RECORD OF DECISION

General Electric Co. Auburn
State Superfund Project
Auburn/Aurelius, Cayuga County
Site No. 706006
March 2016

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

DECLARATION STATEMENT - RECORD OF DECISION

General Electric Co. Auburn
State Superfund Project
Auburn/Aurelius, Cayuga County
Site No. 706006
March 2016

Statement of Purpose and Basis

This document presents the remedy for the General Electric Co. Auburn 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 General Electric Co. Auburn 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. Remedy Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. This includes soil sampling from the un-used northeastern portion of the site in order to confirm that soil quality meets applicable SCOs. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DEC's guidance for Green Remediation (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 gas 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. Enhanced Bioremediation of Soil

In-situ enhanced biodegradation will be employed to treat contaminants in soil that exceed the protection of groundwater SCOs in the areas of the former solvent tanks, evaporation pits and fire training area, an approximately 4.25 acre area in a phased approach. The ongoing biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by injecting Emulsified Vegetable Oil (EVO) into the subsurface, via injection wells located in the above areas, to promote microbe growth to breakdown the contaminants in the soil through reductive dechlorination.

The soil treatment will be conducted in a phased approach toward meeting the protection of groundwater (PGW) SCOs. Recognizing that in areas of the site the large seasonal fluctuation in groundwater levels could result in recontamination of soil from the bedrock groundwater, treatment of the soil in these areas to achieve the PGW SCOs will be deferred until the bedrock insitu treatment is complete. Given these limitations, the Department will set an interim objective for soils treatment during the design. Once these limitations have abated, the soil which was not treated to meet the PGW SCOs will be treated to achieve these goals. Interim Soil Treatment Objectives will be based upon the degree to which the groundwater fluctuation resulting in recontamination; distribution of VOCs in soils; and physical properties of soils limit the ability of the treatment process to achieve the SCOs for protection of groundwater, as follows:

- Areas where recontamination due to groundwater fluctuation is a limiting factor will be treated to VOC concentrations (determined in design and approved by the Department) which exceed the anticipated level of recontamination based upon equilibrium partitioning. Areas where the limiting factors are the distribution of VOCs in soils, and the properties of the soils, will be treated to VOC concentration (determined in design and approved by the Department) based upon the ability for the treatment technology to be feasibly implemented.
- Once the limitation on soil treatment due to recontamination has abated (i.e. when the shallow bedrock remediation has sufficiently progressed), the soils which were not treated to meet groundwater protection SCOs due to this limitation will be treated to meet these goals;
- Soils for which treatment was deferred, or for which the initial level of treatment is above the groundwater SCOs, will be evaluated to allow for a better understanding of the rates of natural attenuation in these soils. This evaluation will be used in the design of the final stage of soil treatment to aid in the determination of which remaining soils can be feasibly treated.

3. Enhanced Bioremediation of Overburden and Shallow Groundwater

In-situ enhanced biodegradation will be employed to treatment contaminants in overburden and

shallow groundwater in the source areas, surrounding the building to the north, west and east. The biological breakdown of contaminants through reductive dechlorination would be enhanced by injecting a lactate and EVO solution into the subsurface to promote microbe growth. The location and depth of injection would be determined during the remedial design.

4. Enhanced Bioremediation of Deep Groundwater

In-situ enhanced biodegradation will be employed to treatment contaminants in deep groundwater in the source areas. The biological breakdown of contaminants through biotic and abiotic degradation would be enhanced by injecting an electron donor(s) and an iron source into the deep bedrock unit, often referred to as D3.

5. Surface Water

Continue operation, maintenance and monitoring of the existing Surface Water Interim Action Enhancement to address any potential recharge of the overburden water into the storm sewers until monitoring performed after modification to the SBGWIA system and commencement of the EISB indicate that the storm water leaving the site no longer requires treatment to meet applicable limits. Once the SWIAE system is discontinued sampling of the offsite surface water will continue as part of the Site Management Plan.

6. Soil Vapor Intrusion Investigation

An evaluation of the potential for soil vapor intrusion for any offsite buildings that may be impacted by the contaminated shallow groundwater to the west of the site will be undertaken during the design phase. Based on this evaluation any actions necessary to address exposures related to soil vapor intrusion into these building will be implemented.

7. Institutional Controls

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

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

8. 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 and site management plan would be used to restrict land use for the facility and require the continued management of engineering controls.

Engineering Controls: The existing Surface Water Interim Action must be operated, maintained, and monitored to maintain protectiveness of human health and the environment.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision for evaluation of the potential for soil vapor intrusion should the on-site building become occupied and for any new buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater and/or surface water use restrictions;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification;
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls; and
- A provision for investigation beneath the existing on-site building if the building is demolished to determine if further remedial action (such as excavation or a soil cover) is warranted.

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

- monitoring of groundwater to assess the performance and effectiveness of the remedy; and
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion should the on-site building become occupied and for any new buildings developed on the site , as may be required by the Institutional and Engineering Control Plan discussed above.

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

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

New York State Department of Health Acceptance

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

Declaration

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

March 31, 2016
Date

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

RECORD OF DECISION

General Electric Co. Auburn
Auburn/Aurelius, Cayuga County
Site No. 706006
March 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 repository:

Seymour Public Library
Attn: Ms. Danette Davis
176-178 Genesee Street
Auburn, NY 13021
Phone: 315-252-2571

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 General Electric former Powerex site is located in an urban commercial area. The site consists of 55.4 acres of land located on the boundary of the town of Aurelius and the City of Auburn. The site is on West Genesee Street approximately 1/4 mile west of Veterans Memorial Parkway.

Site Features: The main site feature is the inactive production facility surrounded by parking areas and fields. Since the plant closed all that remains is the unoccupied manufacturing building and the concrete slabs of small sheds.

Current Zoning and Land Use: The site is currently inactive and zoned for industrial use. The surrounding parcels are currently used for a combination of small businesses and residences. The nearest residential area is on the south side of West Genesee Street, across from the site.

Past Use of the Site: The facility was used for electronics manufacturing. Waste industrial solvents were disposed of in one or two unlined evaporation ponds located on the property. This disposal took place from approximately 1962 to 1966 or 1967. Solvents were also stored in underground waste solvent storage tank from 1966 or 1967 until 1988 on-site which may have leaked.

RCRA Status: The former Powerex site, in addition to being a class 2 in active hazardous waste disposal site, is also subject to the requirements of the Resource Conservation and Recovery Act, as amended (RCRA) and its implementing regulations including New York State’s authorized hazardous waste program. The site does not presently have an operating permit but is subject to “interim status” requirements. An underground storage tank, above ground storage tank and a container storage area have all been closed under RCRA. Pursuant to RCRA, the site has an obligation to address contamination pursuant to RCRA corrective action requirements as well as the State Superfund.

Site Geology and Hydrogeology: The geology of the area is characterized by unconsolidated glacial deposits (soils) underlain by bedrock. The uppermost unit is overburden material (site soils) consisting of glacilacustrine clay, silts and glacial till ranging from approximately 5 to 25 feet thick. The upper portion of the bedrock is composed of limestones of the Onondaga Formation and represents the shallow bedrock unit. Below the Onondaga Formation lies the Manlius Formation, referred to in the site Reports and Documents as the intermediate unit. The deeper bedrock units encountered at the site are, in order of depth, limestones and dolomites of the Rondout, Cobleskill and the Bertie Formations. In general, the deep bedrock is more fractured and more transmissive than the shallow and intermediate bedrock. Within the Bertie Formation is an interval comprised primarily of gypsum which has an average thickness of 5 feet. This is referred to in the site Reports as the D3 zone. This gypsum rich interval is pitted and has occasional voids from dissolution. This interval transmits large amounts of water and represents an important pathway for significant offsite contaminant migration.

The overburden groundwater flows toward local surface water bodies such as Crane Brook and the Owasco River, and also provides recharge to the underlying units. The depth to the overburden groundwater ranges from six to eleven feet. However this unit is greatly influenced by seasonal fluctuations and during the late fall, winter and early spring the water table occurs very close to the ground surface. In some areas of the site the seasonal range in the water table exceeds 11 feet. The shallow groundwater generally flows northward. The shallow zones can become dewatered locally, indicating that vertical fracturing extends through the underlying zones. The deep groundwater flows to the south. The deep aquifer receives groundwater recharge through fractures or karst features connecting the units. The site features also include swallets which directly connect the shallow groundwater to the deep zone. The contaminated deep groundwater, at a depth of 150 feet, is moving laterally in a southwestern direction from the site towards Union Springs and Cayuga Lake. The site contains surface drainage features that carry storm water away from the site after passing through an air sparging system in the last catch basin. During periods of high groundwater, contaminated shallow groundwater from the site discharges upward to the stream located just beyond the facility fence.

Related Site: The deep groundwater plume leaving the site is known as the Cayuga County Groundwater Contamination Superfund (CCGC) site and was placed on the National Priorities List (NPL) [NYS Registry ID No. 706012]. The off-site groundwater plume of contamination is being addressed by EPA pursuant to an EPA ROD issued in March 29, 2013. The CCGC ROD is being implemented through an order issued to GE under CERCLA. Remedial actions at the CCGC site are not the focus of this decision document, however, the success of the remedy for the former GE Powerex site is important to the full realization of the benefits of the remedy selected by EPA for the CCGC site.

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:

General Electric Company

The Department and General Electric entered into a Consent Order (Index No. A7-0286-92-08) on March 31, 1993 and Amended (Index No. A7-0352-97-03) on May 12, 1997. The Order obligates the responsible party to implement a RI/FS only and the amendment allows the responsible party to propose and implement interim actions. After the remedy is selected, the Department will approach the PRPs to implement the selected remedy. 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
- surface water
- soil

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:

acetone	cis-1,2-dichloroethene
methylene chloride	trichloroethene (TCE)
vinyl chloride	toluene
trans-1,2-dichloroethene	tetrachloroethene (PCE)

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

- groundwater
- surface water
- 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.

IRM - Tank Removal

The Laboratory Waste Solvent Tank IRM consisted of the excavation and removal of two 500 gallon underground tanks. These tanks were installed along the east side of the plant building in 1960 and were reportedly used to collect waste solvents. These solvents were gravity fed by underground piping from the laboratory just inside the east wall of the building. The tanks were reportedly emptied periodically by pumping their contents into 55 gallon drums which were then taken to the Drum Storage Building and emptied into the drain leading to the North Evaporation Pit. Use of these two tanks was discontinued in 1966-1967. The tanks and surrounding soil were excavated and removed in 1994. Sampling of the base and walls of excavation had detections of VOCs above the protection of groundwater SCOs and indicated further work was needed. The excavation was backfilled with the excavated soils and subsurface investigation activities were started.

Access Restriction Interim Remedial Action

In December 1994, a chain link fence was constructed around the site to reduce the possibility of direct contact with site contaminants. The fence is regularly inspected and maintained to ensure it remains effective.

Surface Water Interim Action

The Surface Water Interim Action Enhancement system addresses potential recharge of the shallow groundwater into the storm sewers. The action consisted of sliplining existing drainage piping and installing additional piping in order to prevent contaminated site groundwater from infiltrating into the storm water drainage piping, which would allow contaminants to migrate off site.

The storm sewer discharges water to the drainage ditch via Outfall 001, which is located near the northwest corner of the site. The drainage ditch goes offsite toward the northwest, converges with another drainage ditch and then heads north towards Crane Brook. The Surface Water Interim Action Enhancement system began operation in January 1997. It was designed to remove VOCs, primarily TCE and cis-1,2-DCE, from surface water in the storm sewer system at the site. The Surface Water Interim Action Enhancement consists of a forced air bubbler system that aerates the water passing through the last storm sewer catch basin, catch basin CB-16, prior to flowing into the drainage ditch at Outfall 001. Through monitoring is has been shown that the system has been effective. Outfall 001 is sampled quarterly and the results have been non-detect.

Shallow Bedrock Groundwater Interim Action

In May 2001, a dual phase extraction system began operation and continues to treat shallow groundwater. Groundwater and soil vapors are pulled out by vacuum from extraction wells in the source areas; the North Evaporation Pit, the Former Waste Solvent Tank, West Evaporation Pit

and Former Laboratory Waste Solvent Tanks. The extracted air and water are then treated by an onsite catalytic oxidizer unit and a low-profile air stripper, respectively. This system was designed to remove contamination and also contain contaminated shallow groundwater to limit migration. Monthly sampling of the system indicates that contaminant mass is being removed. The underground storage tanks were also removed from the Former Waste Solvent Tanks area during the construction of this system.

6.3: Summary of Environmental Assessment

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

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

Nature and Extent of Contamination:

Sampling has confirmed high levels of volatile organic compounds (VOCs) indicating the likely presence of dense non-aqueous phase liquid (DNAPL) in site soil and groundwater. The DNAPL contains a high percentage of liquid TCE. Based upon investigations, the primary contaminants of concern include the volatile organic compounds (VOCs) trichloroethene (TCE) and its daughter products cis-1,2-dichloroethene (DCE), trans-1,2-dichloroethene (DCE), and vinyl chloride (VC). The primary source areas at the site are the Waste Solvent Tank, North Evaporation Pit, and West Evaporation Pit. The secondary source areas at the site are the Laboratory Waste Solvent Tanks and the purported Fire Training Area.

Soils – TCE was the most commonly detected VOC in the subsurface soils with concentrations ranging from 0.001 to 14,000ppm compared to the protection of groundwater Soil Cleanup Objective (SCO) of 0.47 ppm. Other contaminants exceeding the protection of groundwater SCOs are cis-1,2-DCE and VC. The contaminated soils exceeding the protection of groundwater SCOs are found to a depth of 16’ or the top of bedrock. For the 55.4 acre site only 4.25 acres of subsurface soils exceed the protection of groundwater SCOs and these soils surround the building to the north, west and east. Less than half an acre of subsurface soils exceed the industrial use SCOs and are located in the Waste Solvent Tank Area, North Evaporation Pit and West Evaporation Pit, surrounding the building to the north and west. The remaining acreage of the site, mostly to the north and west, meet unrestricted use SCOs and the protection of groundwater SCOs for VOCs. Soils were analyzed for metals and results were below the residential use SCOs. Soil contamination does not extend off-site.

Soil Vapor – Soil vapor was not evaluated at the site because it is unoccupied. The potential for Soil Vapor Intrusion will be evaluated for any off-site buildings that may be impacted by the shallow groundwater contamination to the west of the site.

Groundwater – TCE, cis-1,2-DCE and vinyl chloride are the most commonly detected VOCs found in the overburden, shallow, and deep groundwater that exceed groundwater standards (5 ppb for TCE and cis-1,2-DCE; and 2 ppb for VC). The overburden groundwater had detections of TCE, cis-1,2-DCE and VC at 1,900 ppm, 640 ppm and 36 ppm respectively. The VOC impacts in the overburden groundwater are in the North Evaporation Pit, West Evaporation Pit and Waste Solvent Tank. The overburden concentrations decrease rapidly with increasing distance from the primary source areas and have not migrated offsite. The overburden groundwater is greatly influenced by seasonal fluctuations with ranges exceeding 11 feet in locations. The shallow groundwater had detections of TCE, cis-1,2-DCE and VC at 840 ppm, 340 ppm and 100 ppm respectively in the primary source areas. TCE concentrations decreased downgradient from the source areas and it has not been detected above NYSDEC Class GW groundwater standard of 5 ppb in shallow groundwater offsite in recent years. However, cis-1,2-DCE and VC have migrated offsite in the shallow groundwater to the northwest of the facility and are above the NYSDEC Class GW groundwater standard 5 ppb and 2 ppb respectively. The deep groundwater had detections of TCE, cis-1,2-DCE and VC at 646 ppm, .12 ppm and 5.5 ppm respectively. The deep groundwater has migrated offsite and is being addressed by EPA through an order issued to GE under CERCLA.

Surface Water – Prior to the Surface Water Interim Action Enhancement system IRM, on-site surface water exceeded the SCGs for TCE (values up to 240 ppb compared to the SCG of 5 ppb), cis-1,2-DCE (values up to 100 ppb compared to the SCG of 5 ppb) and vinyl chloride (values up to 3.9 ppb compared to the SCG of .3 ppb). IRM system monitoring has demonstrated that the IRM has been effective; sampling results are non-detect for VOCs.

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.*

The site is fenced and covered by asphalt or concrete, people will not come into contact with contaminated groundwater or soil unless they dig below the surface. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which is turn may move into the overlying buildings and affect the indoor air quality. This process 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 for soil vapor intrusion to occur on-site will be evaluated should the site building be re-occupied and/or if new construction occurs.

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.
- Prevent the discharge of contaminants to surface water.
- 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 Treatment of Soils to Protection of GW SCOs,Treatment of Groundwater, and a SMP remedy.

The estimated present worth cost to implement the remedy is $23,422,000. The cost to construct the remedy is estimated to be $13,479,000 and the estimated average annual cost is $796,000.

The elements of the selected remedy are as follows:

1. Remedy Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program. This includes soil sampling from the un-used northeastern portion of the site in order to confirm that soil quality meets applicable SCOs. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DEC's guidance for Green Remediation (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 gas and other emissions;
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- 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. Enhanced Bioremediation of Soil

In-situ enhanced biodegradation will be employed to treat contaminants in soil that exceed the protection of groundwater SCOs in the areas of the former solvent tanks, evaporation pits and fire training area, an approximately 4.25 acre area in a phased approach. The ongoing biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by injecting Emulsified Vegetable Oil (EVO) into the subsurface, via injection wells located in the above areas, to promote microbe growth to breakdown the contaminants in the soil through reductive dechlorination.

The soil treatment will be conducted in a phased approach toward meeting the protection of groundwater (PGW) SCOs. Recognizing that in areas of the site the large seasonal fluctuation in groundwater levels could result in recontamination of soil from the bedrock groundwater, treatment of the soil in these areas to achieve the PGW SCOs will be deferred until the bedrock insitu treatment is complete. Given these limitations, the Department will set an interim objective

for soils treatment during the design. Once these limitations have abated, the soil which was not treated to meet the PGW SCOs will be treated to achieve these goals. Interim Soil Treatment Objectives will be based upon the degree to which the groundwater fluctuation resulting in recontamination; distribution of VOCs in soils; and physical properties of soils limit the ability of the treatment process to achieve the SCOs for protection of groundwater, as follows:

- Areas where recontamination due to groundwater fluctuation is a limiting factor will be treated to VOC concentrations (determined in design and approved by the Department) which exceed the anticipated level of recontamination based upon equilibrium partitioning. Areas where the limiting factors are the distribution of VOCs in soils, and the properties of the soils, will be treated to VOC concentration (determined in design and approved by the Department) based upon the ability for the treatment technology to be feasibly implemented.
- Once the limitation on soil treatment due to recontamination has abated (i.e. when the shallow bedrock remediation has sufficiently progressed), the soils which were not treated to meet groundwater protection SCOs due to this limitation will be treated to meet these goals;
- Soils for which treatment was deferred, or for which the initial level of treatment is above the groundwater SCOs, will be evaluated to allow for a better understanding of the rates of natural attenuation in these soils. This evaluation will be used in the design of the final stage of soil treatment to aid in the determination of which remaining soils can be feasibly treated.

3. Enhanced Bioremediation of Overburden and Shallow Groundwater

In-situ enhanced biodegradation will be employed to treatment contaminants in overburden and shallow groundwater in the source areas, surrounding the building to the north, west and east. The biological breakdown of contaminants through reductive dechlorination would be enhanced by injecting a lactate and EVO solution into the subsurface to promote microbe growth. The location and depth of injection would be determined during the remedial design.

4. Enhanced Bioremediation of Deep Groundwater

In-situ enhanced biodegradation will be employed to treatment contaminants in deep groundwater in the source areas. The biological breakdown of contaminants through biotic and abiotic degradation would be enhanced by injecting an electron donor(s) and an iron source into the deep bedrock unit, often referred to as D3.

5. Surface Water

Continue operation, maintenance and monitoring of the existing Surface Water Interim Action Enhancement to address any potential recharge of the overburden water into the storm sewers until monitoring performed after modification to the SBGWIA system and commencement of the EISB indicate that the storm water leaving the site no longer requires treatment to meet applicable limits. Once the SWIAE system is discontinued sampling of the offsite surface water will continue as part of the Site Management Plan.

6. Soil Vapor Intrusion Investigation

An evaluation of the potential for soil vapor intrusion for any offsite buildings that may be impacted by the contaminated shallow groundwater to the west of the site will be undertaken during the design phase. Based on this evaluation any actions necessary to address exposures related to soil vapor intrusion into these building will be implemented.

7. Institutional Controls

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

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

8. 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 and site management plan would be used to restrict land use for the facility and require the continued management of engineering controls.

Engineering Controls: The existing Surface Water Interim Action must be operated, maintained, and monitored to maintain protectiveness of human health and the environment.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision for evaluation of the potential for soil vapor intrusion should the on-site building become occupied and for any new buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- descriptions of the provisions of the environmental easement including any land use, and/or groundwater and/or surface water use restrictions;

- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification;
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls; and
- A provision for investigation beneath the existing on-site building if the building is demolished to determine if further remedial action (such as excavation or a soil cover) is warranted.

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

- monitoring of groundwater to assess the performance and effectiveness of the remedy; and
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion should the on-site building become occupied and for any new buildings developed on the site , as may be required by the Institutional and Engineering Control Plan discussed above.

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

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

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation (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 Standards, Criteria and Guidance (SCGs) for the site. The contaminants are arranged into volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/ polychlorinated biphenyls (PCBs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

Waste/Source Areas

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

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 were 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 include,

The points of release were identified in primary source areas; the Waste Solvent Tank, North Evaporation Pit, and West Evaporation Pit and secondary source areas; the Laboratory Waste Solvent Tanks and the purported Fire Training Area. Dense non-aqueous phase liquid (DNAPL), containing a high percentage of liquid TCE, is present in the overburden, shallow, intermediate and deep groundwater at the site. There is a large hydraulic head difference between the shallow and deep bedrock hydrogeologic units and it is likely that DNAPL migrated downward through vertical fractures below one and/or more of the primary points of release. Contaminants from the DNAPL have migrated from the site in the deep bedrock to the south toward Union Springs and Cayuga Lake. The plume leaving the site is being addressed by EPA through an order issued to GE in relation to the Cayuga Plume NPL site [NYS Registry ID No. 706012].

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

Groundwater

Samples were collected from surface water and overburden, shallow, intermediate and deep groundwater monitoring wells to assess conditions on and off-site. The results indicate that contamination in the overburden, shallow, intermediate and deep groundwater at the site exceeds the SCGs for volatile organic compounds. The primary groundwater contaminants are trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE_ and vinyl chloride (VC) associated with operations at the former GE Powerex site. As noted on Figures 3-6, the groundwater contamination is associated with the North Evaporation Pit, Former Waste Solvent Tank, Purported Fire Training Area, West Evaporation Pit and Former Laboratory Waste Solvent Tanks surrounding the building on the north, west and east side.

Table #1 - Overburden Groundwater

Detected Constituents	Concentration Range Detected (ppb)*	SCG[b]	Frequency Exceeding SCG
VOCs			
1,1,1,2-Tetrachloroethane	0-23.6	5	1/10
1,1,1-Trichloroethane	0-23,000	5	19/145
1,1,2,2-Tertachloroethane	0-160	5	1/145
1,1,2-Trichloroethane	0-222	1	4/145
1,1-Dichloroethane	0-730	5	5/145
1,1-Dichloroethene	0-2,870	5	16/145
1,2,4-Trimethylbenzene	0-57.9	5	2/10
1,2-Dichlorobenzene	0-69	3	3/39
1,2-Dichloroethane	0-12.3	0.6	2/145
1,2-Dichloroethene (total)	0-640,000	5	10/14
1,3,5-Trimethylbenzene	0-18.4	5	2/10
2-Butanone	0-6,300	50	1/41
2-hexanone	0-3,600	50	1/41
Acetone	0-3,600,000	50	23/41
Benzene	0-39.6	1.0	4/145
Bromomethane	0-6.9	5	1/145
Carbon tetrachloride	0-190	5	3/145
Chloroform	0-550	7	5/145
Chloromethane	0-22.4	5	1/145
Cis-1,2-Dichloroethene	0-380,000	5	92/133
Cis-1,3-dichloropropene	0-10	0.4	1/145
Dichlorodifluoromethane	0-14.2	5	1/36
Ethylbenzene	0-3,870	5	23/145
Isopropyl benzene	0-19.8	5	1/36
m&p-Xylenes	0-11,000	5	29/108
Methylene chloride	0-210,000	5	20/145
Naphthalene	0-12.9	10	1/10
N-Propylbenzene	0-12.5	5	1/10
o-Xylene	0-4,700	5	16/108
Tetrachloroethene	0-45,200	5	35/145
Toluene	0-5,400	5	43/145
Trans-1,2-Dichloroethane	0-1,200	5	19/133
Trichloroethene	0-1,900,000	5	105/145
Trifluorotrichloroethane	0-3,580	5	5/26
Vinyl chloride	0-36,000	2	52/145
Xylenes (total)	0-20,300	5	15/50

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 results indicate that contamination in the overburden groundwater at the site exceeds the SCGs for volatile organic compounds (VOCs) north and west of the building and a small area on the east side of the building. The overburden groundwater had detections of TCE, cis-1,2-DCE and VC at concentrations of 1,900 ppm, 640 ppm and 36 ppm, respectively. Semi-volatile organic compounds (SVOCs) phenol, 1,2-dichlorobenzene, 4-methylphenol and 2-methyphenol were detected at low concentrations above the NYSDEC's Class GA groundwater criteria in the vicinity of the source areas but are not a significant concern at the facility. The data indicate that no pesticides or PCBs were detected in overburden groundwater.

Table #2 - Shallow Groundwater

Detected Constituents	Concentration Range Detected (ppb)*	SCG[b]	Frequency Exceeding SCG
VOCs			
1,1,1-Trichloroethane	0-11,000	5	178/1,729
1,1,2-Trichloroethane	0-120	1	8/1,729
1,1-Dichloroethane	0-3,800	5	115/1,729
1,1-Dichloroethene	0-3,500	5	289/1,729
1,2,4-Trimethylbenzene	0-66.3	5	8/76
1,2-Dichlorobenzene	0-72	3	12/370
1,2-Dichloroethane	0-14.6	0.6	6/1,729
1,2-Dichloroethene (total)	0-340,000	5	16/27
1,3,5-Trimethylbenzene	0-22.6	5	7/76
2-Butanone	0-1,600	50	6/767
2-Phenylbutane	0-6.5	5	2/74
Acetone	0-2,400,000	50	307/742
Benzene	0-180	1.0	94/1,723
Carbon disulfide	0-130	60	1/1,723
Chlorobenzene	0-6.8	5	2/1,729
Chloroethane	0-7.5	5	16/1,729
Chloroform	0-940	7	8/1,729
Chloromethane	0-350	5	4/1,729
Cis-1,2-Dichloroethene	0-800,000	5	1,502/1,708
Cis-1,3-dichloropropene	0-130	0.4	1/1,729
Cymene	0-7.2	5	2/76
Dichlorodifluoromethane	0-47	5	3/360
Ethylbenzene	0-5,200	5	254/1,723
Isopropyl benzene	0-15	5	4/360
m&p-Xylenes	0-19,000	5	380/1,451
Methyl tert butyl ether	0-58	10	1/346
Methylene chloride	0-300,000	5	117/1,729
N-Butylbenzene	0-13.9	5	2/76
N-Propylbenzene	0-10.5	5	5/76
o-Xylene	0-3,770	5	192/1,453
Tetrachloroethene	0-15,000	5	98/1,729
Toluene	0-11,000	5	464/1,723
Trans-1,2-Dichloroethane	0-7,000	5	525/1,708
Trichloroethene	0-840,000	5	1,011/1,728
Trifluorotrichloroethane	0-2,820	5	85/284
Vinyl chloride	0-100,000	2	1,468/1,729
Xylenes (total)	0-13,800	5	123/387

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 results indicate that contamination in the shallow groundwater at the site exceeds the SCGs for volatile organic compounds (VOCs) north and west of the building and a small area on the east side of the building. The shallow groundwater had detections of TCE, cis-1,2-DCE and VC at concentrations of 840 ppm, 340 ppm and 100 ppm, respectively. SVOCs were detected at low concentrations above the NYSDEC's Class GA groundwater criteria in the immediate vicinity of the North Evaporation Pit and Waste Solvent Tank areas. Shallow groundwater has not been significantly impacted by SVOCs. Pesticides were detected at low concentrations in one well in the North Evaporation Pit area. The data indicate that no PCBs were detected in shallow groundwater. The offsite shallow groundwater data indicates the potential for soil vapor intrusion.

Table #3 - Deep Groundwater

Detected Constituents	Concentration Range Detected (ppb)*	SCG[b]	Frequency Exceeding SCG
VOCs			
1,1,1-Trichloroethane	0-17.1	5	2/613
1,1,2-Trichloroethane	0-1.8	1	1/613
1,1-Dichloroethane	0-35.3	5	4/613
1,1-Dichloroethene	0-239	5	42/613
1,2,4-Trimethylbenzene	0-15.7	5	1/41
1,2-Dichlorobenzene	0-18.5	3	4/272
1,2-Dichloroethene (total)	0-12	5	2/17
1,3,5-Trimethylbenzene	0-5.6	5	2/50
2-Butanone	0-87.8	50	1/434
Acetone	0-38,000	50	77/434
Benzene	0-411	1.0	8/608
Carbon disulfide	0-350	60	4/608
Chlorobenzene	0-11.6	5	4/613
Chloroform	0-269	7	20/613
Chloromethane	0-7.9	5	3/613
Cis-1,2-Dichloroethene	0-91,700	5	218/596
Cis-1,3-dichloropropene	0-3.4	0.4	2/621
Ethylbenzene	0-712	5	27/608
m&p-Xylenes	0-2,150	5	25/421
Methylene chloride	0-105	5	3/613
o-Xylene	0-526	5	9/421
Tetrachloroethene	0-63.8	5	5/613
Toluene	0-3,800	5	71/608
Trans-1,2-Dichloroethane	0-1,260	5	104/596
Trichloroethene	0-646,000	5	133/613
Trifluorotrichloroethane	0-3,510	5	31/223
Vinyl chloride	0-5,500	2	236/613
Xylenes (total)	0-2,680	5	32/253

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 results indicate that contamination in the deep groundwater at the site exceeds the SCGs for volatile organic compounds (VOC) to the north, west, east and south of the building. The deep groundwater had detections of TCE, cis-1,2-DCE and VC at concentrations of 646 ppm, .12 ppm and 5.5 ppm, respectively. SVOCs were detected at low concentrations below the NYSDEC's Class GA groundwater criteria. Deep groundwater has not been adversely impacted by SVOCs. The data indicate that no pesticides or PCBs were detected in deep groundwater.

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: TCE, cis,1,2-DCE and vinyl chloride.

Soil

Soil samples were collected at the site during the RI. The results identify VOCs as the primary contaminants of concern and the distribution is limited to the immediate vicinity of the on-site source areas: the North Evaporation Pit, Waste Solvent Tank Area, West Evaporation Pit, the Laboratory Waste Solvent Tanks Area and the Fire Training Area. Soils were also analyzed for inorganics. The results were below the restricted residential use SCOs and it was determined that metals were not a contaminant of concern at this site. Soil contamination does not extend off-site.

Table #4 - Soil

Detected Constituents	Concentration Range Detected (ppm)*	Protection of GW SCG[b] (ppm)	Frequency Exceeding Protection of GW	Industrial Restricted Use SCG[c] (ppm)	Frequency Exceeding Industrial Restricted SCG
VOCs					
1,1,1-Trichloroethane	0.001-60	0.68	22/398	1000	0/398
1,1-Dichloroethane	0.002-1.2	0.27	3/398	480	0/398
1,1-Dichloroethene	0.001-0.79	0.33	1/398	1000	0/398
1,2-Dichloroethane	0.002-0.05	0.02	3/398	60	0/398
1,2-Dichloroethene (total)	0.0007-41	5	47/201		0/201
Acetone	0.002-2800	0.05	126/348	1000	6/348
Carbon tetrachloride	0.003-4.8	0.76	3/398	44	0/398
cis-1,2-Dichloroethene	0.001-96	0.25	90/321	1000	0/321
Ethylbenzene	0.0006-370	1.0	58/398	780	0/398
m&p-Xylenes	0.066-71	5	12/38		0/38
Methylene chloride	0.001-64	0.05	49/398	1000	0/398
o-Xylene	0.001-96	5	26/159		0/159
Tetrachloroethene	0.0009-1200	1.3	48/398	300	2/398
Toluene	0.001-930	0.7	68/398	1000	0/398
Trans-1,2-Dichloroethane	0.001-1.6	0.19	1/347	1000	0/347
Trichloroethene	0.001-14000	0.47	210/398	400	29/398
Vinyl chloride	0.001-12	0.02	31/398	27	0/398
Xylenes (total)	0.0007-6700	0.26	78/348	1000	4/348

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

The source areas at the site, the North Evaporation Pit, Former Waste Solvent Tank, the Former Laboratory Waste Solvent Tank, the West Evaporation Pit and the Fire Training Area all had detections of several VOCs including TCE, cis-1,2-DCE and VC, that exceeded the Protection of Groundwater SCOs. The contaminated soils at the site exceeding the protection of groundwater SCOs are found to a depth of 16' or the top of bedrock. The North Evaporation Pit had detections of TCE, acetone and xylene (total) exceeding the industrial use Soil Cleanup Objectives (SCOs). The Waste Solvent Tank Area had detections of TCE and PCE exceeding the industrial use SCOs. The West Evaporation Pit area only had TCE exceeding the industrial use SCOs for VOCs. No VOCs were detected in soil samples exceeding industrial use SCOs in the Laboratory Waste Solvent Tanks area and the purported Fire Training Pit area. For the 55.4 acre site only 4.25 acres of subsurface soils exceed the protection of groundwater SCOs and these soils surround the building to the north, west and east. Less than half an acre of subsurface soils exceed the industrial use SCOs and are located in the Waste Solvent Tank Area, North Evaporation Pit and West Evaporation Pit, surrounding the building to the north and west. The remaining acreage of the site, mostly to the north and west, meet unrestricted use SCOs and the protection of groundwater SCOs.

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, TCE, cis-1,2-DCE, vinyl chloride, xylenes (total) and PCE.

Surface Water

Table #5 - Surface Water

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
cis-1,2-dichloroethene	ND-46.2	5	24/95
Trichlorothene	ND-89	5	30/95
Vinyl chloride	ND-7.3	.3	18/95

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.
b-SCG: Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1) and 6 NYCRR Part 703: Surface Water and Groundwater Quality Standards.

Surface water contamination identified during the RI was addressed during the IRM described in Section 6.2.

The Surface Water Interim Action Enhancement was designed to remove residual VOCs, primarily TCE and cis-1,2-DCE, from surface water in the storm sewer system at the site and has been effective. The Surface Water Interim Action Enhancement consists of a forced air bubbler system that aerates the water passing through the last storm sewer catch basin, catch basin CB-16, prior to flowing into the drainage ditch at Outfall 001. Outfall 001 is sampled quarterly and the results have been non-detect.

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. (Note that the Alternatives presented in this document represent combinations of alternatives presented in the FS Report. These combined Alternatives were developed and included here to aid in the public's understanding of the possible remedies for the site.)

In-situ enhanced biodegradation is the chosen remedy for the overburden and shallow groundwater for the combined alternatives. The basis for this selection was the reliability of this method to reduce VOCs; minimize migration and be protective of human health and the environment. The selected remedy is cost effective while actively addressing the source areas.

In-situ enhanced biotic/abiotic degradation applied upgradient of the primary source areas is the chosen remedy for the deep groundwater for the combined alternatives. The basis for this selection was that it directly addresses the primary source areas, is cost effective compared to the other alternatives and will work in conjunction with the remedy selected by USEPA in the March 2013 ROD for Area 1 of the Cayuga County Groundwater Contamination Superfund Site.

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: Institutional Controls with Site Management and Monitored Natural Attenuation

This alternative includes institutional controls and implementation of a site management plan. Groundwater would be monitored for site related contamination and for monitored natural attenuation (MNA) indicators which would provide an understanding of the biological activity breaking down the contamination. Reports of the attenuation would be provided after 3 years, and active remediation would be selected if it appears that natural processes alone would not address the contamination.

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

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

   Engineering Controls: The existing Surface Water Interim Action must be operated, maintained, and monitored to maintain protectiveness of human health and the environment.

   This plan includes, but may not be limited to:

   - an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
   - a provision for evaluation of the potential for soil vapor intrusion should the on-site building become occupied and for any new buildings developed on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
   - descriptions of the provisions of the environmental easement including any land use, and/or groundwater and/or surface water use restrictions;
   - provisions for the management and inspection of the identified engineering controls;
   - maintaining site access controls and Department notification;
   - the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls; and
   - a provision for investigation beneath the existing on-site building if the building is demolished to determine if further remedial action (such as excavation or a soil cover) is warranted.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
   - monitoring of groundwater to assess the performance and effectiveness of the remedy; and
   - a schedule of monitoring and frequency of submittals to the Department;
   - monitoring for vapor intrusion should the on-site building become occupied and for any new buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

c. an Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, optimization, monitoring, inspection, and reporting of any mechanical or physical components of the remedy. The plan includes, but is not limited to:
   - compliance monitoring of treatment systems to ensure proper O&M as well as providing the data for any necessary permit or permit equivalent reporting;
   - maintaining site access controls and Department notification; and
   - providing the Department access to the site and O&M records.

Present Worth: *$1,797,000*
Capital Cost: *$292,100*
Annual Costs: *$121,320*

Alternative 3: Containment of the Soils above Industrial Use Soil Cleanup Objectives (SCOs), Treatment of the Shallow and Deep Groundwater, Continued O&M of Surface Water Interim Action Enhancement System and Institutional Controls with Site Management Plan

A site cover would be required to allow industrial use of the site. The cover would consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil would exceed the applicable soil cleanup objectives (SCOs). The primary areas that would require a cover are the North Evaporation Pit, Waste Solvent Tank and West Evaporation Pit areas. These areas comprise less than half an acre of the 55 acre site. Where the soil cover would be required it would be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for industrial use. The soil cover would be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site would meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

In-situ enhanced biodegradation would be employed for the treatment of VOCs in the overburden and shallow groundwater in the primary source areas. The biological breakdown of contaminants through reductive dechlorination would be enhanced by injecting a lactate and EVO solution into the subsurface to promote microbe growth. The location and depth of injection would be determined during the remedial design.

In-situ enhanced biodegradation would also be employed to treat VOCs in the deep groundwater upgradient of the North Evaporation Pit and Waste Solvent Tank areas. The biological breakdown of contaminants through biotic and abiotic degradation would be enhanced by injecting an electron donor(s) and an iron source into the D3 unit.

The continued O&M and monitoring of the existing Surface Water Interim Action Enhancement system would treat any potential recharge of the shallow water into the storm sewers. The system is designed to remove residual VOCs, primarily TCE and cis-1,2-DCE, from surface water in the storm sewer system at the facility. The system consists of an air sparging unit that aerates the water passing through the last storm sewer catch basin prior to flowing into the drainage ditch at the northwest corner of the site.

An evaluation of the potential for soil vapor intrusion for any offsite buildings that may be impacted by the contaminated shallow groundwater to the west of the site, including implementing actions recommended to address exposures related to soil vapor intrusion.

This alternative would include the institutional controls and site management elements of Alternative 2.

Present Worth: *$10,917,000*
Capital Cost: *$5,091,000*
Annual Costs: *$469,000*

Alternative 4: Asphalt Cap of the Soils above Protection of Groundwater Soil Cleanup Objectives (SCOs), Treatment of the Shallow and Deep Groundwater, Continued O&M of Surface Water Interim Action Enhancement System and Institutional Controls with Site Management Plan

On-site soils which exceed the protection of groundwater SCOs will be capped. The engineered cap will be placed over an approximately 4.25 acre area surrounding the building to the north, west and east, as indicated on Figure 3. The cap will be inspected and maintained as part of the Site Management Plan.

In-situ enhanced biodegradation would be employed for the treatment of VOCs in the overburden and shallow groundwater in the primary source areas. The biological breakdown of contaminants through reductive dechlorination would be enhanced by injecting a lactate and EVO solution into the subsurface to promote microbe growth. The location and depth of injection would be determined during the remedial design.

In-situ enhanced biodegradation would also be employed to treat VOCs in the deep groundwater upgradient of the North Evaporation Pit and Waste Solvent Tank areas. The biological breakdown of contaminants through biotic and abiotic degradation would be enhanced by injecting an electron donor(s) and an iron source into the D3 unit.

The continued O&M and monitoring of the existing Surface Water Interim Action Enhancement system would treat any potential recharge of the shallow water into the storm sewers. The system is designed to remove residual VOCs, primarily TCE and cis-1,2-DCE, from surface water in the storm sewer system at the facility. The system consists of an air sparging unit that aerates the water passing through the last storm sewer catch basin prior to flowing into the drainage ditch at the northwest corner of the site.

An evaluation of the potential for soil vapor intrusion for any offsite buildings that may be impacted by the contaminated shallow groundwater to the west of the site, including implementing actions recommended to address exposures related to soil vapor intrusion.

This alternative would include the institutional controls and site management elements of Alternative 2.

Present Worth:.....*$13,058,000*
Capital Cost:.....*$7,190,000*
Annual Costs:.....*$472,400*

Alternative 5: Treat Soils to Industrial Use Soil Cleanup Objectives (SCOs); Treat Shallow and Deep Groundwater; Continued O&M of Surface Water Interim Action Enhancement System and Institutional Controls with Site Management Plan

In-situ enhanced biodegradation will be employed to treat contaminants in soils in areas that exceed the industrial use SCOs. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by injecting EVO into the subsurface to promote microbe growth via injection wells. The areas that will be focused on during the remedial design are the North Evaporation Pit, Waste Solvent Tank area and the West Evaporation Pit. A vegetated soil cover would be installed over the soil that needs to be addressed to prevent contact during treatment with soil exceeding industrial use SCOs and/or with probable DNAPL, and for the purposes of site restoration. Asphalt in the Waste Solvent Tank area would be repaired as needed after well installation.

In-situ enhanced biodegradation would be employed for the treatment of VOCs in the overburden and shallow groundwater in the primary source areas. The biological breakdown of contaminants through reductive dechlorination would be enhanced by injecting a lactate and EVO solution into the subsurface to promote microbe growth. The location and depth of injection would be determined during the remedial design.

In-situ enhanced biodegradation would also be employed to treat VOCs in the deep groundwater upgradient of the North Evaporation Pit and Waste Solvent Tank areas. The biological breakdown of contaminants through

biotic and abiotic degradation would be enhanced by injecting an electron donor(s) and an iron source into the D3 unit.

The continued O&M and monitoring of the existing Surface Water Interim Action Enhancement system would treat any potential recharge of the shallow water into the storm sewers. The system is designed to remove residual VOCs, primarily TCE and cis-1,2-DCE, from surface water in the storm sewer system at the facility. The system consists of an air sparging unit that aerates the water passing through the last storm sewer catch basin prior to flowing into the drainage ditch at the northwest corner of the site.

An evaluation of the potential for soil vapor intrusion for any offsite buildings that may be impacted by the contaminated shallow groundwater to the west of the site, including implementing actions recommended to address exposures related to soil vapor intrusion.

This alternative would include, all of the institutional control and site management elements of Alternative 2.

Present Worth: *$13,062,000*
Capital Cost: *$6,615,000*
Annual Costs: *$520,200*

Alternative 6: Treat Soils to Protection of Groundwater Soil Cleanup Objectives (SCOs); Treat Shallow and Deep Groundwater; Continued O&M of Surface Water Interim Action Enhancement System and Implementation of a Site Management Plan

In-situ enhanced biodegradation will be employed to treat contaminants in soils that exceed the protection of groundwater SCOs in a phased approach. The areas that will be focused on during the remedial design are the North Evaporation Pit, Former Waste Solvent Tank, Fire Training Area, West Evaporation Pit and Former Laboratory Waste Solvent Tanks surrounding the building on the north, west and east side. The biological breakdown of contaminants through anaerobic reductive dechlorination will be enhanced by injecting EVO into the subsurface to promote microbe growth via injection wells. A vegetated soil cover would be installed over the soil that needs to be addressed to prevent contact during treatment with soil exceeding industrial use SCOs and/or with probable DNAPL, and for the purposes of site restoration. Asphalt in the Waste Solvent Tank area would be repaired as needed after well installation.

In-situ enhanced biodegradation would be employed for the treatment of VOCs in the overburden and shallow groundwater in the primary source areas. The biological breakdown of contaminants through reductive dechlorination would be enhanced by injecting a lactate and EVO solution into the subsurface to promote microbe growth. The location and depth of injection would be determined during the remedial design.

In-situ enhanced biodegradation would also be employed to treat VOCs in the deep groundwater upgradient of the North Evaporation Pit and Waste Solvent Tank areas. The biological breakdown of contaminants through biotic and abiotic degradation would be enhanced by injecting an electron donor(s) and an iron source into the D3 unit.

The continued O&M and monitoring of the existing Surface Water Interim Action Enhancement system would treat any potential recharge of the shallow water into the storm sewers. The system is designed to remove residual VOCs, primarily TCE and cis-1,2-DCE, from surface water in the storm sewer system at the facility. The system

consists of an air sparging unit that aerates the water passing through the last storm sewer catch basin prior to flowing into the drainage ditch at the northwest corner of the site.

An evaluation of the potential for soil vapor intrusion for any offsite buildings that may be impacted by the contaminated shallow groundwater to the west of the site, including implementing actions recommended to address exposures related to soil vapor intrusion.

This alternative would include, all of the institutional control and site management elements of Alternative 2.

Present Worth: *$23,422,000*
Capital Cost: *$13,479,000*
Annual Cost: *$796,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Average Annual Cost ($)	Total Present Worth ($)
Alternative 1: No Action	0	0	0
Alternative 2: Institutional Controls with Site Management and Monitored Natural Attenuation	$292,100 Soil - $53,100 GW - $117,000 D3GW - $77,000 SW - $45,000	$121,320 Soil - $11,300 GW - $64,200 D3GW - $37,650 SW - $8,170	$1,797,100 Soil - $193,000 GW – $914,000 D3GW - $544,100 SW - $146,000
Alternative 3: Containment of the Soils above Industrial Use SCOs, Treatment of the Shallow and Deep Groundwater, Continued O&M of Surface Water Interim Action Enhancement System and Institutional Controls with a Site Management Plan	$5,091,000 Soil - $136,000 GW - $3,160,000 D3GW - $1,750,000 SW - $45,000	$469,000 Soil - $21,700 GW - $259,000 D3GW - $150,000 SW - $38,300	$10,917,000 Soil - $405,000 GW – $6,380,000 D3GW - $3,610,000 SW - $522,000
Alternative 4: Asphalt Cap of the Soils above Protection of Groundwater SCOs, Treatment of the Shallow and Deep Groundwater, Continued O&M of Surface Water Interim Action Enhancement System and Institutional Controls with a Site Management Plan	$7,190,000 Soil - $2,235,000 GW - $3,160,000 D3GW - $1,750,000 SW - $45,000	$472,400 Soil - $25,100 GW - $259,000 D3GW - $150,000 SW - $38,300	$13,058,000 Soil - $2,546,000 GW – $6,380,000 D3GW - $3,610,000 SW - $522,000
Alternative 5: Treatment of Soils to Industrial Use SCOs; Treatment of Shallow and Deep Groundwater; Continued O&M of Surface Water Interim Action Enhancement System and Institutional Controls with a Site Management Plan	$6,615,000 Soil - $1,660,000 GW - $3,160,000 D3GW - $1,750,000 SW - $45,000	$520,000 Soil - $72,300 GW - $259,000 D3GW - $150,000 SW - $38,300	$13,062,000 Soil - $2,550,000 GW – $6,380,000 D3GW - $3,610,000 SW - $522,000
Alternative 6: Treatment of Soils to Protection of Groundwater SCOs; Treatment of Shallow and Deep Groundwater; Continued O&M of Surface Water Interim Action Enhancement System and Institutional Controls with a Site Management Plan	$13,479,000 Soil - $8,524,000 GW - $3,160,000 D3GW - $1,750,000 SW - $45,000	$796,000 Soil - $348,800 GW - $259,000 D3GW - $150,000 SW - $38,300	$23,422,000 Soil - $12,910,000 GW – $6,380,000 D3GW - $3,610,000 SW - $522,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department is selecting Alternative 6 Treatment of Soils to Protection of Groundwater SCOs; Treatment of Shallow and Deep Groundwater; Continued O&M of Surface Water Interim Action Enhancement System and Institutional Controls with a Site Management Plan as the remedy for this site. Alternative 6 would achieve the remediation goals for the site by treating soils to protection of groundwater SCOs, using an in-situ enhanced bioremediation technology for overburden and shallow groundwater; biotic and abiotic degradation of the contaminated deep groundwater, the continued operation and maintenance of the Surface Water Interim Action Enhancement system, and provisions for evaluating soil vapor intrusion and implementing actions to address related exposures. The elements of this remedy are described in Section 7. The areas the selected remedy would address are depicted in Figures 3-6 for soils, overburden groundwater, shallow groundwater, deep groundwater and surface water, respectively.

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*)* would satisfy this criterion by treating the contaminated soils that exceed the protection of groundwater SCOs (which are lower than the industrial use SCOs), using in-situ enhanced biodegradation to treat TCE in shallow groundwater, treating the deep groundwater using in-situ enhanced biotic/abiotic degradation, continuing to operate, maintain and monitor the existing Surface Water Interim Action Enhancement system, providing for evaluation and corresponding mitigation of potential soil vapor intrusion exposures, and restricting on-site groundwater use. Alternative 6 eliminates any threat associated with impacted soil, addresses the groundwater source areas and treats surface water from the storm sewer before being discharge to a drainage ditch. Alternative 1 does not provide any protection to public health and the environment and will not be evaluated further. Alternative 2 does not prevent exposures to contaminated surface soils that exceed applicable SCOs and therefore is not protective of human health nor is it protective of the environment since no actions would be taken to reduce the sources of contamination to groundwater. Therefore, Alternative 2 will not be evaluated further. Alternatives 3, 4, 5 and 6 would also all be protective of human health and the environment.

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 3 and 4 would reduce infiltration induced impacts and rely on natural attenuation to achieve the protection of groundwater SCOs which would likely not be achievable for a very long time. Alternative 3 addresses contaminated groundwater but leaves contaminated soils above the industrial use SCOs in place with a

soil cover allowing the soils to continue being a source of contamination for the groundwater. Alternative 4 addresses contaminated groundwater but leaves contaminated soils above the PGW SCOs in place with an asphalt cap allowing the soils to continue being a source of contamination for the groundwater. Alternative 5 would be expected to achieve protection of groundwater SCOs sooner than Alternative 3 since soils exceeding industrial use SCOs would be treated. Alternatives 3 and 5 address contaminated groundwater but only address soil contaminated above the industrial use SCOs and are not fully compliant with Part 375. Alternative 6 is the only alternative that actively addresses the source of groundwater contamination in soil where there are concentrations of contaminants in the soil above the PGW SCOs As a result, Alternative 6 would best lead to achievement of groundwater standards.

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.

Alternative 6 has the greatest long-term effectiveness and permanence since site soils would be treated to achieve protection of groundwater/unrestricted use SCOs and therefore, soils would not need long-term management or institutional controls. Soils would continue to impact groundwater under Alternatives 3, 4 and 5 so these alternatives are less effective in the long term.

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 6 would have the highest reductions of toxicity, mobility and volume, as the contaminated soils (109,700 cubic yards) exceeding protection of groundwater SCOs would be treated. The next highest reductions of toxicity, mobility and volume would be achieved by Alternative 5 where soils exceeding industrial use SCOs (11,400 cubic yards) would be addressed. Alternative 4 would provide some reduction in mobility from soils to groundwater via reduction of storm water infiltration provided by the cap and Alternative 3 would so the same but to a lesser degree since the soil cover would allow more infiltration than the cap.

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.

Alternative 3 through 6 would each have short term impacts on the community (noise, increased traffic, air emissions) which could be effectively controlled with standard construction practices and safety measures. Alternatives 3 and 4 have more truck traffic due to importation of cover and cap materials compared to Alternatives 5 and 6. However Alternatives 5 and 6 would require construction of more injection points for treatment of soils than would be provided under Alternatives 3 and 4, which do not treat soils. Risks to remedial workers would be comparable among alternatives Alternative 3 would have lower greenhouse gas emissions, fuel/energy use and water use than Alternatives 4, 5 and 6.

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.

Alternatives 3 through 6 are each implementable. Alternatives 5 and 6 are less implementable than Alternatives 3 and 4 due to the need for relocation of sewers, decommissioning and/or replacement of monitoring/pumping wells and associated piping in order to treat soils.

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

Alternative 6 is the most expensive alternative due to the relatively large volume/area of soils to be treated but this is the only alternative that actively addresses the source of groundwater contamination in soils. Alternatives 4 and 5 have similar present worth costs and are comparable with respect to their effectiveness in addressing the source of groundwater contamination posed by soils. Alternative 3, which is the least costly alternative, does the least to address the source of groundwater contamination posed by soils.

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 anticipated future use of the site is industrial. Each of the alternatives would allow for industrial site use.

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 will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

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

I:\Ge.612\43850.Ap-Ri-Add-No-Am\Docs\Reports\RI Report\Figures\Section 1\Figure 1-1 Site Location Map.mxd

FIGURE 1

N

Former Powerex, Inc. Facility
Remedial Investigation Report

General Electric Company
Albany, New York

SITE LOCATION MAP

0 1,250 2,500 5,000
Feet

MARCH 2012
48217

O'BRIEN & GERE

PLOTDATE: 02/28/12 8:27:48 AM SpooneAM

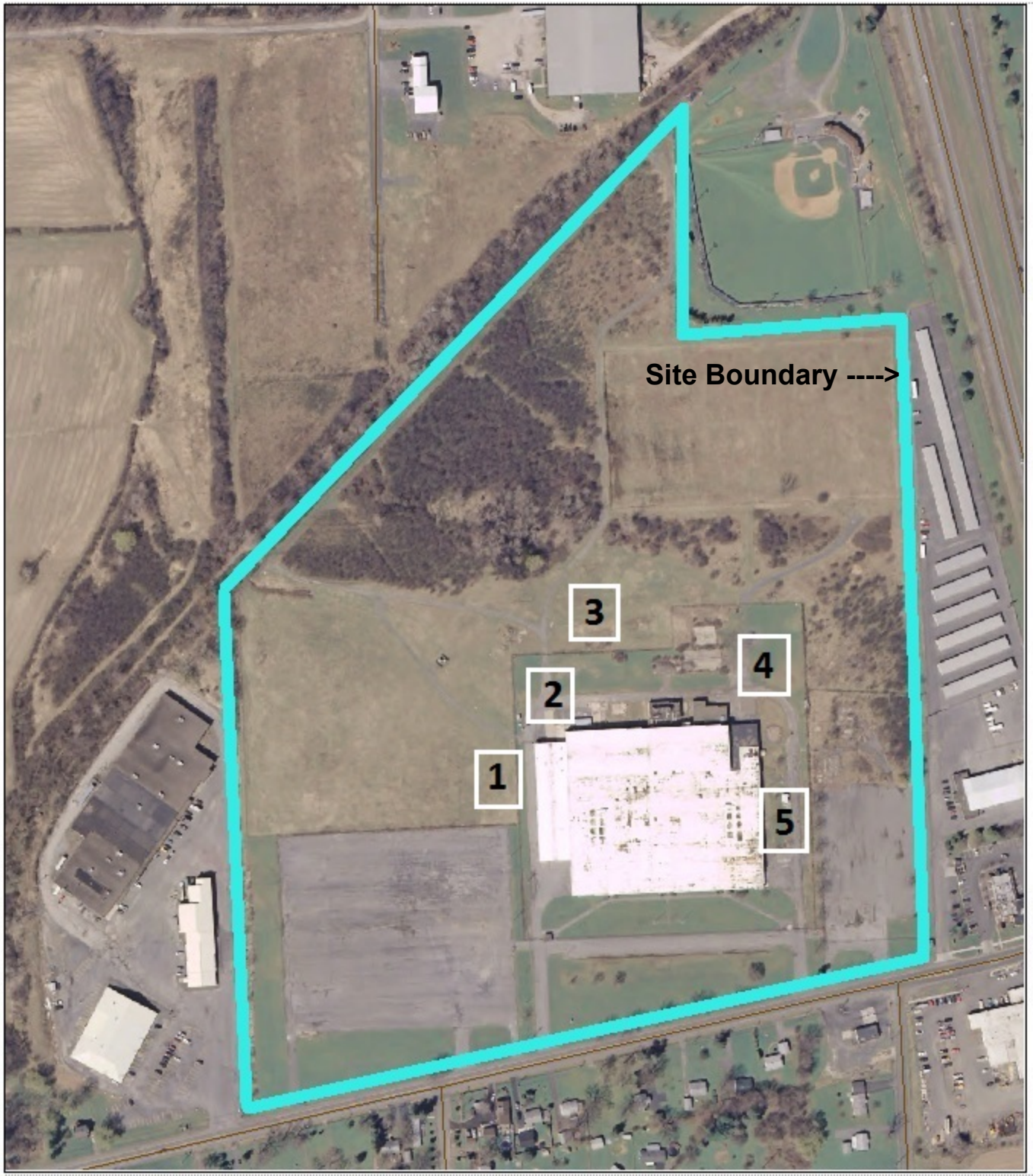

Figure 2
Former Powerex Boundary
Site #706006

Areas of Concern

1 - West Evaporation Pit
2 - Former waste Solvent Tank
3 - North Evaporation Pit
4 - Fire Training Area
5 - Former Laboratory Solvent Tanks

N

0 0.02 0.04 0.08 0.12 0.16
Miles

Notes:
1. Criteria are New York State Part 375-6.8 (a) Soil Cleanup Objectives (SCOs) for Unrestricted Use.
2. Duplicate samples are included in data set.
3. Potential presence of DNAPL obtained from the following reference: Keuper, Dr. B.H. 2012. Assessment and Delineation of DNAPL in Overburden. Former Powerex, Inc. Facility, Auburn, New York. Prepared for General Electric Company, Albany, New York. March 22, 2012. Revised May 16, 2012.

Area: 131,300 sq. ft
Depth to Bedrock: 16 ft
Volume: 2,100,800 cu. ft, 77,800 cu. yds

Area: 44,600 sq. ft
Depth to Bedrock: 16 ft
Volume: 713,600 cu. ft, 26,400 cu. yds

Area: 9,200 sq. ft
Depth to Bedrock: 16 ft
Volume: 147,200 cu. ft, 5,500 cu. yds

North Evaporation Pit

Purported Fire Training Area (Location Unknown)

Former Waste Solvent Tank

Former Acetone Tanks

Former Methylene Chloride Tank

Purported West Evaporation Pit (Location Unknown)

Former Laboratory Waste Solvent Tanks

FIGURE 3

N

LEGEND

- SOIL BORING LOCATION
- TEST PIT LOCATION WITH ANALYTICAL DATA
- PART 375 UNRESTRICTED USE SCO EXCEEDANCE FOR VOCs
- TEST PIT LOCATION WITH NO ANALYTICAL DATA
- AREA OF UNRESTRICTED USE SCO EXCEEDANCES
- POTENTIAL PRESENCE OF DNAPL

FORMER POWEREX, INC. FACILITY
FEASIBILITY STUDY REPORT
GENERAL ELECTRIC COMPANY
ALBANY, NEW YORK

ESTIMATED AREAS AND VOLUMES OF SOIL EXCEEDING UNRESTRICTED USE SCOs

0 50 100 200
Feet

AUGUST 2014
612.48217

O'BRIEN & GERE

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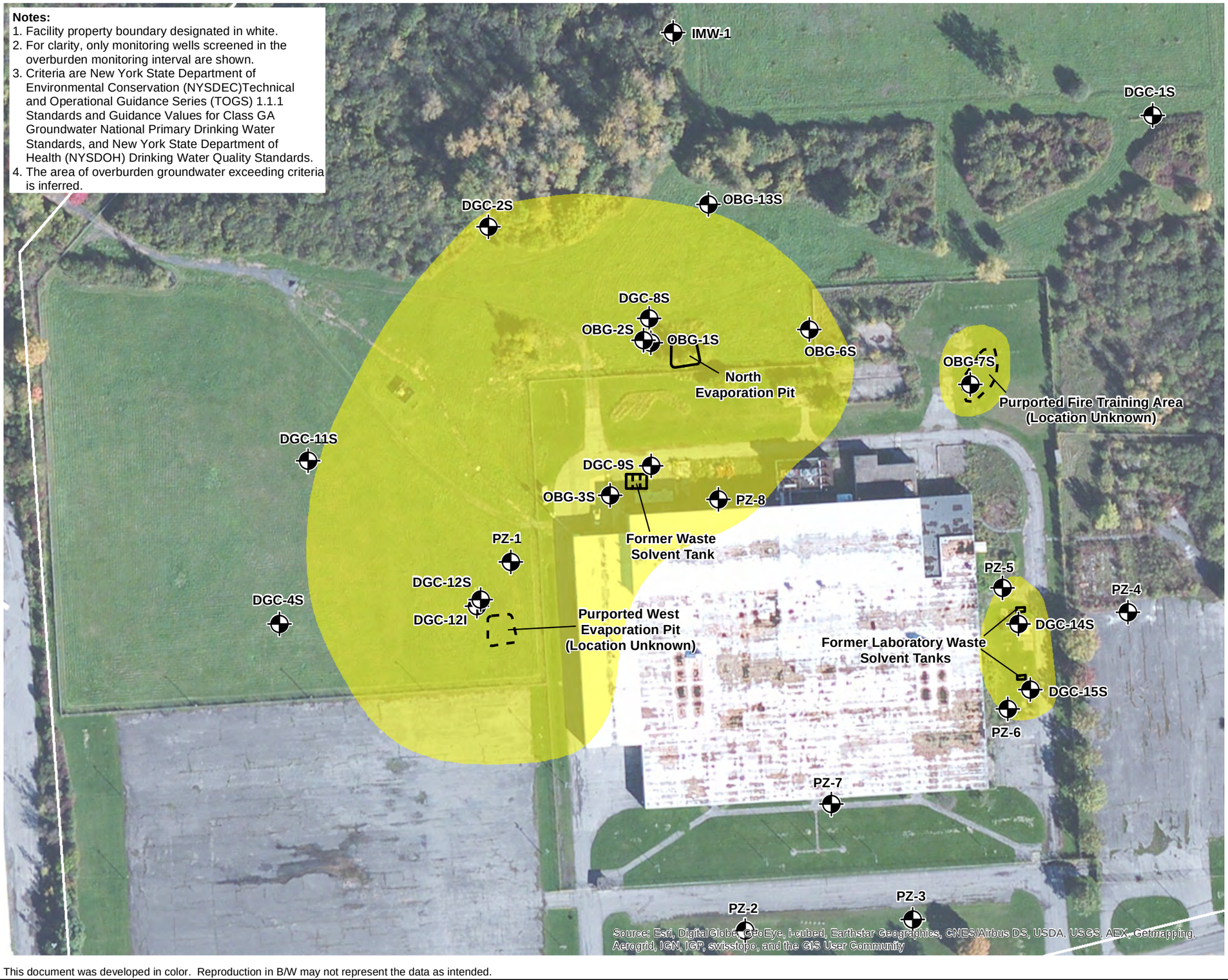
FIGURE 4

Notes:
1. Facility property boundary designated in white.
2. For clarity, only monitoring wells screened in the overburden monitoring interval are shown.
3. Criteria are New York State Department of Environmental Conservation (NYSDEC)Technical and Operational Guidance Series (TOGS) 1.1.1 Standards and Guidance Values for Class GA Groundwater National Primary Drinking Water Standards, and New York State Department of Health (NYSDOH) Drinking Water Quality Standards.
4. The area of overburden groundwater exceeding criteria is inferred.



LEGEND

MONITORING WELL LOCATION

AREA OF OVERBURDEN GROUNDWATER THAT EXCEEDS CRITERIA

FORMER POWEREX, INC. FACILITY
FEASIBILITY STUDY REPORT
GENERAL ELECTRIC COMPANY
ALBANY, NEW YORK

AREA OF OVERBURDEN GROUNDWATER THAT EXCEEDS CRITERIA

0 60 120 240
Feet

AUGUST 2014
612.48217

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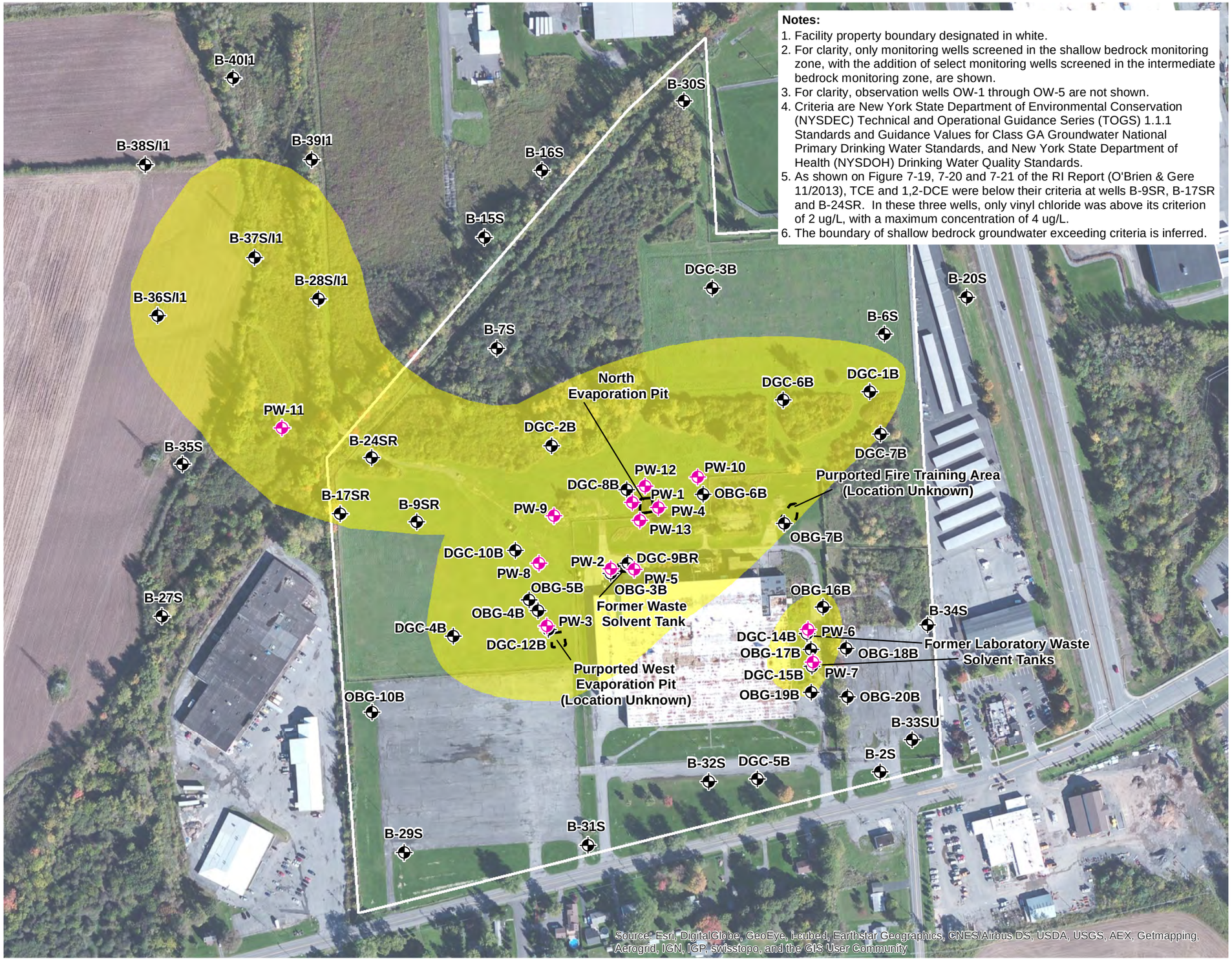
FIGURE 5



Notes:

1. Facility property boundary designated in white.
2. For clarity, only monitoring wells screened in the shallow bedrock monitoring zone, with the addition of select monitoring wells screened in the intermediate bedrock monitoring zone, are shown.
3. For clarity, observation wells OW-1 through OW-5 are not shown.
4. Criteria are New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Standards and Guidance Values for Class GA Groundwater National Primary Drinking Water Standards, and New York State Department of Health (NYSDOH) Drinking Water Quality Standards.
5. As shown on Figure 7-19, 7-20 and 7-21 of the RI Report (O'Brien & Gere 11/2013), TCE and 1,2-DCE were below their criteria at wells B-9SR, B-17SR and B-24SR. In these three wells, only vinyl chloride was above its criterion of 2 ug/L, with a maximum concentration of 4 ug/L.
6. The boundary of shallow bedrock groundwater exceeding criteria is inferred.

N

LEGEND

- MONITORING WELL LOCATION
- EXTRACTION WELL LOCATION
- AREA OF SHALLOW BEDROCK GROUNDWATER THAT EXCEEDS CRITERIA

FORMER POWEREX, INC. FACILITY
FEASIBILITY STUDY REPORT
GENERAL ELECTRIC COMPANY
ALBANY, NEW YORK

AREA OF SHALLOW BEDROCK GROUNDWATER THAT EXCEEDS CRITERIA

0 125 250 500
Feet

AUGUST 2014
612.48217

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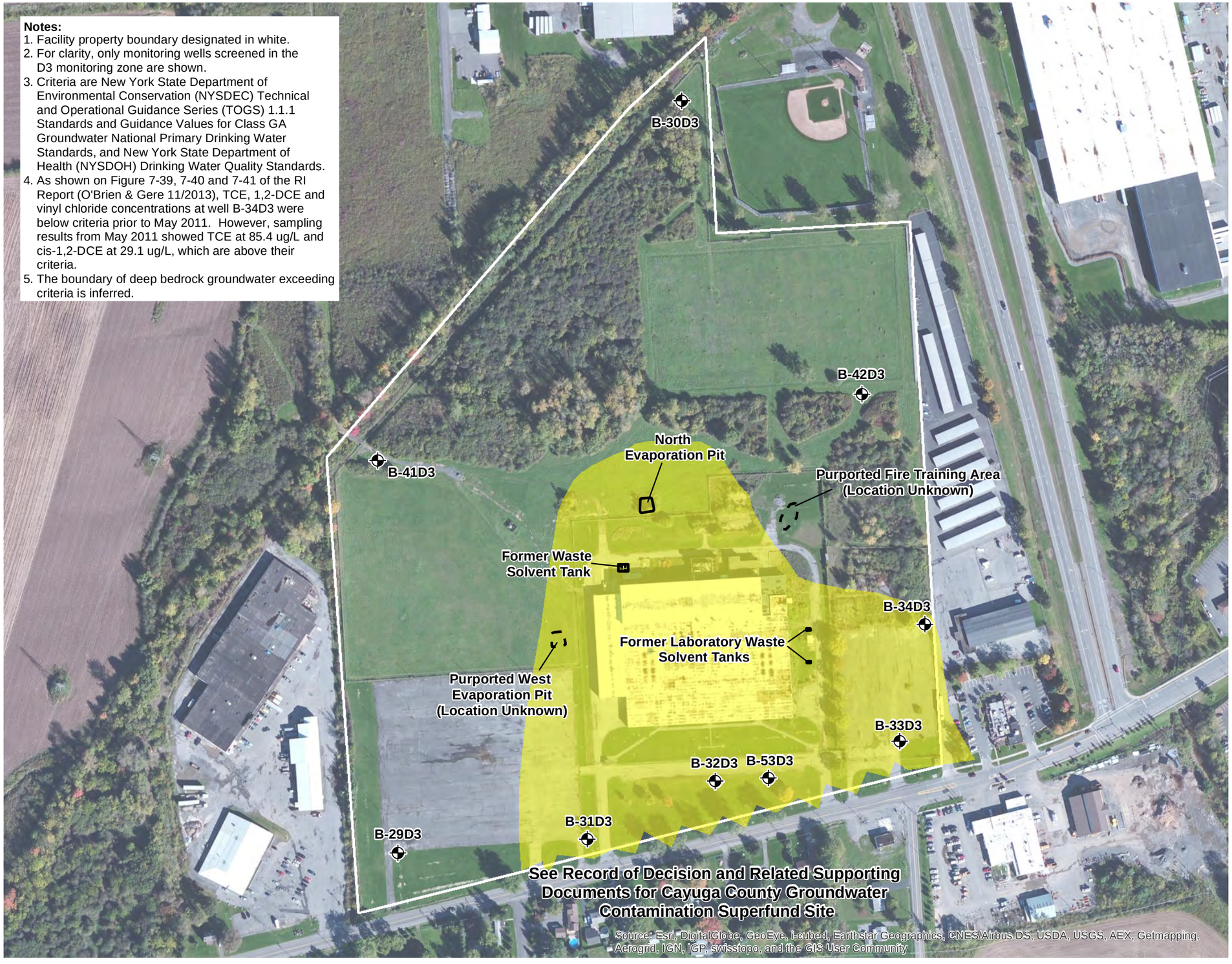
FIGURE 6

Notes:
1. Facility property boundary designated in white.
2. For clarity, only monitoring wells screened in the D3 monitoring zone are shown.
3. Criteria are New York State Department of Environmental Conservation (NYSDEC) Technical and Operational Guidance Series (TOGS) 1.1.1 Standards and Guidance Values for Class GA Groundwater National Primary Drinking Water Standards, and New York State Department of Health (NYSDOH) Drinking Water Quality Standards.
4. As shown on Figure 7-39, 7-40 and 7-41 of the RI Report (O'Brien & Gere 11/2013), TCE, 1,2-DCE and vinyl chloride concentrations at well B-34D3 were below criteria prior to May 2011. However, sampling results from May 2011 showed TCE at 85.4 ug/L and cis-1,2-DCE at 29.1 ug/L, which are above their criteria.
5. The boundary of deep bedrock groundwater exceeding criteria is inferred.



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N

LEGEND

MONITORING WELL LOCATION

AREA OF DEEP BEDROCK (I.E., D3 MONITORING) INTERVAL GROUNDWATER THAT EXCEEDS CRITERIA

FORMER POWEREX, INC. FACILITY
FEASIBILITY STUDY REPORT
GENERAL ELECTRIC COMPANY
ALBANY, NEW YORK

AREA OF DEEP BEDROCK (i.e., D3 MONITORING) INTERVAL GROUNDWATER THAT EXCEEDS CRITERIA

0 125 250 500
Feet

AUGUST 2014
612.48217

O'BRIEN & GERE

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

General Electric Co. Auburn
City of Auburn, Town of Aurelius, Cayuga County, New York
Site No. 7-06-006

The Proposed Remedial Action Plan (PRAP) for the General Electric Co. Auburn 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 January 13, 2016. The PRAP outlined the remedial measure proposed for the contaminated soil, surface water and groundwater at the General Electric Co. Auburn 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 January 27, 2016, which included a presentation of the remedial investigation feasibility study (RI/FS) for the General Electric Co. Auburn 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 was to have ended on February 11, 2016, however it was extended to February 29, 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:

John Uruskyj, GE Senior Project Manager submitted a letter (dated February 29, 2016) which included the following comments: - Please note that Exhibit A – Application of the Protections of Groundwater (POGW) Soil Cleanup Objectives (SCOs) at the Former Powerex, Inc. (Powerex) Facility is Not Required and is Not Appropriate; Exhibit B – Comments on the PRAP for the Former Powerex Facility; Exhibit C – Comments on the PRAP for the Former Powerex Facility; and Exhibit D – Comments on the PRAP for the Former Powerex Facility and their respective Attachments are included in their entirety as part of the Appendix B - Administrative Record.

COMMENT 1: PRELIMINARY STATEMENT:
The soil remedy proposed by the New York State Department of Environmental Conservation (NYSDEC or Department) is not necessary for the protection of public health and the environment. The Department should select the industrial use Soil Cleanup Objectives (SCOs) for on-site soil.

One of the principal issues that must be considered in the selection of the on-site remedial program for this industrial zoned, industrial use property is the applicable SCO. The industrial property is serviced with municipal water (as is the surrounding area), and the United States

Environmental Protection Agency (USEPA) has already issued a Record of Decision (ROD) selecting active biotic/abiotic degradation and/or monitored natural attenuation (MNA) for groundwater areas downgradient of the property. The USEPA program requires a robust groundwater treatment program at the southern perimeter of the facility that will mitigate off-site migration of residual conditions at the site.

A comprehensive groundwater treatment injection program is an integral part of the Department's proposed remedy and this includes treatment in the shallow, intermediate, and deep bedrock. The site has high concentrations of volatile organic compounds (VOCs), including dense non-aqueous phase liquid (DNAPL) impacts, in bedrock; these conditions must be taken into account in evaluating the feasibility of achieving any selected SCO. GE is also working with USEPA to design and implement a robust in-situ biological and abiotic treatment system at the site boundary to address conditions in the deep bedrock that have the potential to migrate off-site. An environmental easement, pursuant to ECL Article 71, will be filed on the property, after approval by the Department, to restrict use of groundwater as part of the remedial program for the industrial site.

In light of the comprehensive nature of groundwater remedial programs at both on-site and off-site locations, including the southern perimeter of the property, the applicable SCO for overburden soils should be the restricted use industrial standard as authorized by Part 375. The SCO selected should be one that: (i) is technically practicable, (ii) takes into account the actual contaminant conditions in the bedrock (including DNAPL), (iii) acknowledges the fluctuation in groundwater elevation that can cause recontamination of the overburden soils because of the high concentrations of VOCs in groundwater, including DNAPL in rock, and (iv) provides for treatment of contamination in overburden soil. The applicable SCO, and the one more consistently applied by the Department at industrial properties, is an industrial use SCO which conforms to both applicable zoning and current use.

There is "good cause" not to impose the protection of groundwater (POGW) SCO at this industrial site. The POGW standard in Part 375-6.5 is not reasonably applicable because of the DNAPL/fractured bedrock conditions and the fact that the industrial site proposed remedy already provides for: (i) imposition of a restrictive easement, (ii) an aggressive in-situ treatment regime for groundwater and (iii) a Site Management Plan (SMP). The Department acknowledges that public water lines have already been installed throughout the area and a USEPA approved remedial program is already being implemented off-site and at the facility's southern perimeter.

As discussed by the New York State Department of Health (NYSDOH) during the public meeting on January 27, 2016, there are no completed exposure pathways, either on-site or off-site. There is no risk of exposure by ingestion to contaminated water because public water is available at the facility and also off-site areas; and there is no reasonable risk of direct contact with contaminants in the on-site soils because of a combination of site security fencing and the fact that the majority of the industrial site is already covered with buildings and pavement. As noted in PRAP Alternative 3, which NYSDEC determined to be protective of human health and the environment, a cover (vegetative soil or asphalt, depending on location) would also be a component of an industrial use SCO remedial action.[1]

The issue of whether overburden soil should be directly treated (whether to an industrial use SCO or to the POGW SCO) can be addressed following a future evaluation, based upon actual field data and a remedy effectiveness review (generally at 5 year intervals), as to the technical merits and practicability of further soil treatment. If additional treatment is demonstrated to be necessary to eliminate any remaining significant threat to the environment and public health, additional treatment can be required following such evaluations. During the times that remedy implementation and monitoring take place, an institutional control in the form of an environmental easement will be an applicable requirement; such an easement would acknowledge that use restrictions apply to the property.

The selection of a restricted use SCO, specifically an industrial use as provided in Part 375-6.8(b), is fully consistent with many Records of Decisions issued by the Department for industrial properties.[2] An industrial use SCO (i) is an officially promulgated standard, (ii) is far more consistently applied to industrial properties than a POGW standard, (iii) is consistent with current and anticipated land use and zoning, and (iv) is consistent with site conditions and remediation status. A POGW standard, on the other hand, is not appropriate for this property, is not consistently applied by the Department across the State, and achieving such a standard at this property is technically impracticable from an engineering perspective until, if ever, well into the future when existing groundwater contamination and DNAPL is remediated. An industrial use SCO approach is fully consistent with Part 375-1.8(f)(2), particularly in light of shallow and deep NAPL, the fractured bedrock, the karst environment and the cross-contamination condition associated with contaminated groundwater.

Finally, the industrial use SCO approach is fully consistent with Alternative 3 in the PRAP; it eliminates or mitigates all current significant threats to public health and the environment, is consistent with zoning and is far more cost effective. Given the factors set forth in Part 375-1.8, it is noteworthy that the selection of Alternative 6 fails to provide any greater environmental or public health protection yet more than doubles the cost of the remedial program (from approximately $11MM to $26MM). The POGW SCO is neither consistent with land use nor cost-effective, and is not applicable at this site.

[1] The application of a restricted use industrial SCO is also consistent with CP-51 (V)(Approach 2) and PRAP Alternative 3 (as well as PRAP Alternatives 4 and 5) addresses and satisfies all components set forth in CP-51 (V)(D)(2).
[2] As further discussed below, the Department identified only six industrial sites where a POGW standard has been applied in part, whereas there are dozens of industrial sites where the industrial standard has been applied. Because the Department is aware of this, the commenter does not set forth extensive review of each such ROD. The relevant point in this regard, however, is that the Department has routinely selected industrial SCOs instead of a POGW standard for industrial zoned sites with analogous conditions.

RESPONSE 1: To PRELIMINARY STATEMENT:

The Department, in implementing the State's remedial program, takes into account the remedy selection criteria in 6 NYCRR Part 375. Among these criteria is the preference for remedies that permanently and significantly reduces the volume, toxicity, and/or mobility of the hazardous

wastes and/or constituents at the site through treatment. As written in 375-1.8(c) source removal and control measures. The following is the hierarchy of source removal and control measures which are to be used, ranked from most preferable to least preferable: (1) Removal and/or treatment; (2) Containment; (3) Elimination of Exposure; and (4) Treatment of source at the point of exposure. At this site, a remedial alternative is available which maximizes the use of treatment to accomplish the reduction of toxicity, mobility and/or mobility of the contaminants within the soils. This remedial alternative, which is identified in this ROD as the selected remedial alternative, has been selected taking into account the source removal hierarchy and remedy selection criteria in 6 NYCRR Part 375.

Also, as a RCRA interim status facility the GE Powerex site is subject to corrective action under 3008(h). For RCRA facilities source control is typically an important part of an acceptable alternative remedial strategy. EPA identifies source control as a recommended threshold criterion for final corrective action remedies. More specifically, facilities should propose final remedies that control the source(s) of releases so as to reduce or eliminate, to the extent practicable, further releases of hazardous wastes or hazardous constituents that may pose a threat to human health or the environment. EPA expects facilities to control the sources of contamination regardless of the current groundwater use or the groundwater use designation. As conveyed in the 1996 Advance Notice of Proposed Rulemaking (ANPR), EPA expects facilities to control or eliminate surface and subsurface sources of groundwater contamination (EPA, 1996a). EPA believes most facilities will need to control sources of contamination to achieve facility-specific cleanup goals.

The contaminated soils will continue to be a source for the groundwater contamination at and leaving the site. The significant environmental damage related to the impacts of waste disposal at the site on the overburden groundwater, as well as on the bedrock groundwater, gives rise to significant threat. For these reasons the Department is within its statutory and regulatory authority in favoring the preferred alternative over ones which would not result in abatement of all significant threats posed by wastes disposed at the site.

It is pertinent to point out that GE's comment on the issue of applying the protection of groundwater soil cleanup objective (SCO) at a site where the anticipated future use is industrial is based upon a false premise – that is, that the Department must choose either an industrial use standard for the protection of public health, or a protection of groundwater standard for the protection of groundwater. To suggest that this choice is necessary shows a misunderstanding of the soil cleanup objectives in Part 375.

In the regulation, there are soil cleanup objectives identified for the protection of public health, the protection of ecological resources, and for the protection of groundwater. The "unrestricted" objective is the lowest of these three values.

The public health SCO is primarily driven by direct contact exposures, and is generally based upon anticipated future human use of the site – categories of future use identified in the regulation are unrestricted, residential, restricted residential, commercial, or industrial.

The ecological resources SCO is primarily driven by the need to protect ecological resources identified during site investigations which are important components of the environment at or in

the vicinity of the site, when there is an impact or threat to ecological resources as defined in the regulation.

The protection of groundwater SCO applies at sites "…where contamination has been identified in on-site soil by the remedial investigation and groundwater standards are, or are threatened to be, contravened by the presence of soil contamination at concentrations above the protection of groundwater soil cleanup objectives."

The application of the ecological resources SCO and groundwater protection SCO, are considered under the regulation regardless of anticipated future use. Simply put, the need to apply the SCO to protect ecological resources, or groundwater, is not impacted by the future use of the site; simply changing the zoning or use of a site does not affect the degree to which soil contaminants could or are impacting nearby ecological or groundwater resources.

GE argues in their commentary that the groundwater SCOs do not apply at the Powerex site. GE is incorrect. According to 375-6.5 (a)(1):

"(1) The protection of groundwater soil cleanup objectives may not be applicable where:
(i) the groundwater standard contravention is the result of an on-site source which is addressed by the remedial program;
(ii) an environmental easement will be put in place which provides for a groundwater use restriction on the site as set forth in section 375-1.8(h)(2) of this Part;
(iii) the department determines that contaminated groundwater at the site:
(a) is not migrating, or likely to migrate, off-site; or
(b) is migrating, or is likely to migrate, off-site, however, the remedy includes controls or treatment to address off-site migration; and
(iv) the department determines the groundwater quality will improve over time."

The Department addresses each point in 375-6.5(a)(1) as follows:

- At the Powerex site, the overburden groundwater contamination is caused by the contaminants within the soils which would be addressed by under the selected remedy applying the groundwater protection SCOs; there are no other known sources which if abated would address the overburden groundwater.
- An environmental easement restricting site use to industrial would not abate these soils as a source of significant threat, as the overburden groundwater would continue to be contaminated above standards.
- The Department can not conclude that the groundwater is not likely to migrate off site, as it has already migrated seven miles, to Union Springs, in the bedrock aquifer.
  The Department can not conclude that the groundwater will improve over time at a reasonable rate without implementing the selected remedy utilizing the protection of groundwater SCOs, as the contaminants within the soils will continue to act as sources to the shallow groundwater.

It is the general practice of the Department to apply the appropriate SCOs to address the varying conditions which may be present at the many sites in New York State. For sites where there are

multiple contaminants, some of which are impacting groundwater and some of which are not, it is common for the Department to apply a use specific protection of human health SCO for some contaminants present at the site, and the applicable protection of groundwater SCOs for other portions of the site where contaminants are impacting groundwater when present in the soils above the groundwater protection SCOs.

GE's commentary is based upon the false premise that either the human health SCO or the groundwater SCO must be chosen; no such limitation is included in Part 375-6.5. Rather, the Department can choose to apply the human health SCOs for contaminants not impacting ecological resources or groundwater, and apply the groundwater protection or ecological protection SCOs for contaminants which have impacted these resources. For this site, had there been contaminants which had no groundwater impacts, then the industrial SCOs would have been identified as the SCOs for soil at this site for such contaminants. At this site, however, the contaminants present at the site also impact groundwater causing contravention of groundwater standards and giving rise to a significant threat, and as a result, the application of the protection of groundwater SCOs at this site are appropriate.

In GE's comments on page 9 of Exhibit A they state that, "although a simple numerical comparison of how many times the POGW standard versus the industrial use standard may not be completely determinative insofar as evaluating the "consistent application" requirement for an SCG, the Department is required, at a minimum, to provide a comprehensive explanation as to why the industrial use SCOs, more often applied, is being rejected via the proposed Alternative 6. As GE states themselves a simple numerical comparison is "not determinative". The "comprehensive explanation" the GE is asking for is that the groundwater protection SCO is required to meet the GW standard in the overburden aquifer.

Also EPA's selected remedy is dependent on the Department's remedy addressing and controlling the source area.

COMMENT 2:

The Protection Of Groundwater (POGW) Soil Cleanup Objectives (SCOs) Need Not And Should Not Be Applied At The Former Powerex Facility – As described more fully in Exhibit A, attached and incorporated into these comments, the POGW SCOs should not be applied at the former Powerex facility based on the provisions of 6 NYCRR Part 375-6.5(a)(1)(i-iv). The appropriate standards to apply are the industrial use SCOs. As stated by NYSDEC in the PRAP, Alternatives 3, 4 and 5 are also protective of human health and the environment. Further, as stated by NYSDOH during the public meeting on January 27, 2016, neither the on-site nor the off-site contamination poses a risk to human health, and chart #12 used at the meeting states that "all exposure pathways are currently incomplete". Thus, selection of Alternative 6 is not needed to be protective, and NYSDEC's cost estimate for Alternative 6 is $15MM more than Alternative 3, which, for soil, is based on the remedial alternative recommended in the FS Report. Alternatives 3 and 4, as noted elsewhere in these comments, provide for the indirect treatment of soil that exceeds the industrial use SCOs, and Alternative 5 adds the direct treatment of soil that exceeds the industrial use SCOs.

RESPONSE 2:

As detailed in RESPONSE 1 above, the contaminated soil present at this site will continue to be a source for the groundwater contamination at and leaving the site. For the reasons listed above in response to the Preliminary Statement the Department is within its statutory and regulatory authority in favoring the preferred alternative over ones which would not result in abatement of all significant threats posed by wastes disposed at the site.

COMMENT 3:

Direct Treatment Of Soil To The POGW SCOs As Proposed By NYSDEC With Alternative 6 Is Not Necessary To Protect Human Health Or The Environment – As stated by NYSDEC on page 3 of its PRAP, the former Powerex facility is located in "an urban commercial area" and is "zoned for industrial use." On page 14 of the PRAP Exhibits, NYSDEC states that "Alternatives 3, 4, 5 and 6 would also all be protective of human health and the environment." This was confirmed at the public meeting on January 27, 2016, when a New York State Department of Health (NYSDOH) representative stated that neither the on-site nor the off-site contamination posed a risk to human health, and chart #12 used at the meeting states that “all exposure pathways are currently incomplete”. Yet NYSDEC proposed Alternative 6, which is by far the most expensive alternative presented in the PRAP, and is not an alternative evaluated in the very comprehensive FS Report. Alternative 6 in the PRAP has a 30-year present worth that is approximately $15MM higher than Alternative 3, an increase of about 135%. With no difference in protectiveness between these remedial alternatives, Alternative 6 is not cost effective and should not be the selected alternative. As discussed extensively in Exhibit A, the POGW SCOs should not be applied to the former Powerex facility.

RESPONSE 3:

As stated in RESPONSE 1 above, the Department is within its statutory and regulatory authority in favoring the preferred alternative over ones which would not result in abatement of all significant threats posed by wastes disposed at the site. Further, the Department disagrees that there would be no additional benefits, especially as related to the abatement of the significant environmental damage associated with the contaminated groundwater and source of contamination in soils. Based on GE’s data all of the DNAPL indicators within the probable and/or potential DNAPL source zone are consistent with residual DNAPL presence in the North Evaporation Pit, Waste Solvent Tank and the West Evaporation Pit areas. Soil with contaminant levels above the POGW SCOs will continue to impact groundwater above applicable standards, resulting in a continuing significant threat due to environmental damage.

COMMENT 4:

The Laboratory Waste Solvent Tanks And Purported Fire Training Area Are Not Primary Source Areas – On page 12 of the PRAP, the Department states that the "primary source areas" are "surrounding the building to the north, west and east." Page 1 of the PRAP Exhibits includes the Laboratory Waste Solvent Tanks and the purported Fire Training Area in a list of "primary areas" and states that the "primary groundwater contamination is associated with the North

Evaporation Pit, Former Waste Solvent Tanks, Purported Fire Training Area, Purported West Evaporation Pit and Former Laboratory Waste Solvent Tanks surrounding the building on the north, west and east side." The lack of differentiation was also reinforced during the public meeting on January 27, 2016. Although the two Laboratory Waste Solvent Tanks and the purported Fire Training Area are source areas, they are not primary source areas at the facility, as described in the Remedial Investigation (RI) Report, the FS Report and numerous other documents. The primary source areas are the North Evaporation Pit, the Waste Solvent Tank and the purported West Evaporation Pit. It is in these three areas that the concentrations of volatile organic compounds (VOCs) in soil exceed the industrial use SCOs and are sufficiently elevated to indicate the probable presence of dense non-aqueous phase liquid (DNAPL). The concentrations of VOCs in soil at the two Laboratory Waste Solvent Tanks and the purported Fire Training Area are much lower and do not exceed the industrial use SCOs and do not even indicate the potential presence of DNAPL.

The concentrations of VOCs in groundwater within the overburden also demonstrate that the two Laboratory Waste Solvent Tanks and the purported Fire Training Area are not primary source areas, as shown by Figures 7-5, 7-6 and 7-7 from the RI Report, which present isoconcentration contour maps for trichloroethene (TCE), cis-1,2-dichloroethene (cDCE) and vinyl chloride (VC), respectively. These three figures are included in Exhibit B. There is one overburden monitoring well (OBG-7S) in the purported Fire Training Area, and that well was sampled on one occasion in September 1997. At that time, TCE, cDCE and VC were reported at 4,500, 1,500 and 180 micrograms per liter (ug/L), respectively, much lower than the current concentrations in overburden groundwater at the North Evaporation Pit, Waste Solvent Tank and purported West Evaporation Pit, and not sufficiently elevated to indicate even the potential presence of DNAPL.

Similarly, the overburden groundwater concentrations are much lower at the two Laboratory Waste Solvent Tanks than at the North Evaporation Pit, Waste Solvent Tank and purported West Evaporation Pit. Monitoring wells DGC-14S and DGC-15S are located at the northern and southern Laboratory Waste Solvent Tanks, respectively, and are sampled routinely. The maximum overburden groundwater concentrations in these two wells during the most recent sampling event were 2,500, 930 and 13 (estimated) ug/L for TCE, cDCE and VC, respectively. Once again, these concentrations in overburden groundwater are much lower than at the North Evaporation Pit, Waste Solvent Tank and purported West Evaporation Pit, and are not sufficiently elevated to indicate even the potential presence of DNAPL.

The concentrations of VOCs in the shallow bedrock groundwater (the "S" monitoring interval) also demonstrate that the two Laboratory Waste Solvent Tanks and the purported Fire Training Area are not primary source areas, as shown by Figures 7-19, 7-20 and 7-21 from the RI Report, which present isoconcentration contour maps for TCE, cDCE and VC, respectively. These three figures are included in Exhibit C. There is one shallow bedrock monitoring well (OBG-7B) in the purported Fire Training Area, and that well was sampled on one occasion in September 1997; TCE, cDCE and VC were reported at 21 (estimated), 220 and 3,100 ug/L, respectively. The highly transformed nature of the VOCs in the shallow bedrock at this location is indicative of robust natural attenuation via reductive dechlorination and suggests that the current concentrations are much lower than the concentrations in shallow bedrock groundwater at the North Evaporation Pit and Waste Solvent Tank areas.

The shallow bedrock groundwater concentrations are also much lower at the two Laboratory Waste Solvent Tanks than at the North Evaporation Pit and Waste Solvent Tank. Monitoring wells DGC-14B and DGC-15B are located at the northern and southern Laboratory Waste Solvent Tanks, respectively, and are sampled routinely. The maximum shallow bedrock groundwater concentrations in these two wells during the two sampling events in 2015 were 800, 820 and 190 ug/L for TCE, cDCE and VC, respectively. These concentrations in shallow bedrock groundwater are much lower than at the North Evaporation Pit and Waste Solvent Tank and are not sufficiently elevated to even indicate the potential presence of DNAPL.

It is also worth noting here that the purported West Evaporation Pit, while considered a primary source area in the RI Report, the FS Report and numerous other documents, also has significantly lower VOC concentrations in bedrock groundwater as compared to the North Evaporation Pit or the Waste Solvent Tank areas. Monitoring well DGC-12B is located in the purported West Evaporation Pit area and is routinely sampled. The concentrations in this shallow bedrock monitoring well during the most recent sampling event were 2,800 and 8,400 ug/L for cDCE and VC, respectively, and TCE was not detected.

In summary, statements that do not differentiate the soil and overburden groundwater impacts at the two Laboratory Waste Solvent Tanks and the purported Fire Training Area with the impacts at the North Evaporation Pit, Waste Solvent Tank and purported West Evaporation Pit are misleading and not helpful in developing the most appropriate remedial program for the site. The two Laboratory Waste Solvent Tanks and the purported Fire Training Area are clearly not the primary source areas at the site. In addition, with respect to the bedrock groundwater, the data clearly show that the purported West Evaporation Pit is not as significant as the North Evaporation Pit or Waste Solvent Tank, which are the two source areas at the site where DNAPL is believed to be present in the shallow bedrock and to have migrated downward to the deep bedrock.

RESPONSE 4:

The ROD and Exhibits have been revised to reflect that the primary source areas at the site are the Waste Solvent Tank, North Evaporation Pit, and West Evaporation Pit. The secondary source areas at the site are the Laboratory Waste Solvent Tanks and the purported Fire Training Area. The description in Nature and Extent of Contamination has also been edited to indicate that the soil data is for subsurface soils and not surface soils. However, regardless of these editorial changes the remedy will not be changed. The same requirements and cleanup objectives for a source area must be meet regardless of the area being named a primary or secondary source area.

COMMENT 5:

Alternative 6 Phasing Of Soil Treatment Is Confusing And Inappropriate – On page 11 of the PRAP, and page 11 of the PRAP Exhibits, the Department describes what is characterized as a phased approach to the treatment of soil in Alternative 6 due to the likelihood that treated soil would become re-contaminated by the underlying shallow bedrock groundwater. For this alternative, NYSDEC states that an "interim objective" would be set during the design phase for the first phase of treatment. The PRAP indicates that when remediation of the shallow bedrock

groundwater progresses sufficiently to abate the likelihood of recontamination of the overlying soil, Alternative 6 seems to then mandate a second mobilization and second phase of soil treatment regardless of whether the soil condition would be a threat to public health or the environment. In addition, it should be noted that any soil that exceeds the POGW SCOs but does not exceed the industrial use SCOs during any such phasing will continue to naturally attenuate. That natural attenuation will be augmented by the upward migration of injectants and/or their fermentation products into the overburden, both at/near the shallow bedrock injection locations and more broadly due to the seasonal fluctuations of the water table within the overburden and potentiometric surface in the shallow bedrock (including the presence of upward hydraulic gradients during certain times of the year). Given the natural attenuation that is likely to occur under these circumstances, a decision as to whether to treat soil (whether to the industrial use SCO or the POGW SCO) should be made following implementation of the shallow bedrock groundwater remedy rather than establishing the POGW standard at this time.

RESPONSE 5:

The goal of this remedy is to achieve the POGW SCOs in the source areas. During design the determination will be made as to the appropriate levels the soil must be treated to in order to prevent the soils from being a continuing source for the groundwater, while the groundwater is also being remediated. It is anticipated that an appropriate interim cleanup level will be below the industrial use SCOs but may be above the POGW SCOs. The Department understands that natural attenuation will also be taking place and this should be accounted for in selection of the interim cleanup level. The Department needs to ensure that the soils concentrations will be able to reach the POGW SCOs within a reasonable timeframe. The remedy was written as a phased approach because at this time there is not enough information to determine how much recontamination may occur as a result of the fluctuating contaminated groundwater table. The objective of the phased approach will allow flexibility in the design for the treatment of the soil with respect to the treatment of the groundwater. However, if GE can otherwise account for the potential for recontamination during design of the soil remedy (for example, by hydraulic control of the groundwater elevations so that recontamination is precluded), the phased approach described in the alternative may be omitted. The overall design of the soil remedy will need to address the potential for recontamination and the phased approach set forth in the ROD is the means by which this concept is accounted for when describing the alternative.

COMMENT 6:

Alternative 6 Is Not The Only Alternative That Actively Addresses The Source Of Groundwater Contamination In Soil – On page 16 of the PRAP Exhibits, the Department states that "Alternative 6 is the only alternative that actively addresses the source of groundwater contamination in soils." This statement is technically inaccurate. In addition, Alternatives 3, 4 and 5 all involve the treatment of shallow bedrock groundwater using EISB. This will result in the upward migration of injectants and/or their fermentation products into the overburden, both at/near the shallow bedrock injection locations and more broadly due to the seasonal fluctuations of the water table within the overburden and potentiometric surface in the shallow bedrock (including the presence of upward hydraulic gradients during certain times of the year). Thus, Alternatives 3, 4 and 5 include active (whether direct and/or indirect) treatment of soil and

overburden groundwater in addition to the natural attenuation which is demonstrated to be occurring at the site. Further, indirect treatment of the soil and overburden groundwater by EISB in the shallow bedrock could be promoted during remedy design.

RESPONSE 6:

The full quote from the Exhibit is "Alternative 6 is the most expensive alternative due to the relatively large volume/area of soils to be treated but this is the only alternative that actively addresses the source of groundwater contamination in soils." Alternative 6 is the only alternative that addresses the source of groundwater contamination posed by soils above the POGW SCOs. Alternatives 3 and 5 address contaminated groundwater but only address soil contaminated above the industrial use SCOs and is not fully compliant with Part 375. Alternative 4 addresses contaminated groundwater but leaves contaminated soils above the POGW SCOs in place with an asphalt cap allowing the soils to continue being a source of contamination for the groundwater. Therefore, Alternative 6 is the only alternative that actively addresses the source of groundwater contamination in soil where there are concentrations of contaminants in the soil above the POGW SCOs.

COMMENT 7:

The Effectiveness Of Injections In The Deep Bedrock Upgradient Of The North Evaporation Pit And Waste Solvent Tank Is Questionable – Alternative 6 proposed by NYSDEC includes injections into the deep bedrock (specifically, the D3 monitoring interval) upgradient of the North Evaporation Pit and Waste Solvent Tank. Although this was evaluated in the FS as a component of Alternative D3GW-3B, the effectiveness of upgradient injections to treat VOCs in the deep bedrock beneath the North Evaporation Pit and Waste Solvent Tank is questionable. As discussed in the FS Report, a portion of the carbon donor injected up-gradient of these source areas is expected to be consumed non-productively by sulfate reducing bacteria and therefore the upgradient injections may be wasteful, ineffective and counterproductive, as more fully described below.

As discussed in the FS Report, drilling into the deep bedrock upgradient of the two dominant source areas carries risk, as downward flow could be induced through the boreholes and cause shallow bedrock groundwater with elevated VOC concentrations to migrate during drilling from the source areas (the closest being the North Evaporation Pit, the most significant source area at the facility), to the borehole locations, down the boreholes and into the deep bedrock groundwater in areas that are not currently impacted. To mitigate this risk, the use of angled deep bedrock injection wells were included in Alternative D3GW-3B, allowing the drilling to start farther away from the North Evaporation Pit but end approximately 80 to 140 feet closer. In addition, the use of telescoping isolation casings was also included during drilling and well installation. Nevertheless, these drilling methods serve only as methods to mitigate the unnecessary risk associated with drilling into the deep bedrock source areas.

RESPONSE 7:

It is the Department's view that directly addressing the deep bedrock by injecting electron donor(s) and an iron source into the D3 zone to promote reductive dechlorination is the best and most appropriate alternative to remediate the deep bedrock groundwater in a reasonable time frame and reduce the contamination in groundwater leaving the site. The design phase will determine the angle of the injection well(s) to best deliver the injection as close to the source area and minimize the amount of injection consumed before reaching the targeted source area. With regard to any concerns related to drilling in the D3 zone on the Powerex property near the areas of upper zone contamination, it is the position of the Department that appropriate and proper drilling techniques can be used to access the deeper D3 unit in a manner which avoids DNAPL migration between hydrostratigraphic units. It is also worth noting that GE has installed numerous wells through contaminated zones at other GE sites using the telescoping well installation method and have not had issues with migrating contamination. The Department's understanding of the situation where past drilling techniques allowed cross contamination between hydrostratigraphic units is that an open borehole between units was allowed by GE's contractor to remain open for a period of time; such drilling techniques will not be allowed for this work.

Also, in GE's Exhibit A it is stated that "the top-down treatment approach included in Alternative GW-4 recommended in the FS Report would ultimately reach and benefit the deep bedrock." The Department selected the proposed remedy to directly address the D3 zone instead of waiting to see when or if the treatment will reach the source area in the D3 zone on site. The Department's objective is to address the source in the D3 zone which EPA's ROD is also dependent on.

COMMENT 8:

The ROD Should Preserve Flexibility Regarding The Injectants Used For The Remediation – On page 11 of the PRAP, and page 11 of the PRAP Exhibits, the Department states that emulsified vegetable oil (EVO) would be used for direct treatment of soil. Page 12 of the PRAP, and page 11 of the PRAP Exhibits, state that "a lactate and EVO solution" would be injected to treat shallow groundwater. While it is likely that some combination of lactate and EVO will be used, the selection of the injectant(s) should be left to the design stage.

Page 12 of the PRAP, and page 11 of the PRAP Exhibits, state that enhanced degradation in the deep bedrock (the "D3" monitoring interval) would involve injection of "electron donor(s) and an iron source." As stated above, the selection of the injectant(s) should be left to the design stage.

RESPONSE 8:

The Department understands that flexibility is needed during the design. However, the current ongoing EISB Pilot Test in the North Evaporation Pit uses lactate and EVO therefore both were presented in the ROD to illustrate the treatment alternatives. If modifications to the design are

needed in the future the Department will address them at that point based on a review current data and consideration of any improvements in technology.

COMMENT 9:

The ROD Should Explicitly State That Operation Of The Existing Dual-Phase Extraction And Treatment System Will Be Terminated – NYSDEC described its proposed remedy in the PRAP, and that description did not include continued operation of the Shallow Bedrock Groundwater Interim Action (SBGWIA) system. As discussed in the FS Report, continued operation of the dual-phase extraction and treatment system is not compatible with treatment of the shallow bedrock groundwater via EISB, which is the approach in Alternative GW-4 recommended in the FS Report and in Alternative 6 proposed in the PRAP. The ROD should clearly state that operation of the SBGWIA system will be terminated before injections begin in the shallow bedrock unit (the "S" monitoring zone).

RESPONSE 9:

The continued operation of the existing dual-phase extraction and treatment system will be determined during design. The proposed design calls for remediation of the shallow bedrock groundwater using EISB in the primary source areas on site. The existing dual-phase extraction and treatment system has an extraction well (PW-11) off-site in the northwest portion of the plume. PW-11 is showing levels of 840ppb and 150ppb of cis-DCE and VC, respectively. This extraction well is important to controlling the offsite plume to the northwest of the site. The overall design of the EISB remediation and modifications to the current dual-phase extraction and treatment system must include maintaining control of the shallow bedrock plume that extends off site.

COMMENT 10:

The ROD Should Allow Operation Of The Surface Water Interim Action Enhancement (SWIAE) System To Be Discontinued Based On Performance Monitoring Results Obtained During Remedy Implementation – For surface water, Alternatives 3, 4 and 5 in the PRAP and Alternative 6 proposed in the PRAP included continued operation of the SWIAE system. That is consistent with Alternative SW-3 evaluated in the FS Report. However, the FS Report recommended a phased approach, beginning with Alternative SW-3 and transitioning to Alternative SW-2 (which did not include continued operation of the SWIAE system) when the results of the performance monitoring performed after shutdown of the SBGWIA system indicate that the storm water leading to the outfall no longer requires treatment to meet applicable limits. Discontinuing operation of the SWIAE system at this point is appropriate, and is also consistent with the Department's green remediation goals, as reflected in the DER-31 guidance. Further, a phased approach also seems consistent with the objective of continued operation of the SWIAE system, as stated on page 12 of the PRAP, which is "to address any potential recharge of shallow water into the storm sewers." When the results of performance monitoring show that the water in the storm sewer no longer needs treatment to meet applicable limits, operation of the SWIAE system should be discontinued.

RESPONSE 10:

The Department agrees that the SWIAE system should be able to be discontinued based on performance monitoring during remedy implementation. The remedy description for the Surface Water section in the ROD has been modified to "Continue operation, maintenance and monitoring of the existing Surface Water Interim Action Enhancement to address any potential recharge of the shallow water into the storm sewers until monitoring performed after modification to the SBGWIA system and commencement of the EISB indicate that the storm water leading to the outfall no longer requires treatment to meet applicable limits. Once the SWIAE system is discontinued sampling of the offsite surface water will continue as part of the Site Management Plan."

COMMENT 11:

Sampling Of The Soil In The "Un-Used Northeastern Portion" Of The Former Powerex Facility Is Not Warranted And Should Not Be Included In The ROD – On page 10 of the PRAP, in its description of the proposed remedy, NYSDEC includes "soil sampling from the un-used northeastern portion of the site in order to confirm that soil quality meets applicable SCOs." As clarified by NYSDEC, this requirement was included at the request of the NYSDOH and the area of interest is readily observable on satellite images (such as on Google Earth) because it is devoid of overgrowth. That area is associated with the two irrigation fields (designated A and B) that were installed as part of the SBGWIA system in the late 1990s. Operation of the SBGWIA system began in May 2001, but the irrigation fields were only used for a brief period in August 2003; the total volume of water discharged to the irrigation fields from the treatment system was only 1,400 gallons. The irrigation fields have not been used since August 2003, but they are mowed annually along with several other areas of the property, and it is for this reason that this area is readily observable on satellite images. There is no technical basis to suggest a reopening of remedial investigation activities that comprehensively evaluated the areal and vertical extent of contamination detected at the site; nor does NYSDOH offer any technical basis for such activity. The proposed soil sampling in the "un-used northeastern portion" of the property is not warranted and should not be included in the ROD.

RESPONSE 11:

Based on the monthly progress reports submitted by GE treated groundwater was discharged to each irrigation field. The volumes discharged to Field A and Field B were 600 and 800 gallons respectively. A representative number of soil samples are required to ensure that the soil in these areas do not contain site contaminants above the applicable SCOs.

COMMENT 12:

The Existing Data Do Not Support The Need To Assess The Potential For Vapor Intrusion (VI) In Buildings West Of The Former Powerex Facility Is Not Warranted – On page 12 of the PRAP, in its description of the proposed remedy, NYSDEC states that an "evaluation of the potential for soil vapor intrusion for any offsite buildings that may be impacted by the contaminated shallow groundwater to the west of the site will be undertaken during the design

phase". Reference to this VI evaluation is also included on page 8 of the PRAP, and on page 12 of the PRAP Exhibits. The data related to conditions associated with the former Powerex facility do not support the need for a VI assessment for buildings on commercial properties located to the immediate west of the facility.

The extent of VOCs in the overburden groundwater at the former Powerex facility has been established as being limited to within the property boundary, as clearly shown on Figure 4 of the PRAP. The areas of overburden groundwater contamination are located at and near the source areas, and do not extend to the facility boundary in any direction, including to the west.

Figure 5 of the PRAP (which is based on Figure 5-5 of the FS Report) shows the extent of VOCs in the shallow bedrock groundwater. As shown on that figure, the area with VOC concentrations in the shallow bedrock above the groundwater standards extends to the northwest of the former Powerex facility, but not to the buildings on the adjacent property(ies). An understanding of the VOC concentrations in the shallow bedrock is provided by Figures 7-19, 7-20 and 7-21 of the RI Report, which are included in Exhibit C and present isoconcentration contour maps for TCE, cDCE and VC, respectively. There are three shallow bedrock monitoring wells located in the northwestern corner of the facility (B-9SR, B-17SR and B-24SR). These three wells are sampled regularly. The concentration trends for TCE, cDCE and VC are shown in Exhibit D, and reductions have been observed in all three wells. Most recently, TCE was not detected in 2015 in any of these three wells; the concentrations of cDCE were all below the groundwater standard, and the concentrations of VC were only slightly above the groundwater standard.

RESPONSE 12:

As stated in the PRAP and now this ROD an evaluation of the potential for soil vapor intrusion will be undertaken during the design phase. The technical basis for this decision was due to the lack of SVI information in the western area of the site. The NYSDOH will take into consideration the information presented in the comment and in consultation with the DEC and EPA evaluate the need to conduct an additional SVI evaluation.

COMMENT 13:

The Cost Estimates Provided By NYSDEC For Alternative 6 Are Inconsistent – As summarized on page 10 of the PRAP, the cost estimate developed by NYSDEC for its recommended remedy (i.e., Alternative 6) is approximately $23.4MM on a 30-year present worth basis, with approximately $13.4MM in capital and an average of $801K per year in annual operation, maintenance and monitoring (OM&M). The costs presented for Alternative 6 on the table in Exhibit C of the PRAP appear to be the same as those presented in the PRAP.

However, NYSDEC also provides costs for Alternative 6 on page 12 of the PRAP Exhibits, and these costs are not the same as included elsewhere in the PRAP. In Exhibit B of the PRAP, the recommended remedy has a 30-year present worth of approximately $26.1MM, or $2.7MM more than presented on page 10 of the PRAP and on the table in Exhibit C of the PRAP. The capital and annual OM&M costs of Alternative 6 are stated in Exhibit B to be approximately

$14.9MM and $893K, respectively, which are also significantly higher than presented on page 10 of the PRAP and on the table in Exhibit C.

RESPONSE 13:

The ROD has been revised to reflect the correct costs. The present worth for Alternative 6 is $23,422,000, the capital cost is $13,479,000 and the annual cost is $796,000. The corrected costs were used in the public meeting presentation and also provided to GE before the public meeting. These corrections had no impact on the remedy selection.

COMMENT 14:

Installation Of A Vegetated Soil Cover In Areas Where Soil Exceeds The Industrial Use SCOs Should Only Be Required If The Concentration Of VOCs In Surface Soil Exceeds Those SCOs –The soil with probable DNAPL is completely within the soil exceeding the industrial use SCOs. During any soil treatment using EISB, a vegetated soil cover should only be installed if the existing surface soil (top 12 inches), which is already vegetated, contains VOCs at concentrations in excess of the industrial use SCOs. Surface soil was not sampled during the RI, so such sampling would need to be performed during the pre-design investigation to obtain the data needed to demonstrate if and where installation of a vegetated soil cover is needed during soil treatment phase. Other than repair of damage caused by the equipment (e.g., ruts), site restoration should not be required.

RESPONSE 14:

Historic data shows soils in the 0-2ft range with concentrations above the Industrial Use SCOs in the Waste Solvent Tank and North Evaporation Pit areas. During any soil treatment using EISB in the Waste Solvent Tank and North Evaporation Pit areas a vegetated soil cover should be installed to prohibit completing any exposure pathways. During design surface soil data should be collected to ensure that soil covers are installed at all areas on the site where surface soil, defined as 0-6 inches below vegetative cover, exceeds the industrial use SCOs. A soil sampling effort may be required during design to delineate surface soil exceeding the SCOs, regardless of whether or not these same areas are delineated for soil remediation to the groundwater protection SCO.

COMMENT 15:

Solvents Were Not Disposed In Evaporation Pits From 1952 To 1970 – On page 3 of the PRAP, the Department states that "[w]aste industrial solvents were disposed of in one or two unlined evaporation pits" and incorrectly states that "[t]his disposal took place from approximately 1952 to 1970." This was also stated in the charts used during the public meeting on January 27, 2016. As discussed in the RI and FS Reports, the North Evaporation Pit was used from 1962 or 1963 until 1966 or 1967 when the Waste Solvent Tank was installed. An aerial photograph for June 1963 does not show the North Evaporation Pit, but the pit is readily observed on subsequent aerial photographs. This suggests that use of the North Evaporation Pit did not actually begin until late 1963. The existence of an earlier evaporation pit to the west of

the plant building was never confirmed, despite significant investigative activities. Moreover, neither the aerial photograph for July 1954 nor the aerial photograph from June 1963 show an evaporation pit to the west of the plant building. This pit has therefore been referred to as the purported West Evaporation Pit. See the RI Report and/or FS Report for additional information.

RESPONSE 15:

The ROD has been revised to reflect that the North Evaporation Pit was used from 1962-1966 or 1967 and the Waste Solvent Tank was used from 1966 or 1967 until 1988.

From Phase III Investigation Report from 1988. “Additional information obtained as part of the Phase III interviews suggests that the pit was utilized from 1962 or 1963 to 1966 or 1967 and not from the 1950s to 1965 as was previously reported. Employee interviews revealed that a second evaporation pit that pre-dated the pit north of the fence (North Evaporation Pit) existed in the open field area west of the manufacturing building.”

COMMENT 16:

The Shallow Bedrock Is Not "Dewatered Locally" At The Former Powerex Facility – On page 4 of the PRAP, after discussing groundwater flow in the overburden and before discussing groundwater flow in the deep bedrock, NYSDEC states that the "shallow zones can become dewatered locally, indicating that vertical fracturing extends through the underlying zones." While true for some areas (e.g., within the Cayuga County Groundwater Contamination Superfund Site), this statement is not correct and is therefore misleading for the former Powerex facility, where the only local dewatering that occurs in the shallow bedrock is due to operation of the dual-phase extraction system.

RESPONSE 16:

In Section 2.2.2 of the Revised FS Report dated August 29, 2014 is states that “The shallow bedrock hydrogeologic unit appears to discharge locally to streams, such as Crane Brook located east, northwest and north of the facility where bedrock is exposed in the stream bed. Shallow bedrock groundwater also appears to discharge to the unnamed surface water stream located northwest of the facility, at least during periods of higher water levels. Some groundwater within the shallow bedrock hydrogeologic unit appears to flow downward into the underlying intermediate bedrock hydrogeologic unit in response to the large hydraulic head differences which often occur between the shallow and deep bedrock hydrogeologic units. Although the vertical permeability of the intermediate bedrock unit is relatively low, as documented in the Phase IB investigation and IRI reports, it is not impermeable and some downward leakage certainly occurs in response to the downward gradients. Additionally, some natural vertical conduits appear to exist which appear to “link” the shallow bedrock hydrogeologic unit to the deep bedrock hydrogeologic unit and short-circuit the flow system. Shallow bedrock groundwater at and near these features may flow toward these natural vertical conduits and then flow downward into the underlying deep bedrock system. In addition, the extraction wells associated with the SBGWIA system also act as local discharge zones for the shallow bedrock hydrogeologic unit at and near the facility.” The area to the northwest of the site which has

contaminated shallow groundwater is considered part of the GE Powerex site and not part of the Cayuga County Groundwater Contamination Superfund Site. Therefore, this language is appropriate and will remain as part of the ROD.

COMMENT 17:

There Is No Evidence That Contaminated Groundwater Still Has The Potential To Infiltrate Drainage Ditches – On page 4 of the PRAP, the Department states that "[d]uring periods of high groundwater, contaminated groundwater from the site has the potential to infiltrate the drainage ditches and move off site". Although this may have been the case many years ago, when a drainage ditch extended in an east-west direction along the north side of the access road between the North Evaporation Pit and Waste Solvent Tank, it is no longer accurate. That drainage ditch was eliminated during the Interim Remedial Measure (IRM) that GE implemented in late 1994. Since that time, storm water has since been conveyed through that area in a high-density polyethylene (HDPE) pipe designed to prevent the infiltration of impacted overburden groundwater.

RESPONSE 17:

VOCs in the stream result from shallow bedrock groundwater with VOCs discharging upward to the stream located just beyond the facility to the northwest during periods when groundwater elevations in the shallow bedrock unit are relatively high.

The sentence will be revised to read “The site contains surface drainage features that carry storm water away from the site after passing through an air sparging system in the last catch basin. During periods of high groundwater, contaminated shallow groundwater from the site discharges upward to the stream located just beyond the facility fence.

COMMENT 18:

The SWIAE System Began Operation In January 1997 – Page 7 of the PRAP states that "[t]he Surface Water Interim Action Enhancement system began operation in early 1996." Operation of the SWIAE system was actually initiated in January 1997.

RESPONSE 18:

The ROD has been revised to reflect this change.

COMMENT 19:

The Waste Solvent Tank Had Three Compartments, But Was A Single Tank – Page 7 of the PRAP and pages 1 and 5 of the PRAP Exhibits refer to the "Former Waste Solvent Tanks." Page 7 of the PRAP states that the "underground storage tanks were also removed from the Former Waste Solvent Tanks area." The so-called Waste Solvent Tank was a single concrete underground tank with three compartments. In late 1988, the Waste Solvent Tank was closed in

place by Powerex in accordance with a NYSDEC-approved Closure Plan. As stated in the PRAP, the tank was physically removed by GE during construction of the SBGWIA system in 1997.

RESPONSE 19:

The ROD has been revised to reflect this change.

COMMENT 20:

The Reference To "OU 01" Should Be Eliminated – The only reference to "OU 01" in the PRAP occurs on page 7. As described by NYSDEC, every site has one operable unit ("OU 01"), for administrative reasons, until additional operable units are defined, and the Department has not defined any additional operable units for the former Powerex facility. Thus, the reference to "OU 01" could be confusing and should be eliminated in the ROD.

RESPONSE 20:

OU 01 is part of the Department's tracking mechanism and used for administrative purposes. OU 01 is for the entire site and will remain as part of the ROD.

COMMENT 21:

Impacted Overburden Groundwater Does Not Extend Off-Site – Page 8 of the PRAP incorrectly states, presumably due to a typographical error, that "overburden concentrations decrease rapidly with increasing distance from the primary source areas and migrated offsite". Impacted overburden groundwater does not reach nor extend beyond the facility boundary in any direction, as discussed elsewhere in these comments and shown in the figures included in Exhibit B.

RESPONSE 21:

This was a typographical error. The contaminated overburden groundwater does not migrate offsite. The sentence has been revised.

COMMENT 22:

The Migration Of cDCE And VC To The Northwest Is In The Shallow Bedrock Groundwater, Not The Overburden Groundwater – Page 8 of the PRAP states that cDCE and VC "have migrated offsite in the shallow groundwater to the northwest of the facility and are above the NYSDEC Class GW [sic] groundwater standard." While it is true that the extent of cDCE and VC in the shallow bedrock groundwater does include an area northwest of the facility, this statement is misleading in that the extent of impacted groundwater in the overburden (i.e., the shallowest groundwater) does not extend to or beyond the facility boundary in any direction, including to the northwest. Moreover, as discussed elsewhere in these comments, the concentrations of cDCE and VC in the shallow bedrock groundwater in the northwest corner of

the facility have declined; the concentrations of cDCE are now below the groundwater standard and the concentrations of VC are only slightly above the groundwater standard.

RESPONSE 22:

The discussion in the ROD has been revised to read as follows:

The overburden concentrations decrease rapidly with increasing distance from the primary source areas and have not migrated offsite. The overburden groundwater is greatly influenced by seasonal fluctuations with ranges exceeding 11 feet in locations. The shallow groundwater had detections of TCE, cis-1,2-DCE and VC at 840ppm, 340ppm and 100ppm respectively in the primary source areas. TCE concentrations decreased downgradient from the source areas and it has not been detected above NYSDEC Class GW groundwater standard of 5 ppb in shallow groundwater offsite in recent years. However, cis-1,2-DCE and VC have migrated offsite in the shallow groundwater to the northwest of the facility and are above the NYSDEC Class GW groundwater standard 5ppb and 2ppb respectively.

The Department would like to include the most recent groundwater data from November 2015. Monitoring well B28S has detections of cis-1,2-DCE and VC of 28ppb and 5 ppb, respectively; B37S had detections of cis-1,2-DCE and VC of 9.4ppb and 2ppb, respectively and the extraction well for the SBGWIA system had detections of cis-1,2-DCE and VC of 840ppb and 150ppb.

COMMENT 23:

The Standards, Criteria And Guidance Values (SCGs) Provided In The PRAP For Surface Water Are Incorrect – On page 8 of the PRAP, an in the table on page 6 of the PRAP Exhibits, the SCGs for TCE, cDCE and VC in surface water are listed as 5, 5 and 2 ug/L, respectively. As discussed in the FS Report, the outfall of the storm sewer is to a Class C stream, for which the standard for TCE is 40 ppb. Furthermore, there are no Class C standards for cDCE or VC. It is also worth noting that the discharge limits set by NYSDEC for the storm sewer outfall (i.e., effluent from the SWIAE system) are 10 ug/L for TCE, 10 ug/L for cDCE and 10 ug/L for VC.

In addition, the table on page 6 of the PRAP Exhibits is only based on 12 surface water samples. As presented the FS Report, far more than 12 samples have been collected. The FS Report describes the results of 42 samples collected from the stream after the comprehensive sampling event in June 2002, when 11 surface water samples were collected. [Note that the data for the June 2002 event were presented on chart #9 used at the public meeting on January 27, 2016, and none of those data exceeded the Class C standard of 40 ug/L for TCE.] GE is unsure which surface water samples NYSDEC used to prepare the table in the RPAP, but, based on the concentration ranges it is suspected that the results of older samples were used, possibly from before implementation of the surface water IRMs. If that is indeed the case, then the table presents information that is no longer representative.

Based on the incorrect surface water SCGs, the frequency of exceeding the SCGs provided in the table on page 6 of the PRAP Exhibits are also all likely to be erroneous. For example, as there is no Class C standard for cDCE or VC, the frequencies of exceeding the SCGs cannot be 10 out of

12 (10/12) and one out of 12 (1/12), respectively. Likewise, the frequency of exceeding the Class C standard of 40 ug/L for TCE is likely not 11 out of 12 (11/12) as reported in the table.

As discussed in the FS Report, 42 surface water samples had been collected from the stream since the June 2002 sampling event. TCE was detected above the Class C standard of 40 ug/L in six of those samples, with a maximum concentration of 89 ug/L. There is no Class C standard for cDCE or VC, but the maximum concentrations of these VOCs in the 42 samples were 46.2 and 7.3 ug/L, respectively.

RESPONSE 23:

The Department used the Ambient Water Quality Standards and Guidance Values found in TOGs 1.1.1 to determine the SCG for surface water. According to Table 1 of TOGs 1.1.1 Water Classes A, A-S, AA and AA-S for Type H(WS) for the Protection For Sources of Drinking Water (surface water) the standard value is 5ug/l for cis-1,2-DCE and 5ug/l for TCE. Using same Table the Guidance Value is .3ppb for Water Classes A, A-S, AA and AA-S for Type H(WS) for the Protection For Sources of Drinking Water (surface water) and 2ppb for Water Classes GA and Type H(WS).

For the Cayuga Groundwater Contamination Site EPA used the NYS Surface Water Quality Standards and Guidance Values for Human Water Source. As a result Table 5 of the PRAP will be revised to indicate that the SCG for vinyl chloride is .3ppb instead of 2ppb. Since the EPA site is closely related to the Former Powerex site the screening criteria will be the same for both sites.

The data in the PRAP was historical data onsite prior to the SWIAE system. The discussion following the table indicated that the surface water leaving the site has been non-detect since the system was operating. The Department went back to compare data against the new criteria. Since 2002 there were only two surface water locations that have been continuously sampled, SW-Q and SW-N. For determining the frequency of exceedances for VC, data indicating an estimated values were considered an exceedance. The offsite surface water contamination is related to the shallow groundwater discharging to the unnamed stream and not surface water leaving the site.

Detected Constituents	Concentration Range Detected (ppb)	SCG[b] (ppb)	Frequency Exceeding SCG
SW-Q			
Cis-1,2-DCE	ND - 11	5	8/49
TCE	ND - 13	5	12/49
VC	ND – 1.7	.3	5/49 (includes estimated values)
SW-N			
Detected Constituents	Concentration Range Detected (ppb)	SCG[b] (ppb)	Frequency Exceeding SCG
Cis-1,2-DCE	ND - 46.2	5	16/46
TCE	ND - 89	5	18/46
VC	ND - 7.3	.3	13/46 (includes estimated values)

b-SCG: Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1) and 6 NYCRR Part 703: Surface Water and Groundwater Quality Standards.

COMMENT 24:

There Is Only One Purported Fire Training Area – Page 1 of the PRAP Exhibits refers to "the Fire Training Areas." As discussed in the RI and FS Reports, only one such area is reported to have existed, located to the north of the northeast corner of the plant building. However, based on the concentrations of VOCs in soil, overburden groundwater and shallow bedrock groundwater in that area of the facility, it has been consistently referred to as the purported Fire Training Area.

RESPONSE 24:

In the sentence which has since been revised in the ROD the Department was not saying there were more than one Fire Training Area. Area was the last word in a list of areas and was therefore pluralized instead of saying area after each specific area.

COMMENT 25:

There Is No Evidence That DNAPL Has Migrated Off-Site In The Deep Bedrock Toward Union Springs And Cayuga Lake – Page 1 of the PRAP Exhibits states that "DNAPL has migrated from the site in the deep bedrock to the south toward Union Springs and Cayuga Lake." There is no evidence to support this statement. In fact, none of the concentrations of TCE in all of the monitoring wells installed south of West Genesee Street are indicative of DNAPL. Further, the dominant VOC in these wells is cDCE, not TCE as would be expected if DNAPL had migrated off-site to the south. It is worth noting that a question was raised during the public meeting on January 27, 2016 and an NYSDEC employee clarified that the DNAPL was on-site and that the constituents in the off-site plume to the south were dissolved.

RESPONSE 25:

The Exhibit has been revised in the ROD to indicate that constituents from the DNAPL have migrated from the site in the deep bedrock to the south toward Union Springs and Cayuga Lake.

COMMENT 26:

The Industrial Use SCOs Apply To The Site, Not The POGW SCOs – Exhibit A sets out in more detail the reasons why the industrial use SCOS apply and the POGW SCOs are not applicable to this site.

Remedial decisions must be made “through the application of scientific and engineering judgment”, and at this industrial site, in an industrial zone, with a comprehensive groundwater remedial program both on-site and off-site, with public water lines installed throughout the area, with a mandatory institutional and engineering control program, with a robust deep groundwater treatment program at the southern perimeter of the site, and with off-site conditions generally subjected to a monitored natural attenuation program, the application of an extraordinarily expensive POGW SCO is not required. The applicable, relevant and appropriate SCO is the

industrial use SCO; an SCO that has routinely and consistently been applied at other industrial sites.

It is a regulatory requirement that the selection of applicable standards in remedy decision making must be based upon the "consistent application" of SCGs, and such consistency is also a general requirement reflected in judicial decisions addressing administrative action. Case law makes clear that "'[a] decision of an administrative agency which neither adheres to its own prior precedent nor indicates its reasons for reaching a different result on essentially the same facts is arbitrary and capricious." Tall Trees Const. Corp. v. Zoning Bd. of Appeals of Town of Huntington, 97 N.Y.2d 86, 93, 761 N.E.2d 565, 570 (NY 2001). For example, a Town zoning board of appeals, which decided an application for a variance or special exception to a zoning ordinance off-street parking requirement contrary to several, earlier, factually similar determinations, acted arbitrarily and capriciously and was required to explain why it no longer followed prior determinations. Knight v. Amelkin, 68 N.Y.2d 975, 503 N.E.2d 106 (NY 1986). And courts routinely find that absent an explanation, failure of an administrative agency to conform its decision to agency precedent, on similar facts, requires reversal of such decision on the law as arbitrary and capricious, even though there is in the record substantial evidence to support the decision. Matter of Charles A. Field Delivery Serv., Inc., 66 N.Y.2d 516, 488 N.E.2d 1223 (NY 1985).

At dozens and dozens of industrial sites (approximately 100) across New York, the Department has selected remedial programs with the industrial use SCOs as the applicable soil cleanup standards; with only a handful of cases (approximately six) identified by the Department where the Department selected the POGW SCO. The six cases are wholly distinguishable from site conditions at the industrial zoned, industrial use former Powerex facility. There is no discussion in the PRAP as to why industrial use SCOs are not protective, nor why the industrial use SCOs are not applicable or appropriate, nor any discussion of why this site is treated differently than most of the industrial sites across the state.

Here, the applicable SCO should be the industrial use SCO. If, in the future, the Department determines, based upon an evaluation of the effectiveness and protectiveness of the remedial program, that the industrial SCO remediation is not protective, the Department can seek to amend the remedy to impose a more stringent SCO. But the imposition, up front, of the POGW SCO is not necessary for the protection of public health or the environment with regard to the comprehensive remedial program being selected for the site.

Exhibits A, B, C and D are included in the Correspondence Section of Appendix B.

RESPONSE 26:

See RESPONSE 1.

Bruce R. Natale, PE, Environmental Engineer, Cayuga County Dept. P&EC submitted a letter dated February 29, 2016 which included the following comments:

COMMENT 27:
The ability of the remedy chosen to remove contaminants from the groundwater before it leaves the Powerex site is essential for the success of USEPA's remedy for the Federal Superfund site known as the Cayuga County Groundwater Contamination site. Since these two sites are inextricably linked, it seems logical that they should both be managed and overseen by the USEPA.

RESPONSE 27:

The Department and EPA understand how closely linked these two sites are and will be working together to coordinate the implementation of the remedies selected for the Powerex site and the Cayuga County Groundwater Contamination Site. Following issuance of the ROD, which specifies the selected remedy for the site, the Department expects to enter into negotiations with the noticed potentially responsible party, GE, to perform the remedial design. If GE refuses to sign the Remedial Design/Remedial Action Consent Order with the Department, the site may be transferred to EPA for the cleanup. As stated in the ROD for the Cayuga County Groundwater Contamination Site, "In the event that source control is not successfully implemented pursuant to New York State law, EPA may elect to evaluate additional options at the Powerex Facility pursuant to CERCLA to ensure the effectiveness of the selected remedy."

COMMENT 28:
At the public meeting it was noted that the effectiveness of the PRAP will be reviewed every five years. A monitoring plan to assess the performance and effectiveness of the remedy and the minimum acceptable removal effectiveness should be specified in the PRAP. Furthermore, a contingency remedy that will be implemented if the effectiveness of the proposed remedy is inadequate should be specified in the PRAP to allow for public comment. If the NYS DEC does not want to merge and transfer this site clean-up into the Federal Superfund site now, 2016, perhaps if the "minimum acceptable removal effectiveness" is not achieved by 2020, then the "contingency remedy" should be to merge this site clean-up with the Cayuga County Groundwater Contamination clean-up and transfer the project to USEPA.

RESPONSE 28:

Part of the Site Management Plan will be the monitoring plan that describes the measures for monitoring the performance and effectiveness of the remedy. The monitoring plan is developed during the design phase of the project once decisions are made relative to the location of treatment injections and the exact amount of material to be injected. Based on that information it will be determined at what rate the contaminants should be degrading. This information is necessary to determine expected performance rates. The first five year review will be five years after implementation of the remedy therefore the review will not be until after 2020. EPA will also be receiving this information for their review. If EPA determines that the Department's selected remedy is not controlling the source they can evaluate additional options for the site to ensure effectiveness of their selected remedy.

COMMENT 29:
At the public meeting, the NYS DEC said that GE is currently conducting a pilot study of injecting a lactate-EVO mixture into the intermediate-depth groundwater. The results of that study should be made public before the final remedy is chosen.

RESPONSE 29:

The final report for Phase 4 of the Enhanced In-Situ Bioremediation Pilot Test report has not been submitted by GE. Once it has been submitted and reviewed the document will be sent to the Library to be added to the Document Repository for the site. The Phase 3 Interim Report has been submitted and reviewed by the Department. The report and the comments will be submitted to the Library to be added to the Repository.

COMMENT 30:

The dual phase extraction system at the Powerex site continues to extract and treat a significant amount of contaminant mass, and NYS DEC must not consider releasing GE from its responsibility to continue and enhance this system under the Shallow Bedrock Groundwater Interim Action and the PRAP. The extraction system reduces downward transport and shallow offsite migration of contaminants by reducing downward and lateral hydraulic gradients and through mass removal (nearly four thousand pounds in 2013}. It is noted that extraction wells lose efficiency over time, but no new extraction wells have been added since 2011. Additional new extraction wells and an enhanced continuation of the extraction system, therefore, need to be considered as part of the PRAP.

RESPONSE 30:

The need for the continued operation of the existing dual-phase extraction and treatment system will be determined during design. The proposed design calls for remediation of the shallow bedrock groundwater using EISB in the primary source areas on site. The existing pump and treat system has an extraction well (PW-11) off-site in the northwest portion of the plume. The overall design of the EISB remediation and modification to the current pump and treat system will ensure maintaining control of the shallow bedrock plume that extends off site.

COMMENT 31:

Timeline. At the public meeting, NYS DEC said they did not have an estimate of when the contaminants would be removed from the site using the proposed remedy, but said that it could be many decades. The residents of Cayuga County are getting weary of the lack of progress on the clean-up of this site and we are concerned that the pollution of the water supply serving the Village of Union Springs from the contaminants at this site will continue or even worsen for another generation. We urge NYS DEC to implement the remedy that will most quickly result in real contaminant removal.

RESPONSE 31:

The Department understands the frustrations of the residents. Remediation of VOCs in the complex matrix at the site will take time. However, the Department feels that the selected remedy will reduce the greatest amount of contaminants in the shortest amount of time. It will take more than five years to attain the cleanup levels, but effectiveness reviews will be conducted no less often than once every five years after the completion of construction to ensure that the remedy is, or will be, protective of human health and the environment.

COMMENT 32:

The "west evaporation pit." The exact location of this earliest disposal area has long been debated, so the CCDP&ED analyzed a series of available aerial photographs to determine its location in 1952-1954, and then translate that spot to more recent images. Enclosed please find a brief summary of our analyses, which tracks a 1954 denuded spot at the NW corner of the plant's paved area through time. As shown on the enclosed "GE/Powerex Site: Possible 1954 waste disposal site" attachment, this 1954 denuded spot ends up under the asphalt pavement just NW of the building's footprint, about midway between solvent hotspots found by monitoring wells 9 and 12. Since there was never a good explanation for the solvent hotspot at well 12, the west disposal area being under the asphalt is an alternative, plausible explanation for intense contamination in wells 9 and 12, just as plausible as a leaking waste solvent tank near well 9. In conclusion, it is highly likely that the west disposal area is under the current asphalt, WSW of well 9 and NE of well 12.

Rain shadow and its impact on contaminant movement. An interesting corollary of this observation is that if this former disposal area has been at the edge of and under the pavement (near the NW corner of the building) for over 53 years, the 'rain shadow' caused by this large impervious area (building plus pavement) could have set up a hydraulic gradient from the NW grassy areas open to rainfall/runoff directly through the old contamination towards the dry area under the center of the building. This old contamination could have or may still be moving down and SE with time.

RESPONSE 32:

Well 12, which the Department believes refers to DGC-12S, DGC-12I and DGC-12B, are slightly northwest of the approximated location of the purported West Evaporation Pit and believed to be the explanation for that solvent hotspot. It is conceivable that the actual location of the West Evaporation Pit was to the north and it was larger based on soil data. The Phase III Investigation Report states “PZ-1 is located within the suspected area of the West Evaporation Pit. Well 9, which the Department believes refers to DGC-9S and DGC-9BR, are located in the area of the Waste Solvent Tank. Before the SBGWIA system was installed the shallow groundwater flowed north northwest away from the building. Once the SBGWIA system started the shallow groundwater flow influenced dramatically by the pumping wells. PW-2 and PW-5 are located in the Waste Solvent Tank area and are potentially pulling groundwater from beneath the building. PW-8 and PW-3 are north and in the West Evaporation Pit area, respectively, and

would prevent any of the contamination from moving southeast if the area is influenced by rain shadow.

COMMENT 33:

Re-analysis of solvent contour maps in NYS DEC's 1996 Proposed Interim Action Plan. As briefly discussed after the January 27, 2016 meeting in Auburn, the Planning Department has taken a new look at the solvent contour maps in NYS DEC's 1996 PIAP, but without assuming that there is nothing under the building. This analysis was independent of the aerial photo analysis in item 6 above. This solvent contour analysis focused on the dense-NAPLs and simply draws new lines, connecting the well data points presented in 1996. This new look at the solvent concentration contours indicates the very real possibility that there is a large amount of dense-NAPL solvent under the north and northwest portions of the building. Four solvent/contaminant contour maps are attached, the TCE and DCE maps from 1996 and a new look at each of these maps.

RESPONSE 33:

Several monitoring wells have been installed since the isoconcentration contour maps were developed for the 1996 Proposed Interim Action Plan. The isoconcentration contour maps provided in the Remedial Investigation Report provided more accurate contours based on the additional data. The Department agrees that there may be contamination under the perimeter of the building associated with the Waste Solvent Tank and the Laboratory Waste Solvent Tanks. However, the Department does not agree that the isoconcentration contours from the North Evaporation Pit/Waste Solvent Tank area should converge with the contours from the Laboratory Waste Solvent Tanks based on the source area data and the flow of groundwater.

COMMENT 34:

Building on points 6 and 7 above, there is a notable lack of data regarding contaminants that may be present beneath the building on the GE/Powerex site. The NW paved area and the NW corner of the building appear to be built over the west disposal area, and could therefore be directly over extremely high levels of contaminants. Furthermore, it is well known that floor drains were typically present in most chemical processing plants in the 1950s to the 1970s to facilitate liquid disposal including any spills. The disposal of solvents through floor drains at that time is a distinct possibility. In spite of the clear possibility of solvents being under the building, no soil borings or sub-slab investigations have been conducted beneath the facility's footprint. It seems illogical to move forward on the PRAP, estimated to cost $23.35M, before conducting relatively inexpensive investigations to determine if dense-NAPL is present beneath the building (TCE's specific gravity is 1.47g/ml). If D-NAPL is present under the building, the proposed remedy will fail to be successful in a timely manner and expended funds will be wasted. We strongly urge that the NYSDEC not move forward before gathering the necessary data. The contention that there is no contaminant mass or that contaminants have not migrated beneath the building are without merit in the absence of such sub-slab soil-boring investigations. We believe that borings through the floor, to the bedrock interface, to the Bertie/Cobleskill formations and all the way to

the NAPL-tard are needed and entirely justified. If D-NAPL is found and removable, this will be the remedy that will most quickly result in real environmental clean-up and restoration.

RESPONSE 34:

All historic evidence indicates that waste solvents were not stored in the building. The Phase II Investigation from 1987 indicated that "within the manufacturing building there are no floor drains. An extensive aboveground waste solvent line does exist throughout much of the building. The solvent line is presently connected to underground waste solvent tanks located at the northwest edge of the building. Prior to the installation of the concrete waste solvent tanks, the wastes passed through the aboveground lines within the manufacturing building to the drum storage building."

It is anticipated that the remedial actions will address any contamination that has migrated under the building from the underground storage tanks. As part of the design phase the Department will have monitoring wells around the perimeter of the building to be able to assess if there is an unknown source under the building. During the first five year review, if the data indicates that the concentrations of contaminants next to the building have not shown a declining trend, further investigation will be done inside the building.

COMMENT 35:

Based on my personal notes, twenty years ago, four major concerns were expressed about this site at a February 29, 1996 public meeting. The top four concerns were: 1. The contamination moving NW off of the property, 2. How slow the clean-up was projected to move (4+ years), 3. Is there contamination under the building? And, 4. Is the state sure the contamination is not moving south following the bedrock dip and/or already entered fractured bedrock formations that are under the site? In 1996, the State Health representative was adamant that it was "unnecessary" to test wells to the south, especially out on NYS Route 326.

As we know, the State's 1996 stance was proven wrong by 2001, by which time we had documented over a hundred solvent contaminated wells to the south of the GE/Powerex site, including over a dozen on NYS Route 326. The County now feels that the State's 1996 position that there is no contamination under the building needs to be re-evaluated with actual testing, as detailed above.

RESPONSE 35:

The data has shown that contaminated groundwater has left the site to the south in the D3 zone. The primary source areas have been identified as the North Evaporation Pit and Waste Solvent Tank areas. It is anticipated that the remedial actions will address any contamination that has migrated under the building from the underground storage tanks. As part of the design phase the Department will have monitoring wells around the perimeter of the building to be able to assess if there is an unknown source under the building. Also, during the first five year review, if the data indicates that the concentrations of contaminants next to the building have not shown a declining trend, further investigation will be done inside the building.

Eileen A. O'Connor, P.E., Environmental Health Director, Cayuga County Health Dept. submitted a letter (dated February 19, 2016) which included the following comments:

COMMENT 36:

The ability of the remedy chosen to remove contaminants from the groundwater before it leaves the Powerex site is essential for the success of USEPA's remedy for the Cayuga County Groundwater Contamination site. Since these two sites are inextricably linked, it seems logical that they should both be managed and overseen by the USEPA.

RESPONSE 36:

Please see Response 27.

COMMENT 37:

At the public meeting it was noted that the effectiveness of the PRAP will be reviewed every five years. A monitoring plan to assess the performance and effectiveness of the remedy and the minimum acceptable removal effectiveness should be specified in the PRAP. Furthermore, the contingency remedy that will be implemented if the effectiveness of the proposed remedy is inadequate should be specified in the PRAP to allow for public comment.

RESPONSE 37:

Please see Response 28.

COMMENT 38:

There is a notable lack of data regarding contaminants that may be present beneath the building on the Powerex site. The west storage garage area and west driveway were added to the Powerex facility sometime after abandonment of the west evaporation pit, and could therefore be directly over extremely high levels of contaminants. Furthermore, it is well known that floor drains were typically present in most chemical processing plants in the 1950s to the mid-1980s to facilitate the cleaning of any spills. The disposal of solvents through floor drains at that time is a distinct possibility. In spite of these uncertainties, no soil borings or sub-slab investigations have been conducted beneath the facility's footprint. It seems illogical to move forward on the PRAP, estimated to cost $23.35M, before conducting relatively inexpensive investigations to determine if NAPL is present beneath the building. If NAPL is present at that location, the proposed remedy will fail to be successful in a timely manner and expended funds will be wasted. We strongly urge that the NYSDEC not move forward before gathering the necessary data. The contentions that there is no contaminant mass or that contaminants have not migrated beneath the building are without merit in the absence of such sub-slab soil-boring investigations.

RESPONSE 38:

Please see Response 34.

COMMENT 39:

At the public meeting, the NYSDEC said that GE is currently conducting a pilot study of injecting the lactate and EVO into the intermediate-depth groundwater. The results of that study should be made public before the final remedy is chosen.

RESPONSE 39:

Please see Response 29.

COMMENT 40:

The dual phase extraction system at the Powerex site continues to extract and treat a significant amount of contaminant mass, and DEC must not consider releasing GE from its responsibility to continue and enhance this system under the Shallow Bedrock Groundwater Interim Action and the PRAP. The extraction system reduces downward transport and shallow offsite migration of contaminants by reducing downward and lateral hydraulic gradients and through mass removal (nearly four thousand pounds in 2013). It is noted that extraction wells lose efficiency over time, but no new extraction wells have been added since 2011. Additional new extraction wells and an enhanced continuation of the extraction system, therefore, need to be considered as part of the PRAP.

RESPONSE 40:

Please see Response 30.

COMMENT 41:

At the public meeting, NYSDEC said they did not have an estimate of when the contaminants would be removed from the site using the proposed remedy, but said that it could be many decades. The residents of Cayuga County are getting weary of the lack of progress on the clean-up of this site and we are concerned that the pollution of the water supply serving the Village of Union Springs from the contaminants at this site will continue or even worsen for another generation. We urge NYSDEC to implement the remedy that will most quickly result in real contaminant removal.

RESPONSE 41:

Please see Response 31.

Kathleen D. Cuddy, MPH, Public Health Director, Cayuga County Health Dept. submitted a letter (dated February 19, 2016) on behalf of the Cayuga County Board of Health which included the following comments:

COMMENT 42:

The ability of the remedy chosen to remove contaminants from the groundwater before it leaves the Powerex site is essential for the success of United States Environmental Protection Agency's (USEPA) remedy for the Cayuga County Groundwater Contamination site. Since these two sites are inextricably linked, it seems logical that they should both be managed and overseen by the USEPA.

RESPONSE 42:

Please see Response 27.

COMMENT 43:

At the public meeting it was noted that the effectiveness of the PRAP will be reviewed every five years. A monitoring plan to assess the performance and effectiveness of the remedy and the minimum acceptable removal effectiveness should be specified in the PRAP. Furthermore, the contingency remedy that will be implemented if the effectiveness of the proposed remedy is inadequate should be specified in the PRAP to allow for public comment.

RESPONSE 43:

Please see Response 28.

COMMENT 44:

There is a notable lack of data regarding contaminants that may be present beneath the building on the Powerex site. The west storage garage area and west driveway were added to the Powerex facility sometime after abandonment of the west evaporation pit, and could therefore be directly over extremely high levels of contaminants. Furthermore, it is well known that floor drains were typically present in most chemical processing plants in the 1950s to the mid-1980s to facilitate the cleaning of any spills. The disposal of solvents through floor drains at that time is a distinct possibility. In spite of these uncertainties, no soil borings or sub-slab investigations have been conducted beneath the facility's footprint. It seems illogical to move forward on the PRAP, estimated to cost $23.35M, before conducting relatively inexpensive investigations to determine if non-aqueous phase liquid (NAPL) is present beneath the building. If NAPL is present at that location, the proposed remedy will fail to be successful in a timely manner and expended funds will be wasted. We strongly urge that the NYSDEC not move forward before gathering the necessary data. The contentions that there is no contaminant mass or that contaminants have not migrated beneath the building are without merit in the absence of such sub-slab soil-boring investigations.

RESPONSE 44:

Please see Response 34.

COMMENT 45:

At the public meeting, NYSDEC said they did not have an estimate of when the contaminants would be removed from the site using the proposed remedy, but said that it could be many decades. The residents of Cayuga County are getting weary of the lack of progress on the clean-up of this site and we are concerned that the pollution of the water supply serving the Village of Union Springs from the contaminants at this site will continue or even worsen for another generation. We urge NYSDEC to implement the remedy that will most quickly result in real contaminant removal.

RESPONSE 45:

Please see Response 31.

Sharon McLeeland submitted an email (dated February 29, 2016) which included the following comments:

COMMENT 46:

Could you define "swallets"? The fact sheet says the site features include "swallets which directly connect the shallow groundwater to the deep zone".

RESPONSE 46:

A swallet a place where water disappears underground in a limestone region. This is indicative of karst conditions, where secondary porosity and permeability can be dominated by solution openings in the bedrock.

COMMENT 47:

Will the EVO process be using the swallets as a means of bringing the abiotic/biotic remediation to the deeper zones?

RESPONSE 47:

The EVO process will not be using the swallets. Injection well(s) will be installed into the D3 zone.

COMMENT 48:

To what depth will the process be used? Will it include injections to the D3 zone, which seems to be the primary transport layer of the deeper bedrock in the offsite migration of the site plume?

RESPONSE 48:

The exact depths of the injections will not be determined until the design phase. Injections into the D3 zone are included in the remedy.

COMMENT 49:

If the abiotic process reduces TCE to Vinyl chloride (VC), will the offsite groundwater/SVI monitoring be assessing for the increase in VC in addition to assessing the decrease of TCE?

RESPONSE 49:

The monitoring program for both onsite and offsite groundwater already monitors for VC so its trend can be observed. Soil vapor intrusion monitoring is not conducted onsite because the building is unoccupied. SVI still needs to be evaluated offsite in the commercial building to the west of the site. For the CCGC site, to the south, groundwater monitoring for VC and other site-related contaminants will be conducted during the performance of the pilot test and as part of a long-term monitoring program. The potential for SVI is unlikely for the CCGC site because the shallow groundwater is not contaminated.

COMMENT 50:

Please define the direction(s) where surface drainage features carry storm water away from the site. Is the storm water impacted or are there stormwater protection plans in effect for the AOCs? If surface soils are impacted, does the stormwater from these areas flow into treated wastewater systems or does the stormwater flow onto adjacent properties or into the groundwater?

RESPONSE 50:

Storm water from the facility currently flows through a series of storm drain lines that combine and pass through a subsurface pipe to the northwest of the plant building and discharges to a drainage ditch extending downstream from the storm sewer outfall near the northwestern property boundary. Near the downstream end of the storm sewer system there is an air sparging system in a catch basin that treats any residual VOCs in the storm sewer. The discharge from the storm sewer to the drainage ditch is non-detect.

COMMENT 51:

During periods of high groundwater, contaminated site groundwater has the potential to infiltrate drainage ditches and move offsite - could you define the direction(s) where these impacted waters flow? What measures are being taken to address this offsite migration? Do these waters

flow onto residential yards, and if so, what measures are being taken to minimize/prevent this from happening?

RESPONSE 51:

Prior to implementation of the Surface Water Interim Action in 1995, impacted overburden groundwater discharged to certain storm sewer drains and the on-site drainage ditch to the stream located northwest of the site. The Surface Water Interim Action included piping the drainage ditch and decommissioning, reconfiguration and slip-lining of portions of the storm sewer piping. These actions prevented infiltration of the overburden water into the storm sewer system and the air sparging system at the end of the storm sewer treats any residual VOCs before being discharged. The contaminated surface water offsite in the stream is a result of contaminated shallow bedrock groundwater discharging upward to the stream and not from the storm sewer discharge. The Shallow Bedrock Groundwater Interim Action system has an extraction well in this offsite area that contains the contaminated groundwater from migrating further offsite to the north and northwest. There are no residential yards to the northwest of the site.

COMMENT 52:

There are residences located along the southern boundary of the AOC areas, and it is stated that overburden groundwater flows toward local surface water bodies such as Crane Brook. What direction is Crane Brook relative to the AOC areas of the site?

RESPONSE 52:

The unnamed stream that eventually connects with Crane Brook is to the northwest of the site.

COMMENT 53:

Will there be a SVI investigation for the homes located along the southern boundary of the site, as homes are approximately 400 feet from AOC-5 and AOC-1? The fact sheet discusses soil vapor intrusion being evaluate for any off-site buildings that may be impacted by the shallow groundwater contamination, to the west - does this mean there is no groundwater contamination and no soil vapor plumes affecting the buildings to the south?

RESPONSE 53:

The homes located to the south of the site are included in the Cayuga County Groundwater Contamination Site. EPA investigated the soil vapor intrusion pathway at the CCGC site. The results of the analyses indicated that the properties sampled did not have concentrations of VOCs at or above EPA Region 2 screening levels for sub-slab and indoor air. The shallow groundwater at the CCGC site is not contaminated. Since, the vapor intrusion pathway is driven by the water table surface the potential for vapor intrusion resulting from reductive dechlorination is reduced.

COMMENT 54:

Will there be a SVI evaluation of homes/buildings located to the northwest, or is that included in the western evaluation for SVI? How extensive is the offsite soil vapor plume?

RESPONSE 54:

A portion of the shallow groundwater plume extends offsite to the northwest. However, the shallow groundwater plume does not extend to the homes north and northwest of the site. The closest properties to the offsite groundwater plume are the commercial buildings to the west. Currently the buildings to the west include a Tool and Die Shop and a Copier Products Sales and Services. As stated in the PRAP and in this ROD an evaluation of the potential for soil vapor intrusion will be undertaken during the design phase. The technical basis for this decision was due to the lack of SVI information in the western area of the site. The NYSDOH will take into consideration the information presented in comments from GE and in consultation with the DEC and EPA evaluate the need to conduct an additional SVI evaluation.

COMMENT 55:

How successful is the proposed EVO process with free-phase concentrations of chlorinated solvents?

RESPONSE 55:

The enhanced in-situ bioremediation (EISB) is a technology has been applied successfully at other sites to treat source zone and the dissolved phase plume. EISB does not work directly on free-phase DNAPL. The EISB technology relies on solubilization and degradation processes that occur at and near the water-DNAPL interface. EVO acts at the electron donor in the process to stimulate anaerobic biodegradation of dissolved, sorbed and residual non-aqueous phase contaminants. The oils will first stimulate rapid biodegradation of dissolved contaminants. Then as contaminants are slowly released from the aquifer matrix or residual DNAPLs, edible oil will still be present to support biodegradation.

APPENDIX B

Administrative Record

Administrative Record

General Electric Co. Auburn
(aka Former Powerex)
State Superfund Project
Auburn/Aurelius, Cayuga County, New York
Site No. 706006

1. Order on Consent, Index No. A7-0286-92-08, between the Department and General Electric, executed on March 31, 1993.
2. Amended Order on Consent, Index No. A7-0352-97-03, between the Department and General Electric, executed on May 12, 1997.
3. "Remedial Investigation Report", Volume 1, November 11, 2013, prepared by O'Brien & Gere.
4. "Remedial Investigation Report", Volume 2, November 11, 2013, prepared by O'Brien & Gere.
5. "Feasibility Study", August 29, 2014, prepared by O'Brien & Gere.
6. Proposed Remedial Action Plan for the General Electric Co. Auburn site, dated January 2016, prepared by the Department.
7. Letter dated February 19, 2016 from Eileen A. O'Connor, Public Health Director, from Cayuga County Health Department.
8. Letter dated February 25, 2016 from Kathleen D. Cuddy, Director of Public Health on behalf of Cayuga County Board of Health.
9. Email dated February 29, 2016 from Sharon McLelland.
10. Letter dated February 29, 2016 from Bruce R. Natale, Environmental Engineer, from Cayuga County Department of Planning and Economic Development.
11. Letter dated February 29, 2016 from John Uruskyj, Senior Project Manager, from General Electric.