PROPOSED REMEDIAL ACTION PLAN

714 Baldwin Street
State Superfund Project
Elmira, Chemung County
Site No. 808041
March 2025

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

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SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), is proposing 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 proposed by this Proposed Remedial Action Plan (PRAP). The disposal of hazardous wastes at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. The proposed remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This PRAP identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for the preferred 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 Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York; (6 NYCRR) Part 375. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all PRAPs. This is an opportunity for public participation in the remedy selection process. The public is encouraged to review the reports and documents, which are available at the following repository:

DECInfo Locator - Web Application
https://gisservices.dec.ny.gov/gis/dil/index.html?rs=808041
New York State Department of Environmental Conservation
Region 8 Office
6274 East Avon-Lima Road
Avon, NY 14414
Phone: 585-226-2466

A public comment period has been set from: March 12, 2025

to April 24, 2025

A public meeting is scheduled for the following date: April 10, 2025

Public meeting location: Steele Memorial Library, 101 E Church St, Elmira, NY 14901

At the meeting, the findings of the remedial investigation (RI) and the feasibility study-alternatives analysis (FS-AA) will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP.

Written comments may also be sent to:

Kira L. Bruno
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
kira.bruno@dec.ny.gov

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP based on new information or public comments. Therefore, the public is encouraged to review and comment on the proposed remedy identified herein. Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

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 714 Baldwin Street site is a 0.75-acre site located in an urban area in the City of Elmira, Chemung County, New York. The property includes a 5,853 square foot warehouse and a lawn area to the north and east of the warehouse. The site is bounded on the north by commercial properties, on the south by mixed commercial and residential properties, on the east by industrial facilities and to the west by Clemens Center Parkway and a packaging and manufacturing plant. A site location map is attached as **Figure 1**.

Site Features: The site is relatively flat and includes one single-floor, 5,853 square-foot building. The building interior includes a small studio space and open warehouse area storing vehicles, paint, fuel, and other automotive chemicals. The building has a loading dock on its southeast corner surrounded by a small, paved area. The site can be accessed from Baldwin Street to the west and Dickinson Street to the east. The majority of the lot is grass covered and the lawn on the eastern side of the site building is bordered on all sides by a chain link fence which includes a gated entrance from Dickinson Street.

Current Zoning and Land Use: The site is currently inactive and is zoned for industrial use. The surrounding parcels are currently used for a combination of commercial and light industrial. The nearest residential area is 50 feet south on Baldwin Road. There are four census tracts within a half-mile vicinity of the site that meet the criteria of disadvantaged communities (DACs) and potential environmental justice area (PEJAs) under the Climate Leadership and Protection Act (CLCPA) as shown on **Figure 1-A**.

Past Use of the Site: Until 2014 the site was occupied by Associated Textile Rental Services (ATRS) for use as a laundry, and truck fueling and maintenance depot. Prior to 1990 this property was occupied by Allen's Cash Paint Company and Frank Allen Gas & Oils where it was used to store petroleum products.

A spill response was conducted under Spill Number 9210608 to address petroleum-related volatile organic compound (VOC) contamination detected in on-site soil and groundwater during several investigations completed from 1993 to 1995. The spill response activities are described in a 2008 summary report prepared by Empire Geo Services, Inc. (Empire Geo) titled "Soil and Groundwater Investigation Summary." The source was identified as several former aboveground petroleum storage tanks located near the northwest corner of the current on-site building, removed some time before 1985. In 1996 a remedial excavation removed approximately 25 cubic yards of soil from the reported source area. A 1997 report completed by O'Brien & Gere Engineers, Inc. reportedly concluded that the excavation was successful and that "active remedial efforts at the site are complete." Following the excavation, Oxygen-Releasing Compound (ORC) socks were installed in several monitoring wells to address remaining groundwater contamination. Multiple rounds of groundwater sampling conducted post-excavation reported steadily decreasing concentrations of VOCs. After their own groundwater and soil sampling conducted in 2007, Empire Geo recommended the implementation of a Monitored Natural Attenuation (MNA) program for petroleum-related VOC contamination at the site.

Site Geology and Hydrogeology: Surficial geology at the site is mapped by the United States

Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) as Howard gravely silt loam. Bedrock geology consists of shale and siltstones associated with the Upper Devonian West Falls Group.

The site is located over the Elmira-Horseheads-Big Flats Primary Water Supply Aquifer. The site is situated in a relatively flat flood plain, formed by the confluence of the Chemung River to the south and the Newtown Creek to the east. It is presumed, based on regional groundwater flow and topography, that the Chemung River and, to a lesser extent Newtown Creek, are local groundwater discharge areas. Groundwater was encountered at 12 to 14 feet below ground surface (bgs) at the site. Groundwater flow direction at the site is estimated to be to the southeast. The site is located within a primary aquifer which supplies drinking water to the local population. The closest operational public water supply wells are located along the shore of the Chemung River, approximately 1.2 miles southwest of the site.

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 that restrict the use of the site to industrial use as described in Part 375-1.8(g) are being evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the investigation 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:

Tartan Textile

Julian Raven

EnviroAnalytics Group LLC

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

The following general activities are conducted during an RI:

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

The analytical data collected on this site includes data for:

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

6.1.1: Standards, Criteria, and Guidance (SCGs)

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

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

6.1.2: RI Results

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

The contaminant(s) of concern identified at this site are:

1,1,1-trichloroethane	tetrachloroethene (PCE)
benzene	toluene
cis-1,2-dichloroethene (cis-1,2-DCE)	total xylenes
ethylbenzene	trichloroethene (TCE)
isopropylbenzene	vinyl chloride
methyl tert-butyl ether (MTBE)	

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

- groundwater
- soil
- soil vapor intrusion

6.2: Interim Remedial Measures

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

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

6.3: Summary of Environmental Assessment

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

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

Soil and groundwater have been analyzed for the full suite of analytes that included volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), herbicides, and pesticides. Groundwater samples were also analyzed for the emerging contaminants per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane, and on-site and off-site soil vapor was analyzed for VOCs. Based upon investigations conducted to date, the primary contaminants of concern for the site are chlorinated VOCs (CVOCs), mainly tetrachloroethene (PCE), trichloroethene (TCE), and cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride, as well as the non-chlorinated, petroleum-related VOCs benzene, ethylbenzene, isopropylbenzene, toluene, and total xylenes.

Soil: CVOCs including PCE, TCE, and cis-1,2-DCE are found in subsurface soils beneath the on-site building and on the southeastern portion of the site, exceeding the protection of groundwater soil cleanup objectives (PGWSCOs). PCE and TCE are present at maximum concentrations of 28 and 100 parts per million (ppm), respectively, compared to their PGWSCOs of 1.3 ppm and 0.47

ppm, respectively. Both maximum concentrations were found at 0.5 to 3 feet below ground surface (bgs) under the southeast corner of the on-site building. Soil sample results have not identified CVOC concentrations exceeding industrial use SCOs. Data does not indicate any off-site CVOC impacts in soil related to this site.

Soil samples collected north and east of the on-site building contain petroleum-related VOCs with maximum concentrations in exceedance of PGWSCOs including ethylbenzene (22 ppm vs. PGWSCO of 1 ppm), toluene (2.1 ppm vs PGWSCO of 0.7 ppm), and total xylenes (21 ppm vs. PGWSCO of 1.6 ppm). No compounds were detected in exceedance of industrial use SCOs. The likely source of these compounds is an historic on-site release related to the aboveground gasoline storage tanks formerly located on the central western side of the site. The area of impacted soil associated with the historic gasoline storage was addressed during the spill response activity described in Section 3. Data does not indicate any off-site impacts of these compounds in soil related to this site.

<u>Groundwater</u>: PCE and its associated degradation products, including TCE, cis-1,2-DCE and vinyl chloride, are found in on-site groundwater at concentrations exceeding ambient water quality standards (AWQS), which is 5 parts per billion (ppb) except for vinyl chloride (2 ppb). Maximum concentrations of PCE (6,700 ppb), TCE (2,900 ppb), cis-1,2-DCE (360 ppb), and vinyl chloride (2,200 ppb) are present beneath or within approximately 20 feet south of the southeast corner of the on-site building. The CVOC groundwater contamination is located under the southeast corner of the on-site building and extends approximately 130 feet down-gradient off-site onto the northern half of the adjacent parcel to the south.

Petroleum-related VOCs are found in groundwater at maximum concentrations exceeding AWQS including benzene (2,100 ppb; AWQS of 1 ppb), ethylbenzene (1,700 ppb; AWQS of 5 ppb), toluene (1,100 ppb; AWQS of 5 ppb), and total xylenes (7,000 ppb; AWQS of 5 ppb). The likely source of non-chlorinated VOCs in groundwater is the soil source area on the central western side of the site associated with historical fuel use. Data does not indicate any off-site impacts of these compounds in groundwater related to this site.

In 2021, perfluorooctanesulfonic acid (PFOS) and perfluorooctanoic acid (PFOA) were detected at concentrations of up to 0.87 parts per trillion (ppt) and 1.2 ppt, respectively; both below their respective AWQS of 2.7 ppt and 6.7 ppt, respectively. Total 1,4-Dioxane was reported at a concentration of up to 0.27 ppb, below its 0.35 ppb AWQS. These sampling results are from two groundwater monitoring wells located south of the on-site building about 10-20 feet off-site.

<u>Soil Vapor and Indoor Air Sampling</u>: To determine whether actions are needed to address exposure related to soil vapor intrusion (SVI), samples of collocated sub-slab vapor, indoor air, and outdoor air were collected from the on-site building and three off-site buildings from September to December 2021. PCE was detected in the indoor air (8.4 ug/m^3) and collocated sub-slab soil vapor (26,000 ug/m^3) of the on-site building at concentrations that warrant actions to reduce exposure. TCE was also detected in the indoor air (3.0 ug/m^3) and collocated sub-slab soil vapor (18,000 ug/m^3) of the on-site building at concentrations that warrant actions to reduce exposure. PCE and TCE were detected at lower concentrations in the soil vapor to the north, east, and south of the on-site building. No actions were needed off-site to address exposures related to SVI.

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.*

Access to the rear portion of the site is restricted by fencing and the on-site building is securely locked. Persons who enter the site may come into contact with contaminants in soil . People are not drinking contaminated groundwater because the area is served by a public water supply that is not affected by site contamination. Volatile organic compounds in groundwater may move into the soil vapor (air spaces within the soil) which in turn may move into overlying buildings and affect indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Soil vapor intrusion sampling on-site identified elevated levels of site-related contaminants in the indoor air and actions have been recommended to reduce exposure. Sampling indicates that actions are not needed to address soil vapor intrusion off-site.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

<u>**Soil Vapor**</u>

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 PROPOSED 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 - Alternatives Analysis (FS-AA) 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 proposed remedy is set forth at **Exhibit D**.

The proposed remedy is referred to as the Source Area Excavation with In-Situ Chemical Oxidation Treatment of Groundwater remedy.

The estimated present cost to implement the remedy is $640,375. The cost to construct the remedy is estimated to be $535,200 and the estimated average annual cost is $6,980.

The elements of the proposed remedy are as follows:

1. <u>Remedial Design</u>

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

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

Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the Feasibility Study, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis was completed. The environmental footprint analysis was completed using the SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA). This analysis will by continuously evaluated during the remedial design to identify and quantify environmental impacts as well as to identify best management practices (BMPs) which could reduce those impacts. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

The disproportionate burden analysis related to the DAC identified the following BMPs to be incorporated into the remedial design:

- Minimization of excess soil generation by completing micro-sampling to identify areas for excavation;
- Optimization of identification of injectants by conducting bench tests and ensuring proper injectant mixing;
- Minimizing energy consumption through selection of most energy-efficient equipment and installation or purchase of green or renewable energy providers when applicable;

- Minimization of dust emissions and production during excavation and intrusive operations;
- Selection of fuel-efficient and/or Ultra-Low Sulfur Diesel fuel vehicles and equipment; and
- Sourcing of materials from the shortest possible distance.

The common fill source for this project is not yet finalized; however, there are four clean aggregate/fill companies from which to select within 10 miles of the Site. This will help in reducing the impact of emissions by transportation of material to the Site. Additional materials, including PVC, water, as well as labor from contractors, will be selected from an area within close proximity to the Site in order to reduce the overall quantity of emissions emitted during remedial operations. As remediation operations have not yet started on the Site, there is room for adjustments to be made based upon causing the least amount of negative impact to the DACs containing and adjacent to the Site.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the proposed remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

2. <u>Excavation</u>

Excavation and off-site disposal of contaminant source areas, including grossly contaminated soil, as defined in 6 NYCRR Part 375-1.2(u) and soils which exceed the protection of groundwater soil cleanup objectives (PGWSCOs), as defined by 6 NYCRR Part 375-6.8 for those contaminants found in site groundwater above standards. Approximately 100 cubic yards of contaminated soil will be removed from the site. Collection and analysis of confirmation samples and sidewall confirmation samples at the remedial excavation depth will be used to verify that SCOs for the site have been achieved.

To ensure proper handling and disposal of excavated material, waste characterization sampling will be completed for all identified contaminated site material. Waste characterizations sampling will be performed exclusively for the purposes of off-site disposal in a manner suitable to receiving facilities and in conformance with applicable federal, state and local laws, rules, and regulations and facility-specific permits.

Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site. Dust and storm water run-off control measures will be employed to minimize any short-term impacts associated with the excavation.

3. <u>In-Situ Chemical Oxidation</u>

In-situ chemical oxidation (ISCO) will be implemented to treat contaminants in groundwater. A chemical oxidant will be injected into the subsurface to destroy the contaminants, targeting the downgradient groundwater CVOC dissolved phase plume south of the site as well as the groundwater BTEX dissolved phase plume north of the site building. The method and depth of injection will be determined during the remedial design.

Prior to the full implementation of this technology, a laboratory bench scale study will be conducted to clearly define design parameters. Between the bench scale and the full-scale implementations, it is estimated that 18 temporary injection wells will be installed, and that the sodium permanganate will be applied in a one-time injection event. However, the number and placement of the injection wells will be determined during the remedial design.

Monitoring of groundwater will be conducted for contaminants of concern up-gradient, down-gradient, and within the treatment zone. The field and laboratory parameters to be monitored for will be determined during the remedial design. Long-term groundwater monitoring will also inform the need for future injections.

4. Vapor Mitigation

Any on-site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from soil and/or groundwater.

5. Institutional Control

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

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

6. Site Management Plan

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

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

Institutional Controls: The Environmental Easement discussed in Paragraph 5 above.

Engineering Controls: The sub-slab depressurization system discussed in Paragraph 4 above.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination.
- descriptions of the provisions of the environmental easement including any land use and groundwater use restrictions;
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

- monitoring of groundwater to assess the performance and effectiveness of the remedy; and
- a schedule of monitoring and frequency of submittals to the Department;

c) An Operation and Maintenance (O&M) Plan to ensure continued operation, maintenance, inspection, and reporting of any mechanical or physical components of the active vapor mitigation system(s). The plan includes, but is not limited to:

- procedures for operating and maintaining the system(s); and
- compliance inspection of the system(s) to ensure proper O&M as well as providing the data for any necessary reporting.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Site Characterization and Remedial Investigation for all environmental media that were evaluated. As described in Section 6.1.2, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium in which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compares the data with the applicable SCGs for the site. The contaminants are arranged into three categories: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and per- and polyfluoroalkyl substances (PFAS). For comparison purposes, the SCGs that allow for unrestricted use are provided for each medium. For soil, if applicable, the Restricted Use SCGs identified in Section 6.1.1 are also presented.

Waste/Source Areas

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

Wastes are defined in 6 NYCRR Part 375-1.2 (aw) and include solid, industrial and/or hazardous wastes. Source Areas are defined in 6 NYCRR Part 375 (au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium.

The soil source area is located beneath the southeast corner of the on-site building. The primary contaminants of concern at the site are tetrachloroethene (PCE) and breakdown products including trichloroethene (TCE), cis-1,2-dichloroethene (cis-1,2-DCE), and vinyl chloride. These compounds are present in the source area. Their presence appears to be a result of the former dry-cleaning operations on-site, where dry cleaning chemicals were dumped to the ground surface and subsequently leaked into the site soil. These compounds present a risk to human health and the environment.

Other contaminants of concern are non-chlorinated, petroleum-related VOCs including benzene, toluene, ethylbenzene, and total xylenes (BTEX). These contaminants of concern are related to the former aboveground petroleum storage tanks on the west side of the site. Based on a 2008 summary report prepared by Empire Geo Services, Inc. (Empire Geo) titled “Soil and Groundwater Investigation Summary”, related soil and groundwater contamination was likely caused by a surface or near surface release of petroleum near a former gasoline pump located by the northwest corner of the on-site building. In 1996 a remedial excavation removed approximately 25 cubic yards of impacted soil from the reported source area. Subsequent soil investigations indicate there is no persistent source area of BTEX compounds remaining.

See Figure 3 for Soil Source Area and Groundwater Plumes, and below for a summary of soil and groundwater contamination.

Groundwater

Groundwater samples were collected from overburden and bedrock monitoring wells at a depth of 10 to 20 feet below ground surface (bgs), as well as from soil borings at a depth of 12 to 49 feet bgs. The samples were collected to assess groundwater conditions on-site. The results indicate that contamination in groundwater at the site exceeds the SCGs for VOCs and SVOCs..

Table 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
1,1,1-Trichloroethane (1,1,1-TCA)	0.48-78.0	5	7/18
Benzene	0.45-2,100	1	20/23
Cis-1,2-Dichloroethene (cis-1,2-DCE)	0.880-360	5	72/88
Ethylbenzene	1.70-1,700	5	7/11
Isopropylbenzene (Cumene)	1.60-150	5	8/10
Methyl-tert-butyl ether (MTBE)	0.180-29.0	10	11/43
Tetrachloroethene (PCE)	1.20-6,700	5	39/57
Toluene	0.250-1,100	5	6/14
Total Xylenes	0.89-7,000	5	8/12
Trichloroethene (TCE)	1.30-2,900	5	41/63
Vinyl Chloride	0.400-2,200	2	53/66

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

The primary groundwater contaminants are PCE and breakdown products including TCE, cis-1,2-DCE, and vinyl chloride. As noted in Figure 3, the primary groundwater contamination occurs mainly in one location on the site, under the southeast corner of the on-site building. BTEX compounds were also detected at concentrations exceeding SCGs, but concentrations have steadily declined since the 1996 soil source area excavation. The BTEX contamination of groundwater was likely caused by surface or near surface release of petroleum from a former gasoline pump. PFOS and PFOA were detected at concentrations of up to 0.87 and 1.2 parts per trillion (ppt), respectively, both below their respective 2.7 ppt and 6.7 ppt ambient water quality standard. 1,4-Dioxane was reported at a concentration of up to 0.27 ppb, below the 0.35 ppb AWQS.

Based on the findings of the RI, the disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: PCE, TCE, and cis-1,2-DCE and BTEX compounds.

Table 2 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Protection of Groundwater (PGW) SCG[c] (ppm)	Frequency Exceeding PGW SCG	Restricted Use SCG[d] (ppm)	Frequency Exceeding Restricted SCG
VOCs							
1,1,1-Trichloroethane	0.0012-0.0012	0.68	0/1	0.68	0/1	1000	0/1
Benzene	0.00071-0.00071	0.06	0/1	0.06	0/1	89	0/1
Cis-1,2-Dichloroethene	0.00087-1.5	0.25	3/13	0.25	3/13	1000	0/13
Ethylbenzene	0.00041-22	1	1/4	1	1/4	780	0/4
Isopropylbenzene	0.0012-6.5	NA[e]	NA	NA	NA	NA	NA
Tetrachloroethene	0.0012-28	1.3	2/21	1.3	2/21	300	0/21
Toluene	0.00053-2.1	0.7	2/8	0.7	2/8	1000	0/8

Total Xylenes	0.0011-21	0.26	2/5	0.26	2/5	1000	0/5
Trichloroethene	0.0016-100	0.47	5/30	0.47	5/30	400	0/30

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives.
c - SCG: Part 375 6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Industrial Use
e - No SCG values promulgated

Subsurface and surface soil samples were collected at the site during the site characterization (SC) and RI to delineate the source area and assess soil contamination impacts to groundwater. For the SC, soil samples were collected from a depth of 2 to 16 feet bgs and analyzed for VOCs, SVOCs, PCBs, Herbicides and pesticides. For the RI, soil samples were collected between 0.5 and 49 feet bgs and analyzed for VOCs, SVOCs, PCBs, Herbicides and pesticides. All soil samples were collected using direct-push methods.

Soil and groundwater have been analyzed for the full suite of analytes that included volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), herbicides, and pesticides. Groundwater samples were also analyzed for the emerging contaminants per- and polyfluoroalkyl substances (PFAS) and 1,4-dioxane, and on-site and off-site soil vapor was analyzed for VOCs.

The soil sampling results were compared to the applicable Soil Cleanup Objectives (SCOs) for unrestricted use, protection of groundwater (PGW), and industrial use, as discussed in Section 3. The results indicate that the primary contaminants of concern on-site are VOCs occurring in high enough concentrations to migrate to the site groundwater and soil vapor. The VOC contamination exceeding the unrestricted and PGW SCOs was determined to emanate from the source area under the southeast corner of the on-site building.

The results indicate that soils at the site exceed the 6 NYCRR Part 375 unrestricted use and PGW SCOs for some VOCs; however, results were below industrial use SCOs for all compounds.

Chlorinated VOCs (CVOCs) including, PCE, TCE, and cis-1,2-DCE were detected at concentrations exceeding unrestricted use and PGW SCOs in soil samples. These exceedances were detected in samples from under the southeast corner of the on-site building and immediately east of the building, with sample depths ranging from 0.5 to 15 feet bgs. The highest concentrations of PCE and TCE were detected under the southeast corner of the on-site building at a depth of 0.5 to 3 feet bgs. No soil sample detected CVOC concentrations exceeding industrial use SCOs.

BTEX compounds including ethylbenzene, isopropyl-benzene, toluene, and xylenes were detected at concentrations exceeding unrestricted use SCOs in soil samples. A historic on-site release related to the above ground gasoline storage tanks formerly located on the north side of the site from 1930-1981 is the likely source of these compounds detected in the subsurface soil samples. The area of impacted soil associated with the historic gasoline storage is limited to the northern portion of the site upgradient of the on-site building. In 1996 a remedial excavation removed about 25 cubic yards of impacted soil from a reported source area in this region of the site. A 2007 soil investigation showed no reported concentrations of VOCs in exceedance of SCOs for industrial use, and no significant detections in central or southern regions of the site that would be indicative of a persistent source area.

Soil Vapor

The SC and RI both included investigations to determine whether actions are needed to address exposure related to the potential for soil vapor intrusion (SVI) resulting from the presence of site-related soil or groundwater contamination. As part of the SC, one sub-slab soil vapor sample was collected under the southwest corner of the on-site building concrete slab. During the RI, an SVI investigation was conducted in the on-site building and in three nearby off-site buildings. The SVI investigation included the installation of a temporary sub-slab vapor point and the simultaneous collection of a sub-slab vapor sample, indoor ambient air sample, and outdoor ambient air sample. There are no SCGs for soil vapor; however, the October 2006 "Guidance for Evaluation Soil Vapor Intrusion in the State of New York" contains matrices that are used to determine whether actions are needed to address exposures associated with soil vapor intrusion by comparing indoor air data with collocated sub-slab vapor.

Based on the findings of these investigations, the presence of PCE and TCE has resulted in the contamination of soil vapor. The site contaminants considered to be the primary contaminants of concern, which will drive the remediation of soil vapor to be addressed by the remedy selection process, are PCE and TCE. The maximum concentrations of PCE and TCE in collocated sub-slab vapor samples were 26,000 micrograms per cubic meter ($\mu g/m^3$) and 18,000 $\mu g/m^3$, respectively. Similarly, PCE and TCE were found in collocated indoor air samples at maximum levels of 8.4 $\mu g/m^3$ and 3.0 $\mu g/m^3$, respectively. The concentrations of these VOCs in outdoor air samples were found to be consistent with background ranges. Low concentrations of BTEX compounds were detected in the collocated sub-slab vapor and indoor air samples.

The soil vapor beneath the on-site building has been impacted by the soil and groundwater CVOC contamination. The shallow depth of the sorbed CVOC soil source area is the likely primary cause of the detected soil vapor concentrations. The on-site SVI samples indicate that the soil vapor is impacting the indoor air inside the building. The concentrations of PCE and TCE in both the sub-slab vapor and indoor air indicate that action should be taken to mitigate the intrusion of PCE and TCE in the building. No actions were needed off-site to address exposures related to SVI.

Exhibit B

Description of Remedial Alternatives

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

Alternative 1: No Action

The "No Action" alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative would leave the site in its present condition and would not provide any additional protection to human health or the environment. The No Action alternative would not involve any surface soil, subsurface soil, groundwater, or soil vapor remedial activity. There are no costs associated with this alternative.

Alternative 2: Sub-Slab Depressurization System (SSDS) and ICs

This alternative would prevent current or future exposures through the imposition of an Engineering Control (EC) and Institutional Controls (ICs). This alternative will provide mitigation of exposures from the on-site CVOC impacts but will not directly treat the on-site soil source area or the impacted groundwater beneath the site. A SSDS would be installed in the on-site building to mitigate soil vapor intrusion as an EC. The soil source area is currently under the southeast portion of the foundation in the on-site building.

Institutional controls (ICs) would be required to prevent future exposure pathways from developing by controlling exposure during potential future construction and limiting the use of groundwater. An Environmental Easement would be recorded to provide an enforceable legal instrument to ensure ICs are met. A Site Management Plan (SMP) would be required to specify the methods necessary to ensure compliance with all ECs and ICs placed on the site. ICs are the same for each alternative below where ICs are indicated.

The projected costs for this alternative are as follows:

Capital Cost:……………………………………………………………………………..$48,000
Annual Costs:……………………………………………………………………………$15,263
Total Present Worth:………………………………………………………………….…..$238,644

Alternative 3: Air Sparge and Soil Vapor Extraction (SVE) with Vapor Mitigation and ICs

This alternative includes the ICs described in Alternative 2 and adds two active remedies to reduce contaminant mass from vadose zone soils and groundwater in the overburden beneath the site. Air sparging can be used to enhance the rate of mass removal of dissolved-phase CVOCs from groundwater. SVE can be used to actively reduce CVOC soil vapor concentrations and sorbed contaminant mass from vadose zone soils in the overburden. The vapor removed by the SVE system will be treated with granulated activated carbon. The SVE wells would be installed inside the southeastern portion of the on-site building and in select locations within the footprint of the down gradient groundwater plume. The screened intervals for the SVE wells will be from approximately 1-13 feet bgs to capture the vapor from the unsaturated zone in the subsurface. Air sparging points will also be installed within the footprint of the down gradient groundwater plume.

Once the soil vapor and groundwater concentrations reach asymptotic levels, the SVE system within the building will be converted to an SSDS. The SSDS will utilize as much of the SVE infrastructure as possible to reduce costs.

Engineering controls will include the SVE system as well as monitoring of soil vapor and groundwater conditions performed in accordance with the Site Management Plan and an Operation and Maintenance (O&M) Plan to ensure the effectiveness of the remedy.

The projected costs for this alternative are as follows:

Capital Cost:…………………………………………………………………………$744,100
Annual Costs:…………………………………………………………………..……...$8,777
Total Present Worth:…………………………………………………………….......$940,200

Alternative 4: In-Situ Chemical Oxidation (ISCO) Treatment of Groundwater with Soil Vapor Extraction, Vapor Mitigation, and ICs

This alternative includes the vapor mitigation and ICs in Alternative 3, but replaces the air sparging system from Alternative 3 with ISCO to reduce concentrations in the dissolved-phase groundwater plume beneath the site. This alternative includes ISCO treatment of the groundwater, and an SVE system to address source mass in the vadose zone, as well as long-term monitoring under the SMP. The ISCO injections will target the downgradient groundwater CVOC dissolved phase plume south of the site as well as the BTEX concentrations within the dissolved phase plume north of the on-site building.

This alternative reduces concentrations in groundwater via in-situ chemical injections and remediates impacted portions of the vadose zone via the SVE system. Once the soil vapor and groundwater concentrations reach asymptotic levels, the SVE system within the building will be converted to an SSDS. The SSDS will utilize as much of the SVE infrastructure as possible to reduce costs. An SMP and O&M Plan may be necessary for site monitoring until such time that groundwater conditions meet criteria.

The projected costs for this alternative are as follows:

Capital Cost:………………………………………………………………………....$622,350
Annual Costs:………………………………………………………………………$11,393
Total Present Worth:…………………………………………………………..…....$911,609

Alternative 5: Source Area Excavation with ISCO Treatment of Groundwater, Vapor Mitigation, and ICs

This alternative includes the vapor mitigation and ICs in Alternative 2 and includes an excavation of the soil source area (Figure 4). To return the site to near pre-release conditions the impacted material in the soil source area will be removed. A section of the concrete slab would need to be removed and the soil source area would be excavated to a depth of 5 feet bgs.

Persistent VOC concentrations in the overburden aquifer will be further reduced by injecting an oxidant in the downgradient groundwater plume to the south of the site as well as the BTEX concentrations within the dissolved phase plume north of the on-site building. ISCO injections will chemically oxidize the dissolved-phase contaminants and convert them to innocuous compounds such as carbon dioxide and water.

An Environmental Easement would be recorded to provide an enforceable legal instrument to ensure ICs are met. A SMP would be required to specify the methods necessary to ensure compliance with all ECs and ICs placed on the site.

Any on-site buildings will be required to have a sub-slab depressurization system, or other acceptable measures, to mitigate the migration of vapors into the building from soil and/or groundwater.

The projected costs for this alternative are as follows:

Capital Cost:……………………………………………………………………………$535,200
Annual Costs:…………………………………………………………………………..$6,980
Total Present Worth:..………………………………………………………………....$640,375

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Costs ($)	Annual Costs ($)	Total Present Worth ($)
Alternative 1 – No Action	$0	$0	$0
Alternative 2 – Sub-Slab Depressurization System (SSDS) and ICs	$48,000	$15,263	$238,644
Alternative 3 – Air Sparge and Soil Vapor Extraction (SVE) with Vapor Mitigation and ICs	$744,100	$8,777	$940,200
Alternative 4 – In-Situ Chemical Oxidation Treatment of Groundwater with Soil Vapor Extraction, Vapor Mitigation, and ICs	$622,350	$11,393	$911,609
Alternative 5 – Source Area Excavation with In-Situ Chemical Oxidation Treatment of Groundwater, Vapor Mitigation, and ICs	$535,200	$6,980	$640,375

Exhibit D

Summary of the Proposed Remedy

The recommended alternative is Alternative 5: Source Area Excavation with In-Situ Chemical Oxidation Treatment of Groundwater, Vapor Mitigation, EC/ICs, and a SMP. Alternative 5 is protective of public health and the environment by removing the contaminant mass in the vadose zone soils through excavation and reducing CVOC concentrations in the downgradient groundwater plume via the ISCO injections. This alternative reduces sorbed CVOCs in soils and groundwater, thereby reducing potential transport of contaminants to the dissolved and vapor phases. Alternative 5 is estimated to achieve compliance with chemical specific SCGs and site-specific cleanup levels in soil, groundwater, and soil vapor. The elements of this remedy are described in Section 7.

The SMP will detail Institutional Controls (ICs) and Engineering Controls (ECs) required for the site. Anticipated ICs and ECs are:

An environmental easement for the controlled property which will:

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

The SMP will include monitoring and inspection requirements to assess the performance and effectiveness of the remedy. The plan will include groundwater monitoring requirements and frequency, inspection frequency and period reporting requirements.

Basis for Selection

The proposed 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-AA 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 proposed remedy would satisfy this criterion by removing the source of the soil and groundwater contamination and address potential exposures associated with soil vapor intrusion. Alternative 1 (No Action) does not address site contamination and does not provide any protection to human health and the environment and will not be evaluated further. Alternatives 2 (Sub-Slab Depressurization System and ICs), 3 (Air Sparge and Soil Vapor Extraction with Vapor Mitigation and ICs), 4 (In-Situ Chemical Oxidation Treatment of Groundwater with Soil Vapor Extraction, Vapor Mitigation, and ICs), and 5 (Source Area Excavation with In-Situ Chemical Oxidation Treatment of Groundwater, Vapor Mitigation, and ICs) would all be protective of both human health and the environment. Alternative 2 would remove vapor-phase contaminants beneath the on-site building, but contaminated soil and groundwater would remain. Alternatives 3 through 5 would similarly remove vapor-phase contaminants, but also reduce or remove the contaminant mass sorbed to vadose zone soils and remove or destroy dissolved-phase CVOCs in groundwater.

For Alternatives 2 through 5, exposure routes would remain for on-site workers that excavate impacted soil by inhalation of impacted soil vapor or direct contact with subsurface impacted soil during ground disturbance activities. This potential for short-term exposure is mitigated by use of personal protective equipment (PPE) and adherence to a Health and Safety Plan (HASP).

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.

The proposed remedy would comply with SCGs as it would remove source material contributing to contamination in groundwater. In addition, in-situ chemical oxidation treatment would continue to reduce CVOCs in groundwater over time and meet SCGs. Alternatives 3 and 4 would also comply with SCGs; however, source material would not be removed. In these cases, diffusion of contaminants from the soil source area would continue to act as a source of CVOCs to groundwater and contribute to a prolonged period of non-compliance with SCGs. Over time, reduction of sorbed mass in soils would reduce, then eliminate, contributions to the dissolved phase leading to an improvement in groundwater quality. Alternative 2 does not allow chemical-specific SCGs and site-specific cleanup levels to be achieved for soil, groundwater, or soil vapor, and is therefore not evaluated further. Because Alternatives 3 through 5 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site.

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

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

Long-term effectiveness is best accomplished by those alternatives involving excavation of the contaminated subsurface soils. For this reason, Alternative 5 would be considered more effective than Alternatives 3 or 4 in the long-term since it would permanently remove the source material and eliminate continued leaching of contaminants. Alternative 5 would also reduce the need for engineering and institutional controls to mitigate the risk until remaining contamination meets SCGs.

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

Alternatives 3 through 5 would all reduce contaminant toxicity, mobility, and volume. The reduction in volume and then toxicity is best achieved through full removal, as incorporated into Alternative 5. Alternative 4 would be given preference over Alternative 3 with respect to improving groundwater quality (toxicity) through direct treatment of concentrations in groundwater via in-situ chemical oxidation remediation, as opposed to waiting for the less direct positive effect of that an SVE system enhanced with air sparging would have on groundwater quality.

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

Alternatives 3 through 5 were determined to have similar short-term impacts. All three have the potential to create human exposure of contaminants to remediation workers, as well as nuisance conditions (noise or dust during construction). These impacts can be mitigated with engineering controls during construction. Duration of construction for the three alternatives is estimated to be similar and will include virtually identical controls (e.g., CAMP, limitations on working hours). Alternative 5 would require the shortest duration of treatment before remedial objectives could be achieved.

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

Alternative 5 is feasible due to the open floor plan of the on-site building and the location of the planned excavation area. This alternative's in-situ chemical oxidation treatment would be applied to the subsurface via temporary injection wells and would not require additional infrastructure at the site. Alternative 3 would require the most additional on-site infrastructure to install and operate the air sparge and SVE system. Alternative 4 would require less additional infrastructure than Alternative 3 because the air sparge system would be replaced with ISCO injection wells. Alternative 5 would require no additional infrastructure to implement the remedy and is therefore considered the most feasible.

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.

Capital and long-term (30-year) costs were evaluated for each alternative, as capital (short-term) savings may be negated by long-term costs. Alternative 3 was found to be the least cost-effective approach with higher capital cost and higher costs beyond the initial remedial action period over Alternative 4. Alternative 5 would cost about 30% less than Alternatives 3 and 4.

8). Land Use. When clean-up 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.

Alternatives 3 and 4 do not change the current land use in any significant way. Alternative 5 would return the site to near pre-release conditions.

9). Community Acceptance. This 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.

10). Green and Sustainable Remediation and Impact to disadvantage communities: Potential Indirect Environmental Impact of the Remedy. For this criterion, preference is given to alternatives that have the potential to remediate the site with the lowest potential negative environmental impact, such as greenhouse gas emissions. This criterion also considers the resilience of alternatives to potential climate change effects such as sustained changes in average temperatures, increased heavy precipitation events, and increased coastal flooding. A detailed analysis can be found in the January 2023 Feasibility Study.

According to the Climate Leadership and Community Protection Act (CLCPA), disadvantaged communities (DAC) are identified based on a combination of environmental, economic, and health criteria. An evaluation was conducted for the Site to determine the proximity of the site to a DAC and whether the proposed remediation places a disproportionate burden on a DAC. Based upon this evaluation, the Site is located within a DAC. The proposed remedy will incorporate elements to minimize the environmental footprint generated associated with the implementation of the required remedy and therefore reduce the associated overall environmental burden that may affect the identified DACs located near the site. This project incorporates many sustainable design elements including the following Best Management Practices (BMPs) identified as practical during the Feasibility Study. These BMPs include minimizing excess soil generation by completing micro-sampling to identify areas for excavation, optimizing the identification of injectants by conducting bench tests and ensuring proper injectant mixing, minimizing energy consumption through the selection of the most energy-efficient equipment and the installation or purchase of green or renewable energy providers when applicable, minimizing dust emissions and production during excavation and intrusive operations, selecting fuel-efficient and/or Ultra-Low Sulfur Diesel fuel vehicles and equipment, and sourcing materials from the shortest possible distance.

Additionally, while the majority of the environmental burden will occur within a relatively short time frame, the long-term benefits—such as the reduction of exposure to hazardous contamination—is expected to bring lasting, positive effects to the surrounding communities.

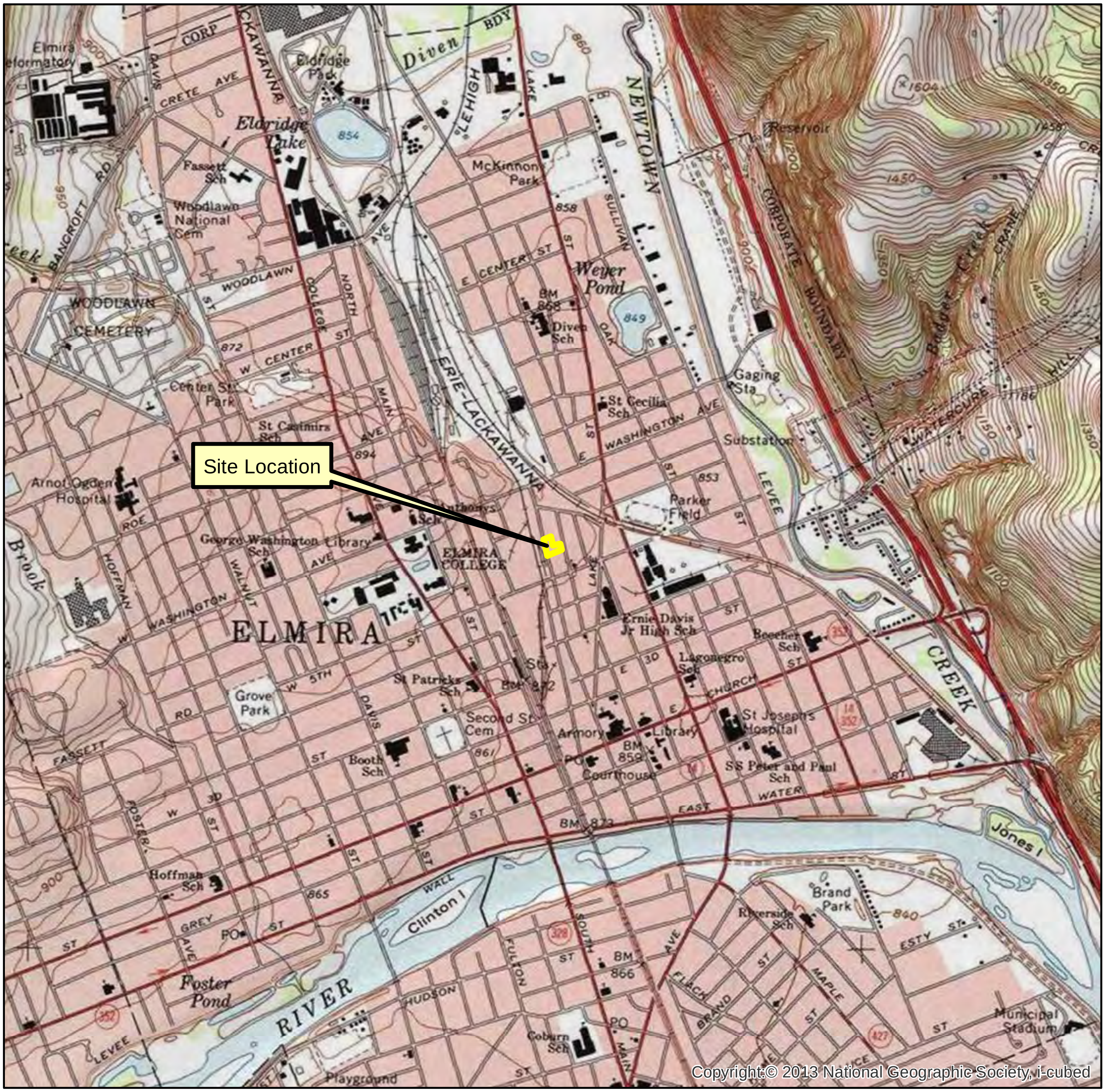
Alternative 3 will have the highest potential environmental impact through greenhouse gas emissions. The electrical demand required by this remedy far exceeds that of Alternatives 4 and 5 and results in higher potential emissions. Alternative 4 design will require less electricity than the combined air sparge/SVE system of Alternative 3 but will still consume more energy than Alternative 5. Alternative 5's excavation of the soil source area will require the off-site transport of impacted material as hazardous waste and will use limited landfill space. Alternative 5 has the lowest overall environmental impact of the 3 viable alternatives because of its minimal electrical power demand over a long-term period. As such, Alternative 5 will produce the least environmental burden during the remediation process for the surrounding community. Negative impacts include an increase in traffic such as diesel trucks, and particulate emissions, both of which reduce air quality and can lead to higher rates of asthma, respiratory illness, and cardiovascular disease. These impacts are limited to the construction period estimated as less than 60 days and can be further reduced by using the sustainable design elements listed above. Moreover, Alternative 5 produces the lowest amount of carbon relative to Alternatives 3 and 4.

Alternatives 4 and 5 will be most resilient to potential climate change effects since no above-ground infrastructure will be present. The air sparge/SVE system of Alternative 3 has the potential to be affected by more intense precipitation events.

Remedy Selection

Alternative 5 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criteria.

Path: S:\Data\NNYDEC - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\ELMIRA\714 BALDWIN STREET, ELMIRA, NY\DEC1017P3\GIS\Figure 1 - Site Location.mxd



0 1,000 2,000 4,000 6,000 8,000 Feet

1 inch = 2,000 feet

N

USGS Quadrangle Information
Quad ID: 42076-A7
Name: Elmira, New York
Date Rev: 1969
Date Pub: 1971

Figure 1
Site Location
714 Baldwin Street Site (Site#808041)
714 Baldwin Street
City of Elmira,
Chemung County, New York
HRP # DEC1017.P3
Scale 1" = 2,000'

HRP
MOVE YOUR ENVIRONMENT FORWARD
ONE FAIRCHILD SQUARE
SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

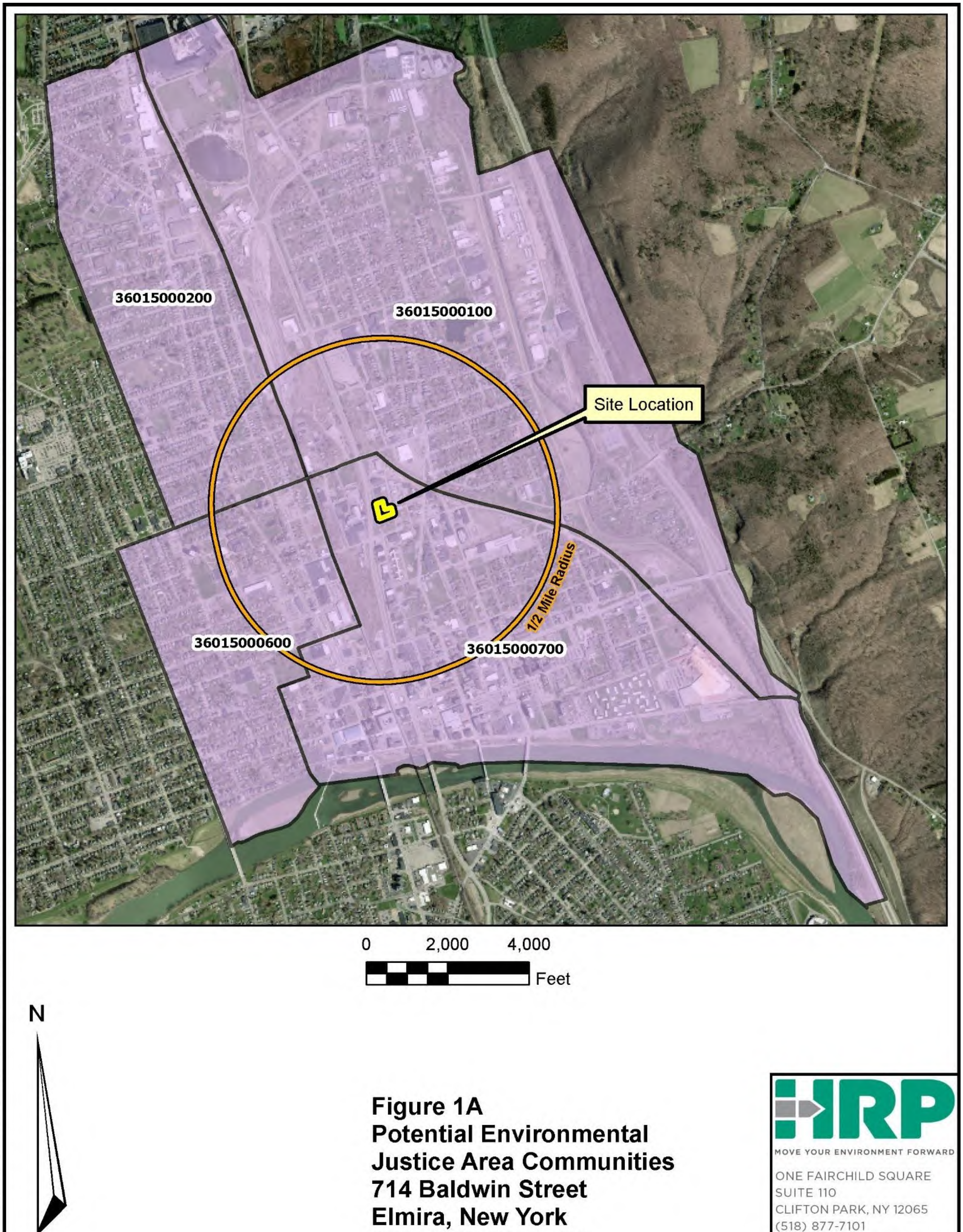


Figure 1A
Potential Environmental
Justice Area Communities
714 Baldwin Street
Elmira, New York
HRP # DEC1017.P3

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SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

0 30 60 Feet

Revisions	
No.	Date

Designed By: PM
Drawn By: BOB
Reviewed By: MEW

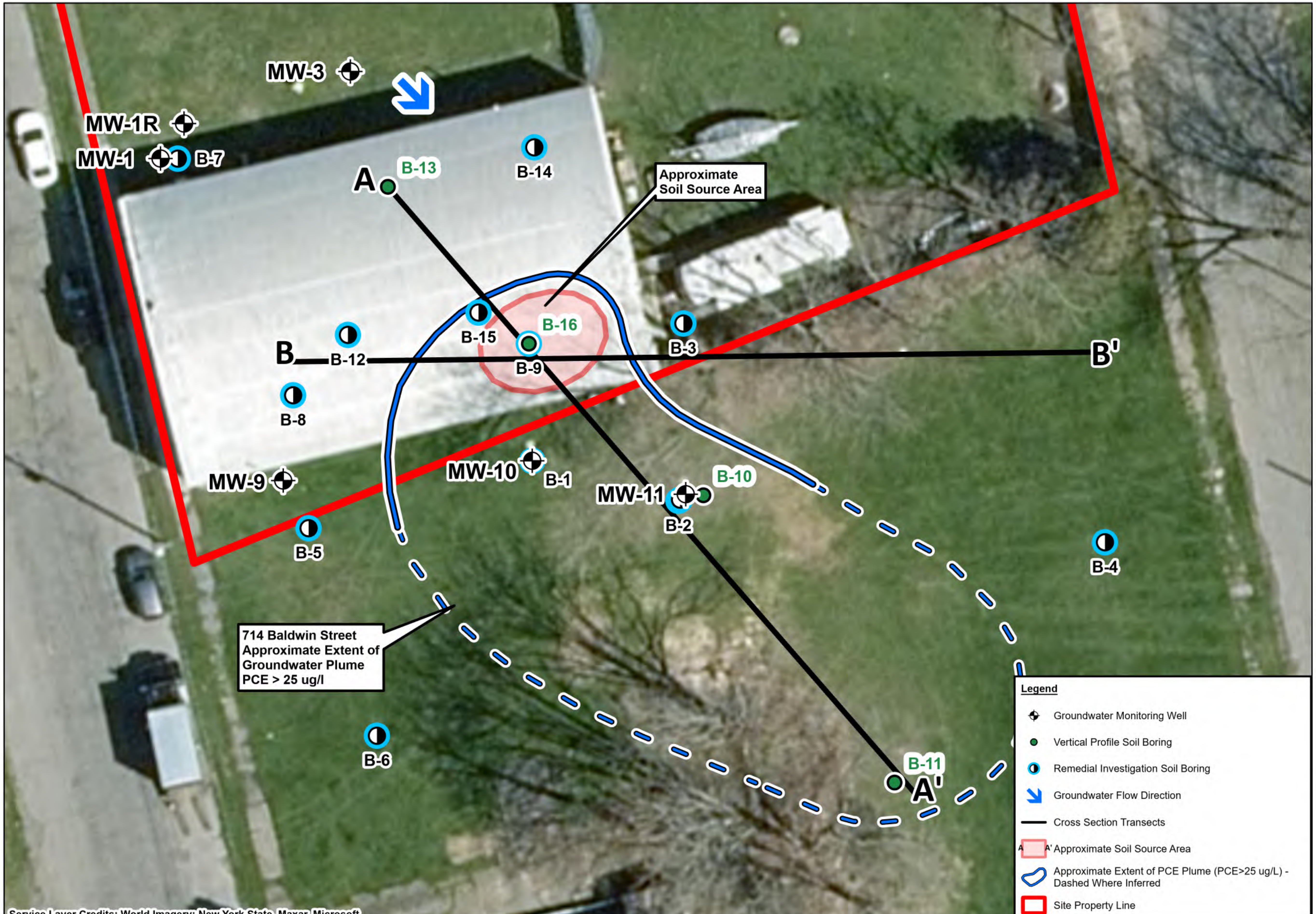
Issue Date: 05/11/2022
Project No: DEC1017.P3
Sheet Size: 11x17

Remedial Investigation Locations

714 Baldwin Street Site (Site#808041)
714 Baldwin Street
City of Elmira, Chemung County, New York

Figure No.
2

Path: S:\Data\NYDEC - NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION\ELMIRA\714 BALDWIN STREET, ELMIRA, NY\DEC1017\P3\GIS\GIS.aprx



HRP
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SUITE 110
CLIFTON PARK, NY 12065
(518) 877-7101
HRPASSOCIATES.COM

North

0 10 20 Feet

Revisions				
No.	Date			

Designed By:	Drawn By:	Reviewed By:
CMS	CMS	MEW

Issue Date:	Project No:	Sheet Size:
10/19/2022	DEC1017.P3	11x17

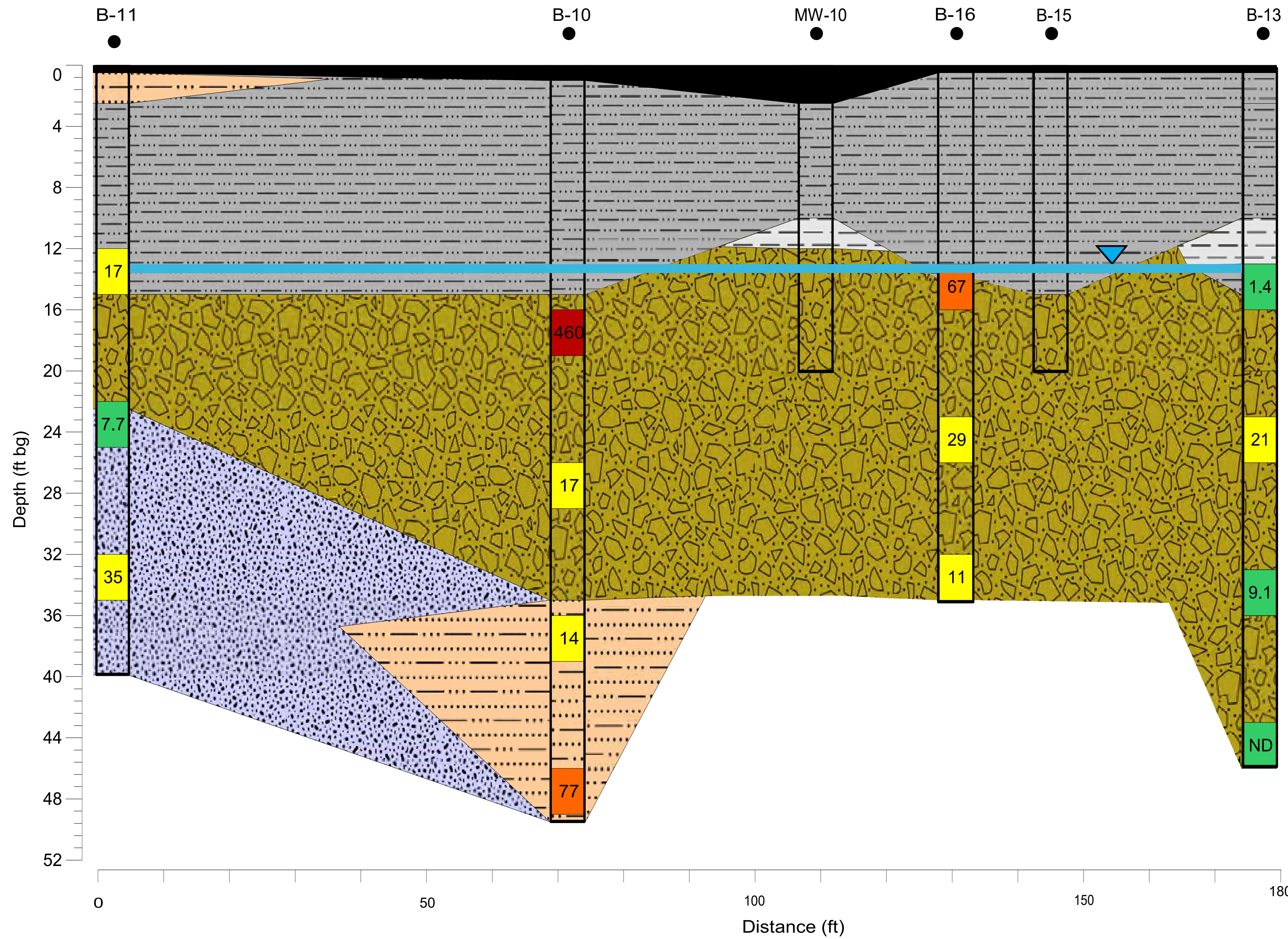
Cross Section Location Map

714 Baldwin Street Site (Site#808041)
714 Baldwin Street
City of Elmira,
Chemung County, New York

Figure No.

3

A A'



Sediment Types

- Clay
- Clay and Silt
- Fill
- Gravel
- Sand and Gravel
- Sand (some Silt)
- Silt (some Sand and Gravel)

PCE (Tetrachloroethene) Concentrations- Groundwater Vertical Profiles (ug/L)

- ND - 10
- 11 - 50
- 51 - 100
- 101 - 1000

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NORTH

0' 10' 20' Distance
0' 4' 8' Depth

REVISIONS	
NO.	DATE

DESIGNED BY: CMS

DRAWN BY: CMS

REVIEWED BY: MEW

PROJECT NUMBER: DEC1017.P3

ISSUE DATE: 6/13/2022

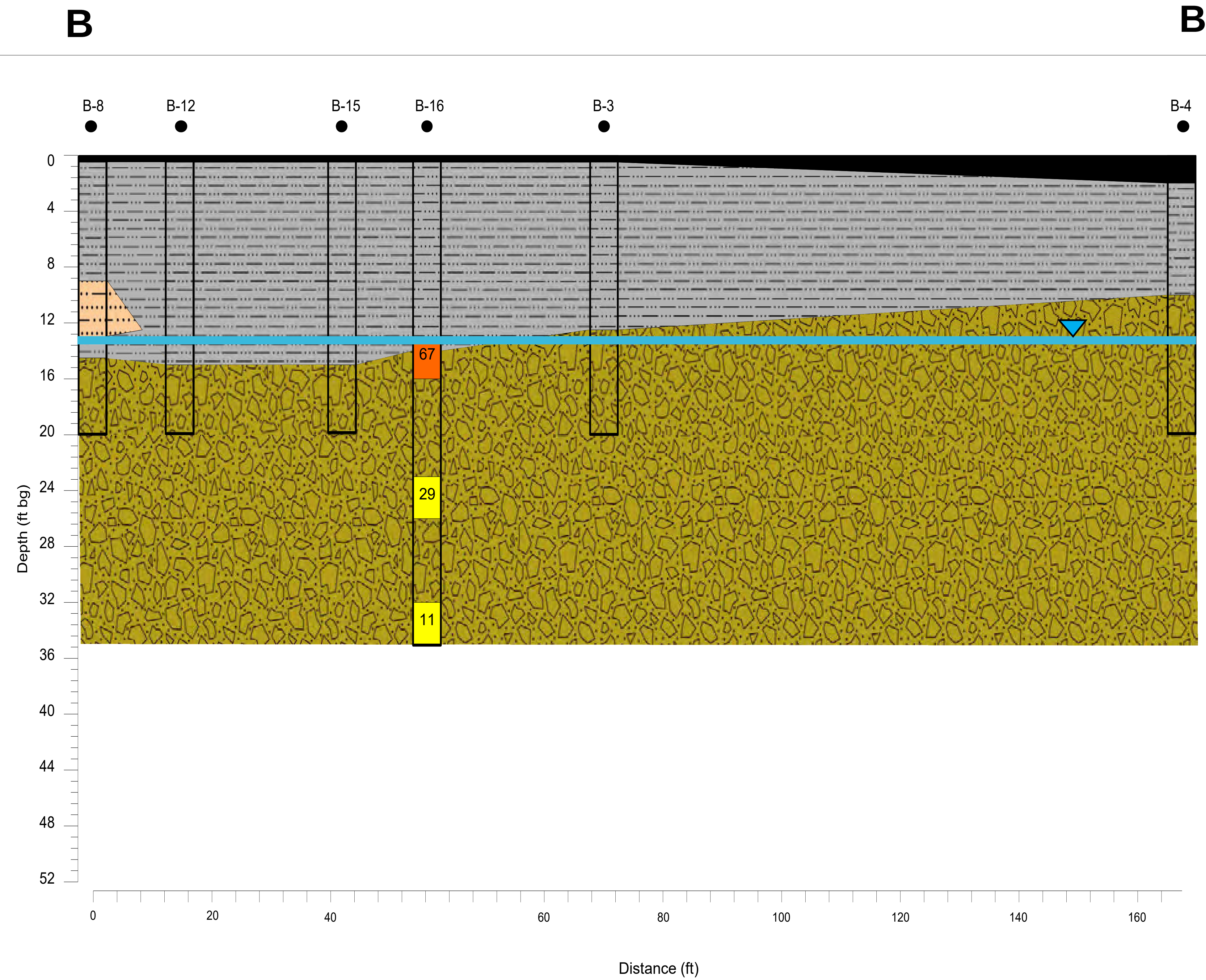
SHEET SIZE 11" x 17"

Cross Section S-N
PCE in Vertical Profile
Groundwater Samples

714 Baldwin Street Site
SITE #808041
714 Baldwin Street
Elmira, New York

FIGURE NO.

4



Sediment Types

- Clay
- Clay and Silt
- Fill
- Gravel
- Sand and Gravel
- Sand (some Silt)
- Silt (some Sand and Gravel)

PCE (Tetrachloroethene) Concentrations Groundwater Vertical Profiles (ug/L)

- ND - 10
- 11 - 50
- 51 - 100
- 101 - 1000

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NORTH

0' 10' 20' Distance

0' 4' 8' Depth

REVISIONS	
NO.	DATE

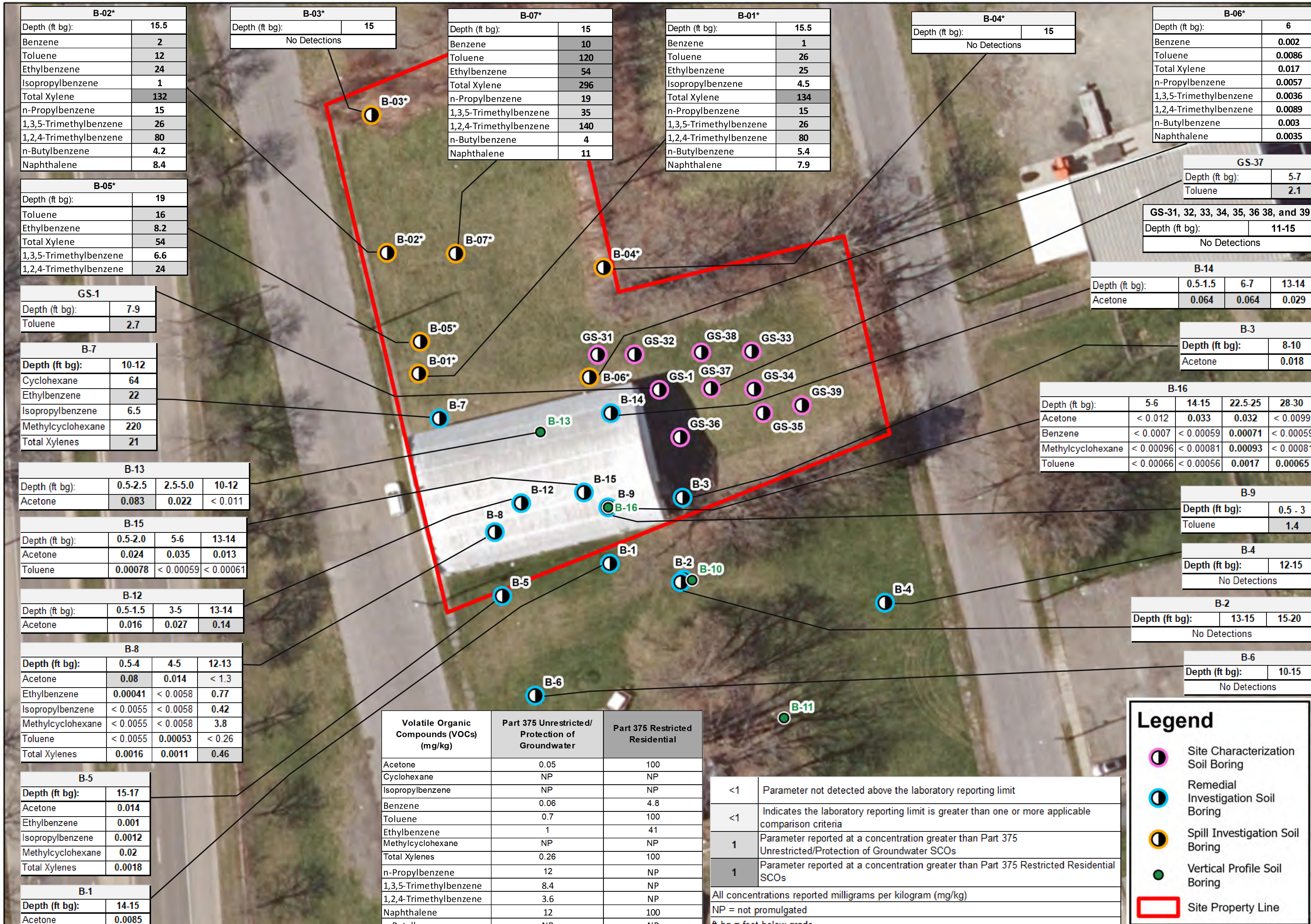
DESIGNED BY:	REVIEWED BY:	ISSUE DATE:
CMS	MEW	6/13/2022
DRAWN BY:	PROJECT NUMBER:	SHEET SIZE
CMS	DEC1017.P3	11" x 17"

Cross Section W-E
PCE in Vertical Profile
Groundwater Samples

714 Baldwin Street Site
SITE #808041
714 Baldwin Street
Elmira, New York

FIGURE NO.

5



B-02*	
Depth (ft bg):	15.5
Benzene	2
Toluene	12
Ethylbenzene	24
Isopropylbenzene	1
Total Xylene	132
n-Propylbenzene	15
1,3,5-Trimethylbenzene	26
1,2,4-Trimethylbenzene	80
n-Butylbenzene	4.2
Naphthalene	8.4

B-03*	
Depth (ft bg):	15
No Detections	

B-07*	
Depth (ft bg):	15
Benzene	10
Toluene	120
Ethylbenzene	54
Total Xylene	296
n-Propylbenzene	19
1,3,5-Trimethylbenzene	35
1,2,4-Trimethylbenzene	140
n-Butylbenzene	4
Naphthalene	11

B-01*	
Depth (ft bg):	15.5
Benzene	1
Toluene	26
Ethylbenzene	25
Isopropylbenzene	4.5
Total Xylene	134
n-Propylbenzene	15
1,3,5-Trimethylbenzene	26
1,2,4-Trimethylbenzene	80
n-Butylbenzene	5.4
Naphthalene	7.9

B-04*	
Depth (ft bg):	15
No Detections	

B-06*	
Depth (ft bg):	6
Benzene	0.002
Toluene	0.0086
Total Xylene	0.017
n-Propylbenzene	0.0057
1,3,5-Trimethylbenzene	0.0036
1,2,4-Trimethylbenzene	0.0089
n-Butylbenzene	0.003
Naphthalene	0.0035

B-05*	
Depth (ft bg):	19
Toluene	16
Ethylbenzene	8.2
Total Xylene	54
1,3,5-Trimethylbenzene	6.6
1,2,4-Trimethylbenzene	24

GS-37	
Depth (ft bg):	5-7
Toluene	2.1

GS-31, 32, 33, 34, 35, 36 38, and 39	
Depth (ft bg):	11-15
No Detections	

GS-1	
Depth (ft bg):	7-9
Toluene	2.7

B-14			
Depth (ft bg):	0.5-1.5	6-7	13-14
Acetone	0.064	0.064	0.029

B-7	
Depth (ft bg):	10-12
Cyclohexane	64
Ethylbenzene	22
Isopropylbenzene	6.5
Methylcyclohexane	220
Total Xylenes	21

B-3	
Depth (ft bg):	8-10
Acetone	0.018

B-16				
Depth (ft bg):	5-6	14-15	22.5-25	28-30
Acetone	< 0.012	0.033	0.032	< 0.0099
Benzene	< 0.0007	< 0.00059	0.00071	< 0.00059
Methylcyclohexane	< 0.00096	< 0.00081	0.00093	< 0.00081
Toluene	< 0.00066	< 0.00056	0.0017	0.00065

B-13			
Depth (ft bg):	0.5-2.5	2.5-5.0	10-12
Acetone	0.083	0.022	< 0.011

B-15			
Depth (ft bg):	0.5-2.0	5-6	13-14
Acetone	0.024	0.035	0.013
Toluene	0.00078	< 0.00059	< 0.00061

B-9	
Depth (ft bg):	0.5 - 3
Toluene	1.4

B-4	
Depth (ft bg):	12-15
No Detections	

B-12			
Depth (ft bg):	0.5-1.5	3-5	13-14
Acetone	0.016	0.027	0.14

B-2		
Depth (ft bg):	13-15	15-20
No Detections		

B-8			
Depth (ft bg):	0.5-4	4-5	12-13
Acetone	0.08	0.014	< 1.3
Ethylbenzene	0.00041	< 0.0058	0.77
Isopropylbenzene	< 0.0055	< 0.0058	0.42
Methylcyclohexane	< 0.0055	< 0.0058	3.8
Toluene	< 0.0055	0.00053	< 0.26
Total Xylenes	0.0016	0.0011	0.46

B-6	
Depth (ft bg):	10-15
No Detections	

B-5	
Depth (ft bg):	15-17
Acetone	0.014
Ethylbenzene	0.001
Isopropylbenzene	0.0012
Methylcyclohexane	0.02
Total Xylenes	0.0018

B-1	
Depth (ft bg):	14-15
Acetone	0.0085

Volatile Organic Compounds (VOCs) (mg/kg)	Part 375 Unrestricted/ Protection of Groundwater	Part 375 Restricted Residential
Acetone	0.05	100
Cyclohexane	NP	NP
Isopropylbenzene	NP	NP
Benzene	0.06	4.8
Toluene	0.7	100
Ethylbenzene	1	41
Methylcyclohexane	NP	NP
Total Xylenes	0.26	100
n-Propylbenzene	12	NP
1,3,5-Trimethylbenzene	8.4	NP
1,2,4-Trimethylbenzene	3.6	NP
Naphthalene	12	100
n-Butylbenzene	NP	NP

<1	Parameter not detected above the laboratory reporting limit
<1	Indicates the laboratory reporting limit is greater than one or more applicable comparison criteria
1	Parameter reported at a concentration greater than Part 375 Unrestricted/Protection of Groundwater SCOs
1	Parameter reported at a concentration greater than Part 375 Restricted Residential SCOs

All concentrations reported milligrams per kilogram (mg/kg)
NP = not promulgated
ft bg = feet below grade

Legend

- Site Characterization Soil Boring
- Remedial Investigation Soil Boring
- Spill Investigation Soil Boring
- Vertical Profile Soil Boring
- Site Property Line

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Revisions		
No.	Date	

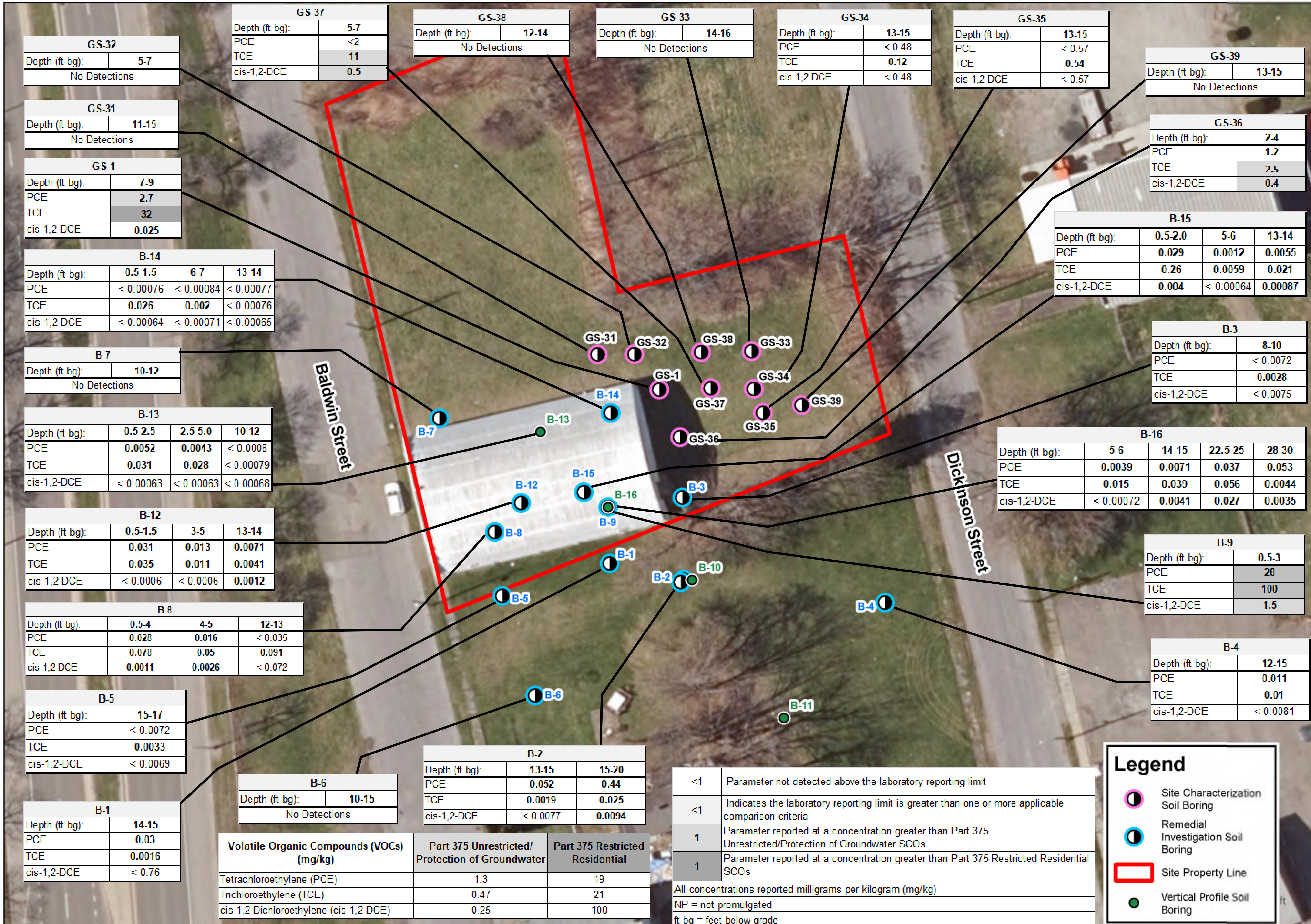
Designed By: PM
Drawn By: CMS
Reviewed By: MEW

Issue Date: 08/16/2022
Project No: DEC1017.P3
Sheet Size: 11x17

Non-Chlorinated VOC Concentrations in Soil

714 Baldwin Street Site (Site#808041)
714 Baldwin Street
City of Elmira,
Chemung County, New York

Figure No.
6A



GS-32	
Depth (ft bg):	5-7
No Detections	

GS-31	
Depth (ft bg):	11-15
No Detections	

GS-1	
Depth (ft bg):	7-9
PCE	2.7
TCE	32
cis-1,2-DCE	0.025

B-14			
Depth (ft bg):	0.5-1.5	6-7	13-14
PCE	< 0.00076	< 0.00084	< 0.00077
TCE	0.026	0.002	< 0.00076
cis-1,2-DCE	< 0.00064	< 0.00071	< 0.00065

B-7	
Depth (ft bg):	10-12
No Detections	

B-13			
Depth (ft bg):	0.5-2.5	2.5-5.0	10-12
PCE	0.0052	0.0043	< 0.0008
TCE	0.031	0.028	< 0.00079
cis-1,2-DCE	< 0.00063	< 0.00063	< 0.00068

B-12			
Depth (ft bg):	0.5-1.5	3-5	13-14
PCE	0.031	0.013	0.0071
TCE	0.035	0.011	0.0041
cis-1,2-DCE	< 0.0006	< 0.0006	0.0012

B-8			
Depth (ft bg):	0.5-4	4-5	12-13
PCE	0.028	0.016	< 0.035
TCE	0.078	0.05	0.091
cis-1,2-DCE	0.0011	0.0026	< 0.072

B-5	
Depth (ft bg):	15-17
PCE	< 0.0072
TCE	0.0033
cis-1,2-DCE	< 0.0069

B-1	
Depth (ft bg):	14-15
PCE	0.03
TCE	0.0016
cis-1,2-DCE	< 0.76

GS-37	
Depth (ft bg):	5-7
PCE	<2
TCE	11
cis-1,2-DCE	0.5

GS-38	
Depth (ft bg):	12-14
No Detections	

GS-33	
Depth (ft bg):	14-16
No Detections	

GS-34	
Depth (ft bg):	13-15
PCE	< 0.48
TCE	0.12
cis-1,2-DCE	< 0.48

GS-35	
Depth (ft bg):	13-15
PCE	< 0.57
TCE	0.54
cis-1,2-DCE	< 0.57

GS-39	
Depth (ft bg):	13-15
No Detections	

GS-36	
Depth (ft bg):	2-4
PCE	1.2
TCE	2.5
cis-1,2-DCE	0.4

B-15			
Depth (ft bg):	0.5-2.0	5-6	13-14
PCE	0.029	0.0012	0.0055
TCE	0.26	0.0059	0.021
cis-1,2-DCE	0.004	< 0.00064	0.00087

B-3	
Depth (ft bg):	8-10
PCE	< 0.0072
TCE	0.0028
cis-1,2-DCE	< 0.0075

B-16				
Depth (ft bg):	5-6	14-15	22.5-25	28-30
PCE	0.0039	0.0071	0.037	0.053
TCE	0.015	0.039	0.056	0.0044
cis-1,2-DCE	< 0.00072	0.0041	0.027	0.0035

B-9	
Depth (ft bg):	0.5-3
PCE	28
TCE	100
cis-1,2-DCE	1.5

B-4	
Depth (ft bg):	12-15
PCE	0.011
TCE	0.01
cis-1,2-DCE	< 0.0081

B-6	
Depth (ft bg):	10-15
No Detections	

B-2		
Depth (ft bg):	13-15	15-20
PCE	0.052	0.44
TCE	0.0019	0.025
cis-1,2-DCE	< 0.0077	0.0094

Volatile Organic Compounds (VOCs) (mg/kg)	Part 375 Unrestricted/ Protection of Groundwater	Part 375 Restricted Residential
Tetrachloroethylene (PCE)	1.3	19
Trichloroethylene (TCE)	0.47	21
cis-1,2-Dichloroethylene (cis-1,2-DCE)	0.25	100

<1	Parameter not detected above the laboratory reporting limit
<1	Indicates the laboratory reporting limit is greater than one or more applicable comparison criteria
1	Parameter reported at a concentration greater than Part 375 Unrestricted/Protection of Groundwater SCOs
1	Parameter reported at a concentration greater than Part 375 Restricted Residential SCOs

All concentrations reported milligrams per kilogram (mg/kg)
NP = not promulgated
ft bg = feet below grade

Legend

- Site Characterization Soil Boring
- Remedial Investigation Soil Boring
- Site Property Line
- Vertical Profile Soil Boring

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North

0 20 40 Feet

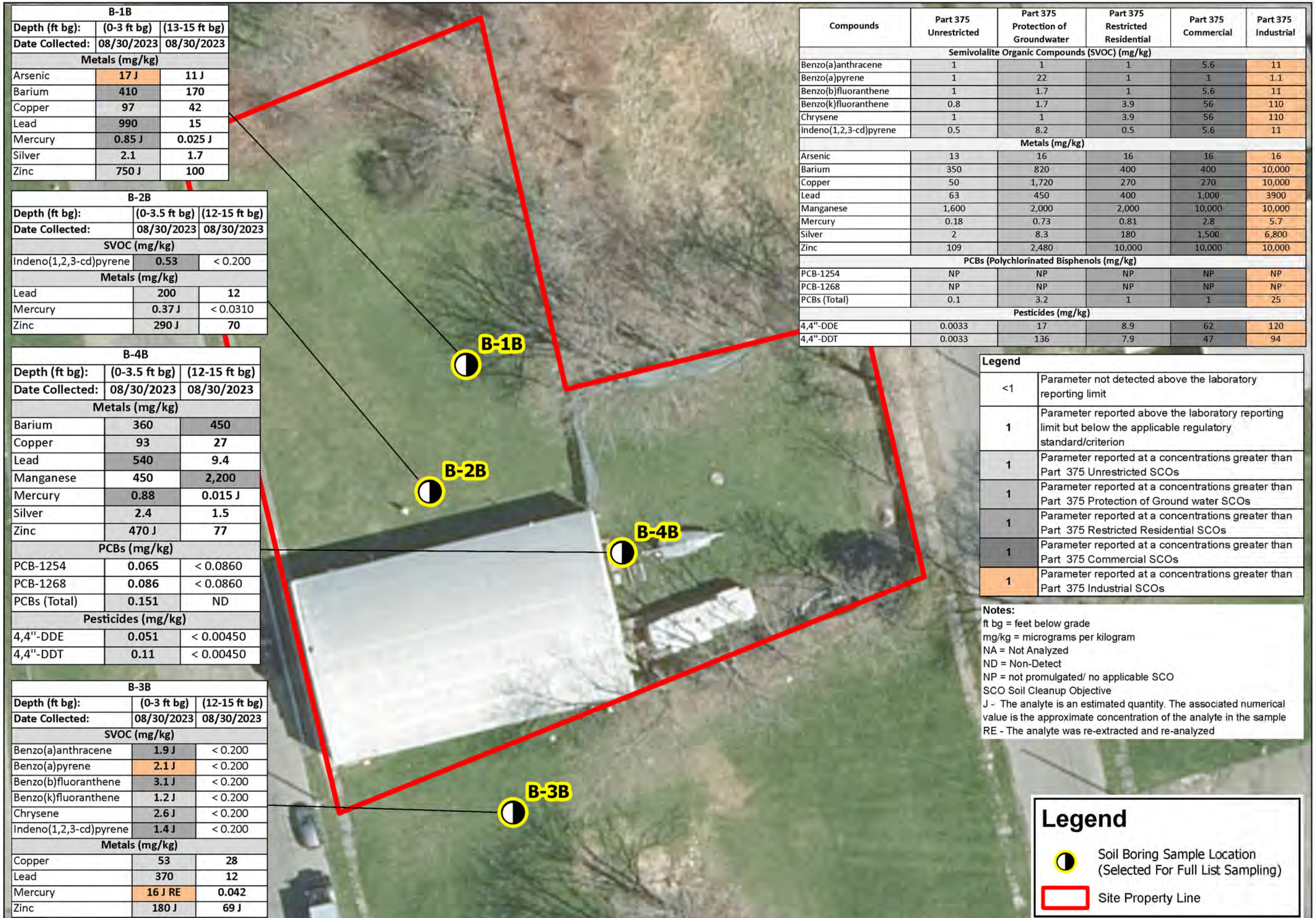
Revisions				
No.	Date			

Designed By: PM
Drawn By: CMS
Reviewed By: MEW
Issue Date: 08/16/2022
Project No: DEC1017.P3
Sheet Size: 11x17

CVOC Concentrations in Soil

714 Baldwin Street Site
(Site#808041)
714 Baldwin Street
City of Elmira,
Chemung County, New York

Figure No.
6B



B-1B		
Depth (ft bg):	(0-3 ft bg)	(13-15 ft bg)
Date Collected:	08/30/2023	08/30/2023
Metals (mg/kg)		
Arsenic	17 J	11 J
Barium	410	170
Copper	97	42
Lead	990	15
Mercury	0.85 J	0.025 J
Silver	2.1	1.7
Zinc	750 J	100

B-2B		
Depth (ft bg):	(0-3.5 ft bg)	(12-15 ft bg)
Date Collected:	08/30/2023	08/30/2023
SVOC (mg/kg)		
Indeno(1,2,3-cd)pyrene	0.53	< 0.200
Metals (mg/kg)		
Lead	200	12
Mercury	0.37 J	< 0.0310
Zinc	290 J	70

B-4B		
Depth (ft bg):	(0-3.5 ft bg)	(12-15 ft bg)
Date Collected:	08/30/2023	08/30/2023
Metals (mg/kg)		
Barium	360	450
Copper	93	27
Lead	540	9.4
Manganese	450	2,200
Mercury	0.88	0.015 J
Silver	2.4	1.5
Zinc	470 J	77
PCBs (mg/kg)		
PCB-1254	0.065	< 0.0860
PCB-1268	0.086	< 0.0860
PCBs (Total)	0.151	ND
Pesticides (mg/kg)		
4,4''-DDE	0.051	< 0.00450
4,4''-DDT	0.11	< 0.00450

B-3B		
Depth (ft bg):	(0-3 ft bg)	(12-15 ft bg)
Date Collected:	08/30/2023	08/30/2023
SVOC (mg/kg)		
Benzo(a)anthracene	1.9 J	< 0.200
Benzo(a)pyrene	2.1 J	< 0.200
Benzo(b)fluoranthene	3.1 J	< 0.200
Benzo(k)fluoranthene	1.2 J	< 0.200
Chrysene	2.6 J	< 0.200
Indeno(1,2,3-cd)pyrene	1.4 J	< 0.200
Metals (mg/kg)		
Copper	53	28
Lead	370	12
Mercury	16 J RE	0.042
Zinc	180 J	69 J

Compounds	Part 375 Unrestricted	Part 375 Protection of Groundwater	Part 375 Restricted Residential	Part 375 Commercial	Part 375 Industrial
Semivolalite Organic Compounds (SVOC) (mg/kg)					
Benzo(a)anthracene	1	1	1	5.6	11
Benzo(a)pyrene	1	22	1	1	1.1
Benzo(b)fluoranthene	1	1.7	1	5.6	11
Benzo(k)fluoranthene	0.8	1.7	3.9	56	110
Chrysene	1	1	3.9	56	110
Indeno(1,2,3-cd)pyrene	0.5	8.2	0.5	5.6	11
Metals (mg/kg)					
Arsenic	13	16	16	16	16
Barium	350	820	400	400	10,000
Copper	50	1,720	270	270	10,000
Lead	63	450	400	1,000	3900
Manganese	1,600	2,000	2,000	10,000	10,000
Mercury	0.18	0.73	0.81	2.8	5.7
Silver	2	8.3	180	1,500	6,800
Zinc	109	2,480	10,000	10,000	10,000
PCBs (Polychlorinated Bisphenols (mg/kg)					
PCB-1254	NP	NP	NP	NP	NP
PCB-1268	NP	NP	NP	NP	NP
PCBs (Total)	0.1	3.2	1	1	25
Pesticides (mg/kg)					
4,4''-DDE	0.0033	17	8.9	62	120
4,4''-DDT	0.0033	136	7.9	47	94

Legend	
<1	Parameter not detected above the laboratory reporting limit
1	Parameter reported above the laboratory reporting limit but below the applicable regulatory standard/criterion
1	Parameter reported at a concentrations greater than Part 375 Unrestricted SCOs
1	Parameter reported at a concentrations greater than Part 375 Protection of Ground water SCOs
1	Parameter reported at a concentrations greater than Part 375 Restricted Residential SCOs
1	Parameter reported at a concentrations greater than Part 375 Commercial SCOs
1	Parameter reported at a concentrations greater than Part 375 Industrial SCOs

Notes:
ft bg = feet below grade
mg/kg = micrograms per kilogram
NA = Not Analyzed
ND = Non-Detect
NP = not promulgated/ no applicable SCO
SCO Soil Cleanup Objective
J - The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample
RE - The analyte was re-extracted and re-analyzed

Legend
Soil Boring Sample Location (Selected For Full List Sampling)
Site Property Line

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North
0 15 30 Feet

Revisions	
No.	Date

Designed By: JG
Drawn By: CMS
Reviewed By: MEW
Issue Date: 12/05/2023
Project No: DEC1017.P3
Sheet Size: 11x17

SVOC, Metal, PCBs and Pesticide Soil Results (Exceedances Only)

714 Baldwin Street Site (Site#808041)
714 Baldwin Street
City of Elmira,
Chemung County, New York

Figure No.
6C

Path: S:\Data\NYDEC - NYSDEC\ELMIRA\714 BALDWIN STREET, ELMIRA, NY\DEC1017P3\GIS\GIS.aprx

MW-3	
Date Collected:	12/16/2021
Benzene	1.1
Total Xylenes	1.6
Acetone	2.8
Chloroform	1.2

MW-7	
Date Collected:	12/16/2021
MTBE	2.4

MW-4	
Date Collected:	12/16/2021
trans-1,2-DCE	1.1
Benzene	36
Isopropylbenzene	12.4
Cyclohexane	90.4
Methylcyclohexane	28.6
Acetone	5.5
Chloroform	1.7

MW-8	
Date Collected:	12/16/2021
PCE	1.5
TCE	13.5
cis-1,2-DCE	2.5
MTBE	4.7

Boring ID:	BGW-16		
Depth (ft bg):	(13-16)	(23-26)	(32-35)
Date Collected:	4/22/2022	4/22/2022	4/22/2022
PCE	67	29	11
TCE	720	170	83
cis-1,2-DCE	270	140	45
Vinyl chloride	21	12	1.2
trans-1,2-DCE	2.2	1.2	< 0.67
1,1-DCE	3.7	2.3	1
1,1,1-TCA	< 1.7	0.6	< 0.68
Benzene	< 2	1.2	< 0.8
MTBE	< 1.7	1.3	3.4
Toluene	< 2.2	1.3	1
MEK	54	< 3.2	45
Acetone	41	18	43
Chloroform	2.3	< 0.34	< 0.67
Methylene chloride	2.8	< 0.47	2.3

MW-2	
Date Collected:	12/16/2021
Benzene	1170
Toluene	108
Ethylbenzene	522
Total Xylenes	726
Isopropylbenzene	150
MTBE	12
Cyclohexane	148
Methylcyclohexane	116
Acetone	9

MW-5	
Date Collected:	12/16/2021
No detections	

MW-1R	
Date Collected:	12/16/2021
Benzene	14.6
Toluene	32.7
Ethylbenzene	50.6
Total Xylenes	164
Isopropylbenzene	16
MTBE	15.4
Cyclohexane	101
Methylcyclohexane	53.2
Acetone	7.6

NYSDEC CLASS GA CRITERIA	
Volatile Organic Compounds (VOCs) (µg/L)	
Tetrachloroethylene (PCE)	5
Trichloroethylene (TCE)	5
cis-1,2-Dichloroethylene (cis-1,2-DCE)	5
Vinyl chloride	2
trans-1,2-Dichloroethylene (trans-1,2-DCE)	5
1,1-Dichloroethene (1,1-DCE)	5
1,1,1-Trichloroethane (1,1,1-TCA)	5
1,1-Dichloroethane (1,1-DCA)	5
Benzene	1
Toluene	5
Ethylbenzene	5
Total Xylenes	5
Isopropylbenzene	5
Methyltertbutyl ether (MTBE)	10
2-Butanone (MEK)	50
Acetone	50
Bromomethane	5
Chloroform	7
Methylene chloride	5

Boring ID:	BGW-13			
Depth (ft bg):	(13-16)	(23-26)	(33-36)	(43-46)
Date Collected:	4/21/2022	4/21/2022	4/21/2022	4/21/2022
PCE	1.4	21	9.1	< 1.9
TCE	4.4	2.7	2.6	< 1.9
cis-1,2-DCE	< 0.59	7.3	5.4	< 1.5
1,1,1-TCA	< 0.68	0.48	< 0.68	< 1.7
Benzene	< 0.8	< 0.2	0.88	< 2
MTBE	< 0.69	0.31	0.88	< 1.7
Toluene	< 0.9	0.25	1.4	< 2.2
MEK	45	< 1.6	43	36
Acetone	38	4.6	50	54
Chloroform	1.7	< 0.17	< 0.67	< 1.7
Methylene chloride	1.9	< 0.23	1.9	< 2.3

<1	Parameter not detected above the laboratory reporting limit
<1	Indicates the laboratory reporting limit is greater than one or more applicable comparison criteria
1	Parameter reported at a concentration greater than NYSDEC Class GA Criteria
All concentrations reported micrograms per liter (µg/L)	
NP = not promulgated	
ft bg = feet below grade	
VOCs = volatile organic compounds	

MW-9	
Date Collected:	12/16/2021
PCE	2.8
TCE	4.5
cis-1,2-DCE	2.2
Ethylbenzene	1.7
Isopropylbenzene	1.6
MTBE	2
Cyclohexane	5.2
Methylcyclohexane	1.6

Boring ID:	BGW-10			
Depth (ft bg):	(16-19)	(26-29)	(36-39)	(46-49)
Date Collected:	4/19/2022	4/19/2022	4/19/2022	4/19/2022
PCE	460	17	14	77
TCE	52	3.1	3.4	9.2
cis-1,2-DCE	44	3.7	2.4	6.6
trans-1,2-DCE	1.7	< 0.67	< 0.67	< 0.67
Benzene	< 1	< 0.8	< 0.8	0.88
MTBE	< 0.86	7	9.6	5.5
Toluene	< 1.1	< 0.9	< 0.9	0.96
MEK	49	53	46	62
Acetone	32	42	28	64
Methylene chloride	2.3	1.9	1.6	2.2

Boring ID:	BGW-11		
Depth (ft bg):	(12-15)	(22-25)	(32-35)
Date Collected:	4/20/2022	4/20/2022	4/20/2022
PCE	17	7.7	35
TCE	3.3	3.1	9.5
cis-1,2-DCE	0.88	2.1	11
Vinyl chloride	< 0.42	0.4	< 1
1,1,1-TCA	< 0.34	2.6	5.2
1,1-DCA	< 0.28	0.24	1.5
Benzene	< 0.4	0.45	4.8
MTBE	< 0.34	0.18	1.6
MEK	< 3.2	< 1.6	57
Acetone	< 4.1	< 2	61
Methylene chloride	< 0.47	< 0.23	2.1

MW-10		
Date Collected:	7/29/2021	12/16/2021
PCE	620	629
TCE	77	60.6
cis-1,2-DCE	32	13.2
1,1,2-TCA	< 2.3	< 1.0

MW-11		
Date Collected:	7/29/2021	12/16/2021
PCE	1,400	1,680
TCE	95	88.6
cis-1,2-DCE	64	56.4
1,1,2-TCA	30	< 1.0

Legend

- Groundwater Flow Direction
- Site Property Line
- Groundwater Monitoring Well
- Vertical Profile Soil Boring
- Extent of BTEX Plume (Exceeds Class GA)
- Approximate Extent of PCE Plume (PCE>25 ug/L) - Dashed Where Inferred

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Revisions	
No.	Date

Designed By: PM
Drawn By: CMS
Reviewed By: MEW

Issue Date: 01/14/2025
Project No: DEC1017.P3
Sheet Size: 11x17

VOC Concentrations in Groundwater

714 Baldwin Street Site (Site#808041)
714 Baldwin Street
City of Elmira,
Chemung County, New York

Figure No.
7

MW-2	
Date Collected:	08/30/2023
SVOCs (ug/l)	
2,4-Dimethylphenol	41
2-Methylnaphthalene	4.9 J
3- And 4- Methylphenol	6.9
Acetophenone	1.9 J
Naphthalene	28
o-cresol	7.8
Phenol	56
Metals (ug/l)	
Aluminum	25.0 J
Arsenic	13
Barium	280
Calcium	75000
Iron	37000
Magnesium	17000
Manganese	9000
Potassium	4100
Sodium	52000
Herbicides and Pesticides (ug/l)	
4,4"-DDD	0.042
4,4"-DDE	0.038 J
4,4"-DDT	0.054

MW-4	
Date Collected:	08/30/2023
Metals (ug/l)	
Aluminum	37.0 J
Antimony	17.0 J
Barium	320
Calcium	130000
Iron	4400
Magnesium	24000
Manganese	2300
Nickel	5.20 J
Potassium	7500
Selenium	19.0 J
Sodium	48000
Zinc	12

NYDEC Class GA Criteria	
Semivolatile Organic Compounds	
2,4-Dimethylphenol	50
2-Methylnaphthalene	NP
3- And 4- Methylphenol	NP
Acetophenone	NP
Naphthalene	10
o-cresol	NP
Phenol	1
Metals (ug/l)	
Aluminum	NP
Antimony	3
Arsenic	25
Barium	1000
Calcium	NP
Iron	300
Magnesium	35000
Manganese	300
Nickel	100
Potassium	NP
Selenium	10
Sodium	20000
Zinc	2000
Herbicides and Pesticides (ug/l)	
4,4"-DDD	0.3
4,4"-DDE	0.2
4,4"-DDT	0.2

MW-10	
Date Collected:	08/31/2023
Metals (ug/l)	
Aluminum	180
Barium	82
Calcium	33000
Iron	180
Magnesium	7000
Manganese	8.70 J
Potassium	3500
Selenium	20.0 J
Sodium	6800

MW-11	
Date Collected:	08/31/2023
Metals (ug/l)	
Aluminum	88
Barium	63
Calcium	92000
Iron	130
Magnesium	14000
Manganese	360
Nickel	3.20 J
Potassium	11000
Selenium	27.0 J
Sodium	19000
Zinc	9.30 J

Legend	
<1	Parameter not detcted above the laboratory reporting limit
1	Parameter reported above the laboratory reporting limit but below the applicable regulatory standard/criterion
1	Parameter reported at a concentrations greater than NYSDEC Class GA Criteria

Notes:
ug/l = micrograms per liter
NA = Not Analyzed
NP = not promulgated/ no applicable cleanup criteria
NYSDEC = New York State Department of Environmental Conservation
J - The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample
No PCB compounds were detected for any groundwater samples

Legend

Groundwater Monitoring Well (Selected for Full List Sampling)
Site Property Line

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SVOC, Metal and Pesticide Groundwater Results (Detections Only)

714 Baldwin Street Site
(Site#808041)
714 Baldwin Street
City of Elmira,
Chemung County, New York

Figure No.
7B

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Alternative 2
Proposed SSDS

714 Baldwin Street Site
(Site#808041)
714 Baldwin Street
City of Elmira,
Chemung County, New York

Figure No.
8

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Alternative 3: Proposed SVE, Air Sparge System and Monitored Natural Attenuation

714 Baldwin Street Site
(Site#808041)
714 Baldwin Street
City of Elmira,
Chemung County, New York

Figure No.

9

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Alternative 4 Site Plan ISCO Injections and SVE

714 Baldwin Street Site
(Site#808041)
714 Baldwin Street
City of Elmira,
Chemung County, New York

Figure No.
10

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Alternative 5: Excavation of Soil Source Area Proposed ISCO Injections and SSDS

714 Baldwin Street Site (Site#808041)
714 Baldwin Street
City of Elmira,
Chemung County, New York

Figure No.

11

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