate. All of the recoveries were within the 70% - 130% limits with the following exceptions:

Compound	**% Rec. MS**	**% Rec. MSD**	**RPD**
Bromoform	66%		
Chloroethane	158%	164%	
Trichlorofluoromethane		139%	.

The data for bromoform in the soil samples were flagged with the "J" qualifier and are estimated values.

Chloroethane and trichlorofluoromethane were not detected in any of the soil samples and their high recoveries do not affect undetected data.

All RPDs were less than 30%.

A water matrix spike was not analyzed.

Laboratory Control Sample

The laboratory's in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

All of the laboratory control samples were within the 70% - 130% limits with the following exceptions:

In LCS VD0409SBS01 analyzed on 4/09, the recovery of bromochloromethane (68%) was less than the 70% quality control limit. This laboratory control sample was associated with the analyses of the following soil samples:

F1889-13 RE	SB-2(4-5) RE
F1889-14	SB-2(6-7)

In LCS VD0408SBS02 analyzed on 4/08, the recoveries of bromoform (66%), chloromethane (133%) and methyl acetate (138%) were outside of the quality control limits. This laboratory control sample was associated with the analyses of the following soil samples:

F1889-10	SB-5(4-5)
F1889-13	SB-2(4-5)
F1889-22	SB-5(6-7)

In LCS VN0404WBS01 analyzed on 4/04, the recovery of 1,4-dioxane (133%) was outside of the quality control limits. This LCS was associated with the following water samples:

F1889-03	SB-4(70)
F1889-04	SB-4(60)

Compounds with low recoveries were flagged with the "J" qualifier and are estimated values.

Compounds with high recoveries were only qualified if they were detected in a sample.

Method Blanks

No compounds were detected in any of the method blanks.

Trip Blank

A trip blank was not analyzed.

Internal Standard Areas and Retention Times

The areas and retention times of all internal standards were within the required quality control limits with the exception of soil sample F1889-13RE / SB-2(4-5).

The recoveries of all four of the internal standards were less than the 50% quality control limit (20%, 22%, 25% and 31%).

All of the recoveries were within the required limits in the original analysis and the data should be reported from the original analysis.

Sample Results

No other problems were detected with any of the samples.

DATA USABILITY SUMMARY REPORT
Former Elka Chemical Company

Soil and Water Volatile Organic Analyses by Method SW846 8260B
Samples Collected: March 31st through April 2, 2014
Samples Received at Chemtech on April 4, 2014
Sample Delivery Group: F1890
Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix	Date Collected
F1890-01	SB-3(4-5)	Soil	04/01
F1890-02	SB-3(6-7)	Soil	04/01
F1890-03	SB-3(70)	Water	04/02
F1890-03DL	SB-3(70)DL	Water	04/02
F1890-04	SB-3(60)	Water	04/02
F1890-04 DL	SB-3(60) DL	Water	04/02
F1890-05	SB-3(50)	Water	04/02
F1890-05 DL	SB-3(50) DL	Water	04/02
F1890-06	SB-3(40)	Water	04/02
F1890-07	SB-3(30)	Water	04/02
F1890-08	SB-3(20)	Water	04/02
F1890-09	SB-3(10)	Water	04/02
F1890-09 DL	SB-3(10)	Water	04/02
F1890-10	F1890-09MS	Water	04/02
F1890-11	F1890-09MSD	Water	04/02
F1890-12	DUP-1	Water	04/02
F1890-13	SB-1(4-5)	Soil	03/31
F1890-14	SB-1(9-10)	Soil	03/31
F1890-15	SB-1(70)	Water	03/31
F1890-15 RE	SB-1(70) RE	Water	03/33
F1890-16	SB-1(60)	Water	03/31
F1890-17	SB-1(50)	Water	03/31
F1890-18	SB-1(40)	Water	03/31
F1890-19	SB-1(30)	Water	03/31
F1890-20	SB-1(20)	Water	03/31
F1890-21	SB-1(10)	Water	03/31
F1890-22	TRIPBLANK	Water	03/31

Soil and water samples were validated for analyses of volatile organics by the US EPA Region II data validation SOP (HW-24, Revision 2, 2008). Data were reviewed for usability according to the following criteria:

- Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
* - Laboratory Blanks
* Trip Blank
- Surrogate Compound Recoveries
- Internal Standard Recoveries
- Matrix Spike
- Laboratory Control Samples
- Compound Identification
* - Compound Quantitation

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The problems with the surrogate recoveries, matrix spike, laboratory control samples, internal standards and calibrations should be noted. These are discussed in detail below.

Holding Times

All of the samples were analyzed within 14 days of collection.

Tunes

No problems were detected with the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the quality assurance limits with the following exceptions:

Lab Sample ID	Field Sample ID	S1	S2	S3	S4
F1890-14	SB-1(9-10)				238%
F1890-15	SB-1(70)				151%
F1890-15 RE	SB-1(70) RE	222%	142%		

Detected compounds in these samples were flagged with the "J" qualifier and are estimated values.

High recoveries do not affect the use of undetected data.

Calibrations

Four initial calibrations were analyzed with this sample delivery group.

All of the %RSDs in the 4/5 initial calibration were less than 20%.

All of the %RSDs in the 3/24 initial calibration were less than 20% with the exceptions of cyclohexane (33%), 1,2,4-trichlorobenzene (38%) and 1,2,3-trichlorobenzene (33%).

This initial calibration was associated with the analyses of the following water samples:

F1890-03	SB-3(70)
F1890-04	SB-3(60)
F1890-04 DL	SB-3(60) DL
F1890-05	SB-3(50)
F1890-05 DL	SB-3(50) DL
F1890-06	SB-3(40)
F1890-07	SB-3(30)
F1890-08	SB-3(20)
F1890-09	SB-3(10)
F1890-09 DL	SB-3(10)
F1890-12	DUP-1
F1890-17	SB-1(50)
F1890-18	SB-1(40)
F1890-19	SB-1(30)
F1890-20	SB-1(20)
F1890-21	SB-1(10)
F1890-22	TRIPBLANK

All of the %RSDs in the 4/10 initial calibration were less than 20% with the exceptions of cyclohexane (36%), 1,2,4-trichlorobenzene (40%) and 1,2,3-trichlorobenzene (34%).

This initial calibration was associated with the analyses of the following water samples:

F1890-03DL	SB-3(70)DL
F1890-15	SB-1(70)
F1890-15 RE	SB-1(70) RE
F1890-16	SB-1(60)

All of the %RSDs in the 4/4 initial calibration were less than 20% with the exception of carbon disulfide (30%), trans-1,3-dichloropropene (22%), dibromochloromethane (22%), bromoform (25%), 1,4-dioxane (46%).

This initial calibration was associated with the analyses of the following water samples:

F1890-01	SB-3(4-5)
F1890-02	SB-3(6-7)

F1890-14	SB-1(9-10)

When a compound with a high %RSD was detected in a sample it was flagged with the "J" qualifier and is an estimated value.

High %RSD do not affect the use of undetected data and are not required to be qualified.

All of the percent differences in the 4/8 continuing calibration, associated with sample, F1890-13 / SB-1(4-5), were less than 20% with the exceptions of acetone (41%), bromochloromethane (28%), bromoform (25%) and 2-butanone (36%).

All of the percent differences in the 4/8 continuing calibration were less than 20% with the exceptions of acetone (36%), methyl acetate (22%), cyclohexane (21%), 2-butanone (28%), 4-methyl-2-pentanone (29%), 2-hexanone (40%), 1,2-dibromo-3-chloropropane (23%), 1,2,3-trichlorobenzene (23%), 1,2,4-trichlorobenzene (24%) and 1,4-dioxane (25%).

This continuing calibration was associated with the analyses of the following water samples:

F1890-03	SB-3(70)
F1890-04	SB-3(60)
F1890-05	SB-3(50)
F1890-06	SB-3(40)
F1890-07	SB-3(30)
F1890-08	SB-3(20)
F1890-09	SB-3(10)
F1890-12	DUP-1
F1890-17	SB-1(50)
F1890-18	SB-1(40)
F1890-19	SB-1(30)
F1890-20	SB-1(20)
F1890-21	SB-1(10)

All of the percent differences in the 4/8 continuing calibration, associated with the trip blank, were less than 20% with the exceptions of 1,2,4-trichlorobenzene (23%) and 1,2,3-trichlorobenzene (23%).

All of the percent differences in the 4/9 continuing calibration were less than 20% with the exceptions of acetone (49%), methyl acetate (30%), 2-butanone (41%), 1,2-dichloroethane (22%), 4-methyl-2-pentanone (41%), trans-1,3-dichloropropane (23%), 2-hexanone (57%), dibromochloromethane (23%), 1,2-dibromomethane (27%), styrene (25%), bromoform (30%), 1,2-dibromo-3-chloropropane (26%), 1,2,3-trichlorobenzene (33%), 1,2,4-trichlorobenzene (37%) and 1,4-dioxane (50%).

This continuing calibration was associated with the analyses of the following water samples:

F1890-04 DL	SB-3(60) DL
F1890-05 DL	SB-3(50) DL
F1890-09 DL	SB-3(10) DL

All of the percent differences in the 4/9 continuing calibration were less than 20% with the exceptions of 2-butanone (21%), 4-methyl-2-pentanone (23%), 2-hexanone (31%), 1,2-dibromo-3-chloropropane (22%), 1,2,3-trichlorobenzene (27%) and 1,2,4-trichlorobenzene (31%).

This continuing calibration was associated with the analyses of the following water samples:

F1890-03DL	SB-3(70)DL
F1890-15	SB-1(70)

All of the percent differences in the 4/11 continuing calibration were less than 20% with the exceptions of acetone (28%), cyclohexane (22%), 2-hexanone (24%) and 1,2,4-trichlorobenzene (24%).

This continuing calibration was associated with the analyses of the following water samples:

F1890-15 RE	SB-1(70) RE
F1890-16	SB-1(60)

All of the percent differences in the 4/7 continuing calibration were less than 20% with the exceptions of carbon disulfide (56%), methylene chloride (25%), 2-hexanone (24%) and 1,4-dioxane (50%)

This continuing calibration was associated with the analyses of the following soil samples:

F1890-01	SB-3(4-5)
F1890-02	SB-3(6-7)
F1890-14	SB-1(9-10)

Data for the compounds in the continuing calibrations with percent differences greater than 20% were flagged with the “J” qualifier and are estimated values.

All of the relative response factors (rrfs) were greater than 0.05 with the one exception of 1,4-dioxane (<0.006).

This compound was not detected in any of the samples and the 1,4-dioxin data were flagged with the "R" qualifier and technically rejected.

Matrix Spike

The laboratory’s in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

Water sample F1890-09 / SB-3(10) was used as the matrix spike and matrix spike duplicate. All of the recoveries were within the 70% - 130% limits with the following exceptions:

Compound	% Rec. MS	% Rec. MSD	RPD
1,1,2-Trichloroethane	132%	133%	
Cyclohexane		40%	
Ethylbenzene	280%	200%	
M,P-Xylene	180%	140%	
2-Butanone	132%		
4-Methyl-2-Pentanone		132%	

The data for cyclohexane in the water samples were flagged with the "J" qualifier and are estimated values.

The compounds with high recoveries were only flagged with the "J" qualifier when they were detected in a sample since high recoveries do not affect undetected data.

All RPDs were less than 30%.

A soil matrix spike was not analyzed.

Laboratory Control Sample

The laboratory's in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

All of the laboratory control samples were within the 70% - 130% limits with the following exceptions:

In LCS VD0408SBS02 analyzed on 4/08, the recoveries of bromoform (66%), chloromethane (133%) and methyl acetate (138%) were outside of the quality control limits. This laboratory control sample was associated with the analyses of the soil sample F1890-13 / SB-1(4-5).

In LCS VN0408WBL01 analyzed on 4/08, the recoveries of acetone (150%), 2-butanone (140%), 4-methyl-2-pentanone (140%), bromoform (131%) and 1,2-dibromo-3-chloropropane (142%) were outside of the quality control limits. This LCS was associated with the following water samples:

F1890-03	SB-3(70)
F1890-04	SB-3(60)
F1890-05	SB-3(50)
F1890-06	SB-3(40)
F1890-07	SB-3(30)
F1890-08	SB-3(20)
F1890-09	SB-3(10)
F1890-12	DUP-1
F1890-17	SB-1(50)
F1890-18	SB-1(40)
F1890-19	SB-1(30)
F1890-20	SB-1(20)
F1890-21	SB-1(10)

In LCS VN0408WBL02 analyzed on 4/09 and associated with the Trip Blank, all recoveries were within the require limits.

In LCS VN0409WBS01 analyzed on 4/09, the recoveries of acetone (140%), 2-butanone (140%), 4-methyl-2-pentanone (140%) and 1,2-dibromo-3-chloropropane (139%) were outside of the quality control limits. This LCS was associated with the following water samples:

F1890-04 DL	SB-3(60) DL
F1890-05 DL	SB-3(50) DL
F1890-09 DL	SB-3(10)

In LCS VR0407MBS01 analyzed on 4/07, the recoveries of carbon disulfide (135%) and 1,4-dioxane (142%) were outside of the quality control limits. This LCS was associated with the following soil samples:

F1890-01	SB-3(4-5)
F1890-02	SB-3(6-7)
F1890-14	SB-1(9-10)

Compounds with low recoveries were flagged with the "J" qualifier and are estimated values.

Compounds with high recoveries were only qualified if they were detected in a sample.

Method Blanks

No compounds were detected in any of the method blanks.

Trip Blank

No compounds were detected in the trip blank.

Internal Standard Areas and Retention Times

The areas and retention times of all internal standards were within the required quality control limits with the exceptions of the following samples:

Sample F1890-03DL / SB-3(70)DL

The recovery of the pentafluorobenzene internal standard (IS1) was 47%.

None of the compounds that were quantitated from the dilution were associated with IS1 and the low recovery doe not affect the use of the data.

Sample F1890-15 / SB-1(70)

The recovery of the pentafluorobenzene internal standard (IS1) was 49.5%.

The recovery was rounded up to 50% and the recovery did not affect the use of the data.

Sample F1890-14 / SB-1(9-10)

The recovery of the 1,4-dichlorobenzene-d4 internal standard (IS4) was 260%.

Any compounds that were quantitated against this internal standard that were detected in the sample were previously qualified due to a high surrogate recovery.

The high recovery of the internal standard did not required additional qualification.

Sample Results

Sample F1890-02 / SB-3(6-7)

The spectra for the four target compounds detected in this sample were not included in the data package.

No other problems were detected with any of the samples.

DATA USABILITY SUMMARY REPORT
Former Elka Chemical Company

Soil and Water Volatile Organic Analyses by Method SW846 8260B
Samples Collected: April 7th through 11th, 2014
Samples Received at Chemtech on April 12, 2014
Sample Delivery Group: F1984
Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix	Date Collected
F1984-01	SB-5(70)	Water	4/7
F1984-02	SB-5(60)	Water	4/7
F1984-03	SB-5(50)	Water	4/7
F1984-04	SB-5(40)	Water	4/7
F1984-05	SB-5(30)	Water	4/7
F1984-06	SB-5(20)	Water	4/7
F1984-07	SB-5(10)	Water	4/7
F1984-08	DUP-5	Soil	4/9
F1984-09	DUP-3	Water	4/11
F1984-09 DL	DUP-3	Water	4/11
F1984-10	SB-6(4-5)	Soil	4/8
F1984-11	SB-6(6-7)	Soil	4/8
F1984-12	SB-6(70)	Water	4/8
F1984-13	SB-6(60)	Water	4/8
F1984-14	SB-6(50)	Water	4/8
F1984-15	SB-6(40)	Water	4/8
F1984-16	SB-6(30)	Water	4/8
F1984-17	F1984-16MS	Water	4/8
F1984-18	F1984-16MSD	Water	4/8
F1984-19	SB-6(20)	Water	4/8
F1984-20	SB-6(10)	Water	4/8
F1984-21	DUP-2	Water	4/8

Soil and water samples were validated for analyses of volatile organics by the US EPA Region II data validation SOP (HW-24, Revision 2, 2008). Data were reviewed for usability according to the following criteria:

* - Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
* - Laboratory Blanks
Trip Blank
* - Surrogate Compound Recoveries
* - Internal Standard Recoveries
- Matrix Spike
- Laboratory Control Samples
* - Compound Identification
* - Compound Quantitation

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The problems with the matrix spike, laboratory control samples and calibrations should be noted. These are discussed in detail below.

Holding Times

All of the samples were analyzed within 14 days of collection.

Tunes

No problems were detected with the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the quality control limits.

Calibrations

Two initial calibrations were analyzed with this sample delivery group.

All of the %RSDs in the 4/08 initial calibration were less than 20% with the exception of bromomethane (27%).

This initial calibration was associated with the analyses of the following soil samples:

F1984-08	DUP-5
F1984-10	SB-6(4-5)
F1984-11	SB-6(6-7)

All of the %RSDs in the 4/10 initial calibration were less than 20% with the exception of cyclohexane (36%), 1,2,4-trichlorobenzene (40%) and 1,2,3-trichlorobenzene (34%).

This initial calibration was associated with the analyses of all of the water samples.

When a compound with a high %RSD was detected in a sample it was flagged with the "J" qualifier and is an estimated value.

High %RSD do not affect the use of undetected data and are not required to be qualified.

All of the percent differences in the 4/17 continuing calibration were less than 20% with the exceptions of acetone (35%), cyclohexane (23%), 2-butanone (23%) and 2-hexanone (31%).

This continuing calibration was associated with the analyses of the following water samples:

F1984-02	SB-5(60)
F1984-03	SB-5(50)
F1984-04	SB-5(40)

All of the percent differences in the 4/17 continuing calibration were less than 20% with the exceptions of bromomethane (24%), cyclohexane (24%) and 2-hexanone (22%).

This continuing calibration was associated with the analyses of the following water samples:

F1984-05	SB-5(30)
F1984-07	SB-5(10)
F1984-09	DUP-3
F1984-12	SB-6(70)
F1984-13	SB-6(60)
F1984-14	SB-6(50)
F1984-15	SB-6(40)
F1984-16	SB-6(30)
F1984-19	SB-6(20)
F1984-20	SB-6(10)
F1984-21	DUP-2

All of the percent differences in the 4/18 continuing calibration were less than 20% with the exceptions of acetone (24%), cyclohexane (24%), 2-butanone (25%), 4-methyl-2-pentanone (26%), 2-hexanone (35%) and 1,2,4-trichlorobenzene (23%)

This continuing calibration was associated with the analyses of the following water samples:

F1984-01	SB-5(70)
F1984-06	SB-5(20)
F1984-09 DL	DUP-3

Data for the compounds in the continuing calibrations with percent differences greater than 20% were flagged with the “J” qualifier and are estimated values.

All of the relative response factors (rrfs) were greater than 0.05 with the one exception of 1,4-dioxane (<0.006).

This compound was not detected in any of the samples and the 1,4-dioxin data were flagged with the "R" qualifier and technically rejected.

Matrix Spike

The laboratory’s in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

Water sample F1984-16 / SB-6(30) was used as the matrix spike and matrix spike duplicate. All of the recoveries were within the 70% - 130% limits with the exception of 2-hexanone (132%) in the MSD.

2-Hexanone was not detected in any of the water samples.

Compounds with high recoveries were only flagged with the "J" qualifier when they were detected in a sample since high recoveries do not affect undetected data.

All RPDs were less than 30%.

A soil matrix spike was not analyzed.

Laboratory Control Sample

The laboratory's in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

All of the laboratory control samples were within the 70% - 130% limits with the following exceptions:

In LCS VD0414SBS01 analyzed on 4/14, the recoveries of bromomethane (57%) and chloroethane (65%) were outside of the quality control limits. This LCS was associated with the following soil samples:

F1984-08	DUP-5
F1984-10	SB-6(4-5)
F1984-11	SB-6(6-7)

Compounds with low recoveries were flagged with the "J" qualifier and are estimated values.

The recoveries of the two other laboratory control samples were within the required limits.

Method Blanks

No compounds were detected in any of the method blanks.

Trip Blank

A trip blank was not analyzed.

Internal Standard Areas and Retention Times

The areas and retention times of all internal standards were within the required quality control limits.

Sample Results

Sample F1984-09 DL / DUP-3

The spectra for several target compounds detected in this sample were not included in the data package.

Sample F1984-19 / SB-6(20)

The spectra for trichloroethene detected in this sample was not included in the data package.

No other problems were detected with any of the samples.

DATA USABILITY SUMMARY REPORT
Former Elka Chemical Company

Soil and Water Volatile Organic Analyses by Method SW846 8260B
Samples Collected: April 9th through 11th, 2014
Samples Received at Chemtech on April 12, 2014
Sample Delivery Group: F1985
Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix	Date Collected
F1985-01	SB-7(4-5)	Soil	4/10
F1985-02	SB-7(9-10)	Soil	4/10
F1985-03	SB-7(45-50)	Soil	4/10
F1985-03 MS	SB-7(45-50) MS	Soil	4/10
F1985-03 MSD	SB-7(45-50) MSD	Soil	4/10
F1985-04	SB-7(70)	Water	4/9
F1985-05	SB-7(60)	Water	4/9
F1985-06	SB-7(50)	Water	4/9
F1985-07	SB-7(40)	Water	4/9
F1985-08	SB-7(30)	Water	4/9
F1985-09	SB-7(20)	Water	4/9
F1985-10	SB-7(10)	Water	4/9
F1985-10 DL	SB-7(10) DL	Water	4/9
F1985-11	SB-9(70)	Water	4/11
F1985-12	SB-9(60)	Water	4/11
F1985-13	SB-9(50)	Water	4/11
F1985-14	SB-9(40)	Water	4/11
F1985-15	F1985-14MS	Water	4/11
F1985-16	F1985-14MSD	Water	4/11
F1985-17	SB-9(30)	Water	4/11
F1985-18	SB-9(20)	Water	4/11
F1985-19	SB-9(10)	Water	4/11
F1985-19 DL	SB-9(10) DL	Water	4/11
F1985-20	SB-9(4-5)	Soil	4/11
F1985-21	SB-9(5-6)	Soil	4/11
F1985-22	SB-9(40-45)	Soil	4/11

Soil and water samples were validated for analyses of volatile organics by the US EPA Region II data validation SOP (HW-24, Revision 2, 2008). Data were reviewed for usability according to the following criteria:

* - Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
* - Laboratory Blanks
Trip Blank
* - Surrogate Compound Recoveries
* - Internal Standard Recoveries
- Matrix Spike
- Laboratory Control Samples
* - Compound Identification
* - Compound Quantitation

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The problems with the matrix spike, laboratory control samples and calibrations should be noted. These are discussed in detail below.

Holding Times

All of the samples were analyzed within 14 days of collection.

Tunes

No problems were detected with the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the quality control limits.

Calibrations

Four initial calibrations were analyzed with this sample delivery group.

All of the %RSDs in the 4/08 initial calibration were less than 20% with the exception of bromomethane (27%).

This initial calibration was associated with the analyses of the following soil samples:

F1985-01	SB-7(4-5)
F1985-03	SB-7(45-50)
F1985-20	SB-9(4-5)
F1985-22	SB-9(40-45)

All of the %RSDs in the 4/10 water initial calibration were less than 20% with the exceptions of cyclohexane (36%), 1,2,4-trichlorobenzene (40%) and 1,2,3-trichlorobenzene (34%).

This initial calibration was associated with the analyses of all of the water samples.

All of the %RSDs in the 4/10 soil initial calibration were less than 20% with the exceptions of bromoform (26%) and 1,2-dibromo-3-chloropropane (22%).

This initial calibration was associated with the analyses of soil sample F1985-02 / SB-7(9-10).

When a compound with a high %RSD was detected in a sample it was flagged with the "J" qualifier and is an estimated value.

High %RSD do not affect the use of undetected data and are not required to be qualified.

All of the percent differences in the 4/16 soil continuing calibration were less than 20% with the exception of acetone (41%).

This continuing calibration was associated with the analyses of soil sample F1985-21 / SB-9(5-6):

All of the percent differences in the 4/17 continuing calibration were less than 20% with the exceptions of acetone (35%), cyclohexane (23%), 2-butanone (23%) and 2-hexanone (31%).

This continuing calibration was associated with the analyses of the following water samples:

F1985-04	SB-7(70)
F1985-10 DL	SB-7(10) DL
F1985-11	SB-9(70)
F1985-13	SB-9(50)
F1985-14	SB-9(40)
F1985-17	SB-9(30)
F1985-19	SB-9(10)
F1985-19 DL	SB-9(10) DL

All of the percent differences in the 4/18 continuing calibration were less than 20% with the exceptions of acetone (24%), cyclohexane (24%), 2-butanone (25%), 4-methyl-2-pentanone (26%), 2-hexanone (35%) and 1,2,4-trichlorobenzene (23%).

This continuing calibration was associated with the analyses of water sample F1985-18 / SB-9(20).

All of the percent differences in the 4/14 soil continuing calibration were less than 20% with the exceptions of methyl acetate (56%), bromodichloromethane (21%), trans-1,3-dichloropropene (26%), dibromochloromethane (33%), 1,2,4-trichlorobenzene (25%) and 1,2,3-trichlorobenzene (24%).

This continuing calibration was associated with the analyses of soil sample F1985-02 / SB-7(9-10).

All of the percent differences in the 4/16 (23:37) continuing calibration were less than 20% with the exceptions of methyl acetate (32%), 2-butanone (33%), 4-methyl-2-pentanone (38%), 2-hexanone (42%), 1,2-dibromo-3-chloropropane (32%), 1,2,4-trichlorobenzene (24%), 1,2,3-trichlorobenzene (24%) and 1,4-dioxane.

This continuing calibration was associated with the analyses of the following water samples:

F1985-05	SB-7(60)
F1985-06	SB-7(50)
F1985-07	SB-7(40)
F1985-08	SB-7(30)
F1985-09	SB-7(20)

F1985-10	SB-7(10)
F1985-12	SB-9(60)

Data for the compounds in the continuing calibrations with percent differences greater than 20% were flagged with the “J” qualifier and are estimated values.

All of the relative response factors (rrfs) were greater than 0.05 with the one exception of 1,4-dioxane (<0.006).

This compound was not detected in any of the samples and the 1,4-dioxin data were flagged with the "R" qualifier and technically rejected.

Matrix Spike

The laboratory’s in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

Soil sample F1985-03 / SB-7(45-50) was used as the matrix spike and matrix spike duplicate. All of the recoveries were within the 70% - 130% limits with the exception of vinyl chloride (69%) in the matrix spike.

The vinyl chloride data in the soil samples were flagged with the "J" qualifier and are estimated values. Vinyl chloride was not detected in any of the samples.

Water sample F1985-14 / SB-9(40) was used as the matrix spike and matrix spike duplicate. All of the recoveries were within the 70% - 130% limits with the following exceptions:

Compound	MS % Rec.	MSD % Rec.	RPD
1,1,2-Trichloroethane		132%	
1,2-Dibromo-3-Chloropropane	131%		
1,4-Dioxane (P-Dioxane)	140%		
2-Hexanone	152%	132%	
Cyclohexane			31%
Dichlorodifluoromethane	62%		
Methyl Acetate	145%		
2-Butanone	152%		
4-Methyl-2-Pentanone	144%		
Methylcyclohexane	26%		72%

The dichlorodifluoromethane (62%) and methylcyclohexane data were flagged with the "J" qualifier and are estimated values.

None of the compounds with high recoveries were detected in any of the water samples.

Compounds with high RPDs were only qualified when detected in a sample.

Laboratory Control Sample

The laboratory's in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

All of the laboratory control samples were within the 70% - 130% limits with the following exceptions:

In LCS VD0414SBS01 analyzed on 4/14, the recoveries of bromomethane (57%) and chloroethane (65%) were outside of the quality control limits. This LCS was associated with the following soil samples:

F1985-01	SB-7(4-5)
F1985-03	SB-7(45-50)
F1985-20	SB-9(4-5)
F1985-22	SB-9(40-45)

In LCS VR0414MBS01 analyzed on 4/14, the recoveries of chloroethane (60%), trichlorofluoromethane (65%), carbon disulfide (65%), bromochloromethane (55%) and 1,4-dioxane (62%) were outside of the quality control limits. This LCS was associated with soil sample F1985-02 / SB-7(9-10).

Compounds with low recoveries were flagged with the "J" qualifier and are estimated values.

The recoveries of the two other laboratory control samples were within the required limits.

Method Blanks

No compounds were detected in any of the method blanks.

Trip Blank

A trip blank was not analyzed.

Internal Standard Areas and Retention Times

The areas and retention times of all internal standards were within the required quality control limits.

Sample Results

No problems were detected with any of the samples.

DATA USABILITY SUMMARY REPORT
Former Elka Chemical Company

Soil and Water Volatile Organic Analyses by Method SW846 8260B
Samples Collected: April 10, 2014
Samples Received at Chemtech on April 12, 2014
Sample Delivery Group: F1986
Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix
F1986-01	SB-8(4-5)	Soil
F1986-02	SB-8(6-7)	Soil
F1986-02 RE	SB-8(6-7) RE	Soil
F1986-03	SB-8(70)	Water
F1986-04	SB-8(60)	Water
F1986-05	SB-8(50)	Water
F1986-06	SB-8(40)	Water
F1986-07	SB-8(30)	Water
F1986-08	SB-8(20)	Water
F1986-09	SB-8(10)	Water
F1986-09 DL	SB-8(10) DL	Water
F1986-10	TRIPBLANK	Water

Soil and water samples were validated for analyses of volatile organics by the US EPA Region II data validation SOP (HW-24, Revision 2, 2008). Data were reviewed for usability according to the following criteria:

* - Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
- Laboratory Blanks
* Trip Blank
- Surrogate Compound Recoveries
* - Internal Standard Recoveries
- Matrix Spike
- Laboratory Control Samples
* - Compound Identification
* - Compound Quantitation

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The problems with the surrogates, laboratory control samples and calibrations should be noted. These are discussed in detail below.

Holding Times

All of the samples were analyzed within 14 days of collection.

Tunes

No problems were detected with the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the quality control limits with the exception of in sample F1986-02 / SB-8(6-7).

In the initial analysis of this sample the recovery of the toluene-d8 surrogate (61%) was below the quality control limit of 67%.

The sample was reanalyzed and the recovery of the 1,2-dichloroethane-d4 surrogate (133%) was above the quality control limit of 120%.

The data from the initial analysis was used for the final reporting since more compounds were detected and the recovery of 61% was not far below the 67% limit.

All of the data for the initial analysis were flagged with the "J" qualifier and are estimated values.

Calibrations

Two initial calibrations were analyzed with this sample delivery group.

All of the %RSDs in the 4/08 initial calibration were less than 20% with the exception of bromomethane (27%).

This initial calibration was associated with the analyses of the following soil samples:

F1986-01	SB-8(4-5)
F1986-02	SB-8(6-7)
F1986-02 RE	SB-8(6-7) RE

All of the %RSDs in the 4/10 water initial calibration were less than 20% with the exceptions of cyclohexane (36%), 1,2,4-trichlorobenzene (40%) and 1,2,3-trichlorobenzene (34%).

This initial calibration was associated with the analyses of all of the water samples.

None of these compounds were detected in any of the samples.

High %RSD do not affect the use of undetected data and are not required to be qualified.

All of the percent differences in the 4/15 soil continuing calibration were less than 20% with the exceptions of acetone (46%) and 2-butanone (25%).

This continuing calibration was associated with the analyses of the following soil samples:

F1986-01	SB-8(4-5)
F1986-02 RE	SB-8(6-7) RE

All of the percent differences in the 4/16 (09:40) continuing calibration were less than 20% with the exceptions of cyclohexane (25%) and 1,4-dioxane (25%).

This continuing calibration was associated with the analyses of the following water samples:

F1986-03	SB-8(70)
F1986-04	SB-8(60)
F1986-05	SB-8(50)
F1986-06	SB-8(40)
F1986-07	SB-8(30)

All of the percent differences in the 4/16 (23:37) continuing calibration were less than 20% with the exceptions of methyl acetate (32%), 2-butanone (33%), 4-methyl-2-pentanone (38%), 2-hexanone (42%), 1,2-dibromo-3-chloropropane (32%), 1,2,4-trichlorobenzene (24%), 1,2,3-trichlorobenzene (24%) and 1,4-dioxane (25%).

This continuing calibration was associated with the analyses of the following water samples:

F1986-08	SB-8(20)
F1986-09	SB-8(10)
F1986-10	TRIPBLANK

All of the percent differences in the 4/17 (11:07) continuing calibration were less than 20% with the exceptions of acetone (35%), cyclohexane (23%), 2-butanone (23%), 4-methyl-2-pentanone (26%) and 2-hexanone (31%).

This continuing calibration was associated with the analyses of water sample F1986-09 DL / SB-8(10) DL.

Data for the compounds in the continuing calibrations with percent differences greater than 20% were flagged with the “J” qualifier and are estimated values.

All of the relative response factors (rrfs) were greater than 0.05 with the one exception of 1,4-dioxane (<0.006).

This compound was not detected in any of the samples and the 1,4-dioxin data were flagged with the "R" qualifier and technically rejected.

Matrix Spike

A matrix spike was not analyzed with this sample delivery group.

Laboratory Control Sample

The laboratory's in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

All of the laboratory control samples were within the 70% - 130% limits with the following exceptions:

In LCS VD0414SBS01 analyzed on 4/14, the recoveries of bromomethane (57%) and chloroethane (65%) were outside of the quality control limits. This LCS was associated with soil sample F1986-02 / SB-8(6-7).

Compounds with low recoveries were flagged with the "J" qualifier and are estimated values.

The recoveries of the other laboratory control samples were within the required limits.

Method Blanks

A low concentration of methylene chloride (1.3J ug/l) was detected in the 04/15 method blank associated with the analyses of the following soil samples:

F1986-01	SB-8(4-5)
F1986-02 RE	SB-8(6-7) RE

This compound was not detected in either sample and the data were not affected by the blank contamination.

No other compounds were detected in any of the method blanks.

Trip Blank

No compounds were detected in the trip blank.

Internal Standard Areas and Retention Times

The areas and retention times of all internal standards were within the required quality control limits.

Sample Results

No problems were detected with any of the samples.

DATA USABILITY SUMMARY REPORT
Former Elka Chemical Company

Soil and Water Volatile Organic Analyses by Method SW846 8260B
Samples Collected: April 14th & 15th, 2014
Samples Received at Chemtech on April 17, 2014
Sample Delivery Group: F2030
Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix	Date Collected
F2030-01	SB-10(70)	Water	04/14/2014
F2030-02	SB-10(60)	Water	04/14/2014
F2030-03	SB-10(50)	Water	04/14/2014
F2030-04	SB-10(40)	Water	04/14/2014
F2030-05	SB-10(30)	Water	04/14/2014
F2030-06	SB-10(20)	Water	04/14/2014
F2030-07	SB-10(10)	Water	04/14/2014
F2030-07 DL	SB-10(10) DL	Water	04/14/2014
F2030-08	SB-10(4-5)	Soil	04/14/2014
F2030-09	SB-10(6-7)	Soil	04/14/2014
F2030-10	TRIPBLANK	Water	04/14/2014
F2030-11	SB-11(70)	Water	04/15/2014
F2030-12	SB-11(60)	Water	04/15/2014
F2030-13	SB-11(50)	Water	04/15/2014
F2030-14	SB-11(40)	Water	04/15/2014
F2030-15	F2030-14MS	Water	04/15/2014
F2030-16	F2030-14MSD	Water	04/15/2014
F2030-17	SB-11(30)	Water	04/15/2014
F2030-18	SB-11(20)	Water	04/15/2014
F2030-19	SB-11(10)	Water	04/15/2014
F2030-20	SB-11(4-5)	Soil	04/15/2014
F2030-21	SB-11(7-8)	Soil	04/15/2014
F2030-22	DUP-4	Water	04/15/2014
F2030-22 DL	DUP-4 DL	Water	04/15/2014

Soil and water samples were validated for analyses of volatile organics by the US EPA Region II data validation SOP (HW-24, Revision 2, 2008). Data were reviewed for usability according to the following criteria:

* - Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
- Laboratory Blanks
* Trip Blank
* - Surrogate Compound Recoveries
* - Internal Standard Recoveries
- Matrix Spike
- Laboratory Control Samples
* - Compound Identification
* - Compound Quantitation

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The problems with the laboratory control samples, method blank and calibrations should be noted. These are discussed in detail below.

Holding Times

All of the samples were analyzed within 14 days of collection.

Tunes

No problems were detected with the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the quality control limits.

Calibrations

Three initial calibrations were analyzed with this sample delivery group.

All of the %RSDs in the 4/17 initial calibration were less than 20% with the exception of bromomethane (35%).

This initial calibration was associated with the analyses of the soil sample F2030-20 / SB-11(4-5).

All of the %RSDs in the 4/10 water initial calibration were less than 20% with the exceptions of cyclohexane (36%), 1,2,4-trichlorobenzene (40%) and 1,2,3-trichlorobenzene (34%).

This initial calibration was associated with the analyses of all of the water samples:

Compounds that were detected in a sample were flagged with the "J" qualifier and are estimated values.

High %RSD do not affect the use of undetected data and are not required to be qualified.

All of the percent differences in the 4/18 soil continuing calibration, associated with sample F2030-20 / SB-11(4-5), were less than 20% with the following exceptions:

Compound	**% D**
1,1-Dichloroethane	26%
Benzene	22%
Bromomethane	33%

Carbon Disulfide	22%
Carbon Tetrachloride	24%
Methylcyclohexane	21%

All of the percent differences in the 4/17 soil continuing calibration were less than 20% with the exceptions of acetone (49%), trichlorofluoromethane (29%) and 1,4-dioxane (25%).

This continuing calibration was associated with the analyses of the following samples:

F2030-08	SB-10(4-5)
F2030-09	SB-10(6-7)
F2030-21	SB-11(7-8)

All of the percent differences in the 4/18 continuing calibration were less than 20% with the following exceptions:

Compound	% D
1,2,4-Trichlorobenzene	23%
2-Hexanone	35%
Acetone	24%
Cyclohexane	24%
Methyl Ethyl Ketone (2-Butanone)	24%
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	26%

This continuing calibration was associated with the analyses of the following water samples:

F2030-01	SB-10(70)
F2030-02	SB-10(60)
F2030-03	SB-10(50)
F2030-04	SB-10(40)
F2030-05	SB-10(30)
F2030-06	SB-10(20)
F2030-07	SB-10(10)
F2030-12	SB-11(60)

All of the percent differences in the 4/19 (02:30) continuing calibration were less than 20% with the exception of cyclohexane (26%).

This continuing calibration was associated with the analyses of the following water samples:

F2030-10	TRIPBLANK
F2030-13	SB-11(50)
F2030-14	SB-11(40)
F2030-17	SB-11(30)
F2030-18	SB-11(20)

All of the percent differences in the 4/19 (14:04) continuing calibration were less than 20% with the following exceptions:

Compound	% D
1,2,3-Trichlorobenzene	23%
1,2,4-Trichlorobenzene	27%
1,2-Dibromo-3-Chloropropane	30%
1,4-Dioxane (P-Dioxane)	25%
2-Hexanone	50%
Acetone	24%
Bromomethane	22%
Carbon Disulfide	25%
Cyclohexane	27%
Methyl Ethyl Ketone (2-Butanone)	38%
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	36%

This continuing calibration was associated with the analyses of the following water samples:

F2030-07 DL	SB-10(10) DL
F2030-11	SB-11(70)
F2030-19	SB-11(10)

All of the percent differences in the 4/21 continuing calibration were less than 20% with the following exceptions.

Compound	**% D**
1,2,4-Trichlorobenzene	22%
2-Hexanone	36%
Acetone	49%
Bromomethane	23%
Carbon Disulfide	26%
Cyclohexane	24%
Methyl Ethyl Ketone (2-Butanone)	32%

This continuing calibration was associated with the analyses of sample F2030-22 / DUP-4.

All of the percent differences in the 4/22 continuing calibration were less than 20% with the following exceptions.

Compound	% D
1,2,3-Trichlorobenzene	28%
1,2,4-Trichlorobenzene	36%
2-Hexanone	50%
Acetone	37%
Bromomethane	34%
Cyclohexane	26%
Methyl Acetate	39%
Methyl Ethyl Ketone (2-Butanone)	43%
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	43%

This continuing calibration was associated with the analyses of sample F2030-22 DL / DUP-4 DL.

Data for the compounds in the continuing calibrations with percent differences greater than 20% were flagged with the “J” qualifier and are estimated values.

All of the relative response factors (rrfs) were greater than 0.05 with the one exception of 1,4-dioxane (<0.006).

This compound was not detected in any of the samples and the 1,4-dioxin data were flagged with the "R" qualifier and technically rejected.

Matrix Spike

The laboratory’s in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

Water sample F2030-14 / SB-11(40) was used for the matrix spike and matrix spike duplicate.

All of the recoveries and RPDs were within the required limits with the exceptions of the recoveries of 1,1,2-trichloroethane (200% & 197%) in the matrix spike and matrix spike duplicate.

This compound was not detected in any of the samples and the high recoveries do not affect the use of the data.

A soil matrix spike was not analyzed.

Laboratory Control Sample

The laboratory’s in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

All of the laboratory control samples were within the 70% - 130% limits with the following exceptions:

In the 4/17 LCS / LCSD pair, all recoveries were within the quality control limits with the following exceptions:

Compound	% Rec. LCS	% Rec. LCSD	RPD
1,1,2-Trichloro-1,2,2-Trifluoroethane	135%		
1,1-Dichloroethene	131%		
Carbon Disulfide	132%		
Methyl Acetate	138%	131%	
4-Methyl-2-Pentanone	140%		

This laboratory control sample was associated with the following soil samples:

F2030-08	SB-10(4-5)
F2030-09	SB-10(6-7)
F2030-21	SB-11(7-8)

None of these compounds were detected in any of the samples and the high recoveries do not affect the use of undetected data.

In the 4/19 LCS all recoveries were within the quality control limits with the exception of carbon disulfide (56%)

This laboratory control sample was associated with the following water samples:

F2030-07 DL	SB-10(10) DL
F2030-11	SB-11(70)
F2030-19	SB-11(10)

The carbon disulfide data were flagged with the "J" qualifier and are estimated values.

In the 4/19 LCS all recoveries were within the quality control limits with the exception of carbon disulfide (64%).

This laboratory control sample was associated with water sample F2030-22 / DUP-4.

The carbon disulfide data were flagged with the "J" qualifier and are estimated values.

In the 4/22 LCS, associated with the analysis of sample F2030-22 DL / DUP-4 DL, all recoveries were within the quality control limits with the following exceptions:

Compound	**% Rec. LCS**
1,1,2,2-Tetrachloroethane	153%
1,2-Dibromo-3-Chloropropane	142%
1,4-Dioxane (P-Dioxane)	150%
2-Hexanone	160%
Acetone	140%
Bromochloromethane	133%
Methyl Acetate	168%
Methyl Ethyl Ketone (2-Butanone)	160%
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)	160%

None of these compounds were detected in the sample and the high recoveries do not affect the use of the data.

Method Blanks

A low concentration of 4-methyl-2-pentanone (8.3J ug/l) was detected in the 04/18 method blank associated with the analyses of sample F2030-21 / SB-11(7-8).:

The compound was detected in the soil sample at a concentration of 15.7J ug/kg. The data were flagged with the "U" qualifier since the concentration in the sample was less than twice the concentration in the method blank.

No other compounds were detected in any of the method blanks.

Trip Blank

No compounds were detected in the trip blank.

Internal Standard Areas and Retention Times

The areas and retention times of all internal standards were within the required quality control limits.

Sample Results

No problems were detected with any of the samples.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
Former Elka Chemical Company

Water Total Metals
Samples Collected: April 23, 2014
Samples Received at Chemtech on April 23, 2014
Sample Delivery Group: F2096
Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix
F2096-01	PZ-1(4-23-14)	Water
F2096-02	F2096-01MS	Water
F2096-03	F2096-01MSD	Water
F2096-04	PZ-2(4-23-14)	Water
F2096-05	PZ-3(4-23-14)	Water
F2096-06	FIELDDUPLICATE1-GW(4-23-14)	Water

Water samples were validated for inorganic analyses by the US EPA Region II data validation SOP (HW-2, Revision 13). Data were reviewed for usability according to the following criteria:

* - Holding Times
* - Calibration Verification
* - CRDL Standard
* - Laboratory Control Sample
* - Serial Dilution
* - Calibration Blanks
  - Field Blank
* - Preparation Blanks
* - Matrix Spike
* - Duplicate Analyses
* - ICP Interference Check Sample
* - Detection Limit Results
* - Linear Range
* - Sample Results

* - Indicates that all criteria were met for this parameter.

Data Validation Summary

No problems were detected that would affect the use of the data.

Holding Times

All samples were analyzed within the required holding times.

CRDL Standards

All of the CRDL standards were within the 70% -130% quality control limits used for the purpose of the validation.

Initial and Continuing Calibrations

No problems were found with any of the initial or continuing calibrations directly associated with the analyses of these samples.

Preparation Blank

No compounds were detected in the one preparation blanks.

Calibration Blanks

Several analytes were found in the continuing calibration blanks at concentrations between the CRDL and instrument detection limit. These very low concentrations are not required to be noted in the data validation summary table and do not affect the end use of the data.

Field Blank

A field blank was not collected with this sample delivery group.

ICP Interference Check Sample

All of the ICP Interference Check Sample recoveries were within the required limits.

Matrix Spike Recovery

Sample F2096-01 / PZ-1(4-23-14) was used as the matrix spike and matrix spike duplicate.

All recoveries, that could be accurately calculated, were within the 75% - 125% quality control limits used for the purpose of the data validation.

Note: The recovery of barium in the matrix spike (79%) was less than the laboratory's in-house limit of 81%, but within the 75% - 125% limits used for the validation.

The "N" qualifier was removed from the data validation column in the NYS EDD.

Duplicate Analysis

Sample F2096-01 / PZ-1(4-23-14) was used as the duplicate.

All RPDs, that could be accurately calculated, were less than the 20% quality control limit used for the purpose of the data validation.

Laboratory Control Sample

No problems were detected with the recoveries of the LCS standards.

Serial Dilution

Sample F2096-01 / PZ-1(4-23-14) was used as the serial dilution..

All percent differences, that could be accurately calculated, were less than the 10% quality control limit used for the purpose of the data validation.

Instrument Detection Limit

No problems were found with the instrument detection limits.

ICP Linear Ranges

No problems were detected with the linear ranges.

Sample Results

No problems were detected with any of the data.

SUMMARY OF THE ANALYTICAL DATA VALIDATION
Former Elka Chemical Company

Water Semivolatile Organic Analyses by Method SW846 8270B
Samples Collected: April 23, 2014
Samples Received at Chemtech on April 23, 2014
Sample Delivery Group: F2096
Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix
F2096-01	PZ-1(4-23-14)	Water
F2096-02	F2096-01MS	Water
F2096-03	F2096-01MSD	Water
F2096-04	PZ-2(4-23-14)	Water
F2096-05	PZ-3(4-23-14)	Water
F2096-06	FIELDDUPLICATE1-GW(4-23-14)	Water

Water samples were validated for analyses of semivolatile organics by the US EPA Region II data validation SOP (HW-22, Revision 3). Data were reviewed for usability according to the following criteria:

* - Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
- Laboratory Blanks
* - Laboratory Control Sample
* - Surrogate Compound Recoveries
* - Internal Standard Recoveries
* - Matrix Spike / Matrix Spike Duplicate
- Field Blank
- Compound Identification
- Compound Quantitation

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The minor problems with the calibrations should be noted. These are discussed in detail below.

Note: spectra for the non-target compounds were not included.

Holding Times

All of the water samples were extracted within the required 7 day holding time from date of collection.

All samples were analyzed (40 days) within the contractual and technical times required by the US EPA Region II protocols.

Tunes

No problems were detected with any of the tunes associated with the samples of this delivery group.

Surrogate Recoveries

All surrogate recoveries were within the required limits.

Matrix Spike / Matrix Spike Duplicate

Sample F2096-01 / PZ-1(4-23-14) was used as the matrix spike and matrix spike duplicate.

All recoveries and RPDs were within the required limits,

Laboratory Control Sample

All recoveries and RPDs were within the required limits.

Calibrations

The %RSDs of the detected compounds in the initial calibration were less than 15% with the following exceptions:

Compound	%RSD
2,4-Dinitrophenol	45%
2,4-Dinitrotoluene	20%
2-Nitroaniline	16%
2-Nitrophenol	19%
4,6-Dinitro-2-Methylphenol	27%
Benzyl Butyl Phthalate	21%
Bis(2-Ethylhexyl) Phthalate	16%
Di-N-Octylphthalate	20%
Hexachlorocyclopentadiene	26%
Pentachlorophenol	25%

The data were only flagged with the "J" qualifier when they were detected in a sample. Undetected data are not required to be qualified for high %RSDs.

The all percent differences from the continuing calibrations were less than 20% with the exception of di-n-octylphthalate (28%) in the 4/29 continuing calibration associated with the analysis of sample F2096-01 / PZ-1(4-23-14).

The data for this compound was flagged with the "J" qualifier and is an estimated value.

All of the relative response factors were greater than 0.05.

Method Blanks

No target compounds were detected in the method blank, but one non-target compound eluting at 4.94 minutes was reported at an estimated concentration of 100JU ug/l.

This compound was detected in a few of the samples at similar concentrations.

The data for the non-target compound was technically rejected and flagged with the "R" qualifier.

Note: spectra were not provided for this compound in either the samples or the method blank.

Field Blank

A field blank was not analyzed with this sample delivery group.

Internal Standard Areas and Retention Times

All internal standard recoveries and retention times were within the required limits.

Sample Results

No problems were found with the results of any of the samples of this delivery group.

DATA USABILITY SUMMARY REPORT
Former Elka Chemical Company

Soil and Water Volatile Organic Analyses by Method SW846 8260B
Samples Collected: April 23, 2014
Samples Received at Chemtech on April 23, 2014
Sample Delivery Group: F2096
Laboratory Reference Numbers:

Lab Sample ID	Field Sample ID	Matrix
F2096-01	PZ-1(4-23-14)	Water
F2096-02	F2096-01MS	Water
F2096-03	F2096-01MSD	Water
F2096-04	PZ-2(4-23-14)	Water
F2096-05	PZ-3(4-23-14)	Water
F2096-06	FIELDDUPLICATE1-GW(4-23-14)	Water
F2096-07	TRIPBLANK-ELKA(4-23-14)	Water
F2096-08	SS-1(0-6)	Soil
F2096-09	SS-2(0-6)	Soil
F2096-10	SS-3(0-6)	Soil
F2096-11	SS-4(0-6)	Soil
F2096-12	FIELDDUPLICATE1-SO(4-23-14)	Soil
F2096-13	F2096-08MS	Soil
F2096-14	F2096-08MSD	Soil

Soil and water samples were validated for analyses of volatile organics by the US EPA Region II data validation SOP (HW-24, Revision 2, 2008). Data were reviewed for usability according to the following criteria:

* - Data Completeness
* - GC/MS Tuning
* - Holding Times
- Calibrations
- Laboratory Blanks
* Trip Blank
- Surrogate Compound Recoveries
- Internal Standard Recoveries
- Matrix Spike
- Laboratory Control Samples
* - Compound Identification
* - Compound Quantitation

* - Indicates that all criteria were met for this parameter.

DATA VALIDATION SUMMARY

The problems with the laboratory control samples and calibrations should be noted. These are discussed in detail below.

Holding Times

All of the samples were analyzed within 14 days of collection.

Tunes

No problems were detected with the tunes associated with the samples of this delivery group.

Surrogate Compound Recoveries

All surrogate compound recoveries were within the EPA quality control limits with the one exception of the toluene-d8 surrogate (122%) in water sample F2096-02MS / F2096-01MS.

Surrogate recoveries in an matrix spike do not directly affect the data and are not required to be qualified.

Calibrations

Two initial calibrations were analyzed with this sample delivery group.

All of the %RSDs in the soil 4/24 initial calibration were less than 20%.

All of the %RSDs in the 4/23 water initial calibration were less than 20% with the following exceptions:

Compound	%RSD
1,1,2,2-Tetrachloroethane	21%
1,2,3-Trichlorobenzene	36%
1,2,4-Trichlorobenzene	36%
Carbon Disulfide	24%
Cyclohexane	33%

This initial calibration was associated with the analyses of all of the water samples:

Compounds that were detected in a sample were flagged with the "J" qualifier and are estimated values.

High %RSD do not affect the use of undetected data and are not required to be qualified.

All of the percent differences in the 4/26 soil continuing calibration were less than 20% with the exceptions of bromochloromethane (52%). chloroethane (30%) and 1,4-dioxane (25%).

All of the percent differences in the 4/24 water continuing calibration were less than 20% with the exceptions of 1.2.4-trichlorobenzene (26%), 1,2,3-trichlorobenzene (23%) and 1,4-dioxane (25%).

Data for the compounds in the continuing calibrations with percent differences greater than 20% were flagged with the “J” qualifier and are estimated values.

All of the relative response factors (rrfs) were greater than 0.05 with the one exception of 1,4-dioxane (<0.006).

This compound was not detected in any of the samples and the 1,4-dioxin data were flagged with the "R" qualifier and technically rejected.

Matrix Spike

The laboratory’s in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

A soil and water samples was used for the matrix spikes and matrix spike duplicates.

Soil sample F2096-08 / SS-1(0-6) was used for the matrix spike and matrix spike duplicate.

All of the recoveries and RPDs were within the required limits with the following exceptions:

Compound	% Rec. MS	% Rec. MSD	RPD
1,1,2,2-Tetrachloroethane	131%		
1,2,3-Trichlorobenzene	33%	46%	34%
1,2,4-Trichlorobenzene	35%	53%	40%
1,3-Dichlorobenzene			37%
2-Hexanone	67%	67%	
Bromoform	66%		
Bromomethane			31%
Chloroethane	169%	148%	
Cis-1,3-Dichloropropene	64%		36%
Dibromochloromethane			35%
Dichlorodifluoromethane	131%		
Methyl Acetate	162%	169%	
Styrene			31%
Tetrachloroethylene (PCE)			31%
Trichlorofluoromethane	154%		36%

Water sample F2096-01 / PZ-1(4-23-14) was used for the matrix spike and matrix spike duplicate.

All of the recoveries and RPDs were within the required limits with the following exceptions:

Compound	% Rec. MS	% Rec. MSD	RPD
1,2-Dibromo-3-Chloropropane		66%	
2-Hexanone		68%	
Acetone	64%	68%	

Cyclohexane	177%	171%
Methyl Acetate		69%
Methyl Ethyl Ketone (2-Butanone)		68%
Methyl Isobutyl Ketone (4-Methyl-2-Pentanone)		68%
Methylcyclohexane	205%	205%

An RPD of 30% was used for the quality control limit.

Compounds with low recoveries were flagged with the "J" qualifier and are estimated values.

Compounds with high recoveries were only qualified when they were detected in a sample, since high recoveries do not affect undetected data.

Compounds were only qualified for high RPDs if they were detected in a sample.

Laboratory Control Sample

The laboratory's in-house QC limits noted on their summary forms were often wider than the 70% - 130% Region 2 limits. The data were validated on the basis of the Region 2 limits.

All of the laboratory control samples were within the 70% - 130% limits with the following exceptions:

In the 4/24 LCS, all recoveries were within the quality control limits with the exception of bromochloromethane (133%).

This laboratory control sample was associated with the following soil samples:

F2096-09	SS-2(0-6)
F2096-10	SS-3(0-6)

None of these compounds were detected in either of the samples and the high recoveries do not affect the use of undetected data.

Method Blanks

A low concentration of 4-methyl-2-pentanone (10.5J ug/l) and 2-hexanone (17.5) were detected in the 04/25 method blank associated with the analyses of the following soil samples:

F2096-09	SS-2(0-6)
F2096-10	SS-3(0-6)

These compounds were detected in neither sample and the blank contamination does not affect the use of the data.

A low concentration of the non-target 2-(trimethylsilyl)-ethanol was detected in the 04/26 soil method blank.

This compound was not detected in any of the associated samples.

No compounds were detected in the one water method blank.

Trip Blank

No compounds were detected in the trip blank.

Internal Standard Areas and Retention Times

The areas and retention times of all internal standards were within the required quality control limits with the exception of . F2096-08MS / SS-1(0-6)MS.

The recoveries of the four internal standards were 27%, 25%, 24% and 16%.

Data for a matrix spike are not required to be qualified for recoveries of low internal standards.

Sample Results

No problems were detected with any of the samples.

APPENDIX C

ANALYTICAL DATA