REMEDIAL INVESTIGATION REPORT

for

FONF Expansion/Sabre Park BCP
1705 Factory Outlet Boulevard
Town of Niagara, New York 14304

NYSDEC BCP Site No. C932162

Prepared For:

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16 August 2013
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LIST OF ACRONYMS

Acronym	Definition
AOC	Area of Concern
ASP	Analytical Services Protocol
AWQS	Ambient Water Quality Standards
BCA	Brownfield Cleanup Agreement
BCP	Brownfield Cleanup Program
CAMP	Community Air Monitoring Plan
CLP	Contract Laboratory Program
COC	Contaminants of Concern
COPC	Constituent of Potential Concern
cVOCs	Chlorinated Volatile Organic Compounds
DER	Division of Environmental Remediation
DOT	Department of Transportation
DUSR	Data Usability Summary Report
EDD	Electronic Data Deliverable
EDR	Environmental Data Resources
ELAP	Environmental Laboratory Accreditation Program
EM	Electromagnetics
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
FSP	Field Sampling Plan
GPR	Ground Penetrating Radar
GPS	Global Positioning Equipment and Software Device
HASP	Health & Safety Plan
IDW	Investigation Derived Waste
IHWDS	Inactive Hazardous Waste Disposal Site

Acronym	**Definition**
IRM	Interim Remedial Measure
IRMWP	Interim Remedial Measures Work Plan
L.E.P.	Licensed Environmental Professional
MS/MSD	Matrix Spike / Matrix Spike Duplicate
NAVD	North American Vertical Datum
NWI	National Wetland Inventory
NYCRR	New York Codes Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOT	New York State Department of Transportation
PAH	Polynuclear Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyl
PID	Photo Ionization Detector
PVC	Polyvinyl Chloride
QAPP	Quality Assurance Project Plan
QA/QC	Quality Assurance / Quality Control
RI	Remedial Investigation
RIR	Remedial Investigation Report
RIWP	Remedial Investigation Work Plan
RPD	Relative Percent Difference
SCOs	Soil Cleanup Objectives
SDG	Sample Delivery Group
SEQR EAF	State Environmental Quality Review Environmental Assessment Form
SSURGO	Soil Survey Geographic
SVOC	Semi-Volatile Organic Compound
TAL	Target Analyte List

Acronym	Definition
TCL	Target Compound List
TCLP	Toxicity Characteristic Leaching Procedure
TOGS	Tehnical Operation Guidance Series
TPH	Total Petroleum Hydrocarbons
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOC	Volatile Organic Compound
XRF	X-Ray Fluorescence

CERTIFICATION

I, Jamie P. Barr, certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Remedial Investigation 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).

Jamie P. Barr, L.E.P. 16 August 2013

Connecticut Licensed Environmental Professional
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1. INTRODUCTION AND OBJECTIVE

This Remedial Investigation Report (RIR) was prepared by Langan Engineering, Environmental, Surveying, and Landscape Architecture, D.P.C. (Langan) on behalf of Fashion Outlets II, LLC (FO II, LLC) and Macerich-Niagara, LLC (collectively "Macerich" for the purpose of this report). Macerich has entered into the Brownfield Cleanup Program (BCP No. C932162) with the New York State Department of Environmental Conservation (NYSDEC) as a "Volunteer", to investigate and, where necessary, remediate contaminated soil, groundwater, and soil gas encountered during the expansion of the approximate 47.8-acre Fashion Outlets of Niagara Falls mall (the Site). Macerich is proposing a 225,000 square foot expansion that includes 175,000 square feet of new enclosed gross leasable area to the existing mall. The expansion will include 50 new stores and dedicated public common space, and additional asphalt paved parking areas, stormwater detention ponds, and landscaped areas.

The objective of the RIR is to present the findings of the RI, compare sample data to the applicable NYSDEC and New York State Department of Health (NYSDOH) cleanup criteria, and evaluate and provide adequate characterization of the Site to potential remedial alternatives to achieve remedial action objectives. The RI was implemented in accordance with the Remedial Investigation Work Plan (RIWP) prepared by Langan, dated 19 April 2013 (revised 14 June 2013), and approved by NYSDEC on 18 June 2013.

The RIR report contains the following sections:

- Section 2.0 summarizes the Site background, including the results of previous investigations;
- Section 3.0 describes the physical characteristics of the Site;
- Section 4.0 presents the methodologies for the field investigation;
- Section 5.0 presents a summary of the analytical results;
- Section 6.0 presents the nature and extent of media contamination, including the extent of historic fill, soil, groundwater, and soil gas quality;
- Section 7.0 describes the fate and transport of the constituents of primary concern (COPCs);
- Section 8.0 presents the qualitative human health exposure assessment;
- Section 9.0 describes any deviations from the NYSDEC approved RIWP
- Section 10.0 presents a summary of our conclusions.

2.0 SITE BACKGROUND AND PREVIOUS INVESTIGATION RESULTS

2.1 Site Description and Current Usage

The Site subject to the Brownfield Cleanup Agreement (BCA), encompasses approximately 47.8-acres wholly within the Town of Niagara and includes the ±34-acres former Sabre Park Mobile Home Community located at 1705 Factory Outlet Boulevard (a/k/a Fashion Outlet Boulevard, a/k/a Third Avenue Extension, a/k/a Connection Boulevard - Assessor's Parcel Numbers 160.08-1-2, 160.08-1-6 and 160.08-1-7), an approximate 10.35-acre parcel located on the southern portion of the larger approximately ±41.3-acre Fashion Outlets of Niagara Falls (Fashion Outlets) property located at 1900 Military Road, (specifically, a portion of Assessor's Parcel Number 145.20-1-15), and a smaller parcel encompassing approximately 3.45-acres on the western side of the Site located at 1755 Factory Outlet Boulevard (a/k/a Fashion Outlet Boulevard, a/k/a Third Avenue Extension, a/k/a Connection Boulevard - Assessor's Parcel Number 160.08-1-1). A Site Location Map is provided as Figure 1.

The Sabre Park parcels were previously occupied by 278 mobile home lots from approximately 1972 to 2013, when demolition commenced. The remainder of the Sabre Park parcels consist of asphalt/gravel parking areas, asphalt driveways, and landscaped areas. The Fashion Outlets parcel consists of an asphalt parking lot and some internal parking related roadways. The parcel located at 1755 Factory Outlet Boulevard is currently improved with a Secure Storage facility and associated asphalt parking.

The Project Site is bouded by Factory Outlet Boulevard/Route 190 to the west/northwest, the existing Fashion Outlets of Niagara Falls to the east, and National Grid power lines to the south. A Site plan depicting the existing conditions is included as Figure 2.

2.2 Proposed Development Plan

The 225,000 square foot expansion includes 175,000 square feet of new enclosed gross leasable area to the existing Fashion Outlets of Niagara Falls mall to include 50 new stores and dedicated public common space, an additional 1,720,000 square feet of asphalt paved parking areas, 225,000 square feet of clay lined stormwater detention ponds, and 273,750 square feet of landscaped areas.

The Secure Storage facility currently located on the site will be demolished and reconstructed in the southwest corner of the Site. A Site plan depicting the proposed development is included as Figure 3.

2.3 Summary of Previous Environmental Investigation and Remediation

Numerous previous environmental reports have been completed (by Langan and others) for the Sabre Park and Fashion Outlets of Niagara Falls parcels. Remedial actions also have been performed at the parcels. Details of the previous reports and remedial actions are discussed in detail in the 5 July 2011 Phase I Environmental Site Assessments (ESAs) prepared by Langan and will not be discussed in detail in this report; however, a brief summary is presented in the following paragraphs.

Sabre Park Property

According to a review of title records for the Site, Sabre Park was owned by Union Carbide Corporation from 1949 until 1969. According to the Environmental Data Resources (EDR) Report, during expansion of the mobile home community to the south in 1978, fill with elevated level of organic chemicals was discovered; however, information regarding the source or quantity of this fill material was not provided. During a 1985/1986 soil sampling event conducted by the United States Environmental Protection Agency (USEPA), organic chemicals were not detected; however, the samples contained mercury. Mercury impacted soil was remediated via excavation and offsite disposal; however, elevated concentrations of mercury remain in on-site soils (maximum concentration = 766 mg/kg).

A follow-up field investigation of the extent of mercury contamination at the Sabre Park Trailer Park was conducted by NUS Corporation (NUS) in May 1988. A total of 424 soil samples were screened for total mercury using the Region 2 Fit X-Ray Fluorescence (XRF) system. In addition 125 split samples were sent to an EPA Contract Laboratory Program (CLP) for confirmation. Mercury was detected by XRF at concentrations greater than 40 mg/kg (up to 84 mg/kg) in 14 soil samples collected from the southwestern portion of the Site. Mercury was detected in 41 of 125 CLP samples at concentrations ranging from 0.14 to 54.4 mg/kg. Approximately 1,200 cubic–yards of mercury impacted soil was remediated in 1989 by excavation and off-site disposal as a D-listed (D009-mercury) hazardous waste at an off-site soil disposal facility.

During an August 1995 subsurface investigation conducted by Paragon Environmental Services (Paragon), total petroleum hydrocarbons (TPH) were detected in the soil and groundwater at concentrations ranging from 7 to 120 mg/kg in soil, and 0.4 to 0.72 mg/L in groundwater. As the NYSDEC has no criteria for TPH in subsurface media, Paragon was directed to use professional judgment to determine if the TPH concentrations posed a risk to human health or the environment. It was Paragon's opinion that the TPH concentrations in the soil and groundwater at the Site did not pose a risk to human health and no further action was recommended on the Site.

Seven petroleum spills (heating oil, motor oil, non-PCB transformer oil, waste oil) were reported at the Sabre Park property from 1985 to 2010. These spills have all been closed according to the NYSDEC Spills Database.

Based on the historic dumping that occurred at the Sabre Park property, the NYSDEC identified the Site as an Inactive Hazardous Waste Disposal Site. Subsequent to several phases of remediation, the NYSDEC concluded that the Sabre Park property had been properly remediated and that "no further action" was required. In a letter dated March 21, 1995, the NYSDEC delisted Sabre Park from the Registry of Inactive Hazardous Waste Disposal Sites in New York State.

Fashion Outlets of Niagara Falls Property

According to the 5 July 2011 Phase I ESA conducted by Langan for the Fashion Outlets property, the 1970 and 1980 city directory listings indicate historic uses of the Fashion Outlets property may have included a dry cleaner. The exact location of the former dry cleaner has not been confirmed.

The northwestern portion of the Property (grids 1 through 7 of Figure 4) was formerly occupied by the Walter Kozdranski Construction Company. This facility has a documented release of diesel fuel oil associated with a former leaking underground storage tank removed in July 1988. A spill report was issued for the Property in July 1988. Reportedly, 5,400 gallons of liquid were removed from the Site but it is unclear if the liquids were tank related or groundwater. The spill was closed by the NYSDEC on July 12, 1988. According to the 2004 Phase II Environmental Site Investigation conducted by IVI Due Diligence Services, Inc. (IVI), concentrations of petroleum related semi-volatile organic compounds (SVOCs), including benzo(a)anthracene, chrysene, and benzo(a)pyrene in three of six soil boring locations were detected above the applicable NYSDEC numeric criteria. As the results of this investigation were similar to the information the NYSDEC had on the Kozdranski property when they closed the spill in 1988, no further investigation was recommended by IVI.

The Fashion Outlets property received contaminated fill in late 1960's or early 1970's. A waste area approximately 0.5-acres in size was discovered in the parking area immediately west-northwest of the outlets. In October 1985, a yellow-tan waste material was discovered during the installation of stormwater piping in the northwestern property corner and investigation of the on-site waste material was initiated. The results of the investigations revealed the presence of volatile organic compounds (VOCs), SVOCs, inorganic compounds, and pesticide compounds. Elevated concentrations of N-nitrosodiphenylamine and 1,2,4-trichlorobenzene were detected in on-site soils in October 1985. Six different types of fill were identified on-site: including a yellow-tan resinous waste, white powder-like material, construction and demolition debris, ash and slag. Based on the described fill placement location, it does not appear that this contaminated material was placed within the BCP development Site boundary.

Approximately 12,879 tons of contaminated materials and 7,300 gallons of impacted wastewater were removed from the Fashion Outlets property between January and February of 1994. The results of post-remediation soil sampling activities indicate that elevated concentrations of 2-mercaptobenzothiazole were detected in four of the twenty-four soil samples at concentrations that exceed the applicable numeric soil criteria. Several metals and pesticides were also detected in soil at concentrations that are below the applicable criteria. The remediation was closed with a Record of Decision in December 1994, which required the property owner to file a deed restriction/covenant prohibiting future use of certain area of the Site for residential purposes. In January 1995, the Site was delisted from the New York State Inactive Hazardous Waste Disposal Site (IHWDS) list (No. 932103).

During construction of the mall expansion in November 1994, a white powder waste was encountered while drilling caissons for the mall's foundation. A sample of the waste was collected and analyzed for TCLP, and found to exceed regulatory limits for vinyl chloride. This material was excavated from the site between February 2 and February 11, 1995 and temporarily staged on-site. Material staged on-site was screened and separated into hazardous and non-hazardous piles. After screening the excavated materials to separate drums and construction and debris material that could not be landfilled, the remaining material no longer exceeded TCLP for vinyl chloride. This material was reused beneath an on-site parking lot.

2.4 Areas of Concern

Based on Site observations, the development history of the Site and the findings of the previous reports outlined above, the areas of concern (AOCs) investigated by this BCP RI are as follows:

AOC #1: Historic Site Use – Walter Kozdranski Construction Company (Northern Portion of Site)

As indicated above, this facility has had a documented release of diesel fuel oil associated with a former leaking underground storage tank removed in July 1988. During a 2004 Phase II ESI conducted by IVI, concentrations of petroleum related semi-volatile organic compounds (SVOCs), including benzo(a)anthracene, chrysene, and benzo(a)pyrene were detected in soil above the applicable NYSDEC numeric criteria.

AOC #2: Historic Site Use – On-site Dumping (Northern Portion of Site)

The northern portion of the Site received contaminated fill in late 1960’s or early 1970’s. A waste area approximately 0.5-acres in size was discovered in the parking area immediately west-northwest of the current outlet building. The results of the investigations revealed the presence of volatile organic compounds (VOCs), SVOCs, inorganic compounds, and pesticide compounds. Elevated concentrations of N-nitrosodiphenylamine and 1,2,4-trichlorobenzene were detected in on-site soils in October 1985. Six different types of fill were identified on-site: including a yellow-tan resinous waste, white powder-like material, construction and demolition debris, ash and slag.

AOC #3: Historic Site Use – Former Sabre Park Parcel (Central and Southern Portion of Site)

According to a review of title records the former Sabre Park Parcel was owned by Union Carbide Corporation. During expansion of the mobile home community to the south in 1978, fill material with elevated levels of organic chemicals was discovered. This fill material (approx. 1,200 cubic–yards) was subsequently removed from the southern portion of the property and disposed of as a D-listed (D009) hazardous waste at an offsite soil disposal facility in 1989. During a 1985/1986 soil sampling event conducted by the USEPA, organic chemicals were not detected in soil samples collected from the property; however, the samples contained elevated levels of mercury. Mercury impacted soil was remediated via excavation and offsite disposal; however, elevated concentrations of mercury remain in onsite soils (maximum concentration = 766 mg/kg).

During an August 1995 subsurface investigation conducted by Paragon, TPH was detected in the soil and groundwater beneath the Site; however, no chemical concentrations or sampling locations were provided. The NYSDEC has no criteria for TPH in subsurface media, and no further action was recommended on the Site by Paragon.

3.0 SITE PHYSICAL CHARACTERISTICS

3.1 Surrounding Property Land Use

The Site is located in an urban setting, occupied by residential and commercial buildings. The Site is bounded to the north by the Fashion Outlets of Niagara Falls, to the east by a commercial plaza which contains a Walmart, to the west by commercial properties, followed by Factory Outlet Boulevard, Route 190, and the Allied Waste Niagara Falls Landfill, and to the south by the National Power Grid power lines and vacant land, followed by commercial buildings.

Based on a State Environmental Quality Review Environmental Assessment Form (SEQR EAF) prepared for the Site by Stantec Consulting Services, Inc. of Rochester, New York (Stantec), the nearest ecological receptor is a 4.3-acre NYSDEC regulated wetland located within 100 feet of the southwestern corner of the Site and potentially down gradient. The nearest sensitive receptor is the Seventy-Ninth Street Elementary School located approximately 0.7 miles southwest of the Site.

3.2 Topography

The elevation of the Site ranges from 571.63 feet to 575.62 feet above mean sea level, measured in accordance with the North American Vertical Datum of 1988 (NAVD 88). The topography of the Site and the surrounding area slopes gently to the south towards the Niagara River (approximately 1.5 miles away).

3.3 Geology

Geological surface features (e.g., rock outcroppings) were not observed at the Site. Based on the Geologic Map of New York, Niagara Sheet (1970) the bedrock beneath the Site is classified as the Lockport Group, consisting primarily of dolostone with incidental amounts of limestone. It is approximately 210-ft thick and overlies the Rochester shale.

According to the EDR Radius Report, the Soil Survey Geographic (SSURGO) data for the Site indicate that the surficial soil consists of a very poorly drained silt loam.

According to a Preliminary Geotechnical Report, dated January 31, 2012, prepared by Baron and Associates P.C. of Clarence, New York, surficial materials in the northern portion of the Site generally consist of 1-2 feet of granular fill, with trace amounts of brick and asphalt. Beneath the fill is a layer of sandy silt, silty clay, with trace amounts of gravel and fine to coarse sand. Glacial till was also encountered at select locations. Bedrock was encountered from approximately 10.5 to 14 feet below grade.

During the RI drilling and test pitting activities, Langan observed the following geological stratigraphy:

Fill Material

Fill was observed at the surface throughout the Sabre Park portion of the property, and just below the asphalt, concrete and landscaped surfaces at the Fashion Outlet and Secure Storage facility parcels. Fill generally extended to an average depth of 5 feet below grade, with a maximum depth of approximately 15 feet below grade at limited locations. The fill consisted of brown to dark gray and black fine to coarse grained sands with varying levels of silt, clay, gravel, organics (roots), brick, concrete, wood, glass, rubber, slag, and miscellaneous pieces of plastic and metal. At select test pit locations Langan observed tires, construction debris (wood), concrete blocks up to 2 feet in diameter, scrap piping and pipe fittings, and miscellaneous metal hardware (blades, screws). The fill layer was more prominent in the southern portion of the Sabre Park parcel, as Langan observed thicker layers with a wider range of fill materials.

Slag was observed at locations throughout the site. The slag generally had a hard, porous composition, and varied in color from black, gray, green, yellow, and blue. Slag was observed within the subbase layer or in the fill just below subbase in soil borings at the Fashion Outlets and Secure Storage facility parcels, and throughout the fill layer at many locations at Sabre Park. At select test pit locations Langan observed pieces of slag up to 2 feet in diameter. A Ludlum Geiger counter was utilized to assess the potential radioactivity of the slag; however, no readings were observed above background (0.05 millirems/hour).

Silty Sand/Silty Clay Unit

At limited locations, Langan observed silty fine sand underneath the fill layer ranging in thickness from 2 to 4 feet. A clay layer was observed underlying the fill and/or silty sand layers, encountered at depths of 2 to 12 feet and extended to 16 feet below grade or the boring/test pit termination depth.

Clay Unit

The clay was observed to vary in color from brown, gray and reddish-brown, and contained trace levels of silt and fine sand. The clay was observed to be very dense and contain increased quantities of coarse sand and fine gravel at depths of 13 to 16 feet below grade or just prior to refusal. Boring refusal was encountered at depths ranging from 10.3 to 15.9 feet below grade, and was generally limited to locations throughout the Fasion Outlets parking lot and Secure Storage facility, and a few locations in the northern section of Sabre Park. Refusal was encountered at one test pit (LSP-55) at a depth of 6 feet below grade when the excavator encountered a very dense, hard presumed silt layer, which was not encountered at any other location at the site.

3.4 Hydrogeology

Historic geotechnical and groundwater sampling conducted at the Site identified groundwater at depths ranging from 2 to 12 feet below grade.

Langan observed varying levels of perched water within the fill and/or sand layers above the thick, continuous clay layer. Langan installed eight (8) permanent monitoring wells throughout the site to determine groundwater depth, flow direction, and water quality. Based on the monitoring well gauging events performed on 2 July 2013 and 23 July 2013, groundwater was encountered at depths ranging from 1.8 to 4.39 feet below grade (elevations 572.50 to 567.23 NAVD 88). A groundwater contour map was created based on these elevations, indicating that the perched groundwater flows to the north (Figure 9). Bedrock monitoring wells were not installed as part of the RI.

3.5 Wetlands

Based on the Niagara County, New York On-Line Mapping System, NYSDEC and National Wetland Inventory (NWI), approximately 4.3-acres of NYSDEC regulated wetland areas are depicted near the southern and eastern portions of the Site. This wetland area is located on the adjacent National Grid utility corridor within 100 feet of the southwest property line.

4.0 FIELD INVESTIGATION

Langan conducted the RI field investigation between 23 June 2013 and 3 July 2013, in accordance with the procedures set-forth in the NYSDEC approved RIWP, dated 14 June 2013. The RI field investigation included the following activities:

- Visual assessment of the Site (subsequent to the utility mark-out), review of all exploration locations with Site representative, and verification that all drilling locations have been checked for utilities and clearly identified in the field;
- Geophysical survey, using ground penetrating radar (GPR) and electromagnetics (EM) to clear boring and test pit location for utilities and subsurface obstructions;
- Geoprobe™ soil borings;
- Test pit excavations;
- Permanent groundwater monitoring well installation;
- Soil and groundwater sample collection and analysis;
- Soil gas monitoring point installation, sampling, and analysis;
- Ambient air monitoring; and,
- Surveying of groundwater monitoring wells and soil boring/test pit locations.

4.1 Utility Clearance and Geophysical Survey

Prior to initiation of the subsurface investigation, Dig Safely – New York was contacted for a utility mark-out (Dig Safely No. 06193-183-024). In addition, Langan coordinated with a geophysical contractor to complete a site-wide GPR, electromagnetics, and utility location survey of the proposed boring and test pit locations. The purpose of the survey was to locate potential subsurface utilities, and unknown subsurface structures.

On 24 June 2013 utility companies including PB Energy Storage Services, Inc. (PB), National Fuel Gas Company (National Fuel), and the Town of Niagara Water and Sewer Department, were on-site to perform utility markouts. PB indicated that they have an easement on the south side of the property which contains a brine containing pipeline that runs east to west, and marked the surface with spray paint and flags. National Fuel indicated that performing a markout of natural gas pipelines at the Sabre Park parcel was not feasible due to overgrown vegetation, the presence of demolished mobile home materials on the surface, little as-built information, and unidentifiable pipelines constructed of flexible Polyvinyl Chlorinde (PVC) piping. The Town of Niagara marked the water valves and sanitary manholes with spray paint, and indicated the general direction of the piping from these structure, but did not mark the service connections or pipes continuously between the structures. The Town of Niagara indicated that performing a markout of the sanitary and water service connections was unfeasible due to no as-built information. Langan did not observe the local electrical or stormwater utility agencies on-site for utility mark-out.

The GPR survey was performed by Nova Geophysical Services (Nova) of Douglaston, NY on 23 June through 28 June 2013. The equipment utilized for the survey was a Sensors & Software Noggin GPR unit equipped with 200 and 250 Mhz antennas with a graphic recorder and video display. The unit, mounted on a three wheel platform, was passed over the selected area in a perpendicular grid pattern. The unit transmits an electromagnetic signal to the subsurface and then detects, amplifies and displays the signal reflection. Any parabolic anomalies noted below grade were graphically displayed and identified as a potential object of concern. Objects of concern were examined for size, shape, and amplitude. The unit was set to detect the features to a depth of 15 feet below grade in the survey locations. Nova also utilized a Fisher T-6 Utility Locator which is capable of finding underground pipes, cables, manhole covers, vaults, valve boxes and other metallic objects.

The GPR survey did not detect any anomalous parabolic features characteristic of underground storage tanks at the site. The GPR survey did detect anomalous parabolic features characteristic of miscellaneous fill materials (concrete, bricks, slag, construction debris) to a depth of approximately 8 feet below grade at locations throughout the Sabre Park portion of the Site. Gas mains, underground stormwater, sanitary, electric and water lines were identified on the Site. Gas mains constructed of untraceable, flexible PVC piping within the southern portion of the Site, and small water service connections for each mobile home were unidentifiable by Nova. The presence of miscellaneous building construction materials on the surface from previously demolished mobile homes, as well as subsurface fill materials, caused interference and obstructed utility locating activities. Nova identified water lines, gas mains and electrical utility lines entering the site from Factory Outlet Boulevard along the western portion of the Site.

A flexible PVC gas main was encountered during advancement of test pit (LTP-58) on 24 June 2013, not previously identified by Dig Safely or Nova. Emergency services (police and fire department) and National Fuel were immediately notified of the gas main breach. The local police and fire department came to the site to assess public safety, and evacuated the adjacent businesses to the west of the Site. National Fuel came to the Site and fixed the gas main breach by capping the gas main. To mitigate the potential of striking further active plastic gas mains, soft digging methods were utilized in areas of the site that were shown by utility mapping as service by plastic gas mains. Small water service connections for the existing and formerly demolished mobile homes, consisting of 1 inch diameter copper piping, were encountered throughout the Sabre Park portion of the Site during soft digging. Deviations from the RIWP resulting from the presence of underground utilities are discussed in Section 9.

4.2 Fill/Soil Investigation

Between 24 June 2013 and 3 July 2013, 62 soil borings and 84 exploratory test pits were advanced, and 10 soil gas monitoring points and 8 overburden groundwater monitoring wells were installed across the Site. The exploratory test pit excavations were performed by Mark Cerrone, Inc. of Niagara Falls, New York. Soil borings and monitoring wells were installed by SJB Services, Inc. of Buffalo New York. All locations were completed under the observation of a Langan field engineer. The sampling locations are depicted on Figure 4. Table 1 presents the final drilled and excavated depths, and sample information for each location. Tables 2 through 4 summarize the soil, groundwater, and soil gas analytical results.

4.2.1 Sampling Methodology and Rationale

4.2.1.1 Soil Boring Sampling Methodology

SJB Services, Inc. (SJB) was retained to complete 76 soil borings (LSB-1 through LSB-76) at the Site. The soil borings were advanced within on a 1-acre grid pattern, generally with 1-3 borings per grid, in accordance with the NYSDEC approved RIWP and Field Sampling Plan (FSP). Due to the presence of unidentified subsurface utilities, as discussed in Section 4.1, several soil boring locations were completed as test pits, resulting in a total of 64 soil borings being advanced during RI activities. All soil borings were advanced with direct-push sampling methods utilizing a Geoprobe™ drill rig, also capable of spinning hollow stem augers. To the extent possible, the borings were advanced in areas of general or suspect soil contamination, including proposed areas of significant historic earthwork/filling activities. Soils were collected continuously using 4 foot, 2 inch diameter macrocores. The soil borings were advanced to approximately 15 feet below existing grade, or refusal.

A Langan engineer observed the soil boring activities, screened the soil samples for environmental impacts, and collected environmental samples for laboratory analyses. Soils were screened for organic vapors with a MultiRAE PLUS 5-gas meter that included a photoionization detector (PID) equipped with a 10.6 electron-volt (eV) lamp, and evaluated for visual and olfactory indications of environmental impacts. Soil descriptions were recorded on boring logs, and were electronically scanned and sent to the office at the end of each day to facilitate data tabulation. All non-dedicated drilling equipment was decontaminated between each boring in accordance with the RI Field Sampling Plan as discussed in Section 4.7. Generally, drill cuttings were backfilled within the borehole at which they were generated. Cuttings were containerized in 55-gallon drums at locations converted to monitoring wells, or at locations where cuttings had gross impacts or were unable to fit into the borehole. Work complied with the procedures identified in the site-specific investigation Health & Safety Plan (HASP), in Appendix B of the RIWP.

4.2.1.2 Soil Boring Sample Collection/Analyses

Up to two samples were collected from each soil boring, as shown on Table 1. Samples were collected from depths between approximately 0 and 15 feet below existing grade to characterize historic fill at the Site, and to evaluate potential releases to native soils throughout the Site. Samples were generally collected from the capillary fringe and from the interval with the most evident contamination (or boring termination). Soil samples were labeled in accordance with the nomenclature outlined in the Field Sampling Plan (FSP).

Samples were collected in laboratory-supplied containers and were sealed, labeled, and immediately placed in a cooler containing ice (to maintain a temperature of approximately 4 degrees Celsius) for delivery to York Analytical Laboratories, Inc. of Stratford, Connecticut (York), a New York State Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP)-certified analytical laboratory. Soil samples were analyzed for the following:

- Target compound list (TCL) volatile organic compounds (VOCs) via EPA Method 8260;
- TCL semi-volatile organic compounds (SVOCS) via EPA Method 8270;
- Target Analyte List (TAL) metals via EPA Methods 6010, 7470/7471, 9010/9012/9014, and 7196; and,
- PCBs via EPA Method 8082/pesticides via EPA Method 8081 (including the herbicide 2,4,5 TP – Silvex).

4.2.1.3 Test Pit Sampling Methodology

Mark Cerrone, Inc. was retained to excavate 70 test pits (LTP-1 through LTP-70) at the Site. Due to the presence of unidentified subsurface utilities, as discussed in Section 4.1, several soil boring location were completed as test pits, resulting in a total of 84 test pits being advanced during RI activities. The test pits were advanced within a one-acre area grid system, generally with 2 test pits per acre, within the Sabre Park portion of the Site. To the extent possible, the test pits were advanced to target general locations of previously identified or suspected soil contamination and remediation areas, including former underground storage tank locations, as well as proposed soil "cut" areas. The test pits were excavated to approximately 10 feet below existing grade or to the observed groundwater depth.

A Langan engineer observed the work, screened the soil for organic vapors with MultiRAE PLUS 5-gas meter that included a PID equipped with a 10.6 electron-volt (eV) lamp and evaluated it for visual and olfactory indications of environmental impacts. Soil descriptions were recorded on test pit logs, and were electronically scanned and sent to the office at the end of each day to facilitate data tabulation. Excavated test pit materials were placed on plastic sheeting while screening activities took place. Upon completion of these activities, the excavated material was returned to the test pit in the general order it was excavated so that surface material is placed on top and potentially contaminated material is buried. Work complied with the procedures identified in the site-specific investigation HASP (Appendix B of RIWP).

4.2.1.4 Test Pit Soil Sample Collection/Analyses

Up to two soil samples were collected from each test pit from depths between approximately 0 and 10 feet below grade. Select samples were collected from the capillary fringe and the interval with the most evident contamination (or test pit termination). Dedicated plastic trowels were used to collect sufficient materials to fill the sample containers. Soil samples were labeled in accordance with the nomenclature outlined on Table 1 of the RIWP and corresponding sampling location plan (Figure 4).

The samples were collected in laboratory-supplied containers and sealed, labeled, and immediately placed in a cooler containing ice (to maintain a temperature of approximately 4 degrees Celsius) for delivery to York. Soil samples were transported to York Analytical and analyzed for all analytical parameters listed in 6 NYCRR Part 375, including:

- Target compound list (TCL) volatile organic compounds (VOCs) via EPA Method 8260;
- TCL semi-volatile organic compounds (SVOCS) via EPA Method 8270;
- Target Analyte List (TAL) metals via EPA Methods 6010, 7470/7471, 9010/9012/9014, and 7196; and,
- PCBs via EPA Method 8082/pesticides via EPA Method 8081 (including the herbicide 2,4,5 TP – Silvex).

Quality Assurance / Quality Control (QA/QC) procedures that were followed are described in the RIWP Quality Assurance Project Plan (QAPP).

4.3 Groundwater Monitoring Well Installation and Development

4.3.1 Monitoring Well Installation Methodology

SJB was retained to install 8 permanent monitoring wells. Select soil borings (borings LSB-11, 19, 20, 26, 35, 43, 47, and 61) were converted to 1.5 inch permanent groundwater monitoring wells, identified as LMW-1 through LMW-8, and the monitoring well construction logs are included as Appendix D. Monitoring wells were installed on 24 and 25 June 2013 at the locations depicted on Figure 4. Each well was advanced a minimum of 5 feet into the perched water table. The wells were constructed with 1.5 inch diameter threaded, flush-joint, PVC casing and approximately 10 feet of 0.01 inch slotted well screen, pre-packed with 20/40 mesh sand, with additional sand approximately 1 to 2 feet above the slotted screen, followed by a bentonite seal ranging from approximately 1 to 2 feet. Each monitoring well was completed with a flush mounted road box encased in concrete.

Upon completion of the monitoring well installation activities, the locations and elevations of the monitoring wells were surveyed with a Trimble RTK GPS Unit, referencing the New York State Department of Transportation (NYSDOT) cooperative base station network, to determine groundwater flow direction and horizontal gradient. On 2 and 3 July 2013 the top of each PVC well casing was surveyed by Langan. Monitoring wells were developed using dedicated WaTerra foot valve inertial pumps by purging a minimum of four casing volumes of groundwater to remove visible sediment. The wells were developed until purged water appeared free of visible sediment and until pH, temperature and specific conductivity stabilized. The parameters were monitoring using a portable nephelometer, and stabilization was reached once three consecutive readings for each parameter showed less than 10% change. The monitoring wells were developed on 28 and 29 June 2013, and were sampled at least 7 days following installation.

4.3.2 Groundwater Sampling/Analysis

Groundwater levels were measured at each monitoring well using an oil/water interface probe. Monitoring wells were sampled in accordance with the procedures defined in the USEPA Low Stress Purging and Sampling of Groundwater Samples from Monitoring Wells dated July 1996. Water quality parameters including dissolved oxygen, pH, temperature, turbidity, specific conductance, and oxidation-reduction potential were measured in the flow through cell until stabilization was achieved in accordance with the FSP. Once stabilization was achieved, the flow through cell was disconnected and a groundwater sample was collected directly into the laboratory provided sample bottles

All samples were collected in laboratory-supplied containers,sealed, labeled, and immediately placed in a cooler containing ice (to maintain a temperature of approximately 4 degrees Celsius) for delivery to York. Groundwater samples were analyzed for the following parameters:

- Target compound list (TCL) volatile organic compounds (VOCs) via USEPA method 8260;
- TCL semi-volatile organic compounds (SVOCS) via USEPA method 8270;
- Target Analyte List (TAL) metals via USEPA 6010, 7470/7471, USEPA 9010, and USEPA 7196;
- PCBs via USEPA method 8082; and,
- Pesticides (including the herbicide 2,4,5 TP – Silvex) via USEPA method 8081.

All groundwater generated during well development and sample purging activities was collected and containerized in 55-gallon drums, labeled, and placed on-site in a designated location. Monitoring well construction logs and monitoring well sampling logs are included as Appendix D and Appendix E, respectively.

4.4 Soil Gas Investigation

4.4.1 Soil Gas Sampling Point Installation Methodology

SJB was retained to install 10 permanent soil gas sampling points (LSV-1 through LSV-10). A Geoprobe™ was used to advance the stainless steel sampling points. The points were constructed with double woven stainless steel soil gas sampling mesh attached to polyethylene tubing, and a clean sand (Morie #1) filter pack was installed around the screen, with additional sand up to 6 inches above the screen. The remaining annular space was backfilled to grade with hydrated bentonite. Due to shallow water, soil gas screens were set between 2 to 3 feet below ground surface (approximately 1 to 2 feet above the observed water table at the time of installation).

4.4.2 Soil Gas Sampling/Analysis

In accordance with the RIWP, a tracer gas test was performed using helium gas to confirm the integrity of the bentonite seals prior to sampling. A detection of helium in the sample tubing would indicate that the seal was compromised and must be repaired.

With the seal confirmed, a PID (which pumps air at approximately 0.2 liters per minute) was attached to the polyethylene tubing, and a total volume of at least three times that of the tubing and screen setup was purged (approximately 1.5 liters). The purged soil gas was also monitored with the PID and the values were recorded in the engineer's field book. After purging was complete, a laboratory-supplied 6-liter Summa canister with a flow controller (with a laboratory-preset flow rate of 0.1 liters per minute) was attached to the polyethylene tubing. Each Summa canister arrived from the lab with approximately 29 to 30 inches of mercury vacuum. Sampling was started by fully opening the canister valve. The sample was collected over a period of approximately 120 minutes, with an average flow rate of 0.18 liters per minute. When the canister pressure dropped below 5 inches of mercury, the sample was stopped by closing the valve. Post-sample helium tracer gas tests were not performed.

While conducting tracer gas testing, water was encountered within soil gas probes LSV-1, LSV-3, LSV-4, LSV-6, LSV-7, LSV-8, and LSV-10. Accordingly, soil gas samples could not be collected at these locations. Soil gas sampling was conducted at locations LSV-2, LSV-5 and LSV-9 on 1 July 2013. During sampling of soil gas at location LSV-9, an on-site excavator was observed discharging exhaust at the decontamination area adjacent to the sampling location.

Therefore an additional sample and associated field duplicate were collected on 2 July 2013 prior to the excavators performing decontamination procedures. An ambient air sample was collected on each day soil gas sampling was conducted.

Soil gas samples were submitted under chain-of-custody to York for analysis of VOCs by Method TO-15. QA/QC measures included the collection and analysis of two duplicate soil gas samples and one ambient air sample. QA/QC procedures followed are described in the QAPP found in Appendix C of the RIWP. Soil gas sampling logs are included in Appendix F.

4.5 Quality Control/Quality Assurance Sampling

During the RI, field blanks, trip blanks, field duplicate samples, and ambient air samples were collected and submitted for laboratory analysis for QA/QC. During the course of the investigation, the following quality control samples were collected:

Soil samples:

- 15 field duplicate samples (280 samples @ 1/20 = 14);
- 13 field blank samples (295 samples @ 1/20 = 15);
- 15 matrix spike/matrix spike duplicate (MS/MSD) samples (295 samples @ 1/20 = 15);
- 6 trip blank samples.

Groundwater samples:

- One field duplicate sample;
- One field blank samples;
- One MS/MSD sample;
- One trip blank sample.

Soil gas samples:

- Two field duplicate samples;
- Two ambient air samples.

4.6 Laboratory Analysis and Data Validation

As indicated above, laboratory analyses of soil, groundwater, and soil gas samples were conducted by York, a New York State Department of Health, ELAP-approved laboratory. Laboratory analyses were conducted in accordance with USEPA SW-846 methods and NYSDEC Analytical Services Protocol (ASP) B deliverable format. All data was provided in the Department's Electronic Data Deliverable (EDD) EQuIS format.

QA/QC procedures required by the NYSDEC ASP and SW-846 methods were followed, including initial and continuing instrument calibrations, standard compound spikes, surrogate compound spikes, and analysis of other samples (blanks, laboratory control samples, and matrix spikes/matrix spike duplicates). The laboratory provided sample bottles which were pre-cleaned and preserved in accordance with the SW-846 methods. Where there were differences in the SW-846 and NYSDEC ASP requirements, the NYSDEC ASP took precedence.

We performed data validation in accordance with EPA validation guidelines for organic and inorganic review. Validation included the following:

- Verification of QC sample results (both quantitative and qualitative);
- Verification of sample results (both positive hits and non-detects);
- Recalculation of 10% of all investigation sample results; and,
- Preparation of Data Usability Summary Reports (DUSRs).

The DUSRs were prepared in accordance with DER-10 and reviewed by the Program Quality Assurance Monitor (PQAM). The DUSRs present the results of the data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and completeness for each analytical method. The DUSRs are included as Appendix G, and a discussion of data usability is included in Section 5.4.

4.7 Field Equipment Decontamination

A temporary equipment decontamination area, bermed and lined with double polyethylene sheeting was constructed in the northern part of the Sabre Park portion of the Site. This was used for steam cleaning the drilling and excavation equipment and downhole well development and purging equipment. Water collected from the decontamination activities was collected in 55-gallon drums and managed as described in Section 4.8.

All drilling equipment including the drilling rig, augers, bits, rods, tools, etc., were cleaned with a high-pressure steam cleaning unit or a thorough non-phosphate detergent (e.g., Liquinox) and water wash and fresh water rinse, before beginning work and between boring locations. Tools, drill rods, and augers were placed on polyethylene plastic sheets following steam cleaning. Direct contact with the ground was avoided. The back of the drill rig and all tools, augers, and rods were decontaminated at the completion of the work and prior to leaving the Site.

Prior to sampling, all non-dedicated sampling equipment (bowls, spoons, split-spoon samplers, water level indicators, etc.) were either steam cleaned or washed using the following procedures:

- Potable water and a phosphate-free detergent wash.
- Dilute nitric acid rinse (10% for non-metallic equipment, 1% for split-spoon samplers)
- Distilled water rinse
- Acetone rinse
- Distilled water rinse
- Final de-ionized water rinse
- Air dry

Decontamination occurred at the sampling location and all liquids were contained in buckets. Between rinses, equipment was placed on polyethylene sheets or aluminum foil if necessary, avoiding contact with the ground.

4.8 Management of Investigation-Derived Waste

Test pit cuttings were backfilled within the excavation that generated them to within 12 inches of the surface. Soil boring cuttings were generally backfilled within the boring that generated them to within 12 inches of the surface unless (a) the soil was visually grossly contaminated, (b) a monitoring well was installed in the borehole, (c) the boring penetrated a confining layer, (d) a path for vertical migration could be completed, or (e) the cuttings could not fit in the borehole. Soil boring cuttings not backfileld within the boring that generated them were collected and containerized in 55-gallon drums and placed on polyethylene sheeting in a designated area located adjacent to the decontamination area.

All soil cuttings, that could not be backfilled, and groundwater investigation-derived wastes (IDW) were containerized, and will be sampled and disposed properly at an off-site facility. Soils were placed in 55-gallon, Department of Transportation (DOT) approved drums. Personal protective equipment and contaminated supplies were also stored in UN/DOT-approved drums. Decontamination and well development/purging fluids were placed in UN/DOT approved fluid drums with closed tops. All drums were properly labeled, sealed, and stored in a designated area of the Sabre Park parcel.

4.9 Air Monitoring During Investigation Activities

Worker air monitoring was conducted for VOCs and particulates as described in Section 3.8.1 of the RIWP. Fugitive dust generation that could affect site workers, site occupants, or the public was not encountered for the following reasons: 1.) the work areas are all paved with asphalt or concrete, therefore work-related traffic did not generate dust, 2.) intrusive work methods such as Geoprobe™ and hollow-stem auger soil borings generate limited quantities of cuttings which collect immediately around the borehole and will be shoveled into drums or dumpsters. To mitigate the potential for dust generation at the Sabre Park portion of the site, which contained areas of unvegetated surface cover, a water truck was utilized to dampen access roads and adjacent areas.

4.9.1 Worker Air Monitoring

Worker air monitoring was conducted of the breathing zone periodically during all drilling, test pitting and sampling activities to assure proper health and safety protection within the work zone. Monitor parameters included VOCs with a PID MultiRAE Plus, and dust with a PGM-50, in accordance with the HASP (Appendix B of the RIWP). The particulate level threshold of 100 micrograms per cubic meter (ug/m^3) for a 15-minute period was exceeded on 2 July during soil boring activities; however, this exceedance was attributed to strong winds and/or vehicular traffic at the site since they took place during soil boring locations where no visible dust was generated. No dust suppression measures were necessary.

Areas containing steel slag were assessed with a gieger counter during implementation of the RI. Radiological field screening results were measured using a Ludlum Model 5 Geiger Counter and recorded in the field engineer's log book. The radioactivity of the slag was measured to be non-detect [less than 0.5 millirems per hour (mrem/hr)], which was consistent with background measurements

4.9.2 Community Air Monitoring Plan

In addition to air monitoring in the worker breathing zone, Langan conducted community air monitoring and fugitive dust and particulate monitoring in compliance with the NYSDOH Generic Community Air Monitoring Plan (CAMP) and the NYSDEC DER-10. The CAMP is summarized in greater detail in the HASP included in Appendix B of the RIWP. General CAMP information including real-time air monitoring for dust and VOCs at the perimeter of the hot zone is presented in the following paragraphs.

We conducted periodic monitoring for VOCs during non-intrusive activities such as the collection of groundwater samples. Periodic monitoring included obtaining measurements upon arrival at a location, when opening a monitoring well cap, when bailing/purging a well, as well as upon departure from the location. We conducted continuous monitoring for VOCs and dust during all ground intrusive activities (i.e., soil boring and monitoring well installation and excavation of test pits). We measured upwind concentrations of VOCs and dust at the start of each workday, and periodically thereafter, to establish background concentrations. We monitored VOCs and dust continuously at the downwind perimeter of the work zone, which was established at a point on the site where the general public or site employees may be present.

Monitoring of VOCs was conducted with a MultiRAE PLUS 5-gas method that equipped with a 10.6 eV lamp. VOC community air monitoring requirements were conducted until it was determined that the site was not a source of organic vapors. Dust emissions were monitored using a Thermo MIE pDR-1000 DataRam, real-time monitoring equipment 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 (e.g., DustTrak).

The particulate level threshold of 100 micrograms per cubic meter (ug/m^3) for a 15-minute period was exceeded on 24 June, however, high winds were observed and no intrusive activities were being conducted at the time the exceedances were experienced. No dust suppression measures were necessary. Although particulates were not identified to be an issue, as a precautionary measure dust suppression via water truck was implemented continuously during RI activities.

5.0 OBSERVATIONS AND RESULTS

This section summarizes the findings of the RI.

The proposed future use of the Site will be Commercial, therefore analytical results for soil were compared to the Title 6, New York Code of Rules and Regulations [6 NYCRR] Part 375 Soil Cleanup Objectives (SCOs) for Unrestricted Use and Restricted Commercial Use (referred to as the Commercial SCOs), for comparison purposes. However, Macerich desires to attain a Track 4 BCP cleanup. Therefore, engineering controls, institutional controls, and/or site-specific SCOs will be developed which will be protective of public health and the environment.

5.1 Soil Investigation Findings

A total of 295 grab soil samples were collected for laboratory analysis (including 15 field duplicate samples) as summarized in Table 2. 183 samples were collected from within the fill layer, and 112 samples were collected in the silty sand/clay or clay layers. Analytical results were compared to NYSDEC Part 375 Unrestricted Use and Restricted Commercial Use Soil Cleanup Objectives for comparison purposes. The analytical data are shown spacially on Figures 5 and 6.

5.1.1 General Field Observations

- Subsurface Stratigraphy
    - Fill was observed at the surface throughout the Sabre Park portion of the property, and just below the asphalt, concrete and landscaped surfaces at the Fashion Outlet and Secure Storage facility parcels. Fill generally extended to an average depth of 5 feet below grade, with a maximum depth of approximately 15 feet below grade at limited locations. The fill consisted of brown to dark gray and black fine to coarse grained sands with varying levels of silt, clay, gravel, organics (roots), brick, concrete, wood, glass, rubber, slag, and miscellaneous pieces of plastic and metal. Cross sections of the subsurface stratigraphy are included as Figures 10A through 10E.
    - At limited locations, Langan observed silty fine sand underneath the fill layer ranging in thickness from 2 to 4 feet. A clay layer was observed underlying the fill and/or silty sand layers, encountered at depths of 2 to 12 feet and extended to 16 feet below grade or the boring/test pit termination depth.
    - The clay was observed to vary in color from brown, gray and reddish-brown, and contained trace levels of silt and fine sand. The clay was observed to be very dense and contain increased quantities of coarse sand and fine gravel at depths of 13 to 16 feet below grade or just prior to refusal, and ranged in thickness from 2 to 8 feet.

  - Boring refusal was encountered at depths ranging from 10.3 to 15.9 feet below grade, and was generally limited to locations throughout the Fashion Outlets parking lot and Secure Storage facility, and a few locations in the northern section of Sabre Park. Refusal was encountered at one test pit (LSP-55) at a depth of 6 feet below grade when the excavator encountered a very dense, hard presumed silt layer, which was not encountered at any other location at the site.

- Slag was observed at 29 locations throughout the site. The slag generally had a hard, porous composition, and varied in color from black, gray, green, yellow, and blue. Slag was observed within the subbase layer or in the fill just below subbase in soil borings at the Fashion Outlet and Secure Storage facility parcels, and throughout the fill layer at many locations at Sabre Park. At select test pit locations Langan observed pieces of slag up to 2 feet in diameter. A Ludlum Geiger counter was utilized to assess the potential radioactivity of the slag; however, no readings above background (0.05 millirems/hour) were observed, confirming that the slag is not radioactive.

- Utilities
  - Natural gas, electrical, sanitary, stormwater, telecommunications, and water supply utilities were identified at the Site by Dig Safely, Nova, and the utility agencies.
  - Utility markouts did not identify all subsurface utilitiy locations. Langan was informed that utility location was deficient due to overgrown vegetation, limited as-built information, the presence of demolished mobile home materials on the surface, and subsurface fill materials. National Fuel informed Langan that the southern portion of the Sabre Park parcel contained natural gas services constructed of flexible PVC piping, while the remainder of Site contained natural gas services constructed of steel piping.
  - During test pit activities, Langan encountered natural gas, electrical, sanitary and water supply utilities that were not previously marked out. These utilities were observed within the fill layer.
  - A flexible PVC natural gas main was breached at test pit LTP-58 on 24 June 2013. The main was observed at approximately 4 feet below grade within the fill layer, directly covered by a large concrete block. The main was subsequently capped by National Fuel on the same day. To mitigate the potential of striking further active plastic gas mains, soft digging methods were utilized in areas of the site that were shown by utility mapping as service by plastic gas mains.
  - Small water service connections for the existing and formerly demolished mobile homes, consisting of 1 inch diameter copper piping, were encountered throughout the Sabre Park portion of the Site during soft digging. On 30 June 2013 a 1 inch diameter copper service connection was encountered at test pit

location LSB-62, and was severed from an adjacent water supply trunkline, causing the water main to rupture. The Town of Niagara Water Department was immediately informed by Langan, and the water supply to Sabre Park was temporarily shut off by the Town of Niagara in order to repair the water main. Mark Cerrone, Inc. completed the repairs and water supply was restored the same day.

- An unidentified metal object was encountered at test pit location LTP-22 on 27 June 2013 at approximately 3 feet below grade. The metal object appeared to be constructed of sheet metal and was not indicative of an underground storage tank (UST). The object was observed within an odorous fill layer, and perched water was observed at approximately 3 feet below grade. The perched water was observed to be brownish-gray in color with a slight sheen, and white foam was observed accumulating on the water. A water sample was collected and submitted to York for hydrocarbon fingerprint analysis; however, the analysis determined there was no identifiable hydrocarbon pattern.
- Yellow stained soils were encountered in soil boring LSB-23 on 26 June 2013 at a depth ranging from 3 to 3.5 feet below grade. The material appeared to be bright yellow in color and Langan personnel did not observe an odor. On 2 July 2013 additional soil borings were advanced around boring LSB-23 to delineate the extent of the yellow material. The material was identified in soil borings located 2 feet north, 15 feet south, and 15 feet southeast of boring location LSB-23. The material was not observed in borings located 10 feet east, 10 feet west, 15 feet southwest, and 50 feet south of boring LSB-23.
- On 29 June 2013 large pieces of slag were encountered at test pit location LSB-55 at a depth ranging from 1 to 4 feet below grade. The slag was observed to be very hard, pourous, green to yellow in color, and ranged from 12 to 25 inches in diameter. The slag was screened with a gieger counter and no readings above background were observed, which identified the slag as not radioactive. At a depth of 6 feet below grade Langan encountered a very hard dark gray silt layer that was impenetrable by the excavator.
- No free product was identified by Langan at the Site

The following constituents of concern were detected in one or more soil samples at concentrations above the Restricted Commercial SCOs.

5.1.2 Analytical Results Overview

VOCs

One or more aromatic and/or halogenated VOCs were detected in 160 of 280 soil samples collected. Of the 160 soil samples with detected VOCs, 149 exhibited detections of the common laboratory contaminants acetone and/or methylene chloride. Acetone and/or methylene chloride were the sole-detected VOCs in 56 soil samples. Accordingly, 104 soil samples exhibited VOC detections not indicative of typical laboratory contaminants. 15 detections of Acetone exceeded the Unrestricted Use SCO; however, these detections were attributed to laboratory contamination. No detected VOCs exceed the Restricted Commercial SCOs.

Detected VOCs included, 1,1-dichloroethane, 1,2,4-trimethylbenzene, 1,2-dichlorobenzene, (cis) 1,2-dichloroethylene, 1,3,5-trimethylbenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2-butanone (methyl ethyl ketone; MEK), benzene, chlorobenzene, ethylbenzene, sec-butylbenzene, toluene, trichloroethylene (TCE), vinyl chloride, and xylenes.

SVOCs

One or more SVOCs (polynuclear aromatic hydrocarbons (PAHs) only) were detected in 162 of 295 soil samples collected. 31 samples exceeded the Unrestricted Use SCOs. 16 samples exceeded the Restricted Commercial SCOs.

Detected SVOCs included acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, dibenzofuran, fluoranthene, fluorene, hexachlorobenzene, indeno(1,2,3-c,d)pyrene, naphthalene, pentachlorophenol, phenanthrene, and pyrene.

PAHs exceeding the Unrestricted Use and Restricted Commercial SCOs are identified in Table 2 and on Figures 3 and 4. The following Table A summarizes the Restricted Commercial SCOs for SVOCs.

Table A – SVOC Restricted Commercial SCO Exceedances

Parameters	Part 375 Restricted Commercial mg/kg	LSB-21-A 6/26/2013 2-4 ft Fill mg/kg	LSB-22-A 6/26/2013 2-4 ft Fill mg/kg	LSB-23-A 6/26/2013 2-4 ft Fill mg/kg	LSB-46-A 6/26/2013 2-4 ft Fill mg/kg	LSB-57-B 7/2/2013 5-7 ft Fill mg/kg	LSB-69-A 6/27/2013 1-3 ft Fill mg/kg
SVOCs							
Benzo(a)anthracene	5.6	**8.56 J**	**17.7**	0.993	1.9	2.56	ND J
Benzo(a)pyrene	1	**7.85 J**	**18.9**	**1.03**	**1.93**	**3.79 J**	**1.22 J**
Benzo(b)fluoranthene	5.6	**9.82**	**11.2**	0.171 J	2.15	3.24 J	ND J
Dibenz(a,h)anthracene	0.56	ND	**2.91 J**	0.129 J	0.442	0.291 J	ND J
Indeno(1,2,3-c,d)pyrene	5.6	2.66 J	**6.13 J**	0.254	0.783	0.65 J	ND J

Parameters	Part 375 Restricted Commercial mg/kg	LTP-21-A 6/27/2013 3-5 ft Fill mg/kg	LTP-22-A 6/27/2013 2-4 ft Fill mg/kg	LTP-23-A 6/28/2013 4-6 ft Fill mg/kg	LTP-24-A 7/2/2013 0-2 ft Fill mg/kg	FD-2 (LTP-32-A) 6/26/2013 1-2 ft Fill mg/kg	LTP-32-A 6/26/2013 1-2 ft Fill mg/kg
SVOCs							
Benzo(a)anthracene	5.6	1.5 J	1.3 J	1.26 J	1.21	**14.3 J**	1 J
Benzo(a)pyrene	1	**1.22**	**1.21 J**	**1.33 J**	**1.21**	**17.1 J**	**1.15 J**
Benzo(b)fluoranthene	5.6	1.21 J	1.22 J	1.14 J	1.46	**17.4 J**	ND J
Dibenz(a,h)anthracene	0.56	ND J	ND J	0.18 J	0.22	**3.13 J**	ND J
Indeno(1,2,3-c,d)pyrene	5.6	0.394 J	0.257 J	0.38 J	0.535	**5.7 J**	ND J

Parameters	Part 375 Restricted Commercial mg/kg	LTP-33-A 7/2/2013 3-5 ft Fill mg/kg	LTP-37-A 7/2/2013 2-4 ft Fill mg/kg	LTP-39-A 7/2/2013 0-2 ft Fill mg/kg	LTP-60-A 7/1/2013 0-2 ft Fill mg/kg
SVOCs					
Benzo(a)anthracene	5.6	**25.3**	3.13 J	2.56	1.44
Benzo(a)pyrene	1	**23**	**2.74 J**	**2.15**	**1.23 J**
Benzo(b)fluoranthene	5.6	**21.3**	1.91 J	1.77	1.52 J
Dibenz(a,h)anthracene	0.56	**2.37**	0.264 J	0.407	ND J
Indeno(1,2,3-c,d)pyrene	5.6	**12.6**	0.579 J	0.875	0.46 J

Metals

One or more total metals were detected in each of the 295 soil samples collected. 187 samples contained one or more of the following metals in exceedance of the Unrestricted Use SCOs: Arsenic, barium, cadmium, trivalent chromium, hexavalent chromium, total chromium, copper, cyanide, lead, manganese, mercury, nickel, selenium, and zinc. 27 samples contained the following metals in exceedance of the Restricted Commercial SCOs: Arsenic, barium, trivalent chromium, hexavalent chromium, lead, mercury, and nickel.

Detected total metals included arsenic, barium, beryllium, cadmium, chromium III, hexavalent chromium, copper, lead, manganese, mercury, nickel, selenium, and zinc. See Table B below for a summary of the Restricted Commercial exceedances.

Table B – Metals Restricted Commericial SCO Exceedances

Parameters	Part 375 Restricted Commercial mg/kg	LSB-2-A 6/27/2013 2-4 ft Fill mg/kg	LSB-10-A 6/27/2013 1.5-4 ft Fill mg/kg	LSB-16-A 6/27/2013 2.5-4.5 ft Fill mg/kg	LSB-22-A 6/26/2013 2-4 ft Fill mg/kg	LSB-23-A 6/26/2013 2-4 ft Fill mg/kg	LSB-23-S 7/2/2013 3-4 ft Fill mg/kg	LSB-31-A 6/27/2013 0-2 ft Fill mg/kg
Metals								
Arsenic	16	**21.8**	5.34	6.71	ND	ND	ND	ND
Barium	400	63	314	160	241	54.2	58	67.3
Chromium III	1,500	25.5	145	108	**1,940**	**1,680**	**5,930**	**2,010**
Hexavalent Chromium	400	ND	ND J	ND	44.4	8.88	**506**	22.6 J
Lead	1,000	22.4	**11,900**	**1,260**	54.8	17.1	15.8	16
Mercury	2.8	ND	0.169	0.256	0.239 J	0.0673 J	ND	ND
Nickel	310	22.7	35.1	24.7	137	137	289	249

Parameters	Part 375 Restricted Commercial mg/kg	LSB-32-A 6/26/2013 3-5 ft Fill mg/kg	LSB-34-A 6/26/2013 3-4.5 ft Fill mg/kg	LSB-35-A 6/25/2013 2-4 ft Fill mg/kg	LSB-36-A 6/26/2013 1-3 ft Fill mg/kg	LSB-38-A 6/28/2013 0-2 ft Fill mg/kg	LSB-40-A 6/26/2013 4-6 ft Fill mg/kg	LSB-43-A 6/25/2013 2-4 ft Fill mg/kg
Metals								
Arsenic	16	ND	ND	ND	ND	ND	ND	ND
Barium	400	116	58.2	192	83.3	89.5	58.3	46.6
Chromium III	1,500	**2,860**	**1,500**	**4,730**	**4,320**	895	**4,980**	**2370**
Hexavalent Chromium	400	3.04	47.8	87.3	150	ND	55.1	11.1
Lead	1,000	46	10.7	19.9	32.8	53.9	12.2	14.3
Mercury	2.8	0.423 J	0.258 J	0.196 J	**3.86**	ND	0.759 J	0.021
Nickel	310	150	114	254	252	**424**	**739**	154

Parameters	Part 375 Restricted Commercial mg/kg	LSB-47-A 6/25/2013 2-4 ft Fill mg/kg	LSB-53-A 6/29/2013 0.5-1 ft Fill mg/kg	LSB-55-B 6/29/2013 2-4 ft Fill mg/kg	LSB-61-A 6/25/2013 1.5-3.5 ft Fill mg/kg	LSB-70-A 6/27/2013 0.42-1.25 ft Fill mg/kg	LSB-76-A 6/28/2013 2-4 ft Fill mg/kg	LTP-11-A 6/27/2013 1-3 ft Sand mg/kg
Metals								
Arsenic	16	ND	ND	ND	ND	ND	ND	ND
Barium	400	66	54.9	74.2	113	39.8	101	78.4
Chromium III	1,500	**4,360**	**2,090**	**3,460**	**4,330**	**3,690**	**3,140**	**3,540**
Hexavalent Chromium	400	28.9	ND	275	364	**486**	ND	ND
Lead	1,000	42.5	33.4	29.6	20.9	20.3	80.4	34.5
Mercury	2.8	0.314	ND	ND	0.248 J	ND	ND	ND
Nickel	310	242	221	194	220	233	**2,440**	178

Parameters	Part 375 Restricted Commercial mg/kg	LTP-18-A 6/26/2013 1-3 ft Fill mg/kg	FD-4 (LTP-22-A) 6/27/2013 2-4 ft Fill mg/kg	LTP-22-A 6/27/2013 2-4 ft Fill mg/kg	LTP-30-A 6/26/2013 1-3 ft Fill mg/kg	FD-2 (LTP-32-A) 6/26/2013 1-2 ft Fill mg/kg	LTP-65-A 6/29/2013 0-2 ft Fill mg/kg
Metals							
Arsenic	16	ND	ND J	5.01 J	ND	**35.6 J**	ND
Barium	400	70	104 J	**477 J**	68	293 J	81.5
Chromium III	1,500	**1,560**	**1,740 J**	87.5 J	**6,560**	199 J	**2,590**
Hexavalent Chromium	400	ND	ND J	ND J	ND	ND	202
Lead	1,000	24.7	54 J	189 J	31.4	74.8	14.8
Mercury	2.8	0.311	ND	ND	0.131	0.234 J	ND
Nickel	310	113	170 J	32.7 J	**336**	106 J	174

Due to site-wide exceedances of the Residential Commerical SCOs for chromium, select samples were analyzed for chromium using the toxicity characteristic leaching procedure (TCLP) to determine if the soil could be considered characteristically hazardous in accordance with RCRA regulations. Samples with the highest detections of chromium, or those located in areas proposed for excavation in accordance with the development plan were selected for TCLP analysis.

The results of the TCLP analysis are included as Table 5, and depicted on Figure 12. 12 of 13 samples had detections of chromium above laboratory reporting limits. Only two of the samples (LSB-23-A and LSB-23-S), collected adjacent to each other, had detections of chromium exceeding the RCRA Hazardous Waste Criteria of 5 mg/L. These two samples were collected from the fill layer that was observed to contain the bright yellow staining. See Table C below for a summary of the TCLP analysis results.

Table C – Chromium TCLP Results

Parameters	RCRA Hazardous Waste Criteria (mg/L)	LSB-21-A 6/26/2013 2-4' Fill-Sand mg/L	LSB-22-A 6/26/2013 2-4' Fill-Sand mg/L	LSB-23-A 6/26/2013 2-4' Fill-Sand mg/L	LSB-23-S 7/2/2013 3-4' Fill-Sand mg/L	LSB-31-A 6/27/2013 0-2' Fill-Sand mg/L	LSB-32-A 6/26/2013 3-5' Fill-Sand mg/L	LSB-42-A 6/26/2013 3-5' Fill-Sand mg/L
Chromium, TCLP	5	0.0583	0.77	**6.79**	**8.85**	1.13	0.159	ND<0.005

Parameters	RCRA Hazardous Waste Criteria (mg/L)	LSB-55-A 6/29/2013 0-2' Fill-Sand mg/L	LSB-55-B 6/29/2013 2-4' Fill-Sand mg/L	LTP-11-A 6/27/2013 1-3' Sand mg/L	LTP-12-A 6/27/2013 0-2' Fill-Sand mg/L	LTP-30-A 6/26/2013 1-3' Fill-Sand mg/L	LTP-55-A 6/28/2013 6-8' Clay mg/L
Chromium, TCLP	5	0.0205	4.73	0.853	0.0171	0.405	0.0234

The results indicate that samples LSB-23-A and LSB-23-S have hazardous waste characteristics in accordace with RCRA regulations. Both samples were collected from adjacent boring locations at the Secure Storage facility parcel, from material within the fill layer at approximately the same depth interval which was observed to contain yellow staining. As previously discussed in Section 5.1.1, this material was identified as unique to the overall site conditions, and on 2 July 2013 we conducted a visual step-out delineation program where borings were advanced radially from boring location LSB-23 in approximately 10 foot intervals until the material was not encountered. During construction of the proposed development, this material will be handled and disposed of in accordance with RCRA regulations as discussed in the IRMWP.

Pesticides

One or more organochlorine pesticides were detected in 34 of the 295 soil samples collected. 18 samples contained pesticides in exceedance of the Unrestricted Use SCOs for the following compounds: 4,4’-DDD, 4,4’-DDE, 4,4’-DDT, alpha-BHC, beta-BHC, delta-BHC, and gamma-BHC (Lindane). No organochlorine pesticides exceeded the Restricted Commercial SCOs.

Detected organochlorine pesticides included alpha-BHC, beta-BHC, delta-BHC, gamma-BHC (Lindane), 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT, and Silvex (2,4,5-TP).

Herbicides

The herbicide Silvex (2,4,5-TP) was detected in 1 of the 295 soil samples[LSB-32-B (6-8 ft)], at a concentration of 0.0477 mg/kg. This Silvex (2,4,5-TP) concentration does not exceed the Unrestricted Use or Restricted Commercial SCOs.

PCBs

One or more PCBs were detected in 43 of the 295 soil samples collected. 30 samples contained PCBs in exceedance of the Unrestricted Use SCOs. 5 samples contained PCBs in exceedance of the Restricted Commercial SCOs.

Detected PCBs included Aroclor 1248, Aroclor 1254, and Aroclor 1260. See Table D below for a summary of the Restructed Commercial exceedances.

Table D – PCB Restricted Commercial SCO Exceedances						
Parameters	Part 375 Restricted Commercial mg/kg	LSB-22-A 6/26/2013 2-4 ft Fill mg/kg	LSB-26-A 6/25/2013 4-6 ft Fill mg/kg	LTP-45-A 7/2/2013 1.5-3.5 ft Fill mg/kg	LTP-46-A 7/2/2013 0-2 ft Fill mg/kg	LTP-46-B 7/2/2013 2-4 ft Fill mg/kg
PCBs						
Total PCBs	1	**2.52**	**1.71**	**1.07**	**8.31**	**23**

5.2 Groundwater Investigation Findings

Analytical results for groundwater were compared to NYSDEC Division of Water Technical and Operation Guidance Series (TOGS) 1.1.1 Ambient Water Quality Standards (AWQS) and Guidance Values for Class GA groundwater (Groundwater Quality Standards Part 703). A total of 9 groundwater monitoring well samples (including 1 field duplicate) were submitted for analysis. During groundwater sampling it was observed that the monitoring wells located on the Fashion Outlets and Secure Storage facility parcels, LMW-1 through LMW-4, had pH values ranging from 6.29 to 6.85, and the monitoring wells located on the Sabre Park parcel, LMW-5 through LMW-8, had pH values ranging from 11.4 to 12.11. Laboratory analysis of the groundwater samples confirmed these measurements were accurate, as presented in Table E below:

Table E – Groundwater pH Values								
	LMW-1	LMW-2	LMW-3	LMW-4	LMW-5	LMW-6	LMW-7	LMW-8
pH	7.32	7.30	6.75	6.94	11.8	11.4	11.9	12.2

Analytical results from the groundwater samples are presented in Table 3 and shown spatially in Figure 7. Analytes exceeding AWQS are summarized below:

VOCs

One or more aromatic and/or halogenated VOCs were detected in each of the 9 groundwater samples collected, including 1 field duplicate sample. Each of the 9 groundwater samples exhibited detections of the common laboratory contaminant acetone. Acetone was the sole-detected VOC in 3 of the 9 groundwater samples.

Detected VOCs included, 1,1-dichloroethane, 1,1-dichloroethylene, 1,2,4-trimethylbenzene, (cis) 1,2-dichloroethylene, (trans) 1,2-dichloroethylene, 2-butanone (MEK), benzene, chloroform, methyl tert-butyl ether (MTBE), naphthalene, tetrachloroethylene (PCE), toluene trichloroethylene (TCE), and vinyl chloride.

The concentrations of (cis) 1,2-dichloroethylene, trichloroethylene (TCE), and vinyl chloride detected in groundwater collected from monitoring well LMW-1 exceed the AWQS for these compounds of 5 ug/L, 19, ug/L, and 13 ug/L, respectively.

SVOCs

One or more SVOCs (PAHs only) were detected in each of the 9 groundwater samples collected. Detected SVOCs included anthracene, benzo(k)fluoranthene, fluoranthene, fluorene, phenanthrene, and pyrene. One PAH, benzo(k)fluoranthene, was detected in groundwater collected from monitoring well LMW-8 at a concentration of 0.0526 ug/L, exceeding the AWQS for benzo(k)fluoranthene of 0.002 ug/L.

Metals

One or more total metals were detected in each of the 9 groundwater samples collected. Detected total metals included arsenic, barium, chromium III, hexavalent chromium, manganese, nickel, selenium, and zinc. Cyanide was detected at a concentration of 10 ug/L in groundwater collected from LMW-1, below the AWQS of 200 ug/L. Cyanide was not detected in groundwater at concentrations above the method detection limits at the remaining monitoring wells.

The concentrations of Hexavalent Chromium and total Chromium detected in groundwater collected from monitoring wells LMW-5 through LMW-8 exceed the AWQS for these compounds of 50 ug/L. Manganese was detected in groundwater collected from wells LMW-1 through LMW-4 at concentrations exceeding the AWQS for manganese of 300 ug/L. Selenium was additionally detected in groundwater collected from wells LMW-3 and LMW-4 at concentrations exceeding the AWQS for Selenium of 10 ug/L.

Pesticides/Herbicides

The pesticide beta-BHC was detected in groundwater collected from monitoring well LMW-7 at a concentration of 0.00866. This concentration was well below the AWQS for beta-BHC of 0.04 ug/L. Pesticides or herbicides were not detected in any of the remaining groundwater samples.

PCB

PCBs were not detected in any of the 9 collected groundwater samples at concentrations above analytical method detection limits.

5.3 Soil Gas Investigation Findings

As mentioned in Section 4.4, Langan installed 10 stainless steel, subsurface soil gas sampling points, identified as LSV-1 through LSV-10. While conducting tracer gas testing, water was encountered within soil gas probes LSV-1, LSV-3, LSV-4, LSV-6, LSV-7, LSV-8, and LSV-10; therefore, soil gas samples only were collected from soil gas probes LSV-2, LSV-5, and LSV-9. As a QA/QC measure, two ambient air samples also were collected, identified as Ambient 1 and Ambient 2.

Analytical results for soil gas were compared to the NYSDOH October 2006 Soil Vapor Intrusion Guidance Document, Fuel Oil 2003 Upper Fence Value list. Analytical results from the soil gas samples are presented in Table 4 and shown spatially in Figure 8. VOCs detected in the soil gas samples included the following (analytes exceeding respective compound Upper Fence values are bolded):

- **1,1,1-Trichloroethane**
- **1,1-Dichlorethane**
- 1,2,4-Trimethylbenzene
- 1,3,5-Trimethylbenzene
- **1,3-Dichlorobenzene**
- 2-Hexanone
- Acetone *
- **Benzene**
- Carbon disulfide
- Dichlorodifluoromethane
- **O-Xylene**
- **Tetrachloroethene (PCE)**
- Trans-1,2-dichloroethene
- **Trichlorofluoromethane**
- Methylene chloride*
- **Chloroform**
- Chloromethane
- **cis-1,2-dichloroethene**
- **Cyclohexane**
- **Ethylbenzene**
- Isopropanol
- M,P-Xylene
- **Methyl ethyl ketone**
- **Methyl isobutyl ketone**
- **Trichloroethene**
- **n-Heptane**
- **n-Hexane**
- **Toluene**

Flagged as common laboratory contaminant

The VOCs detected in the ambient air samples were generally lower than the soil gas samples. Chlorbenzene and p&m xylenes were detected in the ambient samples, but not the soil gas samples. Although not confirmed, some level of ambient air non-chlorinated VOC cross-contamination may have occurred during the soil gas sampling, likely attributable to on-Site construction vehicles/nearby vehicles (i.e. Geoprobe™ trucks, excavators, cars, etc.).

5.4 Data Usability

Data validation was performed in accordance with the USEPA Region II and USEPA CLP data validation guidelines for organic and inorganic data review and the specific requirements of the analytical methods. Validation included the following:

- Verification of QC sample results (both qualitative and quantitative).
- Verification of sample results (both positive hits and non-detects).
- Recalculation of 10% of all investigative sample results.
- Preparation of Data Usability Summary Reports (DUSRs).

The DUSRs was prepared in accordance with DER-10 and reviewed by the Program Quality Assurance Monitor (PQAM) before issuance. The DUSRs presented the results of data validation, including a summary assessment of laboratory data packages, sample preservation and chain of custody procedures, and a summary assessment of deficiencies for each analytical method. A detailed assessment of each sample delivery group (SDG) will follow. Additional details on the DUSRs are provided in the QAPP in Appendix C of the RIWP.

Data validation was performed by Langan's in-house Project Chemist/Risk Assessor. Final ASP B-like laboratory reports were provided by York Analytical for all samples collected during the Phase II and Supplemental Remedial investigations. Validation included a review of the following:

- Custody Documentation
- Holding Times
- Surrogate Recoveries
- Internal Standard Areas
- Matrix Spike Recoveries/Spike Duplicate Recoveries and Relative Percent Differences (RPDs)
- Method, Field, and Trip blank Samples
- Laboratory Control Spike/Laboratory Control Duplicate Recoveries and RPDs
- Instrument Tunes
- Initial and Continuing Calibrations and Calibration Verifications
- Field Duplicate Precision
- Inductively Coupled Plasma (ICP) Serial Dilution
- CRI/CRA Standards

With the exception of rejected results for soil gas samples LSV-9 and FD-1-AIR, no data was flagged as unusable. Some data qualifiers were appended to the reported results, which have been included in the respective data summary tables (Tables 2 – 4). Copies of the DUSRs are included in Appendix G.

6.0 NATURE AND EXTENT OF CONTAMINATION

This section discusses the preliminary nature and extent of soil, groundwater, and soil gas contamination at the Site based on the findings of the RI.

6.1 Soil and Fill Contamination

Historic fill consisting of brown to dark gray and black fine to coarse grained sands with varying levels of silt, clay, gravel, organics (roots), brick, concrete, wood, glass, rubber, slag, and miscellaneous pieces of plastic and metal, and ranging in thickness from 1 to 15 feet has been identified throughout the Site. The slag generally had a hard, porous composition, and varied in color from black, gray, green, yellow, and blue. Slag was observed within the subbase layer or in the fill just below subbase in soil borings at the Fashion Outlets and Secure Storage facility parcels, and throughout the fill layer at many locations at Sabre Park. At select test pit locations Langan observed pieces of slag up to 2 feet in diameter. A Ludlum Geiger counter was utilized to assess the potential radioactivity of the slag; however, no readings above background (0.05 millirems/hour) were observed. At soil boring, LSB-23, located in the southern portion of the Secure Storage facility, bright yellow staining was identified within the fill layer at a depth of approximately 3.5 feet below grade. The fill material is underlain by native material predominantly consisting of brown, gray, and reddish-brown clay with trace levels of silt and fine sand.

Analysis of the Site's native clay layer indicated low-level impacts, likely from the overlying fill material. A number of metals and acetone (attributed to lab contamination) was detected in the clay layer above the NYSDEC Unrestricted Use SCOs. There were no exceedances of the Restricted Commercial SCOs in any of the clay samples.

Contaminants of concern (COCs) have been identified at the Site associated with the historic fill material. A summary of these results is present below:

SVOCs

PAH SVOC exceedances were primarily reported in the western and south central portions of the former Saber Park parcel. One or more PAHs were reported at concentrations exceeding Unrestricted Use SCOs in surficial fill material collected from 0 to 7 feet below grade. The distribution of PAH exceedances indicate the impacts are likely attributed to the placement of historic fill in those portions of the Sabre Park parcel.

Metals

Total metals exceedances were reported throughout the Site at one or more sample collection depth intervals. Metals that exceed Unrestricted SCOs included arsenic, barium, chromium III, hexavalent chromium, manganese, nickel, selenium, and zinc. Metals exceedances ranged between 0 and 16 feet below grade. Unrestricted Use Metal SCO exceedances appear to be distributed throughout the Site at varying depth intervals at concentrations that are likely attributable to the quality of the fill at the Site.

Exceedances of RCRA Hazardous Waste Criteria for chromium were reported at two sample locations. The samples were collected from adjacent borings located at the Secure Storage facility parcel, from within fill material that was observed to contain yellow staining. This material was observed by Langan at these locations only, and it was delineated and identified as being present on the Secure Storage facility parcel only.

PCBs

PCB exceedances of the Unrestricted SCOs were primarily reported in the northern portion of the Site, along the western side of the existing mall, and in the western and southern portions of the former Saber Park parcel. PCB exceedances ranged between 0 and 8 feet below grade. The highest concentration of PCBs (23 mg/kg) was identified at test pit LTP-46 at a depth of 2 to 4 feet below grade. The distribution of PCB exceedances indicate the impacts are likely attributed to the placement of historic fill.

6.2 Groundwater

The RI identified groundwater impacts throughout the Site. Impacts are the results of perched water mixing with slag and fill material above the clay layer. The slag and elevated metal concentrations are also causing the pH in groundwater to rise to the levels observed in the field.

VOCs

One or more aromatic and/or halogenated VOCs were detected in 5 of the 8 monitoring wells. Chlorinated VOCs (cVOCs) exceeding the AWQS were detected in LMW-1 installed in the north central portion of the Site, in the area of the proposed mall building addition.

SVOCs

One or more PAH SVOCs were detected in each of the 8 monitoring wells. The PAH benzo(k)fluoranthene detected in LMW-8, installed along the south central property boundary, exceeded the AWQS.

Metals

Total metals exceedances were reported throughout the Site in all 8 monitoring well locations sampled during this investigation. Generally, manganese and selenium exceedances were encountered in the northern half of the Site, while hexavalent chromium and total chromium exceedances were encountered in the southern half of the Site.

Pesticides/Herbicides

Generally, pesticides or herbicides were not detected in groundwater, with the exception of a low detection of the pesticide beta-BHC in monitoring well LMW-7 located in the south central portion of the Site.

PCBs

PCBs were not detected in groundwater.

6.3 Soil Gas

Analytical results for soil gas were compared to the New York State Department of Health (NYSDOH) October 2006 Soil Vapor Intrusion Guidance Document, Fuel Oil 2003 Upper Fence Value list.

Seventeen analytes exceeding Upper Fence Values were identified. Although no soil VOC exceedances of the SCOs were reported at the Site, several of the seventeen analytes were detected in soil above analytical method detection limits. Several analytes also were detected in the “perched” groundwater located in the northern central portion of the Site, beneath the approximate location of the soil gas sampling areas.

7.0 FATE AND TRANSPORT OF COPCS

The soil/fill and groundwater sample analytical results were incorporated with the physical characterization of the Site to evaluate the fate and transport of constituents of primary concern (COPCs) in Site media. The mechanisms by which the COPCs can migrate to other areas or media are briefly outlined below.

7.1 Fugitive Dust Generation

Volatile and non-volatile chemicals present in soil can be released to ambient air as a result of fugitive dust generation. Under the proposed future commercial land use, the majority of the Site would be covered by structures, concrete, asphalt, and vegetation. However, since fugitive dusts may be generated during construction activities, this migration pathway is potentially relevant and should be mitigated with dust suppression techniques, accordingly.

7.2 Volatilization

Volatile chemicals present in soil/fill, groundwater, and soil gas may be released to ambient or indoor air either from or through the soil/fill underlying current or future building structures. Volatile chemicals typically have a low organic-carbon partition coefficient (Koc), low molecular weight, and a high Henry's Law constant.

No volatile organic compounds were detected in site soils above 6 NYCRR Part 375 unrestricted use SCOs. However, numerous aromatic and halogenated VOCs were detected above the NYSDOH October 2006 Soil Vapor Intrusion Guidance Document, Fuel Oil 2003 Upper Fence Value list, and several halogenated VOCs were detected in Site groundwater located in the north-central portion of the Site at concentrations above Class GA AWQS. As these exceedances are located within the footprint of the proposed mall building addition, a subslab depressurization system is being proposed for all occupied structures proposed on the Site, to mitigate a potential exposure pathway.

7.3 Surface Water Runoff

Erosion and transport of surface soils and associated sorbed chemicals in surface water runoff is a potential migration pathway. The potential for soil particle transport with surface water runoff is likely under current Site conditions. However, under the proposed future commercial land use, the entire Site will be covered by clean imported gravel, vegetation, concrete, asphalt or building, and will be serviced by the City of Niagara Sewer Authority's sanitary water collection system and on-site clay-lined detention ponds, making soil particle transport with surface water runoff unlikely.

7.4 Leaching

Leaching refers to chemicals present in soil/fill migrating downward to groundwater as a result of infiltration of precipitation. Under the proposed future commercial land use, the entire Site will be covered by asphalt, buildings, and/or one foot of clean imported materal, and will be serviced by the City of Niagara Sewer Authority's sanitary water collection system and on-site clay-lined detention ponds, minimizing the infiltration of water through the fill material.

Furthermore, the entire Site is underlain by a dense silty-clay geologic unit ranging in thickness from 2 to 6 feet. As such, leaching is not considered a relevant migration pathway.

7.5 Groundwater Transport

Chemicals present in groundwater may be transported horizontally and vertically through the Site via groundwater flow. Based on groundwater elevations measured as part of this RI, perched groundwater underlying the Site migrates horizontally to the north, preferentially following the silty-clay geologic unit. This geologic unit, which was encountered throughout the Site, makes vertical groundwater migration unlikely.

A bedrock groundwater assessment was not performed as part of this RI; therefore, the bedrock groundwater quality is unknown.

7.6 Exposure Pathways

Based on the analysis of chemical fate and transport provided above, the pathways through which Site COPCs could reach receptors at significant exposure point concentrations is fugitive dust emissions via physical disturbance of subsurface soil/fill, vapor intrusion of the expanded mall, and groundwater migration to the on-site storm sewer system. The fugitive dust emissions potential will be mitigated during the proposed IRM activities via dust management practices during construction and engineered controls.

As previously discussed, under the proposed future commercial land use, the majority of the Site would be covered by structures, concrete, asphalt, and vegetation, making fugitive dust emissions less likely.

Volatilization and groundwater transport exposure pathways are anticipated to be mitigated by the use of engineered and institutional controls (i.e. vapor barrier and subslab depressurization system and groundwater use restriction and restriction of residential).

The proposed development plan includes the installation of stormwater sewers at depths below the observed perched groundwater table. Due to these conditions there is the potential for water to infiltrate the stormwater system and flow into the stormwater detention ponds. Although this presents a potential future exposure pathway to COCs in the perched groundwater, watertight fittings will be specified for the stormwater system in order to mitigate the potential for groundwater infiltration, therefore minimizing the exposure pathway.

8.0 QUALITATIVE HUMAN EXPOSURE ASSESSMENT

A Qualitative Human Health Exposure Assessment was conducted in accordance with Appendix 3B of the NYSDEC DER-10, Technical Guidance for Site Investigation and Remediation, dated May 2010. The assessment included, at a minimum:

- A description of the contaminant source(s) including the location of the contaminant release to the environment (any waste disposal area or point of discharge) or if the original source is unknown, the contaminated environmental medium (soil, indoor or outdoor air, biota, water) at the point of exposure;
- An explanation of the contaminant release and transport mechanisms to the exposed population;
- Identification of all potential exposure point(s) where actual or potential human contact with a contaminated medium may occur;
- Description(s) of the route(s) of exposure (i.e., ingestion, inhalation, dermal absorption);
- A characterization of the receptor populations who may be exposed to contaminants at a point of exposure; and,
- A summary table providing an overview of the current and potential exposures for the specific site.

8.1 Site Conditions

The Site is currently vacant land which was formerly developed as a mobile home park. Currently, the Site is primarily grass-covered, with interspersed asphalt-paved roadways and concrete walkways. The anticipated future Site development will include the construction of an addition to the existing mall, with concrete walkways, asphalt-paved parking, and vegetated areas. A site redevelopment plan is presented as Appendix E in the IRMWP.

The environmental conditions at the Site for soil, soil gas, and groundwater (the exposure media) were described in Section 7. Soil COCs include historic fill material primarily with PAH, Metals, PCB, and pesticide exceedances.

8.2 Conceptual Site Model

A conceptual site model has been developed based on the findings of the Site subsurface investigations. The purpose of the conceptual site model is to develop a simplified framework for understanding the distribution of impacted materials, potential migration pathways, and potentially complete exposure pathways, as discussed below.

8.2.1 Potential Sources of Contamination

Sources of contamination at the Site primarily include contaminants from documented historic urban fill material (some containing slag) which was historically placed at the Site to raise grade for development. Additional sources, such as historical releases or spills have not been identified.

8.2.2 Exposure Media

The media that may have been impacted by the above sources include soil, groundwater, and soil gas. Site soil may have been impacted by any of the former historical operations and/or the nature of the historic fill. Analytical data collected to date indicates that the historic fill underlying the Site is contaminated with VOCs (low-level), PAHs, PCBs, pesticides, and metals. Exceedances in groundwater are likely attributable to on-Site source(s). The source of the detected VOCs in soil gas is likely also from an on-site source(s).

8.2.3 Receptor Populations

The human receptors for current Site conditions include workers, visitors, and trespassers. Trespassers may be comprised of children, adolescents, and adults, whereas construction workers would be limited to adults. During construction and remediation activities, receptors will include construction and remediation workers. Under future conditions, receptors will likely include workers and visitors.

8.2.4 Potential Exposure Pathways

Potential pathways to human receptors include direct contact (dermal absorption), ingestion, and inhalation of identified COCs. An evaluation of potential exposure pathways is provided below.

It should be noted that, the Site and surrounding areas are serviced by municipal water and the use of municipal water is required by the Town of Niagara Zoning Ordinance Chapter 135 Article VII Section 135-95 (Use of Town Water Required) and also required in the City of Niagara Falls under Local Law #4 of 2010. Use of ground water at the Site for drinking will be further prohibited through filing of an Environmental Easement.

As previously discussed, there is the potential for water to infiltrate the proposed stormwater system and flow into the stormwater detention ponds. Although this presents a potential future exposure pathway to COCs in the perched groundwater, watertight fittings will be specified for the stormwater system in order to mitigate the potential for groundwater infiltration, therefore minimizing the exposure pathway.

Current Site Conditions

Site soil is currently covered by grass or covered by existing impervious cover (asphalt pavement and concrete). Therefore, a potential exposure pathway from COCs in soil to human receptors exists under current conditions.

The Site and surrounding areas obtain their drinking water supply from municipal sources, and not from Site groundwater. Therefore, a potential exposure pathway from groundwater to human receptors does not exist.

A potential exposure pathway from COCs in soil gas to human receptors does exist for current Site conditions.

Construction/Remediation Activities

Future construction and remediation activities at the Site will include demolition of the paved areas, and excavation and removal of some impacted soil. Therefore, the potential exists for exposure of soil COCs to construction workers via dermal absorption, ingestion, and inhalation. The future construction activities may result in exposure to the public and construction workers of Site soil gas COCs through volatilization of vapors into the air and Site soil COCs through the generation and off-Site migration of dust. However, such exposures would be of short duration limited only to intrusive activities. Working in accordance with a Health and Safety Plan, a Soil Management Plan, and a Community Air Monitoring Plan, as well as donning personal protective equipment, and applying vapor and dust suppression measures to prevent off-Site migration of contaminants during construction would make this potential migration pathway incomplete.

Future/Post-Construction Conditions

Upon completion of the proposed construction activities, the Site will primarily be covered by buildings, parking lots, and roads. These structures will prevent direct human exposure to any contaminated materials that may be left in place. After the buildings are constructed, a complete exposure pathway via potential inhalation of subsurface soil gas should not exist as long as the existing building slabs are sealed. However, vapor intrusion to indoor air presents a low but potential exposure pathway that will be addressed by a soil vapor barrier and sub slab depressurization system.

As discussed above, infiltration into the proposed stormwater system presents a potential future exposure pathway to COCs in the perched groundwater. Watertight fittings will be specified for the stormwater system in order to mitigate the potential for groundwater infiltration, minimizing the exposure pathway.

Potential Exposure Pathways – Off-Site

A groundwater exposure pathway to off-Site human receptors may exist for Site COCs for current Site conditions. This exposure pathway applies to perched groundwater encountered at the Site. Bedrock groundwater conditions have not been assessed.

8.3 Evaluation of Human Health Exposure

According to DER-10, Appendix 3B, a complete exposure pathway to human receptors requires all of the following five elements: 1) a contaminant source; 2) contaminant release and transport mechanisms; 3) a point of exposure; 4) a route of exposure; and 5) a receptor population. If any of the above five elements do not exist for current or future Site conditions, then a complete exposure pathway does not exist.

8.3.1 Current Conditions

The conceptual Site model identified a contaminant source (element 1) and a human receptor population (element 5). Also, a point of exposure (element 3) exists/may exist for potential exposure media for soil and groundwater COCs for current Site conditions, and a point of exposure exists for soil gas COCs in select portions of the Site.

8.3.2 Construction/Remediation Activities

Contaminant sources and contaminant release and transport mechanisms are those identified for the current conditions. Points of exposure during construction/remediation activities include the disturbed and exposed contaminated soil during excavation and contaminated dust and organic vapors arising from the excavation activities. Points of exposure will exist for groundwater COCs because excavation will go into groundwater (perched water). Routes of exposure include ingestion and dermal absorption of contaminated soil or groundwater, inhalation of organic vapors arising from contaminated soil and groundwater, and inhalation of dust arising from contaminated soil. The receptor population includes the construction and remediation workers and, to a lesser extent, the local population. All five elements exist; therefore, completed exposure pathways are present. However, the temporary risk will be minimized by applying appropriate health and safety measures, such as monitoring the air for organic vapors and dust, using vapor and dust suppression measures, maintaining site security, and wearing the appropriate personal protective equipment.

8.3.2 Future (Post-Construction) Conditions

Although post-construction conditions will be characterized by a contaminant source (element 1) and a human receptor population (element 5), a point of exposure (element 3) will not exist for potential exposure media for soil and groundwater COCs. After the structures are constructed, a complete exposure pathway via potential inhalation of subsurface vapors should not exist as long as the existing building slab is sealed and a sub-slab depressurization system is installed.

As discussed above, infiltration into the proposed stormwater system presents a potential future exposure pathway to COCs in the perched groundwater. Watertight fittings will be specified for the stormwater system in order to mitigate the potential for groundwater infiltration, minimizing the exposure pathway.

8.3.3 Potential Ecological Risks

The Site is a former urban fill site located within a highly developed, urban area in the Town of Niagara. The future Site use is commercial with the majority of the Site covered by buildings, concrete sidewalks and asphalt, providing little or no wildlife habitat or food value. As such, no unacceptable ecological risks are anticipated under the current or reasonably anticipated future use scenario.

The NYSDEC's decision key contained in Appendix 3C of DER-10 (NYSDEC, 2010) was utilized to evaluate whether or not performance of a Fish and Wildlife Resources Impact Analysis was needed. The RI demonstrated that there is evidence that COPCs were released into the environment at the Site. Therefore, the Site can be considered to have been affected by one or more discharge or spill events.

The Site currently contains ecological resources consisting of grassy fields and shrubby areas. Other ecological resources may also be present.

Review of the NYSDEC's internet-based Environmental Resources Management Resource Mapper suggests that the Site and adjacent properties may contain state-regulated freshwater wetlands and rare plants and/or rare animals. However, evidence of significant on-Site ecological resources was not observed during the RI. Additionally, there is no evidence that contamination present at the Site has the potential to migrate to and impact potential off-Site ecological resources. Therefore, a Fish and Wildlife Resources Impact Analysis was not needed based on interpretation of NYSDEC guidance (DER-10 Appendix 3C).

9.0 DEVIATIONS FROM RI WORK PLAN

Langan conducted the RI at the Site in accordance with the NYSDEC approved RIWP dated 19 April 2013 and revised 14 June 2013, prepared by Langan, with the following deviations:

- Test Pits
  - Test pit locations LTP-1, LTP-2, and LTP-3 were completed as soil borings due to their location within the asphalt drive aisle at the Fashion Outlets.
  - Test pit location LTP-13 was completed as a soil boring due to its location within the asphalt drive aisle of the existing Secure Storage facility.
  - Test pit location LTP-45 was completed as a soil boring due to the close proximity of subsurface utilities.
- Soil Borings
  - National Fuel was unable to disconnect the gas mains prior to RI activities therefore soil borings within the perimeter of the live gas line were converted to soft dig test pits. The converted soil borings include the following locations:
    - LSB-31
    - LSB-33
    - LSB-37
    - LSB-38
    - LSB-39
    - LSB-44
    - LSB-45
    - LSB-50
    - LSB-51
    - LSB-52
    - LSB-53
    - LSB-54
    - LSB-55
    - LSB-56
    - LSB-58
    - LSB-59
    - LSB-60
    - LSB-62
    - LSB-63
  - Soil boring locations LSB-19, LSB-20, LSB-26, and LSB-36 were advanced to a depth of 12 feet below grade since these locations were converted to monitoring wells and groundwater was encountered at a shallow depth.
- Soil Gas
  - Soil gas samples were not collected from locations LSV-1, LSV-3, LSV-4, LSV-6, LSV-7, LSV-8, and LSV-10 due to the presence of water within the soil gas sampling point. Water within the soil gas probes is being attributed to the elevated groundwater table, heavy rains, and high permeability of the shallow fill material.

10.0 RI SUMMARY/CONCLUSIONS

Based on the data and analyses presented in the preceding sections, we offer the following summary and conclusions:

- Soil at the Site consists of a layer of historic fill, underlain by silty sand and/or clay layers. The fill extended to an average depth of 5 feet below grade, with a maximum depth of approximately 15 feet below grade. The fill consisted of brown to dark gray and black fine to coarse grained sands with varying levels of silt, clay, gravel, organics (roots), brick, concrete, wood, glass, rubber, slag, and miscellaneous pieces of plastic and metal. A silty fine sand was observed underneath the fill layer at limited locations, and ranged in thickness from 2 to 4 feet. The fill and silty sand layers were underlain by a thick clay layer, which was observed to vary in color from brown, gray and reddish-brown, and contained trace levels of silt and fine sand. The clay was observed to be very dense and contain increased quantities of coarse sand and fine gravel at depths of 13 to 16 feet below grade or just prior to refusal. Boring refusal was encountered at depths ranging from 10.3 to 15.9 feet below grade, which was generally limited to locations throughout the Fashion Outlets parking lot and Secure Storage facility, and a few locations in the northern section of Sabre Park.

- Langan observed slag within the historic fill throughout the site. The slag generally had a hard, porous composition, and varied in color from black, gray, green, yellow, and blue. Slag was observed within the subbase layer or in the fill just below subbase in soil borings at the Fashion Outlets and Secure Storage facility parcels, and throughout the fill layer at many locations at Sabre Park. At select test pit locations Langan observed pieces of slag up to 2 feet in diameter. A Ludlum Geiger counter was utilized to assess the potential radioactivity of the slag; however, no readings above background (0.05 millirems/hour) were observed and the slag was identified by Langan as not radioactive.

- VOC, SVOC, PCB, Pesticide and metals were identified in soil throughout the Site at concentrations exceeding the Unrestricted Use SCOs. SVOC, metals, and PCB exceedances of the Restricted Commercial SCOs were identified in soil throughout the Site, and are likely attributed to the result of site-wide historic dumping.

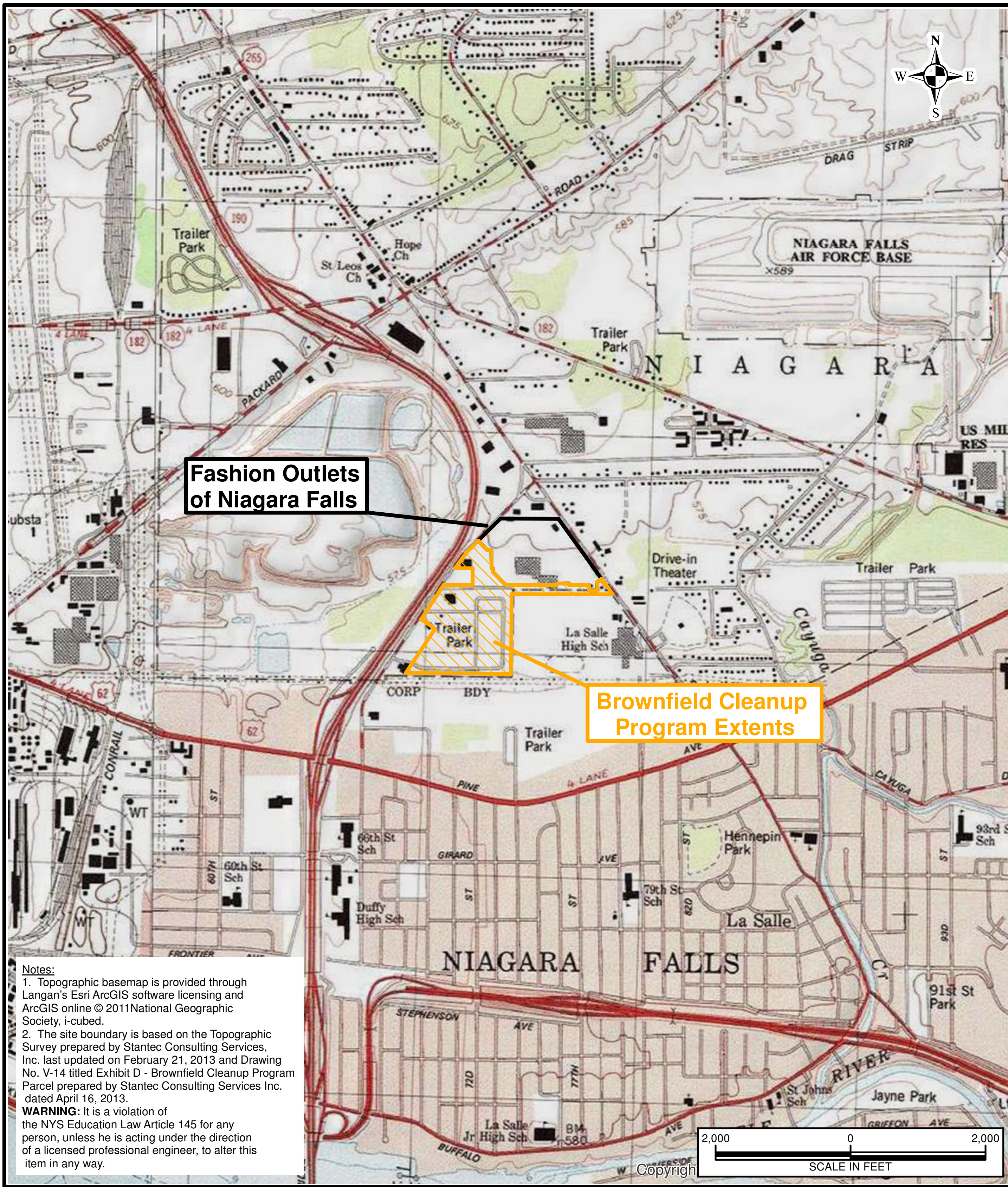
- Based on chromium TCLP analysis of select samples, it was determined that samples from LSB-23-A and LSB-23-S had exceedances of the RCRA Hazardous Waste Criteria. These samples were collected from within the fill layer at a depth ranging from 2 to 4 feet below grade, from material observed to contain yellow staining. This material was only observed in this area of the Site, as its extents were delineated following its initial observation. During construction of the proposed development, this material will be handled in accordance with RCRA regulations, addressed in the IRMWP

- The overburden groundwater observed at the Site is likely perched water within the fill layer, contained by the underlying clay layer. Groundwater was observed to have pH values ranging from 6.29 to 7.32 at the Fashion Outlets and Secure Storage facility parcels, and a range of 11.44 to 12.11 at the Sabre Park parcels. The impacts in groundwater at the Sabre Park parcel are likely a result of perched water mixing with slag and fill material, and the impacted slag and elevated metal concentrations are also causing the pH in groundwater to rise to the levels observed in the field.

- The high chromium concentrations in groundwater are likely a result of perched water mixing with slag and fill material. The impacted slag and elevated metal concentrations are likely causing the high chromium concentrations and the pH of groundwater to rise to the levels observed in the field.

- VOC impacts in soil gas were identified at concentrations exceeding the NYSDOH Upper Fence Values, at locations within the footprint of the proposed expansion. A subslab vapor intrusion mitigation system will be incorporated into the construction of the expansion, and will be detailed further in the IRM.

FIGURES



Notes:
1. Topographic basemap is provided through Langan's Esri ArcGIS software licensing and ArcGIS online © 2011National Geographic Society, i-cubed.
2. The site boundary is based on the Topographic Survey prepared by Stantec Consulting Services, Inc. last updated on February 21, 2013 and Drawing No. V-14 titled Exhibit D - Brownfield Cleanup Program Parcel prepared by Stantec Consulting Services Inc. dated April 16, 2013.

WARNING: It is a violation of the NYS Education Law Article 145 for any person, unless he is acting under the direction of a licensed professional engineer, to alter this item in any way.

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NJ CERTIFICATE OF AUTHORIZATION No. 24GA27996400

Project	Drawing Title	Project No.	Figure
FONF Expansion/ Sabre Park BCP TOWN OF NIAGARA NIAGARA COUNTY NEW YORK	SITE LOCATION MAP	140091401 Date: 4/4/2013 Scale: 1"= 2000' Drawn By: amf Last Revised: 8/2/2013	1

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Path: \\langan.com\data\EP\data4\140091401\ArcGIS\ArcMap_Documents\2013-07 - RIR\Figure 1 - Site Location Map.mxd