RECORD OF DECISION

Farmingdale Plaza Cleaners
Operable Unit Number 02: On-site and Off-site Groundwater
State Superfund Project
Farmingdale, Nassau County
Site No. 130107
March 2014

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

DECLARATION STATEMENT - RECORD OF DECISION

Farmingdale Plaza Cleaners
Operable Unit Number: 02
State Superfund Project
Farmingdale, Nassau County
Site No. 130107
March 2014

Statement of Purpose and Basis

This document presents the remedy for Operable Unit Number: 02: On-site and Off-site Groundwater of the Farmingdale Plaza Cleaners 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 Operable Unit Number: 02 of the Farmingdale Plaza Cleaners 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. A remedial design to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

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

• Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Supplement the existing Liberty Industrial Finishing Site (LIFS) groundwater extraction and treatment system. This will capture tetrachloroethene (PCE) and associated breakdown products at the leading edge of the plume to minimize any further down-gradient migration of the contaminated groundwater. A groundwater extraction system will be designed and installed so that the capture zone is sufficient to intercept the areal and vertical extent of the area of elevated contamination near the leading edge of the plume that is not currently remediated by the LIFS groundwater extraction systems. The contaminated groundwater will be connected into the existing LIFS piping system and sent to the existing LIFS treatment facility. Further details of the extraction system will be determined during the remedial design. Prior to the full implementation of this technology, studies will be conducted to more clearly define design parameters.

3. A Site Management Plan required under the Operable Unit 1 Record of Decision will be expanded to include a monitoring plan for the off-site groundwater and an Operation and Maintenance Plan for the groundwater extraction and treatment component. In addition, Nassau County further restricts the use of private wells for potable water.

New York State Department of Health Acceptance

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

Declaration

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

March 25, 2014
Date

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

RECORD OF DECISION

Farmingdale Plaza Cleaners
Farmingdale, Nassau County
Site No. 130107
March 2014

SECTION 1: SUMMARY AND PURPOSE

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

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

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

SECTION 2: CITIZEN PARTICIPATION

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

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

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

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

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

Receive Site Citizen Participation Information By Email

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

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The Farmingdale Plaza Cleaners Site is located at 450 Main Street in Farmingdale, Nassau County. The site is in a suburban area and lies at the intersection of Main Street and Fulton Street. This site is upgradient of the Liberty Industrial Finishing site which is a United States Environmental Protection Agency (USEPA) National Priorities List (NPL) site.

Site Features: The site is a commercial plaza that formerly housed the Farmingdale Plaza Cleaners. The shopping plaza consists of a single building and a paved parking lot, surrounded by apartment buildings and other commercial structures.

Current Zoning/Use(s): The former dry cleaner and adjacent former supermarket are currently vacant. Two businesses in the plaza are occupied. The shopping plaza is zoned for commercial use. The surrounding parcels are zoned residential or commercial.

Historic Use(s): Waldbaum Shopping Plaza was reportedly constructed in 1983, at which time the Farmingdale Plaza Cleaners began operation. Investigations conducted by the USEPA at the adjacent Liberty Industrial Finishing site indicated that there was a significant upgradient source of tetrachloroethene (PCE). Additional investigation by the USEPA around the shopping plaza in 2000 through 2003 identified that the source was associated with the dry cleaner. PCE was detected in a groundwater well immediately south of the former dry cleaner and soil gas survey results from USEPA suggest the probability of a source contributing to the groundwater plume in shallow subsurface soils in the vicinity of the dry cleaner site. As a result of data collected during the USEPA investigation, the site was listed as a Class 2 on the State's Registry of Inactive Hazardous Waste Disposal Sites in December 2002. The potentially responsible parties (PRPs) failed to sign an Order on Consent and in January 2005, the site was referred to the State Superfund for a Remedial Investigation (RI).

Operable Units: The site is divided into two operable units. An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of a release or exposure pathway resulting from the site contamination. Operable Unit 1 (OU1) consists of contaminated soil and soil vapor and includes the plaza property and portions of adjacent properties. Operable Unit 2 (OU2) addresses on-site and off-site groundwater.

Site Geology and Hydrogeology: The on-site soil consists of mostly sand. The depth of groundwater is about 15 feet below ground surface. The groundwater flow direction is predominantly to the south. A confining layer is encountered at a depth of around 90 feet below ground surface at some locations on-site.

Operable Unit (OU) Number 02 is the subject of this document.

A Record of Decision was issued previously for OU 01.

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 commercial use (which allows for 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:

The Great Atlantic & Pacific Tea Company

Farmingdale Plaza Cleaners

Farmingdale Grocery, LLC

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

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 for this Operable Unit at this site is/are:

TETRACHLOROETHYLENE (PCE) TRICHLOROETHENE (TCE)
DICHLOROETHYLENE

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

- groundwater

6.2: Interim Remedial Measures

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

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

6.3: Summary of Environmental Assessment

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

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 02.

Nature and Extent of Contamination:

For OU 1: Soil and Soil Vapor

Based upon investigations conducted to date, the primary contaminants of concern for OU1 include tetrachloroethene (PCE) and its associated degradation products (i.e., trichloroethene, cis-dichloroethene).

Soil - PCE was found in the soil beneath the slab in one location inside the dry cleaner at a concentration of 1.8 parts per million (ppm), which slightly exceeds the Part 375 Unrestricted Soil Cleanup Objective (SCO) of 1.3 ppm.

Soil Vapor - In May 2004, PCE was detected at a maximum concentration of 264,000 micrograms per cubic meter (ug/m3) in the sub-slab soil vapor beneath the foundation at the dry

cleaner. Sub-slab and soil vapor data collected at the dry cleaner and adjacent parking lot area demonstrated the highest concentration of PCE to be located beneath the dry cleaner, with a gradual decrease in concentration in areas south of the dry cleaner. Subsequent investigation by the Department in March 2006 confirmed that the highest PCE soil vapor detection is found beneath the dry cleaner floor slab with a maximum concentration of 68,000 ug/m3. Additional sub-slab soil vapor and indoor air sampling performed in January 2007 by NYSDEC included the adjacent residential buildings. The levels detected at the plaza and one residential building warranted mitigation to prevent exposures via soil vapor intrusion. Consequently, a soil vapor extraction (SVE) system was extended to mitigate both structures. Indoor air levels have not exceeded the NYSDOH air guidelines. Additional SVI and soil vapor monitoring was conducted in 2011 and 2012. Soil vapor data collected in 2011 suggested mitigation was still warranted at the former dry cleaner location.

An SVE system has been operating at the site since November 2011 as part of an interim remedial measure (IRM). The purpose of this IRM is to mitigate high soil vapor concentrations in and around the plaza, and to remove any residual subsurface PCE source. The SVE system also serves as a mitigation measure to prevent vapor intrusion into the buildings. The SVE system's initial operational monitoring data has demonstrated that it is effective at remediating the elevated PCE vapor levels at the site and at adjacent properties. Only one building adjacent to the plaza is currently connected to the SVE. Other buildings have seen concentrations drop to the extent that they only require continued monitoring.

For OU 2: Groundwater

The discussion on groundwater contamination is divided into the shallower aquifer (Upper Glacial Aquifer) and the deeper aquifer (Magothy Aquifer).

The primary contaminant of concern for OU 2 is PCE and the associated breakdown products.

a) Upper Glacial Aquifer: During the most recent investigation, PCE was found at a maximum concentration of 21 parts per billion (ppb) at 40 feet below ground surface (bgs) on-site. Most of the PCE concentrations in the on-site groundwater wells are below 10 ppb. Off-site, the maximum PCE concentration was 38 ppb at 95 bgs. Most off-site wells did not detect any PCE contamination, with a few wells showing PCE concentrations between 10 ppb to 20 ppb. Other breakdown products were also observed, but the data are inconclusive as to whether their source is the Farmingdale Plaza site or the nearby Liberty Industrial Finishing Site (LIFS).

b) Magothy Aquifer: During the most recent investigation, PCE was found at a maximum concentration of 130 ppb at 120 feet bgs around the leading edge of the plume off-site. Most of the other groundwater monitoring wells showed PCE concentrations from non-detect to less than 100 ppb. The groundwater investigation also showed that there is no on-going source at the site, since most of the higher PCE concentrations are found at the plume head. Other breakdown products were also observed but the data are inconclusive as to whether their source is the Farmingdale Plaza site or the nearby LIFS.

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*.

People are not drinking the contaminated groundwater at the site because the area is served by a public water supply that obtains groundwater not affected by this contamination. Direct contact with contaminants in groundwater is not likely because the majority of the site is covered by buildings or pavement. Volatile organic compounds in the groundwater 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. A soil vapor extraction system (a system that removes sub-surface vapors) has been installed and extends to the property line. Therefore, inhalation of site-related contaminants in on-site buildings and buildings in the immediate vicinity of the site is not expected as this system addresses the potential for soil vapor intrusion. Sampling indicates soil vapor intrusion as a result of this site is not a concern for other off-site structures.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.

RAOs for Environmental Protection

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

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 Modified Pump and Treat with Long Term Monitoring remedy.

The estimated present worth cost to implement the remedy is $1,631,000. The cost to construct the remedy is estimated to be $657,000 and the estimated average annual cost is $225,000.

The elements of the selected remedy are as follows:

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

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

2. Supplement the existing Liberty Industrial Finishing Site (LIFS) groundwater extraction and treatment system. This will capture tetrachloroethene (PCE) and associated breakdown products at the leading edge of the plume to minimize any further down-gradient migration of the contaminated groundwater. A groundwater extraction system will be designed and installed so that the capture zone is sufficient to intercept the areal and vertical extent of the area of elevated contamination near the leading edge of the plume that is not currently remediated by the LIFS groundwater extraction systems. The contaminated groundwater will be connected into the existing LIFS piping system and sent to the existing LIFS treatment facility. Further details of the extraction system will be determined during the remedial design. Prior to the full

implementation of this technology, studies will be conducted to more clearly define design parameters.

3. A Site Management Plan required under the Operable Unit 1 Record of Decision will be expanded to include a monitoring plan for the off-site groundwater and an Operation and Maintenance Plan for the groundwater extraction and treatment component. In addition, Nassau County further restricts the use of private wells for potable water.

Exhibit A

Nature and Extent of Contamination

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

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into one category; volatile organic compounds (VOCs). Volatile organic compounds are the only focused group of contaminants since this is the identified contaminant emanating from the Site. Even though there are other classes of contaminants found in the groundwater, all the other contaminants have been identified as coming from other sources. For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use.

Groundwater

Groundwater samples were collected from the shallow Upper Glacial Aquifer and the deeper Magothy Aquifer. The samples were collected to assess groundwater conditions on and off-site. Concentrations of the primary contaminant of concern, tetrachloroethylene (PCE), in the Upper Glacial Aquifer are less than 50 ppb, with most locations showing non-detectable concentrations or below the SCGs. In the Magothy Aquifer, three locations have PCE concentrations higher than 100 ppb. However, the majority of the other locations, especially in the trailing portion of the plume, show non-detectable or low PCE concentrations. Remedy selection for the groundwater will focus primarily on the Magothy Aquifer.

Table 1A - Groundwater (Upper Glacial Aquifer)

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
1,2-DICHLOROBENZENE	0-1.50	3	0/15
1,4-DICHLOROBENZENE	0-1.10	3	0/15
CIS-1,2-DICHLOROETHYLENE	0-16.0	5	1/15
TERT-BUTYL METHYL ETHER	0-1.60	10	0/15
TETRACHLOROETHYLENE(PCE)	0-38.0	5	4/15
TRICHLOROETHYLENE (TCE)	0-18.0	5	2/15

Table 1B - Groundwater (Magothy Aquifer)

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
1,1-DICHLOROETHANE	0-2.50	5	0/22
1,2-DICHLOROBENZENE	0-16.0	3	1/22
1,4-DICHLOROBENZENE	0-1.90	3	0/22
CHLOROBENZENE	0-6.30	5	1/22
CIS-1,2-DICHLOROETHYLENE	0-15.0	5	3/22
DICHLORODIFLUOROMETHANE	0-25.0	5	4/22
TERT-BUTYL METHYL ETHER	0-15.0	10	1/22
TETRACHLOROETHYLENE(PCE)	0-130	5	11/22
TRICHLOROETHYLENE (TCE)	0-86.0	5	4/22

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

The primary groundwater contaminants are tetrachloroethylene (PCE) and associated breakdown products. The source of the PCE is the chemicals used in the former dry cleaner operations at the site. The inorganic compounds found in the groundwater were not addressed nor analyzed in the investigation process for this site since the source and remedy was handled under the Liberty Industrial Finishing Site program. Previous groundwater investigations by the EPA determined that the on-site groundwater was not impacted by any inorganic compounds.

Based on the findings of the RI, the presence of tetrachloroethylene 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, trichloroethylene and cis-1,2-dichloroethylene.

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. All the alternatives listed below are subject to the site management plan required under the Operable Unit 1 (OU-1) Record of Decision dated March 30, 2012. This site management plan includes an institutional and engineering control plan, a monitoring plan and an operation and maintenance plan.

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: Long-Term Monitoring

This alternative would include groundwater monitoring to assess the plume locations and concentrations over time.

There would be periodic certification every five years to assess the effectiveness of the institutional controls. A select number of groundwater wells would be sampled annually for the first five years, and every five years as needed after that. For the cost calculation, it is assumed that a total of 33 wells would be monitored over a 30-year span. The existing site management plan under OU-1 will be expanded to include the off-site groundwater monitoring plan.

Present Worth: *$150,000*
Capital Cost: *$67,400*
Annual Costs: *$13,000*

Alternative 3: In-Situ Biological Enhancement with Long-Term Monitoring

In-situ enhanced biodegradation would be employed to treat PCE in groundwater in an area of the downgradient groundwater plume where the highest contaminants reside. The biological breakdown of contaminants through anaerobic reductive dechlorination would be enhanced by the addition of a micro-emulsion product to serve as an electron donor to increase the rate of reductive dechlorination. The barrier is expected to extend vertically throughout the majority of the PCE contaminant plume within the Magothy Aquifer and would be approximately 80 feet thick. No biological enhancement would be needed in the Upper Glacial Aquifer due to a low PCE concentration, which is expected to attenuate to groundwater standards.

This alternative would also include groundwater monitoring to assess the plume locations and concentrations over time. There would be periodic certification every five years to assess the effectiveness of the institutional controls. A select number of groundwater wells will be sampled annually for the first five years, and every five years as needed after that. For the cost calculation, it is assumed that a total of 33 wells would be monitored

over a 30-year span. The existing site management plan under OU-1 will be expanded to include the off-site groundwater monitoring and an in-situ biological enhancement treatment plan.

Present Worth: ..... *$ 3,376,000*
Capital Cost: *$2,965,000*
Annual Costs: *$65,000*

Alternative 4: Modified Pump and Treat with Long-Term Monitoring

This alternative would include the design and installation of a groundwater extraction system. As shown in Figure 4, this extraction well(s) would be placed at the leading edge of the highest PCE plume concentration that is not currently being treated by the existing Liberty Industrial Finishing Site (LIFS) groundwater extraction system. The extracted groundwater would be treated via granular-activated carbon filters at the LIFS treatment facility. The treatment facility would be upgraded to handle the additional volume of influent groundwater. The treated water would be released into the infiltration basin located at the LIFS property. An alternate location would be chosen if the existing LIFS treatment facility is not available. For cost estimation, it is assumed that one groundwater extraction well would be constructed and operated for five years. Contaminated groundwater would be extracted from the subsurface, at approximately 150 feet below ground surface (bgs), at the leading edge of the plume. An estimated 33 groundwater wells screened in the Upper Glacial and Magothy Aquifers would be monitored annually to assess the effectiveness of the extraction system. Some of these wells are currently monitored as part of the LIFS remedy. The number of wells being monitored may be reduced after five years if the levels of PCE in groundwater exhibit a decreasing trend. The existing site management plan under OU-1 will be expanded to include the off-site groundwater monitoring and an operation and maintenance plan for the groundwater extraction and treatment component.

Present Worth: ..... *$ 1,631,000*
Capital Cost: *$657,000*
Annual Costs: *$225,000*

Alternative 5: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A. This alternative would be similar to Alternative 4 except that four extraction wells would be used at the leading edge of the PCE plume to arrest and mitigate the complete PCE plume migration beyond the extraction wells. This is shown in Figure 5.

Three additional granular activated carbon vessels will be needed to handle the additional volume of extracted groundwater. It is assumed that at least a 30-year operation of the extraction systems will be needed to restore the groundwater to predisposal conditions. The existing site management plan under OU-1 will be expanded to include the off-site groundwater monitoring and an operation and maintenance plan for the groundwater extraction and treatment component.

Present Worth: ..... *$ 6,340,000*
Capital Cost: *$2,131,500*
Annual Costs: *$665,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	0	0	0
Long Term Monitoring and Institutional Controls	67,400	13,000	150,000
In-Situ Biological Enhancement with Long Term Monitoring and Institutional Control	2,965,000	65,000	3,376,000
Modified Pump and Treat with Long Term Monitoring and Institutional Controls	657,000	225,000	1,631,000
Restoration to Pre-Disposal or Unrestricted Conditions	2,131,500	665,000	6,340,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department is selecting Alternative 4, Modified Pump and Treat with Long-Term Monitoring as the remedy for this site. Alternative 4 would achieve the remediation goals for the site by extracting the groundwater with the highest PCE plume concentration that is not currently being treated by the existing Liberty Industrial Finishing Site (LIFS) groundwater extraction system. The elements of this remedy are described in Section 7. The selected 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 4) would satisfy this criterion by extracting the contaminated groundwater and treating it prior to discharge back into the infiltration basin. Alternative 1 (No Action) does not provide any protection to public health and the environment and will not be evaluated further. Alternative 2 (Long-Term Monitoring) will provide some protection of human health due to the periodic monitoring of the groundwater in the on-site and off-site areas. Alternative 3 (Biological Enhancement) will provide some protection of human health and the environment as the addition of biological amendment will aid in the destruction of the contaminants in the groundwater. Alternative 5 would satisfy the criterion by completely arresting the progress of the contaminated plume and preventing any further migration away from the extraction wells. Public health protection from the off-site groundwater contamination is further provided by Nassau County, which restricts the use of private wells for potable water.

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.

Alternatives 2, 3, 4 and 5 comply with SCGs to varying degrees. All four alternatives reduce the amount of contaminants in the groundwater to meet SCGs. Alternative 2 will comply with SCGs since the groundwater is monitored periodically for 30 years until it attenuates to a level that meets the SCGs. However, Alternative 2 will most likely take the longest time to achieve the SCGs since it is only groundwater monitoring. This is followed by Alternative 3, where the rate of reductive dechlorination is indirectly dependent on other external environmental factors such as soil chemistry and microbial activities which are difficult to control. Alternative 4 will achieve the SCGs more reliably compared to Alternative 3 since there is more control toward the groundwater extraction and treatment process. Alternative 5 offers the best reliability and speed with which the SCGs will be achieved since there are more extraction wells.

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.

Since the highest PCE plume concentration (130 ppb) exists at a very small area, Alternative 2 will have low risks and good reliability in the long-term. Alternative 3 will be marginally effective in the long-term since remediation of the untreated portions of the plume and the completeness of the remediation process relies on the continued microbial activities to transform the contaminants from a hazardous waste to non-hazardous byproducts. Alternatives 4 and 5 are more effective in the long-term because the contaminated groundwater will be removed and treated.

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

Alternative 2 does not reduce the toxicity, mobility or volume of the groundwater contaminants since it only monitors the groundwater periodically. Alternative 3 treats the contaminated groundwater in-situ with biological amendment products, thereby reducing the toxicity, mobility and volume of contamination within the treatment area. Alternatives 4 and 5 both capture, extract and treat the contaminants although Alternative 5 provides for the greatest degree of treatment given its greater number of extraction wells.

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.

There are negligible or no short-term impacts for Alternative 2 during periods of groundwater monitoring. Alternatives 3, 4 and 5 would cause short-term impacts on the community during remedial activities, such as increased traffic, dust, and noise during injections (Alternative 3) or installation of recovery wells and pipelines (Alternatives 4 and 5). Alternatives 3 and 5 impacts would be more prolonged than Alternative 4 due to the construction of more injection and/or extraction wells.

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.

Alternative 2 is the easiest to implement since it only involves groundwater monitoring. Alternative 3 can be readily implemented using standard methods for the application of biological amendment products. Since the majority of the proposed treatment area is east and outside of the capture zone of the existing Liberty Industrial mid-field extraction wells, no impact to the existing Liberty extraction system is expected. Alternative 5 would have some construction difficulties associated with installing multiple extraction wells and associated pipelines

in a densely populated area. Alternative 4 would be easier to implement since it involves only one extraction well and significantly less piping.

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. The projected cost of Alternative 2 is the lowest of all the alternatives. The cost for Alternative 3 may be higher, and the timeframe to achieve the groundwater SCGs may be longer than Alternatives 4 and 5 since biological processes can be slow and unpredictable. Alternative 5 is significantly more costly (greater than six times as much) as Alternative 4. Given the low contaminant concentrations in the plume outside of the plume's leading edge, Alternative 5 is disproportionately most costly and energy intensive. Hence, Alternative 4 is more cost-effective than Alternative 5.

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.

All five alternatives have existing on-site groundwater use restriction. Hence, all the alternatives under consideration would have similar impact on the land use as the groundwater use restriction would be required to stay in place for the foreseeable future.

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

FIGURE 1 - SITE LOCATION MAP

New York State Department of Environmental Conservation
Site Location Map
Farmingdale Plaza Cleaners, Site No. 1-30-107
Farmingdale, Nassau County, New York

F:\Farmingdale Cleaners\FS 1-14-13\Figure 1-3.dwg

NOTE

DATA FOR WELLS AND BORINGS SAMPLED AS PART OF THE FPC OU2 INVESTIGATION IS PRESENTED IN TABLES 5-1 AND 5-3. DATA FOR WELLS SAMPLED IN OTHER STUDIES 2012 AND EARLIER IS FROM LIFS 2012, LIFS 2011, LIFS 2010, YU 2009 GROUNDWATER INVESTIGATION, AND O'BRIEN & GERE 2007 RI (SEE TABLE 5-4).

LEGEND

- EXISTING MONITORING WELL, RECOVERY WELL, OR PIEZOMETER
- 2008 FPC GROUNDWATER PROFILE WELL
- 2011 FPC GROUNDWATER PROFILE BORING
- 2011 FPC MONITORING WELL
- MW-22A WELL/BORING SAMPLED FOR THE FPC OU2 INVESTIGATION
- PW-5 WELL SAMPLED FROM OTHER STUDIES 2012 OR EARLIER
- APPROXIMATE EXTENT OF PCE
- APPROXIMATE EXTENT OF TCE
- APPROXIMATE AREA WHERE PCE AND TCE INTERSECT
- ND PCE RESULT IN µg/L
- ND TCE RESULT IN µg/L
- LIFS LIBERTY INDUSTRIAL FINISHING SITE

SCALE IN FEET

0 800 1600 2400

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Figure 2 GROUNDWATER CONTAMINANT PLUME, UPPER GLACIAL AQUIFER FARMINGDALE PLAZA CLEANERS SITE FARMINGDALE, NEW YORK

F:\Farmingdale Cleaners\FS 1-14-13\Figure 1-4.dwg

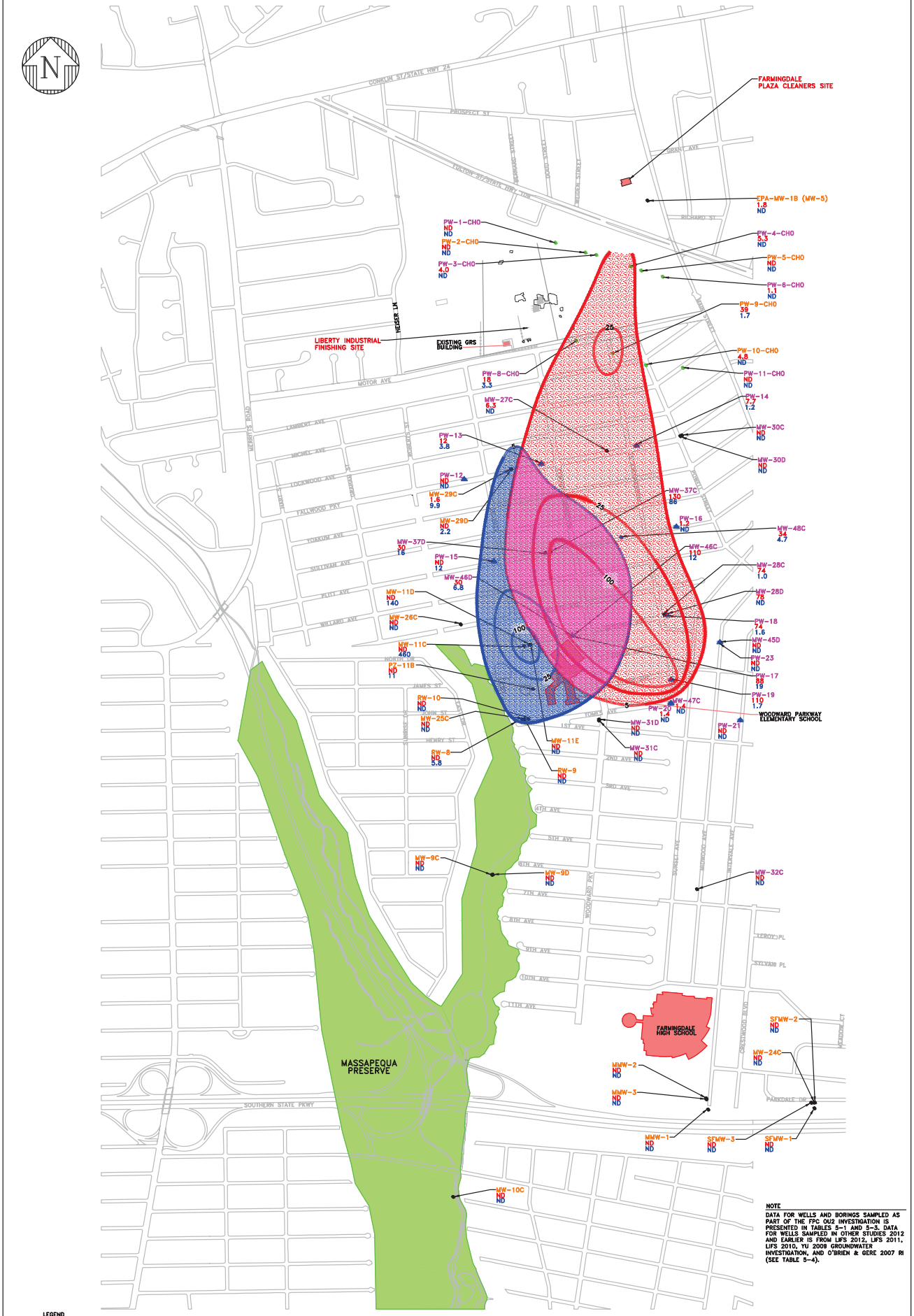

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Figure 3

GROUNDWATER CONTAMINANT PLUME, MAGOTHY AQUIFER
FARMINGDALE PLAZA CLEANERS SITE
FARMINGDALE, NEW YORK

F:\Farmingdale Cleaners\FS 1-14-13\Figure 1-4.dwg

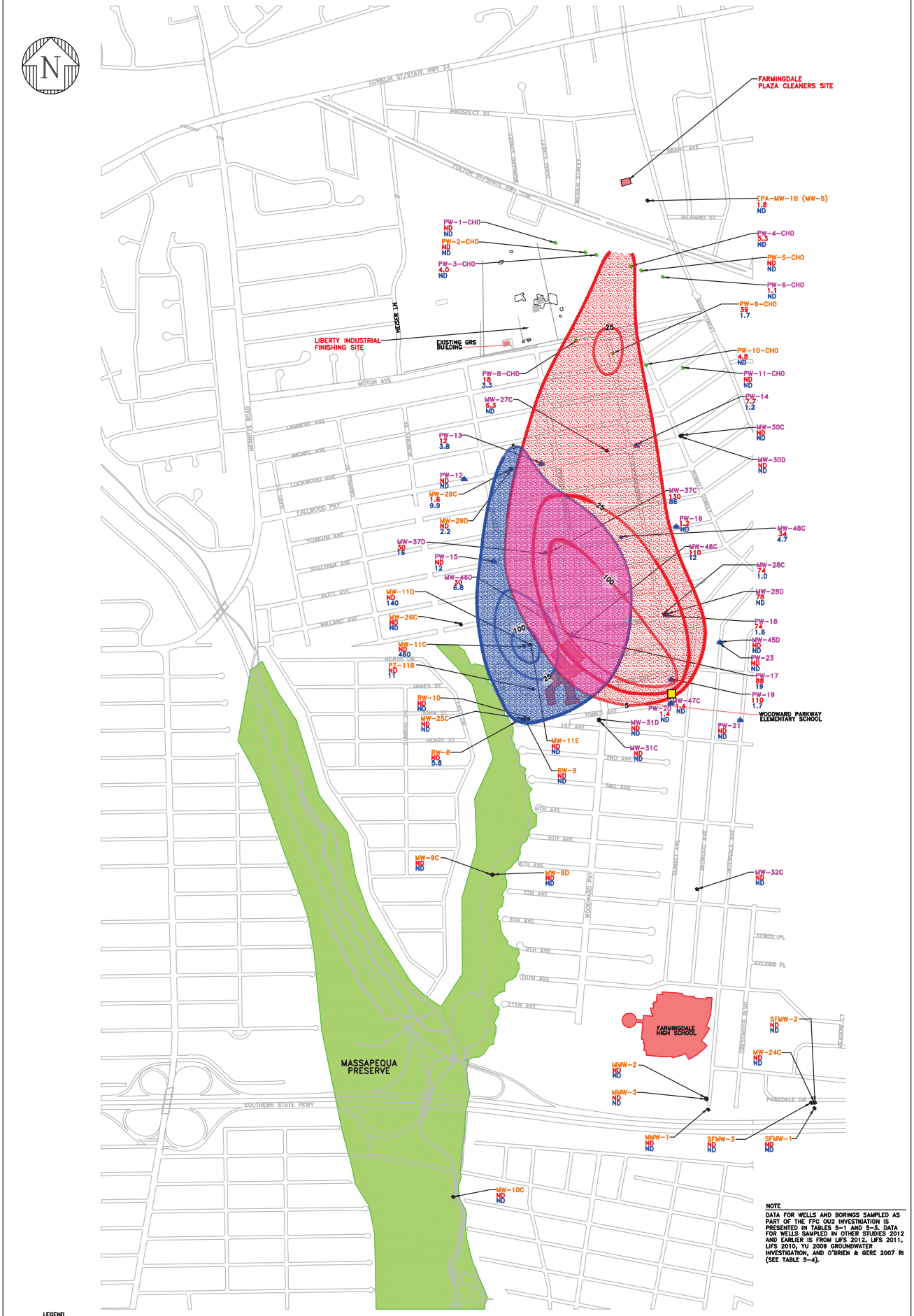

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Figure 4

ALTERNATIVE 4 - MODIFIED PUMP AND TREAT WITH LONG-TERM MONITORING AND IC
FARMINGDALE PLAZA CLEANERS SITE
FARMINGDALE, NEW YORK

F:\Farmingdale Cleaners\FS 4-11-13 updates\Fig 5-4.dwg

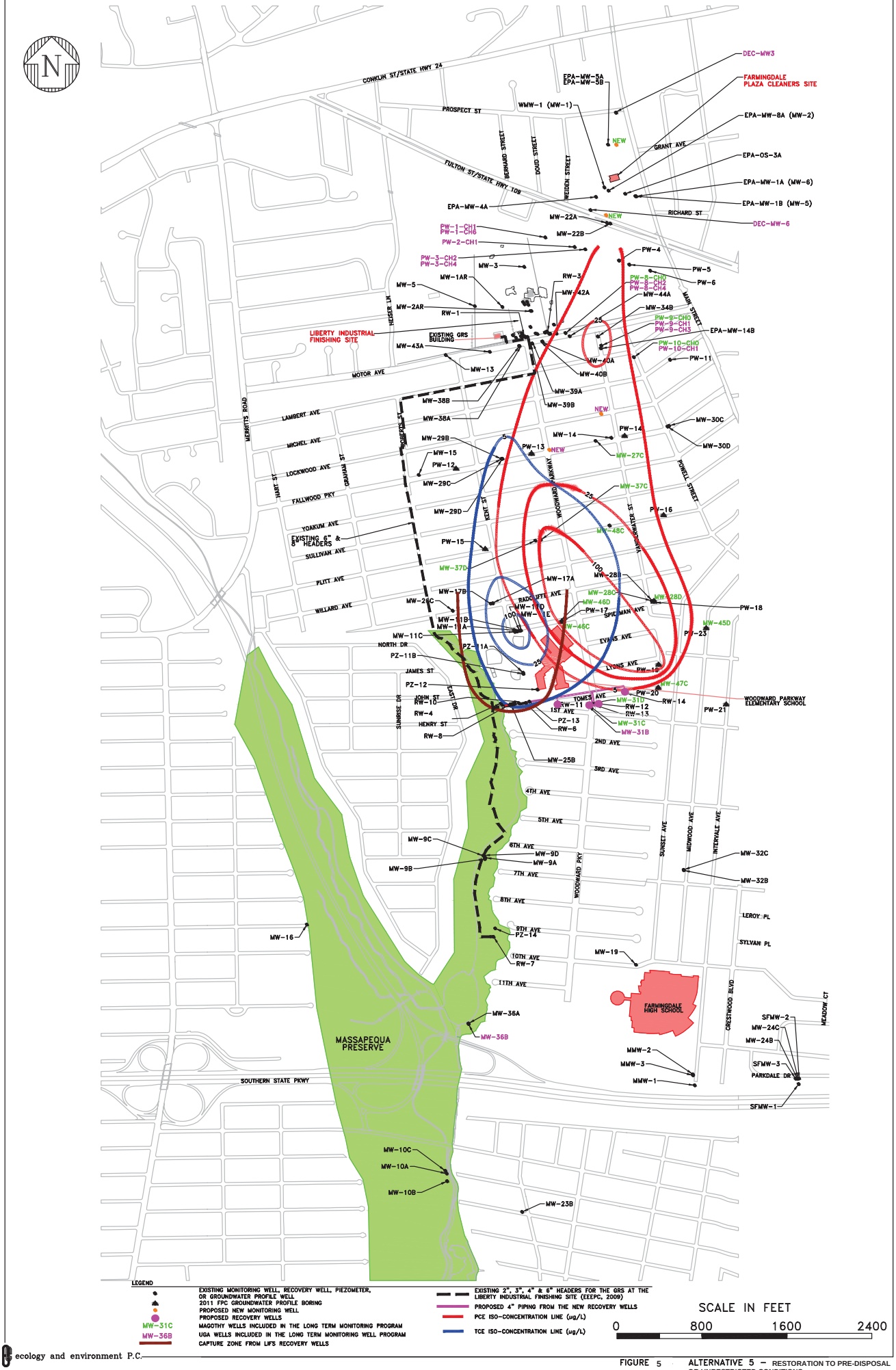

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FIGURE 5 ALTERNATIVE 5 – RESTORATION TO PRE-DISPOSAL OR UNRESTRICTED CONDITIONS.
FARMINGDALE PLAZA CLEANERS SITE
FARMINGDALE, NEW YORK

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Farmingdale Plaza Cleaners
Operable Unit No. 2: On-site and Off-site Groundwater
State Superfund Project
Farmingdale, Nassau County, New York
Site No. 130107

The Proposed Remedial Action Plan (PRAP) for the Farmingdale Plaza Cleaners Operable Unit No. 2 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 21, 2014. The PRAP outlined the remedial measure proposed for the contaminated groundwater at the Farmingdale Plaza Cleaners 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 11, 2014, which included a presentation of the remedial investigation and feasibility study (RI/FS) for the Farmingdale Plaza Cleaners site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 24, 2014.

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

COMMENT 1: Is there a groundwater monitoring well near the Woodward Parkway Elementary School?

RESPONSE 1: Yes. There are four monitoring wells immediately upgradient of the elementary school and another five monitoring wells immediately downgradient of the elementary school. The wells were installed by the United States Environmental Protection Agency (USEPA) and the Department to monitor the groundwater conditions from both Liberty Industrial Finishing site and Farmingdale Plaza Cleaners site.

COMMENT 2: What is the quantity of tetrachloroethene (PCE) that was leaked into the soil to cause this groundwater contamination?

RESPONSE 2: The quantity of the release is not known. However, we believe that we have fully characterized the extent of the contamination that resulted from it.

COMMENT 3: It appears that the leading edge of the PCE plume is heading eastward. Will this

plume affect the public supply wells?

RESPONSE 3: The leading edge of the PCE plume is moving in a southerly direction. Based on the groundwater flow direction and the locations of the public supply wells, it is unlikely that the plume will affect the public supply wells. However, as a precaution, sentinel wells are monitored in the vicinity of the well field designed to detect contaminant migration in the direction of the public supply wells and allow action, as needed, prior to the plume impacting the wells.

COMMENT 4: Using a street map as a guide, where is the physical location of the PCE plume leading edge?

RESPONSE 4: Currently, the leading edge of the PCE plume is located along Tomes Avenue.

COMMENT 5: Where is the contaminated groundwater removed from, and where will it be processed?

RESPONSE 5: The contaminated groundwater will be extracted from the leading edge of the PCE plume. Pending an agreement with the Liberty Industrial Finishing site (LIFS) remedial parties the extracted groundwater will be sent to the existing LIFS treatment facility for processing.

COMMENT 6: Are there any extraction wells to the east of the Liberty Industrial Finishing site (LIFS) groundwater plume?

RESPONSE 6: Currently, there are no extraction wells to the east of LIFS groundwater plume that will treat the PCE-only plume. The selected remedy will install an extraction well(s) at the appropriate location(s) to capture contaminated groundwater in this area that is not currently being treated by the existing LIFS groundwater extraction system.

COMMENT 7: What is the approximate dimension of the plume?

RESPONSE 7: Aerially, the plume has a tear-drop shape. Using 5 parts per billion (ppb) of PCE as the outline, the plume is currently 0.75 miles long and 0.3 miles at its widest section.

COMMENT 8: How much PCE was released from the cleaners since it began operation at the plaza?

RESPONSE 8: See Response 2.

COMMENT 9: What are the next steps after the remedy is chosen, and what is the time table for the clean-up?

RESPONSE 9: Issuance of this Record of Decision identifies the selected remedy for this site. Upon issuance, the Department will contact the potentially responsible party (PRP) and give them the opportunity to enter into an Order on Consent to implement the selected remedy. If the PRP is unwilling or unable to enter into an order, the site will be referred to the State Superfund and remediation will be performed by the State. This process usually takes about six to nine months,

depending on the complexity of the negotiation between the PRP and the Department. Once it is determined who will implement the remedy, it will take about a year to complete the design, select a contractor and begin field work. Assuming that extracted water will be treated at the LIFS plant, operation could begin six to nine months later.

COMMENT 10: After the system is installed, how long will it take to clean up the PCE groundwater contamination?

RESPONSE 10: Based on information currently available, it is expected that the system may be able to be shut down in 5 years. However, the system will continue to operate until the remedial goals have been achieved.

COMMENT 11: How fast is the PCE groundwater plume traveling?

RESPONSE 11: The groundwater velocity was not investigated as part of the remedial investigation since the main focus was to determine the lateral and vertical extent of the PCE contamination. The typical literature value for groundwater velocity in Long Island is about 1 ft/day.

COMMENT 12: How far is the PCE plume from the public supply wells that are located to the south?

RESPONSE 12: The southernmost part of the PCE plume is about 0.75 miles away from the two public supply wells in the southeast direction, and 1.1 miles away from the one public supply well in the southwest direction.

COMMENT 13: Is the leading edge of the plume moving toward the public supply wells?

RESPONSE 13: See Response 3.

COMMENT 14: What is the capture radius of the proposed recovery well?

RESPONSE 14: The capture radius of the proposed recovery well or wells will be determined during the remedial design phase of the project.

COMMENT 15: How many sentinel wells are proposed between the leading edge of the plume and the public supply wells?

RESPONSE 15: No new sentinel wells will be installed. The Department has determined that the four sentinel wells that were installed by the EPA as part of the LIFS investigation, in addition to wells installed by Nassau County and the water districts, are adequate. However, if future groundwater monitoring results indicate the need for additional sentinel wells, the Department will proceed accordingly.

COMMENT 16: What is the duration of the operation of the Liberty Industrial Finishing remediation system?

RESPONSE 16: The Liberty Industrial Finishing Site (LIFS) remediation system is managed by the USEPA. Questions regarding LIFS should be directed to USEPA.

COMMENT 17: Are any fish advisories posted for the Massapequa Preserve?

RESPONSE 17: There is a fish advisory in place for the Massapequa Reservoir / Upper Massapequa Reservoir which is located south of the site. The advisory cautions against the consumption of certain fish species due to the presence of chlordane. Chlordane is a pesticide and is unrelated to the Farmingdale Cleaners Site. For more information regarding the fish advisory, please call the NYSDOH at (518) 402-7800 or visit:
http://www.health.ny.gov/environmental/outdoors/fish/health_advisories/

COMMENT 18: Are there any concerns about the soil vapor intrusion at the Woodward Parkway Elementary School?

RESPONSE 18: EPA conducted a soil vapor intrusion investigation at the Woodward Elementary School in 2007 and in 2010 as part of the Liberty Industrial Finishing Site (ID #130005). No levels of contaminants that warrant action were identified during this investigation. Periodic monitoring of the school by EPA continues to confirm these results.

APPENDIX B

Administrative Record

Administrative Record

Farmingdale Plaza Cleaners
Operable Unit No. 2: On-site and Off-site Groundwater
State Superfund Project
Farmingdale, Nassau County, New York
Site No. 130107

1. Proposed Remedial Action Plan for the Farmingdale Plaza Cleaners site, Operable Unit No. 2, dated March 2014, prepared by the Department.

2. *"Final Remedial Investigation Report for Farmingdale Plaza Cleaners Site (Operable Unit 1)",* dated August 2007, prepared by O'Brien & Gere.

3. *"Final Immediate Investigation Report for Farmingdale Plaza Cleaners Site",* dated June 2009, prepared by YU & Associates, Inc.

4. *"Final Remedial Investigation Report for the Farmingdale Plaza Cleaners Site Operable Unit 2",* dated February 2013, prepared by Ecology and Environment Engineering, P.C.

5. *"Final Feasibility Study Report for the Farmingdale Plaza Cleaners Site Operable Unit 2",* dated April 2013, prepared by Ecology and Environment Engineering, P.C.