PROPOSED REMEDIAL ACTION PLAN

Zip Zip Mini Market Site
Environmental Restoration
Project Syracuse, Onondaga
County Site No. B00075
February 2020

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

PROPOSED REMEDIAL ACTION PLAN

Zip Zip Mini Market Site
Syracuse (c), Onondaga County
Site No. B00075
February 2020

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 contaminants 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 contaminants at this site, as more fully described in Section 6 of this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum. 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 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled, or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated, the property can then be reused.

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 online through the DECinfo Locator: https://www.dec.ny.gov/data/DecDocs/B00075/ and at the following repository:

City of Syracuse
Attn: Owen Kerney
201 East Washington Street, Room 512
Syracuse, NY 13202
Phone: (315) 448-8110

A public comment period has been set from:

02/12/2020 to 03/28/2020

A public meeting is scheduled for the following date:

03/12/2020 at 6:00pm

Public meeting location:

NYS Department of Environmental Conservation
615 Erie Blvd West
Syracuse, NY 13204

At the meeting, the findings of the remedial investigation (RI) and the alternatives analyses (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 through 03/28/2020 to:

Michael Belveg
NYS Department of Environmental Conservation
Division of Environmental Remediation
615 Erie Blvd W
Syracuse, NY 13204
michael.belveg@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 Zip Zip Mini Market Site is a 1.14-acre site located in an urban area. The site is located at 1410 Erie Boulevard East along the eastern side of the City of Syracuse. The site is bordered by Erie Boulevard to the north, Cherry Street to the east, East Washington Street to the south, and South Beach Street to the west.

Site Features: The site is relatively flat and has one building that is partially located on-site. The building is owned by the adjoining property owner and is an automobile repair shop. The site is mostly made up of hard compact soil and gravel. The building located on the adjacent parcel to the east slightly encroaches onto the western portion of the site.

Current Zoning and Land Use: The site is currently being used as a parking area and is zoned for commercial use. The surrounding parcels are currently used for a combination of commercial, light industrial, and utility right-of-ways. The nearest residential area is approximately 100 yards to the south on East Washington Street.

Past Use of the Site: Until 1997, the site was used as a retail gasoline business prior to a fire that destroyed the service building. Contamination at the site is believed to be the result of four underground storage tanks being left at the property without being closed properly.

Site Geology and Hydrogeology: The site has an approximate elevation of 440 feet above mean sea level and is relatively flat. The majority of the overland flow is towards Erie Blvd. East and Route 690, where subtle east sloping topography results in discharge to the south branch of Ley Creek, which eventually discharges into Onondaga Lake. Site soils consist of Urban Land with the bedrock anticipated to be of the Upper Silurian Age. The bedrock geology underlying the site is the Syracuse Formation, which consists of dolostone, shale, gypsum, and salts.

The estimated depth to groundwater is less than 10 feet below ground surface. Groundwater at the site generally flows to the north towards Ley Creek.

A site location map is attached as Figure 1, a site boundary map is attached as Figure 2, and a site map is attached as Figure 3.

SECTION 4: LAND USE AND PHYSICAL SETTING

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

No PRPs have been documented to date.

Since no viable PRPs have been identified, there are currently no ongoing enforcement actions. However, legal action may be initiated at a future date by the State to recover state response costs should PRPs be identified. The City of Syracuse will assist the State in its efforts by providing all information to the state which identifies PRPs. The City of Syracuse will also not enter into any agreement regarding response costs without the approval of the Department.

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

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 contaminant 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 contaminants of concern identified at this site are:

benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzene
ethylbenzene
isopropylbenzene
methyl-tert-butyl ether (MTBE)
toluene
xylene (total)
naphthalene
pyrene

As illustrated in Exhibit A, the contaminants of concern exceed the applicable SCGs for:

- groundwater
- soil

6.2: Interim Remedial Measures

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

The following IRMs have been completed at this site based on conditions observed during the RI.

UST and Residual Soil Removal IRM

In September of 2005, an excavation program was undertaken to remove the six underground storage tanks (USTs) and associated contaminated soils at the site. The excavations took place at two different UST areas, the gasoline UST area in the southwestern portion of the site, and the

waste oil UST area in the central/eastern portion of the site. The excavations went to a depth of approximately 11 feet bgs.

In addition to the tanks, approximately 568 tons of contaminated soil were removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) was brought in to replace the excavated soil and establish the designed grades at the site. More details of the work completed under this IRM are within the Construction Completion Report (CCR) submitted to the Department in May 2006.

Soil and Source Removal IRM

In January of 2008, an excavation program was undertaken to remove and properly dispose of additional petroleum-impacted soils, subsurface structures, piping and equipment. Soils that were visibly stained, that exhibited petroleum-like odors, or with measured levels of volatile vapors exceeding 20 parts per million (ppm) on a field instrument, were loaded for disposal. The excavations addressed three distinct areas: the former dispenser island area, the vault and equipment area, and the slab removal area. The excavations went to a depth of 18 feet bgs.

Approximately 1,707 tons of contaminated soil and debris were removed from the site. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) was brought in to replace the excavated soil and establish the designed grades at the site. More details of the work completed under this IRM are within the CCR submitted to the Department in March 2008.

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.

Nature and Extent of Contamination:

Post-IRM: Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals. Soils were also analyzed for polychlorinated biphenyls (PCBs), and pesticides. Based upon investigations conducted to date, the primary contaminants of concern are VOCs and SVOCs with minor detections of pesticides and metals.

Soil:

Surface Soils:
Only one VOC, acetone, was detected at a concentration of 0.056 ppm which exceeded the Part 375 unrestricted use SCO of 0.05 ppm. This detection was, however, below the Part 375 commercial use SCO of 500 ppm.

Three SVOCs were detected at concentrations exceeding their respective Part 375 commercial use SCOs. These were benzo[a]anthracene at a maximum concentration of 8.2 ppm with a commercial SCO of 5.6 ppm, benzo[a]pyrene at a maximum concentration of 7 ppm with a commercial SCO of 1 ppm, and benzo[b]fluoranthene at a maximum concentration of 8.2 ppm with a commercial SCO of 5.6 ppm. These concentrations were present in the northeast portion of the site. There are several other compounds including benzo[k]fluoranthene at a maximum concentration of 3.3 ppm, chrysene at a maximum concentration of 5.3 ppm, and indeno[1,2,3-cd]pyrene at a maximum concentration of 3.7 ppm, exceeding their respective Part 375 Restricted Residential SCOs, but below Part 375 commercial SCOs. No other SVOCs exceeded unrestricted use SCOs.

Only one pesticide, 4,4'-DDT, was detected in a surface soil sample at a concentration of 0.0094 ppm which exceeds the Part 375 unrestricted use SCO of 0.0033 ppm but is less than the Part 375 commercial use SCO of 47 ppm.

No PCBs were identified in the surface soil samples.

One metal, lead, at a maximum concentration of 854 ppm, exceeded its Part 375 restricted residential SCO of 400 ppm but was less than the commercial SCO of 1000 ppm. Zinc was detected at a maximum concentration of 569 ppm, exceeding the Part 375 unrestricted use SCO of 109 ppm.

Subsurface Soils:
No VOCs were detected in subsurface soil samples at concentrations exceeding their respective commercial use SCOs. There were several compounds including acetone at a maximum of 0.11 ppm, benzene at a maximum of 1.1 ppm, ethylbenzene at a maximum of 3.6 ppm, methylene chloride at a maximum of 0.068 ppm, and xylenes (total) at a maximum of 20 ppm, that were detected above their respective Part 375 unrestricted use SCOs. Benzene, ethylbenzene and xylenes (total) also exceeded their respective Part 375 Protection of Groundwater SCOs.

No SVOCs were detected in subsurface soil samples at concentrations exceeding their respective commercial use SCOs. There were several compounds, including benzo(b)fluoranthene at a maximum concentration of 1.1 ppm and indeno(1,2,3-cd)pyrene at a maximum concentration of 0.56 ppm, that were detected above their respective Part 375 unrestricted use SCOs.

No pesticides were detected in subsurface soil samples at concentrations exceeding their unrestricted use SCOs.

No metals were detected in subsurface soil samples at concentrations exceeding their respective commercial use SCOs. There were two compounds including mercury at a maximum concentration of 0.19 ppm and nickel, at a maximum concentration of 43.2 ppm, that were detected above their respective Part 375 unrestricted use SCOs.

Groundwater (GW):

No metals were detected above their respective groundwater standards.

VOCs detected in groundwater above ambient quality standards include benzene at a maximum concentration of 120 parts per billion (ppb), ethylbenzene at a maximum concentration of 83 ppb, isopropylbenzene at a maximum of 6.4 ppb, methyl tert-butyl ether at a maximum of 73 ppb, toluene at a maximum of 48 ppb, and xylenes (total) at a maximum of 440 ppb. Most of the VOC groundwater impacts were located in the northern portion of the site, except for methyl tert-butyl ether, which was detected throughout the site.

SVOCs detected in groundwater above their respective standards include 2,4-dimethylphenol at a maximum of 6.4 ppb, naphthalene at a maximum of 17 ppb, and phenol at a maximum of 3.2 ppb. All of the SVOC groundwater impacts were located in the northern portion of the site.

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 is not restricted and people who enter the site could contact contaminants in the soil by walking on it, digging, or otherwise disturbing the soil. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in the soil vapor (air spaces within the soil) may move into buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The potential exists for the inhalation of site contaminants due to soil vapor intrusion on and offsite.

6.5: Summary of the Remediation Objectives

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

The remedial action objectives for this site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

practicable.
- Remove the source of ground or surface water contamination.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

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

Soil Vapor

RAOs for Public Health Protection

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

SECTION 7: SUMMARY OF THE 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 Alternatives Analysis 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 In-situ treatment and Cover System remedy.

The estimated present worth cost to implement the remedy is $554,000. The cost to construct the remedy is estimated to be $514,500 and the estimated average annual cost is $2,000.

The elements of the proposed remedy are as follows:

1. Remedial Design

A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. This will also include an assessment to determine if any contamination is migrating off-site in soil, or groundwater and would include sampling of the building that is partially on-site for soil vapor intrusion, pending permission from the building's owner. 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
• Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings will include, at a minimum, a 20-mil vapor barrier/waterproofing membrane on the foundation to improve energy efficiency as an element of construction.

2. Cover System

The site will be regraded, and a site cover will be required to allow for commercial use of the site in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where a soil cover is to be used it will be a minimum of one foot of soil placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetative layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs.

3. Groundwater Remedies

In-situ chemical oxidation will be implemented to treat contaminants in groundwater. A chemical oxidant will be injected into the subsurface to destroy the contaminants in an approximately 300 square foot area located in the northern portion of the site where gasoline-related compounds were elevated in the groundwater. The method and depth of injection will be

determined during the remedial design. Monitoring will be required upgradient, downgradient, and within the treatment zone.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. Between the pilot and the full-scale implementations, it is estimated that one shallow and one deep injection point will be installed. It is estimated that the chemical oxidant will be injected during two separate events over several months.

4. 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 commercial 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.

5. 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 4 above.

- Engineering Controls:
    - The soil cover discussed in Paragraph 2 and injections as discussed in Paragraph 3.

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;
• A provision for evaluation of the potential for soil vapor intrusion for any new or occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;

• Provisions for the management and inspection of the identified engineering controls;
• Maintaining site access controls and Department notification; and
• The steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

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

•Monitoring of the groundwater to assess the performance and effectiveness of the remedy; and

• A schedule of monitoring and frequency of submittals to the Department.

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

• Procedures for operating and maintaining the remedy;
• 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 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 values (SCGs) for the site. The contaminants are arranged into four categories: 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 were impacting groundwater and soil prior to the implementation of the IRMs as described in section 6.2.

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site where substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and source areas identified at the site included, underground storage tanks (USTs), the dispenser island area, and the vault/equipment storage area, Figure 3. The USTs were left at the site after the service station burned down in 1997.

Waste and source areas were identified at the site within the UST area, dispenser island area, and the vault/equipment storage area. Petroleum and other service station wastes were found within subsurface structures including the USTs and the pump islands.

The waste/source areas identified at the site were addressed by the IRMs described in Section 6.2.

Groundwater

Groundwater samples were collected from overburden monitoring wells. The samples were collected to assess groundwater conditions on and off-site. The results indicate that contamination in groundwater at the site exceeds the SCGs for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs).

Table #1 – Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Benzene	ND-120	1	1/5
Ethylbenzene	ND-83	5	1/5

Isopropylbenzene	ND-6.4	5	1/5
Methyl tert-butyl ether	0.7-73	10	3/5
Toluene	ND-48	5	1/5
Xylene (Total)	ND-440	5	1/5
SVOCs			
2,4-Dimethylphenol	ND-6.4	1	1/5
Naphthalene	ND-17	10	1/5
Phenol	ND-3.2	1	1/5

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 MTBE, benzene, ethylbenzene, and xylenes (total) associated with operation of the former gas station. As noted on Figure 4, the primary groundwater contamination is associated with the former dispenser island area located in the northern portion of the site.

Based on the findings of the RI, the presence of USTs and other service station wastes have 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: benzene, ethylbenzene, and xylenes (total).

Soil

Surface and subsurface soil samples were collected at the site during the RI and post implementation of the IRMs as described in Section 6.2. Surface soil samples were collected from a depth of 0-24 inches to assess direct human exposure. Subsurface soil samples were collected from a depth of 2-20 feet to assess soil contamination impacts to groundwater. The results indicate that soils at the site exceed the unrestricted use SCGs for volatile and semi-volatile organics, pesticides, and inorganics and the restricted commercial SCGs for semi-volatile organics. Table 2 shows the contaminant constituents detected, the concentration ranges, and the frequency in which they exceeded SCGs for soils after the IRMs were implemented.

Table #2 – Soil

Detected Constituents	Concentration Range Detected (ppb)[a]	Unrestricted SCG[b] (ppb)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppb)	Frequency Exceeding Restricted SCG
VOCs					
Acetone	ND - 110	50	5/16	500000	0/16
Benzene	ND - 1100	60	2/16	60[d]	2/16
Ethylbenzene	ND - 3600	1000	1/16	1000[d]	1/16

Detected Constituents	Concentration Range Detected (ppb)[a]	Unrestricted SCG[b] (ppb)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppb)	Frequency Exceeding Restricted SCG
Methylene Chloride	ND - 68	50	1/16	500000	0/16
Xylenes, total	ND – 20000	260	2/16	1600[d]	2/16
SVOCs					
Benzo[a]anthracene	ND - 8200	1000	1/14	5600	1/14
Benzo[a]pyrene	ND – 7000	1000	1/14	1000	1/14
Benzo[b]fluoranthene	ND - 8200	1000	1/14	5600	1/14
Benzo[k]fluoranthene	ND - 3300	800	1/14	56000	0/14
Chrysene	ND - 5300	1000	1/14	56000	0/14
Indeno[1,2,3-cd]pyrene	ND - 3700	500	1/14	5600	0/14
Pesticides					
4,4'-DDT	ND – 9.4	3.3	1/5	47000	0/5
Inorganics					
Lead	4.6 - 854	63	3/14	1000	0/14
Mercury	0.014 – 0.19	0.18	1/14	2.8	0/14
Nickel	6.4 – 43.2	30	3/14	310	0/14
Zinc	20.2 - 569	109	2/14	10000	0/14

a - ppb: parts per billion, which is equivalent to milligrams per kilogram, ug/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 Public Health for Commercial Use, unless otherwise noted.
d – SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Groundwater

A majority of the soil contamination identified during the RI was addressed during the IRMs described in Section 6.2.

Based on the findings of the Remedial Investigation, the presence of USTs and other service station wastes have 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, benzo[a]anthracene, benzo[a]pyrene, and benzo[b]fluoranthene.

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 Further Action

The No Further Action Alternative recognizes the remediation of the site completed by the IRMs described in Section 6.2. This alternative leaves the site in its present condition and does not provide any additional protection of the environment.

Alternative 2: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil cleanup objectives listed in Part 375-6.8 (a). This alternative would include excavation and off-site disposal of all waste and soil contamination above the unrestricted soil cleanup objectives. The anticipated volume of soil to be removed is 11,000 cubic yards or 18,000 tons. The remedy does not rely on institutional or engineering controls to prevent future exposure. As there would be no contamination remaining above unrestricted SCOs and groundwater cleanup would be achieved through in-situ chemical oxidation (ISCO) injections, there is no need for long-term site management, restrictions, or periodic review. This remedy will have no annual cost, only the capital cost.

Capital Cost:.....$2,700,000

Alternative 3: Cover System

This alternative would include a soil cover over the entire site consisting of a minimum of one foot of soil placed over a demarcation layer. Soil cover material, including any fill material brought to the site, will meet the SCOs for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs. A pre-design investigation (PDI) would be performed to evaluate the potential for off-site migration of site-related contaminants in soil, groundwater, and soil vapor. As part of the PDI, emerging contaminants would be assessed as well. Any off-site area containing site-related contaminants in groundwater, soil or soil vapor above SCGs would be assessed and remediated as appropriate. Groundwater would not be actively addressed in this remedy, however use restrictions would be put in place.

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan is required with this remedy. The remedy will achieve a commercial cleanup at a minimum and includes an environmental easement, and site management plan.

Present Worth:.....*$256,000*
Capital Cost:.....*$217,000*
Annual Costs:.....*$2,000*

Alternative 4: In-situ Treatment and Cover System

This alternative would include a soil cover consisting of a minimum of one foot of soil placed over a demarcation layer. Soil cover material, including any fill material brought to the site, will meet the requirements for cover material for the use of the site as set forth in 6 NYCRR Part 375-6.7(d). Substitution of other materials and components may be allowed where such components already exist or are a component of the tangible property to be placed as part of site redevelopment. Such components may include, but are not necessarily limited to: pavement, concrete, paved surface parking areas, sidewalks, building foundations and building slabs. A PDI would be performed to evaluate the potential for off-site migration of site-related contaminants in soil, groundwater, and soil vapor. As part of the PDI, emerging contaminants would be assessed as well. Any off-site area containing site-related contaminants in groundwater, soil or soil vapor above SCGs would be assessed and remediated as appropriate.

In-situ chemical oxidation would be implemented to treat contaminants in groundwater. A chemical oxidant would be injected into the subsurface to destroy the contaminants in an approximately 300 square foot area located in the northern portion of the site where gasoline-related compounds were elevated in the groundwater. The method and depth of injection would be determined during the remedial design.

Groundwater monitoring would be required up-gradient, down-gradient, and within the treatment zone.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies would be conducted to more clearly define design parameters. Between the pilot and the full-scale implementations, it is estimated that one shallow and one deep injection points would be installed. It is estimated that the chemical oxidant chemical oxidant would be injected during approximately two separate events over several months.

Imposition of an institutional control in the form of an environmental easement and a Site Management Plan is required with this remedy. The remedy will achieve a commercial cleanup at a minimum and includes an environmental easement, and site management plan.

Present Worth: *$554,000*
Capital Cost: *$515,000*
Annual Costs: *$2,000*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Further Action	0	0	0
Restoration to Pre-Disposal or Unrestricted Conditions	2,700,000	0	2,700,000
Cover System	217,000	2,000	256,000
In-situ Treatment and Cover System	515,000	2,000	554,000

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 4, In-situ Treatment and Cover System as the remedy for this site. Alternative 4 would achieve the remediation goals for the site by providing a cover system that will allow for commercial use. The elements of this remedy are described in Section 7.

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 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, Alternative 4 would satisfy this criterion by covering the contaminated soils. Alternative 4 addresses the source of the groundwater contamination, which is the most significant threat to public health and the environment. Alternative 1 (No Action) does not provide any protection to public health and the environment and will not be evaluated further. Alternative 2, by removing all soil contaminated above the unrestricted soil cleanup objective, meets this threshold criteria. Alternative 3 complies with this criterion but to a lesser degree or with lower certainty. Alternatives 3 and 4 rely on a restriction of groundwater use at the site to protect human health. Alternative 2 may require a short-term restriction on groundwater use; however, it is expected the restriction would be able to be removed in approximately three to five years.

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 4 complies with SCGs to the extent practicable. It addresses source areas of contamination and complies with the restricted use soil cleanup objectives at the surface through construction of a cover system. It also creates the conditions necessary to restore groundwater quality to the extent practicable. Alternative 3 also complies with this criterion but to a lesser degree or with lower certainty. Because Alternatives 2, 3 and 4 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site. It is expected Alternatives 2 and 4 will achieve groundwater SCGs within several years, while groundwater contamination above SCGs will remain on-site under Alternative 3 for many years.

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 overburden soils (Alternative2). Since most of the contamination is in the eastern corner of the site, Alternative 2 results in removal of all of the contamination at the site and thus alleviates the need for property use restrictions and long-term monitoring. Alternative 4 would result in the covering of all of the contaminated soil at the site and the treatment of source areas in the groundwater, but it also requires an environmental easement and long-term monitoring. For Alternative 3, site management remains effective, but it would be less desirable 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 2, excavation and off-site disposal, reduces the mobility and volume of on-site waste by transferring the material to an approved off-site location. However, depending on the disposal facility, the volume of the material would not be reduced. Alternative 3 requires covering the contaminated soil. Although the volume of the contaminated soil is not reduced, the overwhelming majority of contamination at the site would be reduced in its mobility. However, the sites soils will contain residual contamination, entailing restrictions on the use of the property and long-term maintenance of the capped area. Only Alternative 4 would permanently reduce the toxicity, mobility and volume of contaminants in groundwater by use of chemical treatment.

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

Alternatives 2 through 4 all have short-term impacts to the community, the workers, and the environment such as noise and truck traffic which could easily be controlled, however, Alternative 3 would have the smallest impact. The time needed to achieve the remediation goals is the shortest for Alternative 3 and longer for Alternative 2. Alternative 4 takes the longest to achieve the remediation goals.

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, and 4 are favorable in that they are readily implementable, relying on proven technologies. Alternative 2 is also implementable, but the volume of soil excavated under this alternative would necessitate increased truck traffic on local roads for up to several months.

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

The costs of the alternatives vary significantly. Alternative 3 has the lowest cost, but the contaminated groundwater would not be addressed other than by institutional controls. With its large volume of soil to be

handled, Alternative 2 (excavation and off-site disposal) would have the highest present work cost. Covering and ISCO injections (Alternative 4) would be much less expensive than Alternative 2, yet it would provide equal protection of the groundwater resource. The capital cost for Alternative 4 would be higher than that of Alternative 3. The long-term maintenance cost of the capped areas with Alternatives 4 and 5 would be similar.

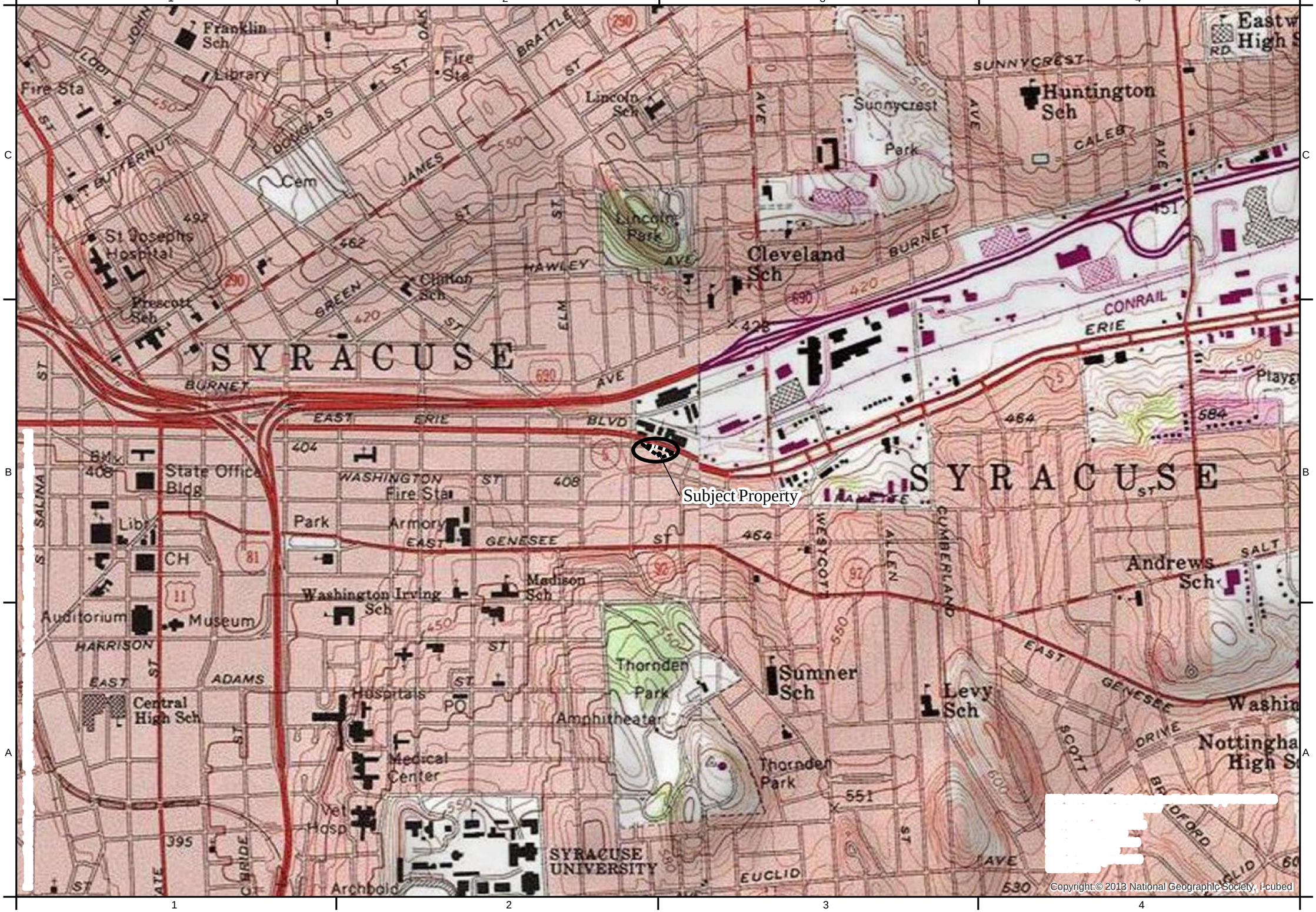
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

The anticipated use of the site is commercial, and Alternatives 2, 3 and 4 are all compatible with that use. The remaining contamination with Alternatives 3 and 4 would be controllable with implementation of a Site Management Plan. With Alternative 2, removing all of the contaminated soil from the site, restrictions on the site use would not be necessary.

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



C&S COMPANIES®

C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, New York 13212
Phone: 315-455-2000
Fax: 315-455-9667
www.cscos.com

Syracuse New York

0

0 1,000 Feet

1 inch = 1,000 feet

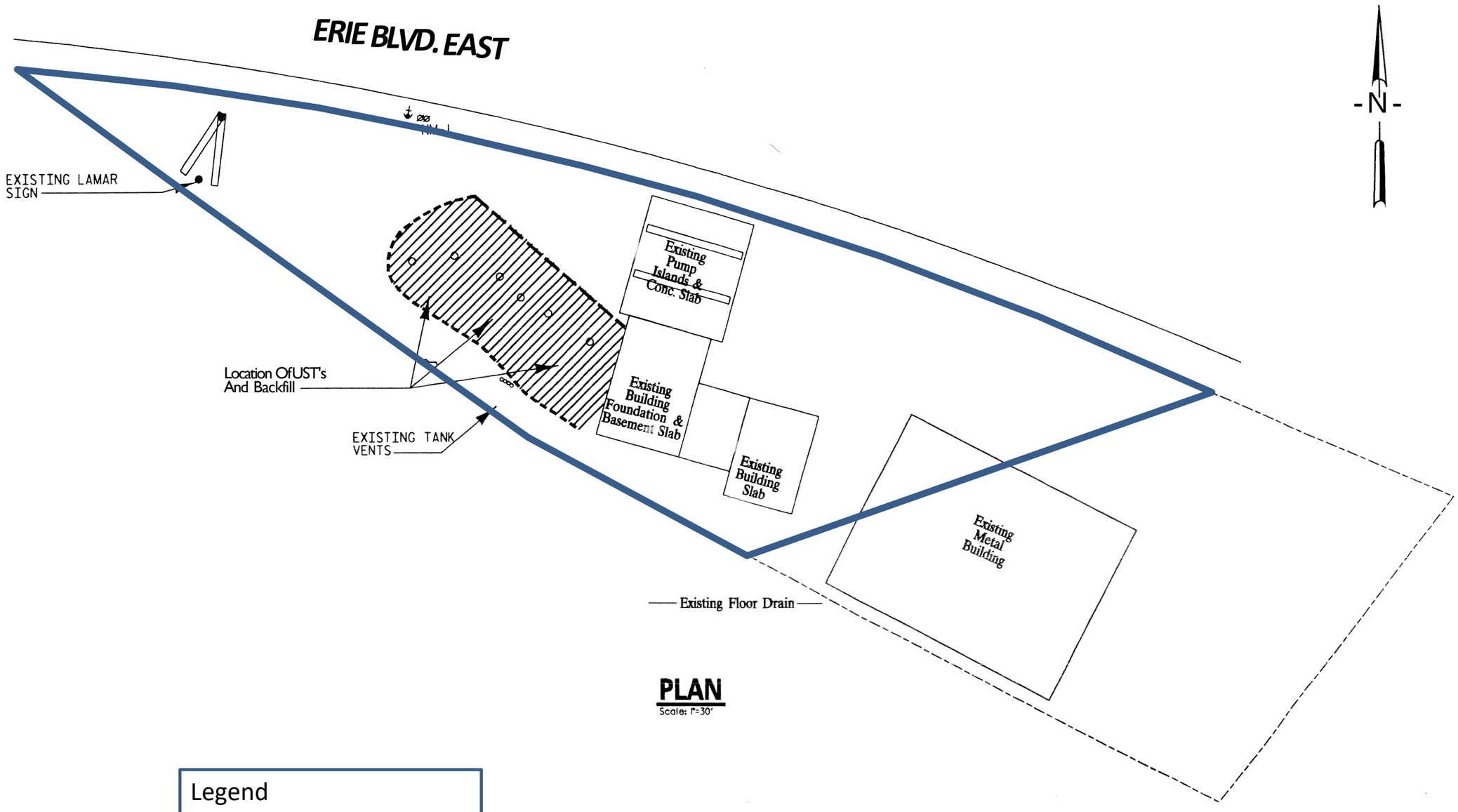
Zip Zip Minimarket ERP Site
NYSDEC Site No. B00075
City of Syracuse, Onondaga County, New York

PROJECT NO:	119.412.009
DATE:	March 2019
SCALE:	AS SHOWN
DRAWN BY:	JTB
DESIGNED BY:	MLW
CHECKED BY:	MLW

Modified: 3/7/2019 @ 4:51:46 PM

SITE LOCATION

Figure 1



PLAN
Scale: 1"=30'

Legend

Site Boundary

30' 30 0 30 60 FT.

CITY OF STUOJSE — NEW YORK

ZIP-ZIP MINI MART
ERIE BLVD. EAST
BROWNFIELDS
SITE PLAN

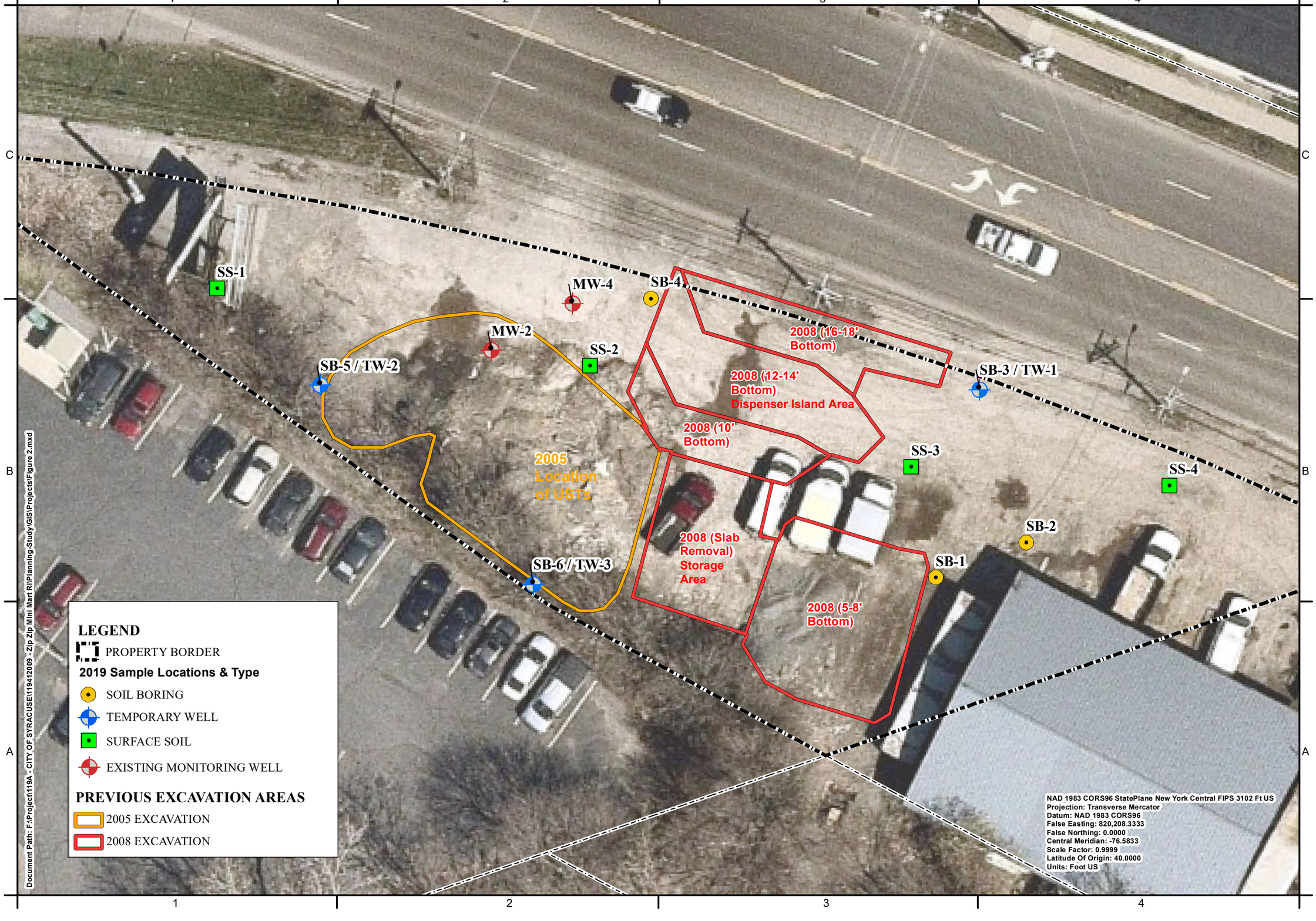
C&S Engineers, Inc. — SYRACUSE • BUFFALO • BINGHAMTON

DATE: FEBRUARY 2000
SCALE: AS SHOWN
FILE NO. 119.332.002

2

REFNAME

SYTIME



C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, New York 13212
Phone: 315-455-2000
Fax: 315-455-9667
www.cscos.com

N

0 20 Feet

1 inch = 20 feet

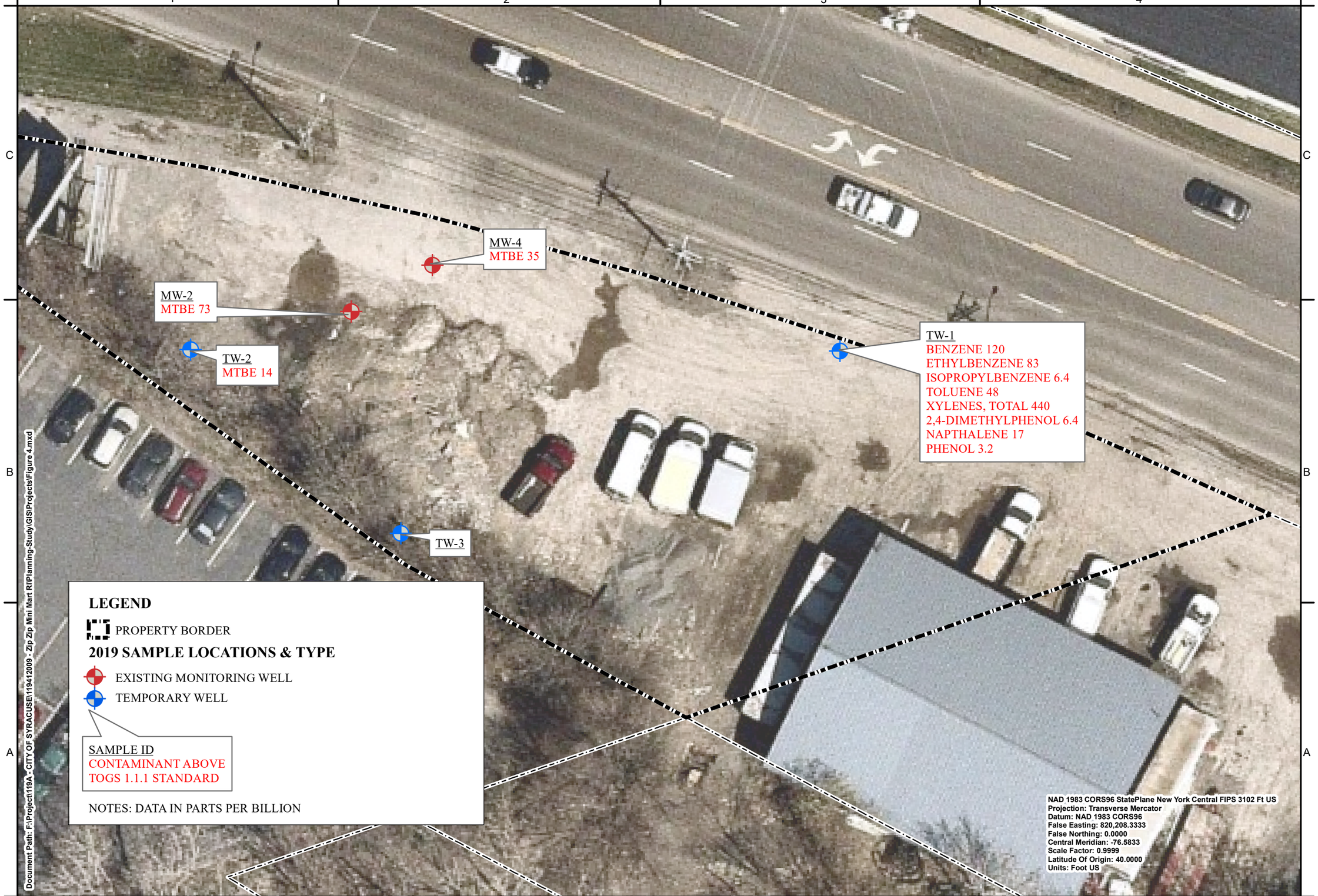
Zip Zip Minimarket ERP Site
NYSDEC Site No. B00075
City of Syracuse, Onondaga County, New York

PROJECT NO:	119.412.009
DATE:	April 2019
SCALE:	AS SHOWN
DRAWN BY:	JTB
DESIGNED BY:	MLW
CHECKED BY:	MLW

Modified: 4/26/2019 @ 8:33:41 AM

SITE MAP

Figure 3



C&S COMPANIES®
C&S Engineers, Inc.
499 Col. Eileen Collins Blvd.
Syracuse, New York 13212
Phone: 315-455-2000
Fax: 315-455-9667
www.cscos.com

Syracuse New York

N

0 20 Feet

1 inch = 20 feet

Zip Zip Minimarket ERP Site
NYSDEC Site No. B00075
City of Syracuse, Onondaga County, New York

PROJECT NO:	119.412.009
DATE:	March 2019
SCALE:	AS SHOWN
DRAWN BY:	JTB
DESIGNED BY:	MLW
CHECKED BY:	MLW

Modified: 3/11/2019 @ 11:34:08 AM

GROUNDWATER SAMPLING LOCATIONS

Figure 4