Proposed Plan

Alexander Cleaners Site

137 Broadway

Hillsdale Borough, Bergen County

New Jersey Department of Environmental Protection **February 2018**

PURPOSE OF PROPOSED PLAN

This Proposed Plan identifies the Preferred Alternative for addressing the contaminated soil and ground water at the former Alexander Cleaners site (Site) and provides the rationale for this preference. The Preferred Alternative calls for demolishing the existing structure on the property which will allow access to the "PCE source area" or hotspot to complete an alternative form of excavation using large diameter augers (LDA). Excavated soil from the source area would be dewatered, then loaded onto trucks and hauled to an acceptable disposal facility. Upon completion of soil excavation, the area will be backfilled to match existing exterior site grade and will be paved with asphalt. Finally, post remediation groundwater monitoring for five (5) years is included with this remedial alternative.

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:
February 23, 2018 to March 23, 2018
NJDEP will accept written comments on the Proposed Plan during the public comment period.

For more information, see the Administrative Record at the following location:

Hillsdale Municipal Building
380 Hillsdale Avenue
Hillsdale, NJ 07642
ATTN: Jonathan DeJoseph, Administrator
201-666-4800 x 1504
jdejoseph@hillsdalenj.org

Hours: Monday – Friday 8 AM to 4 PM

The Proposed Plan includes a description of the Preferred Alternative, and also provides a summary of all other cleanup alternatives evaluated for this Site. This proposed plan was developed by the New Jersey Department of Environmental Protection (NJDEP). NJDEP will select a final remedy for the Site after reviewing and considering all information submitted during the 30-day public comment period. NJDEP may modify the Preferred Alternative or select another response action presented in this Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan.

This Proposed Plan summarizes information that can be found in greater detail in the September 2017 Remedial Alternative Selection and Evaluation Report (referred to here as the "RASE"), and August 2016 Remedial Investigation Report. NJDEP encourages the public to review these and other documents in order to gain a more comprehensive understanding of the Site and the investigations and studies that have been conducted there.

SITE BACKGROUND

The Site (Site Remediation Program Interest #015123) is located at 137 Broadway in Hillsdale Borough, Bergen County, New Jersey. The property is identified as Tax Block 1102, Lot 4, and is approximately 0.1928 acres in size. Broadway fronts the property to the east and Orchard Street fronts the property to the north. A commercial property, occupied by Bank of America, borders the property to the south and west. Beyond the Bank of America property are the New Jersey Transit rail lines, and a municipal park (Memorial Park).

The subject property is developed with a two-story commercial building which is surrounded by a paved parking lot on the eastern, northern and western sides. Alexander Cleaners, a former dry-cleaning establishment with an on-site dry-cleaning plant, operated at this location from sometime between the late 1960's and early to mid-1970's, until 1996.

One tenant, Sotheby's International Realty, presently occupies the first floor of the property building and uses the space as a real estate sales office. The basement is currently used for storage of the real estate office's unused furniture and archived files.

A subsurface depressurization system/soil vapor extraction (SVE) system was installed in the basement of the building in 2002, and augmented in 2003. The system is maintained by the New Jersey Department of Environmental Protection (NJDEP) to mitigate indoor air concerns. In addition, the basement walls were sealed in 2004 to reduce vapor intrusion into the basement. The second floor of the building is currently unoccupied.

Contaminants of concern (COCs) associated with this Site consist predominantly of tetrachloroethylene (also known as perchloroethylene [PCE]), which is attributed to the former dry-cleaning operations conducted onsite, and degradation products of PCE, including trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2-DCE), and vinyl chloride (VC). These compounds have been detected in both soil and groundwater at the Site.

PRIOR SITE INVESTIGATIONS AND REMEDIAL ACTIVITIES

Previous site investigations and remedial investigation activities conducted by the then property owner and the NJDEP indicated that a chlorinated volatile organic compound (CVOC) plume was emanating from the former Alexander Cleaners property. In November 1995, sampling of onsite monitor wells revealed PCE, TCE, cis-1-2- dichloroethene and vinyl chloride was present in groundwater at concentrations above the NJDEP Ground Water Quality Standards (GWQS).

In 1998, three shallow monitor wells, and one deep monitor well were installed. A complete round of groundwater sampling was conducted on all newly installed and existing monitoring wells both on- and off- site. Free-phase Dense Non-Aqueous Phase Liquid (DNAPL) was reportedly observed in the onsite basement monitor well, MW-5. Additionally, all onsite monitoring wells except for the deep monitoring wells MW-1D and MW-7D, installed during this time period, exhibited concentrations of PCE and TCE.

Based on the aforementioned sampling results, the NJDEP engaged an Emergency Services Contractor to install a subsurface depressurization system/SVE system to mitigate PCE in the indoor air. Subsequent indoor air monitoring indicated that PCE concentrations in the building interior air samples were still exceeding the NJDEP Indoor Air Screening Levels. The SVE system was modified by adding an additional extraction point, in addition to improvements made to the original SVE system. The updated SVE system continues to be in operation, and is monitored and maintained by a contractor under contract with the NJDEP.

ON-SITE REMEDIAL INVESTIGATION

In 2015, H2M was contracted by the NJDEP to expand on the previous investigations and further delineate the PCE plume, as well as to evaluate remedial alternatives for the source area beneath the basement floor of the building.

For the remedial investigation, additional monitoring wells and soil borings were installed and sampled both on-site, and off-site. Based on the findings of H2M's 2015-2016 Remedial Investigation, as well as results from prior investigations, free phase DNAPL is likely to be present beneath the western part of the building. Significantly elevated concentrations of PCE were confirmed to be present in soil at a concentration as high as 510,000 milligrams per kilogram (mg/kg), at a depth of 8-8.5 feet beneath the basement slab (Non-Residential Direct Contact Soil Remediation Standard for PCE is 5 mg/kg). The below building soils are acting as a continuing source of the CVOC contamination impacting groundwater and affecting vapor intrusion inside the on-site building. The vertical extent of CVOCs in soil beneath the basement has not been delineated. During the RI, sampling could not be performed to depths deeper than 10 feet inside the building because of limitations in the type of drilling equipment that could be used in the basement and due to low ceiling height and restrictions on vertical clearance. Therefore, to accurately estimate the size, dimensions or volume of the "PCE source area", additional investigation under the basement of the building is needed.

Groundwater sampling conducted below the western portion of the site building contained elevated levels of PCE at 210,000 micrograms per liter (µg/L) (NJDEP Class IIA Groundwater Quality Standard for PCE is 1.0 µg/L). Additional nearby groundwater samples from below the western portion of the site building also contained significantly elevated PCE concentrations at 130,000 µg/L and 180,000 µg/L. These concentrations approach the pure-phase solubility of PCE which is 200,000 µg/L. Additionally, groundwater samples collected from an outdoor monitoring well on the western portion of the property, which was installed at a depth of approximately 8 feet below the basement floor slab, contained PCE at 7,600 µg/L. Accordingly, the on-site CVOC groundwater DNAPL plume has not been fully delineated due to constraints associated with collecting soil and groundwater samples in the basement of the onsite structure.

More detailed findings from the Remedial Investigation are discussed in the Remedial Investigation Report (RIR) prepared by H2M, and submitted to NJDEP in August 2016.

OFF-SITE REMEDIAL INVESTIGATIONS

For the remedial investigation, additional monitoring wells and soil borings were installed off-site at the Bank of America property and at the Borough's Memorial Park. The dissolved CVOC groundwater contaminant plume extends off-site to the Bank of America property within the shallow groundwater zone, but was not observed in the deep flow zone. PCE and TCE are present at concentrations above the NJDEP Class II-A Groundwater Quality Standard (GWQS). PCE and TCE are also present in a monitoring well located in the parking lot of the Bank of America property south of Alexander Cleaners Site at concentrations above the NJDEP GWQS and above the Vapor Intrusion Groundwater Screening Level (VI-GWSL).

More detailed findings from the Remedial Investigation are discussed in the Remedial Investigation Report (RIR) prepared by H2M, and submitted to NJDEP in August 2016.

REMEDIAL ALTERNATIVES

This section describes the identification and screening of the potential remedial technologies and process options to address the "PCE source area" or hotspot at the Alexander Cleaners Site. The area of highest CVOC contamination is concentrated beneath the western portion of the basement area of the building. Based on the significantly elevated concentrations of PCE detected in soil and groundwater at this location, DNAPL is believed to be present. The groundwater contaminant plume migrating away from the Site is not being addressed at this time. The current focus is to remediate the source area as an interim remedial measure and protect receptors in the most technically effective and cost-efficient manner.

The general response actions evaluated in the Remedial Alternatives Selection and Evaluation Report for the "PCE source area/hot spot" are listed below:

- Alternative No. 1
  No Further Action
- Alternative No. 2
  Limited Action Alternative
- Alternative No. 3A
  Vacuum-Enhanced Fluid Recovery, Soil Excavation, Transport and Disposal
- Alternative No. 3B
  Demolition, Soil Excavation, Transport and Disposal
- Alternative No. 3C
  Demolition, Large Diameter Auger (LDA) Soil Excavation, Transport and Disposal
- Alternative No. 4
  Soil Vapor Extraction
- Alternative No. 5
  In-Situ Enhanced Bioremediation
- Alternative No. 6
  In-Situ Chemical Oxidation (ISCO)
- Alternative No. 7
  In-Situ Chemical Reduction using Zero Valance Iron Metals
- Alternative No. 8
  In-Situ Thermal Remediation

Technology types and processes are identified for each general response action identified above. Each response action under consideration has been reviewed relative to the following criteria: (1) Effectiveness of the remedial technology to achieve the remedial action

objectives; (2) Ability to reduce toxicity, contaminant mobility or volume; (3) Risk minimization; (4) Ease of implementation; (5) Potential to impact receptors; and (6) the relative cost of the response action.

Each of the response actions listed above are described and evaluated in detail in the Remedial Alternatives Selection and Evaluation (RASE) Report, dated September 2017.

PREFERRED REMEDIAL ALTERNATIVE

Based on the evaluation of the viable remedial alternatives against the remedial action goals, NJDEP is proposing Remedial Alternative No. 3C: Demolition, LDA Soil Excavation, Transport, and Disposal to address PCE source area remediation at the former Alexander Cleaners site.

Alternative No. 3C - Demolition, LDA Soil Excavation, Transport and Disposal

This remedial action involves demolishing the existing structure on the property which will allow access to the "PCE source area" or hotspot to complete an alternative form of excavation using large diameter augers (LDA). Demolition activities include building demolition and debris removal of the structure, and removal of the slab, footings, and foundation in the western portion of the building. Several permits will need to be obtained before starting work. Demolition of the building will be completed prior to performing further source area delineation and soil excavation activities.

Pre-excavation soil borings will be required to assess the total depth of the excavation and vertically delineate the contamination prior to soil removal. Soil sampling will also be performed to pre-characterize the material to be removed for handling and disposal. Additionally, standard penetration tests may also need to be performed to evaluate site soil conditions for soil removal and backfill placement.

Groundwater in the area to be excavated was encountered during the Remedial Investigation at approximately 10 feet below the exterior site grade (or approximately 2 feet below the basement slab elevation). To perform LDA excavation with a shallow groundwater table, a slightly larger steel casing will be advanced along with the auger to maintain the excavation sidewalls from collapse and control groundwater infiltration. To achieve complete coverage of the excavation area using the LDA method, auger holes will have an overlap of 17% with adjacent holes. Once all contaminated material is removed each auger hole will be backfilled with flowable fill such as cement-like slurry.

The excavation is expected to reach a depth of at least 28 feet below surface grade. Soil from the source area would be excavated and stockpiled in a lined temporary staging area, the material would be allowed to drain excess water into a contained area. The water would then be pumped into a vacuum truck where it would be taken to a disposal facility licensed to accept the water. Subsequently, the soil would then be loaded onto trucks and hauled to an acceptable disposal facility. If the material is still too wet for shipment, the material will be amended with Portland cement or kiln dust to meet transportation and facility acceptance criteria.

Upon completion of soil excavation, the void space that was the basement area will be backfilled to match existing exterior site grade using certified clean fill. The entire area formerly occupied by the footprint of the building will be paved with asphalt. Additionally, post remediation groundwater monitoring for five (5) years is included with this remedial alternative.

The estimated cost to implement the demolition, soil excavation, transport, and disposal approach is $1,710,384.00. A breakdown of the costs associated with the various tasks to implement Remedial Alternative No. 3C is provided in **Table 1**. Groundwater from monitoring wells, both onsite and offsite, will be monitored and sampled for five (5) years, on a semi-annual schedule, to confirm the effectiveness of the removal of the source of CVOCs. The wells will be sampled and analyzed for volatile organic compounds using the U.S. Environmental Protection Agency's SW-846 Test Method 8260c. The costs for performing the groundwater monitoring are detailed in **Table 2**. The total of the remedial action implementation including the 5-year semi-annual groundwater monitoring is estimated to be $1,880,059.00.

Demolition, soil excavation using large diameter augers, and transportation with off-site disposal of contaminated soil is a viable and effective method of source area remediation for the Alexander Cleaners Site. This remedial alternative is readily implementable, and can be accomplished using demonstrated construction methods to achieve a reduction in toxicity and volume of contaminant mass

within a relatively short period. Alternative No. 3C has multiple advantages compared to other remediation alternatives. Due to the inclusion of building demolition, it will allow for vertical delineation of the source area to enable final design, and complete the source area removal. With the other alternatives (i.e., Nos. 3A, 5, 6 and 7), if vertical delineation cannot be accomplished due to constraints attributable to the on-site building or is determined to be deeper than estimated, remediation of the source area cannot be successfully implemented to the required depth. LDA excavation can be performed effectively to deeper depth if necessary. Another advantage of Alternative 3C over conventional excavation is that LDA excavation eliminates the need to dewater the excavation area, thus alleviating the need for onsite contaminated water treatment and disposal. Use of casings with LDA excavation will also alleviate the need for conventional sheeting and shoring. Additionally, if significant levels of additional contamination are discovered during vertical delineation, the concentrations at depth may significantly increase the cost of Alternatives 3A, 3B, 5, 6, and 7, particularly if significant additional contamination is discovered below the investigated depths. Remedial Alternative 3C provides long term protection to human health and the environment, and there are no impacts to ecological receptors or human population.

COMMUNITY PARTICIPATION

NJDEP encourages the public to gain a more comprehensive understanding of the site and the activities that have been conducted there. NJDEP has established a 30-day public comment period to solicit citizens' opinions on the Proposed Plan. The public comment period will run from **February 23, 2018 through March 23, 2018**.

This Proposed Plan is open for public review, and public comment on the proposed remedial action will be solicited before any final decision on the remedy for Alexander Cleaners is made.

For further information on the Alexander Cleaners site, or to provide written or oral comments on the Proposed Plan, please contact:

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Alexander Cleaners Glossary

Chlorinated Volatile Organic Compound (CVOC): Chlorine and Carbon-containing chemicals that evaporate readily at room temperature. Examples of products that contain CVOCs include dry cleaning fluid and degreasing agents.

Dense Non-Aqueous Phase Liquid (DNAPL): A groundwater contaminant present in a separate immiscible phase when in contact with water. Physical and chemical differences between water and DNAPL prevent the compounds from mixing. DNAPL compounds have a density greater than water which causes the compounds to sink deep into groundwater.

Granular Activated Carbon (GAC): Type of filtration commonly used to adsorb volatile organic compounds, following this treatment, contaminants have been removed from the aqueous solution and groundwater can be discharged into local storm water sewers, under specific permits.

Groundwater: Subsurface water that fills pores between materials such as sand, soil or gravel.

Groundwater Quality Standards: The Class II-A GWQS for PCE is 1.0 µg/L

In-Situ: Treatment method refers to those actions that treat soil contaminants in place. In-Situ treatment of VOC contaminated soil generally includes methods to separate and remove contaminants or to degrade contaminants in place. Since minimal or no removal or handling is required for this method, the in-situ process tends to be more economical then ex-situ processes but may require a longer time to meet remedial objectives.

Large Diameter Auger (LDA): A helical bit attached to drilling equipment designed for boring holes

Micrograms per Liter (µg/L): Units of concentration used to express the levels of groundwater contamination at a site undergoing a *Remedial Investigation* or a cleanup.

Milligrams per Kilogram (mg/Kg): Units of concentration used to express the levels of soil contamination at a site undergoing a *Remedial Investigation* or a cleanup.

Monitoring Well: Monitoring wells provide access to ground water in order to get information about site conditions, such as the extent and type of ground water contamination, soil types, depth to ground water and direction of ground water flow.

Perchloroethylene (PCE): Another name for tetrachloroethylene, also known as "Perc." This chlorinated volatile organic compound (CVOC) has historically been used as a dry-cleaning fluid and degreasing agent.

Remedial Investigation: An in-depth study designed to gather data necessary to determine the nature and extent of contamination at a site and establish criteria for addressing it.

Remediate: To remedy or clean up.

Subsurface Depressurization System/Soil Vapor Extraction System (SVE): A device that prevents vapors in the soil beneath a building from entering the structure and contaminating the indoor air. It ventilates the soil directly below the basement floor or slab and diverts the vapors away from the building.

Vadose Zone: The portion of the subsurface above the ground water table. It is also referred to as the "unsaturated zone." The pores within the soil and rock in this zone contain air/vapor as well as water.

Vapor Intrusion Groundwater Screening Level: The NJDEP vapor intrusion screening levels listed in Tables 1 through 3 of the *Vapor Intrusion Screening Levels* (March 2013).

Vapor Intrusion: Occurs when gases from VOC-contaminated soil or ground water seep through cracks and holes in the foundations or slabs of buildings and accumulate in basements, crawl spaces and/or living areas.

Vacuum Enhanced Fluid Recovery: An extraction method that applies a vacuum to a monitoring or recovery well, while simultaneously pumping liquid, to enhance the recovery of vapors as well as groundwater impacted by VOCs and non-aqueous phase liquids.

Volatile Organic Compound (VOC): Carbon-containing chemicals that evaporate readily at room temperature. Examples of products that contain VOCs include gasoline, dry cleaning fluid and degreasing agents.

Table 1
Cost Estimate for Remedial Alternative No. 3C - Demolition, LDA Soil Excavation, Transport & Disposal
Alexander Cleaners Site (PI #015123), Hillsdale, Bergen County, New Jersey

Building Demolition & Site Work Preparation	**Unit Cost**	**Unit**	**Quantity**	**Total**
Mobilization	$ 5,000.00	Ea.	1	$ 5,000.00
Cut and Cap Water Line	$ 1,000.00	Ea.	1	$ 1,000.00
Cut and Cap Gas line	$ 1,500.00	Ea.	1	$ 1,500.00
Building Demolition & Debris Removal (Non-hazardous)	$ 55,000.00	L.S.	1	$ 55,000.00
Footings Removal	$ 10,000.00	L.S.	1	$ 10,000.00
Subtotal:				**$ 72,500.00**
Additional Delineation & Initial GW Extraction	**Unit Cost**	**Unit**	**Quantity**	**Total**
Mobilization/Demobilization	$ 4,000.00	Ea.	1	$ 4,000.00
Delineation Soil Borings (Double cased)	$ 65.00	Ea.	240	$ 15,600.00
Waste classification samples	$ 1,250.00	Ea.	4	$ 5,000.00
Soil & Groundwater Sample Analysis	$ 650.00	Ea.	30	$ 14,000.00
Soil Delineation Samples	$ 650.00	Day	30	$ 13,500.00
Subtotal:				**$ 38,600.00**
Large Diameter Auger Excavation	**Unit Cost**	**Unit**	**Quantity**	**Total**
Mobilization/Demobilization/Site Preparation (staging area, erosion control, stockpile pad, etc.)	$ 75,000.00	Ea.	1	$ 75,000.00
Auger Soils/Backfill Augured Holes (flowable fill)	$ 460,000.00	Ea.	1	$ 460,000.00
Post-Excavation Sampling	$ 100.00	Ea.	25	$ 2,500.00
Subtotal:				**$ 537,500.00**
Transportation and Disposal	**Unit Cost**	**Unit**	**Quantity**	**Total**
Waste Disposal - Soil [1,500 tons] - (T&D)				
- Non-Hazardous Soil	$ 90.00	Ton	375	$ 33,750.00
- RCRA Hazardous Soil - Landfill	$ 285.00	Ton	675	$ 192,375.00
- RCRA Hazardous Soil – Incineration	$ 575.00	Ton	450	$ 258,750.00
Waste Disposal - Liquids	$ 3.15	Gal	5,000	$ 15,750.00
Subtotal:				**$ 500,625.00**
Backfill/Restoration	**Unit Cost**	**Unit**	**Quantity**	**Total**
Concrete Retaining Wall	$ 135.00	LF	70	$ 9,450.00
Certified Clean fill	$ 30.00	Ton	350	$ 10,500.00
Paving (4-inch Asphalt Cover)	$ 3.25	SF	3,200	$ 10,400.00
Subtotal:				**$ 30,350.00**
Total Construction Costs:				**$ 1,179,575.00**
Engineering/PM/CM (25%):				**$ 294,894.00**
Contingency (20%):				**$ 235,915.00**
Present Value for 5 Year GW Monitoring (10 Events):				**$ 169,675.00**
Total Capital Cost:				**$ 1,880,059.00**

Notes:

1. Interest rate of 5% use for Present Value cost calculations.
2. Engineering/Project Management/Construction Management references USEPA 540-R-22-002, Guide to Developing and Documenting Cost Estimates During Feasibility Study
3. Assumes no asbestos or lead paint concerns. Demolition cost estimates do not account for lead paint or asbestos abatement prior to demolition.
4. Cost estimates are based on conceptual design, actual costs can range from +50% to -30% of this estimate.

Table 2
Cost Estimate for Post-Remedial, Semi-Annual Groundwater Monitoring (5 Years)
Alexander Cleaners Site (PI #015123), Hillsdale, Bergen County, New Jersey

Description	Unit Cost	Unit	Quantity	Total
GW Sample Collection				
Labor: Semi-Annual Sample Collection:				
Project Manager	$ 160.00	Hour	8	$ 1,280.00
Senior Scientist/Engineer	$ 125.00	Hour	16	$ 2,000.00
Scientists/Engineers	$ 90.00	Hour	24	$ 2,160.00
Labor – Data Compilation & Reporting				
Program Manager	$ 190.00	Hour	4	$ 760.00
Project Manager	$ 160.00	Hour	12	$ 1.920.00
Senior Scientist/Engineer	$ 125.00	Hour	16	$ 2,000.00
Scientist/Engineer/Draftsperson	$ 90.00	Hour	12	$ 1,080.00
Administrative Assistant	$ 55.00	Hour	6	$ 330.00
Labor Subtotal:				**$ 11,530.00**
Equipment				
Vehicle	$ 110.00	Day	2	$ 220.00
Sampling Equipment:				
Pumps, Batteries & Controllers	$ 126.50	Day	2	$ 253.00
Oil-Water Interface Probes	$ 49.50	Day	2	$ 99.00
Water Quality Meters, Calibration Certificates	$ 149.00	Day	2	$ 298.00
PID	$ 82.50	Day	2	$ 165.00
Disposables and Tubing	$ 1,163.00	Event	1	$ 1,163.000
Equipment Subtotal:				**$ 2,198.00**
Laboratory Analyses (Groundwater)				
VO+15 Analyses (12 MWs, 2 FBs, 1TB, 1 Duplicate, 1 MS/MSD)	$ 104.50	Sample/ Event	17	$ 1,776.50
Data Validation	$ 55.00	Sample	15	$ 825.00
Analytical Subtotal:				**$ 2,601.50**
Sub-total Per Sampling Event:				**$ 16,329.50**
Contingency (20%):				**$ 3,265.90**
Total Estimated Cost Per Event:				**$ 19,595.40**
Total Estimated Cost: Per 5 Years (10 Events):				**$ 195,954.00**
Present Value for 5 Year GW Monitoring (10 Events):				**$ 169,675.00**

Notes:

1. Interest rate of 5% use for Present Value cost calculations.
2. Engineering/Project Management/Construction Management references USEPA 540-R-22-002, Guide to Developing and Documenting Cost Estimates During Feasibility Study
3. Cost estimates are based on conceptual design, actual costs can range from +50% to -30% of this estimate.