RECORD OF DECISION

Solvent Finishers
State Superfund Project
Jericho, Nassau County
Site No. 130172
July 2016

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

DECLARATION STATEMENT - RECORD OF DECISION

Solvent Finishers
State Superfund Project
Jericho, Nassau County
Site No. 130172
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Statement of Purpose and Basis

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

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

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Additional soil investigation and sampling will be conducted to determine if on-site soils meet the industrial use criteria. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

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

sustainable re-development.

2. Air Sparge/Soil Vapor Extraction

Continued operation of the air sparge and soil vapor extraction system that was implemented in October 2012 to address the groundwater plume contaminated by volatile organic compounds (VOCs). At this site, two (2) air injection wells have been installed within the source area at the rear of the main building to a depth of about 92 feet. To capture the volatilized contaminants, four (4) SVE wells have been installed in the vadose zone to depths of about 25 feet and 65 feet below ground surface. This existing system will be optimized and/or modified, based on the data and evaluation conducted during the remedial design phase, so the influence of the system can more efficiently address the soil, soil vapor, and shallow groundwater contamination by volatile organic compounds (VOCs).

3. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in soil and groundwater. A chemical oxidant will be injected into the subsurface to destroy the contaminants in the source area south of the building where the VOCs are elevated. The method and depth of injection will be determined during the remedial design.

4. Enhanced Bioremediation

In-situ enhanced bioremediation will be employed to treat contaminants in soil and groundwater in areas downgradient of the source area. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by injection of an electron donor product and other amendments. The electron donor materials will be injected into the subsurface to promote microbe growth via injection wells screened at multiple locations and depths along the length of the plume that will be determined during the remedial design.

5. Vapor Mitigation

Any on-site buildings and off-site buildings impacted by the site will be required to have a sub-slab depressurization system, or similar engineered system, to mitigate the migration of vapors into the building from soil and/or groundwater.

6. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

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

7. Site Management Plan

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

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

Institutional Controls: The Environmental Easement discussed in Paragraph 6 above.

Engineering Controls: The AS/SVE, ISCO, Enhanced Bioremediation, and Vapor Mitigation discussed in Paragraphs 2 through 5 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination,
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater use restrictions,
- a provision for evaluation of the potential for soil vapor intrusion for future buildings developed on the site, and in off-site area affected by site related contamination, including provision for implementing actions recommended to address exposures related to soil vapor intrusion,
- provisions for the management and inspection of the identified engineering controls,
- maintaining site access controls and Department notification,and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

- monitoring of soil, groundwater and soil vapor to assess the performance and effectiveness of the remedy, including sampling and evaluation to confirm restricted use SCOs are achieved.
- a schedule of monitoring and frequency of submittals to the Department, and
- monitoring for vapor intrusion for any buildings required by the Institutional and Engineering Control Plan discussed above.

c) an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

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

New York State Department of Health Acceptance

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

Declaration

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

July 27, 2016
Date

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

RECORD OF DECISION

Solvent Finishers
Jericho, Nassau County
Site No. 130172
July 2016

SECTION 1: SUMMARY AND PURPOSE

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

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

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

SECTION 2: CITIZEN PARTICIPATION

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

Jericho Public Library
1 Merry Lane
Jericho, NY 11753
Phone: 516-935-6790

and

Westbury Memorial Public Library
445 Jefferson Street
Westbury, NY 11590
Phone: 516-333-0176

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

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

Receive Site Citizen Participation Information By Email

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

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Solvent Finishers site is located in a suburban portion of Nassau County, New York. The site occupies about 3.8 acres at 601 Cantiague Rock Road. The site is located on Cantiague Rock Road about 500 feet east of the intersection of Jericho Turnpike and Brush Hollow Road.

Site Features: The site is currently occupied. The main site features includes one large, extended one story building surrounded by paved and gravel parking areas.

Current Zoning and Land Use: The site is currently zoned Industrial (light manufacturing) and is occupied by Rubies Costume. The surrounding parcels include commercial, industrial and public use. A school is located across Cantiague Rock Road. The nearest residential property is about 400 feet northeast of the site.

Past Use of the Site: The site has a history of solvent use and has operated as a manufacturer of artificial leather and plastics, an industrial dry cleaner, and manufacturer of imprinted and embroidered sportswear. The Nassau County Department of Health documented wastewater discharges to the ground and site drainage structures starting in 1977. In 1998, 59 tons of tetrachloroethylene (PCE) contaminated soil was excavated from an abandoned cesspool and disposed off-site.

Site Geology and Hydrogeology: The geology at the site generally consists of stratified sand and

gravel with some fine grain material from the ground surface down to about 200 feet where clay is found. The depth to groundwater in the Upper Glacial Aquifer is about 85 feet below ground surface. The groundwater generally flows in a southerly direction.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

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

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

SECTION 5: ENFORCEMENT STATUS

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

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

Nassau County IDA

Skodnek Industries, Inc.

601 Canti Rd Corp.

Richmond Associates, L.P.

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

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

The following general activities are conducted during an RI:

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

The analytical data collected on this site includes data for:

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

6.1.1: Standards, Criteria, and Guidance (SCGs)

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

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

6.1.2: RI Results

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

tetrachloroethene (PCE) trichloroethene (TCE)

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

- groundwater
- soil

6.2: Interim Remedial Measures

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

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

Air Sparge with Soil Vapor Extraction (AS/SVE)

Air sparging has been implemented by NYSDEC in October 2012 to address the groundwater plume contaminated by volatile organic compounds (VOCs). VOCs will be physically removed from the groundwater and soil below the water table (saturated soil) by injecting air into the subsurface. The injected air rising through the groundwater will volatilize and transfer VOCs from the groundwater and/or soil into the injected air. The VOCs are carried with the injected air into the vadose zone (the area below the ground surface but above the water table) where a soil vapor extraction (SVE) system designed to remove the injected air has been installed. The SVE system applies vacuum to wells that have been installed into the vadose zone to remove the VOCs along with the air introduced by the sparging process. The air extracted from the SVE wells is then treated as necessary prior to being discharged to the atmosphere.

At this site, two (2) air injection wells have been installed within the source area at the rear of the main building to a depth of about 92 feet. To capture the volatilized contaminants, four (4) SVE wells have been installed in the vadose zone to depths of about 25 feet and 65 feet below ground surface. The air containing VOCs extracted from the SVE wells will be treated by passing the air stream through activated carbon which removes the VOCs from the air prior to it being discharged to the atmosphere. The details of this system are documented in the June 2014 Construction Completion Report.

6.3: Summary of Environmental Assessment

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

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

On-site soil was analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and metals. Both on-site and off-site groundwater was analyzed for volatile

organic compounds (VOCs), semi-volatile organic compounds (SVOCs), iron and manganese. Based on investigations to date, the primary contaminants of concern are Tetrachloroethylene (PCE) and Trichloroethylene (TCE). They have been found in on-site and off-site groundwater, on-site soil, and both on-site and off-site soil vapor, sub-slab vapor and indoor air. The highest levels of contamination were found near the south side of the building where the presence of DNAPL is suspected.

Soil- Solvent contaminated soils are found on-site from 5 feet below the surface to the water table at 85 feet below ground surface. The highest soil contaminant concentration of PCE was reported at 7,300 ppm (parts per million) at the water table, which exceeds both the Industrial Use Soil Cleanup Objective of 300 ppm and the Protection of Groundwater Soil Cleanup Objective of 1.3 ppm. TCE at 1.2 ppm which exceeds the Protection of Groundwater Soil Cleanup Objective of 0.47 ppm.

Groundwater- PCE and its associated break down products were found in on-site and off-site groundwater at concentrations exceeding the groundwater standards of 5 ppb (parts per billion). The maximum on-site concentrations are; PCE of 300,000 ppb and TCE of 9,900 ppb. The contamination has migrated south about 4,000 feet off-site and the maximum off-site concentrations are PCE of 81,000 ppb and TCE of 89 ppb.

Soil Vapor and Indoor Air- VOCs were detected in on-site sub-slab soil vapor and indoor air. On-site sub-slab vapor contaminant concentrations were detected up to a maximum of 119,349 ug/m3 (micrograms per cubic meter) for PCE; and 2,466 ug/m3 for TCE. On-site indoor air VOC concentrations were detected up to a maximum of 335 ug/m3 for PCE; and 1.6 ug/m3 for TCE. While this TCE level is above concentrations commonly observed but below NYSDOH's guideline of 2 ug/m3, the maximum concentration of PCE detected exceeds both NYSDOH's air guideline of 30 ug/m3 and immediate action level of 300 ug/m3 for PCE. PCE and TCE were also detected at one off-site commercial property in sub-slab vapor and indoor air. PCE concentrations were detected to a maximum of 1,070 ug/m3 and TCE to a maximum of 1.67 ug/m3 in off-site sub-slab vapor. Off-site indoor air concentrations of PCE were detected to a maximum of 16.6 ug/m3 (which is above levels commonly observed) and TCE to a maximum of 0.81 ug/m3 in off-site indoor air. Off-site soil vapor (soil gas) was detected at 32.9 ug/m3 of PCE. TCE was not detected.

Significant Threat: This site presents a significant environmental threat because the dissolved plume is impacting a sole-source aquifer.

6.4: Summary of Human Exposure Pathways

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

Direct contact with contaminants in the soil is unlikely because the majority of the site is covered with buildings and pavement. People are not drinking the contaminated groundwater because the area is served by a public water supply that is treated to remove contaminants before the water is distributed to consumers. Volatile organic compounds in the groundwater and/or soil may move

into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion in the on-site building and one off-site building.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section

6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the feasibility study (FS) report.

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

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

The selected remedy is referred to as the AS/SVE, ISCO, Enhanced Bioremediation, and Vapor Mitigation remedy.

The estimated present worth cost to implement the remedy is $14,181,000. The cost to construct the remedy is estimated to be $12,036,000 and the estimated average annual cost is $204,000.

The elements of the selected remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Additional soil investigation and sampling will be conducted to determine if on-site soils meet the industrial use criteria. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows;

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

2. Air Sparge/Soil Vapor Extraction

Continued operation of the air sparge and soil vapor extraction system that was implemented in October 2012 to address the groundwater plume contaminated by volatile organic compounds (VOCs). At this site, two (2) air injection wells have been installed within the source area at the

rear of the main building to a depth of about 92 feet. To capture the volatilized contaminants, four (4) SVE wells have been installed in the vadose zone to depths of about 25 feet and 65 feet below ground surface. This existing system will be optimized and/or modified, based on the data and evaluation conducted during the remedial design phase, so the influence of the system can more efficiently address the soil, soil vapor, and shallow groundwater contamination by volatile organic compounds (VOCs).

3. In-Situ Chemical Oxidation

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in soil and groundwater. A chemical oxidant will be injected into the subsurface to destroy the contaminants in the source area south of the building where the VOCs are elevated. The method and depth of injection will be determined during the remedial design.

4. Enhanced Bioremediation

In-situ enhanced bioremediation will be employed to treat contaminants in soil and groundwater in areas downgradient of the source area. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by injection of an electron donor product and other amendments. The electron donor materials will be injected into the subsurface to promote microbe growth via injection wells screened at multiple locations and depths along the length of the plume that will be determined during the remedial design.

5. Vapor Mitigation

Any on-site buildings and off-site buildings impacted by the site will be required to have a sub-slab depressurization system, or similar engineered system, to mitigate the migration of vapors into the building from soil and/or groundwater.

6. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property which will:

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

7. Site Management Plan

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

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

Institutional Controls: The Environmental Easement discussed in Paragraph 6 above.

Engineering Controls: The AS/SVE, ISCO, Enhanced Bioremediation, and Vapor Mitigation discussed in Paragraphs 2 through 5 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination,
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater use restrictions,
- a provision for evaluation of the potential for soil vapor intrusion for future buildings developed on the site, and in off-site area affected by site related contamination, including provision for implementing actions recommended to address exposures related to soil vapor intrusion,
- provisions for the management and inspection of the identified engineering controls,
- maintaining site access controls and Department notification and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

- monitoring of soil, groundwater and soil vapor to assess the performance and effectiveness of the remedy, including sampling and evaluation to confirm restricted use SCOs are achieved.
- a schedule of monitoring and frequency of submittals to the Department, and
- monitoring for vapor intrusion for any buildings required by the Institutional and Engineering Control Plan discussed above.

c) an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:

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

Exhibit A

Nature and Extent of Contamination

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

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

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater, soil and soil vapor.

Wastes are defined in 6 NYCRR Part 375-1.2 (aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375 (au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and Source Areas were identified at the site near the former underground solvent storage tank, former cooling tower and former dry well located on the south side of the building. Tetrachloroethylene (PCE) was discharged into the ground in these areas as noted on Figure 2. In addition to soil and groundwater contamination, sampling suggests the presence of a Dense Non-Aqueous Phase Liquid (DNAPL) in this area, both in the upper portions of the water column and in deeper areas at approximately 200 feet below grade.

Certain waste/source areas identified at the site were addressed by the IRM(s) described in Section 6.2. The remaining waste/source area(s) identified during the RI will be addressed in the remedy selection process.

Groundwater

Groundwater samples were collected from different depths to assess the groundwater conditions both on-site and off-site. The samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), iron and manganese to determine the nature and extent of contamination related to the historical operation of the site. The investigation results indicate that contamination in the groundwater at the site exceeds the SCGs for volatile organic compounds, semi-volatile organic compounds, iron and manganese.

The primary groundwater contaminants are Tetrachloroethylene (PCE) and Trichloroethene (TCE) associated with former site operations. The primary groundwater contamination is concentrated in the source area located on the south side of the building and extends off-site. A contaminated groundwater plume of PCE and its associated breakdown products TCE, Cis-1,2-Dichlorethene (DCE) emanates from the site to the south. This groundwater contamination extends approximately 4000 feet

downgradient from the site to a depth of about 325 feet below grade. See Figure 3 for a generalized representation of the area of groundwater contamination that exceeds drinking water standards.
Other Metal, SVOC and VOC constituents have been reported above SCGs but are a lesser concern due to their location, nature, relatively low concentration results and/or low occurrence frequency. The VOC and SVOC exceedances can also be remediated by the methods required to treat the PCE and TCE plume. The metal exceedances are most likely related to changes in groundwater chemistry resulting from the reduced conditions during the breakdown of the PCE.

Table 1 – Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
Metals NYS CLASS GA			
Iron	ND-1,500	300	3/4
Iron (DISSOLVED)	ND-28,500	300	12/15
Manganese	25.0-5,440	300	9/18
Manganese (DISSOLVED)	418-6,590	300	15/15
SVOC NYS CLASS GA			
Bis(2-Ethylhexyl) Phthalate	ND-3.40	5	0/5
Phenol	ND-1.80	1	1/5
VOC NYS CLASS GA			
1,1,1-Trichloroethane	ND-6.10	5	1/330
1,1-Dichloroethane	ND-0.860	5	0/330
1,1-Dichloroethene	ND-3.50	5	0/330
1,2,3-Trichlorobenzene	ND-3.10	5	0/330
1,2,4-Trichlorobenzene	ND-0.280	5	0/16
Acetone	ND-32.0	50	0/314
Benzene	ND-0.380	1	0/330
Bromodichloromethane	ND-0.230	50	0/330
Bromoform	ND-0.850	50	0/330
Carbon Disulfide	ND-0.460	60	0/330
Chlorobenzene	ND-2.10	5	0/330
Chloroform	ND-0.720	7	0/330
Cis-1,2-Dichloroethylene	ND-58.0	5	20/330
Dibromochloromethane	ND-0.670	50	0/330
Ethylbenzene	ND-0.360	5	0/330
Methylene Chloride	ND-0.200	5	0/16
Naphthalene	ND-3.00	10	0/10
O-Xylene (1,2-Dimethylbenzene)	ND-3.10	5	0/330
Tert-Butyl Methyl Ether	ND-2.20	10	0/330
Tetrachloroethylene (PCE)	ND-300,000	5	169/330
Toluene	ND-4.20	5	0/330
Trichloroethylene (TCE)	ND-9,900	5	33/330
Vinyl Chloride	ND-2.00	2	1/330

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

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: Tetrachloroethylene (PCE), Trichloroethene (TCE).

Soil

Soil samples were collected at the site during the RI, during the Site Characterization and during prior site activities. The samples were analyzed for volatile organic compounds, semi-volatile organic compounds and metals to determine the nature and extent of contamination related to historical operations at the site. Soil samples were collected at different depths from the surface to the groundwater table on-site. The results of these samples indicate that on-site soil contamination exceeds the unrestricted SCGs for volatile organic compounds near the former underground storage tank and cooling tower located on the south side of the building. There is VOC contaminated soil from about 5 feet below the surface to the groundwater table at 85 feet. Limited non-VOC soil data requires the collection of additional soil samples during the remedial design phase to determine if on-site soils meet industrial use criteria. Based on the investigation results near the property boundaries, no site related off-site soil contamination was expected, consequently, no off-site soil samples were collected. Figure 2 shows the location of soil samples collected during the remedial investigation.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted Use SCG[b] (ppm)	Frequency Exceeding Unrestricted Use SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted Use SCG
METALS PART 375					
Arsenic	ND-1.95	16	0/7	16	0/7
Barium	ND-8.57	350	0/4	433	0/4
Cadmium	ND-8.97	2.5	2/7	7.5	0/7
Chromium	ND-38.3	22	2/7	19	0/7
Lead	ND-135	400	0/7	450	0/7
Mercury	ND-0.371	0.81	0/7	0.73	0/7
Selenium	ND-0.384	36	0/7	4	0/7
Silver	ND	36	0/7	8.3	0/7
Beryllium	ND	14	0/3	47	0/3
Copper	ND-862	270	1/3	1,720	0/3
Zinc	ND-434	2,200	0/3	2,480	0/3
Nickel	ND-8.59	140	0/3	130	0/3
SVOC PART 375					
Anthracene	ND-0.0510	100	0/15	500	0/15
Benzo(A)Anthracene	ND-0.320	1	0/15	1	0/15
Benzo(A)Pyrene	ND-0.300	1	0/15	1	0/15
Benzo(B)Fluoranthene	ND-0.510	1	0/15	1.7	0/15
Benzo(G,H,I)Perylene	ND-0.300	100	0/15	500	0/15
Benzo(K)Fluoranthene	ND-0.240	0.8	0/15	1.7	0/15
Chrysene	ND-0.380	1	0/15	1	0/15
Dibenz(A,H)Anthracene	ND-0.0480	0.33	0/15	0.56	0/15
Fluoranthene	ND-0.450	100	0/15	500	0/15
Indeno(1,2,3-C,D)Pyrene	ND-0.240	0.5	0/15	5.6	0/15
Naphthalene	ND-3.20	12	0/25	12	0/25
Pentachlorophenol	ND-0.540	0.8	0/15	0.8	0/15
Phenanthrene	ND-0.200	100	0/15	500	0/15
Pyrene	ND-1.20	100	0/15	500	0/15
VOC PART 375					
1,2,4-Trimethylbenzene	ND-0.400	3.6	0/10	3.6	0/10
1,3,5-Trimethylbenzene (Mesitylene)	ND-0.170	8.4	0/10	8.4	0/10
Acetone	ND-0.0230	0.05	0/16	0.05	0/16
Cis-1,2-Dichloroethylene	ND-0.00920	0.25	0/16	0.25	0/16
Ethylbenzene	ND-0.150	1	0/16	1	0/16

Methyl Ethyl Ketone (2-Butanone)	ND-0.00470	0.12	0/16	0.12	0/16
Methylene Chloride	ND-0.00860	0.05	0/16	0.05	0/16
O-Xylene (1,2-Dimethylbenzene)	ND-0.370	0.26	1/16	1.6	0/16
Tetrachloroethylene (PCE)	ND-7,300	1.3	3/16	1.3	3/16
Toluene	ND-0.320	0.7	0/16	0.7	0/16
Trichloroethylene (TCE)	ND-1.20	0.47	2/16	0.47	2/16

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater.

The primary soil contaminants are Tetrachloroethylene (PCE) and Trichloroethene (TCE) associated with former site operations on the south side of the building and is being addressed by the IRM described in Section 6.2.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are: Tetrachloroethylene (PCE), Trichloroethene (TCE).

Soil Vapor

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

Samples were collected at the Solvent Finishers site and at three adjacent commercial properties. The results from these samples indicate the PCE and TCE contamination related to the on-site disposal of hazardous wastes was detected in the soil vapor, sub-slab vapor and indoor air of the on-site building and at one off-site property. Results of the investigation are detailed in PRAP Section 6.3

Based on the concentration detected, the primary soil vapor contaminants are PCE and TCE which are associated with the former site operations. Actions are needed to address exposures at the on-site structure and one adjacent off-site property.

Based on the findings of the Remedial Investigation, the disposal of hazardous waste has resulted in the contamination of soil vapor and indoor air. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of soil vapor to be addressed by the remedy selection process are: Tetrachloroethylene (PCE) and Trichloroethene (TCE).

Exhibit B

Description of Remedial Alternatives

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

Alternative 1: No Action

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

Alternative 2: Air Sparge/Soil Vapor Extraction (AS/SVE), and Enhanced Bioremediation

This alternative would include continued use and modification of the existing on-site AS/SVE with on-site and off-site Enhanced Bioremediation, and Vapor Mitigation. This alternative also employs site management, including institutional and engineering controls (IC/EC), to ensure the remedy continues to be protective and to ensure the safe reuse of the property where contamination will remain in place.

Continued operation of the air sparge and soil vapor extraction system that was implemented in October 2012 to address the groundwater plume contaminated by volatile organic compounds (VOCs). At this site, two (2) air injection wells have been installed within the source area at the rear of the main building to a depth of about 92 feet. To capture the volatilized contaminants, four (4) SVE wells have been installed in the vadose zone to depths of about 25 feet and 65 feet below ground surface. This existing system will be optimized and/or modified, based on the data and evaluation conducted during the remedial design phase, so the influence of the system can more efficiently address the soil, soil vapor, and shallow groundwater contamination by volatile organic compounds (VOCs).

Enhanced Bioremediation will be employed to treat contaminants in on-site and off-site groundwater in an area to be determined during the remedial design. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the placement of chemical amendments into the subsurface to promote microbial growth. The amendments, method and depth of injection will be determined during the remedial design.

Vapor Mitigation of any on-site and off-site buildings impacted by the site will be required to have a sub-slab depressurization system, or a similar engineered system, to mitigate the migration of vapors into the building from soil and/or groundwater.

The cost to implement this alternative varies based on the specific chemicals used. The upper range of costs from the feasibility study has been used for comparison purposes.

Present Worth:.....$10,081,000
Capital Cost: $7,936,000
Annual Costs:.....$204,000

Alternative 3: Air Sparge/Soil Vapor Extraction (AS/SVE), In-Situ Thermal Remediation (ISTR) and Enhanced Bioremediation

This alternative would include continued use and modification of the existing on-site AS/SVE with on-site ISTR and off-site Enhanced Bioremediation, and Vapor Mitigation. This alternative also employs site management, including institutional and engineering controls (IC/EC), to ensure the remedy continues to be protective and to ensure the safe reuse of the property where contamination will remain in place.

Continued operation of the air sparge and soil vapor extraction system that was implemented in October 2012 to address the groundwater plume contaminated by volatile organic compounds (VOCs). At this site, two (2) air injection wells have been installed within the source area at the rear of the main building to a depth of about 92 feet. To capture the volatilized contaminants, four (4) SVE wells have been installed in the vadose zone to depths of about 25 feet and 65 feet below ground surface. This existing system will be optimized and/or modified, based on the data and evaluation conducted during the remedial design phase, so the influence of the system can more efficiently address the soil, soil vapor, and shallow groundwater contamination by volatile organic compounds (VOCs).

In-Situ Thermal Treatment will be implemented to destroy or volatilize volatile organic compounds (VOCs) in the source area located south of the building. Heat will be supplied to the soil and groundwater either by steam or electrical heating methods to mobilize and evaporate the contaminants. The gases produced by the thermal treatment will be collected by vapor extraction wells and treated in an ex-situ treatment unit. Effluent vapors will be treated prior to discharge. Details of the thermal and vapor treatment systems will be determined during the remedial design.

Enhanced Bioremediation will be employed to treat contaminants in off-site groundwater in an area to be determined during the remedial design. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the placement of chemical amendments into the subsurface to promote microbial growth. The amendments, method and depth of injection will be determined during the remedial design.

Vapor Mitigation of any on-site and off-site buildings impacted by the site will be required to have a sub-slab depressurization system, or a similar engineered system, to mitigate the migration of vapors into the building from soil and/or groundwater.

The cost to implement this alternative varies based on the specific ISTR technology and the chemicals used. The upper range of costs from the feasibility study has been used for comparison purposes below.

Present Worth:.....$20,879,000
Capital Cost: $18,734,000
Annual Costs:.....$204,000

Alternative 4: Air Sparge/Soil Vapor Extraction (AS/SVE), Groundwater Extraction and Treatment, and Enhanced Bioremediation

This alternative would include continued use and modification of the existing on-site AS/SVE with on-site Groundwater Extraction and Treatment, and off-site Enhanced Bioremediation, and Vapor Mitigation. This alternative also employs site management, including institutional and engineering controls (IC/EC), to ensure the remedy continues to be protective and to ensure the safe reuse of the property where contamination will remain in place.

Continued operation of the air sparge and soil vapor extraction system that was implemented in October 2012 to address the groundwater plume contaminated by volatile organic compounds (VOCs). At this site, two (2) air injection wells have been installed within the source area at the rear of the main building to a depth of about 92 feet. To capture the volatilized contaminants, four (4) SVE wells have been installed in the vadose zone to depths of about 25 feet and 65 feet below ground surface. This existing system will be optimized and/or modified, based on the data and evaluation conducted during the remedial design phase, so the influence of the system can more efficiently address the soil, soil vapor, and shallow groundwater contamination by volatile organic compounds (VOCs).

Groundwater extraction and treatment will be implemented to treat contaminants in groundwater. The groundwater extraction system will be designed and installed so that the capture zone is sufficient to cover the areal and vertical extent of the area of concern. The extraction system will create a depression of the water table so that contaminated groundwater is directed toward the extraction wells within the plume area. The extracted groundwater will be treated using air stripping. Air stripping will be implemented ex-situ to remove volatile contaminants from extracted groundwater. The groundwater will be contacted with an air stream to volatilize contaminants from groundwater to air. The extracted air stream containing the volatile contaminants will be treated prior to discharge to the atmosphere and following treatment, the groundwater will be discharged. Further details of the extraction and treatment systems will be determined during the remedial design.

Enhanced Bioremediation will be employed to treat contaminants in off-site groundwater in an area to be determined during the remedial design. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the placement of chemical amendments into the subsurface to promote microbial growth. The amendments, method and depth of injection will be determined during the remedial design.

Vapor Mitigation of any on-site and off-site buildings impacted by the site will be required to have a sub-slab depressurization system, or a similar engineered system, to mitigate the migration of vapors into the building from soil and/or groundwater.

The cost to implement this alternative varies based on the specific technology and the chemicals used. The upper range of costs from the feasibility study has been used for comparison purposes below.

Present Worth:.....$17,191,000
Capital Cost: $7,358,000
Annual Costs:.....$934,000

Alternative 5: Air Sparge/Soil Vapor Extraction (AS/SVE), In-Situ Thermal Remediation (ISTR), and In-Situ Chemical Oxidation (ISCO)

This alternative would include continued use and modification of the existing on-site AS/SVE with on-site ISTR and off-site ISCO, and Vapor Mitigation. This alternative also employs site management, including institutional and engineering controls (IC/EC), to ensure the remedy continues to be protective and to ensure the safe reuse of the property where contamination will remain in place.

Continued operation of the air sparge and soil vapor extraction system that was implemented in October 2012 to address the groundwater plume contaminated by volatile organic compounds (VOCs). At this site, two (2) air injection wells have been installed within the source area at the rear of the main building to a depth of about 92 feet. To capture the volatilized contaminants, four (4) SVE wells have been installed in the vadose zone to depths of about 25 feet and 65 feet below ground surface. This existing system will be optimized and/or modified, based on the data and evaluation conducted during the remedial design phase, so the influence of the system can more efficiently address the soil, soil vapor, and shallow groundwater contamination by volatile organic compounds (VOCs).

In-Situ Thermal Treatment will be implemented to destroy or volatilize volatile organic compounds (VOCs) in the source area located south of the building. Heat will be supplied to the soil and groundwater either by steam or electrical heating methods to mobilize and evaporate the contaminants. The gases produced by the thermal treatment will be collected by vapor extraction wells and treated in an ex-situ treatment unit. Effluent vapors will be treated prior to discharge. Details of the thermal and vapor treatment systems will be determined during the remedial design.

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in soil and groundwater. A chemical oxidant will be injected into the subsurface to destroy the contaminants south of the building where the chlorinated compounds are elevated. The method and depth of injection will be determined during the remedial design.

Vapor Mitigation of any on-site and off-site buildings impacted by the site will be required to have a sub-slab depressurization system, or a similar engineered system, to mitigate the migration of vapors into the building from soil and/or groundwater.

The cost to implement this alternative varies based on the specific ISTR technology and the ISCO chemicals used. The upper range of costs from the feasibility study has been used for comparison purposes.

Present Worth:.....$50,833,000
Capital Cost: $48,688,000
Annual Costs:.....$204,000

Alternative 6: Air Sparge/Soil Vapor Extraction (AS/SVE), In-Situ Chemical Oxidation (ISCO), and Enhanced Bioremediation

This alternative would include continued use and modification of the existing on-site AS/SVE with ISCO and off-site Enhanced Bioremediation, and Vapor Mitigation. This alternative also employs site management, including institutional and engineering controls (IC/EC), to ensure the remedy continues to be protective and to ensure the safe reuse of the property where contamination will remain in place.

Continued operation of the air sparge and soil vapor extraction system that was implemented in October 2012 to address the groundwater plume contaminated by volatile organic compounds (VOCs). At this site, two (2) air injection wells have been installed within the source area at the rear of the main building to a depth of about 92 feet. To capture the volatilized contaminants, four (4) SVE wells have been installed in the vadose zone to depths of about 25 feet and 65 feet below ground surface. This existing system will be optimized and/or modified, based on the data and evaluation conducted during the remedial design phase, so the influence of the system can more efficiently address the soil, soil vapor, and shallow groundwater contamination by volatile organic compounds (VOCs).

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in soil and groundwater. The method and depth of injection will be determined during the remedial design. Prior to the full implementation of this technology, laboratory and on-site pilot scale studies may be conducted to more clearly define design parameters.

Enhanced Bioremediation will be employed to treat contaminants in on-site and off-site groundwater in an area to be determined during the remedial design. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by the placement of chemical amendments into the subsurface to promote microbial growth. The amendments, method and depth of injection will be determined during the remedial design.

Vapor Mitigation of any on-site and off-site buildings impacted by the site will be required to have a sub-slab depressurization system, or a similar engineered system, to mitigate the migration of vapors into the building from soil and/or groundwater.

The cost to implement this alternative varies based on the specific technology and the chemicals used. The upper range of costs from the feasibility study has been used for comparison purposes.

Present Worth:.....$14,181,000
Capital Cost: $12,036,000
Annual Costs:.....$204,000

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($) For 20 Years	Total Present Worth ($)
1. No Action	0	0	0
2. Air Sparge/Soil Vapor Extraction, and Enhanced Bioremediation	$7,936,000	$204,000	$10,081,000
3. Air Sparge/Soil Vapor Extraction, In-Situ Thermal Remediation and Enhanced Bioremediation	$18,734,000	$204,000	$20,879,000
4. Air Sparge/Soil Vapor Extraction, Groundwater Extraction and Treatment, and Enhanced Bioremediation	$7,358,000	$934,000	$17,191,000
5. Air Sparge/Soil Vapor Extraction, In-Situ Thermal Remediation, and In-Situ Chemical Oxidation	$48,688,000	$204,000	$50,833,000
6. Air Sparge/Soil Vapor Extraction, In-Situ Chemical Oxidation and Enhanced Bioremediation	$12,036,000	$204,000	$14,181,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department is selecting Alternative 6, on-site AS/SVE and ISCO with off-site Enhanced Bioremediation and Vapor Mitigation and site management as the remedy for this site. Alternative 6 will achieve the remediation goals for the site by using multiple technologies to remove the contamination from the soil, destroying the contamination in the groundwater, and monitoring the soil vapor and the groundwater to ensure the concentration of contaminants continues to decrease, and managing remaining contamination and associated human exposures. The elements of this remedy are described in Section 7. The remedy is depicted in Figure 4.

Basis for Selection

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

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

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

The selected remedy (Alternative 6, on-site AS/SVE and ISCO with Enhanced Bioremediation) will satisfy this criterion by treating the on-site contaminated soils, providing source removal, along with quickly destroying the on-site groundwater contamination in-situ and treating off-site groundwater thereby preventing the further migration of the groundwater plume, capturing soil vapor and managing remaining contamination and associated human exposures. The selected alternative destroys source area contamination which is the most significant threat to public health and the environment. Alternative 1, the “no action” alternative, will not provide protection to human health and the environment and will not be evaluated further. Alternatives 2 through 6 all protect human health and control human exposure by using soil vapor extraction to capture and treat soil vapor, and restrict the use of contaminated groundwater. Alternatives 3, 5 and 6 provide additional protection by removing or destroying the on-site groundwater contamination at a significantly faster rate which will prevent the further migration of contaminated groundwater. Alternative 4 reduces off-site migration of groundwater by extracting groundwater but both groundwater contamination and the potential for soil vapor intrusion will remain significantly longer. Alternative 5 will reduce contamination in portions of the off-site plume faster than the other alternatives while Alternatives 2, 3, 4 and 6 will provide similar off-site long term protections but not as quickly.

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

Alternative 6 complies with SCGs to the extent practicable. It quickly removes and destroys source area contamination in soil, soil vapor and groundwater, creating conditions necessary to restore

groundwater quality. Alternatives 3, 5 and 6 are expected to achieve on-site groundwater SCGs in a much shorter time frame when compared to achievement of SCGs for Alternatives 2 and 4. Alternative 2 and 4 will comply with this criterion with lower certainty to remediate the source area. Because Alternatives 2 through 6 all satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site.

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

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

Alternatives 2 through 6 all provide adequate long term effectiveness but at varied levels and all require groundwater use restrictions and site management. Long-term effectiveness is best accomplished by Alternative 3, 5, and 6, involving quick reduction of the source area contamination which will in turn reduce both the potential for soil vapor intrusion and off-site migration of the plume. Alternative 6 will permanently destroy the source area contamination by chemical oxidation, reduce contamination from migrating and reduce the potential for soil vapor intrusion. Alternatives 3 and 5 will use heat to effectively volatize contamination from the subsurface on-site which can be beneficial to the downgradient biological aspects of these alternatives. Alternative 4 will reliably control off-site migration but the source area remediation will be much slower and therefore less effective than alternatives 3, 5 and 6. Alternative 4 will also require long term operation of a groundwater treatment system which will have difficulty removing the source area contamination. Alternative 2 will be the least effective at quickly reducing the source area contamination.

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

Alternatives 3, 5 and 6 will quickly and permanently remove on-site contamination and provide a reduction in toxicity, mobility and volume. The fast removal of the source area contamination will also significantly limit the continued source area contribution to the off-site plume and reduce the potential for soil vapor intrusion. Alternative 5 provides additional reduction in toxicity, mobility and volume by treating the off-site portion of source area contamination. Alternatives 2 and 4 will provide a much slower reduction of on-site contaminant volume and toxicity which will allow greater mobility when compared to the other alternatives.

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

Alternatives 2 through 6 all have similar and controllable short term on-site impacts associated with the installation and operation of the on-site AS/SVE system. Overall, the time necessary to achieve the remediation goals is the shortest for Alternative 5, followed by Alternatives 3 and 6 which will reach the goals faster than Alternatives 2 and 4. Alternatives 2 and 6 have the smallest overall short-term on-

site impacts. The on-site short term chemical injection impacts associated with Alternative 6 are easily controlled. Alternatives 3 and 5 will have the greatest short term impacts including using large portions of the current parking lot to install and operate the thermal treatment system. Alternative 4 will have considerable on-site short term impacts related to well drilling and pumping along with the construction of on-site water treatment and discharge systems. Alternatives 2, 3, 4, and 6, all have similar minor short term off-site community impacts since they all use the same common and short duration well drilling and injection methods of remedial products into groundwater while Alternative 5 will have larger short term impacts due to the additional off-site chemical injection impacts.

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

Each of the alternatives is technically and administratively implementable but with varied degree of difficulty. Alternatives 2 and 6 are readily implemented using industry standard drilling and injection methods. Alternative 4 is implementable using industry standard construction but has increased complexity from operating and monitoring a groundwater treatment system and associated treated water discharge. Alternatives 3 and 5 are less implementable in that they require both additional electric power sources and complete access to a large portion of the on-site parking lot. Alternatives 2 through 6 all have similar off-site implementability by use of similar injection methods for oxidants and/or biological amendments.

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

The costs of the alternatives vary significantly and are summarized in Exhibit C. Alternative 2 has the lowest total cost but will take significantly longer to remediate contamination in the source area. Alternative 6 has the second lowest total cost but removes a substantial amount of source area contamination very quickly which limits off-site migration. Alternative 5 has the highest total cost and highest capital cost to achieve the shortest remediation time. Alternative 4 has the highest annual operation and maintenance (O&M) cost due to operation of the long term groundwater extraction and treatment system which contributes to Alternative 4 having a larger total cost than Alternative 6 and 2.

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

The site will be restricted to industrial use. Alternatives 2 and 4 are the least desirable because in addition to being the slowest remedial methods they would most likely to leave residual contamination in the source area. Alternatives 3, 5 and 6 would be more desirable since they will remove or permanently treat the on-site source area. Alternative 6 is the most desirable since it will permanently destroy or treat the entire source area. Alternatives 2 through 6 all require that remaining contamination be monitored and controlled with a site management plan that includes provisions for the testing of

groundwater and soil vapor and also requires an environmental easement restricting the use of on-site groundwater.

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

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

Alternative 6 has been selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.

Location of former cesspool

Locations of solvent tank and former cooling tower

Solvent Finishers Site

Miles
0 25 50

N

Legend

Site Boundary

N

0 200 400

Feet

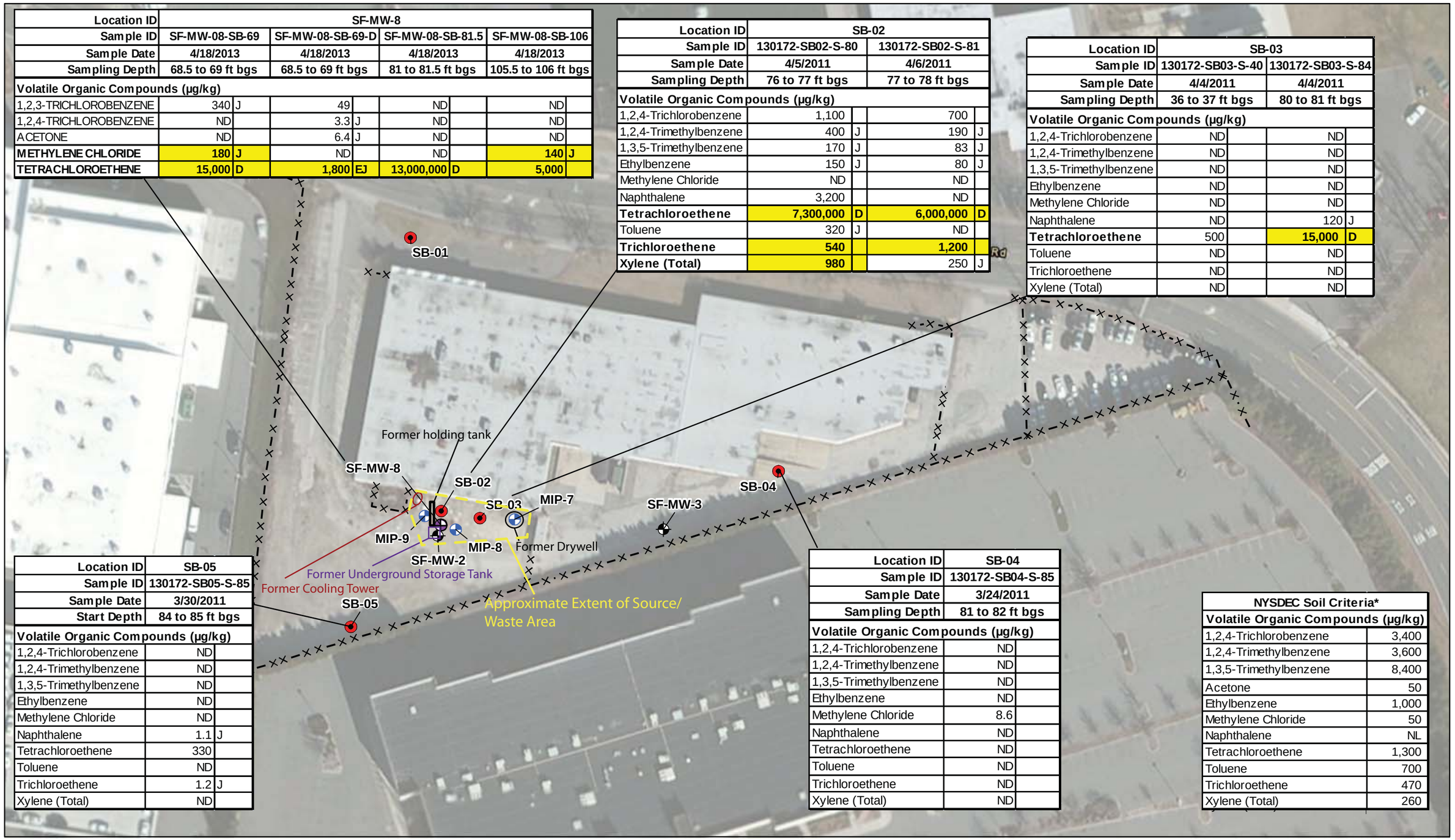
CDM Smith

Figure -1
Site Location Map
Solvent Finishers Site
Jericho, New York

Location ID	SF-MW-8							
Sample ID	SF-MW-08-SB-69		SF-MW-08-SB-69-D		SF-MW-08-SB-81.5		SF-MW-08-SB-106	
Sample Date	4/18/2013		4/18/2013		4/18/2013		4/18/2013	
Sampling Depth	68.5 to 69 ft bgs		68.5 to 69 ft bgs		81 to 81.5 ft bgs		105.5 to 106 ft bgs	
Volatile Organic Compounds (µg/kg)								
1,2,3-TRICHLOROBENZENE	340	J	49		ND		ND	
1,2,4-TRICHLOROBENZENE	ND		3.3	J	ND		ND	
ACETONE	ND		6.4	J	ND		ND	
METHYLENE CHLORIDE	**180**	**J**	ND		ND		**140**	**J**
TETRACHLOROETHENE	**15,000**	**D**	**1,800**	**EJ**	**13,000,000**	**D**	**5,000**	

Location ID	SB-02			
Sample ID	130172-SB02-S-80		130172-SB02-S-81	
Sample Date	4/5/2011		4/6/2011	
Sampling Depth	76 to 77 ft bgs		77 to 78 ft bgs	
Volatile Organic Compounds (µg/kg)				
1,2,4-Trichlorobenzene	1,100		700	
1,2,4-Trimethylbenzene	400	J	190	J
1,3,5-Trimethylbenzene	170	J	83	J
Ethylbenzene	150	J	80	J
Methylene Chloride	ND		ND	
Naphthalene	3,200		ND	
Tetrachloroethene	**7,300,000**	**D**	**6,000,000**	**D**
Toluene	320	J	ND	
Trichloroethene	**540**		**1,200**	
Xylene (Total)	**980**		250	J

Location ID	SB-03			
Sample ID	130172-SB03-S-40		130172-SB03-S-84	
Sample Date	4/4/2011		4/4/2011	
Sampling Depth	36 to 37 ft bgs		80 to 81 ft bgs	
Volatile Organic Compounds (µg/kg)				
1,2,4-Trichlorobenzene	ND		ND	
1,2,4-Trimethylbenzene	ND		ND	
1,3,5-Trimethylbenzene	ND		ND	
Ethylbenzene	ND		ND	
Methylene Chloride	ND		ND	
Naphthalene	ND		120	J
Tetrachloroethene	500		**15,000**	**D**
Toluene	ND		ND	
Trichloroethene	ND		ND	
Xylene (Total)	ND		ND	



Location ID	SB-05	
Sample ID	130172-SB05-S-85	
Sample Date	3/30/2011	
Start Depth	84 to 85 ft bgs	
Volatile Organic Compounds (µg/kg)		
1,2,4-Trichlorobenzene	ND	
1,2,4-Trimethylbenzene	ND	
1,3,5-Trimethylbenzene	ND	
Ethylbenzene	ND	
Methylene Chloride	ND	
Naphthalene	1.1	J
Tetrachloroethene	330	
Toluene	ND	
Trichloroethene	1.2	J
Xylene (Total)	ND	

Location ID	SB-04	
Sample ID	130172-SB04-S-85	
Sample Date	3/24/2011	
Sampling Depth	81 to 82 ft bgs	
Volatile Organic Compounds (µg/kg)		
1,2,4-Trichlorobenzene	ND	
1,2,4-Trimethylbenzene	ND	
1,3,5-Trimethylbenzene	ND	
Ethylbenzene	ND	
Methylene Chloride	8.6	
Naphthalene	ND	
Tetrachloroethene	ND	
Toluene	ND	
Trichloroethene	ND	
Xylene (Total)	ND	

NYSDEC Soil Criteria*	
Volatile Organic Compounds (µg/kg)	
1,2,4-Trichlorobenzene	3,400
1,2,4-Trimethylbenzene	3,600
1,3,5-Trimethylbenzene	8,400
Acetone	50
Ethylbenzene	1,000
Methylene Chloride	50
Naphthalene	NL
Tetrachloroethene	1,300
Toluene	700
Trichloroethene	470
Xylene (Total)	260

Legend

- Membrane Interface Probe Boring
- Monitoring Well
- Vertical Profile Boring
- Fence line
- Deep Monitoring Well

Notes

D - dilution
J - estimated value
ND - non detect
NL - no limit
µg/kg - micrograms per kilogram

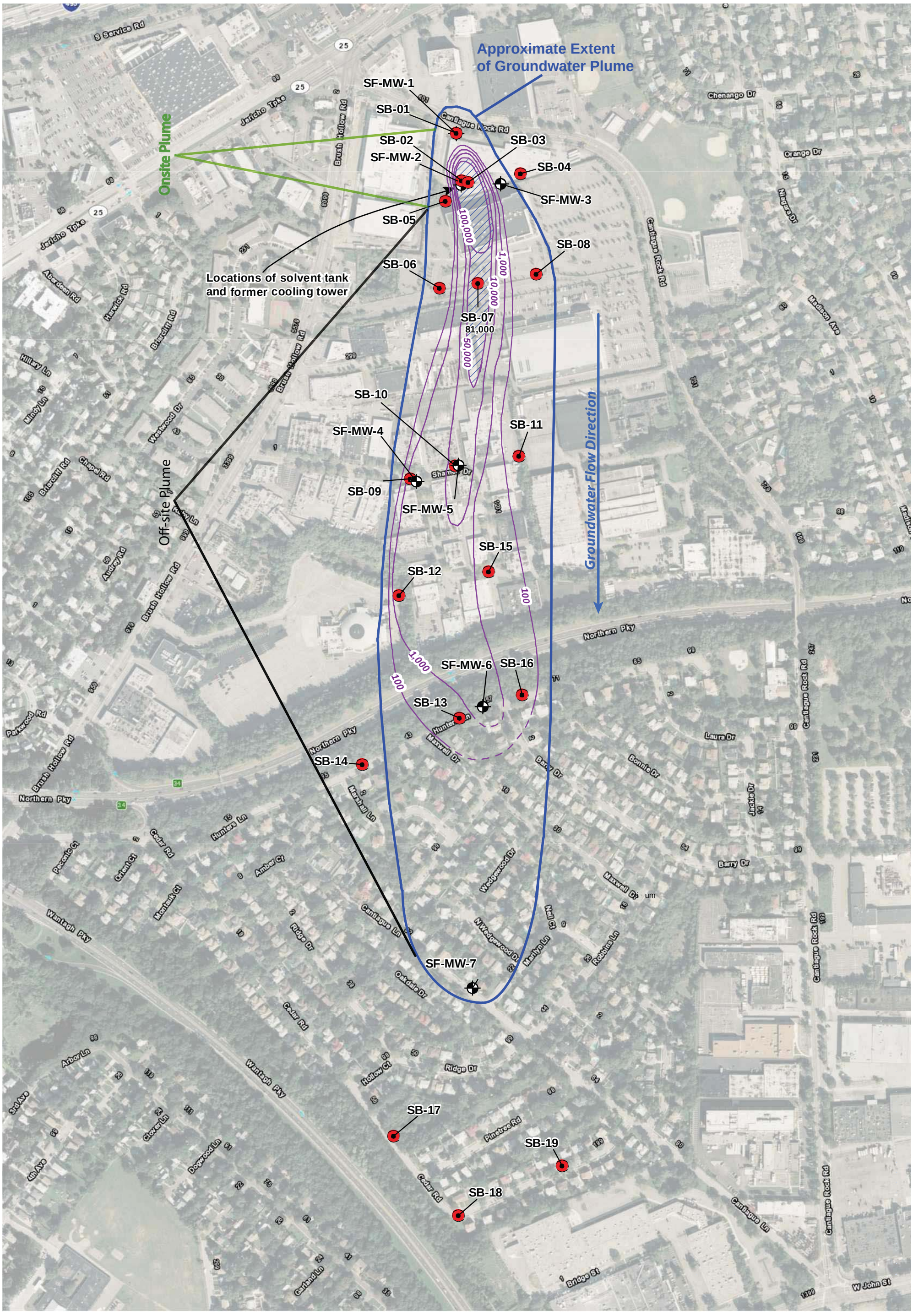
*Soil Cleanup Objectives (SCOs) are Comprised of:
1.) New York State Department of Environmental Conservation (NYSDEC) Part 375-6.8(a) Unrestricted Use Criteria.
2.) NYSDEC Part 375.6.8(b) Restricted Use – Protection of Groundwater Criteria.
3.) NYSDEC CP-51 Supplemental SCOs.

N

0 37.5 75 150 Feet

Figure 2
Waste/Source Areas and Soil Sample Results
Solvent Finishers Site
Jericho, New York

CDM Smith



PCE Isoconcentration Contour, dashed where inferred (micrograms/liter)

Monitoring Well

Vertical Profile Boring

N

0 200 400 800

Feet

Figure 3
Extent of Groundwater Contamination
Jericho, Long Island
Nassau County, New York

CDM Smith

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Approximate Area of Air Sparge/Soil Vapor Extraction (AS/SVE)

Approximate Area of In-Situ Chemical Oxidation (ISCO)

Approximate Area of Enhanced Bioremediation

SF-MW-1
SB-01
SB-02
SB-03
SF-MW-2
SB-04
SF-MW-3
SB-05
SB-06
SB-07
SB-08
SB-09
SB-10
SF-MW-4
SF-MW-5
SB-11
SB-12
SB-13
SB-14
SB-15
SF-MW-6
SB-16
SF-MW-7
SB-17
SB-18
SB-19

Locations of solvent tank and former cooling tower

100,000
10,000
1,000
100
50,000

PCE Isoconcentration Contour, dashed where inferred (micrograms/liter)
Monitoring Well
Vertical Profile Boring

N

0 200 400 800
Feet

Figure 4
Selected Remedy
Jericho, Long Island
Nassau County, New York

CDM Smith

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APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Solvent Finishers
State Superfund Project
Jericho, Nassau County, New York
Site No. 130172

The Proposed Remedial Action Plan (PRAP) for the Solvent Finishers site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 25, 2016. The PRAP outlined the remedial measure proposed for the contaminated soil, groundwater, and soil vapor at the Solvent Finishers site.

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

A public meeting was held on March 15, 2016, which included a presentation of the remedial investigation/feasibility study (RI/FS), and a discussion of the proposed remedy for the Solvent Finishers site. Based on the March 15th meeting, the PRAP comment period was extended, additional sampling was conducted, and a second meeting was held. The Department attended the second meeting, held on April 18, 2016, which included a presentation of the investigation, including a discussion of the new soil vapor and groundwater data, as well as an overview of the RI/FS and the proposed remedy. The meetings provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. Written comments were also accepted and these comments have become part of the Administrative Record for this site. The public comment period was to have ended on March 26, 2016, however, it was extended to April 26, 2016, at the request of the public.

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

COMMENT 1: Where is the southernmost boundary of the plume?

RESPONSE 1: The plume is about 4,000 feet long, or about ¾ mile, to the south of the site.

COMMENT 2: What is the width of the plume?

RESPONSE 2: The plume is about 800 feet wide at its widest point near where it crosses the Northern State Parkway.

COMMENT 3: Has the ground water plume stopped moving?

RESPONSE 3: The plume is slowly migrating southward with the flow of groundwater.

COMMENT 4: Is the contamination migrating deeper into the ground water?

RESPONSE 4: Yes, the data shows that the contamination is moving deeper with the flow of groundwater as the plume is migrating southward.

COMMENT 5: When did the ground water sampling show the extent of the deeper contamination?

RESPONSE 5: The deep contamination was identified during the on-site site characterization investigation activities that began in April 2008. The remedial investigation which followed further defined the nature and extent of the plume.

COMMENT 6: At what point did we say this plume is spreading and that we should do something? What triggered us to be here?

RESPONSE 6: Based on historic records and site history, a site characterization investigation was conducted in 2008. The data collected during this site characterization resulted in the site being added to the New York State Registry of Inactive Hazardous Waste Disposal Sites. As no Potentially Responsible Party offered to do the work, this was followed by a referral to conduct a New York State funded remedial program for the Remedial Investigation/Feasibility Study and an Interim Remedial Measure (RI/FS and IRM). The RI characterized the nature and extent of contamination including the off-site plume. The FS provided remedial alternatives of how to clean up the site. In addition, an IRM consisting of an air sparge/soil vapor extraction system, was installed in October 2013 and continues to operate to address the source of the contamination on the site. The purpose of these meetings are to provide the results of the RI/FS and to inform you of the proposed remedial action plan to clean up the site.

COMMENT 7: Can information be presented so that we can see trends in how the contamination progressed?

RESPONSE 7: The data was not collected to show the contaminant migration over time.

The purpose of the RI/FS was to define the nature and extent of the current plume and develop remedial alternatives.

COMMENT 8: Has the contamination from this site impacted the Temple on Cantiague Rock Road?

RESPONSE 8: No. The off-site groundwater plume is located west of the Temple. In addition, the off-site contaminated groundwater plume is not at the surface of the water table and has a layer of uncontaminated groundwater over it the further south of the site it travels. Due to the depth of contamination and the layer of clean water above it, to the south of the site soil vapor intrusion is not a concern. The drinking water that serves this area comes from public supply wells which are not located near this plume and are also tested prior to distribution to consumers.

COMMENT 9: Can we see monitoring data that reflects 2016 numbers? How deep are the monitoring wells screened?

RESPONSE 9: The March 2016 groundwater results can be found online at the Department's Solvent Finishers webpage http://www.dec.ny.gov/chemical/105528.html. Of this recent data, three samples were collected at one multi-level well location screened at 222, 262 and 313 feet below ground surface. Groundwater was also collected by temporary methods (hydro punch) at 10 foot intervals from near the top of the water table located about 85 feet below ground surface to about 155 feet below ground surface.

COMMENT 10: When was the extra profile monitoring wells added to the east?

RESPONSE 10: No additional wells were added. Groundwater was collected from existing and temporary locations between the known plume and the Cantiague Elementary School during late March 2016.

COMMENT 11: If the contamination is deep and covered by a layer of clean ground water will the vapors come up at some point? Will the ground water mix with the vapors and become contaminated over time?

RESPONSE 11: Soil Vapor (air) exists above the groundwater in the unsaturated (dry) soil. Contaminated water in contact with this air can create contaminated soil vapor when the chemical volatilizes. Contaminated soil vapor does not typically contaminate groundwater. Due to the depth of groundwater contamination further south of the site which has a layer of clean water above it, soil vapor intrusion is not a concern.

COMMENT 12: Are the public supply wells in the zone of contaminated ground water?

RESPONSE 12: The plume has not impacted any public supply wells. The drinking water that serves this area comes from public supply wells which are tested and treated prior to distribution to consumers. The public water supply is safe to drink.

COMMENT 13: Will the Department test the school and the school property? When?

RESPONSE 13: The soil vapor, sub-slab soil vapor and indoor air at the Cantiague Elementary School were tested during March 2016 by the Jericho School District. Both the school's consultant and the New York State Department of Health have reviewed the data and announced that soil vapor intrusion is not a concern at the school during the April 18th public meeting. The plume of contaminated groundwater does not come near the school property. This was confirmed by Department sampling in March 2016. No additional testing at the school is planned by the Department.

COMMENT 14: If you had kids in this school would you want this school tested?

RESPONSE 14: The vapor data collected from the parking lot areas for the Movie Theater across from the school had very low detections of site-related tetrachloroethene (PCE) or trichloroethene (TCE) in the vapor samples collected. Vapor samples from this area, across from the school, were collected to determine if site-related PCE and/or TCE vapors were at concentrations that would indicate site-related PCE and/or TCE vapors could possibly be detected at the elementary school. However, the levels from the parking lot samples did not indicate a need to do additional sampling at the school. Also see Response 13.

COMMENT 15: Why does our school district have to pay for the testing in the school?

RESPONSE 15: While the State did not identify the need to do additional testing of the Cantiague Elementary School, the Jericho School District felt an additional level of comfort was prudent and decided to collect the soil vapor intrusion data with their own funds to assess conditions at the Cantiague Elementary School. Those results showed no impacts to the Cantiague Elementary School from the site's contamination.

COMMENT 16: Can the school have testing done prior to the determination of the remediation plan for this site?

RESPONSE 16: See Response 13. The results do not necessitate changes to the remedy.

COMMENT 17: Should the school remain open during the cleanup of the site?

RESPONSE 17: Yes. While the clean-up of the site is underway, procedures will be in-place to protect residents, businesses and the school from potential exposures to site-related contamination. To make sure that individuals aren't exposed to these chemicals or the site-related chemicals during the injection process, a community air monitoring plan will be used to ensure off-site migration of these chemicals does not occur during the remedial process.

COMMENT 18: Should the school board write a letter to the Nassau County Legislature asking for a faster cleanup?

RESPONSE 18: Comment noted.

COMMENT 19: Will the school continue to test as the remediation continues and who will pay for it?

RESPONSE 19: The school district's plans for additional testing are not known. The data, including the recent March 2016 results, indicate that soil vapor intrusion is not a concern at the school and that the plume of contaminated groundwater does not come near the school property. The Department does not plan to conduct or fund any additional sampling at the school.

COMMENT 20: What has happened since the last testing at the site? Will additional testing be done?

RESPONSE 20: Additional groundwater, soil vapor, sub-slab and indoor air sampling was conducted in March 2016, after release of the PRAP, and resulted in no change to the selected remedy. Only the on-site interim remedial system (air sparge/soil vapor extraction) is currently still being sampled to monitor its operation and effectiveness. The investigation of the groundwater plume migration has determined the nature and extent of groundwater contamination so further sampling is not necessary until remedial design work gets underway. When the proposed remedy is in-place, periodic monitoring will be conducted as part of the site management plan to assess the effectiveness of the remedy until completion of the entire remedial process.

COMMENT 21: Was the current owner of the site made aware of the contamination that was found?

RESPONSE 21: The current owner is aware of the contamination and the sampling data/results have been provided to them.

COMMENT 22: Have any other properties in the area been sampled such as the soccer field by the firehouse?

RESPONSE 22: Five adjacent properties surrounding the site have had soil vapor sampling. The Town of Oyster Bay also has recently conducted soil vapor sampling at Chenango Park adjacent to the Firehouse during April 2016. The results do not indicate the need for any action or additional sampling.

COMMENT 23: Do you have any newer data than what you have shown on your maps?

RESPONSE 23: The PRAP was developed using results from the Remedial Investigation which occurred between 2011 and 2015. The March 2016 data that affirmed the findings of the earlier investigation is available online and in the in the document repositories.

COMMENT 24: How old is the vapor data you have?

RESPONSE 24: The soil vapor, sub-slab and indoor air data was collected from 2011 to 2016.

COMMENT 25: How often do you monitor the ground water wells?

RESPONSE 25: The remedy calls for additional testing during the Remedial Design and during Site Management. Periodic sampling will be conducted to assess the progress of the remedy during the entire remedial process.

COMMENT 26: The 2700 pounds of contamination that you recovered is what percentage of the amount released?

RESPONSE 26: The total amount of PCE released into the environment at the site is unknown.

COMMENT 27: Is the movie theater aware of the vapor problem?

RESPONSE 27: The movie theater has participated in vapor intrusion sampling to determine the potential for vapor intrusion into the theater and all sampling data has been

provided to them. New York State Department of Health has stated that the results indicate that no site-related VOC contamination was detected in the indoor air of areas of the theater where the general public would be visiting and therefore no current exposures are occurring.

COMMENT 28: How can you feel confident with the small number of samples you have taken?

RESPONSE 28: The Department is confident that the samples collected during the Remedial Investigation are sufficient to characterize the nature and extent of the contamination at the site. The additional sampling conducted during March 2016 affirmed the findings of the earlier investigation and did not result in a change to the selected remedy. The remedy calls for additional testing during the Remedial Design and during Site Management. Periodic sampling will be conducted to assess the progress of the remedy during the entire remedial process.

COMMENT 29: Why have you stopped monitoring the site now?

RESPONSE 29: See Response 28.

COMMENT 30: Who fenced off and closed Fireman's ball field and said not to use it and is doing soil sampling?

RESPONSE 30: The Town of Oyster Bay closed the ball field on their own accord. They also have recently conducted soil vapor sampling at Chenango Park adjacent to the Firehouse during April 2016. The results do not indicate the need for any action or additional sampling.

COMMENT 31: When was the movie theater and BJ's last sampled and what were the results?

RESPONSE 31: The movie theater was last sampled during 2015 to determine the potential for vapor intrusion into the theater. There was no site-related VOC contamination detected in the indoor air of areas of the theater where the general public would be visiting and therefore no current exposures are occurring. Based on the locations of the vapor sampling conducted during the remedial investigation, the New York State Department of Health felt that additional testing in other buildings, such as BJs, was not necessary.

COMMENT 32: Were the air detections in the movie theater below or above action levels?

RESPONSE 32: Only one area, which is not accessible to the general public, had site-related VOCs detected in both the indoor air and sub-slab vapor, but the indoor air concentrations did not exceed the New York State guidance value.

COMMENT 33: Why did a 1997 ESA only drill and sample to - 25 feet and not find this soil contamination?

RESPONSE 33: The 1997 work was not conducted under the oversight of the Department. This question is beyond the scope of this remedy selection document.

COMMENT 34: Who owns this site? Nassau County? Will they be asked to do the cleanup?

RESPONSE 34: The current owner of record is the Nassau County Industrial Development Agency (NCIDA). The NCIDA will be one of the potential responsible parties who are asked to conduct the cleanup. A Potentially Responsible Party of an Inactive Hazardous Waste Disposal Site includes all current and former owners and operators of such sites. Each Potentially Responsible Party is jointly and severally liable for contamination and remedial costs incurred. However, the Department typically first looks to the owners and operators who were present during the periods of disposal of waste to pay for or perform the remediation.

COMMENT 35: Can the Department start the cleanup now before you ask the PRP's to do the work?

RESPONSE 35: Not immediately since the law which provides the funding for Superfund requires that all potentially responsible parties at Inactive Hazardous Waste Disposal Sites are first given the opportunity to pay for or perform the remediation. The remediation can only begin when one or more of the potential responsible parties enter into an agreement with the Department to implement the remedy or, if no parties are willing to enter an agreement, when the Department refers the site to the State Superfund Program to conduct the selected remedial action using NY State funds.

COMMENT 36: When will the remediation begin?

RESPONSE 36: The remediation will begin when one or more of the potential responsible parties enter into an agreement with the Department to implement the remedy or, if no parties are willing to enter an agreement, when the Department conducts the selected remedial action using New York State funds under the State Superfund Program. First, a remedial design will be conducted to collect additional data and determine the details

necessary to implement the remedial action. It is estimated that the remedial action may begin in about two years.

COMMENT 37: Will your remediation methods do more damage to the environment?

RESPONSE 37: The remediation is expected to remove contamination from the subsurface and will not result in any additional environmental damage.

COMMENT 38: Can you tell us what other cleanup alternatives were considered but not chosen?

RESPONSE 38: The other cleanup alternatives evaluated in the Feasibility Study (FS) included combinations of treatment technologies including in-situ thermal remediation, in-situ chemical oxidation, groundwater extraction and treatment, air sparge/soil vapor extraction, and enhanced bioremediation. They are presented in detail in the FS, which can be found at the document repositories, or the Department's Solvent Finishers webpage at http://www.dec.ny.gov/chemical/105528.html.

COMMENT 39: Will the use of fertilizer by the residents help with the bioremediation?

RESPONSE 39: No, it is not likely that use of fertilizers by residents will result in nutrients being transported to the needed location or be in sufficient quantity to help with the remediation. Similarly the enhanced bio remediation products that will be injected will not have any impacts at the ground surface or your lawns.

COMMENT 40: Can you give us periodic monitoring results of new data?

RESPONSE 40: The remedy calls for additional testing during the remedial design and during site management. Periodic sampling will be conducted to assess the progress of the remedy during the entire remedial process. Once the remediation begins, any reports that include data will be sent to the local repositories and placed on the Department's Solvent Finishers webpage at http://www.dec.ny.gov/chemical/105528.html.

COMMENT 41: What is the estimate on how long it will take to remediate the plume?

RESPONSE 41: The timeframes for evaluating the cleanup alternatives of the site were shown in Exhibit C, Remedial Alternative Cost, in the PRAP and now in the Record of Decision. It was estimated that it would take 20 years to clean up the contaminated groundwater plume. While certain elements of the various alternatives might differ in their operational period, the overall remedy operational period takes into account achieving

remedial action objectives for all the contamination, consequently, no one remedy has a significantly shorter operational period.

COMMENT 42: How often are monitoring wells monitored?

RESPONSE 42: See Response 40.

COMMENT 43: You noted that 2700 pounds of PCE have been recovered from the soil vapor system. What percentage does this represent of what was actually in the ground?

RESPONSE 43: See Response 26.

COMMENT 44: Why wasn't Thermal treatment chosen to remediate the site? Couldn't it be used as part of the remediation along with the chemical treatment?

RESPONSE 44: Based on the evaluation of the alternatives, chemical oxidation is believed to be the best remedial technology for the on-site groundwater contamination coupled with enhanced bioremediation for the off-site groundwater plume. The other cleanup alternatives included combinations of treatment technologies including in-situ thermal remediation, in-situ chemical oxidation, groundwater extraction and treatment, air sparge/soil vapor extraction, and enhanced bioremediation. They were summarized in the PRAP and now in the ROD, which can be found at the document repositories or the Department's Solvent Finishers webpage which can be found online at http://www.dec.ny.gov/chemical/105528.html.

COMMENT 45: Why would Thermal Treatment cause a hardship to the current property owner?

RESPONSE 45: As stated in the PRAP and now the ROD, Thermal Treatment poses greater challenges in its implementation in that it will require both additional power sources to generate heat or steam, and complete access to a large portion of the on-site parking lot for heating equipment, treatment systems and wires or piping.

COMMENT 46: What will be the order of cleaning the ground water up? From more to less or the reverse?

RESPONSE 46: This will ultimately be determined during the remedial design. Generally the individual remedial technologies will be implemented independently and as quickly as possible. Each technology will likely begin in the areas with the highest contaminant

concentrations in an effort to reduce the total mass of contamination as soon as possible. The injections of chemicals and amendments will likely take multiple applications.

COMMENT 47: Will the remedy be put in place all at one time or in phases?

RESPONSE 47: See Response 46.

COMMENT 48: Can the 20 years to do the cleanup be shortened?

RESPONSE 48: The remediation will start and be completed as quickly as possible.

COMMENT 49: We would like to see a more robust remedy that potentially incorporates thermal, chemical and biological remediation and results in a remedy that is quicker than 20 years? Why does it have to be an either or remedy?

RESPONSE 49: he selected remedy incorporates multiple remedial technologies. Based on the evaluation of the alternatives, chemical oxidation was identified as the best remedial technology for the on-site groundwater contamination with enhanced bioremediation for the off-site groundwater plume. The off-site enhanced bioremediation injections may take longer to achieve goals than the on-site chemical oxidation. The on-site application of both thermal treatment and chemical oxidation would be redundant and using both would have no identified benefit to using just chemical oxidation.

COMMENT 50: Will there be another meeting to tell us what is happening and when?

RESPONSE 50: A second meeting was held on April 18, 2016. It was similar to the March 15th meeting with the addition of a discussion of the March 2016 data. No additional meetings are planned at this time. However, by subscribing to the Department's Listserv you will receive periodic site updates and other site-related information and/or announcements. You can sign up for Listserv at http://www.dec.ny.gov/chemical/61092.html.

COMMENT 51: Why weren't the people who live in the other areas, such as Westbury Gardens notified of this problem?

RESPONSE 51: Resident and business over the plume have been notified at various times through the remedial investigation. The neighborhood of Westbury Gardens and the surrounding area were previously mailed a Factsheet in May 2011 prior to drilling and sampling activities in that neighborhood.

COMMENT 52: How come Nassau County has not made us aware of the problem if they own the property?

RESPONSE 52: See Response 34.

COMMENT 53: Can you extend the comment period? Say two months?

RESPONSE 53: The comment period was extended an additional thirty (30) days from the original comment period end date of March 26 to April 26, 2016 in accordance with 6NYCRR375-1.10(g).

COMMENT 54: Are there any more sites on Cantiague Rock Road?

RESPONSE 54: Yes. The “70-140 Cantiague Rock Rd/Former Sylvania”, Site No. V00089; and “General Instruments Corp.”, Site No. 130020 are located along the south end of Cantiague Rock Road. The Department’s website will allow you to search for other sites in the area and throughout New York.
http://www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=3

COMMENT 55: Why should I use Listserv?

RESPONSE 55: The Department uses its Listserv to provide periodic site-related information and/or announcements for this and other contaminated sites in the counties you select. You can sign up for listserv at http://www.dec.ny.gov/chemical/61092.html.

COMMENT 56: I would have liked to have seen more substantial information about this site a little earlier.

RESPONSE 56: Residents and businesses above and near the plume received Factsheets in 2011 that contained information about the investigation. These factsheets encouraged citizens to share the information with neighbors and tenants, and to sign up to receive information by email through Listserv.

COMMENT 57: Can the comment period be extended for another two weeks due to the upcoming Passover Holiday?

RESPONSE 57: See Response 53.

COMMENT 58: If you knew about this problem in the 1970's why weren't we informed then?

RESPONSE 58: The contamination was first identified by the Nassau County Department of Health. The Department was not involved until 2007.

COMMENT 59: How long ago were postcards sent out to residents about the new Listserv?

RESPONSE 59: Residents and businesses above and near the plume received postcards during the Spring of 2012 that encouraged and instructed them to sign up to receive site related information by email from Listserv.

COMMENT 60: How are homes determined to be notified of the problem off site?

RESPONSE 60: See Response 56.

COMMENT 61: There is a Synagogue with a pre-school down gradient of the site above the off-site plume should it be notified and tested?

RESPONSE 61: The Synagogue, residences and businesses in the area have been notified in the past. Based on this sampling conducted during the remedial investigation, the Department and the New York State Department of Health feel that additional testing is unnecessary. Also see Response 8 which addressed a similar comment.

COMMENT 62: What is the plan to notify the homes located over the plume?

RESPONSE 62: See Response 56.

COMMENT 63: When will there be another update to us?

RESPONSE 63: See Response 50.

COMMENT 64: Will tonight's presentation be available to the public?

RESPONSE 64: The slideshow and the reports containing the March 2016 data will be sent to the local repositories and have also been placed on the Department's, Solvent Finishers webpage which can be found online at http://www.dec.ny.gov/chemical/105528.html.

COMMENT 65: Can you make the data on the maps more visible so we can see it? It is too small for us to see.

RESPONSE 65: See Response 64.

COMMENT 67: Are smaller children that are exposed to these chemicals at more risk that other people?

RESPONSE 67: Children are considered when making decisions to address potential exposures to site-related contamination. Children are categorized as a "sensitive population", and the remedy chosen is protective of sensitive populations.

COMMENT 68: Will there be a health risk from the chemicals that you will be using to clean up the contamination?

RESPONSE 68: No. The chemicals proposed for the remedy will be injected beneath the surface of the ground in the specified areas of injection. While these chemicals will be injected into the groundwater, people will not be exposed to the site-related chemicals and the chemicals to be used during the clean-up through the drinking water as the drinking water that serves the Cantiague Elementary school and all other users in the area comes from the Jericho Water District which is treated prior to distribution to consumers. Additionally, to ensure that residents are not exposed to the injection chemicals or the site-related chemicals during the injection process, a community air monitoring plan (CAMP) is used. The CAMP will be used as a direct result of the remedial work activities and will provide a measure of protection for the down-wind community such as residences, businesses and the elementary school from potential airborne contaminant releases.

COMMENT 69: What are the health consequences of the two chemicals involved?

RESPONSE 69: A detailed evaluation of PCE and TCE can be found at http://www.atsdr.cdc.gov/toxfaqs/index.asp

COMMENT 70: What is the current health risk if I go to the movie theater? Has remediation started under the movie theater's slab?

RESPONSE 70: See Response 31.

Ira Goldstein, submitted an email on March 15, 2016 which included the following comment on the OU2 remedy:

COMMENT 71: What is the purpose for the proposed remediation of an industrial site in Jericho? Site closure or site re-development?

RESPONSE 71: The purpose of the proposed remediation is to eliminate the threat posed by contaminants at the site to public health and/or the environment.

An email from Deric dated March 15, 2016 included the following comment on the OU2 remedy:

COMMENT 72: The water pollution is in the ground water of the immediate area. However, wouldn't the pollutants seep into our water aquifers, which are pumped into our homes?

RESPONSE 72: The plume has not impacted any public supply wells but it is in the aquifer that is used for drinking water. The drinking water that serves this area comes from public supply wells which is tested and treated prior to distribution to consumers. The public water supply is safe to drink.

The following three letters all have the very similar comments regarding the proposed remedy and have been grouped together:

- Mr. Jeffrey Gross submitted a letter on April 7, 2016
- Mr. Henry L. Grishman, Superintendent of Schools, Jericho Union Free School District, submitted a letter on April 14, 2016
- The Honorable Judith A. Jacobs, Nassau County Legislator, 16th Legislative District, submitted a letter on April 15, 2016

The comments that require a response or additional clarification follow:

COMMENT 73: The Department’s proposed remedy set forth in the Proposed Remedial Action Plan does not adequately address the substantial threats posed to our community and the sole-source aquifer that provides drinking water to Long Island.

RESPONSE 73: The proposed, and now selected, remedy has been determined by the Department and NYSDOH to best achieve the criteria set forth in 6NYCCR Part 375 for the remedy selection process and is protective of public health and the environment. The selected remedy incorporates multiple remedial technologies to address contamination in the soil, soil vapor and groundwater by using on-site air sparge/soil vapor extraction, on-site in-situ chemical oxidation and off-site enhanced bioremediation as the remedy for the site.

COMMENT 74: The proposed remedy is not aggressive enough.

RESPONSE 74: See Response 49.

COMMENT 75: Thermal treatment will be faster than Chemical oxidation.

RESPONSE 75: See Response 41.

COMMENT 76: Steam Enhanced extraction will be more effective.

RESPONSE 76: Based on the evaluation of the alternatives, the Department has selected Alternative 6 - Air Sparge/Soil Vapor Extraction (AS/SVE), In-Situ Chemical Oxidation (ISCO) and Enhanced Bioremediation as the remedy for the site. Alternative 6 utilizes on-site chemical oxidation which has been proven to be a reliable remedial technology for the destruction of chlorinated solvents. Chemical Oxidation can be used in off-site areas of high concentration near the site. The alternative of on-site thermal remediation in Alternatives 3 and 5 is unproven at the target depths of 200-300 feet below grade and about 200 feet below the surface of the groundwater table, and in the porous (high groundwater conductivity) soils of Long Island. Alternatives 3 and 6 use the same off-site bioremediation technology so no off-site comparison can be made. The off-site use of chemical oxidation (for the entire off-site plume) versus enhanced bioremediation in Alternative 3 will require the use of strong oxidizers (vs. vegetable oil) in the residential neighborhoods and thus would result in the potential for increased short-term impacts. The use of chemical oxidation in the off-site plume would not decrease the 20 year time period and would cost more to implement.

COMMENT 77: Alternatives 3 and 5 are less implementable in that they require both additional electric power sources and complete access to a large portion of the on-site parking lot. This may not be the case if steam-enhanced extraction is utilized for the thermal remediation system.

RESPONSE 77: All sources of thermal remediation utilized in Alternatives 3 and 6, including steam enhanced extraction, present challenges in their implementation due to the location of the contamination being targeted. They also all require a large on-site footprint and have a substantial energy requirement to generate the necessary heat required to bring the groundwater to the required temperatures. Energy in the form of electricity, natural gas, or diesel is needed to generate heat, including steam. Steam enhanced extraction will also require above ground treatment systems and piping for the extracted fluids and vapors. These factors all were considered in selecting Alternative 6. Also see Response 76.

COMMENT 78: Costs may have been overstated. The capital cost for Alternative 3 and Alternative 5 are higher than Alternative 6.

RESPONSE 78: Cost estimates for Alternatives 3 and 5 were obtained for multiple thermal treatment technologies. Not knowing which heating technology would be selected during the remedial design, the Department used the worst case scenario of capital cost and total present worth. Please note that cost was not a deciding evaluation criteria in the selection of Alternative 6, it was largely based on the site specific conditions, also see Responses 76 and 77.

COMMENT 79: The Department disregarded thermal treatment because of potential on-site property access issues. Chemical oxidation will also have on-site property disruptions.

RESPONSE 79: Thermal treatment requires a large portion of the site for the heating and treatment equipment. This factual statement was included as part of the evaluation criteria. All alternatives will need access to the site for continued monitoring during the duration of the remedy. The use of chemical oxidants on-site will be less disruptive than thermal remediation due to the short duration and method of product injections. Also see Responses 76, 77 and 78.

COMMENT 80: The Department should use both chemical oxidation and enhanced bioremediation where the off-site contamination is the highest and enhanced bioremediation alone for the rest of the site.

RESPONSE 80: It is anticipated that chemical oxidation will be utilized to destroy contamination both on the site and in areas near the site that are appropriate based on the remedial design.

COMMENT 81: The Department should clarify the roles played by potential responsible parties including Rubies.

RESPONSE 81: See Responses 34, 35 and 36.

COMMENT 82: The Department should work with the local water authorities.

RESPONSE 82: The local water authorities are aware of the site and associated groundwater plume. The plume has not impacted any public water supply wells.

COMMENT 83: The Department should improve the way it distributes information and keeps the public informed.

RESPONSE 83: See Response 56.

Mr. Richard W. Humann, P.E., from H2M, submitted a letter on April 21, 2016, which included the following comments on the OU2 remedy:

COMMENT 84: Due to the high concentrations of VOCs detected off site, we recommend deep monitoring wells be installed at locations farther south than 4,000 feet off site of 601 Cantiague Rock Road. The contaminants have had the opportunity to migrate over the past 5 years. Groundwater flows in a southerly direction from the site and many public water supply wells (including Hicksville Water District wells) are located downgradient of 601 Cantiague Rock Road and are threatened to be impacted by this contamination.

RESPONSE 84: It is expected that additional wells will be installed to the south, and at deeper depths, of the known plume as part of the remedial design and monitoring of the final remedy. Volatile Organic Chemicals will be sampled for to periodically assess the effectiveness of the remedy.

COMMENT 85: No information is provided with up to date contaminant concentrations. The latest offsite data was taken in 2013, but no VOC concentrations are provide. The latest VOC data is from 2011, which is now 5 years ago. We recommend routine sampling be done at all monitoring wells (at least annually to monitor the contamination levels). Additionally, we would suggest a new well be added further downgradient as the plume has likely migrated further south in the last 5 years.

RESPONSE 85: See Response 84.

COMMENT 86: We recommend that the Hicksville Water district be included on any correspondence or data collection due to the fact that there is a potential threat to the District's well by this contamination.

RESPONSE 86: As in the past, the Hicksville Water District will be kept informed and provided the data.

COMMENT 87: No information is given regarding whether or not the off-site contamination will be contained and/or remediated. What action will be taken to prevent the contamination that has migrated from the site from impacting any public water supply wells?

RESPONSE 87: The PRAP for the Solvent Finishers site was prepared by the Department in consultation with the New York State Department of Health and was issued to the document repositories on February 25, 2016. The PRAP, and now the ROD, outline the remedial measure for the contaminated soil, groundwater, and soil vapor at the Solvent Finishers site. The selected remedy incorporates multiple remedial technologies to address contamination in the soil, soil vapor and groundwater (aquifer) by using on-site air sparge/soil vapor extraction, on-site in-situ chemical oxidation and off-site enhanced bioremediation as the remedy for the site.

The PRAP and ROD can be found at the document repositories or the Department's Solvent Finishers webpage which can be found online at http://www.dec.ny.gov/chemical/105528.html.

COMMENT 88: No information is given regarding weather or not the monitoring wells will remain active during and after the proposed treatment. We strongly recommend that the monitoring wells installed as part of the investigation be maintained and sampled on a regular basis to provide public water suppliers with information on the plume and conformation of the effectiveness of the proposed treatment.

RESPONSE 88: The sampling of existing and new monitoring wells will be included in the site management of the remedy. The local area public water supply water districts will be kept informed and provided the collected data.

APPENDIX B

Administrative Record

Administrative Record

Solvent Finishers
State Superfund Project
Jericho, Nassau County, New York
Site No. 130172

1. Proposed Remedial Action Plan for Solvent Finishers, dated February 2016, prepared by the Department.

2. Referral Memorandum, dated June 17, 2010, for a state-funded Remedial Program (RI/FS and IRM, only).

3. “Records Search Report Site Characterization”, dated June 2007, prepared by Camp Dresser & McKee.

4. “Final Site Characterization”, dated May 2009, prepared by Camp Dresser & McKee.

5. “Final Work Plan Remedial Investigation/Feasibility Study”, dated February 2011, prepared by Camp Dresser & McKee.

6. “Construction Completion Report” for the AS/SVE IRM, dated June 2014, prepared by Camp Dresser McKee & Smith Inc.

7. “Final Remedial Investigation Report”, dated December 2014, by CDM Smith.

8. “Soil Vapor Intrusion Results Offsite- Round 2”, dated April 14, 2015, by CDM Smith.

9. “DEC Site # 130172, 601 Cantiague Rock Rd- AS/SVE Air Sampling Analytical Results (January 2016)”, dated January 28, 2016, by Environmental Assessment & Remediations.

10. “Final Feasibility Study”, dated July 2016, by CDM Smith.

11. “Groundwater Sampling Subsurface Investigation (March 2016)”, dated April 15, 2016, by Environmental Assessment & Remediations.

12. “Volatile Vapor Intrusion Report, Town of Oyster Bay – Chenango Park”, dated April 2016, by J.C. Broderick & Associates, Inc.

13. “Volatile Vapor Intrusion (VVI) Report, Cantiague Elementary School 678 Cantiague Rock Road”, dated April 2016, by J.C. Broderick & Associates, Inc.

14. Email, dated March 15, 2016, from Ira Goldstein.

15. Email, dated March 15, 2016, from Deric.

16. Emails, dated March 16, 2016, March 29, 2016, and one containing a Letter and Exhibits, dated April 7, 2016, from Jeffrey Gross.

17. Letter, dated April 14, 2016, from Henry Grishman, Superintendent of Schools, Jericho Union Free School District.

18. Letter, dated April 15, 2016, from the Honorable Judith A. Jacobs, Nassau County Legislature, 16th District.

19. Letter, dated April 21, 2016, from Richard W. Humann P.E., H2M architects + engineers.