RECORD OF DECISION

Brandt Airflex
State Superfund Project
East Farmingdale, Suffolk County
Site No. 152183
March 2015

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - RECORD OF DECISION

Brandt Airflex
State Superfund Project
East Farmingdale, Suffolk County
Site No. 152183
March 2015

Statement of Purpose and Basis

This document presents the remedy for the Brandt Airflex site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Brandt Airflex site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the proposed remedy, shown on figures 6, 7A, 7B and 8 are as follows:

1. Remedial Design
A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and

sustainable re-development.

2. Cover System
A site cover currently exists and will be maintained to allow for restricted residential use of the site. Any site redevelopment will maintain a site cover, which may consist either of the structures such as buildings, pavement and sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. Soil Vapor Extraction (SVE)
SVE will be implemented to remove volatile organic compounds (VOCs) from the subsurface. VOCs will be physically removed from the soil by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through the soil matrix which carries the VOCs from the soil to the SVE well. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere. It is expected that the SVE system can be designed to remediate suspected VOC contamination under the on-site buildings while simultaneously protecting the on-site and off-site buildings, identified in Figure 6, from soil vapor intrusion by preventing VOCs from accumulating under the building slabs.

4. Vapor Mitigation
The SVE system described in Item 3 will be tested to demonstrate system effectiveness (e.g., radius of influence, etc.). Should the SVE system, inadequately protect any of the identified buildings from vapor intrusion, then additional vapor mitigation measures will be undertaken for each building, as deemed necessary by the Department. Any building deemed inadequately protected from vapor intrusion will be required to have a sub-slab depressurization system (SSDS), or a similar engineered system, to prevent the migration of vapors into the building from contaminated soil and groundwater.

5. In-Situ Chemical Oxidation (ISCO)
ISCO will be implemented to treat VOCs in the groundwater in the area surrounding drywell DW-11. A chemical oxidant will be injected into the groundwater to destroy the contaminants in an approximately 550-square foot area located in the north western portion of the site where PCE was discharged into the dry well. Pre-design estimates contemplate four injection locations in the groundwater source remediation zone; each location having four injection wells screened for shallow (<50 feet below ground surface [bgs]), intermediate (80 feet bgs), deep (100 feet bgs) and very deep (130 feet bgs). The choice of chemical oxidant and final depth of injections will be determined during the remedial design.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. It is estimated that the chemical oxidant chemical will be injected during two separate events over several months. Groundwater

monitoring will continue and inform the need, if any, for future injections.

6. Institutional Control
Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH;
- requires compliance with the Department approved Site Management Plan.

7. Site Management Plan
A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: the Environmental Easement discussed in item 6 above.

Engineering Controls: The Cover System discussed in item 2 above; the SVE system discussed in item 3 above; the Vapor Mitigation system discussed in item 4 above; and the ISCO system discussed in item 5 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision for further investigation to refine the nature and extent of contamination under the on-site buildings if and when the buildings are demolished or when a change of use of the site is contemplated;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion to impact existing off-site buildings and any buildings developed on- or near the site , including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for soil vapor intrusion of any buildings identified in Figure 6 as requiring actions to address potential or current human exposures due to soil vapor intrusion, and any additional existing off-site buildings and buildings developed on – or near the site as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy.

The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 30, 2015
Date

Robert W. Schick, P.E., Director
Division of Environmental Remediation

RECORD OF DECISION

Brandt Airflex
East Farmingdale, Suffolk County
Site No. 152183
March 2015

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repository:

Farmingdale Public Library
Attn: Mr. Stuart Schaeffer
116 Merritts Road
Farmingdale, NY 11735
Phone: 516-249-9090

A public meeting was also conducted. At the meeting, the findings of the remedial investigation

(RI) and the feasibility study (FS) were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Brandt Airflex Site is located in a mixed-use area within a suburban portion of Suffolk County. The 2.07-acre site is located on the north side of Conklin Street, west of Broad Hollow Road in East Farmingdale, within the Town of Babylon. The site consists of the two tax parcels; one at 937 Conklin Street (approximately 1.5 acres), and the other at 965 Conklin Street (approximately 0.6 acres), each with one single-story industrial building. The closest surface water body is a former recharge basin (since filled) located approximately 550 feet southeast of the site, listed as a Class 2 Inactive Hazardous Waste Site (Fairchild Republic Old Sump Site No 152004).

Current Zoning/Use: The building at 937 Conklin Street is a 30,000 square feet masonry building that is used for light manufacturing (design and production of architectural and ornamental metal workings). The majority of the products are decorative metals such as brass, aluminum, and stainless steel which do not require chemical coatings or treatment. Finishing, if required, is performed off-site by subcontractors. The building at 965 Conklin Street (approximately 10,300 square feet) is used for packaging and storage of finished ornamental metal products prior to shipping. Both site parcels are zoned Industry (Light). The surrounding properties are used for a combination of commercial, light industrial, and residential. Vacant land, the East Farmingdale Fire Department, and residential properties are to the South. To the east is Suffolk Truck Wash and storage yard. A mix of commercial and light industrial tenants occupy the properties to the north and west.

Site Features: The site lies at an elevation of approximately 72 to 79 feet above mean sea level. The site and surrounding area are relatively flat. A fence exists along the east, southeast, north and northwest property lines of both properties separating the site from the neighboring properties. The site is covered with the two buildings or paved, with the exception of two small landscaped areas south of both buildings. The property is sloped to drain storm water runoff via

overland flow to eleven on-site drywells. Four drywells are located north of Building 937 and three north of Building 965. The remaining four drywells are located south and east of the buildings.

Site History: Historic land use information indicates that the site was at one time part of a larger track of land under single ownership and utilized for textile related operations by the Independent Silk Dyeing Company, Inc., later the Independent Textile Dyeing Company, Inc., which conducted silk and textile screening operations at the site from 1914 until 1958. Textile screening and dyeing operations ceased at that time. In 1972, this larger track of land was subdivided (into a northern parcel and a southern parcel) and sold.

The southern parcel later became the Brandt Airflex facility. In 1976, Brandt Airflex Corp. began leasing 937 Conklin Street and in 1980 it also began leasing 965 Conklin Street from Brent Associates. In 1984, Brent Associates sold the entire site to Conklin Street Associates, a partnership formed by Frederick Fogelman, President of Brandt Airflex, with Charles Selig. Brandt Airflex Corp. and its successor and/or affiliated companies have occupied the property since 1976.

A routine inspection by the Suffolk County Department of Health Services (SCDHS) in 1993 resulted in citations for poor housekeeping of drums and pails of paint - some drums were noted to be open and overflowing into nearby drywells - and inadequate record keeping for the disposal of hazardous wastes. After sampling, SCDHS ordered that the drywells be cleaned of all liquids and sludge and be resampled to demonstrate compliance.

One drywell required additional remediation and remained severely contaminated after cleanout efforts ceased. In August 1994, high levels of tetrachloroethene (PCE) and trichloroethene (TCE) were detected in groundwater samples at the water table just downgradient of the drywell while only low levels of PCE were found in the nearby upgradient sample. Subsequent groundwater investigations documented PCE contamination ranging from 72,650 parts per billion (ppb) to 124,370 ppb throughout the water column adjacent to the drywell, and up to 3,800 ppb of PCE in the groundwater at the downgradient site boundary.

A prior Oil Spill investigation involving the removal of an underground fuel oil storage tank at the East Farmingdale Fire House documented 12,143 ppb of PCE in groundwater samples, in addition to fuel oil related contaminants. The fire house, located at 930 Conklin St. is immediately downgradient of and across the street from the Brandt Airflex site. The Brandt Airflex site was listed by the Department on the Registry of Inactive Hazardous Waste Disposal Sites (Registry) in 2001.

Site Geology/Hydrogeology: The site is underlain by the Upper Glacial and Magothy Aquifers which are designated by the United States Environmental Protection Agency (USEPA) as sole source aquifers. Depth to groundwater ranges from 23 to 25 feet below ground surface (bgs) and flows generally to the south. Based on borings completed at the site, the subsurface geology is comprised of fine to coarse brown sand and rounded gravel to a depth of approximately 80 feet bgs. Below this is a layer of a mottled fine to medium sand with trace silt and mica. Mixed in with this layer are silt and clay lenses.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives (or an alternative) that restrict(s) the use of the site to restricted-residential use (which allows for commercial use and industrial use) as described in Part 375-1.8(g) were/was evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

937 - 941 Conklin Street Associates

Airflex Industrial, Inc.

937 Conklin Street Associates, LLC

965 Conklin Street Associates, LLC

Fredrick Fogelman

Airflex Corp.

The PRPs for the site declined to implement a remedial program when requested by the Department. After the remedy is selected, the PRPs will again be contacted to assume responsibility for the remedial program. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the state for recovery of all response costs the state has incurred.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field

activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- air
- groundwater
- soil
- soil vapor
- indoor air
- sub-slab vapor

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminant(s) of concern identified at this site is/are:

TRICHLOROETHENE (TCE)	CHROMIUM
TETRACHLOROETHYLENE (PCE)	COPPER
cis-1,2-Dichloroethene	CADMIUM
BENZO(A)PYRENE	

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
- soil vapor intrusion
- indoor air

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 01.

Nature and Extent of Contamination:
Soil, groundwater and soil vapor samples were collected during the State-funded Remedial Investigation (RI) conducted from January 2011 through February 2015. Soil and groundwater samples were analyzed for volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), metals, polychlorinated biphenyls (PCB) and pesticides. Soil vapor samples were analyzed for VOCs.

The primary environmental issues identified at the site are significant groundwater contamination from chlorinated volatile organic compounds (CVOC) and potential soil vapor intrusion of the same CVOC into both on-site buildings and two neighboring off-site buildings. Tetrachloroethene (PCE), a CVOC solvent commonly associated with the dry cleaning industry, but also used for metal degreasing was detected at high levels in groundwater and soil vapor samples.

A source of the groundwater contamination is the drywell (DW-11) in back of the site building at 937 Conklin Street. DW-11 was identified as a source of CVOC contamination by the Suffolk

County Department of Health Services (SCDHS) during a 1993 compliance inspection. Soil contamination was removed from the drywell in 1994. However, high levels of PCE remain throughout the groundwater column directly below the drywell.

Groundwater: Analytical results from the RI indicate that groundwater at the site is impacted with several CVOCs at concentrations greater than the NYS Class GA Groundwater Quality Standards.

PCE was detected in on-site groundwater at a concentration of up to 13,000 parts per billion (13,000 ppb). Also present in the groundwater plume are some of the degradation products of PCE: trichloroethene (TCE) at up to 260 ppb and cis-1,2-dichloroethene (1,2-DCE) at up to 280 ppb. The groundwater standard for PCE, TCE and 1,2-DCE is 5 ppb.

The groundwater flow has caused contaminated groundwater to migrate under the on-site buildings, contributing to vapor intrusion issues in both on-site buildings and two nearby off-site commercial buildings. CVOC concentrations in the groundwater plume sharply diminish within a short distance of the source area drywell. The highest downgradient PCE detection was 110 ppb at monitoring well BAW-05C at a depth of 90-100 feet below grade. BAW-05C is located in the parking lot of the East Farmingdale Volunteer Fire House, approximately 700 feet SSW of the Site.

Soil Vapor Intrusion: Soil vapor, sub-slab vapor and indoor air samples were collected from both on-site structures and from two neighboring commercial properties. The samples were collected to determine whether actions are needed to address exposures related to the potential for vapors emanating from soil and groundwater contamination to enter into nearby buildings via a process known as soil vapor intrusion. The results show that PCE and TCE were detected in the sub-slab vapor and indoor air of both on-site buildings as well as both off-site buildings, indicating that all four buildings require mitigation systems to protect occupants from potential exposure due to soil vapor intrusion. High levels of PCE, at up to 1,300,000 micrograms per cubic meter (1,300,000 µg/m3), were detected in sub-slab vapor samples under the on-site building at 937 Conklin Street, leading the Department to suspect that an additional source of CVOC contamination soil is under the building slab. PCE was detected at up to 16,000 µg/m3 in sub-slab vapor samples from under the on-site building at 965 Conklin Street; at up to 16,000 µg/m3 under the nearest off-site building slab; and at up to 2,600 µg/m3 from under the downgradiant building slab. Indoor air concentrations of PCE exceed background concentrations in all four of the buildings tested and exceed NYSDOH's air guideline of 30 micrograms per cubic meter PCE in the onsite building at 937 Conklin Street. The results of soil vapor samples collected from around the site perimeter and off-site were highest, at up to 68,000 µg/m3 of PCE, west of the site and adjacent to the off-site building. A substantial drop in PCE vapor levels was observed to the north-east and south-east of the site.

Soil: The Department was unable to collect soil samples from under the on-site buildings where sub-slab vapor samples indicate that a source of PCE is likely present. Characterization of soil contamination under the buildings will be deferred until such time as the buildings are demolished, or a change of use of the site provides an opportunity for sampling.

The remaining soil sample results around the site did not indicate soil contamination above applicable New York State Department of Environmental Conservation (NYSDEC) unrestricted use soil cleanup objectives (UUSCOS) with the exception of PCBs, at a concentration of 0.19 part per million (ppm), in one sample collected at 15 feet below ground surface (BGS). Other than potential VOCs under the building slabs, the impacted subsurface soil appears to be limited to three drywell bottoms.

Drywells DW-8, DW-9 and DW-11, located north of Building 937 are impacted with metals, PCBs, SVOCs and/or VOCs greater than the UUSCOs. Restricted residential use SCOs (RRUSCO) were exceeded for SVOCs, PCBs and/or metals in the same three drywells. Industrial use SCOs were exceeded for one SVOC - benzo(a)pyrene in one drywell sample (DW-11). The drywell bottoms range from 17 feet to 19 feet below ground surface.

A shallow pile, approximately 20 cubic-yards, of depositional material was observed on the ground surface behind the site building at 937 Conklin Street. The depositional material was identified as a garnet powder abrasive (grit pile), discarded from a metal wet-polishing process. A surface soil sample collected from the pile exceeded UUSCOs for four metals: chromium, copper, nickel and zinc. Chromium, copper and nickel also exceeded their respective RRUSCOs. Reported detections of VOC, SVOC and PCBs did not exceed UUSCOs. The grit pile is a solid waste which has been improperly disposed of on-site, and is being referred to the DEC Region 1 Office- Division of Materials Management for appropriate action.

None of the compounds detected in the drywells or grit pile at concentrations greater the UUSCOs, were detected in groundwater at concentrations greater than the NYS groundwater standards, indicating that soil contamination in the drywells is not impacting the groundwater.

Although PCE was not detected above UUSCOs in any soil sample, a source of PCE contamination likely exists in the soil under the on-site building slabs that is contributing to the extremely high levels of PCE vapor detected in sub-slab soil vapor samples.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure*.

Direct contact with contaminants in the soil is unlikely because the majority of the site is covered with buildings and pavement. Contaminated groundwater at the site is not used for drinking or other purposes and the area is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Soil vapor intrusion sampling identified impacts to the sub-slab environments of the two on-site buildings and two off-site buildings. This sampling has shown there are impacts to

indoor air in these buildings and that actions are needed to address soil vapor intrusion into these structures.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the feasibility study (FS) report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's remedy is set forth at Exhibit D.

The selected remedy is referred to as the Restricted Residential Use with Site Management remedy.

The estimated present worth cost to implement the remedy is $3,500,000. The cost to construct the remedy is estimated to be $1,800,000 and the estimated average annual cost is $98,000.

The elements of the selected remedy, shown on figures 6, 7A, 7B and 8 are as follows:

1. Remedial Design
A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Cover System
A site cover currently exists and will be maintained to allow for restricted residential use of the site. Any site redevelopment will maintain a site cover, which may consist either of the structures such as buildings, pavement and sidewalks comprising the site development or a soil cover in areas where the upper two feet of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is required it will be a minimum of two feet of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for restricted

residential use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. Soil Vapor Extraction (SVE)
SVE will be implemented to remove volatile organic compounds (VOCs) from the subsurface. VOCs will be physically removed from the soil by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground but above the water table). The vacuum draws air through the soil matrix which carries the VOCs from the soil to the SVE well. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere. It is expected that the SVE system can be designed to remediate suspected VOC contamination under the on-site buildings while simultaneously protecting the on-site and off-site buildings, identified in Figure 6, from soil vapor intrusion by preventing VOCs from accumulating under the building slabs.

4. Vapor Mitigation
The SVE system described in Item 3 will be tested to demonstrate system effectiveness (e.g., radius of influence, etc.). Should the SVE system, inadequately protect any of the identified buildings from vapor intrusion, then additional vapor mitigation measures will be undertaken for each building, as deemed necessary by the Department. Any building deemed inadequately protected from vapor intrusion will be required to have a sub-slab depressurization system (SSDS), or a similar engineered system, to prevent the migration of vapors into the building from contaminated soil and groundwater.

5. In-Situ Chemical Oxidation (ISCO)
ISCO will be implemented to treat VOCs in the groundwater in the area surrounding drywell DW-11. A chemical oxidant will be injected into the groundwater to destroy the contaminants in an approximately 550-square foot area located in the north western portion of the site where PCE was discharged into the dry well. Pre-design estimates contemplate four injection locations in the groundwater source remediation zone; each location having four injection wells screened for shallow (<50 feet below ground surface [bgs]), intermediate (80 feet bgs), deep (100 feet bgs) and very deep (130 feet bgs). The choice of chemical oxidant and final depth of injections will be determined during the remedial design.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. It is estimated that the chemical oxidant chemical will be injected during two separate events over several months. Groundwater monitoring will continue and inform the need, if any, for future injections.

6. Institutional Control
Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

- allows the use and development of the controlled property for restricted residential, commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH;
- requires compliance with the Department approved Site Management Plan.

7. Site Management Plan
A Site Management Plan is required, which includes the following:

a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: the Environmental Easement discussed in item 6 above.

Engineering Controls: The Cover System discussed in item 2 above; the SVE system discussed in item 3 above; the Vapor Mitigation system discussed in item 4 above; and the ISCO system discussed in item 5 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision for further investigation to refine the nature and extent of contamination under the on-site buildings if and when the buildings are demolished or when a change of use of the site is contemplated;
- descriptions of the provisions of the environmental easement including any land use, and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion to impact existing off-site buildings and any buildings developed on- or near the site , including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for soil vapor intrusion of any buildings identified in Figure 6 as requiring actions to address potential or current human exposures due to soil vapor intrusion, and any additional existing off-site buildings and buildings developed on – or near the site as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, monitoring, inspection, and reporting of any mechanical or physical components of the remedy.

The plan includes, but is not limited to:

- compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
- maintaining site access controls and Department notification; and
- providing the Department access to the site and O&M records.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

The primary environmental issues identified at the site are significant groundwater contamination and soil vapor contamination resulting from chlorinated volatile organic compounds (CVOC). The soil vapor contamination poses a threat due to soil vapor intrusion into both on-site buildings and two neighboring off-site commercial buildings.

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater, soil, and soil vapor. A drywell in the rear of 937 Conklin St. is identified as a source of CVOCs, particularly tetrachloroethene (PCE). The drywell was first identified as a source of CVOCs by the Suffolk County Department of Health Services (SCDHS) during a 1993 compliance inspection. In 1994, after the drywell was cleaned out, elevated levels of PCE were detected throughout the groundwater column directly below the drywell. PCE was detected in groundwater samples at levels ranging from 111,500 parts per billion (ppb) at the groundwater table, 26 feet below ground surface, to 124,370 ppb at 60 feet below ground surface. Groundwater sampling during the 2011-2013 RI documented PCE at levels as high as 13,000 ppb next to the drywell, denoted in the RI report as DW-11. The southerly regional groundwater flow has resulted in the contaminated groundwater migrating under the on-site buildings.

PCE was not detected above unrestricted use soil cleanup objectives (UUSCOs) in any soil sample. High levels of CVOC were detected in sub-slab vapors leading the Department to conclude that an additional source of CVOC soil contamination is likely present under one or more of the on-site buildings. The buildings are occupied, preventing an investigation of the soils below the building slabs. Low levels of SVOC, VOC, metals and PCB soil contamination were observed in three on-site drywells. A small surface pile of discarded garnet grit from a metal wet polishing process was found to have levels of metals contamination above the UUSCOs.

Figures 3a and 4a depict the waste source areas.

The waste/source areas identified will be addressed in the remedy selection process.

Groundwater

The groundwater sampling program included vertical profiling of groundwater using direct-push groundwater probes at 11 locations followed by four separate monitoring well sampling events. The monitoring well drilling program consisted of the installation of seven multi-level well clusters (BAW-01 through BAW-07) and two individual wells (BAW-08E and BAW-09E). Each multi-level well had at least four separate screened depth intervals; generally, one each at the water table, between 60 and 70 feet bgs, one between 95 and 100 feet bgs, and one between 120 and 125 feet bgs. A fifth depth interval was installed at BAW-02 (175 ft.), BAW-05 (285 ft.) and BAW-07 (130 ft.) and a sixth depth interval was installed at BAW-02 (277 ft.) only. A total of 34 monitoring wells were installed during the RI.

PCE was detected in on-site groundwater at concentrations ranging from non-detect to 13,000 parts per billion (ND-13,000 ppb). Also present in the groundwater plume are some of the degradation products of PCE: trichloroethene (TCE) from (ND-260 ppb) and cis-1,2-dichloroethene (1,2-DCE) from (ND-280 ppb). In the area to the north and west of the site buildings, concentrations of PCE, TCE and 1,2-DCE were detected at the highest concentrations. Monitoring well BAW-07E, installed directly downgradient of the suspected source area drywell (DW-11), had the highest concentration of PCE, reported at three orders of magnitude above the NYSDEC Class GA standard of 5 ppb. The plume runs directly under the site buildings to the south. In the front of the Site buildings, PCE concentrations had decreased by two orders of magnitude, yet still exceeding the NYSDEC Class GA standard by one order of magnitude. Further south, on the opposite side of Conklin Street, PCE continued to be detected at concentrations that are one to two orders of magnitude above the Class GA standard.

The areal extent of the groundwater contamination plume appears to be about 50 feet wide by 800 feet long. The vertical extent of groundwater contamination appears to be from 25 feet bgs to 130 feet bgs within the source area. CVOC concentrations in groundwater sharply diminish within a short distance of the source area monitoring well. The highest downgradient PCE detection was 110 ppb at monitoring well BAW-05C at a depth of 90-100 feet below grade 750 feet from the drywell. Figures 3a and 3b depict the extent of groundwater contamination.

Two additional CVOCs that were found to exceed groundwater standards are 1,1,2-trichloro-1,2,2-trifluoroethane (freon-113) from (ND-140 ppb) and 1,1,1-trichloroethane (1,1,1-TCA) from (ND-39 ppb). Both freon-113 and 1,1,1-TCA are not considered site-related contaminants and their source is yet unknown. The NYS groundwater standard for each of the above mentioned CVOC is 5 ppb. Table 1, below lists all detected contaminants that exceed the New York State Class GA Groundwater Quality Standards.

Table # 1- Groundwater **152183** Screening Criteria in use: NEW YORK STATE CLASS GA

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOC NYS CLASS GA			
Tetrachloroethylene (PCE)	0-13,000	5	92/372
Trichloroethylene (TCE)	0-260	5	32/372
Cis-1,2-Dichloroethylene (1,2-DCE)	0-280	5	30/372
1,1,1-Trichloroethane	0-39.0	5	22/372

1,1,2-Trichloro-1,2,2-Trifluoroethane	0-140	5	12/372
1,1-Dichloroethane	0-5.20	5	4/372
1,1-Dichloroethene	0-20.0	5	8/372
Metals NYS CLASS GA			
Chromium, Total	0-70.0	50	2/26
Iron	0-21,000	300	14/32
Manganese	0-8,400	300	6/32
Manganese (DISSOLVED)	0-330	300	2/18
Sodium	11,000-40,000	20000	16/26
Pesticides/PCBs NYS CLASS GA			
Chlordane	0-0.280	0.05	2/26
Dieldrin	0-0.310	0.004	2/26

Table # - Groundwater
a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

The primary contaminants of concern at the Site are PCE, TCE and 1,2-DCE, detected at high levels in groundwater samples near the source area dry well in the rear of 937 Conklin Street. As noted on Figure 3b, the primary groundwater contamination is located on the north-west portion of the site and under the on-site buildings. Other CVOC detected in groundwater, while exceeding groundwater standards, are at generally lower concentrations or are not necessarily deemed site-related, and are not considered primary contaminants of concern for the purposes of selecting a remedy. Metals detected in groundwater samples are consistent with regional groundwater conditions on Long Island and are not considered site specific contaminants of concern.

Based on the findings of the RI, the presence of chlorinated volatile organic compounds has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: PCE, TCE and 1,2-DCE.

Soil

The soil sampling program for the RI was conducted during the initial phase of the investigation for on-site locations only. As noted earlier, the Department was unable to collect soil samples from under the site buildings where sub-slab vapor samples indicate that a source of CVOC is likely present. Characterization of soil contamination under the buildings will be deferred until such time as the buildings are demolished, or a change of use of the site provides an opportunity for sampling.

The remaining soil sample results around the site did not indicate soil contamination above applicable New York State Department of Environmental Conservation (NYSDEC) unrestricted use soil cleanup objectives with the exception of PCBs, at a concentration of 0.19 mg/kg, in one sample collected at 15 feet below ground surface

(BGS). Other than VOCs under the building slabs, the impacted subsurface soil appears to be limited to three drywell bottoms.

Drywells DW-8, DW-9 and DW-11, located north of Building 937 are impacted with metals, PCBs, SVOCs and/or VOCs greater than the unrestricted use SCOs (UUSCO). Restricted residential use SCOs (RRUSCO) were exceeded for SVOCs, PCBs and/or metals in the same three drywells. SVOCs in excess of the UUSCOs include benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[k]fluoranthene, chrysene, and indeno[1,2,3-cd]pyrene. VOCs included ethylbenzene and total xylene. Metals above UUSCOs include cadmium, chromium, copper, lead, mercury, aluminum, silver and zinc.

Industrial use SCOs were exceeded for one compound- benzo(a)pyrene in one drywell sample (DW-11). The highest detection of PCE was in drywell DW-9 at a concentration of 1.1 parts per million (ppm) which is less than the UUSCO of 1.3 ppm. The drywell bottoms range from 17 feet to 19 feet below ground surface. It should be noted that DW-11, sited earlier as the source of severe CVOC groundwater contamination, was reportedly cleaned out 1994, and PCE was detected at only 0.025 ppm during the RI.

A shallow pile, approximately 20 cubic-yards, of depositional material was observed on the ground surface behind the site building at 937 Conklin Street. The depositional material was identified as a garnet powder abrasive, discarded from a metal wet-polishing process. The pile, identified in the RI as "Washout-01," was sampled and found to exceed UUSCOs for metals: chromium (630 ppm), copper (280 ppm), nickel (330 ppm) and zinc (209 ppm). Chromium, copper and nickel also exceeded their RRUSCOs – 180 ppm, 270 ppm and 310 ppm, respectively. Reported detections of VOC, SVOC and PCBs did not exceed UUSCOs.

None of the compounds detected in the drywells or washings pile at concentrations greater the unrestricted use SCOs, was detected in groundwater at concentrations greater than the NYS Class GA GWQS, indicating that soil contamination is not impacting the groundwater.

Table 2 and Figures 4a and 4b depict the soil sampling results.

Table #2 - Soil **152183** Screening Criteria in use: 375 SOIL – RESTRICTED RESIDENTIAL USE, 375 SOIL - UNRESTRICTED USE

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted Use SCG[b] (ppm)	Frequency Exceeding Unrestricted Use SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted Use SCG
Metals PART 375					
Aluminum	0-11,000	NA	0/12	10,000[e]	1/12
Cadmium	0-5.1	2.5	1/12	4.3	1/12
Chromium, Total	0-630	30	4/12	180	3/12
Copper	0-1,400	50	4/12	270	4/12
Lead	0-120	63	2/12	400	0/12
Mercury	0-1.7	0.18	2/12	0.81	1/12
Nickel	0-490	30	4/12	310	3/12
Silver	0-4.7	2	2/12	180	0/12
Zinc	0-1,200	109	4/12	10,000	0/12
Pesticides/PCBs PART 375					

PCB-1248 (Aroclor 1248)	0-2.2	0.1	3/12	1	1/12
Polychlorinated Biphenyl (PCBs)	0-2.2	0.1	3/12	1	1/12
SVOC PART 375					
Benzo(A)Anthracene	0-1.9	1	1/12	1	1/12
Benzo(A)Pyrene	0-2.2	1	1/12	1	1/12
Benzo(B)Fluoranthene	0-3.5	1	1/12	1	1/12
Benzo(K)Fluoranthene	0-0.92	0.8	1/12	3.9	0/12
Chrysene	0-2.5	1	1/12	3.9	1/12
Dibenz(A,H)Anthracene	0-0.67	0.33	1/12	0.33	1/12
Indeno(1,2,3-C,D)Pyrene	0-1.6	0.5	1/12	0.5	1/12
VOC PART 375					
1,1,1-Trichloroethane	0-0.9	0.68	1/12	0.68[d]	1/12
Ethylbenzene	0-1.2	1	1/12	41	0/12
Tetrachloroethylene (PCE)	0-1.1	1.3	0/12	1.3[d]	0/12
Xylenes	0-2.37	0.26	1/12	100	0/12

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c -SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Restricted Residential Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.
e – SCG: CP-51, Supplemental Soil Cleanup Objectives for the Protection of Ecological Resources

The site has low-level soil contamination, mostly limited to three drywell bottoms, all between 17 feet and 19 feet below ground surface, and a garnet (abrasive) washings pile on the ground surface. The drywell contamination is primarily inorganics/metals: aluminum, chromium, copper, iron, lead, mercury, silver and zinc, associated with present activities at the site- the design and production of architectural and ornamental metal workings. The contamination present in the garnet washings pile is metals, also from current site activities. SVOC contamination observed in the dry wells and is likely attributable to extensive asphalt pavement covering the site, and the trucking of materials and finished product to and from the site. The contamination is immobile and no impacts to groundwater were observed during the RI.

The drywell contamination is not unusual for a typical active industrial facility. Given that there are no impacts to groundwater, and the high likelihood of recontamination from continued site activities, the drywell remediation will be deferred until a change of use of the site is contemplated. The garnet washings pile is an improperly discarded solid waste and is being referred to the DEC Region 1 Office- Division of Materials Management for appropriate action. It will not be addressed by the remedy selection process.

Based on the findings of the Remedial Investigation, the likely presence of CVOC has resulted in the contamination of soil under the on-site buildings. The site contaminants identified which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are PCE and TCE.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor, sub-slab soil vapor under structures, and indoor air inside structures. At this site due to the presence of buildings in the impacted area a full suite of samples was collected to evaluate whether actions are needed to address exposures related to soil vapor intrusion.

Soil vapor samples were collected from the sub-slab of both structures located on the site and in two adjacent commercial properties. Indoor air and outdoor air samples were also collected at the same time. A total of three rounds of soil vapor intrusion sampling were conducted during the RI. The results indicate that tetrachloroethene (PCE) and trichloroethene (TCE) were detected in the sub-slab vapor and indoor air of both onsite buildings as well as both offsite buildings. High levels of PCE were detected under the building at 937 Conklin Street, leading the Department to suspect that a source of contaminated soil is under the building slab. However, due to the occupancy of the buildings, the Department was unable to confirm the presence of soil contamination under the building slab. PCE was detected at 1.3 million micrograms per cubic meter (1,300,000 $\mu g/m^3$) in the sub-slab vapor at the 937 building. PCE was detected at up to 16,000 µg/m3 in sub-slab vapor samples from under the on-site building at 965 Conklin Street; at up to 16,000 µg/m3 under the nearest off-site building slab; and at up to 2,600 µg/m3 from under the downgradiant off-site building slab.

Based on the concentrations detected, and in comparison with the State's Soil Vapor Intrusion Guidance (NYSDOH 2006), onsite and off-site potential for soil vapor intrusion at levels of concern was identified during the RI. The primary soil vapor contaminant of concern is PCE. As noted in Figures 5 and 6, PCE soil vapor contamination was found under both on-site buildings and two neighboring off-site commercial buildings. Therefore, mitigation of all four buildings is necessary to protect the building occupants from potential exposure from soil vapor intrusion. Figure 6 identifies the four structures which require mitigation and/or monitoring.

Based on the findings of the Remedial Investigation, the presence of PCE and TCE has resulted in the contamination of soil vapor. These contaminants are considered to be the primary contaminants of concern which will drive the remediation of soil vapor to be addressed by the remedy selection process.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment

Alternative 2: Vapor Mitigation w/ Site Management

The Site Management Alternative requires only institutional controls for the site. This alternative includes institutional controls, in the form of an environmental easement and a site management plan (SMP), necessary to protect public health and the environment from any contamination identified at the site. A long-term groundwater monitoring plan will be included in the SMP. As there is documented need to mitigate two on-site and two off-site buildings from potential soil vapor intrusion, measures must be undertaken to protect the building occupants. This alternative contemplates the design, construction and continued operation of individual sub-slab depressurization systems (SSDS) for each of the three impacted buildings.

Present Worth:……. $1.0M
Capital Cost:…… $357,000
Annual Costs:…… $47,000

Alternative 3: Restricted Residential Use with Site Management

This alternative includes, The in-situ chemical oxidation of groundwater contamination (ISCO) in the source area groundwater plume to destroy CVOC contamination; a soil vapor extraction system (SVE) and/or sub-slab depressurization systems (SSDS) to remove suspected soil contamination from under the on-site buildings, and to protect impacted buildings from the threat of soil vapor intrusion; and institutional controls in the form of an environmental easement. Use of the site will be limited to restricted residential, commercial or industrial purposes. A Site Management Plan (SMP) is required that identifies all use restrictions, institutional and engineering controls for the site, and details the steps and media-specific requirements necessary to ensure that the controls remain in place and are effective. Also required in the SMP is a long-term groundwater monitoring plan.

Soil Vapor Extraction is preferred to Sub-Slab Depressurization in this alternative because it should actively remediate a suspected source of soil contamination under the on-site buildings, while simultaneously protecting impacted buildings from the threat of soil vapor intrusion. If it is determined during implementation of the remedy, that SVE will not adequately protect all of the impacted buildings, then additional vapor mitigation measures will be undertaken for each building, as deemed necessary by the Department.

Present Worth:..... $3.3M
Capital Cost:..... $1.7M

Annual Costs:.....$105,000

Alternative 4: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative attempts* to achieve all of the SCGs discussed in Section 6.1.1 and Exhibit A and meet the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative would include: The in-situ chemical oxidation (ISCO) of groundwater contamination in the source area groundwater plume to destroy CVOC contamination; a soil vapor extraction system (SVE) and/or sub-slab depressurization systems (SSDS) to remove suspected soil contamination from under the on-site buildings, and to protect impacted buildings from the threat of soil vapor intrusion by preventing contaminated vapors from accumulating underneath buildings; and institutional controls in the form of an environmental easement restricting use of the site to restricted residential, commercial or industrial purposes. A Site Management Plan (SMP) is required that identifies all use restrictions, institutional and engineering controls for the site, and details the steps and media-specific requirements necessary to ensure that the controls remain in place and are effective. Also required in the SMP is a long-term groundwater monitoring plan.

Soil Vapor Extraction is preferred to Sub-Slab Depressurization in this alternative because it should actively remediate a suspected source of soil contamination under the on-site buildings, while simultaneously protecting impacted buildings from the threat of soil vapor intrusion. If it is determined during implementation of the remedy, that SVE will not adequately protect all of the impacted buildings, then additional vapor mitigation measures will be undertaken for each building, as deemed necessary by the Department.

In addition, minor soil contamination in three onsite drywells exceeding Unrestricted Use SCOs will be excavated and removed. A surface pile of discarded garnet polishing grit which exceeds UUSCOs for metals- chromium, copper, nickel and zinc will be removed and properly disposed of offsite.

*The on-site building at 937 Conklin Street is currently occupied and will require vacancy and possible demolition in order to fully assess the extent of CVOC contamination under the building slab.

Present Worth:.....$13.5M
Capital Cost:.....$10.8M
Annual Costs:.....$105,000

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost	Periodic Cost	Present Worth Cost
Alt. No. 1: No Action	$0	$0	$0
Alt. No. 2: Vapor Mitigation w/ Site Management	$357,000	$47,000	$ 1.0 M
Alt. No. 3: Restricted Residential Use with Site Management	$1.7M	$105,000	$3.3M
Alt. No. 4: Attempted Restoration to Pre-Disposal or Unrestricted Conditions[1]	$10.8M	$105,000	$13.5M

1. This alternative attempts to restore the property to pre-disposal conditions by treating or removing all known and accessible contamination at the site. However, there is suspected contamination under the on-site buildings which could not be investigated without disrupting business operations. As such, this alternative will require an environmental easement and site management plan to allow for further investigation to refine the nature and extent of contamination under the on-site buildings if and when the buildings are demolished. Therefore this alternative cannot reasonably achieve unrestricted conditions.

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department has selected Alternative 3, Restricted Residential Use with Site Management as the remedy for this site. Alternative 3 will achieve the remediation goals for the site by remediating all groundwater and soil vapor contamination above SCGs. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figures 6, 7A, 7B and 8.

Basis for Selection

The selected remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS and Supplemental FS reports.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

Alternative 4 (Attempted Restoration to Pre-Disposal or Unrestricted Conditions) satisfies this criterion by removing or remediating all contamination at the site. The selected remedy, Alternative 3 (Restricted Residential Use with Site Management) satisfies this criterion by remediating the source of groundwater, soil and soil vapor contamination which are the most significant threats to public health and the environment. Alternative 3 leaves minor contamination on the site, but protects human health through the imposition of institutional and engineering controls. Alternative 2 (Vapor Mitigation) satisfies this criterion by mitigating the threat to public health caused by soil vapor contamination. Alternative 2 does not address the sources of contamination (groundwater, soil or soil vapor), but protects human health through the imposition of institutional and engineering controls. Alternative 1 (No Action) does not provide any additional protection to public health and the environment and will not be evaluated further.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternative 4 best complies with SCGs to the extent practicable by removal or remediation of all contamination. Alternative 3 leaves some low-level soil contamination on-site and achieves compliance with SCGs through the imposition of institutional and engineering controls. Alternatives 3 and 4 both address groundwater contamination, thus creating the conditions necessary to restore groundwater quality to desired standards. Alternative 2 does nothing to address source areas of contamination, and achieves compliance with this criterion through the imposition of institutional and engineering controls.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Alternatives 2, 3 and 4 will all provide long-term effectiveness. Generally, alternatives that remove or treat contamination are considered more effective than alternatives that rely on future owner/operator compliance with easements, use restrictions or site management plans. Alternative 2 has the least long-term effectiveness because it does little to address contamination and relies heavily on institutional and engineering controls for protectiveness. Alternative 3 is more effective than Alternative 2 because it removes the most significant threats to public health and the environment. Alternatives 4 is considered more effective and permanent because it removes the most contamination all of the alternatives.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternative 2 would control potential exposures with institutional and engineering controls, but will not reduce the toxicity, mobility or volume of contaminants remaining. Alternatives 3 and 4 reduce the toxicity, mobility and volume of the primary contaminants of concern (CVOC) by removing them with SVE and destroying them with ISCO. Only Alternative 4 removes the metals and SVOC contamination from the onsite drywells and polishing grit pile. This contamination is minor and not impacting groundwater quality and is considered immobile. Alternative 4 further removes suspected CVOC contamination from under the on-site buildings, if and when the buildings are eventually vacated.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternatives 2, 3 and 4 all require installation of equipment - fans/motors, ductwork and/or plumbing. All will result in some disruption of building operations during installation which can be minimized with a detailed work plan. Alternative 2 has no groundwater treatment component, resulting in the least disruption at the site, but it will result in impacts to the neighboring properties when installing the sub-slab depressurization systems. Alternative 2 requires access to three buildings to install the SSDS. Coordination to minimize impacts to property and business operations could prove difficult and may require scheduling of work to occur during non-business hours. Space must be found in each building to permanently house electrical/control equipment. Alternative 3 places all remediation activities on the Site resulting in more disruption of on-site operations, but little disruption to neighboring properties. Alternative 3 contemplates a soil vapor extraction system (SVE) to remediate soil vapors, and in-situ chemical oxidation (ISCO) for treatment of groundwater contamination. Due to the lack of available space at the site, it is expected that SVE extraction wells and ISCO injection wells will be placed in trenches, where appropriate and power equipment will be roof-mounted, where possible. Normal site operations may temporarily be impacted during installation and startup, and increased traffic and noise during well installation and trenching is expected. Further evaluation of site conditions will be necessary when planning locations for drilling, trenching and equipment placement. With the added groundwater treatment element, Alternative 3 will have substantial short term impact on Site operations, but it is anticipated that it will remediate soil vapors and restore groundwater quality within 3-years. The impacts associated with Alternative 4 are virtually the same as with Alternative 3. The added impacts of soil removal from drywell bottoms and a pile of polishing grit is minor compared to installation of SVE and ISCO systems.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

Each alternative is implementable with readily available equipment and materials; however, the buildings are all actively used which will require coordination with the owners/operators for access, and to minimize impacts to business operations during the remedial construction. Available space on-site on which to stage equipment and construct the remedial systems is very limited and will have a constraining influence on design considerations. Potential impacts to business operations during construction of any of the remedial systems must be reviewed

It is anticipated that many components of the SVE and SSDS systems, such as blowers and fans, electrical closets, plumbing manifolds, etc., can be roof-mounted on one or more of the impacted buildings, enhancing implementability. However, if system components cannot be roof-mounted, then the purchase/construction and placement of equipment sheds must be considered.

Alternative 2 is most easily implemented in that it proposes much less remedial work than Alternatives 3 or 4.

Alternative 4 requires the evacuation and possible demolition of at least one of the on-site buildings in order to remove the contaminated soil necessary to achieve unrestricted conditions. As it is not the Department's policy to forcibly close or relocate active businesses operating on private property in order to facilitate an environmental investigation, this alternative cannot be implemented within a reasonable timeframe. Instead, Alternative 3 contains a provision for further investigation to refine the nature and extent of contamination under the on-site buildings if and when the buildings are demolished or when a change of use of the site is contemplated and the buildings are unoccupied.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

Alternative 2 has the lowest cost, but it leaves all of the contamination in the environment. Alternatives 3 and 4 cost substantially more than Alternative 2. The majority of the remediation cost at this site is to address groundwater contamination and soil vapor intrusion, which must be undertaken regardless of land use or zoning. The cost of the drywell soil removal contemplated in Alternative 4 relative to the cost of addressing groundwater and soil vapor contamination (Alternative 3) is marginal and adds only about 5% to the overall budget. However, the benefit of removing the drywell contamination from an active industrial property is questionable. The drywell cleanout may better be deferred until the eventual redevelopment of the property. As noted earlier, Alternative 4 cannot be fully implemented until the onsite buildings are unoccupied, providing an opportunity to refine the nature and extent of contamination under the on-site buildings.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

The current zoning and land use of the site is light-industrial. It is reasonably foreseeable that the site could one

day be redeveloped into condominiums or apartments. For this reason, the Department has elected to remediate the site to restricted residential land use standards. As previously mentioned, VOC contamination is present under the on-site buildings which will require further evaluation once the buildings are demolished or a change of use of the site is contemplated.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary has been prepared that describes public comments received and the manner in which the Department will address the concerns raised.

Alternative 3 has been selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

Brandt Airflex (NYSDEC Site # 152183)
937 & 965 Conklin Street
East Farmingdale, New York

Site Location Map

DATE
October 2014

FIGURE
1

\\Prl-srv3\gis_projects\202315_NEW YORK STATE DEPT OF ENVIRONMENTAL CON\0147462_NYSDECESWA11BRANDT AIRFLEXRIFS\GIS\map_docs\mxd\Fig1_Site_Location_011911.mxd

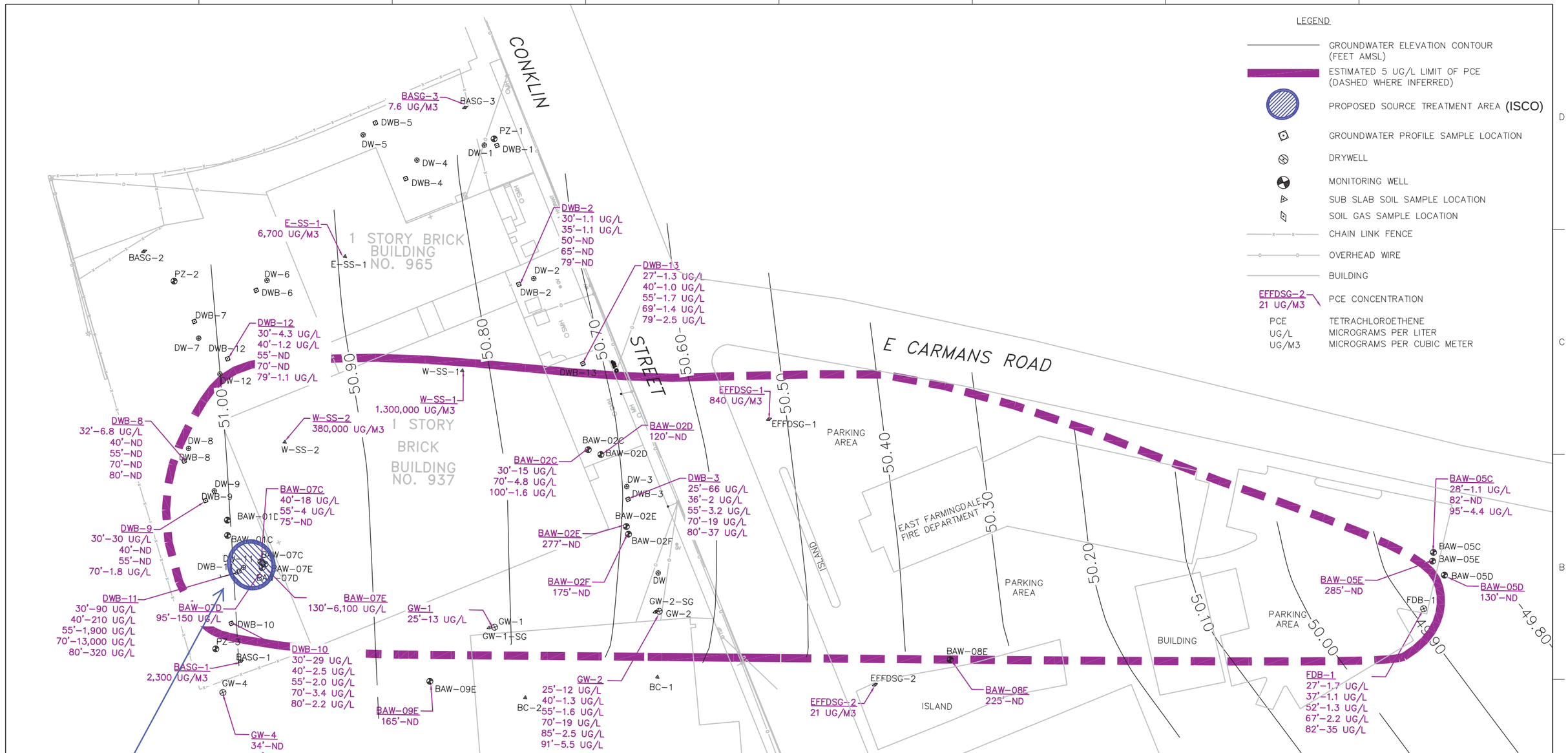
Brandt Airflex (NYSDEC Site # 152183)
937 & 965 Conklin Street
East Farmingdale, New York

Site Features

DATE
01/20/2014

FIGURE
2

Path: \\Prl-srv3\GIS_Projects\202315_NEW YORK STATE DEPT OF ENVIRONMENTAL CON\0147462_NYSDECESWA11BRANDT AIRFLEXRIFS\GIS\map_docs\mxd\2014-RIreport\02 Site Map.mxd



NOTES:

1. ONSITE STRUCTURES SHOWN ARE THE RESULT OF A FIELD SURVEY COMPLETED BY YEC, INC ON AUGUST 25, 2011, MARCH 6, 2012, AND SEPTEMBER 27, 2013. OFF SITE STRUCTURES ARE APPROXIMATE AND ARE BASED ON AERIAL PHOTOGRAPHS FROM THE NYS GIS CLEARINGHOUSE WEBSITE.
2. SOIL GAS RESULTS SHOWN ARE FROM SAMPLES COLLECTED BY HDR IN NOVEMBER 2013.
3. GROUNDWATER SAMPLE RESULTS SHOWN ARE FROM SAMPLES COLLECTED BY HDR IN NOVEMBER 2013.
4. GROUNDWATER PROFILING RESULTS ARE FROM SAMPLES COLLECTED BY HDR IN FEBRUARY 2011.
5. THE SOURCE REMEDIATION AREA IS SUBJECT TO CHANGE AND MAY BE REFINED DURING THE PRE-DESIGN INVESTIGATION PRIOR TO IMPLEMENTING A REMEDY.
6. ISO-CONCENTRATION LINES DEPICT CONTAMINANT CONCENTRATIONS AT VARIABLE DEPTHS PROJECTED TO THE GROUNDWATER SURFACE.

Proposed In-situ Chemical Oxidation (ISCO) Groundwater Treatment Area

GRAPHIC SCALE

60 0 60 120

(IN FEET)

1 inch = 60 ft.

HDR

Henningson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

SUMMARY OF GROUNDWATER PCE ANALYTICAL RESULTS

BRANDT AIRFLEX

NYSDEC SITE NO. 152183

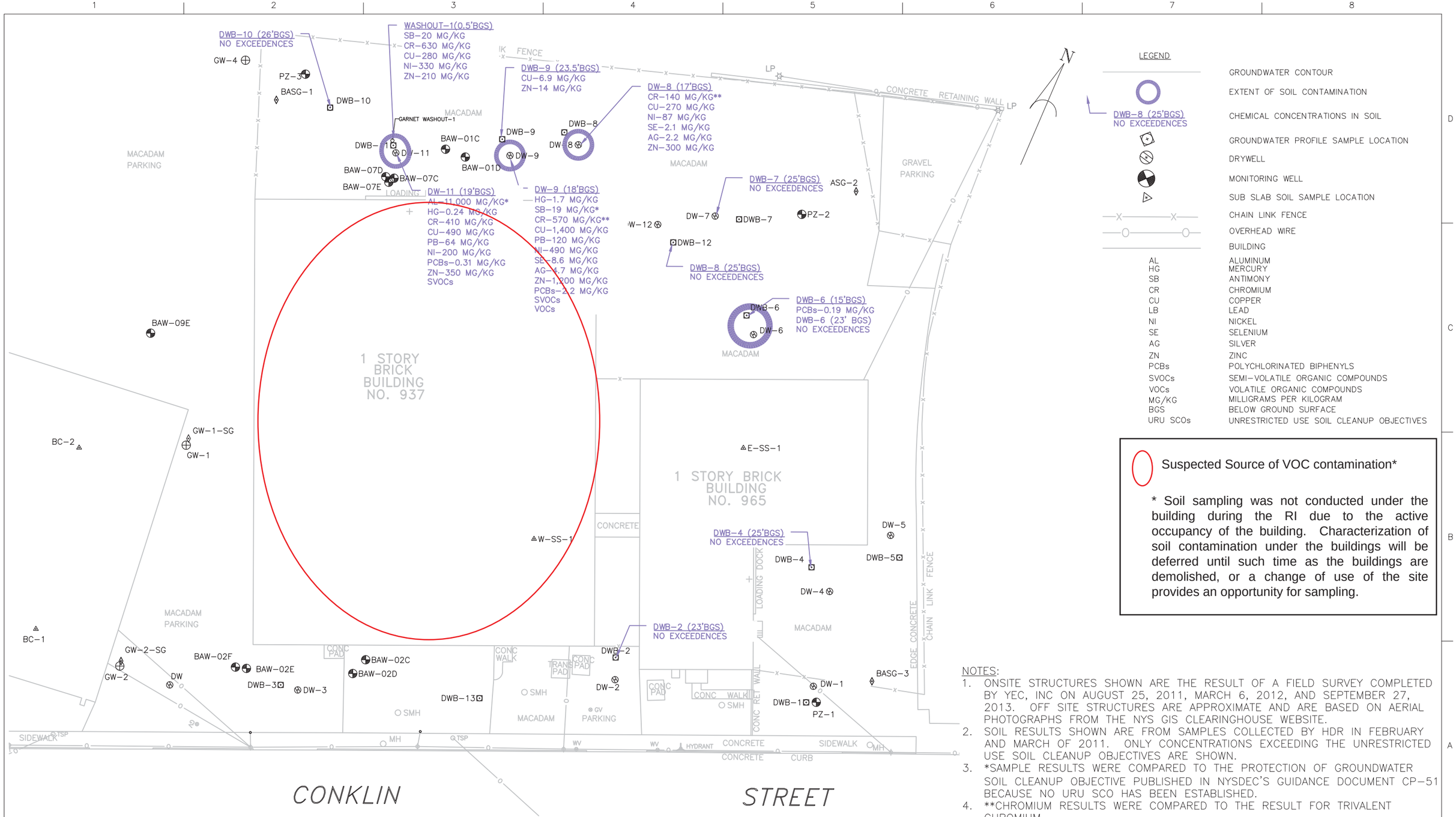
EAST FARMINGDALE, NEW YORK

DATE

DECEMER 2014

FIGURE

3a



LEGEND

	GROUNDWATER CONTOUR
	EXTENT OF SOIL CONTAMINATION
DWB-8 (25'BGS) NO EXCEEDENCES	CHEMICAL CONCENTRATIONS IN SOIL
	GROUNDWATER PROFILE SAMPLE LOCATION
	DRYWELL
	MONITORING WELL
	SUB SLAB SOIL SAMPLE LOCATION
	CHAIN LINK FENCE
	OVERHEAD WIRE
	BUILDING

AL	ALUMINUM
HG	MERCURY
SB	ANTIMONY
CR	CHROMIUM
CU	COPPER
LB	LEAD
NI	NICKEL
SE	SELENIUM
AG	SILVER
ZN	ZINC
PCBs	POLYCHLORINATED BIPHENYLS
SVOCs	SEMI-VOLATILE ORGANIC COMPOUNDS
VOCs	VOLATILE ORGANIC COMPOUNDS
MG/KG	MILLIGRAMS PER KILOGRAM
BGS	BELOW GROUND SURFACE
URU SCOs	UNRESTRICTED USE SOIL CLEANUP OBJECTIVES

Suspected Source of VOC contamination*

* Soil sampling was not conducted under the building during the RI due to the active occupancy of the building. Characterization of soil contamination under the buildings will be deferred until such time as the buildings are demolished, or a change of use of the site provides an opportunity for sampling.

NOTES:

1. ONSITE STRUCTURES SHOWN ARE THE RESULT OF A FIELD SURVEY COMPLETED BY YEC, INC ON AUGUST 25, 2011, MARCH 6, 2012, AND SEPTEMBER 27, 2013. OFF SITE STRUCTURES ARE APPROXIMATE AND ARE BASED ON AERIAL PHOTOGRAPHS FROM THE NYS GIS CLEARINGHOUSE WEBSITE.
2. SOIL RESULTS SHOWN ARE FROM SAMPLES COLLECTED BY HDR IN FEBRUARY AND MARCH OF 2011. ONLY CONCENTRATIONS EXCEEDING THE UNRESTRICTED USE SOIL CLEANUP OBJECTIVES ARE SHOWN.
3. *SAMPLE RESULTS WERE COMPARED TO THE PROTECTION OF GROUNDWATER SOIL CLEANUP OBJECTIVE PUBLISHED IN NYSDEC'S GUIDANCE DOCUMENT CP-51 BECAUSE NO URU SCO HAS BEEN ESTABLISHED.
4. **CHROMIUM RESULTS WERE COMPARED TO THE RESULT FOR TRIVALENT CHROMIUM.
5. FOR A LIST OF SVOCs AND VOCs EXCEEDING THE URU SCOs REFER TO TABLES 1 AND 2 OF THE FS REPORT.

GRAPHIC SCALE

40 0 40 80

(IN FEET)

1 inch = 40 ft.

Hennigson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

SOIL CONTAMINATED ABOVE SCOs

BRANDT AIRFLEX

NYSDEC SITE NO. 152183

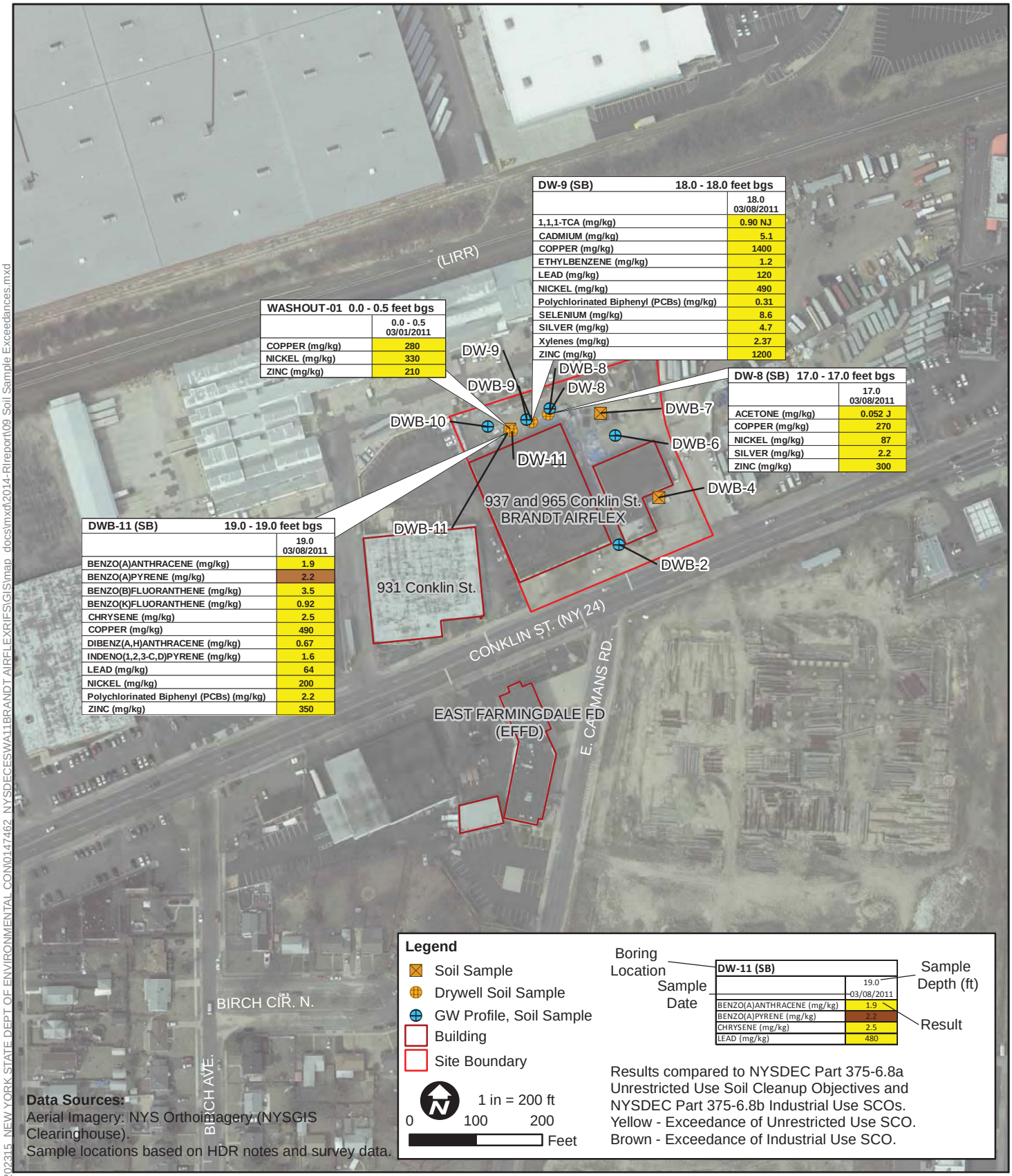
EAST FARMINGDALE, NEW YORK

DATE

DECEMBER 2014

FIGURE

4a



WASHOUT-01 0.0 - 0.5 feet bgs	0.0 - 0.5 03/01/2011
COPPER (mg/kg)	280
NICKEL (mg/kg)	330
ZINC (mg/kg)	210

DW-9 (SB) 18.0 - 18.0 feet bgs	18.0 03/08/2011
1,1,1-TCA (mg/kg)	0.90 NJ
CADMIUM (mg/kg)	5.1
COPPER (mg/kg)	1400
ETHYLBENZENE (mg/kg)	1.2
LEAD (mg/kg)	120
NICKEL (mg/kg)	490
Polychlorinated Biphenyl (PCBs) (mg/kg)	0.31
SELENIUM (mg/kg)	8.6
SILVER (mg/kg)	4.7
Xylenes (mg/kg)	2.37
ZINC (mg/kg)	1200

DW-8 (SB) 17.0 - 17.0 feet bgs	17.0 03/08/2011
ACETONE (mg/kg)	0.052 J
COPPER (mg/kg)	270
NICKEL (mg/kg)	87
SILVER (mg/kg)	2.2
ZINC (mg/kg)	300

DWB-11 (SB) 19.0 - 19.0 feet bgs	19.0 03/08/2011
BENZO(A)ANTHRACENE (mg/kg)	1.9
BENZO(A)PYRENE (mg/kg)	2.2
BENZO(B)FLUORANTHENE (mg/kg)	3.5
BENZO(K)FLUORANTHENE (mg/kg)	0.92
CHRYSENE (mg/kg)	2.5
COPPER (mg/kg)	490
DIBENZ(A,H)ANTHRACENE (mg/kg)	0.67
INDENO(1,2,3-C,D)PYRENE (mg/kg)	1.6
LEAD (mg/kg)	64
NICKEL (mg/kg)	200
Polychlorinated Biphenyl (PCBs) (mg/kg)	2.2
ZINC (mg/kg)	350

Legend

- Soil Sample
- Drywell Soil Sample
- GW Profile, Soil Sample
- Building
- Site Boundary

1 in = 200 ft

0 100 200 Feet

Boring Location

Sample Date

DW-11 (SB)	19.0 03/08/2011
BENZO(A)ANTHRACENE (mg/kg)	1.9
BENZO(A)PYRENE (mg/kg)	2.2
CHRYSENE (mg/kg)	2.5
LEAD (mg/kg)	480

Sample Depth (ft)

Result

Results compared to NYSDEC Part 375-6.8a Unrestricted Use Soil Cleanup Objectives and NYSDEC Part 375-6.8b Industrial Use SCOs.
Yellow - Exceedance of Unrestricted Use SCO.
Brown - Exceedance of Industrial Use SCO.

Data Sources:
Aerial Imagery: NYS Orthoimagery (NYSGIS Clearinghouse).
Sample locations based on HDR notes and survey data.

HDR

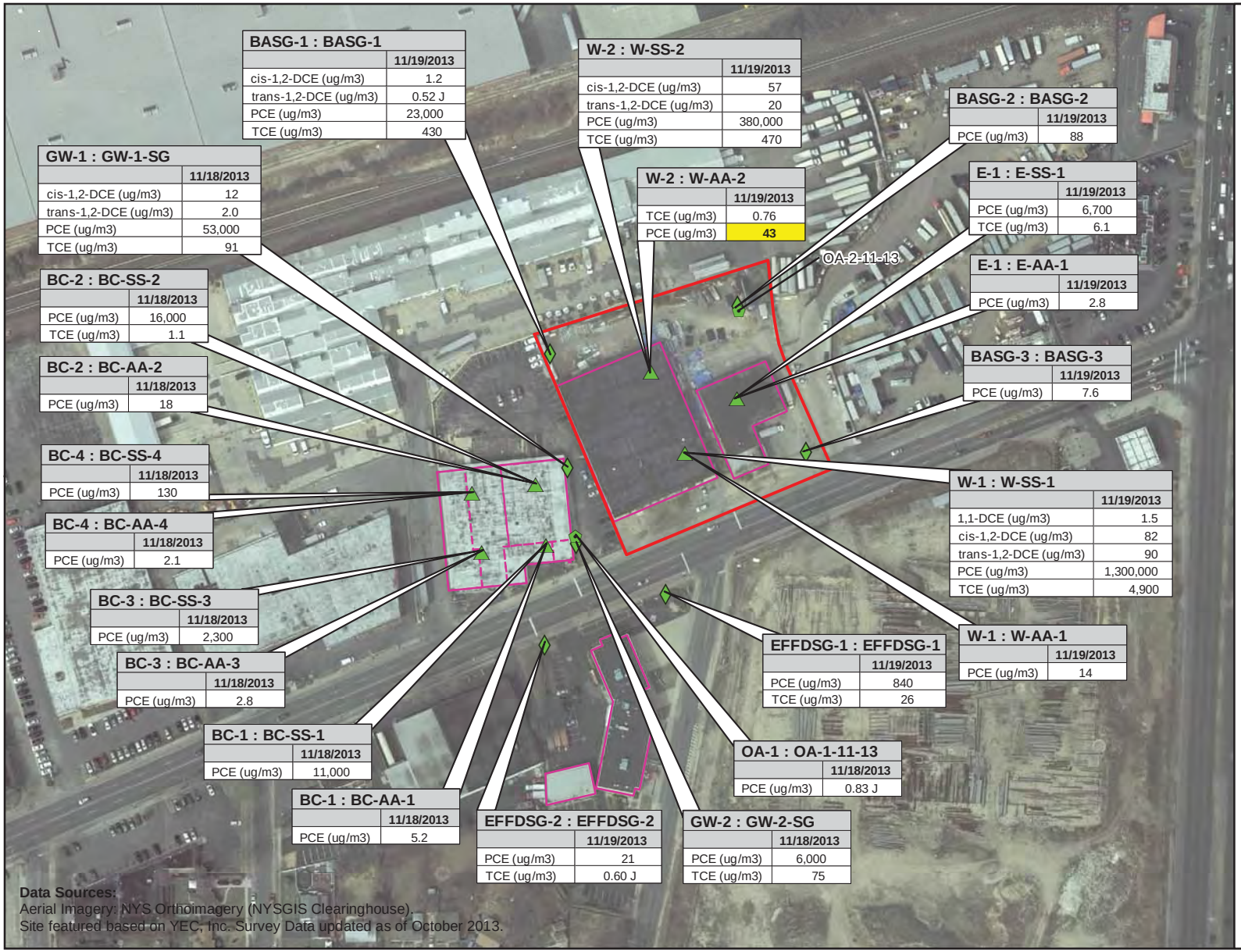
Brandt Airflex (NYSDEC Site # 152183)
937 & 965 Conklin Street
East Farmingdale, New York

Soil Sample Exceedances of NYSDEC Part 375 SCOs

DATE **01/20/2014**

FIGURE 4b

Path: \\Pit-svr3\gis_projects\202315_NEW YORK STATE DEPT OF ENVIRONMENTAL CON\0147462_NYSDECESWA11BRANDT AIRFLEX\FIFSIG\Smap_docs\mxd\2014-RIreport\09_Soil Sample Exceedances.mxd



Legend

- Permanent Soil Vapor Point
- Subslab Vapor Sample
- Outdoor Ambient Air Sample
- Site Boundary
- Building Footprint
- Interior Wall

Sample Location/ID

Result

W-2: W-AA-2	
PCE	43
TCE	0.76

Shortened Analyte Name

Abbreviated Chemical Names

1,1-DCE - 1,1-Dichloroethylene
cis-1,2-DCE - cis-1,2-Dichloroethylene
trans-1,2-DCE - cis-1,2-Dichloroethylene
PCE - Tetrachloroethylene
TCE - Trichloroethylene

Notes

Results compared to NYSDOH Soil Vapor Intrusion Guidance Document (10-2006) and PCE Factsheet (09-2013).

Note:
Only samples with exceedances or results are shown for the selected analytes. Analyte selection based on NYSDOH SVI Guidance Document standards.

0 100 200 Feet

1 in = 200 ft

Brandt Airflex (NYSDEC Site # 152183)

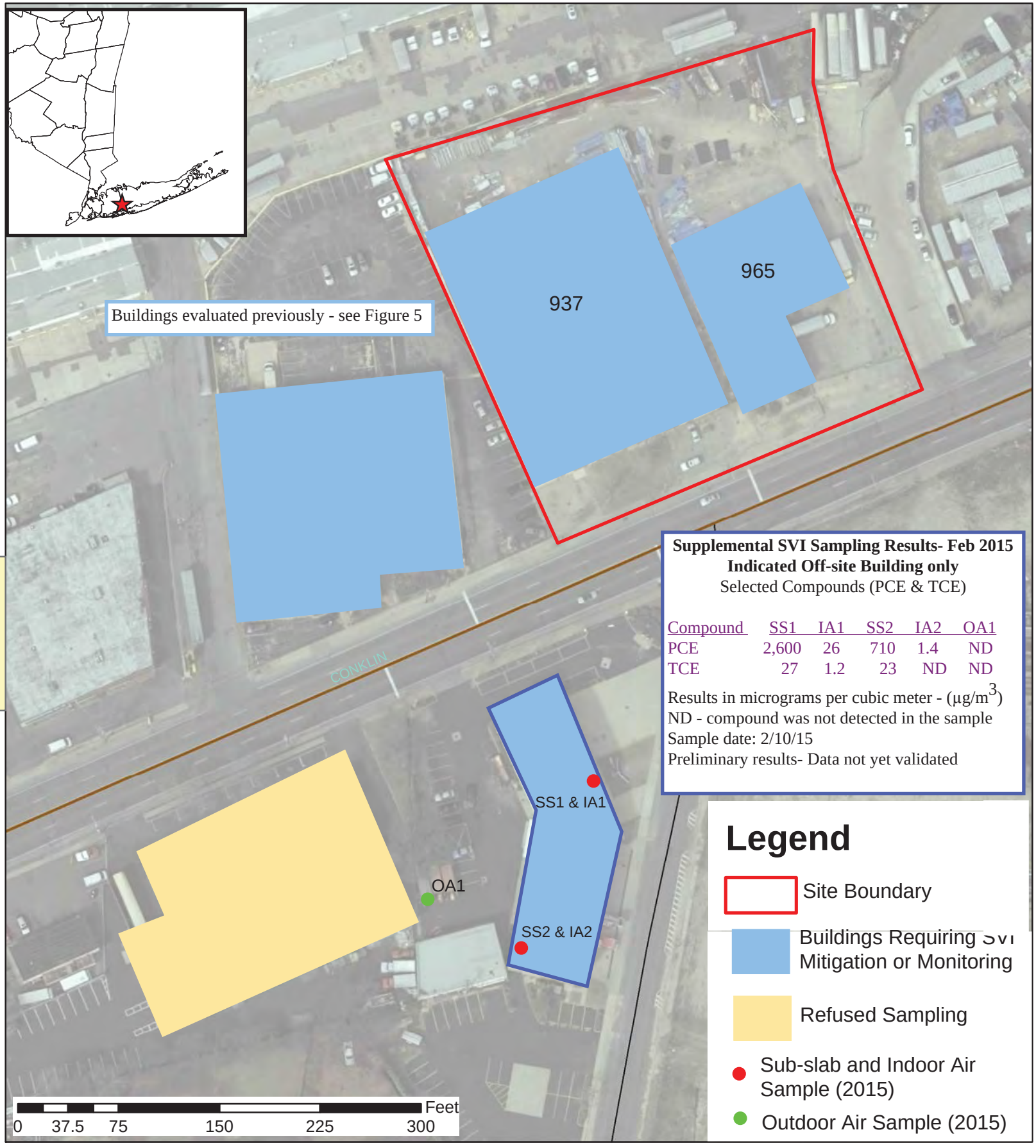
937 & 965 Conklin Street
East Farmingdale, New York

2013 Soil Vapor Sampling Results, Selected Compounds

DATE
02/10/2014

FIGURE
5

Path: \\prl-srv3\GIS_Projects\202315_NEW YORK STATE DEPT OF ENVIRONMENTAL CON\0147462_NYSDECESWA11BRANDT AIRFLEXRIFS\GIS\map_docs\mxd\2014-RIreport\11C Soil Gas Results - 2013.mxd



Supplemental SVI Sampling Results- Feb 2015
Indicated Off-site Building only
Selected Compounds (PCE & TCE)

Compound	SS1	IA1	SS2	IA2	OA1
PCE	2,600	26	710	1.4	ND
TCE	27	1.2	23	ND	ND

Results in micrograms per cubic meter - ($\mu g/m^3$)
ND - compound was not detected in the sample
Sample date: 2/10/15
Preliminary results- Data not yet validated

Legend

- Site Boundary
- Buildings Requiring SVI Mitigation or Monitoring
- Refused Sampling
- Sub-slab and Indoor Air Sample (2015)
- Outdoor Air Sample (2015)

N

New York State Department of Environmental Conservation
Brandt Airflex Site (class 2) Site No. 152183
937 & 965 Conklin St., East Farmingdale, NY 11735

2015 Supplemental Soil Vapor Intrusion (SVI) Sampling Results
Buildings Identified as Requiring Vapor Intrusion Mitigation and/or Monitoring

2/19/15
Figure 6

Buildings requiring soil vapor intrusion mitigation

Approximate Site Boundary

Approximate Area of Soil Vapor Remediation

N

1 STORY BRICK BUILDING NO. 931

1 STORY BRICK BUILDING NO. 937

1 STORY BRICK BUILDING NO. 965

PROCESS TREATMENT BUILDING

VACUUM WELLS

CONCRETE RETAINING WALL

GRAVEL PARKING

MACADAM PARKING

MACADAM

LOADING DOCK

CONCRETE

CHAIN LINK FENCE

EDGE CONCRETE

CONC RET WALL

CONC PAD

CONC WALK

TRANS PAD

SMH

GV

MH

TSP

WV

HYDRANT

SIDEWALK

CURB

GARNET WASHOUT-1

LOADING DOCK

GW-4 PZ-3 BASG-1 DWB-10 DWB-11 DWB-9 DWB-8 DW-11 DW-8 BAW-01C BAW-01D BAW-07D BAW-07C BAW-07E DW-7 DWB-7 PZ-2 BASG-2 DW-12 DWB-12 W-SS-2 DWB-6 DW-6 BAW-09E BC-4 BC-2 GW-1-SG GW-1 E-SS-1 DW-5 DWB-4 DWB-5 DW-4 W-SS-1 BC-3 BC-1 GW-2-SG BAW-02F BAW-02E BAW-02C BAW-02D GW-2 DW DWB-3 DW-3 DWB-13 DWB-2 DW-2 BASG-3 DW-1 DWB-1 PZ-1 GW-3

CONKLIN STREET

LEGEND

- GROUNDWATER PROFILE SAMPLE LOCATION
- DRYWELL
- MONITORING WELL
- SUB SLAB SOIL SAMPLE LOCATION
- SOIL GAS SAMPLE LOCATION
- CHAIN LINK FENCE
- OVERHEAD WIRE
- BUILDING
- LIGHT POLE
- VACUUM WELLS
- VACUUM TRANSMISSION PIPING

GRAPHIC SCALE

40 0 40 80

(IN FEET)

1 inch = 40 ft.

NOTES:

1. LAYOUT IS CONCEPTUAL AND THE FINAL NUMBER AND LOCATION OF VAPOR EXTRACTION WELLS WILL BE DETERMINED DURING THE REMEDIAL DESIGN. RADIUS OF INFLUENCE WAS CALCULATED TO BE 100 FEET IN THE UPPER SAND AND GRAVEL AQUIFER USING A BLOWER CAPACITY OF 150 CFM.
2. SOIL VAPOR EXTRACTION WELLS WERE ASSUMED TO HAVE 5 FEET SCREEN AND DEPTH OF 10 FEET BELOW GROUND SURFACE.

HDR

Henningson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

CONCEPTUAL SOIL VAPOR EXTRACTION SYSTEM LAYOUT

BRANDT AIRFLEX

NYSDEC SITE NO. 152183

EAST FARMINGDALE, NEW YORK

DATE

DECEMBER 2014

FIGURE

7A

Buildings requiring soil vapor intrusion mitigation

CHAIN LINK FENCE
CONCRETE RETAINING WALL
LP
GW-4
PZ-3
BASG-1
DWB-10
MACADAM
GARNET WASHOUT-1
DWB-11
DW-11
BAW-01C
DWB-9
DW-9
DWB-8
DW-8
BAW-01D
MACADAM PARKING
EQUIPMENT ENCLOSURE
BAW-07D
BAW-07C
BAW-07E
LOADING DOCK
MACADAM
GRAVEL PARKING
BASG-2
DW-12
DW-7
DWB-7
PZ-2
DWB-12
W-SS-2
BAW-09E
1 STORY BRICK BUILDING NO. 937
EQUIPMENT ENCLOSURE
DWB-6
DW-6
MACADAM
BC-4
GW-1-SG
GW-1
BC-2
1 STORY BRICK BUILDING NO. 931
BC-3
BC-1
EXTRACTION POINT
W-SS-1
E-SS-1
1 STORY BRICK BUILDING NO. 965
CONCRETE
DW-5
DWB-4
DWB-5
LOADING DOCK
DW-4
MACADAM
EDGE CONCRETE
CHAIN LINK FENCE
MACADAM PARKING
GW-2-SG
BAW-02F
BAW-02E
BAW-02C
BAW-02D
CONC PAD
CONC WALK
TRANS PAD
CONC PAD
DWB-2
GW-2
DW
DWB-3
DW-3
DWB-13
SMH
DW-2
CONC PAD
CONC WALK
SMH
DW-1
DWB-1
PZ-1
BASG-3
CONC RET WALL
GW-3
MACADAM
GV
PARKING
CONCRETE
SIDEWALK
TSP
MH
TSP
WV
WV
HYDRANT
CONCRETE
SIDEWALK
MH
CONCRETE
CURB
CONCRETE
CURB

CONKLIN STREET

LEGEND

- GROUNDWATER PROFILE SAMPLE LOCATION
- DRYWELL
- MONITORING WELL
- SUB SLAB SOIL SAMPLE LOCATION
- SOIL GAS SAMPLE LOCATION
- CHAIN LINK FENCE
- OVERHEAD WIRE
- BUILDING
- LIGHT POLE
- EXTRACTION POINT
- HEADER PIPE
- EQUIPMENT ENCLOSURE

GRAPHIC SCALE
40 0 40 80
(IN FEET)
1 inch = 40 ft.

NOTES:
1. LAYOUT IS CONCEPTUAL AND THE FINAL NUMBER AND LOCATION OF EXTRACTION POINTS WILL BE DETERMINED DURING THE REMEDIAL DESIGN.

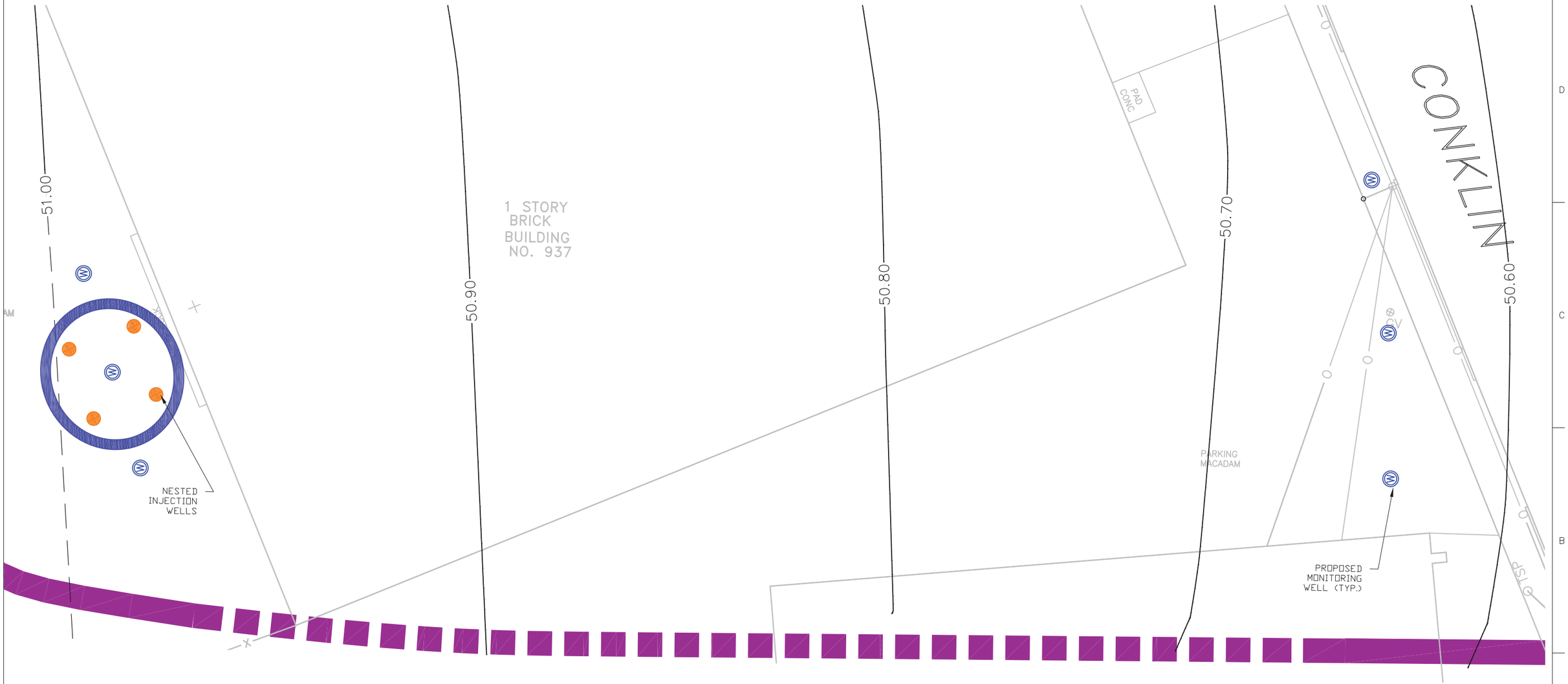
HDR
Hennlngson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

CONCEPTUAL SUB-SLAB DEPRESSURIZATION SYSTEM LAYOUT

BRANDT AIRFLEX
NYSDEC SITE NO. 152183
EAST FARMINGDALE, NEW YORK

DATE
DECEMBER 2014

FIGURE
7B



LEGEND

- GROUNDWATER ELEVATION CONTOUR (FEET AMSL) (DASHED WHERE INFERRED)
- ESTIMATED 5 UG/L LIMIT OF PCE (DASHED WHERE INFERRED)
- PROPOSED SOURCE TREATMENT AREA (ISCO)
- CHAIN LINK FENCE
- OVERHEAD WIRE
- BUILDING
- NESTED INJECTION POINTS (4 WELLS PER POINT)
- PROPOSED PERFORMANCE MONITORING WELL

GRAPHIC SCALE

20 0 20 40

(IN FEET)

1 inch = 20 ft.

NOTES:

1. ONSITE STRUCTURES SHOWN ARE THE RESULT OF A FIELD SURVEY COMPLETED BY YEC, INC ON AUGUST 25, 2011, MARCH 6, 2012, AND SEPTEMBER 27, 2013. OFF SITE STRUCTURES ARE APPROXIMATE AND ARE BASED ON AERIAL PHOTOGRAPHS FROM THE NYS GIS CLEARINGHOUSE WEBSITE.
2. ALTERNATIVE INCLUDES THE INSTALLATION OF INJECTION WELLS AT FOUR DEPTHS TO TREAT THE FULL DEPTH OF CONTAMINATION.
3. LAYOUT IS CONCEPTUAL AND FINAL NUMBER OF WELLS AND LOCATIONS WILL BE DETERMINED DURING THE REMEDIAL DESIGN.
4. SCREEN LOCATIONS FOR NESTED WELLS WILL BE SHALLOW (30–50' BGS), INTERMEDIATE (55–75' BGS), DEEP (810–100' BGS), AND VERY DEEP (105–125' BGS)

HDR

Henningson, Durham & Richardson, Architecture and Engineering, P.C. In Association with HDR Engineering, Inc.

IN SITU CHEMICAL OXIDATION
NYSDEC SITE NO. 152183
EAST FARMINGDALE, NEW YORK

DATE

DECEMBER 2014

FIGURE

8

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Brandt Airflex
State Superfund Project
East Farmingdale, Suffolk County New York
Site No. 152183

The Proposed Remedial Action Plan (PRAP) for the Brandt Airflex site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 26, 2015. The PRAP outlined the remedial measure proposed for the contaminated groundwater, soil vapor and soil at the Brandt Airflex site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 18, 2015, which included a presentation of the remedial investigation, feasibility study (RI/FS) for the Brandt Airflex site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 28, 2015.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: Has the company which owns the site been cooperative and are they paying for any of this work?

RESPONSE 1: While the company has been cooperative, they declined to conduct the investigation. The Department conducted the investigation and will be seeking cost recovery from the responsible party.

COMMENT 2: Who will do the cleanup?

RESPONSE 2: Once the record of decision (ROD) is issued, the responsible party will be given the option to implement the selected remedy. If they refuse, or are unable to implement the remedy, the Department will proceed with State funds and seek cost recovery at a later date.

COMMENT 3: Will the state step in to address off-site vapor issues if the responsible party does not?

RESPONSE 3: Yes, see Response 2 above.

COMMENT 4: The Town of Babylon requested that they be copied on any IC's or EC's that are placed on the property because they are keeping their own database for sites in the Town.

RESPONSE 4: The Department will forward a copy of the environmental easement to the town.

COMMENT 5: The Town is looking at possible redevelopment in the area of this site.

RESPONSE 5: Comment is noted.

COMMENT 6: When will the 2-foot soil cover be placed on the site?

RESPONSE 6: A site cover (buildings and paved parking area) currently exists and will be maintained. Should redevelopment occur, a two foot soil cover (or buildings, etc.) must be placed over any exposed soil that exceeds the restricted residential soil cleanup objectives.

APPENDIX B

Administrative Record

Administrative Record

Brandt Airflex
State Superfund Project
East Farmingdale, Suffolk County New York
Site No. 152183

1. Proposed Remedial Action Plan for the Brandt Airflex site, dated February 2015, prepared by the Department.

2. Referral Memorandum dated July 23, 2010 for the development and implementation of an on-Site Remedial Investigation/ Feasibility Study and Interim Remedial Measures, at or near the Site.

3. Remedial Investigation Report, June 2014, prepared by Henningson, Durham & Richardson Architecture and Engineering, PC. (HDR)

4. Feasibility Study Report, December 2014, prepared by Henningson, Durham & Richardson Architecture and Engineering, PC.

5. Supplemental Feasibility Study Report, January 2015, prepared by the Department