FORMER KENWOOD CLEANERS SITE

FOCUSED FEASIBILITY STUDY REPORT

WORK ASSIGNMENT D007622-37

FORMER KENWOOD CLEANERS
SCHENECTADY

SITE NO. 447032
SCHENECTADY COUNTY, NY

Prepared for:
NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
625 Broadway, Albany, New York

Basil Seggos, Commissioner

DIVISION OF ENVIRONMENTAL REMEDIATION
Remedial Bureau B

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FINAL
APRIL 2018

CERTIFICATION

I Mark E Lang certify that I am currently a NYS registered professional engineer as defined in 6 NYCRR Part 375 and that this Focused Feasibility Study Report was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

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SITE #447032
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Prepared For:

NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
REMEDIAL BUREAU B
WORK ASSIGNMENT D007622-37

Prepared By:

URS CORPORATION
257 WEST GENESEE STREET, SUITE 400
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LIST OF ACRONYMS AND ABBREVIATIONS

6 NYCRR	Title 6 of New York Codes, Rules and Regulations
bgs	below ground surface
CCl_4	carbon tetrachloride
cm/sec	centimeters/second
CPC	contaminants of potential concern
DCE	dichloroethylene
DER	Division of Environmental Remediation
DPE	Dual Phase Extraction
EHC	Environmental Hydrogeology Corporation
FS	Feasibility Study
ft	feet
IIWA	Immediate Investigation Work Assignment
ISCO	in situ chemical oxidation
LTM	Long Term Monitoring
MeCl	methylene chloride
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
ND	not detected
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OM&M	operation maintenance and monitoring
PAHs	polycyclic aromatic hydrocarbons
PCE	perchlorethylene (tetrachloroethylene)
PID	photoionization detector
POTW	publicly owned treatment works
ppb	parts per billion
ppm	parts per million
PRB	Permeable Reactive Barrier
psi	pounds per square inch
QHHEA	qualitative human health exposure assessment
RAO	remedial action objective
RI	Remedial Investigation

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

ROD	Record of Decision
SCGs	Standards, Criteria, and Guidance
SCO	Soil Cleanup Objectives
sf	square feet
Site	Former Kenwood Cleaners Site
SMP	Site Management Plan
SVI	soil vapor intrusion
TCA	trichloroethane
TCE	trichloroethylene
TMV	toxicity, mobility, or volume
TOGS 1.1.1	Technical and Operational Guidance Series 1.1.1
URS	URS Corporation
USEPA	United Stated Environmental Protection Agency
VC	vinyl chloride
VCP	Voluntary Cleanup Program
VOC	volatile organic compounds
µg/Kg	micrograms per kilogram
µg/L	micrograms per liter
$\mu g/m^3$	micrograms per cubic meter

1.0 PURPOSE

1.1 Introduction

This Focused Feasibility Study (FS) report was prepared by URS Corporation (URS) for the Former Kenwood Cleaners site (Site), formerly known as the 435 Duane Avenue site, located in the City of Schenectady, Schenectady County, New York. The report was prepared for the New York State Department of Environmental Conservation (NYSDEC) under the State Superfund Standby Contract, Work Assignment D007622-37.

1.2 Scope of Feasibility Study

This Feasibility Study (FS) report evaluates the remedial action for the contaminated soils in the source area located adjacent to the former dry cleaner building and for the dissolved-phase contamination identified at the Site and downgradient of the source area.

This FS was developed to meet the requirements set forth in the NYSDEC Department of Environmental Remediation (DER) DER-10 Technical Guidance for Site Investigation and Remediation. This FS specifies the remedial goal, identifies potential remedial technologies feasible for use at this Site, and develops remedial alternatives that meet the remedial objectives for the site.

1.3 Report Organization

This document has been organized consistent with NYSDEC DER-10 and includes the following sections:

- Introduction;
- Site Description and History including Nature and Extent of Contamination and Exposure Assessment;
- Remedial Goal and Remedial Action Objectives including remediation areas and volumes;
- Identification of Remedial Technologies;
- Development and Description of Alternatives;

- Detailed Analysis of Alternatives; and
- Recommended Remedy.

2.0 SITE DESCRIPTION AND HISTORY

This section presents a description of the Site and a summary of Site conditions and history.

2.1 Site Description

The former Kenwood Cleaners site is located in the city of Schenectady, Schenectady County, New York (Figure 2-1) and occupies approximately 1.4 acres. There have been numerous owners and commercial activities on the site including a dry cleaning establishment. The sole owner of interest was Kenwood Cleaners from 1950 to 1964. No contact information could be located for this entity and the property was transferred to several individuals between 1964 and 1994.

There is currently a mixed-use metal building on the site that was constructed in 2004-2005, and an asphalt parking lot (Figure 2-2). A landscaped area is located along the perimeter of the Site. The building is a slab-on-grade structure with approximately 15,000 square feet (sf) of warehouse space and 1,200 sf of office space. The floor's cross section consists of a relatively permeable sub-base (sand), one-inch foam board insulation, a 10 mil poly vapor barrier membrane, fiberglass/steel-reinforced pre-stressed 4500 pounds per square inch (psi) concrete and an epoxy sealer/paint. The building is equipped with a loading dock situated in the southeast portion of the building. Asphalt paved parking surfaces surround the building on the south and west. The current occupant provides diagnostic testing and repair services for train power converters. Surrounding land uses include light manufacturing, parking, housing, and highway I-890. There is a school/daycare facility (St. Luke's School) approximately 600 feet southeast of the site.

2.2 Site History

Historical releases of hazardous wastes have caused documented contamination of soil and groundwater at the site. A Voluntary Cleanup Program (VCP) application that included the site was filed with the NYSDEC Division of Environmental Remediation (DER) in 1998. An investigation at that time indicated the presence of a commonly used dry cleaning solvent, perchloroethylene (PCE) also known as tetrachloroethylene, which is consistent with the past use of the site as Kenwood Cleaners. Petroleum-related hydrocarbons were also detected in soil and groundwater beneath the site though the source is unclear. Site investigation results were documented in a letter report prepared by Environmental Hydrogeology Corporation (EHC) in December 1998. Based on historical drawings, the former dry cleaner building is estimated to

have been located in the area of the southwest corner of the existing building (Figure 2-2). The VCP application was subsequently withdrawn.

URS performed field activities under an Immediate Investigation Work Assignment (IIWA) in May 2005 to confirm the presence of PCE and the hydrocarbons. Contamination was again detected in both soil and groundwater, though at lower levels than those previously detected.

A Remedial Investigation (RI) report was issued in November 2007 and the FS report was issued in February 2009. The Record of Decision (ROD), issued in March 2009, specified a remedy including a Dual Phase Extraction (DPE) system installed near the existing building and a Permeable Reactive Barrier (PRB) installed along the property line. Subsequently, a pilot test of the DPE system was performed in 2010 and a DPE pilot test report was issued in April 2011. Data in the Pilot Test report indicated that a DPE system would not be very effective and also revealed that there was significant soil contamination located outside the southwest corner of the on-site building. Based on this data, a supplemental RI investigation was performed in 2017 and an Addendum to RI Report was issued in October 2017. This report located and characterized the soil contamination present outside the on-site building. Based on the findings of the Addendum to RI Report, NYSDEC directed URS to perform a Focused FS to reevaluate remediation alternatives for the site based on the recent data which is summarized in this document.

2.3 Geology and Hydrogeology

Geologic features and geologic cross sections of the site are shown on Figures 2-3, 2-4 and 2-5. There is a surficial fill layer of variable thickness across the area. The fill material consists primarily of sand mixed with some ash, concrete and wood. The fill layer ranges from one-foot thick up to 22-feet thick. The fill material covers discontinuous sand and silt layers, possibly deposited from the former unnamed stream located south of the site. The sand and silt layers were deposited directly on a clay layer. The thickness of the clay layer across the Site is not known. Shale bedrock of the Schenectady Formation was encountered at approximately 40-44 feet below ground surface (bgs). Data indicates that the clay layer acts as a confining unit between the underlying silt, sand and gravel layer and the overlying upper water-bearing zone.

Figure 2-6 shows the depth to the top of the clay unit. Overall, the top of clay dips to the southwest, which is consistent with the direction of groundwater flow.

The hydraulic conductivity of the materials comprising the upper water-bearing zone ranged from 2.73×10^{-2} centimeters per second (cm/sec) to 1.66×10^{-4} cm/sec, as measured during the RI by means of slug tests conducted in eight monitoring wells. The geometric mean value for the site is approximately 1×10^{-3} cm/sec.

The depth to groundwater ranges from 6 to 17 feet bgs. The most recent groundwater elevation contours from February 2017 are shown on Figure 2-7.

2.4 Nature and Extent of Contamination

2.4.1 Soil

The Addendum to RI Report confirmed that the predominant soil contaminant at the Site is PCE. Table 2-1 presents the recent and historical soil analytical results for volatile organic compounds (VOC). Figure 2-8 presents an isoconcentration contour map for PCE in soil and is based on the highest concentrations of PCE from depths ranging from approximately 8 ft to 23 ft bgs. The isoconcentration contour map shows that the highest concentrations of PCE are located off the southwest corner of the existing building.

Figures 2-9 and 2-10 present cross sections C-C' (west-east) and D-D' (south-north), respectively, through the contaminated area (Figure 2-11 presents the cross section location map). The cross sections include photoionization detector (PID) readings through the depths of the respective borings, as well as PCE soil analytical results. The locations and depths of elevated PID readings correlates well with the soil analytical data (i.e., locations with the highest PID readings are locations with elevated VOC impacts). The highest PCE concentrations and PID readings are located in the AECOM-06 area (off the southwest corner of the building) at depths ranging from approximately 10 to 20 feet bgs.

2.4.2 Air and Soil Vapor

The analytical results from the four soil vapor samples, four indoor air samples (plus one field duplicate), and two outdoor air samples collected during the supplemental RI are summarized in Table 2-2. Only VOCs detected in one or more soil vapor/air samples are listed in Table 2-2.

Figure 2-12 shows the detected results for the eight chlorinated VOCs listed in the NYSDOH decision matrices.

Based on the PCE and trichloroethylene (TCE) results in sub-slab vapors, in accordance with NYSDOH guidance (*Guidance for Evaluating Soil Vapor Intrusion in the State of New York)*, the recommended action for onsite building H-001 is "mitigate". The recommendation for offsite building H-003 is to identify source(s), resample or mitigate based on the cis-1,2-dichloroethylene (DCE) and vinyl chloride (VC) results.

2.4.3 Groundwater

The 2017 groundwater analytical data show that chlorinated VOCs exceed Class GA standards in on Site and offsite wells. The highest chlorinated VOC concentrations on Site were detected in wells off the southwest corner of the building, which is consistent with the highest soil impacts. Offsite wells located downgradient of the southwest corner of the building showed the highest chlorinated VOC concentrations offsite. The recent data is consistent with historical data which shows the groundwater impacts in the vicinity, and downgradient, of the southwest corner of the building.

2.5 Qualitative Human Health Exposure Assessment

Direct contact with and ingestion of contaminated soil and groundwater are not complete exposure pathways under current use scenarios. However, soil vapor contamination, which is a result of the soil and groundwater contamination, is a potential completed exposure pathway.

Potential complete exposure pathways under future use scenarios include: direct contact with and ingestion of contaminated groundwater during intrusive activities; direct contact with and ingestion of contaminated soil during intrusive activities; and inhalation of contaminated soil vapor.

Fourteen Chemicals of Potential Concern (CPCs) were identified in the Exposure Assessment. Chlorinated solvents (mainly PCE) are the chemicals of greatest concern.

2.6 Conceptual Site Model

Based on data collected from supplemental RI investigation performed in 2017, there is significant soil contamination at the site in the vicinity of the former dry cleaning building. Most of the contamination is located adjacent to the existing on site building. The data suggests that most of the contamination is present in the saturated zone in this area although there is a possibility that some contamination is still present in the unsaturated zone, particularly just above the water table. The soil in the source area consists of a fill and fine sand layer, a silty clay to clayey silt layer with silty sand lenses above a confining clay layer.

Groundwater flows southwest from this source area toward Duane Avenue. The most significant groundwater contamination is in the source area. The dissolved-phase plume extends downgradient from the source area to just west of Duane Avenue.

Chlorinated solvents in soil and groundwater may volatize into soil vapor. The largest soil vapor concentrations would be expected in the area of soil contamination discussed above.

2.7 Potentially Applicable Standards, Criteria, and Guidance

In the Addendum to RI, the soil analytical results were compared to Unrestricted Use, Protection of Groundwater, and Commercial Use Soil Cleanup Objectives (SCOs) presented in Title 6 of New York Codes, Rules and Regulations (6 NYCRR) Part 375.

The groundwater analytical results were compared to 6 NYCRR Part 703 water quality standards. The data was compared to NYSDEC Division of Water Technical and Operational Guidance Series 1.1.1 (TOGS 1.1.1), Class GA Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998, including January 1999 Errata Sheet, April 2000 and June 2004 Addenda.

The NYSDOH *Guidance for Evaluating Soil Vapor Intrusion in the State of New York* was utilized to evaluate sub-slab and indoor air concentration data for eight chlorinated VOCs, i.e., TCE, PCE, carbon tetrachloride (CCl_4), 1,1,1-trichloroethane (1,1,1-TCA), 1,1-DCE, methylene chloride (MeCl), cis-1,2-DCE and VC.

3.0 REMEDIAL GOAL AND REMEDIAL ACTION OBJECTIVES

3.1 Remedial Goal

The remedial goal for the site is to eliminate or reduce to the maximum extent practicable, significant threats to human health and/or the environment due to former site activities.

3.2 Remedial Action Objectives

In order to meet this goal, remedial action objectives (RAOs) have been established. These RAOs provide the basis for selecting appropriate remediation technologies and developing remedial alternatives for the site. RAOs were established based on contaminated media, identified contaminants of concern, standards, criteria and guidance (SCGs), and results of the Qualitative Human Health Exposure Assessment (QHHEA) as presented in the RI and Addendum to RI (see section 2.5).

Media	RAO for	Remedial Action Objectives
Soil	Public Health Protection	o Prevent ingestion/direct contact with contaminated soil. o Prevent inhalation exposure to contaminants volatilizing from soil.
Soil	Environmental Protection	o Prevent migration of contaminants that would result in groundwater contamination.
Groundwater	Public Health Protection	o Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards. o Prevent contact with, or inhalation of volatiles, from contaminated groundwater.
Groundwater	Environmental Protection	o Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable. o Remove the source of groundwater contamination.
Soil Vapor	Public Health Protection	o Mitigate impacts to public health resulting from existing, or potential for, soil vapor intrusion into buildings at the site.

3.3 Remediation Areas and Volumes

3.3.1 Soil

Contamination has been delineated near the southwest corner of the existing on-site building. For this Focused FS, the remediation area is roughly defined by the 150 mg/kg PCE contour which represents the commercial use SCO for PCE. The estimated maximum depth of contamination is 23 feet. The remediation area limits used for the Focused FS are shown in Figure 3-1. This area is 454 sf. Based on this area and a depth of 23 feet, a total of 387 cubic yards of soil are located in the remediation area.

The quantity of soil contamination in the remediation area has been estimated as 1,672 pounds. This calculation for the mass quantity is presented in Appendix A.

3.3.2 Groundwater

The 2017 groundwater analytical data (Figure 3-2) show that chlorinated VOCs exceed Class GA standards in on Site and offsite wells. The highest chlorinated VOC concentrations on Site were detected in wells off the southwest corner of the building, which is consistent with the highest soil impacts. Offsite wells located downgradient of the southwest corner of the building showed the highest chlorinated VOC concentrations offsite. The recent data is consistent with historical data which shows the groundwater impacts in the vicinity, and downgradient, of the southwest corner of the building.

3.3.3 Air and Soil Vapor

Based on the Department's evaluation, solvents are currently being used in the existing on-site building so soil vapor intrusion (SVI) cannot be properly assessed at this time. Further soil vapor investigations and possibly remediation may take place if there is a change in use of the on-site building.

4.0 IDENTIFICATION OF REMEDIAL TECHNOLOGIES

Based on direction from NYSDEC, two technologies have been identified for inclusion in the Focused FS. These technologies include the following:

- Excavation of soil and disposal offsite.
- In-Situ Chemical Oxidation (ISCO) of contamination in groundwater using permanganate or other suitable oxidant.

5.0 DEVELOPMENT AND DESCRIPTION OF ALTERNATIVES

This section presents remedial alternatives for the site.

5.1 Development of Alternatives

From the feasible remedial technologies, and based on direction by the NYSDEC, the following list of remedial alternatives has been developed for the site:

Alternative 1 - No Action, Institutional Controls with Site Management

Alternative 2 – Excavation and Institutional Controls with Site Management

Alternative 3 – Excavation, ISCO and Institutional Controls with Site Management

5.2 Description of Alternatives

5.2.1 Alternative 1 - No Action, Institutional Controls with Site Management

Alternative 1 is the No Action alternative that includes no active remediation and maintains exposure controls through institutional controls and site management and includes monitoring.

Size and Configuration

- A deed restriction or environmental easement will restrict the use of the property and groundwater use as well as require compliance with the Site Management Plan (SMP). The SMP will be used to manage remaining contamination and potential exposures. The SMP will include provisions to evaluate SVI if the site use changes. The deed restriction or environmental easement will be recorded at the county clerk's office.
- Quarterly sampling and analysis for VOCs, as well as routine water quality indicator parameters, (e.g., oxidation-reduction potential, pH, temperature and conductivity) would be performed in approximately 10 select existing groundwater monitoring wells for the first 18 months of post remediation sampling. The data from the monitoring in the first 18 months will be used to determine the frequency of

continued monitoring. The list of parameters, number of monitoring wells, and sampling frequency could be modified following data review of monitoring results.

- An annual report and Five-Year Review would evaluate site conditions and monitoring activities and recommend any changes necessary to the existing program.

Time for Remediation

- For the purpose of this report, a 30-year period is assumed for monitoring.

Spatial Requirements

- There are no spatial requirements for this alternative.

Options for Disposal

- No significant off-site disposal will be required for this alternative.

Permit Requirements

- No permits will be required for this alternative other than NYSDEC approval.

Limitations

- There are no limitations associated with this alternative.

Ecological Impacts

- There would be no change from existing conditions.

5.2.2 Alternative 2 – Excavation with Site Management

This alternative includes remediation by excavating soil located adjacent to the existing on-site building. By removing contaminated soil, groundwater contamination would be reduced over time by natural attenuation. Groundwater monitoring would be used to evaluate the progress of groundwater remediation after contaminated soil removal. A conceptual layout of Alternative 2 is presented as Figure 5-1.

Size and Configuration

- A deed restriction or environmental easement will restrict the use of the property and groundwater use as well as require compliance with the SMP. The SMP will be used to manage remaining contamination and potential exposures. The SMP will include

provisions to evaluate SVI if the site use changes. The deed restriction or environmental easement will be recorded at the county clerk's office.

- Quarterly sampling and analysis for VOCs, as well as routine water quality indicator parameters, (e.g., oxidation-reduction potential, pH, temperature and conductivity) would be performed in approximately 10 select existing groundwater monitoring wells for the first 18 months of post remediation sampling. The data from the monitoring in the first 18 months will be used to determine the frequency of continued monitoring. The list of parameters, number of monitoring wells, and sampling frequency could be modified following data review of monitoring results.
- An annual report and Five-Year Review would evaluate site conditions and monitoring activities and recommend any changes necessary to the existing program.
- An estimated 370 cubic yards of contaminated soil would be excavated. The contaminated soil would be transported and disposed of off-site.
- 370 cubic yards of clean fill that meets the Subpart 375-6 SCO for commercial use would be imported on-site and used as backfill.

Time for Remediation

- For the purposes of this report, a 30-year period is assumed for monitoring.
- Construction, including excavation and disposal of contaminated soil, would require less than one year.

Spatial Requirements

- On-site space would be required for stockpiling excavated soil and for storing clean backfill materials during construction.
- On-site space would be required for equipment required to excavate contaminated soil and backfill the excavation.
- Adequate space is available for remedial activities. However, construction activities would have to be coordinated with the owner and tenant in the on-site building so interference with on-site operations would be minimized.

Options for Disposal

- Treated water from dewatering the excavation would be discharged to the local publicly owned treatment works (POTW) via a sanitary sewer.
- Excavated contaminated soil would be disposed of off-site.

Permit Requirements

- A temporary permit to discharge treated water to the sewer during dewatering of the excavation would be required.
- A building permit would be required for excavation near the on-site building.

Limitations

- Contaminated soil would not be excavated within two feet of the existing on-site building to protect the on-site building foundations. Technologies such sheetpiling and underpinning would be required to excavated near the building. This would leave a small portion (about 5%) of the soil contaminant mass remaining at the site.
- Construction activities would have to be coordinated with the owner and tenant in the on-site building so as to minimally impact on-site operations.

Ecological Impacts

- This alternative is not anticipated to have any significant impacts on fish and wildlife resources.

5.2.3 Alternative 3 – Excavation, ISCO with Site Management

This alternative includes remediation by excavating in the remediation area located adjacent to the existing on-site building. It also includes the addition of an oxidant (potassium permanganate is assumed in this Focused FS) at the bottom of the excavation to further reduce contamination. Groundwater monitoring would be used to evaluate the progress of groundwater remediation after source removal and the addition of an oxidant. A conceptual layout of Alternative 3 is presented as Figure 5-2.

Size and Configuration

- A deed restriction or environmental easement will restrict the use of the property and groundwater use as well as require compliance with the SMP. The SMP will be used to manage remaining contamination and potential exposures. The SMP will include provisions to evaluate SVI if the site use changes. The deed restriction or environmental easement will be recorded at the county clerk's office.
- Quarterly sampling and analysis for VOCs, as well as routine water quality indicator parameters, (e.g., oxidation-reduction potential, pH, temperature and conductivity) would be performed in approximately 10 select existing groundwater monitoring wells for the first 18 months of post remediation sampling. The data from the monitoring in the first 18 months will be used to determine the frequency of continued monitoring. The list of parameters, number of monitoring wells, and sampling frequency could be modified following data review of monitoring results.
- An annual report and Five-Year Review would evaluate site conditions and monitoring activities and recommend any changes necessary to the existing program.
- An estimated 370 cubic yards of contaminated soil would be excavated. The contaminated soil would be transported and disposed of off-site.
- 370 cubic yards of clean fill that meets the Subpart 375-6 SCO for commercial use would be imported on-site and used as backfill.
- An estimated 1,650 pounds of potassium permanganate would be placed at the bottom of the excavation and would be covered by clean soil.

Time for Remediation

- For the purposes of this report, a 30-year period is assumed for monitoring.
- Construction, including excavation and disposal of contaminated soil and addition of potassium permanganate, would require less than one year.

Spatial Requirements

- On-site space would be required for stockpiling excavated soil and for storing clean backfill materials during construction.

- On-site space would be required for equipment required to excavate contaminated soil and backfill the excavation.
- Adequate space is available for remedial activities. However, construction activities would have to be coordinated with the owner and tenant of the on-site building so interference with on-site operations would be minimized.

Options for Disposal

- Treated water from dewatering the excavation would be discharged to the local POTW via a sanitary sewer.
- Excavated contaminated soil would be disposed of off-site.

Permit Requirements

- A temporary permit to discharge treated water to the sewer during dewatering of the excavation would be required.
- A building permit would be required for excavation near the on-site building.

Limitations

- Contaminated soil would not be excavated within two feet of the existing on-site building to protect the on-site building foundations. Technologies such sheetpiling and underpinning would be required to excavated near the building. This would leave a small portion (about 5%) of the soil contaminant mass remaining at the site.
- Construction activities would have to be coordinated with the owner and tenant in the on-site building so as to minimally impact on-site operations.

Ecological Impacts

- This alternative is not anticipated to have any significant impacts on fish and wildlife resources.

6.0 DETAILED ANALYSIS OF ALTERNATIVES

6.1 Description of Evaluation Criteria

Each of the alternatives is subjected to a detailed evaluation with respect to the criteria outlined in 6 NYCRR Part 375 and described below. This evaluation aids in the selection process for remedial actions in New York State.

Overall Protection of Public Health and the Environment

This criterion is an assessment of whether the alternative meets requirements that are protective of human health and the environment. The overall assessment is based on a composite of factors assessed under other evaluation criteria, particularly long-term effectiveness and performance, short-term effectiveness, and compliance with SCGs. This evaluation focuses on how a specific alternative achieves protection over time and how site risks are reduced. The analysis includes how the source of contamination is to be eliminated, reduced, or controlled.

Compliance with Standards, Criteria, and Guidance

This criterion determines whether or not each alternative complies with applicable environmental laws and SCGs pertaining to the chemicals detected in contaminated media, the location of the Site, and relating to proposed technologies. A discussion is included on any necessary waivers.

Long-Term Effectiveness and Permanence

This criterion addresses the performance of a remedial action in terms of its permanence and the quantity/nature of waste or residuals remaining at the Site after implementation. An evaluation is made of the extent and effectiveness of controls required to manage residuals remaining at the Site and the operation and maintenance systems necessary for the remedy to remain effective. The factors that are evaluated include permanence of the remedial alternative, magnitude of the remaining risk, adequacy of controls used to manage residual contamination, and the reliability of controls used to manage residual contamination.

Reduction of Toxicity, Mobility or Volume with Treatment

This criterion assesses the remedial alternative's use of technologies that permanently and significantly reduce toxicity, mobility, or volume (TMV) of the contamination as their principal

element. Preference is given to remedies that permanently and significantly reduce the toxicity, mobility, or volume of the wastes at the site.

Short-Term Effectiveness

This criterion assesses the effects of the alternative during the construction and implementation phase with respect to the effect on human health and the environment. The factors that are assessed include protection of the workers and the community during remedial action, environmental impacts that result from the remedial action, and the time required until the remedial action objectives are achieved.

Implementability

This criterion addresses the technical and administrative feasibility of implementing the alternative and the availability of various services and materials required during implementation. The evaluation includes the feasibility of construction and operation; the reliability of the technology; the ease of undertaking additional remedial action; monitoring considerations; activities needed to coordinate with regulatory agencies; availability of adequate equipment, services and materials, off-site treatment, and storage and disposal services.

Cost

Capital costs and operation, maintenance, and monitoring costs are estimated for each alternative and presented on a present worth basis based on a 5% discount rate. Cost estimates for each remedial alternative are presented in Appendix B and summarized on Table 6-1.

Community and State Acceptance

Concerns of the State and the Community will be addressed separately in accordance with the public participation program developed for this Site.

Land Use

This criterion addresses the current, intended, and reasonably anticipated future land use in the area as impacted by the remediation.

6.2 Alternative 1 – No Action, Institutional Controls with Site Management

The source material would remain on-site in its present condition. Long Term Monitoring would assess the reduction in contaminant concentrations in the dissolved phase groundwater plume and assess the degree to which natural processes were having an effect on the concentrations of contaminants. Deed restrictions would have to be implemented to limit Site development and groundwater use. Alternative 1 does not meet the RAOs for the Site.

6.2.1 Overall Protection of Public Health and the Environment

Although this alternative poses few short-term risks, it does not comply with SCGs, and is not effective in the long term. This alternative would not be protective of human health or the environment.

6.2.2 Compliance with SCGs

Since contamination would remain on-site, this alternative would not meet SCGs for media at the Site.

6.2.3 Long-Term Effectiveness and Permanence

Contaminant migration from soil to groundwater and potential exposure to contaminants would continue. The potential risks to human health caused by contaminated soil and groundwater could be addressed through deed restrictions limiting Site use and prohibiting extraction of groundwater for potable purposes. Potential exposure to soil vapor would not be addressed if mitigation was required in the future. This alternative is not considered effective or permanent in the long term.

6.2.4 Reduction of Toxicity, Mobility and Volume with Treatment

Reduction of the TMV of contaminants would occur slowly through natural attenuation. There is no technology included in this alternative that permanently and significantly reduces TMV.

6.2.5 Short-Term Effectiveness

As there is no construction associated with this alternative, there would be minimal impact to workers or the community. Remedial action objectives would not be met.

6.2.6 Implementability

Monitoring and deed restrictions could be implemented, but would restrict future use of the Site.

6.2.7 Cost

Estimated capital and operation, maintenance, and monitoring (OM&M) costs for Alternative 1 are presented on Table 6-1.

6.3 Alternative 2 – Excavation and Institutional Controls with Site Management

6.3.1 Overall Protection of Public Health and the Environment

A combination of deed restrictions and excavation is protective of human health and the environment and meets the RAOs for the site. This alternative would meet the SCGs for soil immediately after construction and the SCGs for groundwater over time. The SCGs for SVI would be achieved through the SMP including mitigation in the future if required. The soil would be remediated by excavation and minimal residual contamination would remain. Long Term Monitoring (LTM) would assess the remediation of the groundwater plume over time.

6.3.2 Compliance with SCGs

Soil remediation would comply with SCGs for soil to the extent practicable. Once the soil contamination is removed the groundwater plume is expected to reach SCGs over time. The SCGs for SVI would be achieved through the SMP including mitigation in the future if required.

6.3.3 Long-term Effectiveness and Permanence

This alternative addresses the majority of soil contamination at the site, i.e. contaminated soil located near the southwest corner of the existing on-site building. Deed restrictions and engineering controls would adequately address the remaining residual contamination at the site.

6.3.4 Reduction of Toxicity, Mobility and Volume with Treatment

It is estimated that 95% of soil contaminant mass located in the remediation area would be removed under Alternative 2 (see Appendix A). The mass of contamination in groundwater would be reduced gradually over time by natural processes.

6.3.5 Short-term Effectiveness

Excavation of soil would produce noise, disrupt daily traffic patterns and present short-term risks to workers and local residents that would need to be addressed through engineering controls and air monitoring. Dust control would be required. The time of construction would be less than one year.

6.3.6 Implementability

The technologies employed for remediation are conventional technologies for addressing the types of contamination at the site. Coordination with the site owners and residents would be required during the construction of the remedial components.

Excavation would be somewhat limited because of building foundations in the areas of excavation. The excavation perimeter would have to be off-set two feet from the building foundation. Sheet pile and underpinning or a comparable technology would be installed to protect building foundations during construction activities.

6.3.7 Cost

Estimated capital and OM&M costs for Alternative 2 are presented on Table 6-1.

6.3.8 Land Use

The site is expected to remain commercial use area for the foreseeable future. Alternative 2 will restrict land use through deed restrictions.

6.4 Alternative 3 – Excavation, ISCO and Institutional Controls with Site Management

6.4.1 Overall Protection of Public Health and the Environment

A combination of deed restrictions, excavation and ISCO is protective of human health and the environment and meets the RAOs for the site. This alternative would meet the SCGs for soil immediately after construction and the SCGs for groundwater over time. The SCGs for SVI would be achieved through the SMP including mitigation in the future if required. The remediation area would be remediated by excavation and minimal residual contamination would remain. LTM would assess the remediation of the groundwater plume over time.

6.4.2 Compliance with SCGs

Soil source remediation would comply with SCGs for soil to the extent practicable. Once the source is removed the groundwater plume is expected to reach SCGs over time. . The SCGs for SVI would be achieved through the SMP including mitigation in the future if required.

6.4.3 Long-term Effectiveness and Permanence

This alternative addresses the majority of contamination at the site, i.e. contaminated soil located near the southwest corner of the existing on-site building. ISCO would further reduce contamination at the site. Deed restrictions and engineering controls would adequately address the remaining residual contamination at the site.

6.4.4 Reduction of Toxicity, Mobility and Volume with Treatment

It is estimated that 95% of soil contaminant mass in the remediation area would be removed by excavation under Alternative 3 (see Appendix A). Additional mass would be removed by employing ISCO for Alternative 3. It is estimated that 99% of the contaminant mass would be removed by employing both excavation and ISCO.

6.4.5 Short-term Effectiveness

Excavation of soil would produce noise, disrupt daily traffic patterns and present short-term risks to workers and local residents that would need to be addressed through engineering controls and air monitoring. Dust control would be required. The time of construction would be less than one year.

6.4.6 Implementability

The technologies employed for remediation are conventional technologies for addressing the types of contamination at the site. Coordination with the site owners and residents would be required during the construction of the remedial components.

Excavation would be somewhat limited because of building foundations in the areas of excavation. The excavation perimeter would have to be off-set two feet from the building

foundation. Sheet pile and underpinning or a comparable technology would be installed to protect building foundations during construction activities.

6.4.7 Cost

Estimated capital and OM&M costs for Alternative 3 are presented on Table 6-1.

6.4.8 Land Use

The site is expected to remain commercial use area for the foreseeable future. Alternative 2 will restrict land use through deed restrictions.

6.5 Comparative Analysis of Alternatives

6.5.1 Overall Protection of Public Health and the Environment

Alternative 1 does not meet RAOs for the site.

Alternatives 2 and 3 are protective of human health and the environment and meet the RAOs for the site. These alternatives would meet the SCGs for soil immediately after construction and the SCGs for groundwater over time. The SCGs for SVI would be achieved through the SMP including mitigation in the future if required. The soil would be remediated by excavation and minimal residual contamination would remain. LTM would assess the remediation of the groundwater plume over time.

6.5.2 Compliance with SCGs

Alternative 1 would not comply with the SCGs for the Site.

For Alternatives 2 and 3, soil source remediation would comply with SCGs for soil. Once the source is removed the groundwater plume is expected to reach SCGs over time. Groundwater SCGs are expected to be achieved more quickly under Alternative 3. The SCGs for SVI would be achieved through the SMP including mitigation in the future if required.

6.5.3 Long-term Effectiveness and Permanence

Alternative 1 would not be effective in achieving the remedial objectives.

Both Alternatives 2 and 3 address the majority of contamination at the site, i.e. contaminated soil located near the southwest corner of the existing on-site building. ISCO included in Alternative 3 would further reduce contamination at the site. Deed restrictions and engineering controls would adequately address the remaining residual contamination at the site for Alternatives 2 and 3.

6.5.4 Reduction of Toxicity, Mobility and Volume with Treatment

There is no reduction in TMV under Alternative 1. It is estimated that there would be a 95% reduction of contaminant mass under Alternative 2 and a 99% reduction in contaminant mass under Alternative 3.

6.5.5 Short-term Effectiveness

There are no short-term impacts from Alternative 1.

For Alternatives 2 and 3, excavation of a soil would produce noise, disrupt daily traffic patterns and present short-term risks to workers and local residents that would need to be addressed through engineering controls and air monitoring. Dust control would be required. The time of construction would be about equal and be less than one year for both Alternatives 2 and 3. Groundwater remediation would be faster under Alternative 3.

6.5.6 Implementability

Alternative 1 would be the easiest to implement. Alternatives 2 and 3 can be implemented using standard construction methods, and all would involve coordination with the owner of the property to minimize the disruption to the commercial establishment operating at the Site.

Excavation included in Alternatives 2 and 3 would be somewhat limited because of building foundations in the areas of excavation. The excavation perimeter would have to be off-set two feet from the building foundation. Sheet pile and underpinning or a comparable technology would be installed to protect building foundations during construction activities.

6.5.7 Cost

In ascending order, the lowest total present worth cost is for Alternative 1 followed by Alternatives 2 and 3, which has the highest total present worth cost.

7.0 RECOMMENDED REMEDIAL ALTERNATIVE

Alternatives were developed, screened and evaluated for the remediation of the Kenwood Cleaners site. The evaluation of alternatives focused on remedial action objectives that were designed to provide source reduction, eliminate exposure pathways and attain SCGs to the extent practicable. Remediation areas and volumes were calculated for contaminated media identified for the site. Costs were developed for each alternative. The overall approach used to select the recommended alternative considered protection of human health and the environment during construction and after completion of remediation, the potential difficulties associated with implementing the alternative and the cost-effectiveness of the alternative. The recommendation is presented below.

7.1 Basis for Recommendation

Alternative 1 is not protective of human health and the environment and is rejected as a viable alternative for remediation. Alternatives 2 and 3 are protective of human health, and meet the RAOs for the site. Alternative 3 is the recommended alternative based on a comparison of alternatives included in Section 6.5. Alternative 3 is superior to Alternative 2 because of the following;

- Alternative 3 will include a greater reduction of contamination than Alternative 2.
- Alternative 3 will achieve SCGs in groundwater more quickly than Alternative 2.

In addition, the benefits derived from Alternative 3 given above can be achieved for only a small increase in cost.

7.2 Components of Remediation

A conceptual layout for Alternative 3 is shown on Figure 5-2. The major components of the alternative are soil excavation and ISCO which are described below.

Soil Excavation: Soil exceeding commercial SCOs will be removed from the area located near the corner of the existing on-site building. An estimated 370 cubic yards of contaminated soil would be excavated. The contaminated soil would be transported and disposed of off-site.

ISCO: Potassium permanganate or another suitable oxidant will be place at the bottom of the excavated area to promote groundwater remediation. An estimated 1,650 pounds of potassium permanganate would be placed at the bottom of the excavation.

8.0 REFERENCES

Environmental Hydrogeology Corporation (EHC), *Letter Report for the Brandywine Industrial Park/Roxy Dry Cleaners,* December 1998.

NYSDEC, *DER-10 Technical Guidance for Site Investigation and Remediation,* August 2009.

URS Corporation (URS), *Addendum to Remedial Investigation Report,* October 2017.

TABLES

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					AECOM-01	AECOM-01	AECOM-02	AECOM-02	AECOM-02
Sample ID					AECOM-01 (6-8)	AECOM-01 (8-10)	AECOM-02 (2-4)	AECOM-02 (15-16)	DUP-01-020717
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					6.0-8.0	8.0-10.0	2.0-4.0	15.0-16.0	15.0-16.0
Date Sampled					02/07/17	02/07/17	02/07/17	02/07/17	02/07/17
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					Field Duplicate (1-1)
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190					
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500		0.011 J		0.0074	0.0074
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					
Acetone	MG/KG	0.05	0.05	500	0.13 J	0.050 J		0.034 J	0.049 J
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500		0.010 J			
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500					
Naphthalene	MG/KG	12	12	500					
sec-Butylbenzene	MG/KG	11	11	500					
tert-Butylbenzene	MG/KG	5.9	5.9	500					
Tetrachloroethene	MG/KG	1.3	1.3	150	1.7 J	7.3 DJ	0.19	0.015	
Toluene	MG/KG	0.7	0.7	500		0.00066 J			
Trichloroethene	MG/KG	0.47	0.47	200		0.019 J	0.0034 J		
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					AECOM-03	AECOM-03	AECOM-04	AECOM-04	AECOM-05
Sample ID					AECOM-03 (8-10)	AECOM-03 (15-16)	AECOM-04 (10-11)	AECOM-04 (11-12)	AECOM-05 (10-11)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					8.0-10.0	15.0-16.0	10.0-11.0	11.0-12.0	10.0-11.0
Date Sampled					02/07/17	02/07/17	02/08/17	02/08/17	02/08/17
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190					
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500					
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					
Acetone	MG/KG	0.05	0.05	500	0.020 J	0.033 J	0.0094 J	0.010 J	
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500					
Naphthalene	MG/KG	12	12	500					
sec-Butylbenzene	MG/KG	11	11	500					
tert-Butylbenzene	MG/KG	5.9	5.9	500					
Tetrachloroethene	MG/KG	1.3	1.3	150	3.1 DJ		0.049 J	0.079 J	7.6 J
Toluene	MG/KG	0.7	0.7	500					
Trichloroethene	MG/KG	0.47	0.47	200	0.0036 J		0.0023 J	0.011	
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					AECOM-05	AECOM-06	AECOM-06	AECOM-06	AECOM-07
Sample ID					AECOM-05 (19-20)	AECOM-06 (12-13)	AECOM-06 (19-20)	AECOM-06 (21-22)	AECOM-07 (9-10)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					19.0-20.0	12.0-13.0	19.0-20.0	21.0-22.0	9.0-10.0
Date Sampled					02/08/17	02/08/17	02/08/17	02/08/17	02/08/17
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190					
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500					
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					
Acetone	MG/KG	0.05	0.05	500					
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500					
Naphthalene	MG/KG	12	12	500					
sec-Butylbenzene	MG/KG	11	11	500					
tert-Butylbenzene	MG/KG	5.9	5.9	500					
Tetrachloroethene	MG/KG	1.3	1.3	150	130 DJ	39,000 DJ	210 DJ	10 J	1.3 J
Toluene	MG/KG	0.7	0.7	500					
Trichloroethene	MG/KG	0.47	0.47	200	0.44 J	14 J	3.1 J	1.7 J	
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					AECOM-07	AECOM-08	AECOM-08	AECOM-09	AECOM-09
Sample ID					AECOM-07 (13-14)	AECOM-08 (8-9)	AECOM-08 (19-20)	AECOM-09 (19-20)	AECOM-09 (22-23)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					13.0-14.0	8.0-9.0	19.0-20.0	19.0-20.0	22.0-23.0
Date Sampled					02/08/17	02/08/17	02/08/17	02/08/17	02/08/17
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190					
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500			0.41 J		1.2 J
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					
Acetone	MG/KG	0.05	0.05	500		0.72 J			
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500					
Naphthalene	MG/KG	12	12	500					
sec-Butylbenzene	MG/KG	11	11	500					
tert-Butylbenzene	MG/KG	5.9	5.9	500					
Tetrachloroethene	MG/KG	1.3	1.3	150	4.0 J	0.82	200 DJ	120 DJ	39 D
Toluene	MG/KG	0.7	0.7	500					
Trichloroethene	MG/KG	0.47	0.47	200			3.5 J	0.47 J	22 D
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					AECOM-10	AECOM-10	AECOM-11	AECOM-11	AECOM-12
Sample ID					AECOM-10 (10-11)	AECOM-10 (19-20)	AECOM-11 (10-11)	AECOM-11 (14-15)	AECOM-12 (9-10)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					10.0-11.0	19.0-20.0	10.0-11.0	14.0-15.0	9.0-10.0
Date Sampled					02/09/17	02/09/17	02/09/17	02/09/17	02/09/17
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190					
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500				0.048 J	0.0017 J
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					
2-Hexanone	MG/KG	-	-	-			0.15 J		
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					
Acetone	MG/KG	0.05	0.05	500	0.015 J		0.024 J	0.025 J	0.019 J
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500					
Naphthalene	MG/KG	12	12	500					
sec-Butylbenzene	MG/KG	11	11	500			0.048 J		
tert-Butylbenzene	MG/KG	5.9	5.9	500					
Tetrachloroethene	MG/KG	1.3	1.3	150	0.055 J	160	0.044 J	0.15 J	0.072
Toluene	MG/KG	0.7	0.7	500					
Trichloroethene	MG/KG	0.47	0.47	200	0.0018 J	3.9 J		0.0036 J	0.0073
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					AECOM-12	AECOM-13	AECOM-13	AECOM-14	AECOM-14
Sample ID					AECOM-12 (19-20)	AECOM-13 (8-9)	AECOM-13 (12-13)	AECOM-14 (8-9)	AECOM-14 (19-20)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					19.0-20.0	8.0-9.0	12.0-13.0	8.0-9.0	19.0-20.0
Date Sampled					02/09/17	02/09/17	02/09/17	02/09/17	02/09/17
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190					
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500		0.016		0.24 J	
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					
Acetone	MG/KG	0.05	0.05	500		0.050 J			
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500					
Naphthalene	MG/KG	12	12	500					
sec-Butylbenzene	MG/KG	11	11	500					
tert-Butylbenzene	MG/KG	5.9	5.9	500					
Tetrachloroethene	MG/KG	1.3	1.3	150	590 J	0.021	10	4.4	2,900 DJ
Toluene	MG/KG	0.7	0.7	500					
Trichloroethene	MG/KG	0.47	0.47	200	3.8 J	0.0059 J	0.51	0.21 J	12 J
Vinyl chloride	MG/KG	0.02	0.02	13		0.014			
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					AECOM-15	AECOM-15	AECOM-16	AECOM-16	AECOM-17
Sample ID					AECOM-15 (7-8)	AECOM-15 (9-10)	AECOM-16 (7-8)	AECOM-16 (20-21)	AECOM-17 (8-9)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					7.0-8.0	9.0-10.0	7.0-8.0	20.0-21.0	8.0-9.0
Date Sampled					02/13/17	02/13/17	02/13/17	02/13/17	02/13/17
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190	0.15 J				
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500	0.46		0.49	1.3 J	
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					
Acetone	MG/KG	0.05	0.05	500					
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500					
Naphthalene	MG/KG	12	12	500					
sec-Butylbenzene	MG/KG	11	11	500		0.13 J			
tert-Butylbenzene	MG/KG	5.9	5.9	500					
Tetrachloroethene	MG/KG	1.3	1.3	150	1.5	1.4	1.6	65	0.42
Toluene	MG/KG	0.7	0.7	500					
Trichloroethene	MG/KG	0.47	0.47	200	0.34 J	0.16 J	0.45 J	7.7	0.19 J
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					AECOM-17	AECOM-18	AECOM-18	AECOM-19	AECOM-20
Sample ID					AECOM-17 (22-23)	AECOM-18 (8-9)	AECOM-18 (16-17)	AECOM-19 (16-17)	AECOM-20 (13-14)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					22.0-23.0	8.0-9.0	16.0-17.0	16.0-17.0	13.0-14.0
Date Sampled					02/13/17	02/13/17	02/13/17	02/13/17	02/14/17
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190					
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500	5.3 J	1.1	1.5 J	7.1	
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					
Acetone	MG/KG	0.05	0.05	500					
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500					
Naphthalene	MG/KG	12	12	500					
sec-Butylbenzene	MG/KG	11	11	500					
tert-Butylbenzene	MG/KG	5.9	5.9	500					
Tetrachloroethene	MG/KG	1.3	1.3	150	6.2 J	3.9	41	0.88	42
Toluene	MG/KG	0.7	0.7	500					
Trichloroethene	MG/KG	0.47	0.47	200	86	0.45 J	9.6	0.13 J	7.6
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					AECOM-21	AECOM-22	GP-01	GP-02	GP-03
Sample ID					AECOM-21 (8-9)	AECOM-22 (12-13)	GP-01 8'-9'	GP-02 6'-7'	GP-03 9'-10'
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					8.0-9.0	12.0-13.0	8.0-9.0	6.0-7.0	9.0-10.0
Date Sampled					02/17/17	02/22/17	05/24/05	05/24/05	05/24/05
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190	0.033 J				4.1 DJ
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500				0.012 J	
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					2.0 DJ
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					0.62 J
Acetone	MG/KG	0.05	0.05	500	0.057 J	0.025 J	0.014 J	0.018 J	0.040 J
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-	0.013 J				0.12 J
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					0.012 J
Methylcyclohexane	MG/KG	-	-	-	0.022 J				0.021 J
Methylene chloride	MG/KG	0.05	0.05	500					
Naphthalene	MG/KG	12	12	500			0.0020 J		
sec-Butylbenzene	MG/KG	11	11	500	0.066 J				0.36 J
tert-Butylbenzene	MG/KG	5.9	5.9	500	0.026 J				
Tetrachloroethene	MG/KG	1.3	1.3	150	0.059 J	0.022		0.043 J	0.011 J
Toluene	MG/KG	0.7	0.7	500	0.029 J	0.024			0.0070 J
Trichloroethene	MG/KG	0.47	0.47	200				0.015 J	0.0060 J
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500	0.0093 J		0.0020 J		

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					GP-04	GP-05	GP-06	GP-07	GP-08
Sample ID					GP-04 7'-8'	GP-05 6'-7'	GP-6 7'-8'	GP-7 7'-8'	GP-8 7'-8'
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					7.0-8.0	6.0-7.0	7.0-8.0	7.0-8.0	7.0-8.0
Date Sampled					05/24/05	05/25/05	05/25/05	05/25/05	05/25/05
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190			0.0020 J		
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500	0.0040 J				0.065 J
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					
Acetone	MG/KG	0.05	0.05	500	0.0070 J	0.012 J		0.0060 J	0.016 J
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500			0.0020 J		
Naphthalene	MG/KG	12	12	500			0.0010 J		
sec-Butylbenzene	MG/KG	11	11	500					
tert-Butylbenzene	MG/KG	5.9	5.9	500					
Tetrachloroethene	MG/KG	1.3	1.3	150	0.14 J			0.044 J	0.38 DJ
Toluene	MG/KG	0.7	0.7	500	0.0030 J	0.0010 J	0.0020 J	0.0010 J	
Trichloroethene	MG/KG	0.47	0.47	200	0.015 J			0.0010 J	0.068 J
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500			0.0010 J		

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					GP-09	GP-10	GP-11	GP-12	MP-04D
Sample ID					GP-9 6'-7'	GP-10	GP-11	GP-12 12-16	MP-4D (9.5)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					6.0-7.0	10.0-12.0	8.0-12.0	12.0-16.0	9.5-9.5
Date Sampled					05/25/05	02/06/07	02/06/07	02/06/07	05/13/10
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190					NA
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500	0.018 J				
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					NA
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					NA
Acetone	MG/KG	0.05	0.05	500	0.044 J	0.072 J	0.012 J	0.080 J	0.020
Benzene	MG/KG	0.06	0.06	44		0.0020 J			
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-				0.0040 J	
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500	0.0070 J	0.019 J			
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500					0.0090
Naphthalene	MG/KG	12	12	500					NA
sec-Butylbenzene	MG/KG	11	11	500					NA
tert-Butylbenzene	MG/KG	5.9	5.9	500					NA
Tetrachloroethene	MG/KG	1.3	1.3	150	0.26 J		0.0040 J		
Toluene	MG/KG	0.7	0.7	500		0.0050 J		0.0030 J	
Trichloroethene	MG/KG	0.47	0.47	200	0.014 J				
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					MP-06D	MP-11D	MP-12D	MP-13D	MP-13D
Sample ID					MP-6D (14.8)	MP-11D (8-8.5)	MP-12D (7.5-8)	MP-13D (8-8.5)	MP-13D (13.7-14.2)
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					14.8-14.8	8.0-8.5	7.5-8.0	8.0-8.5	13.7-14.2
Date Sampled					05/14/10	05/15/10	05/15/10	05/15/10	05/15/10
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190	NA	NA	NA	NA	NA
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500					
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190	NA	NA	NA	NA	NA
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-	NA	NA	NA	NA	NA
Acetone	MG/KG	0.05	0.05	500					0.026
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500					0.010
Naphthalene	MG/KG	12	12	500	NA	NA	NA	NA	NA
sec-Butylbenzene	MG/KG	11	11	500	NA	NA	NA	NA	NA
tert-Butylbenzene	MG/KG	5.9	5.9	500	NA	NA	NA	NA	NA
Tetrachloroethene	MG/KG	1.3	1.3	150	560				
Toluene	MG/KG	0.7	0.7	500					
Trichloroethene	MG/KG	0.47	0.47	200					
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					URS-01	URS-02	URS-03	URS-04	URS-05
Sample ID					URS-01 08-10	URS-02 14-16	URS-03 22-24	URS-04 12-14	URS-05 10-12
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					8.0-10.0	14.0-16.0	22.0-24.0	12.0-14.0	10.0-12.0
Date Sampled					01/22/07	01/23/07	01/23/07	01/24/07	01/24/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**					
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190					
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500				0.050	
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					
Acetone	MG/KG	0.05	0.05	500	0.022 J	0.035 J	0.054 J		
Benzene	MG/KG	0.06	0.06	44					
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-					
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500					
Naphthalene	MG/KG	12	12	500					
sec-Butylbenzene	MG/KG	11	11	500					
tert-Butylbenzene	MG/KG	5.9	5.9	500					
Tetrachloroethene	MG/KG	1.3	1.3	150				0.50 J	
Toluene	MG/KG	0.7	0.7	500					0.0020 J
Trichloroethene	MG/KG	0.47	0.47	200				0.026	
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					URS-06	URS-07	URS-07	URS-08	URS-09
Sample ID					URS-06 20-22	DUP20070125	URS-07 14-16	URS-08 8-10	URS-09 6-8
Matrix					Soil	Soil	Soil	Soil	Soil
Depth Interval (ft)					20.0-22.0	14.0-16.0	14.0-16.0	8.0-10.0	6.0-8.0
Date Sampled					01/24/07	01/25/07	01/25/07	01/25/07	01/29/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**		Field Duplicate (1-1)			
Volatile Organic Compounds									
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190					
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500	0.016				
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190					
2-Hexanone	MG/KG	-	-	-					
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-					
Acetone	MG/KG	0.05	0.05	500					
Benzene	MG/KG	0.06	0.06	44		0.0020 J	0.0030 J		
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-					
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-					
Methyl acetate	MG/KG	-	-	-				0.0040 J	0.0040 J
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500					
Methylcyclohexane	MG/KG	-	-	-					
Methylene chloride	MG/KG	0.05	0.05	500		0.0080		0.0020 J	0.0040 J
Naphthalene	MG/KG	12	12	500					
sec-Butylbenzene	MG/KG	11	11	500					
tert-Butylbenzene	MG/KG	5.9	5.9	500					
Tetrachloroethene	MG/KG	1.3	1.3	150	0.0050 J				
Toluene	MG/KG	0.7	0.7	500		0.0030 J	0.0040 J		
Trichloroethene	MG/KG	0.47	0.47	200	0.0020 J				
Vinyl chloride	MG/KG	0.02	0.02	13					
Xylene (total)	MG/KG	0.26	1.6	500					

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-1
SUMMARY OF DETECTED VOLATILE ORGANIC COMPOUNDS IN ALL SOIL SAMPLES
FORMER KENWOOD CLEANERS SITE

Location ID					URS-10
Sample ID					URS-10 18-20
Matrix					Soil
Depth Interval (ft)					18.0-20.0
Date Sampled					01/30/07
Parameter	**Units**	**Criteria (1)**	**Criteria (2)**	**Criteria (3)**	
Volatile Organic Compounds					
1,2,4-Trimethylbenzene	MG/KG	3.6	3.6	190	
1,2-Dichloroethene (cis)	MG/KG	0.25	0.25	500	0.71 D
1,3,5-Trimethylbenzene (Mesitylene)	MG/KG	8.4	8.4	190	
2-Hexanone	MG/KG	-	-	-	
4-Isopropyltoluene (p-Cymene)	MG/KG	10 CP-51	10 CP-51	-	
Acetone	MG/KG	0.05	0.05	500	
Benzene	MG/KG	0.06	0.06	44	
Carbon disulfide	MG/KG	2.7 CP-51	2.7 CP-51	-	
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	2.3 CP-51	-	
Methyl acetate	MG/KG	-	-	-	
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	0.12	500	
Methylcyclohexane	MG/KG	-	-	-	
Methylene chloride	MG/KG	0.05	0.05	500	
Naphthalene	MG/KG	12	12	500	
sec-Butylbenzene	MG/KG	11	11	500	
tert-Butylbenzene	MG/KG	5.9	5.9	500	
Tetrachloroethene	MG/KG	1.3	1.3	150	0.31 D
Toluene	MG/KG	0.7	0.7	500	
Trichloroethene	MG/KG	0.47	0.47	200	0.21 D
Vinyl chloride	MG/KG	0.02	0.02	13	0.051
Xylene (total)	MG/KG	0.26	1.6	500	

Criteria (1)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

Criteria (2)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Restricted Use. Protection of Groundwater, plus CP-51 Table 1 10/21/10.

Criteria (3)- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Protection of Public Health, Commercial, plus CP-51 Table 1 10/21/10.

Flags assigned during chemistry validation are shown.

Concentration Exceeds Criteria 1

Concentration Exceeds Criteria (2)

Border Concentration Exceeds Criteria (3)

- = criteria. Empty cell - not detected. NA - Not analyzed.

D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-2
SUMMARY OF DETECTED COMPOUNDS IN SOIL VAPOR INTRUSION SAMPLES
2017 INVESTIGATION
FORMER KENWOOD CLEANERS SITE

Location ID		H-001-C	H-001-C	H-001-D	H-001-D	H-001-OA
Sample ID		IA02(B1)030817	SS02(B1)030817	IA01(B1)030817	SS01(B1)030817	OA01(B1)030817
Matrix		Indoor Air	Sub-Slab Vapor	Indoor Air	Sub-Slab Vapor	Outdoor Air
Depth Interval (ft)		-	-	-	-	-
Date Sampled		03/08/17	03/08/17	03/08/17	03/08/17	03/08/17
Parameter	**Units**					
Volatile Organic Compounds						
1,2,4-Trimethylbenzene	UG/M3	3.6	3.1	4.0		
1,2-Dichloroethene (cis)	UG/M3					
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3	0.94	0.92	1.1		
1,3-Butadiene	UG/M3	1.7	2.2	2.0		
2-Hexanone	UG/M3					
4-Ethyltoluene	UG/M3	0.86	0.85	1.0		
4-Methyl-2-pentanone	UG/M3	4.6	4.8	4.9		
Acetone	UG/M3	630 D	1,100 D	660 D	950	7.2
Benzene	UG/M3	1.8	2.5	1.8		0.25
Bromoform	UG/M3					
Carbon disulfide	UG/M3		2.6			
Carbon tetrachloride	UG/M3	0.43	0.39	0.40		0.42
Chloroform	UG/M3		0.48			
Chloromethane	UG/M3	1.3		1.5		1.1
Cyclohexane	UG/M3	1.1	1.7	1.2		
Dichlorodifluoromethane	UG/M3	0.82 J	1.1 J	1.0 J	97	0.95 J
Ethanol	UG/M3	130 DJ	200 DJ	140 DJ	360 J	
Ethyl acetate	UG/M3	4.2	4.0	4.3		
Ethylbenzene	UG/M3	4.5	6.6	4.9		
Heptane	UG/M3	18	23	18		
Isopropanol	UG/M3	23	39	24		
m&p-Xylene	UG/M3	19	23	20		
Methyl ethyl ketone (2-Butanone)	UG/M3	7.7	8.5	7.4		

Flags assigned during chemistry validation are shown.

Empty cell - not detected. D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-2
SUMMARY OF DETECTED COMPOUNDS IN SOIL VAPOR INTRUSION SAMPLES
2017 INVESTIGATION
FORMER KENWOOD CLEANERS SITE

Location ID		H-001-C	H-001-C	H-001-D	H-001-D	H-001-OA
Sample ID		IA02(B1)030817	SS02(B1)030817	IA01(B1)030817	SS01(B1)030817	OA01(B1)030817
Matrix		Indoor Air	Sub-Slab Vapor	Indoor Air	Sub-Slab Vapor	Outdoor Air
Depth Interval (ft)		-	-	-	-	-
Date Sampled		03/08/17	03/08/17	03/08/17	03/08/17	03/08/17
Parameter	**Units**					
Volatile Organic Compounds						
Methylene chloride	UG/M3	2.1	1.5	2.4		
Naphthalene	UG/M3	1.4	2.0	1.7		
o-Xylene	UG/M3	5.6	7.4	6.3		
Propene	UG/M3					
Styrene	UG/M3	0.88	0.99	0.99		
Tetrachloroethene	UG/M3	16	89	19	59,000 D	
Tetrahydrofuran	UG/M3	8.9	7.9	8.4		9.2
Toluene	UG/M3	350 D	370 D	370 D	97	0.37
Trichloroethene	UG/M3	0.21	0.27	0.21	190	
Trichlorofluoromethane	UG/M3	1.3	2.0	1.3		1.3
Vinyl chloride	UG/M3					

Flags assigned during chemistry validation are shown.

Empty cell - not detected. D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-2
SUMMARY OF DETECTED COMPOUNDS IN SOIL VAPOR INTRUSION SAMPLES
2017 INVESTIGATION
FORMER KENWOOD CLEANERS SITE

Location ID		H-003-A3	H-003-A4	H-003-A5	H-003-A5	H-003-A6
Sample ID		IA01(B2)030717	SS02(B2)030717	DUP01(B2)030717	IA02(B2)030717	SS01(B2)030717
Matrix		Indoor Air	Sub-Slab Vapor	Indoor Air	Indoor Air	Sub-Slab Vapor
Depth Interval (ft)		-	-	-	-	-
Date Sampled		03/07/17	03/07/17	03/07/17	03/07/17	03/07/17
Parameter	Units			Field Duplicate (1-1)		
Volatile Organic Compounds						
1,2,4-Trimethylbenzene	UG/M3	0.35	0.58	0.34	0.38	0.36
1,2-Dichloroethene (cis)	UG/M3	0.92	77	0.93	0.97	1.1
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3		0.21			
1,3-Butadiene	UG/M3	0.10		0.11	0.11	
2-Hexanone	UG/M3	0.40	0.64	0.38 J		0.44
4-Ethyltoluene	UG/M3					
4-Methyl-2-pentanone	UG/M3		0.65			0.41
Acetone	UG/M3	21	76	20	18	50
Benzene	UG/M3	0.73	0.93	0.72	0.75	0.66
Bromoform	UG/M3		7.3			1.5
Carbon disulfide	UG/M3		1.2			1.9
Carbon tetrachloride	UG/M3	0.45	0.35	0.45	0.46	0.35
Chloroform	UG/M3	0.62	2.5	0.57	0.62	0.98
Chloromethane	UG/M3	1.1	0.15	1.1	1.1	
Cyclohexane	UG/M3		0.50			0.41
Dichlorodifluoromethane	UG/M3	0.72	0.69 J	0.69	0.71	0.72 J
Ethanol	UG/M3	9.3 J	19	9.3 J	8.7 J	17
Ethyl acetate	UG/M3	0.62	1.0	0.70	0.57	0.68
Ethylbenzene	UG/M3	0.35	0.32	0.34	0.35	0.26
Heptane	UG/M3	0.63	1.3	0.59	0.64	1.2
Isopropanol	UG/M3	55		58	62	5.3
m&p-Xylene	UG/M3	1.4	1.3	1.3	1.4	1.1
Methyl ethyl ketone (2-Butanone)	UG/M3		5.0			

Flags assigned during chemistry validation are shown.

Empty cell - not detected. D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-2
SUMMARY OF DETECTED COMPOUNDS IN SOIL VAPOR INTRUSION SAMPLES
2017 INVESTIGATION
FORMER KENWOOD CLEANERS SITE

Location ID		H-003-A3	H-003-A4	H-003-A5	H-003-A5	H-003-A6
Sample ID		IA01(B2)030717	SS02(B2)030717	DUP01(B2)030717	IA02(B2)030717	SS01(B2)030717
Matrix		Indoor Air	Sub-Slab Vapor	Indoor Air	Indoor Air	Sub-Slab Vapor
Depth Interval (ft)		-	-	-	-	-
Date Sampled		03/07/17	03/07/17	03/07/17	03/07/17	03/07/17
Parameter	**Units**			Field Duplicate (1-1)		
Volatile Organic Compounds						
Methylene chloride	UG/M3	5.6		5.4	5.4	
Naphthalene	UG/M3		0.41	0.20	0.21	0.74
o-Xylene	UG/M3	0.46	0.47	0.45	0.48	0.34
Propene	UG/M3					3.2
Styrene	UG/M3					
Tetrachloroethene	UG/M3	6.7	55	7.6	7.9	50
Tetrahydrofuran	UG/M3	22	2.6	23	24	6.6
Toluene	UG/M3	6.2	2.7	6.0	6.3	2.4
Trichloroethene	UG/M3	0.63	0.55	0.69	0.71	0.55
Trichlorofluoromethane	UG/M3	1.3	1.2	1.3	1.3	1.2
Vinyl chloride	UG/M3	0.37	0.12	0.33	0.36	

Flags assigned during chemistry validation are shown.

Empty cell - not detected. D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-2
SUMMARY OF DETECTED COMPOUNDS IN SOIL VAPOR INTRUSION SAMPLES
2017 INVESTIGATION
FORMER KENWOOD CLEANERS SITE

Location ID		H-003-OA
Sample ID		OA01(B2)030717
Matrix		Outdoor Air
Depth Interval (ft)		-
Date Sampled		03/07/17
Parameter	**Units**	
Volatile Organic Compounds		
1,2,4-Trimethylbenzene	UG/M3	
1,2-Dichloroethene (cis)	UG/M3	
1,3,5-Trimethylbenzene (Mesitylene)	UG/M3	
1,3-Butadiene	UG/M3	
2-Hexanone	UG/M3	0.28
4-Ethyltoluene	UG/M3	
4-Methyl-2-pentanone	UG/M3	
Acetone	UG/M3	11
Benzene	UG/M3	0.62
Bromoform	UG/M3	
Carbon disulfide	UG/M3	
Carbon tetrachloride	UG/M3	0.45
Chloroform	UG/M3	
Chloromethane	UG/M3	1.1
Cyclohexane	UG/M3	
Dichlorodifluoromethane	UG/M3	0.66
Ethanol	UG/M3	6.2 J
Ethyl acetate	UG/M3	0.52
Ethylbenzene	UG/M3	
Heptane	UG/M3	
Isopropanol	UG/M3	
m&p-Xylene	UG/M3	
Methyl ethyl ketone (2-Butanone)	UG/M3	

Flags assigned during chemistry validation are shown.

Empty cell - not detected. D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 2-2
SUMMARY OF DETECTED COMPOUNDS IN SOIL VAPOR INTRUSION SAMPLES
2017 INVESTIGATION
FORMER KENWOOD CLEANERS SITE

Location ID		H-003-OA
Sample ID		OA01(B2)030717
Matrix		Outdoor Air
Depth Interval (ft)		-
Date Sampled		03/07/17
Parameter	**Units**	
Volatile Organic Compounds		
Methylene chloride	UG/M3	1.2
Naphthalene	UG/M3	
o-Xylene	UG/M3	
Propene	UG/M3	
Styrene	UG/M3	
Tetrachloroethene	UG/M3	0.25
Tetrahydrofuran	UG/M3	
Toluene	UG/M3	0.74
Trichloroethene	UG/M3	
Trichlorofluoromethane	UG/M3	1.5
Vinyl chloride	UG/M3	

Flags assigned during chemistry validation are shown.

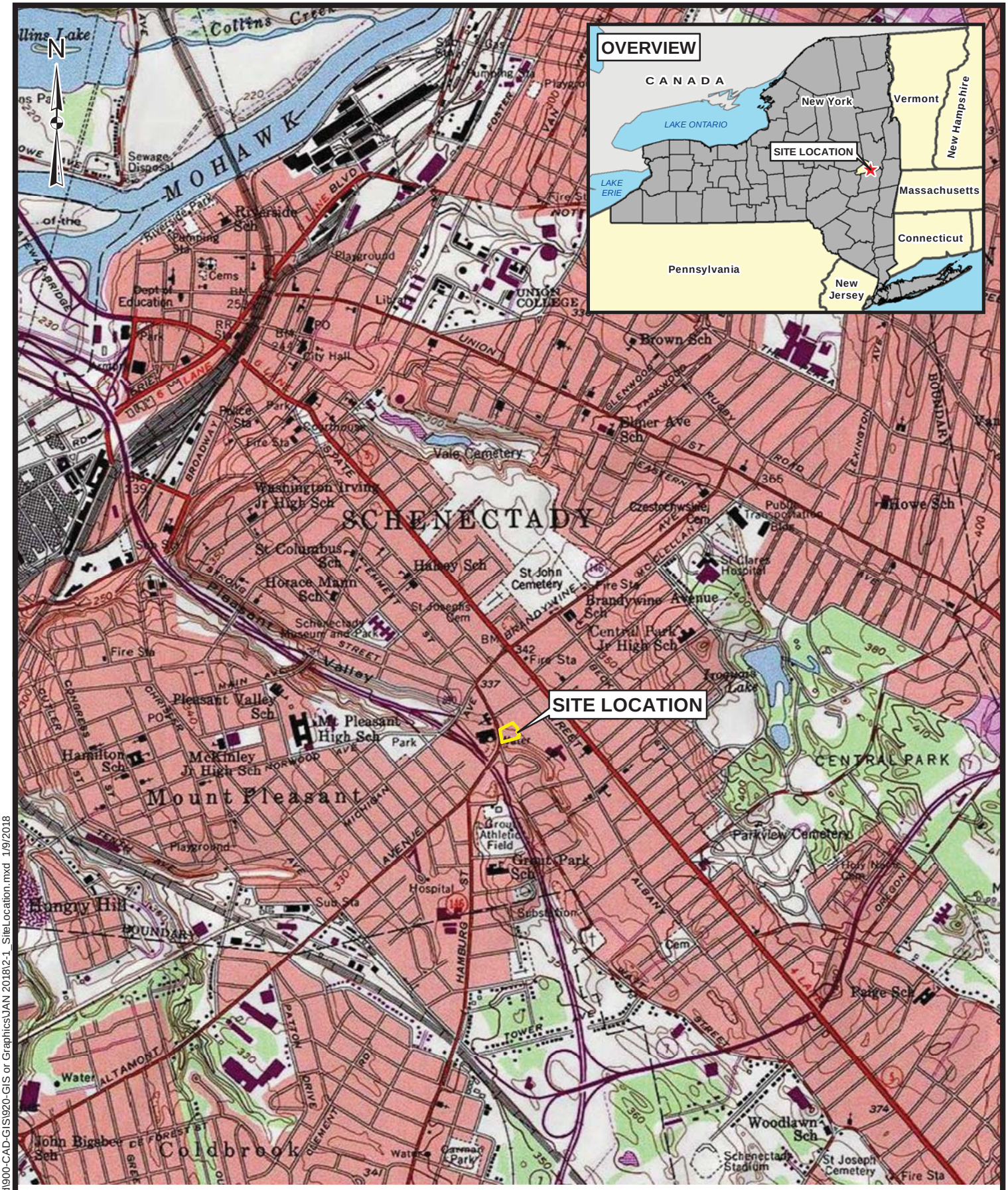
Empty cell - not detected. D - Result reported from a secondary dilution analysis. J - The reported concentration is an estimated value.

Only Detected Results Reported.

TABLE 6-1
SUMMARY OF FINAL REMEDIAL ALTERNATIVE COSTS

	Alternative 1	Alternative 2	Alternative 3
	No Action, Institutional Controls with Site Management	**Excavation and Institutional Controls with Site Management**	**Excavation, ISCO and Institutional Controls with Site Management**
CAPITAL COSTS			
Site Management Plan	$40,600	$40,600	$40,600
Mobilization/Demobilization&Site Services		$149,700	$149,700
Source Excavation		$316,500	$316,500
ISCO			$14,388
Overhead and Profit	$4,100	$50,700	$52,200
Contingency	$13,500	$167,300	$172,100
TOTAL CAPITAL COST	$58,200	$724,800	$745,488
OM&M COSTS			
Monitoring - First 18 Months	$15,600	$15,600	$15,600
Present Worth Monitoring-30 years	$40,000	$40,000	$40,000
Present Worth Annual Report and 5-Year Reviews-30years	$230,000	$230,000	$230,000
TOTAL OM&M COST	$285,600	$285,600	$285,600
TOTAL COST	$343,800	$1,010,400	$1,031,088

FIGURES



SOURCE:
USGS 7.5 Minute Topographic Quadrangle
Schenectady - 1995

URS

FORMER KENWOOD CLEANERS SITE
SITE LOCATION

FIGURE 2-1

J:\Projects\60523012__Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 2018\2-1_SiteLocation.mxd 1/9/2018

N

DUANE AVENUE

KELTON AVENUE

ODELL STREET

STATE STREET

ALBANY STREET

LANDSCAPED AREA

EXISTING METAL CLAD BUILDING

CHAIN LINK FENCE

LOADING DOCK

FORMER DRY CLEANER BUILDING FOOTPRINT

ASPHALT PAVEMENT

CURB

CURB

BUILDING

INTERSTATE

890

RAMP

RAMP

PARKING LOT

CURB

PARKING LOT

PARKING LOT

CURB

WILLIAM C. KEANE ELEMENTARY SCHOOL

LAKE BOULEVARD

ALTAMONT AVENUE

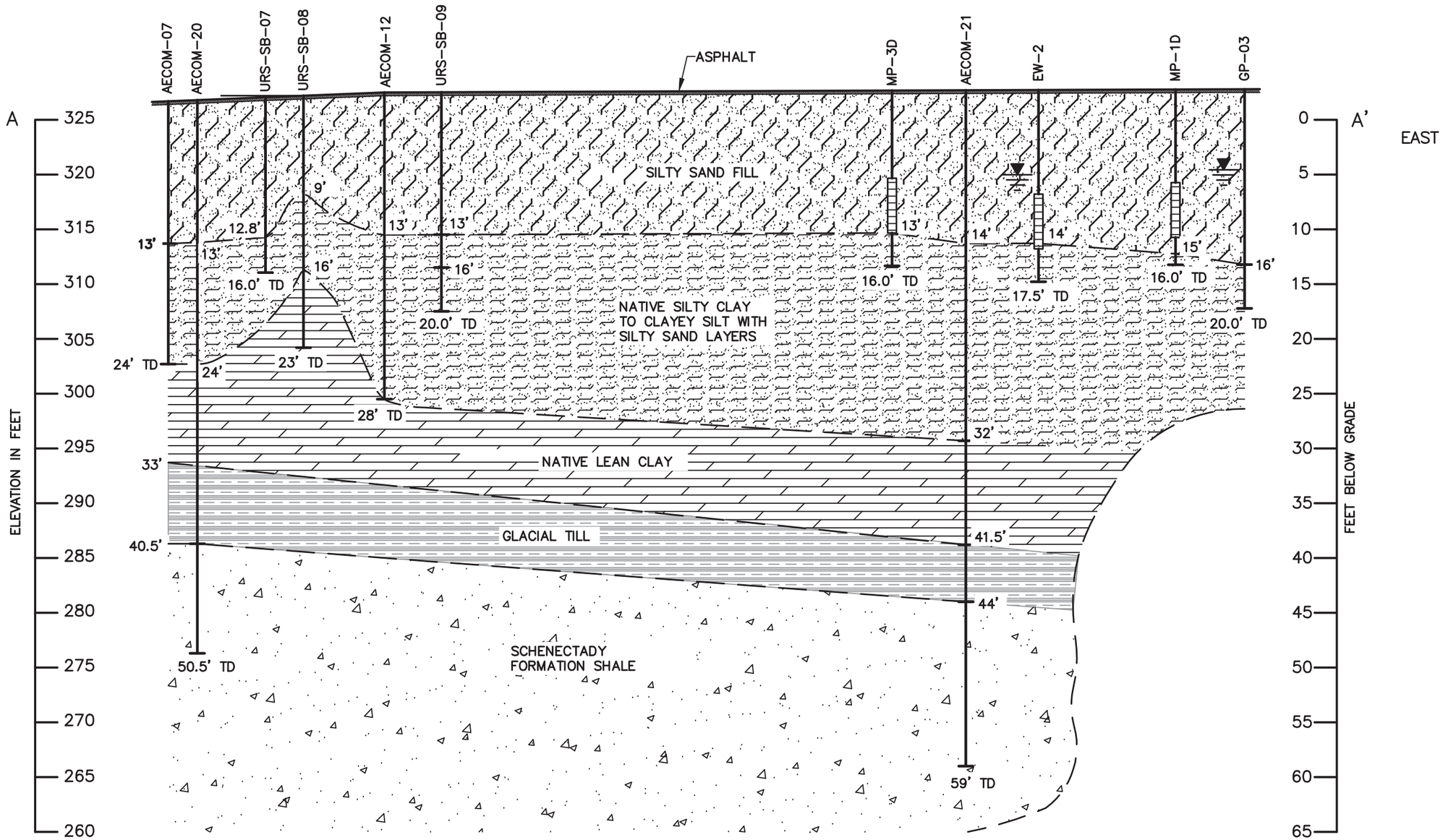
100 0 100 Feet

FORMER KENWOOD CLEANERS
SITE PLAN

URS

FIGURE 2-2

\\URSBuffalo\Buffalo\Projects\60523012__Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 2018\2-2_SitePlan.mxd 1/21/2018



10' 0 10'

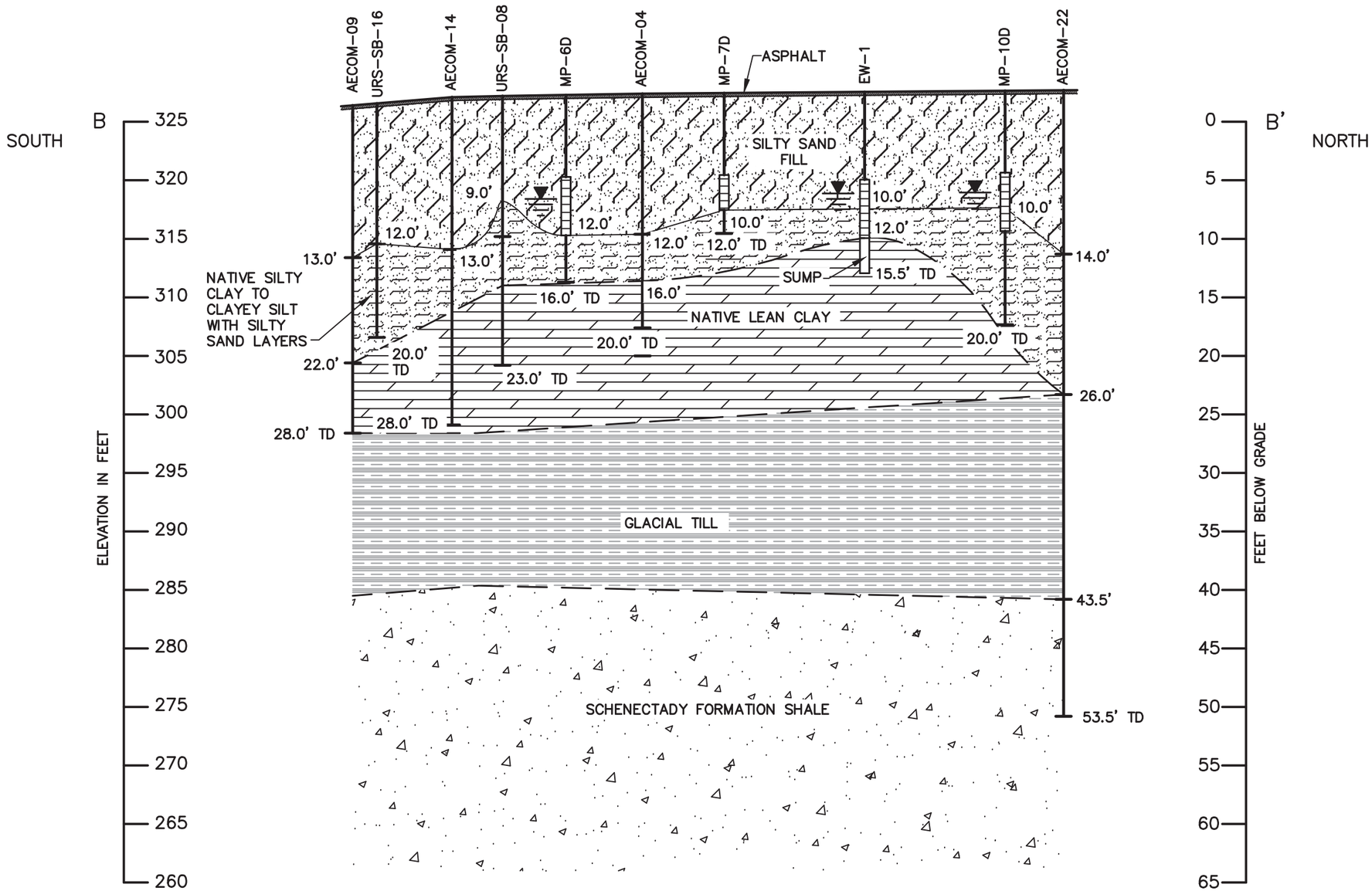
SCALE IN FEET

CROSS SECTION A–A'
FORMER KENWOOD CLEANERS SITE

URS

FIGURE 2–3

J:\Projects\60523012__Kenwood\900-CAD-GIS\910-CAD\20-SHEETS\JANUARY 2018 SUBMITTAL\FIGURE 2-3 & 2-4.dwg, FIG 2-3, 1:2.58, 9/15/17 -1-RAL



CROSS SECTION B–B'
FORMER KENWOOD CLEANERS SITE

URS

FIGURE 2–4

J:\Projects\60523012__Kenwood\900-CAD-GIS\910-CAD\20-SHEETS\JANUARY 2018 SUBMITTAL\FIGURE 2-3 & 2-4.dwg, FIG 3-2, 1:2.58, 9/15/17 -1-RAL

N

GP-06

MP-13 D/S

MP-11 D/S

AECOM-22

B'

MP-10 D/S

A'

GP-03

MP-1 D/S

EW-2

EW-1

MP-3 D/S

AECOM-21

AECOM-03

AECOM-02

MP-9 D/S

MP-7 D/S

AECOM-01

URS-SB-02

MP-2 D/S

URS-SB-04

URS-SB-01

URS-SB-03

AECOM-04

MP-8 D/S

MP-6 D/S

URS-SB-05

AECOM-06

URS-SB-10

MP-4 D/S

GP-07

URS-SB-14

URS-SB-06

URS-SB-09

FORMER DRY CLEANER BUILDING FOOTPRINT

A

AECOM-12

AECOM-15

URS-SB-07

URS-SB-08

AECOM-11

AECOM-07

AECOM-05

URS-SB-18

AECOM-10

AECOM-20

AECOM-14

GP-04

URS-SB-13

URS-SB-12

URS-SB-19

AECOM-18

URS-SB-11

URS-SB-16

URS-SB-17

B

AECOM-09

AECOM-08

MP-5 D/S

URS-SB-15

AECOM-13

GP-09

Legend

- Soil Boring
- Monitoring Well
- Extraction Well
- Cross Section A-A'
- Cross Section B-B'

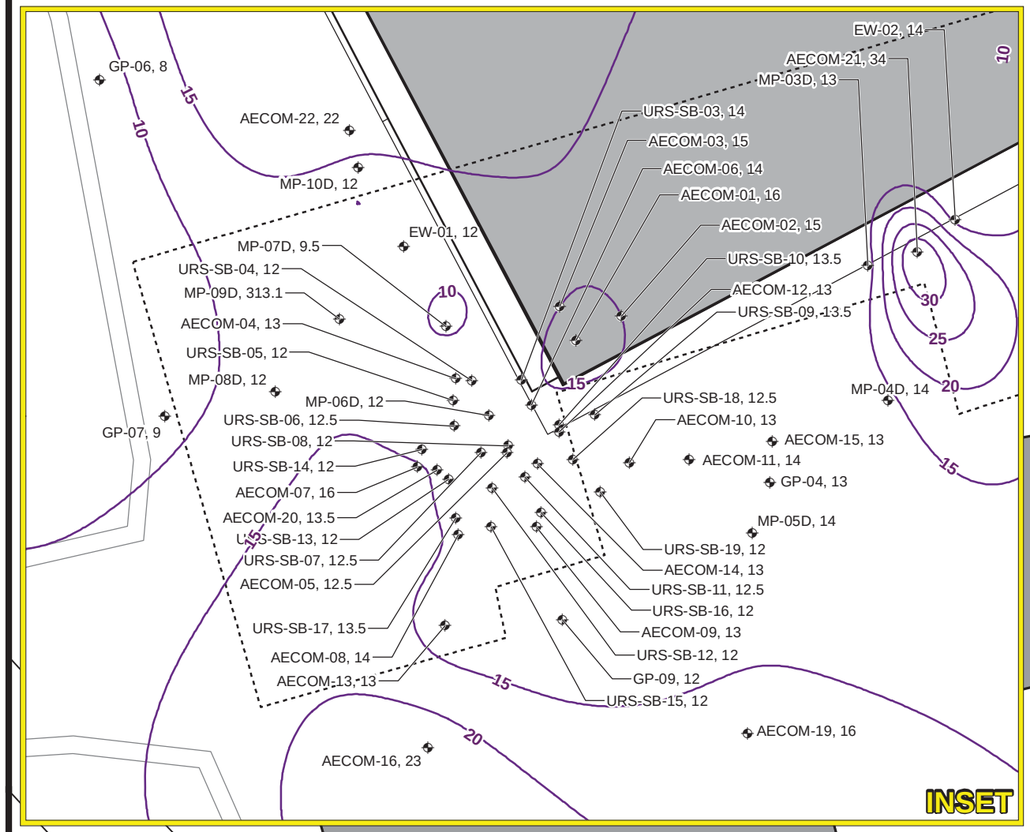
10 0 10 Feet

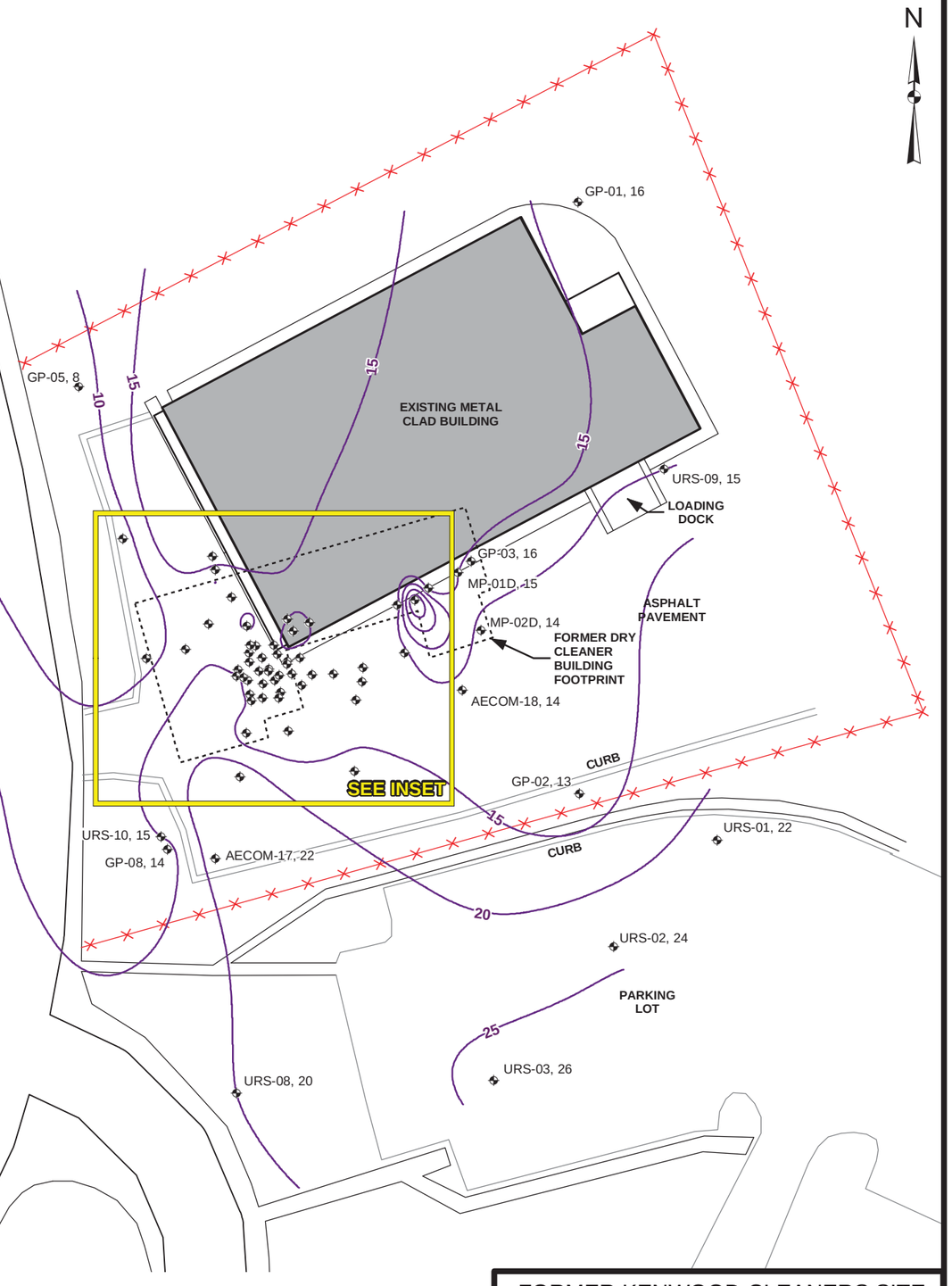
FORMER KENWOOD CLEANERS SITE
GEOLOGIC CROSS SECTION LOCATIONS

URS

FIGURE 2-5

J:\Projects\60523012__Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 2018\2-5_CrossSection.mxd 1/10/2018





Legend

- Depth to Clay Contour (ft)
- URS-06, 19
  - Monitoring Well Location ID
  - Depth from Surface to Clay Layer

NOTES:
1. URS-SB-03 was drilled at an approximately 10 degree angle towards the northeast to reach under the sidewalk slab.

50 0 50 Feet

FORMER KENWOOD CLEANERS SITE
DEPTH TO CLAY LAYER TOPOGRAPHY

URS

FIGURE 2-6

J:\Projects\60523012_Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 2018\2-6_Clay_Topography.mxd 1/9/2018

N

DUANE AVENUE

WATT STREET

URS-05, 317.54

URS-04, 311.68

URS-06, 306.13

URS-07, 307.25

GP-01, 321.62

GP-03, 320.01

GP-07, 317.98

GP-09, 318.14

GP-02, 319.24

GP-08, 317.85

316

314

312

310

308

Legend

- Monitoring Well
- Groundwater Flow Direction
- 310 Groundwater Elevation Contour (ft amsl)

50 0 50 Feet

FORMER KENWOOD CLEANERS SITE
GROUNDWATER ELEVATION CONTOURS
FEBRUARY 2017

URS

FIGURE 2-7

\\URSBuffalo\Buffalo\Projects\605523012_Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 2018\2-7_GW ELEV.mxd 1/21/2018

N

AECOM-21, 0.059 (8'-9')

AECOM-03, 3.1 (8'-10')

AECOM-02, 0.19 (2'-4')

AECOM-01, 7.3 (8'-10')

AECOM-04, 0.079 (11'-12')

GP-07, 0.044 (7'-8')

AECOM-06, 39000 (12'-13')

MP-06D, 560 (14.8')

MP-04D, ND (9.5')

AECOM-12, 590 (19'-20')

AECOM-15, 1.5 (7'-8')

AECOM-05, 130 (19'-20')

AECOM-10, 160 (19'-20')

AECOM-07, 4 (13'-14')

AECOM-14, 2900 (19'-20')

AECOM-11, 0.15 (14'-15')

AECOM-20, 42 (13'-14')

GP-04, 0.14 (7'-8')

AECOM-18, 41 (16'-17')

AECOM-08, 200 (19'-20')

AECOM-09, 120 (19'-20')

GP-09, 0.26 (6'-7')

AECOM-13, 10 (12'-13')

AECOM-19, 0.88 (16'-17')

AECOM-16, 65 (20'-21')

URS-10, 0.31 (18'-20')

CURB

Legend

- Soil Sample

PCE Concentration Contour

- 10 mg/kg
- 100 mg/kg
- 1000 mg/kg
- 10000 mg/kg
- 1.6 mg/kg (Unrestricted Threshold)
- 150 mg/kg (Commercial Threshold)

Maximum PCE Concentration (mg/kg)

AECOM-07, 4 (13'-14')

Soil Sample Location ID

Soil Sample Depth Interval

NOTES:
1. Contours based on maximum PCE concentration

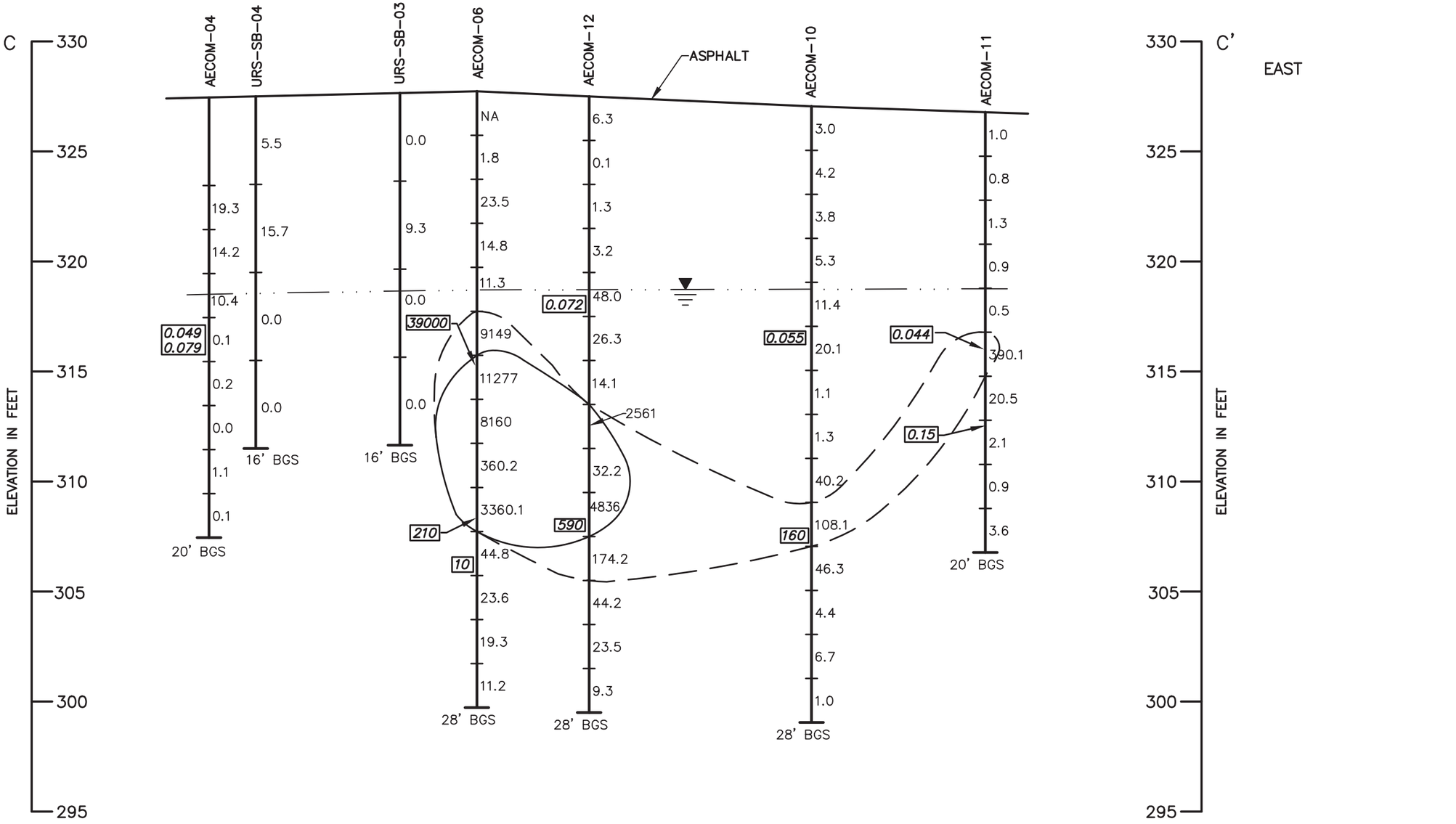
10 0 10 Feet

FORMER KENWOOD CLEANERS SITE
PCE IN SOIL ISOCONCENTRATION CONTOURS

URS

FIGURE 2-8

\\URSBuffalo\Buffalo\Projects\60523012__Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 201802-8_PCE_Concentration.mxd 1/9/2018

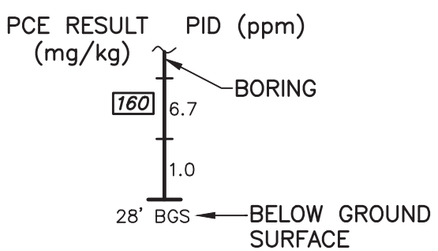


LEGEND:

PCE RESULT >150 mg/kg (COMMERCIAL THRESHOLD)

PID READINGS>100 ppm

WATER LEVEL 2/12/17



CROSS SECTION C-C'
FORMER KENWOOD CLEANERS SITE

URS

FIGURE 2-9

D — SOUTH

D' — NORTH

ELEVATION IN FEET

330 / 325 / 320 / 315 / 310 / 305 / 300 / 295

BUILDING WALL

ASPHALT

BUILDING

AECOM-16 | AECOM-13 | AECOM-08 | URS-SB-12 | AECOM-05 | URS-SB-08 | AECOM-06 | URS-SB-01 | AECOM-01 | URS-SB-02 | AECOM-02

AECOM-16: 0.0 / 0.0 / 0.0 / 0.0 / 0.0 / 0.1 / 180.1 / 133.1 / 316.3 / 65 / 3525 / 126.7 / 24.4 / 4.7 — 28' BGS

AECOM-13: 1.3 / 1.6 / 0.8 / 1.1 / 0.7 / 40.3 / 455 / 130 / 257.6 / 391.5 / 360.1 / 4.5 / 0.3 / 0.0 — 28' BGS

AECOM-08: NA / NA / 4.6 / 1.7 / 3.0 / 126.3 / 166.8 / 63.9 / 106.1 / 517.2 / 48.1 / 7.0 / 0.2 / 0.0 — 28' BGS

URS-SB-12: 8.7 / 6.0 / 3.8 / 18.7 / 31.2 / 32 / 168 / 931 / 17.9 — 24' BGS

AECOM-05: 6.9 / 11.8 / 6.1 / 8.8 / 14.6 / 7.6 / 1201 / 170.6 / 355.2 / 1555 / 1730 / 130 / 20.2 / 3.2 — 23' BGS

URS-SB-08: 11.2 / 5.2 / 157 / >10000 / 656 / 135 / 35.9 / 81.9 / 207 / 4.538 / 53.9 / 63.4 / 45.2 / 18.2 / 10.5 / 2.5 / 11.0 / 10.2 — 28' BGS

AECOM-06: NA / 1.8 / 23.5 / 14.8 / 11.3 / 39000 / 9149 / 11277 / 8160 / 360.2 / 3360.1 / 210 / 44.8 / 10 / 23.6 / 19.3 / 11.2 — 28' BGS

URS-SB-01: 21.4 / 67.1 / 45.9 / 21.1 / 648 / 20.5 / 4.0 — 19' BGS

AECOM-01: 4.0 / 13.2 / 4.0 / 17.1 / 1.7 / 5.4 / 7.3 / 2.0 / 2.3 / 2.7 / 4.0 / 2.3 / 3.1 / 4.0 / 2.2 / 2.4 — 28' BGS

URS-SB-02: 4.0 / 22.0 / 0.5 / 0.0 / 0.0 — 16' BGS

AECOM-02: 3.0 / 0.19 / 20.8 / 9.4 / 5.8 / 3.3 / 1.9 / 2.2 / 1.8 / 0.015 / 6.1 / 3.2 — 20' BGS

1.6 | 0.021 | 0.82 | 10

LEGEND:

PCE RESULT >150 mg/kg (COMMERCIAL THRESHOLD)

PID READINGS>100 ppm

WATER LEVEL 2/12/17

PCE RESULT (mg/kg) / PID (ppm) — BORING

160 / 6.7 / 1.0 / 28' BGS — BELOW GROUND SURFACE

5' 0 5'

SCALE IN FEET

CROSS SECTION D–D'
FORMER KENWOOD CLEANERS SITE

URS

FIGURE 2–10

N

AECOM-22
MP-11 D/S
GP-03
MP-10 D/S
MP-1 D/S
EW-2
EW-1
MP-3 D/S
AECOM-21
AECOM-03
AECOM-02
D'
MP-9 D/S
MP-7 D/S
AECOM-01
URS-SB-02
MP-2 D/S
URS-SB-04
URS-SB-01
C
URS-SB-03
AECOM-04
MP-8 D/S
MP-6 D/S
URS-SB-10
MP-4 D/S
URS-SB-05
AECOM-06
GP-07
URS-SB-09
URS-SB-06
URS-SB-14
AECOM-12
AECOM-15
URS-SB-07
URS-SB-08
AECOM-10
AECOM-11
AECOM-07
AECOM-05
URS-SB-18
C'
AECOM-14
AECOM-20
URS-SB-11
GP-04
URS-SB-12
URS-SB-19
URS-SB-13
AECOM-18
URS-SB-16
URS-SB-17
AECOM-09
AECOM-08
MP-5 D/S
URS-SB-15
GP-09
AECOM-13
AECOM-19
D
AECOM-16

FORMER DRY CLEANER BUILDING FOOTPRINT

Legend

- Soil Boring
- Monitoring Well
- Extraction Well
- Cross Section C-C'
- Cross Section D-D'

10 0 10 Feet

FORMER KENWOOD CLEANERS SITE
GEOLOGIC CROSS SECTION LOCATIONS

URS

FIGURE 2-11

\\URSBuffalo\Buffalo\Projects\60523012__Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 2018\2-11_CrossSection_C-D.mxd 1/21/2018

N

DUANE AVENUE

LANDSCAPED AREA

H-001-OA	03/17
VOCs:	
Carbon tetrachloride	0.42

H-001-C (Sub-slab)	03/17
VOCs:	
Carbon tetrachloride	0.39
Methylene chloride	1.5
Tetrachloroethene	89
Trichloroethene	0.27

EXISTING METAL CLAD BUILDING

H-001-D (Sub-slab)	03/17
VOCs:	
Tetrachloroethene	59000
Trichloroethene	190

H-001-C	03/17
VOCs:	
Carbon tetrachloride	0.43
Methylene chloride	2.1
Tetrachloroethene	16
Trichloroethene	0.21

LOADING DOCK

ASPHALT PAVEMENT

H-001-D	03/17
VOCs:	
Carbon tetrachloride	0.4
Methylene chloride	2.4
Tetrachloroethene	19
Trichloroethene	0.21

FORMER DRY CLEANER BUILDING FOOTPRINT

CURB

Legend

- Sub-slab Sample
- Indoor Air Sample
- Outdoor Air Sample

30 0 30 Feet

FORMER KENWOOD CLEANERS SITE CHLORINATED COMPOUNDS DETECTED IN SUB-SLAB/INDOOR AIR/OUTDOOR AIR MARCH 2017

URS

FIGURE 2-12

\\URSBuffaloBuffalo\Projects\60523012_Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 2018\2-12_Chlorinated_Compounds.mxd 1/21/2018

N

CURB

Legend

Remediation Area

PCE Concentration Contour

- 10 mg/kg
- 100 mg/kg
- 1000 mg/kg
- 10000 mg/kg
- 1.6 mg/kg (Unrestricted Threshold)
- 150 mg/kg (Commercial Threshold)

NOTES:
1. Contours based on maximum PCE concentration

10 0 10 Feet

FORMER KENWOOD CLEANERS SITE
REMEDIATION AREA

URS

FIGURE 3-1

\\URSBuffalo\Buffalo\Projects\60523012_Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 201813-1_SourceArea.mxd 1/21/2018

N

DUANE AVENUE

LANDSCAPED AREA

EXISTING METAL CLAD BUILDING

BUILDING

LOADING DOCK

FORMER DRY CLEANER BUILDING FOOTPRINT

ASPHALT PAVEMENT

CURB

PARKING LOT

WATT STREET

URS-05
No Compounds Exceed Criteria

EW-01 | CRIT | 03/17

VOCs:		
Tetrachloroethene	5	13

MP-08D | CRIT | 03/17

VOCs:		
1,2-Dichloroethene (cis)	5	18
Tetrachloroethene	5	290
Trichloroethene	5	17

GP-07 | CRIT | 03/17

VOCs:		
Tetrachloroethene	5	63

URS-04 | CRIT | 03/17

VOCs:		
1,2-Dichloroethene (cis)	5	660
1,2-Dichloroethene (trans)	5	18
Tetrachloroethene	5	790
Trichloroethene	5	260
Vinyl chloride	2	4.9

URS-10 | CRIT | 03/17

VOCs:		
1,2-Dichloroethene (cis)	5	15
Vinyl chloride	2	140

URS-06 | CRIT | 03/17

VOCs:		
1,2-Dichloroethene (cis)	5	140
1,2-Dichloroethene (trans)	5	8.5
Tetrachloroethene	5	6.2
Vinyl chloride	2	13

URS-11
No Compounds Exceed Criteria

URS-07
No Compounds Exceed Criteria

GP-01
No Compounds Exceed Criteria

MP-12D
No Compounds Exceed Criteria

MP-11D
No Compounds Exceed Criteria

MP-13D
No Compounds Exceed Criteria

GP-03
No Compounds Exceed Criteria

EW-02
No Compounds Exceed Criteria

MP-06D | CRIT | 03/17

VOCs:		
1,2-Dichloroethene (cis)	5	120
Tetrachloroethene	5	1700
Trichloroethene	5	190
Vinyl chloride	2	3.7

GP-09 | CRIT | 03/17

VOCs:		
1,2-Dichloroethene (cis)	5	25
Tetrachloroethene	5	6.8
Trichloroethene	5	7.7
Vinyl chloride	2	3

GP-02 | CRIT | 03/17

VOCs:		
1,2-Dichloroethene (cis)	5	7.1
Tetrachloroethene	5	31

GP-08 | CRIT | 03/17

VOCs:		
Vinyl chloride	2	11

Legend

- Monitoring Well
- Extraction Well

CRITERIA:
CRIT: NYSDEC TOGS (1.1.1), Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations. April 2000, Class GA.

50 0 50 Feet

FORMER KENWOOD CLEANERS SITE COMPOUNDS DETECTED IN GROUNDWATER MARCH 2017

URS

FIGURE 3-2

\\URSBuffalo\Buffalo\Projects\60523012_Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 2018\3-2_Groundwater_Exceedances.mxd 1/22/2018

N

CURB

Legend

Area of Excavation

Area cannot be excavated due to proximity to foundation

PCE Concentration Contour

- 10 mg/kg
- 100 mg/kg
- 1000 mg/kg
- 10000 mg/kg
- 1.6 mg/kg (Unrestricted Threshold)
- 150 mg/kg (Commercial Threshold)

NOTES:
1. Contours based on maximum PCE concentration

10 0 10 Feet

CONCEPTUAL LAYOUT FOR ALTERNATIVE 2
SOIL EXCAVATION AND SMP

URS

FIGURE 5-1

J:\Projects\60523012__Kenwood900-CAD-GIS\920-GIS or Graphics\JAN 2018\5-1_ExcavationArea.mxd 1/9/2018

N

CURB

Legend

- Area of Excavation and ISCO
- Area cannot be excavated due to proximity to foundation

PCE Concentration Contour

- 10 mg/kg
- 100 mg/kg
- 1000 mg/kg
- 10000 mg/kg
- 1.6 mg/kg (Unrestricted Threshold)
- 150 mg/kg (Commercial Threshold)

NOTES:
1. Contours based on maximum PCE concentration

10 0 10 Feet

CONCEPTUAL LAYOUT FOR ALTERNATIVE 3 EXCAVATION, ISCO AND SMP

URS

FIGURE 5-2

\\URSBuffalo\Buffalo\Projects\60523012_Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 201815-2_ExcavationArea.mxd 1/21/2018

APPENDICES

APPENDIX A

CALCULATIONS

JOB NO.: 60523012

MADE BY: C. Pawlewski DATE: 11/20/17

CHECKED BY: D. McCall DATE: 12/11/17

PROJECT: **Kenwood Cleaners Focused FS**

SUBJECT: **Mass Calculations**

---

1. Background and Purpose

Supplemental RI investigations performed in 2017 showed that most site soil contamination is present outside the southwest corner of the existing on-site building. A Focused FS is being performed for the Kenwood Cleaners site to evaluate the excavation of heavily contaminated soil in the source area located mainly immediately adjacent to the southwest corner of the existing on-site building. The purpose of this calculation is to estimate the percentage (by mass) of the total contamination that will be removed by excavating the heavily contaminated source area.

2. Extent of Contamination

A contour map of soil concentrations of PCE was presented in the RI Addendum and is included as Figure 1 of this calculation. The estimated area within the limits of each of these contours is presented in the table below.

PCE Concentration (mg/kg)	Area (ft^2)
1.6-10	657
10-100	629
100-150	169
150-1000	216
1000-10000	45
Greater than 10000	29

The thickness of contamination in each of the above zones is approximated by PID readings recorded during the 2017 sampling event. The depth approximately correlates to the depth defined by the 100 ppm PID contour. Cross-sections showing PID readings in the contaminated area are included as figures 2 and 3. The locations of the cross-sections are shown in Figure 4. Based on these cross-sections the estimated average total

thickness of contamination in each of the above zones is presented in the table below.

PCE Concentration (mg/kg)	Thickness (ft)
1.6-10	10
10-100	10
100-150	10
150-1000	6
1000-10000	12
Greater than 10000	12

3. Contaminant Concentrations

A total of 15 VOCs were detected in soil during the 2017 investigation. Table 1 shows the average concentrations of each of these VOCs detected in soil. As shown, PCE is the most prevalent VOC by far. Based on average concentrations, the concentration of all other VOCs combined are less than 1 percent of the PCE concentration. Therefore, the contribution of VOCs other than PCE to the total contaminant mass is considered negligible and only PCE will be used in the calculations for contaminant mass in soil.

Concentrations of PCE in the zones presented above were estimated by using the average of the two contour lines except for the greater than 10,000 mg/kg zone. In that zone, PCE was detected at a concentration of 39,000 mg/kg at AECOM-06. For this zone, the estimated PCE concentration is the average of 10,000 mg/kg (the contour line) and 39,000 mg/kg or 24,500 mg/kg. PCE concentrations used for mass calculations are summarized below.

PCE Concentration Range (mg/kg)	Average Concentration (mg/kg)
1.6-10	5.8
10-100	55
100-150	125
150-1000	575
1000-10000	5500
Greater than 10000	24500

4. Soil Bulk Density

The majority of contamination is present in the silty clay and clay zones at the site. Bulk density was measured in a sample taken at depth in clay (see Attachment A). Three measurements of bulk density from this sample ranged from 126 to 141 lb/ft^3. A value of 130 lb/ft^3 was used for this calculation.

5. Total Contaminant Mass

The contaminant mass for each zone is calculated using the following formula:

Mass PCE (lb) = Area (ft^2) x Thickness (ft) x Bulk Density (lb/ft^3) x Concentration (10^{-6}lb/lb)

The mass from each zone was added to calculate the total contaminant mass. A mass of contamination outside the 1.6-10 mg/kg contour was also included in this calculation. For this zone a value of 0.8 mg/kg (average of 1.6 and 0 mg/kg) was used. The area and thickness of contamination of this

zone have not been determined. An assumed area of 3,285 (5 times the area of the 1.6-10 mg/kg contour) was used and an assumed thickness of 10 feet was used for this calculation. The calculation is summarized in the table below.

PCE Concentration Range (mg/kg)	Area (ft^2)	Thickness (ft)	Concentration (10^{-6} lb/lb)	Mass PCE (lb)
0-1.6	3,285	10	0.8	3
1.6-10	657	10	5.8	5
10-100	629	10	55	45
100-150	169	10	125	27
150-1000	216	6	575	97
1000-10000	45	12	5,500	386
Greater than 10000	29	12	24,500	1,108
TOTAL MASS				1,672

6. Contaminant Mass to be Excavated

The proposed area to be excavated is shown on Figure 5. As shown, there is an area that is up to 2 feet away from the building that cannot be excavated because it too close to the foundation.

The contaminant mass removed by excavation is calculated in the same manner as described above. The calculation of the mass of contamination to be excavated is summarized in the table below.

PCE Concentration Range (mg/kg)	Area (ft^2)	Thickness (ft)	Concentration (10^{-6} lb/lb)	Mass (lb)
10-100	68	10	55	5
100-150	84	10	125	14
150-1000	208	6	575	93
1000-10000	43	12	5,500	369
Greater than 10000	29	12	24,500	1,108
TOTAL MASS				1,589

7. Percentage Contamination Removed by Excavation

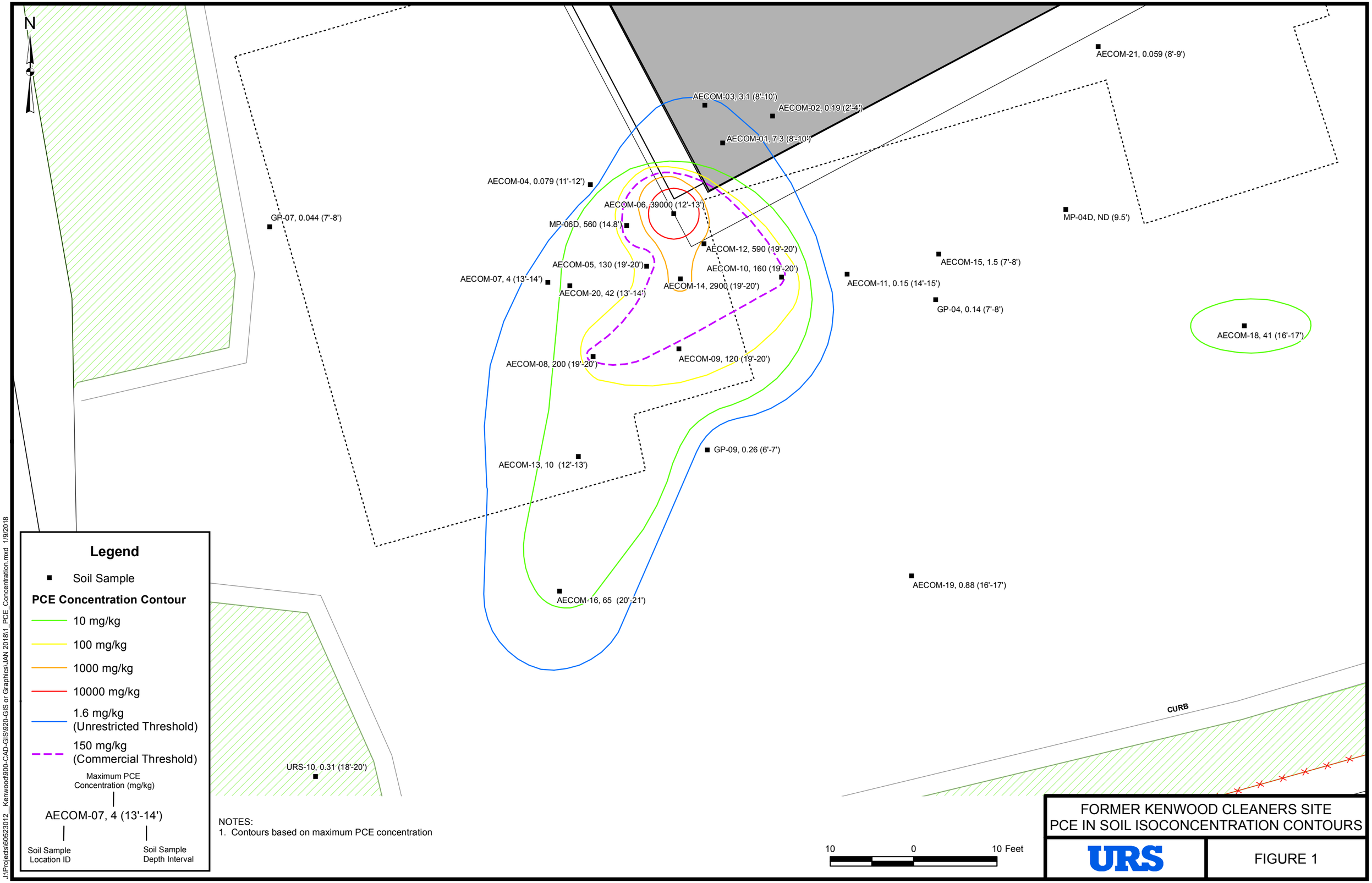
The percentage of contamination removed by excavation is estimated as follows:

Percent Removed = Total Mass Excavated ÷ Total Mass x 100

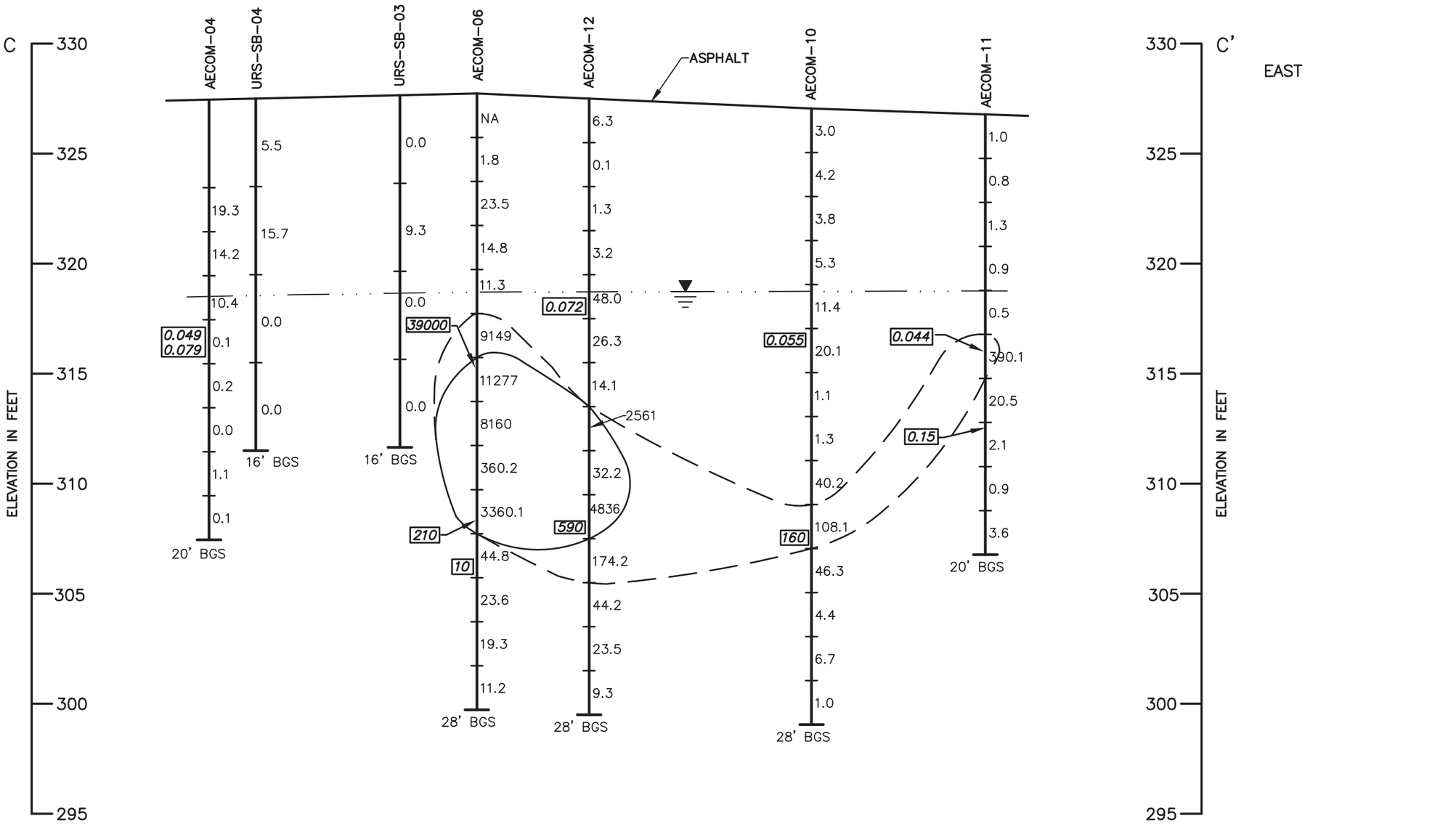
Percent Removed = 1,589 lbs ÷ 1,687 x 100

Percent Removed = 95%

FIGURES



J:\Projects\60523012__Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 2018\1_PCE_Concentration.mxd 1/9/2018



LEGEND:

PCE RESULT >150 mg/kg (COMMERCIAL THRESHOLD)

PID READINGS>100 ppm

WATER LEVEL 2/12/17

PCE RESULT (mg/kg) PID (ppm)

160 BORING

6.7

1.0

28' BGS BELOW GROUND SURFACE

5' 0 5'

SCALE IN FEET

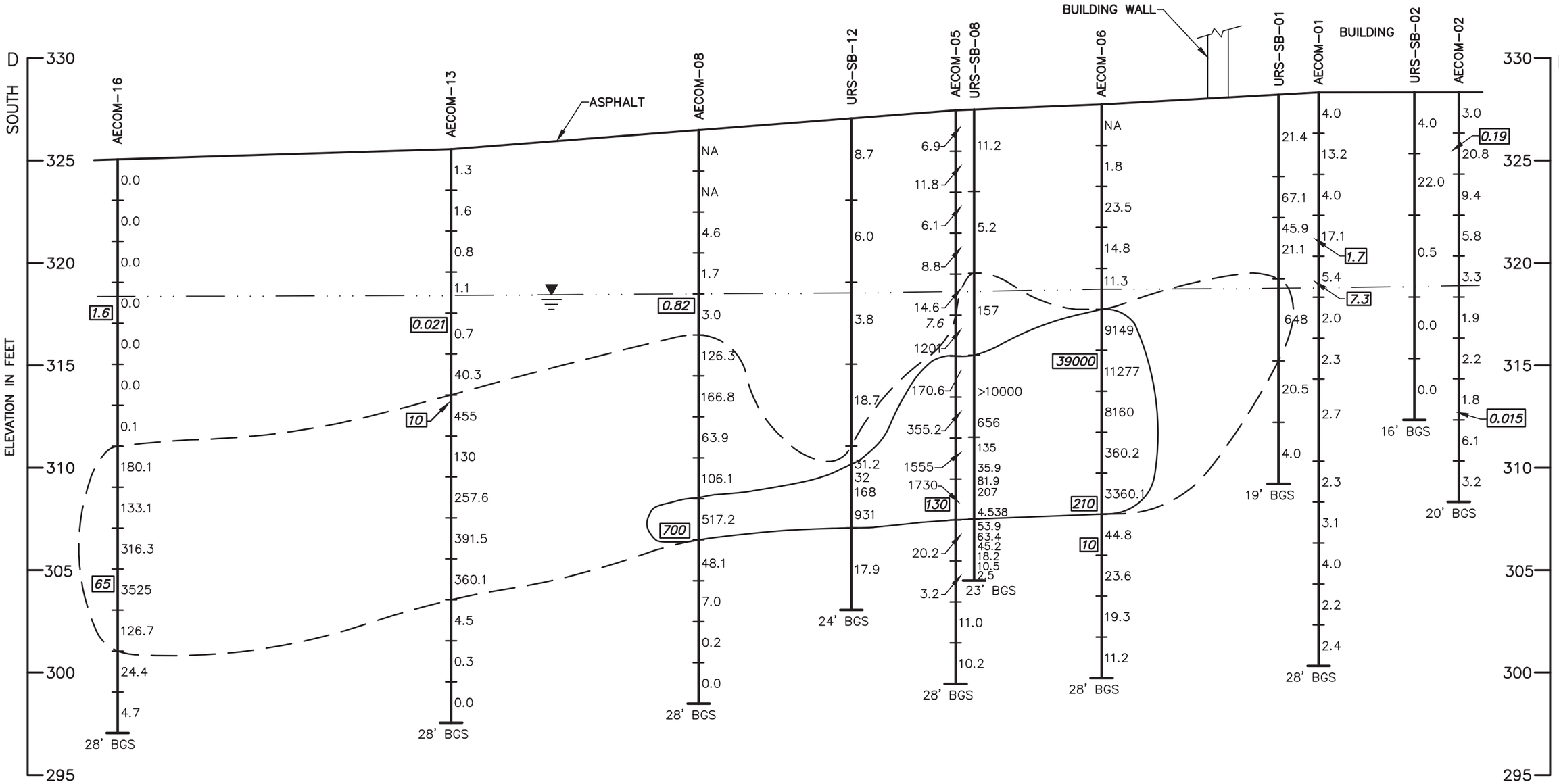
CROSS SECTION C–C'
FORMER KENWOOD CLEANERS SITE

URS

FIGURE 2

J:\Projects\60523012__Kenwood\900-CAD-GIS\910-CAD\20-SHEETS\JANUARY 2018 SUBMITTAL\FIGURE 2 & 3.dwg, SEC C-C, 1:2.58, 1/8/18 -1-RAL

J:\Projects\60523012__Kenwood\900-CAD-GIS\910-CAD\20-SHEETS\JANUARY 2018 SUBMITTAL\FIGURE 2 & 3.dwg, SEC D-D, 1:2.58, 1/8/18 -1-RAL



LEGEND:

PCE RESULT >150 mg/kg (COMMERCIAL THRESHOLD)

PID READINGS>100 ppm

WATER LEVEL 2/12/17

PCE RESULT (mg/kg) PID (ppm)

160 6.7 — BORING

1.0

28' BGS — BELOW GROUND SURFACE

5' 0 5'

SCALE IN FEET

CROSS SECTION D-D'
FORMER KENWOOD CLEANERS SITE

URS

FIGURE 3

N

AECOM-22
MP-10 D/S
MP-11 D/S
GP-03
MP-1 D/S
EW-2
EW-1
MP-3 D/S
AECOM-21
AECOM-03
AECOM-02
D'
MP-9 D/S
MP-7 D/S
AECOM-01
URS-SB-02
MP-2 D/S
URS-SB-04
URS-SB-01
C
URS-SB-03
AECOM-04
MP-8 D/S
MP-6 D/S
URS-SB-05
AECOM-06
URS-SB-10
MP-4 D/S
GP-07
URS-SB-14
URS-SB-06
URS-SB-09
AECOM-12
FORMER DRY CLEANER BUILDING FOOTPRINT
AECOM-15
URS-SB-07
URS-SB-08
AECOM-10
AECOM-11
C'
AECOM-07
AECOM-05
URS-SB-18
AECOM-14
AECOM-20
URS-SB-11
GP-04
URS-SB-13
URS-SB-12
URS-SB-19
AECOM-18
URS-SB-17
URS-SB-16
AECOM-09
AECOM-08
MP-5 D/S
URS-SB-15
GP-09
AECOM-13
AECOM-19
D
AECOM-16

Legend

- Soil Boring
- Monitoring Well
- Extraction Well
- Cross Section C-C'
- Cross Section D-D'

10 0 10 Feet

FORMER KENWOOD CLEANERS SITE
GEOLOGIC CROSS SECTION LOCATIONS

URS

FIGURE 4

J:\Projects\60523012_Kenwood900-CAD-GIS\920-GIS or Graphics\JAN 2018\4_CrossSection_C-D.mxd 1/9/2018

N

CURB

Legend

Area of Excavation

Area cannot be excavated due to proximity to foundation

PCE Concentration Contour

- 10 mg/kg
- 100 mg/kg
- 1000 mg/kg
- 10000 mg/kg
- 1.6 mg/kg (Unrestricted Threshold)
- 150 mg/kg (Commercial Threshold)

NOTES:
1. Contours based on maximum PCE concentration

10 0 10 Feet

FORMER KENWOOD CLEANERS SITE
EXCAVATION AREA

URS

FIGURE 5

J:\Projects\60523012__Kenwood\900-CAD-GIS\920-GIS or Graphics\JAN 2018\5_ExcavationArea.mxd 1/9/2018

TABLES

TABLE 1
STATISTICAL SUMMARY OF DETECTED COMPOUNDS IN SOIL - 2017 INVESTIGATION
UNRESTRICTED USE CRITERIA
FORMER KENWOOD CLEANERS SITE

Parameter	Units	Criteria*	No. of Samples	No. of Detections	Range of Detections			No. Exceed	Location of Max Value	Depth Of Max
					Min	Max	Avg			
Volatile Organic Compounds										
1,2,4-Trimethylbenzene	MG/KG	3.6	42	2	0.033	0.150	0.092	0	AECOM-15	7-8
1,2-Dichloroethene (cis)	MG/KG	0.25	42	16	0.002	7.10	1.20	9	AECOM-19	16-17
2-Hexanone	MG/KG	-	42	1	0.150	0.150	0.150	0	AECOM-11	10-11
Acetone	MG/KG	0.05	42	16	0.009	0.720	0.079	3	AECOM-08	8-9
Isopropylbenzene (Cumene)	MG/KG	2.3 CP-51	42	1	0.013	0.013	0.013	0	AECOM-21	8-9
Methyl ethyl ketone (2-Butanone)	MG/KG	0.12	42	1	0.010	0.010	0.010	0	AECOM-01	8-10
Methylcyclohexane	MG/KG	-	42	1	0.022	0.022	0.022	0	AECOM-21	8-9
sec-Butylbenzene	MG/KG	11	42	3	0.048	0.130	0.081	0	AECOM-15	9-10
tert-Butylbenzene	MG/KG	5.9	42	1	0.026	0.026	0.026	0	AECOM-21	8-9
Tetrachloroethene	MG/KG	1.3	42	40	0.015	3.90E+04	1,089	25	AECOM-06	12-13
Toluene	MG/KG	0.7	42	3	0.0007	0.029	0.018	0	AECOM-21	8-9
Trichloroethene	MG/KG	0.47	42	31	0.002	86.00	5.75	13	AECOM-17	22-23
Vinyl chloride	MG/KG	0.02	42	1	0.014	0.014	0.014	0	AECOM-13	8-9
Xylene (total)	MG/KG	0.26	42	1	0.009	0.009	0.009	0	AECOM-21	8-9

*Criteria- 6 NYCRR Part 375.6, Remedial Program Soil Cleanup Objectives, Effective 12/14/06. Unrestricted Use, plus CP-51 Table 1 10/21/10.

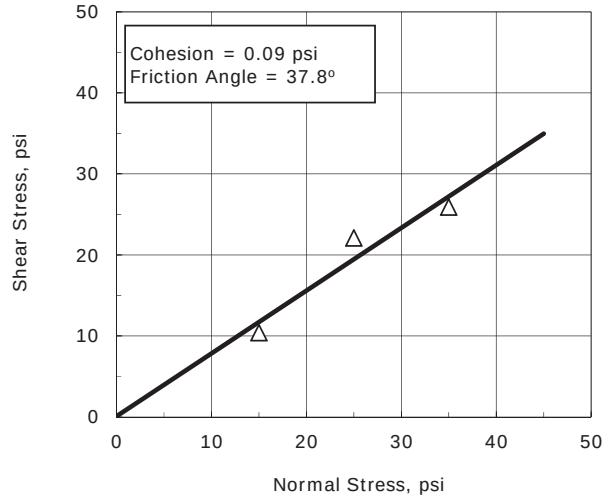
Concentration Exceeds Criteria

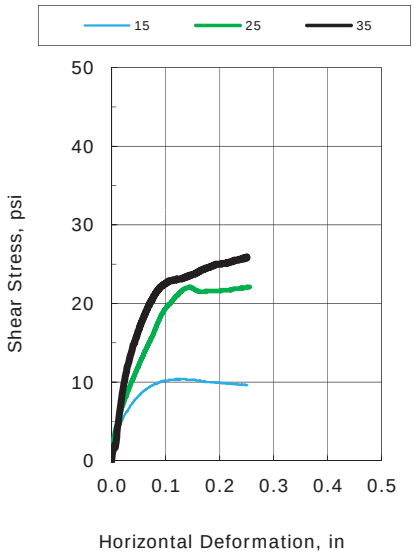
Only Detected Results Reported.

ATACHMENT A

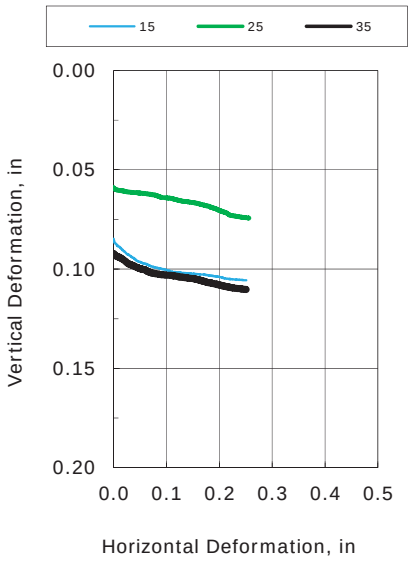
Client:	AECOM
Project Name:	Former Kenwood
Project Location:	Schenectady, NY
GTX #:	306073
Test Date:	03/15/17
Tested By:	md
Checked By:	njh
Boring ID:	---
Sample ID:	AECOM-21
Depth, ft:	32-34
Visual Description:	Moist, dark gray clay

Direct Shear Test of Soils Under Consolidated Drained Conditions by ASTM D3080





Test No.:	DS-1	DS-2A	DS-3
Initial Diameter, in:	2.5	2.5	2.5
Initial Height, in:	1.0	1.0	1.0
Initial Mass, grams:	149	157	164
Initial Dry Density, pcf:	88	95	105
Initial Moisture Content, %:	32.1	28.4	21.6
Initial Bulk Density, pcf:	116	122	127
Initial Degree of Saturation:	94.3	99.4	95.8
Initial Void Ratio:	0.92	0.77	0.61
Final Dry Density, pcf:	98	103	118
Final Moisture Content, %:	32.4	23.0	20.1
Final Bulk Density, pcf:	130	126	141
Normal Stress, psi:	15	25	35
Maximum Shear Stress, psi:	10	22	26
Shear Rate, in/min:	0.0004	0.0004	0.0004



Sample Type:	intact
Estimated Specific Gravity:	2.70
Liquid Limit:	33
Plastic Limit:	19
Plasticity Index:	14
% Passing #200 sieve:	99.6
Soil Classification:	Lean CLAY
Group Symbol:	CL

Notes:

Moisture content obtained before shear from sample trimmings
Moisture Content determined by ASTM D2216
Percent passing #200 sieve determined by ASTM D422
Atterberg Limits determined by ASTM D4318
Extruded from tube, cut, trimmed and placed into apparatus at the as-received density and moisture content. Values for cohesion and friction angle determined from best-fit straight line to the data for the specific test conditions. Actual strength parameters may vary and should be determined by an engineer for site-specific conditions.

APPENDIX B

ALTERNATIVE COST ANALYSES

ALTERNATIVE 1

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Description:	**Alt 1 - Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

Construction Cost Estimate Summary

DESCRIPTION	ESTIMATED COST
SITE MANAGEMENT PLAN	**$40,600**
(CONSTRUCTION) SUBTOTAL 1	**$40,600**

SUPPLEMENTAL PROJECT COSTS

Overhead and Profit (10% of Subtotal 1)	**$4,100**
(CONSTRUCTION) SUBTOTAL 2	**$44,700**
Contingency (30% of Subtotal 2)	**$13,500**
TOTAL CONSTRUCTION COSTS	**$58,200**
Total Capital Costs	**$58,200**
First 18 Months of Monitoring	**$15,600**
Present Worth Monitoring - 30 Years	**$40,000**
Present Worth Annual Report&5-Year Review - 30 Years	**$230,000**
TOTAL COST	**$343,800**

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alt 1 - Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	SITE MANAGEMENT PLAN				
1	Labor	450	MH	$90	$40,500
2	Direct Costs	1	LS	$100	$100
	TOTAL COST				**$40,600**

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alt 1 - Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	MONITORING - 30 YEARS				
	FIRST 18 MONTHS COSTS				
1	Groundwater Analysis - VOCs, first 18 months	60	Each	$70	$4,200
2	Sampling Labor, first 18 months	96	Hour	$50	$4,800
3	Supplies, first 18 months	6	LS	$500	$3,000
	First 18 months SUBTOTAL 1				**$12,000**
	30% Contingency				**$3,600**
	First 18 months TOTAL COST				**$15,600**
	ANNUAL COSTS				
1	Groundwater Analysis - VOCs	10	Each	$70	$700
2	Sampling Labor	16	Hour	$50	$800
3	Supplies	1	LS	$500	$500
	SUBTOTAL 1				**$2,000**
	30% Contingency				**$600**
	SUBTOTAL 2				**$2,600**
Present Worth of Subtotal 2 (30 years @ 5% discount rate)					**$40,000**
	TOTAL COST				**$40,000**

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alt 1 - Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	ANNUAL REPORT AND 5-YEAR REVIEW				
1	Labor Annual Report	120	Hour	$80	$9,600
2	Direct Cost Annual Report	1	LS	$200	$200
3	Labor 5-Year Review (on annual basis)	20	Hour	$80	$1,600
4	Direct Cost 5-Year Review (on annual basis)	1	LS	$100	$100
	SUBTOTAL 1				**$11,500**
	30% Contingency				**$3,450**
	SUBTOTAL 2				**$14,950**
	Present Worth of Subtotal 1 (30 years @ 5% discount rate)				**$230,000**
	TOTAL COST				**$230,000**

ALTERNATIVE 2

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Description:	**Alternative 2-Excavation and Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

Construction Cost Estimate Summary

DESCRIPTION	ESTIMATED COST
SITE MANAGEMENT PLAN	**$40,600**
MOB/DEMOB & SITE SERVICES	**$149,700**
EXCAVATION	**$316,500**
(CONSTRUCTION) SUBTOTAL 1	**$506,800**

SUPPLEMENTAL PROJECT COSTS

Overhead and Profit (10% of Subtotal 1)	**$50,700**
(CONSTRUCTION) SUBTOTAL 2	**$557,500**
Contingency (30% of Subtotal 2)	**$167,300**
TOTAL CONSTRUCTION COSTS	**$724,800**
Total Capital Costs	**$724,800**
First 18 Months of Monitoring	**$15,600**
Present Worth Monitoring - 30 Years	**$40,000**
Present Worth Annual Report & 5-Year Review - 30 Years	**$230,000**
TOTAL COST	**$1,010,400**

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NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alternative 2-Excavation and Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	SITE MANAGEMENT PLAN				
1	Labor	450	MH	$90	$40,500
2	Direct Costs	1	LS	$100	$100
	TOTAL COST				**$40,600**

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alternative 2-Excavation and Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	MONITORING - 30 YEARS				
	FIRST 18 MONTHS COSTS				
1	Groundwater Analysis - VOCs, first 18 months	60	Each	$70	$4,200
2	Sampling Labor, first 18 months	96	Hour	$50	$4,800
3	Supplies, first 18 months	6	LS	$500	$3,000
	First 18 months SUBTOTAL 1				**$12,000**
	30% Contingency				**$3,600**
	First 18 months TOTAL COST				**$15,600**
	ANNUAL COSTS				
1	Groundwater Analysis - VOCs	10	Each	$70	$700
2	Sampling Labor	16	Hour	$50	$800
3	Supplies	1	LS	$500	$500
	SUBTOTAL 1				**$2,000**
	30% Contingency				**$600**
	SUBTOTAL 2				**$2,600**
	Present Worth of Subtotal 2 (30 years @ 5% discount rate)				**$40,000**
	TOTAL COST				**$40,000**

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alternative 2-Excavation and Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	ANNUAL REPORT AND 5-YEAR REVIEW				
1	Labor Annual Report	120	Hour	$80	$9,600
2	Direct Cost Annual Report	1	LS	$200	$200
3	Labor 5-Year Review (on annual basis)	20	Hour	$80	$1,600
4	Direct Cost 5-Year Review (on annual basis)	1	LS	$100	$100
	SUBTOTAL 1				**$11,500**
	30% Contingency				**$3,450**
	SUBTOTAL 2				**$14,950**
	Present Worth of Subtotal 1 (30 years @ 5% discount rate)				**$230,000**
	TOTAL COST				**$230,000**

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NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alternative 2-Excavation and Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	MOBILIZATION/DEMOBILIZATION AND				
	SITE SERVICES				
1	Submittals	1	LS	$5,000	$5,000
2	Health and Safety	20	Day	$1,400	$28,000
3	Project Sign	1	Each	$1,000	$1,000
4	Erosion and Sediment Control	1	LS	$2,000	$2,000
5	Decon Pad	1	LS	$2,500	$2,500
6	Temporary Fencing	1	LS	$2,000	$2,000
7	Air Monitoring	20	Day	$2,500	$50,000
8	Survey	1	LS	$2,500	$2,500
9	Utilities	1	LS	$2,500	$2,500
10	Mobilize Equipment	1	LS	$10,000	$10,000
11	Demobilize Equipment	1	LS	$10,000	$10,000
12	Office Trailer	1	LS	$1,000	$1,000
13	Electrical Connection to Office Trailer	1	LS	$5,000	$5,000
14	Temporary Soil Staging and Dewatering Area	1	LS	$2,000	$2,000
15	Snow Removal	5	Day	$200	$1,000
16	Port-a-John Rental	2	Each	$100	$200
17	Dust Control	1	LS	$1,000	$1,000
18	Site Security	20	Day	$1,200	$24,000
	TOTAL COST				**$149,700**

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NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alternative 2-Excavation and Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	EXCAVATION				
1	Temporary Canopy Remove/Restore	1	LS	$5,000	$5,000
2	Demolition of Sidewalk and Pavement	53	SY	$17	$1,000
3	Pre-Drill for Shoring Posts	250	LF	$45	$11,300
4	Shoring	2440	SF	$16	$39,100
5	Underpinning	19	CY	$2,800	$53,200
6	Excavation	370	CY	$15	$5,600
7	Soil Disposal Off-site	650	TON	$110	$71,500
8	Dewatering	15	DAY	$260	$3,900
9	On-Site Water Treatment Plant Rental	20	DAY	$600	$12,000
10	Dispose Treated Water to Sewer	54161	GAL	$1	$54,200
11	Soil Analytical Testing	10	EACH	$200	$2,000
12	Water Analytical Testing	30	EACH	$200	$6,000
13	Purchase/Deliver Clean Off Site Soil	650	TON	$30	$19,500
14	Backfilling With Clean Off Site Soil	370	CY	$15	$5,600
15	Sidewalk Reconstruction	26	SF	$6	$200
16	Pavement Reconstruction	451	SF	$3	$1,400
17	Costs associated with working in contaminated material	1	LS	$25,000	$25,000
	TOTAL COST				**$316,500**

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ALTERNATIVE 3

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Description:	**Alternative 3-Excavation, ISCO and Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

Construction Cost Estimate Summary

DESCRIPTION	ESTIMATED COST
SITE MANAGEMENT PLAN	**$40,600**
MOB/DEMOB & SITE SERVICES	**$149,700**
EXCAVATION	**$316,500**
ISCO	**$14,388**
(CONSTRUCTION) SUBTOTAL 1	**$521,188**

SUPPLEMENTAL PROJECT COSTS

Overhead and Profit (10% of Subtotal 1)	**$52,200**
(CONSTRUCTION) SUBTOTAL 2	**$573,388**
Contingency (30% of Subtotal 2)	**$172,100**
TOTAL CONSTRUCTION COSTS	**$745,488**
Total Capital Costs	**$745,488**
First 18 Months of Monitoring	**$15,600**
Present Worth Monitoring - 30 Years	**$40,000**
Present Worth Annual Report&5-Year Review - 30 Years	**$230,000**
TOTAL COST	**$1,031,088**

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client: NYSDEC
Project: Kenwood Cleaners FFS
Title: **Alternative 3-Excavation, ISCO and Institutional Controls with Site Management**

Project Number: 60523012
Calculated By: CWP, DNM Date: 3-Apr-18
Checked By: DMc Date: 3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	SITE MANAGEMENT PLAN				
1	Labor	450	MH	$90	$40,500
2	Direct Costs	1	LS	$100	$100
	TOTAL COST				**$40,600**

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NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alternative 3-Excavation, ISCO and Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	MONITORING - 30 YEARS				
	FIRST 18 MONTHS COSTS				
1	Groundwater Analysis - VOCs, first 18 months	60	Each	$70	$4,200
2	Sampling Labor, first 18 months	96	Hour	$50	$4,800
3	Supplies, first 18 months	6	LS	$500	$3,000
	First 18 months SUBTOTAL 1				**$12,000**
	30% Contingency				**$3,600**
	First 18 months TOTAL COST				**$15,600**
	ANNUAL COSTS				
1	Groundwater Analysis - VOCs	10	Each	$70	$700
2	Sampling Labor	16	Hour	$50	$800
3	Supplies	1	LS	$500	$500
	SUBTOTAL 1				**$2,000**
	30% Contingency				**$600**
	SUBTOTAL 2				**$2,600**
Present Worth of Subtotal 2 (30 years @ 5% discount rate)					**$40,000**
	TOTAL COST				**$40,000**

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alternative 3-Excavation, ISCO and Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	ANNUAL REPORT AND 5-YEAR REVIEW				
1	Labor Annual Report	120	Hour	$80	$9,600
2	Direct Cost Annual Report	1	LS	$200	$200
3	Labor 5-Year Review (on annual basis)	20	Hour	$80	$1,600
4	Direct Cost 5-Year Review (on annual basis)	1	LS	$100	$100
	SUBTOTAL 1				**$11,500**
	30% Contingency				**$3,450**
	SUBTOTAL 2				**$14,950**
	Present Worth of Subtotal 1 (30 years @ 5% discount rate)				**$230,000**
	TOTAL COST				**$230,000**

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alternative 3-Excavation, ISCO and Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	MOBILIZATION/DEMOBILIZATION AND				
	SITE SERVICES				
1	Submittals	1	LS	$5,000	$5,000
2	Health and Safety	20	Day	$1,400	$28,000
3	Project Sign	1	Each	$1,000	$1,000
4	Erosion and Sediment Control	1	LS	$2,000	$2,000
5	Decon Pad	1	LS	$2,500	$2,500
6	Temporary Fencing	1	LS	$2,000	$2,000
7	Air Monitoring	20	Day	$2,500	$50,000
8	Survey	1	LS	$2,500	$2,500
9	Utilities	1	LS	$2,500	$2,500
10	Mobilize Equipment	1	LS	$10,000	$10,000
11	Demobilize Equipment	1	LS	$10,000	$10,000
12	Office Trailer	1	LS	$1,000	$1,000
13	Electrical Connection to Office Trailer	1	LS	$5,000	$5,000
14	Temporary Soil Staging and Dewatering Area	1	LS	$2,000	$2,000
15	Snow Removal	5	Day	$200	$1,000
16	Port-a-John Rental	2	Each	$100	$200
17	Dust Control	1	LS	$1,000	$1,000
18	Site Security	20	Day	$1,200	$24,000
	TOTAL COST				**$149,700**

NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client:	NYSDEC	Project Number:	60523012		
Project:	Kenwood Cleaners FFS	Calculated By:	CWP, DNM	Date:	3-Apr-18
Title:	**Alternative 3-Excavation, ISCO and Institutional Controls with Site Management**	Checked By:	DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	EXCAVATION				
1	Temporary Canopy Remove/Restore	1	LS	$5,000	$5,000
2	Demolition of Sidewalk and Pavement	53	SY	$17	$1,000
3	Pre-Drill for Shoring Posts	250	LF	$45	$11,300
4	Shoring	2440	SF	$16	$39,100
5	Underpinning	19	CY	$2,800	$53,200
6	Excavation	370	CY	$15	$5,600
7	Soil Disposal Off-site	650	TON	$110	$71,500
8	Dewatering	15	DAY	$260	$3,900
9	On-Site Water Treatment Plant Rental	20	DAY	$600	$12,000
10	Dispose Treated Water to Sewer	54161	GAL	$1	$54,200
11	Soil Analytical Testing	10	EACH	$200	$2,000
12	Water Analytical Testing	30	EACH	$200	$6,000
13	Purchase/Deliver Clean Off Site Soil	650	TON	$30	$19,500
14	Backfilling With Clean Off Site Soil	370	CY	$15	$5,600
15	Sidewalk Reconstruction	26	SF	$6	$200
16	Pavement Reconstruction	451	SF	$3	$1,400
17	Costs associated with working in contaminated material	1	LS	$25,000	$25,000 #
	TOTAL COST				**$316,500**

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NYSDEC
Kenwood Cleaners Site
Focused Feasibility Study
Cost Estimate

Client: NYSDEC	Project Number: 11176731		
Project: Kenwood Cleaners FFS	Calculated By: CWP, DNM	Date:	3-Apr-18
Title: **Alternative 3-Excavation, ISCO and Institutional Controls with Site Management**	Checked By: DMc	Date:	3-Apr-18

ITEM	DESCRIPTION	QTY.	UNITS	UNIT COST	TOTAL COST
	ISCO				
1	Potassium Permanganate	5	Drum	$1,237.66	$6,188
2	Labor	2	Day	$1,600	$3,200
3	Equipment	2	Day	$1,500	$3,000
4	Health and Safety	2	Day	$1,000	$2,000
	TOTAL COST				**$14,388**