PROPOSED REMEDIAL ACTION PLAN

Town and Country Dry Cleaners
State Superfund Project
Brighton, Monroe County
Site No. 828149
February 2017

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

PROPOSED REMEDIAL ACTION PLAN

Town and Country Dry Cleaners
Brighton, Monroe County
Site No. 828149
February 2017

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:

Brighton Memorial Library
Attn: Reference Desk
2300 Elmwood Avenue
Brighton, NY 14618
Phone: (585) 784-5300

A public comment period has been set from:

2/27/2017 to 3/27/2017

A public meeting is scheduled for the following date:

3/16/2017 at 6:30 PM

Public meeting location:

Brighton Town Hall
2300 Elmwood Avenue
Brighton, New York 14618

At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) 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 3/27/2017 to:

Matt Dunham
NYS Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233
matthew.dunham@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: This site is located at 2308 and 2310 Monroe Avenue in the Town of Brighton, Monroe County. The 0.390 acre site is located in a mixed commercial/residential area on the northeast side of the town.

Site Features: The majority of the site is occupied by the on-site building with a paved parking area on the north side. The on-site building is occupied by a dry cleaning business. The site is bound by Monroe Avenue to the south, commercial properties to the west and east and a residential neighborhood to the north.

Current Zoning/Use(s): The site is currently an active dry cleaner and is zoned for commercial use.

Historic Use(s): From 1969 to present day the site has operated commercially as a dry cleaner. While chlorinated solvents were previously used in the dry cleaning machines, they are now using a non-chlorinated solvent process (GreenEarth Cleaning).

Site Geology and Hydrogeology: The site is underlain by approximately 16 to 19 feet of overburden materials overlying bedrock. The overburden consists of gray and brown silty sand to sandy silt with little clay and gravel. Groundwater in the overburden beneath the site is 6 feet below ground surface with flow to the east.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

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

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

Town & Country Cleaners, LTD

2308 Monroe Avenue, LLC

W. J. Dry Cleaning Co., Inc.

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

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

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

The following general activities are conducted during an RI:

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

The analytical data collected on this site includes data for:

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

6.1.1: Standards, Criteria, and Guidance (SCGs)

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

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

6.1.2: RI Results

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

tetrachloroethene (PCE)	vinyl chloride
trichloroethene (TCE)	cis-1,2-dichloroethene

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.

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

IRM - Soil Removal / Catch Basin Replacement

In September 2015, the State's contractors completed a Soil Removal / Catch Basin Replacement IRM to mitigate soil impacted with PCE behind the former dry cleaner. The IRM included excavation and off-site disposal of contaminated soil and soil sampling from the excavation limits to document any remaining contaminant concentrations. Confirmation sampling results reveal that VOC contamination still exists on-site exceeding commercial SCOs. 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. Details of the IRM, which removed 275 tons of soil, are presented in a Construction Completion Report (CCR), dated June 2016.

IRM - Sub Slab Depressurization System (SSD) Installation

The Department performed Soil Vapor Intrusion (SVI) sampling during the heating seasons from 2013-2015 off-site, at structures overlying the groundwater contamination plume starting at the former drycleaner. Seventeen property owners agreed to sampling. Based on the sampling results, no further action was recommended for 16 residential structures and the installation of a sub-slab depressurization (SSD) system was recommended at one structure, immediately adjacent to the site, which was installed in November, 2015. Details of the IRM, are presented in a Construction Completion Report (CCR), dated May 2016.

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 not required.

Soil and groundwater were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and pesticides. Based upon investigations conducted to date, the primary contaminants of concern include tetrachloroethene (PCE) and its associated degradation products.

Soil - Concentrations of PCE found on and off-site (2 ppm to 4,390 ppm) significantly exceed the soil cleanup objectives for commercial use (150 ppm) at depths ranging from 6 feet to 17.9 feet.

Groundwater - PCE and its associated degradation products are found in overburden groundwater at the north end of the site, exceeding groundwater standards (typically 5 ppb), with a maximum concentration of 90,000 ppb (PCE). PCE from the site above the 5 ppb groundwater standard has migrated about 700 feet down-gradient off-site to adjacent properties. PCE was detected in bedrock groundwater as high as 16 ppb, slightly exceeding groundwater standards (5 ppb). Degradation products including cis-1,2- dichloroethene and vinyl chloride indicate some natural degradation of source material is occurring.

Soil Vapor and Indoor Air - Sampling by others, in the on-site building detected PCE in the sub-slab vapor as high as 11,000 ug/m3. As a result, a sub-slab depressurization (SSD) system was installed, in the on-site building, by the property owner. SVI samples, consisting of sub-slab vapor and ambient indoor and outdoor air, were collected at 17 off-site residence from 2011-2013. Based on the results of those samples, no further action was recommended for 16 residential structures and the installation of a sub-slab depressurization (SSD) system was recommended at one structure. A sub-slab depressurization (SSD) system was installed at an off-site property, to the northwest, immediately adjacent to the site by others. The system was installed because of data from a Phase I/II, by others.

6.4: Summary of Human Exposure Pathways

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

People are not coming into contact with the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Direct contact with contaminants in the soil is unlikely because the contamination is not accessible below the on-site building and pavement. Volatile organic compounds in the groundwater may move into the soil vapor (air between soil particles), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The potential exists for inhalation of site-related contaminants via soil vapor intrusion in on- and off-site buildings.

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 FS report.

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

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

The proposed remedy is referred to as the Off-Site Soil Excavation, On-Site Soil Excavation and In-Situ Enhanced Biodegradation remedy.

The estimated present worth cost to implement the remedy is $1,400,000. The cost to construct the remedy is estimated to be $954,000 and the estimated present worth of the annual cost is $446,000.

The elements of the proposed remedy are as follows:

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

2. Excavation and off-site disposal of all on-site soils which exceed commercial SCOs, as defined by 6 NYCRR Part 375-6.8. All off-site soils which exceed residential SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. 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.

3. In-Situ Enhanced Biodegradation will be employed to treat tetrachloroethene (PCE) and its associated degradation products in groundwater in an area to be determined during the remedial design. The biological breakdown of contaminants will be enhanced by the placement of microbial cultures to facilitate complete breakdown of chlorinated solvents. Injections may include electron donor compounds to enhance conditions for microbial growth as indicated by design phase testing.

Vapor Mitigation Systems: Monitoring of sub-slab depressurization (SSD) systems installed, on-site and off-site, to mitigate the migration of vapors into structures from soil and/or groundwater.

4. 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 County DOH; and
- require compliance with the Department approved Site Management Plan.

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

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 above.

Engineering Controls: The sub-slab depressurization system discussed 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;
- a provision for the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision for further actions in the event that the on-site building is removed;
- 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 groundwater to assess the performance and effectiveness of the remedy;
- monitoring of on-site and off-site SSD systems to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for vapor intrusion for any occupied existing or future buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

Exhibit A

Nature and Extent of Contamination

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

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

Waste/Source Areas

As described in the RI report, waste/source materials were identified at the site and are impacting groundwater, soil and/or 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 were substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium.

As a result of the historic use of the site, dry cleaning chemicals were either spilled to the ground surface or to floor drains, where they flowed/leaked into the soil at the site. The historic source area was determined to be the former catch basin/dry well located in the rear parking area to the east-northeast of the site building. In September 2015, as part of an IRM, the former catch basin/dry well was removed and replaced. A total of 275 tons of hazardous soil were removed during the catch basin/dry well replacement. While a significant mass removal was achieved, a small source area under the parking lot remains.

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

Groundwater

Groundwater samples were collected from overburden and bedrock monitoring wells. The samples were collected to assess groundwater conditions on-site. The results indicate that contamination in shallow groundwater at the site exceeds the SCGs for volatile organic compounds. Contaminant levels in bedrock groundwater slightly exceeded the guidance values for volatile organic compounds. Sampling indicates some limited biodegradation is occurring. With the removal of the source area by excavation, we expect to be able to enhance existing microbial colonies to more completely break down the chlorinated solvents with in-situ treatment. Design phase sampling will be used to measure and improve as necessary the environment for further growth of microbial communities.

Table #1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethene (PCE)	0.41 - 90000	5	19/33
Trichloroethene (TCE)	0.38 - 500	5	13/33
cis-1,2-Dichloroethene	0.45 - 890	5	16/33
Vinyl Chloride	0.34 - 260	2	3/33

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

Based on the findings of the RI, the presence of VOCs has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are tetrachloroethene (PCE) and its associated degradation products.

Soil

Soil samples were collected at the site during the RI, from on-site and off-site locations to further delineate the historic source area. Soil samples were collected in the vicinity of the historic source area, east to an adjacent property for analytical analysis primarily for VOCs.

The RI soil sampling results were compared to the applicable Soil Cleanup Objectives (SCOs) for unrestricted use and commercial restricted use, as discussed in Section 3, and indicate that the primary contaminants of concern on-site are VOCs. Based on the comparison of the soil sampling results to the restricted use SCOs, the commercial SCOs were selected for the evaluation of the data.

During the September 2015 IRM 275 tons of soil were removed from the historic source area and the excavation was backfilled with clean soil. Confirmation sampling and soil VOC results reveal that a VOC contamination still exists on and off-site. The VOC contamination exceeding the unrestricted and commercial SCOs was determined to extend from the historic source area east beneath the back parking lot as shown in Figure 4. The estimated area of soil contamination is approximately 10,000 square feet and extends from approximately 3 to 20 feet bgs, for a total volume of approximately 7,425 cubic yards.

Table #2 – Soil - Post IRM

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG	Restricted Use SCG[d] (ppm)	Frequency Exceeding Restricted SCG
VOCs							
Tetrachloroethene (PCE)	nd - 3890	1.3	49 / 93	5.5	49/93	150	9/93
Trichloroethene (TCE)	nd - 2.2	0.47	17 / 93	10	17/93	200	0/93
cis-1,2-Dichloroethene	nd - 3.2	0.25	22 / 93	59	0/93	500	0/93
Vinyl Chloride	nd - 0.58	0.02	17 / 93	0.21	0/93	13	0/93

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 Public Health for Residential Use, unless otherwise noted.
d - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.

Based on the findings of the Remedial Investigation, the presence of VOCs has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process are, tetrachloroethene (PCE) and its associated degradation products.

Soil Vapor

The evaluation of the potential for soil vapor intrusion resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor, sub-slab soil vapor under structures, and indoor air inside structures. At this site, due to the presence of buildings in the impacted area soil vapor intrusion (SVI) samples, consisting of sub-slab vapor and ambient indoor and outdoor air, were collected to determine whether actions are needed to address exposures to site-related contaminants.

The soil vapor intrusion sampling was conducted during the 2013 and 2014 heating seasons and included the sampling of 17 structures. For each structure sampled, sub-slab soil vapor and indoor air samples were collected in order to determine whether actions are needed to address exposures to site-related contaminants. Outdoor air samples were collected concurrently with the sub-slab soil vapor and indoor air samples in order to evaluate outdoor air (background) quality in the vicinity of the study area. The results of the soil vapor intrusion sampling primarily indicated the presence of PCE and TCE. Based on the SVI sampling results, no VOCs detected in an indoor air samples exceeded its respective SCG. Site related VOCs were found in sub-slab vapor at structures both on- and off-site.

Sample results were evaluated in accordance with the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (DOH 2006) in order to determine whether actions were needed to address exposure via soil vapor intrusion. Based on the sampling results, actions, including installation of a sub-slab depressurization system at one off-site building was recommended.

Sampling, by others, at the on-site building detected PCE in the sub-slab vapors. Based on the sampling results, a sub-slab depressurization (SSD) system was installed, in the on-site building, by the property owner. An

additional sub-slab depressurization (SSD) system was installed at an off-site property, to the northwest, immediately adjacent to the site, by others. The system was installed based on the sampling results from a Phase I/II conducted by others.

The nature and extent of the soil vapor contamination has been delineated based on the findings of the soil vapor intrusion investigations as well as the evaluation of the groundwater plume delineation.

Based on the concentration detected, and in comparison with the Guidance for Evaluating Soil Vapor Intrusion in the State of New York (DOH 2006), soil vapor contamination identified during the RI was addressed during the IRM described in Section 6.2.

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 IRM(s) 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: No Further Action with Site Management

The No Further Action with Site Management Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2 and Site Management and Institutional Controls and Engineering Controls are necessary to confirm the effectiveness of the IRM. This alternative maintains engineering controls which were part of the IRM and includes institutional controls, in the form of an environmental easement and site management plan, necessary to protect public health and the environment from contamination remaining at the site after the IRMs.

Present Worth: *$376,000.00*
Capital Cost: *$46,000.00*
Annual Costs: *$330,000.00*

Alternative 3: 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 clean objectives listed in Part 375-6.8 (a). This alternative will involve excavation and off-site disposal of all waste and soil contamination above the unrestricted soil cleanup objectives. This alternative would also include the demolition and rebuilding of the on-site building and a garage on a neighboring property. The remedy will not rely on institutional or engineering controls to prevent future exposure. There is no Site Management, no restrictions, and no periodic review. This remedy will have no annual cost, only the capital cost.

Capital Cost: ..... *$ 3,936,000.00*

Alternative 4: Off-Property Soil Excavation and Monitored Natural Attenuation

This alternative would include, excavation of off-site soils which exceed residential SCOs, as defined by 6 NYCRR Part 375-6.8, and transported off-site for disposal. 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. Groundwater contamination (remaining after active remediation) will be addressed with monitored natural attenuation (MNA). Groundwater will be monitored for site related contamination and also for MNA indicators which will provide an understanding of the (biological activity) breaking down the contamination. This alternative

includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment.

Present Worth: *$972,000.00*
Capital Cost: *$526,000.00*
Annual Costs: *$446,000.00*

Alternative 5: Off-Site Soil Excavation, On-Site Soil In-Situ Chemical Oxidation and In-Situ Enhanced Biodegradation

This alternative would include, excavation of off-site soils which exceed residential SCOs, as defined by 6 NYCRR Part 375-6.8, and transported off-site for disposal. 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. Treatment of on-site soils, above commercial SCOs, would be implemented using in-situ chemical treatment, either chemical oxidation or chemical reduction depending on the results of the bench and pilot scale tests. The in-situ chemical treatment would be conducted via soil mixing. Groundwater contamination (remaining after active remediation) will be addressed with In-Situ Enhanced Biodegradation. In-Situ Enhanced Biodegradation would include excavating a trench on the west side of on-site building in a north-south orientation. The trench would be backfilled with crushed stone, and a perforated pipe with riser would be installed inside the trench. Select bio-amendments would then be added to the trench through the riser pipe to enhance biodegradation in the area. This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment.

Present Worth: *$1,270,000.00*
Capital Cost: *$824,000.00*
Annual Costs: *$446,000.00*

Alternative 6: Off-Site and On-Site Soil Excavation with In-Situ Enhanced Biodegradation

This alternative would include, excavation of off-site soils which exceed residential SCOs and excavation of on-site soil which exceed commercial SCOs, as defined by 6 NYCRR Part 375-6.8, and transported off-site for disposal. 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. Groundwater contamination (remaining after active remediation) will be addressed with In-Situ Enhanced Biodegradation. In-Situ Enhanced Biodegradation would include excavating a trench on the west side of on-site building in a north-south orientation. The trench would be backfilled with crushed stone, and a perforated pipe with riser would be installed inside the trench. Select bio-amendments would then be added to the trench through the riser pipe to enhance biodegradation in the area. This alternative includes institutional controls, in the form of an environmental easement and a site management plan, necessary to protect public health and the environment.

Present Worth: *$1,400,000.00*
Capital Cost: *$954,000.00*
Annual Costs: *$446,000.00*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
#1 No Action	0	0	0
#2 No Further Action with Site Management	$46,000.00	$330,000.00	$376,000.00
#3 Restoration to Pre-Disposal or Unrestricted Conditions	$3,936,000.00	0	$3,936,000.00
#4 Off-Property Soil Excavation and Monitored Natural Attenuation	$526,000.00	$446,000.00	$972,000.00
#5 Off-Site Soil Excavation, On-Site In-Situ Chemical Oxidation and Bio-Augmentation	$824,000.00	$446,000.00	$1,270,000.00
#6 Off-Site Soil Excavation, On-Site Soil Excavation and In-Situ Enhanced Biodegradation	$954,000.00	$446,000.00	$1,400,000.00

Exhibit D

SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 6: Off-Site and on-Site Soil Excavation with In-Situ Enhanced Biodegradation, as the remedy for this site. Alternative 6 would achieve the remediation goals for the site by excavation of off-site soils which exceed residential SCOs and excavation of on-site soil which exceed commercial SCOs, as defined by 6 NYCRR Part 375-6.8, and transported off-site for disposal. Groundwater contamination will be addressed with In-Situ Enhanced Biodegradation. The elements of this remedy are described in Section 7. The proposed remedy is depicted in Figure 6.

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 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 6 would satisfy this criterion by removing the contaminated soils from below and above the water table and transporting them off-site for disposal. Alternative 6 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 3, by removing all soil contaminated above the unrestricted soil cleanup objective, meets the threshold criteria. Alternatives 2, 4, and 5 also comply with this criterion but to a lesser degree or with lower certainty. Alternatives 2, 4 and 5 rely on a restriction of groundwater use at the site to protect human health. Alternative 3 may require a short-term restriction on groundwater use; however, it is expected the restriction will be able to be removed in approximately three years. The potential for soil vapor intrusion will be significantly reduced by Alternatives 3 and 6 and, to a somewhat lesser extent, Alternative 5. The potential for soil vapor intrusion will remain high under Alternatives 2 and 4.

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

Alternative 6 complies with SCGs to the extent practicable. It addresses source areas of contamination and complies with the restricted use soil cleanup objectives at the surface. It also creates the conditions necessary to restore groundwater quality over time. Because Alternatives 2, 3, 4, and 5 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site. It is expected Alternative 3 will achieve groundwater SCGs sooner, while groundwater contamination above SCGs will remain on-site under Alternatives 2, 4 and 5 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 (Alternatives 3 and 6). Alternative 3 results in removal of all of the chemical contamination at the site and removes the need for property use restrictions and long-term monitoring. Alternative 6 would result in the removal of contaminated soil exceeding remediation goals and almost all of the contaminated soil below the water table, but it also requires an environmental easement and long-term monitoring. For Alternative 2, site management remains effective, but it will not be desirable in the long term. The results of the pilot testing indicate some uncertainty regarding the long-term effectiveness of Alternative 5 due to the tightness of the soil.

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 2 and 4 would control potential exposures with institutional controls only and will not reduce the toxicity, mobility or volume of contaminants remaining. Alternatives 3 and 6 will reduce the toxicity, 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. Only Alternatives 3, 5 and 6 would to varying degrees permanently reduce the toxicity, mobility and volume of some portion of the contaminants by use of physical and 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 6 all have short-term impacts which could easily be controlled, however, Alternative 2 would have the least impact. While the short term impacts are greatest in terms of disruption due to construction with Alternatives 3 and 6, the time needed to achieve the remediation goals would be the shorter with these alternatives. Alternative 4 will take 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 2, 4 and 6 are favorable in that they are readily implementable. Alternative 3 is also implementable, but the volume of soil excavated under this alternative would necessitate increased truck traffic on local roads for several months. The results of the pilot testing indicate some uncertainty regarding the implementability of Alternative 5 due to the nature of the soil.

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 2 has a low cost, but the contaminated soil would not be addressed other than by institutional controls. With its large volume of soil to be handled, Alternative 3 (restoration to unrestricted conditions) would have the highest present worth cost. Excavation and off-site disposal (Alternative 6) would be less expensive than Alternative 3, yet it would provide equal protection of the groundwater resource.

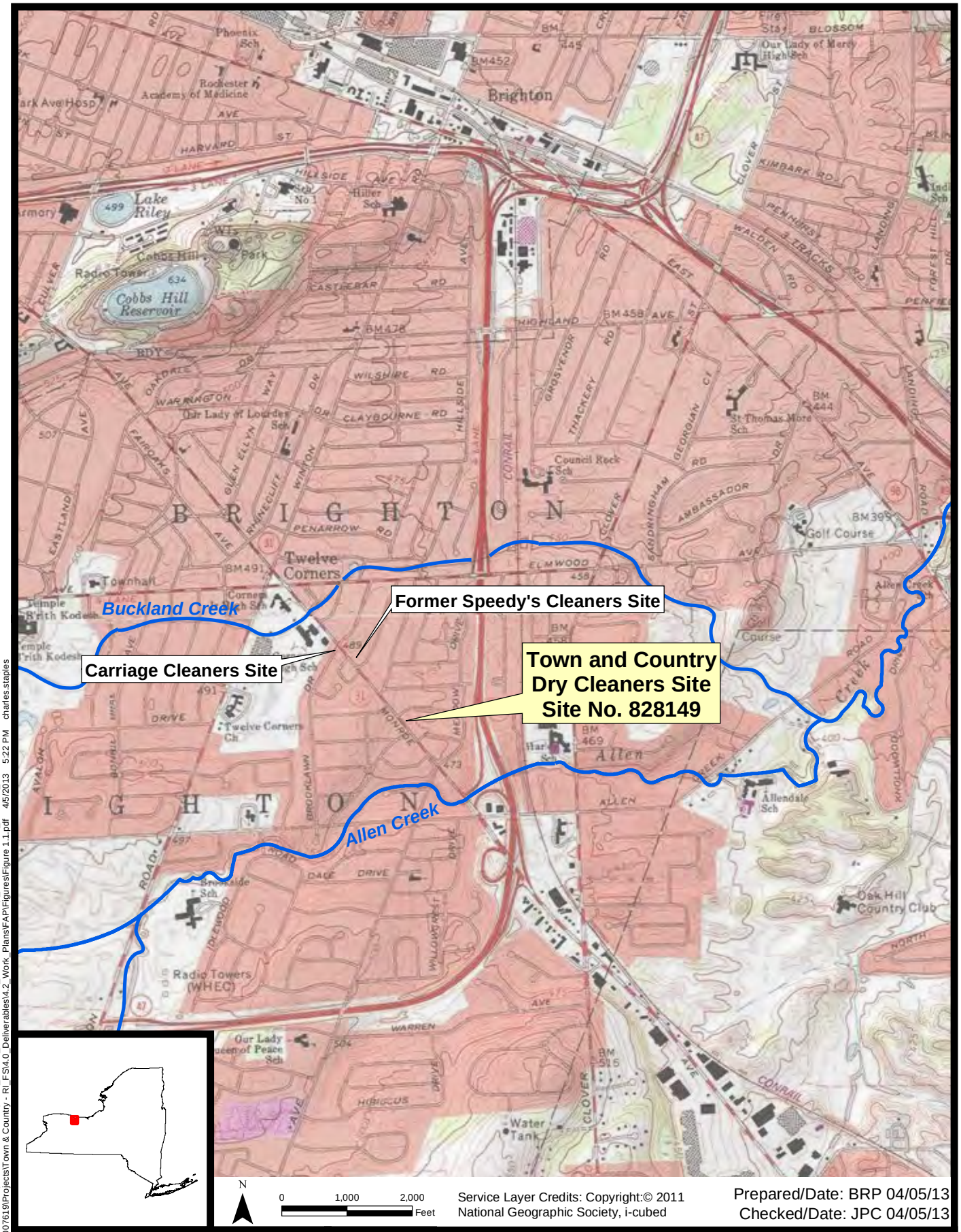
8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Since the anticipated use of the site is commercial, Alternatives 2, 4 and 5 would be less desirable because at least some contaminated soil would remain on the property whereas Alternative 3 and 6 would remove or treat the contaminated soil. However, the remaining contamination with Alternatives 4 and would be controlled with the implementation of a Site Management Plan. With Alternative 3, all of the overburden would be removed and 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 6 is being proposed because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criterion.



Service Layer Credits: Copyright:© 2011 National Geographic Society, i-cubed

Prepared/Date: BRP 04/05/13
Checked/Date: JPC 04/05/13

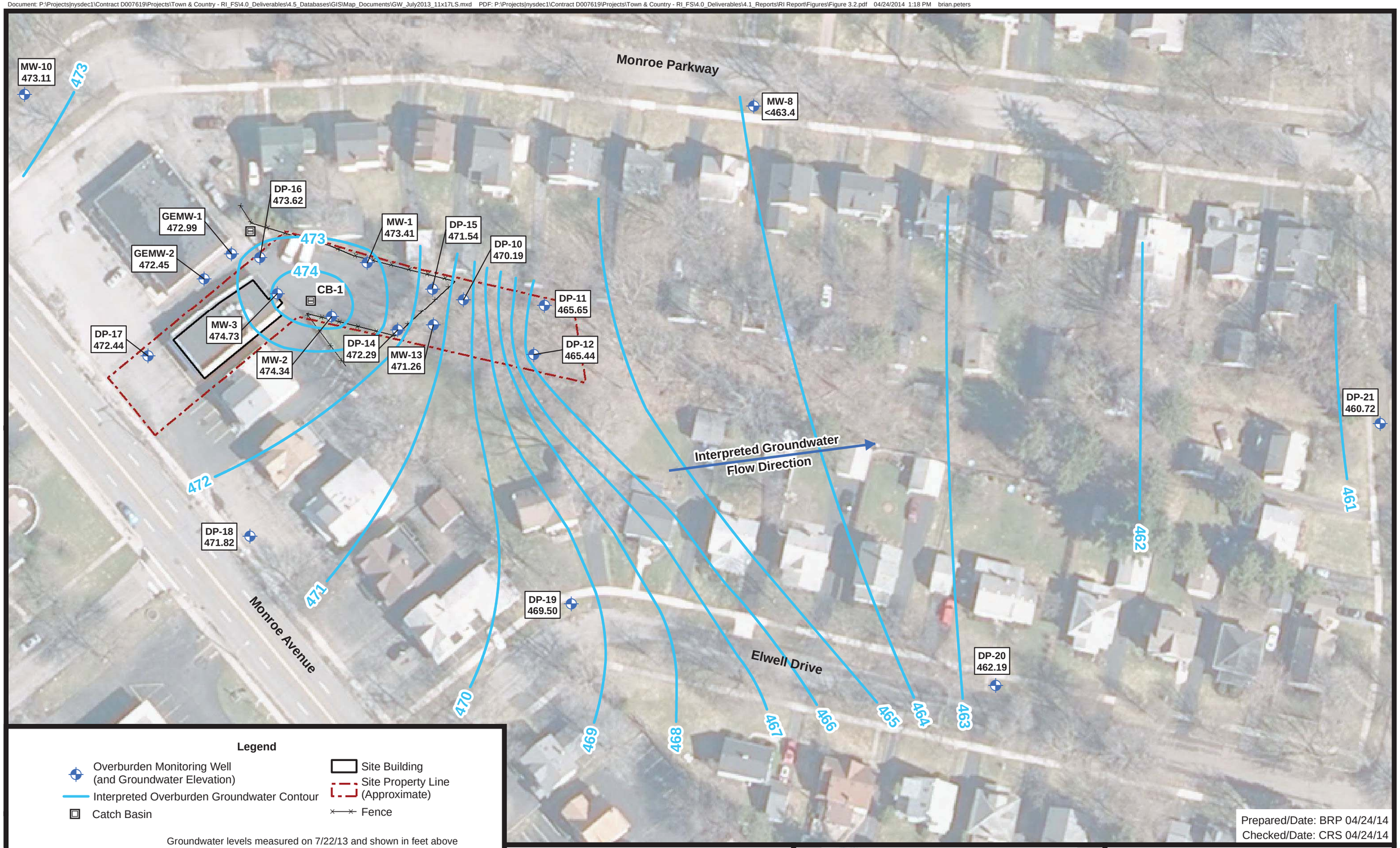
TOWN AND COUNTRY DRY CLEANERS
SITE NO. 828149
BRIGHTON, NEW YORK

MACTEC

SITE LOCATION

Figure 1

Document: \\pld2-fs1\Project\Projects
ysdec1\Contract D007619\Projects\Town & Country - RI_FS\4.0_Deliverables\4.5_Databases\GIS\Map_Documents\Site_Location_8.5x11P.mxd PDF: P:\Projects
ysdec1\Contract D007619\Projects\Town & Country - RI_FS\4.0_Deliverables\4.2_Work_Plans\FAP\Figures\Figure 1.1.pdf 4/5/2013 5:22 PM charles.staples



Legend

- Overburden Monitoring Well (and Groundwater Elevation)
- Interpreted Overburden Groundwater Contour
- Catch Basin
- Site Building
- Site Property Line (Approximate)
- Fence

Groundwater levels measured on 7/22/13 and shown in feet above mean sea level.

Monroe County color digital orthoimagery (2009) obtained from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

N

0 30 60 Feet

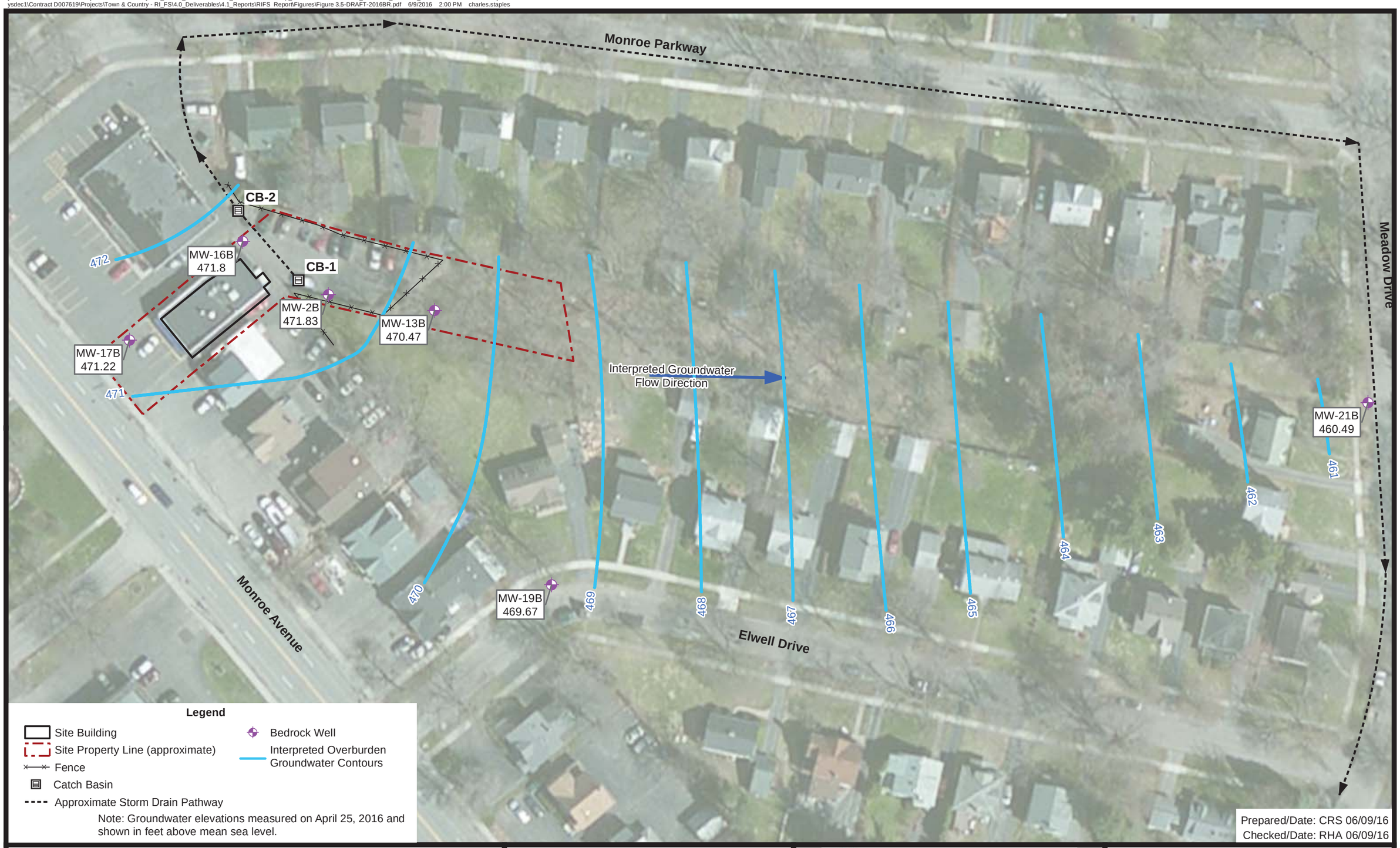
Prepared/Date: BRP 04/24/14
Checked/Date: CRS 04/24/14

TOWN AND COUNTRY DRY CLEANERS
SITE NO. 828149
BRIGHTON, NEW YORK

MACTEC

OVERBURDEN GROUNDWATER CONTOURS - JULY 2013
Figure 2

Document: P:\Projects
ysdec1\Contract D007619\Projects\Town & Country - RI_FS\4.0_Deliverables\4.5_Databases\GIS\Map_Documents\GW-Contour_Locations_11x17LS_No-Inset.mxd PDF: P:\Projects
ysdec1\Contract D007619\Projects\Town & Country - RI_FS\4.0_Deliverables\4.1_Reports\RIFS Report\Figures\Figure 3.5-DRAFT-2016BR.pdf 6/9/2016 2:00 PM charles.staples



Legend

- Site Building
- Site Property Line (approximate)
- Fence
- Catch Basin
- Approximate Storm Drain Pathway
- Bedrock Well
- Interpreted Overburden Groundwater Contours

Note: Groundwater elevations measured on April 25, 2016 and shown in feet above mean sea level.

Prepared/Date: CRS 06/09/16
Checked/Date: RHA 06/09/16

N
0 30 60
Feet

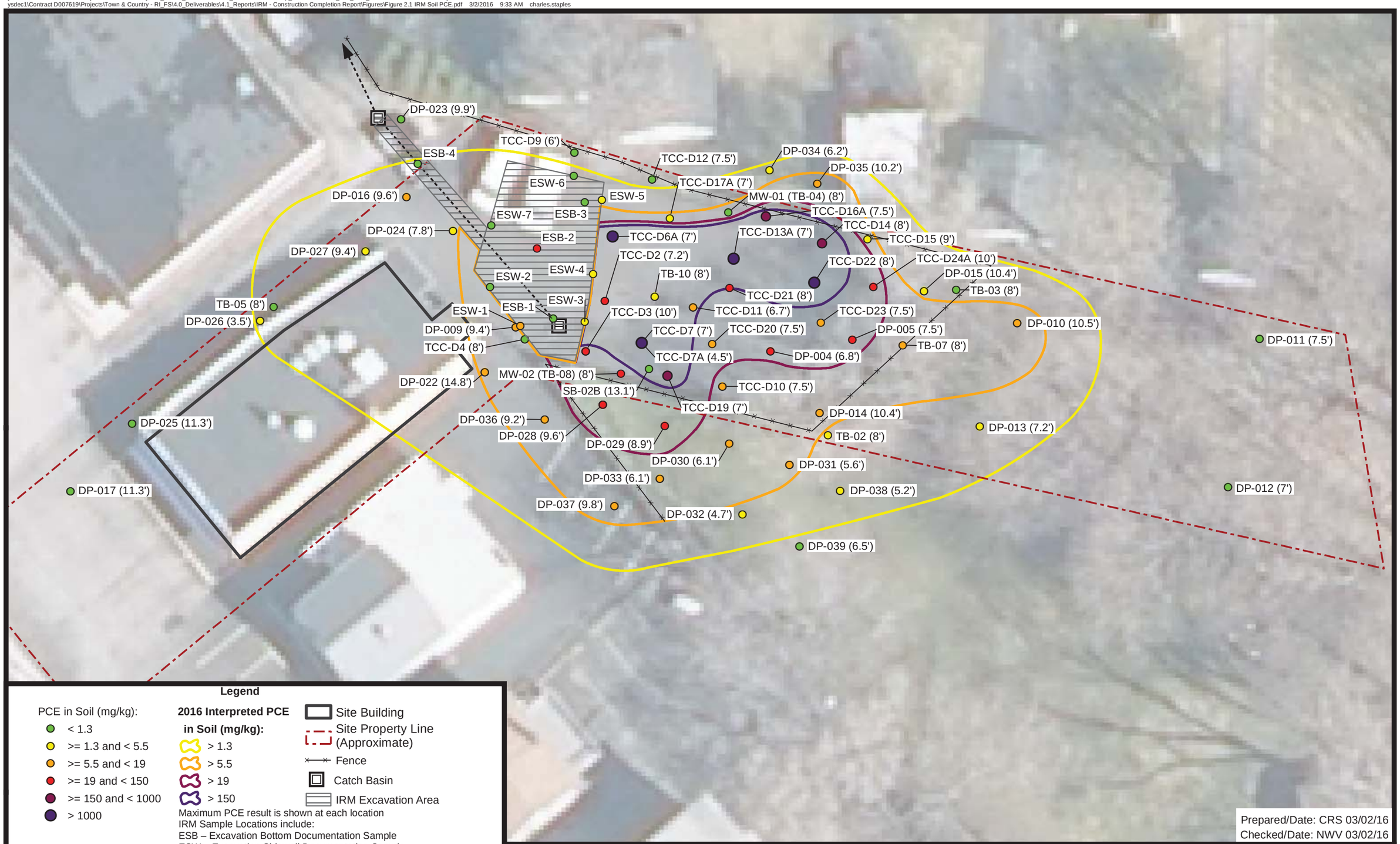
Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), MapmyIndia, © OpenStreetMap contributors, and the GIS User Community
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

TOWN AND COUNTRY DRY CLEANERS
SITE NO. 828149
BRIGHTON, NEW YORK

MACTEC

OVERBURDEN/BEDROCK INTERFACE- 2016
Figure 3

Document: P:\Projects
ysdec1\Contract D007619\Projects\Town & Country - RI_FS\4.0_Deliverables\4.5_Databases\GIS\Map_Documents\IRM_Soil_PCE_11x17LS.mxd PDF: P:\Projects
ysdec1\Contract D007619\Projects\Town & Country - RI_FS\4.0_Deliverables\4.1_Reports\IRM - Construction Completion Report\Figures\Figure 2.1 IRM Soil PCE.pdf 3/2/2016 9:33 AM charles.staples



Legend

PCE in Soil (mg/kg):
- < 1.3
- >= 1.3 and < 5.5
- >= 5.5 and < 19
- >= 150 and < 1000
- > 1000

2016 Interpreted PCE in Soil (mg/kg):
- > 1.3
- > 5.5
- > 19
- > 150

- Site Building
- Site Property Line (Approximate)
- Fence
- Catch Basin
- IRM Excavation Area

Maximum PCE result is shown at each location
IRM Sample Locations include:
ESB – Excavation Bottom Documentation Sample
ESW – Excavation Sidewall Documentation Sample
Other locations from RI and previous investigations.

N
0 10 20 Feet

Monroe County color digital orthoimagery (2009) obtained from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

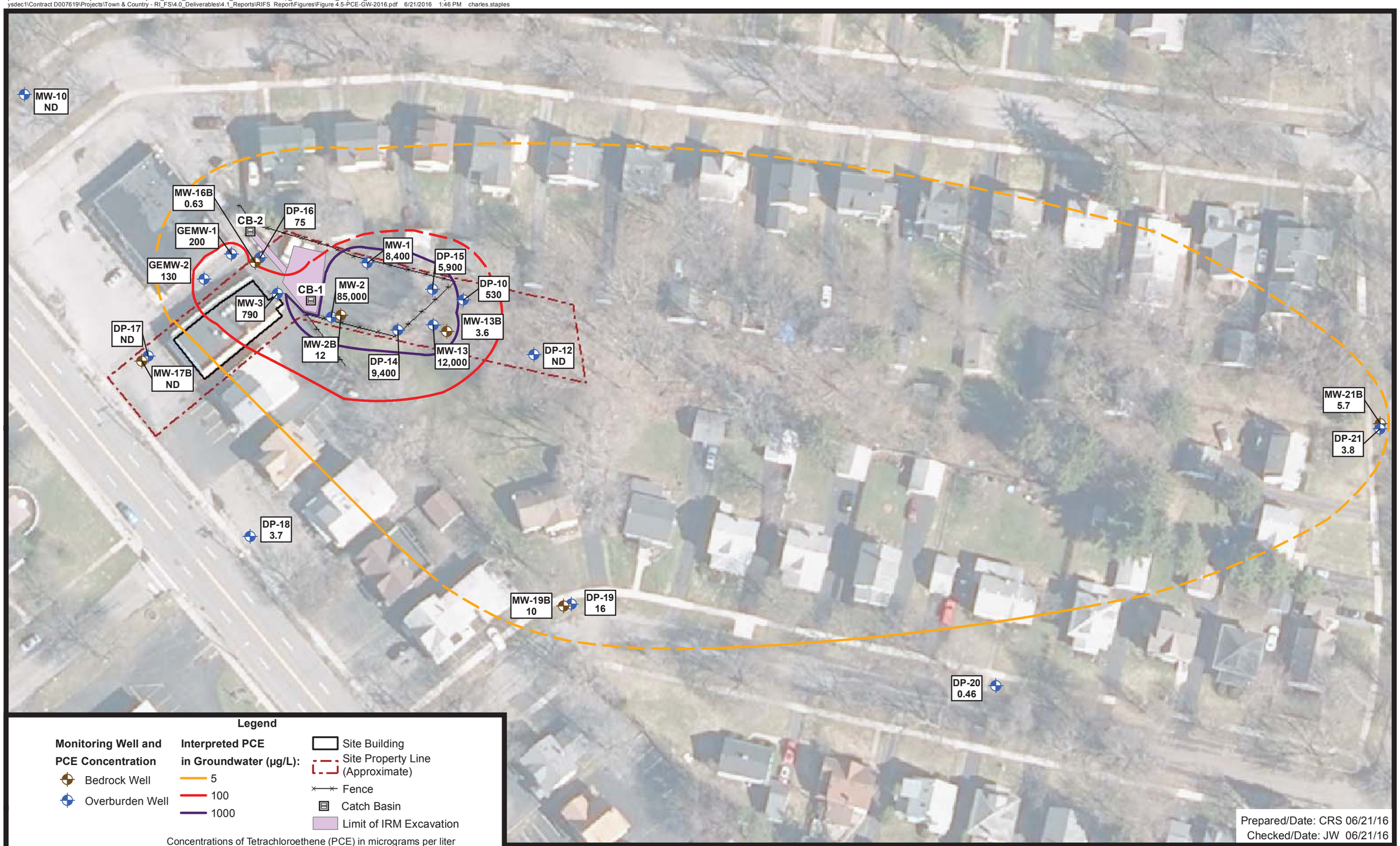
Prepared/Date: CRS 03/02/16
Checked/Date: NWV 03/02/16

TOWN AND COUNTRY DRY CLEANERS
SITE NO. 828149
BRIGHTON, NEW YORK

MACTEC

IRM SOIL REMOVAL AREA AND SAMPLE LOCATIONS
Figure 4

Document: P:\Projects
ysdec1\Contract D007619\Projects\Town & Country - RI_FS\4.0_Deliverables\4.5_Databases\GIS\Map_Documents\GW_July2013_11x17LS.mxd PDF: P:\Projects
ysdec1\Contract D007619\Projects\Town & Country - RI_FS\4.0_Deliverables\4.1_Reports\RIFS Report\Figures\Figure 4.5-PCE-GW-2016.pdf 6/21/2016 1:46 PM charles.staples



Legend

Monitoring Well and PCE Concentration
- Bedrock Well
- Overburden Well

Interpreted PCE in Groundwater (µg/L):
- 5
- 100
- 1000

- Site Building
- Site Property Line (Approximate)
- Fence
- Catch Basin
- Limit of IRM Excavation

Concentrations of Tetrachloroethene (PCE) in micrograms per liter (µg/L) (ND = not detected). Samples collected by MACTEC in April 2016.

Monroe County color digital orthoimagery (2009) obtained from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

N
0 30 60 Feet

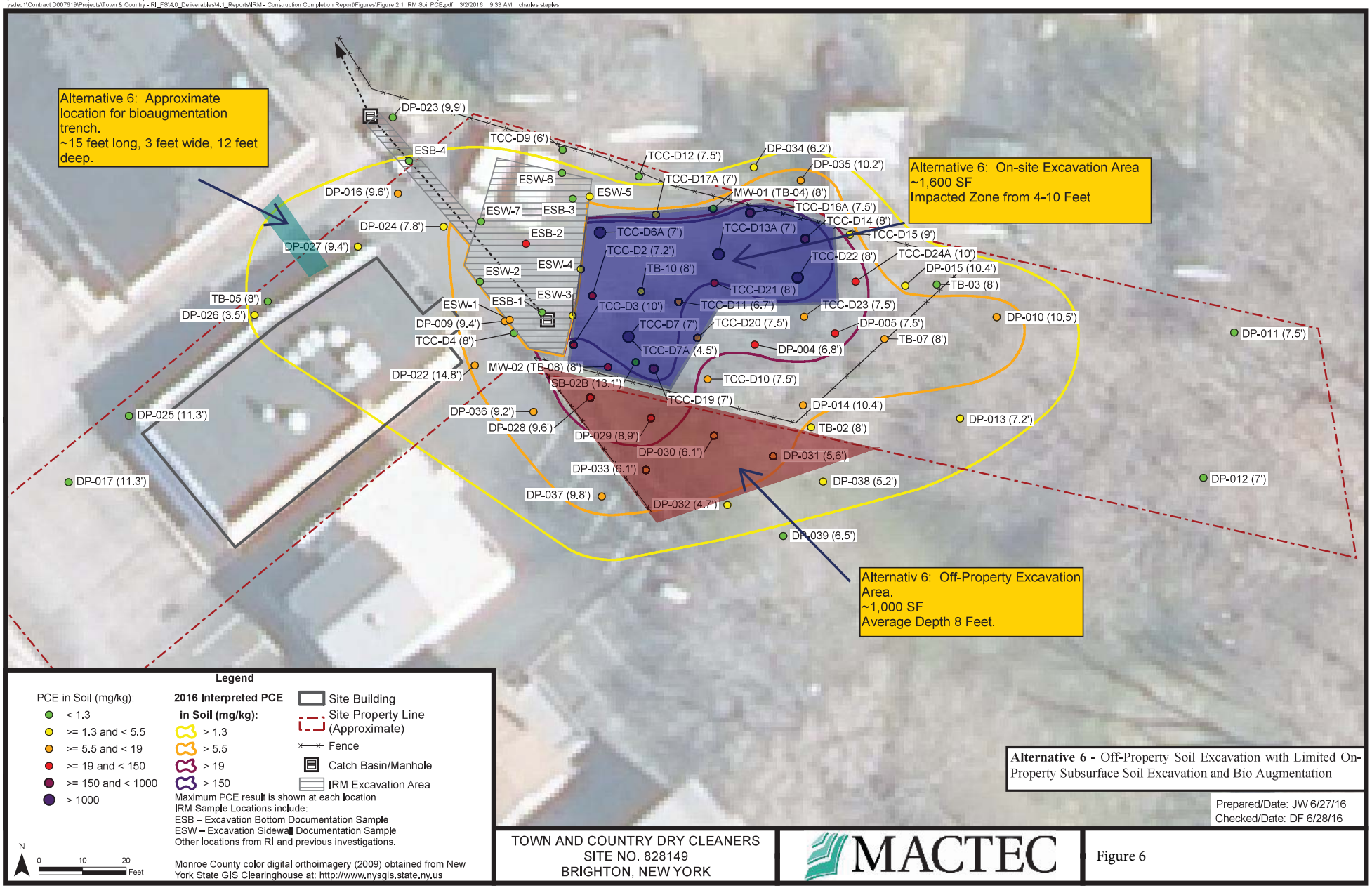
Prepared/Date: CRS 06/21/16
Checked/Date: JW 06/21/16

TOWN AND COUNTRY DRY CLEANERS
SITE NO. 828149
BRIGHTON, NEW YORK

MACTEC

GROUNDWATER PCE CONCENTRATIONS
April 2016
Figure 5

Document: P:\Projects
ysdec1\Contract D007619\Projects\Town & Country - RI_FS\4.0_Deliverables\4.5_Databases\GIS\Map_Documents\IRM_Soil_PCE_11x17LS.mxd PDF: P:\Projects
ysdec1\Contract D007619\Projects\Town & Country - RI_FS\4.0_Deliverables\4.1_Reports\IRM - Construction Completion Report\Figures\Figure 2.1 IRM Soil PCE.pdf 3/2/2016 9:33 AM charles.staples



Legend

PCE in Soil (mg/kg):
- < 1.3
- >= 1.3 and < 5.5
- >= 5.5 and < 19
- >= 19 and < 150
- >= 150 and < 1000
- > 1000

2016 Interpreted PCE in Soil (mg/kg):
- > 1.3
- > 5.5
- > 19
- > 150

- Site Building
- Site Property Line (Approximate)
- Fence
- Catch Basin/Manhole
- IRM Excavation Area

Maximum PCE result is shown at each location
IRM Sample Locations include:
ESB – Excavation Bottom Documentation Sample
ESW – Excavation Sidewall Documentation Sample
Other locations from RI and previous investigations.

N
0 10 20 Feet

Monroe County color digital orthoimagery (2009) obtained from New York State GIS Clearinghouse at: http://www.nysgis.state.ny.us

Alternative 6 - Off-Property Soil Excavation with Limited On-Property Subsurface Soil Excavation and Bio Augmentation

Prepared/Date: JW 6/27/16
Checked/Date: DF 6/28/16

TOWN AND COUNTRY DRY CLEANERS
SITE NO. 828149
BRIGHTON, NEW YORK

MACTEC

Figure 6