RECORD OF DECISION

Castle Cleaners
State Superfund Project
City of Elmira, Chemung County
Site No. 808034
July 2016

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

DECLARATION STATEMENT - RECORD OF DECISION

Castle Cleaners
State Superfund Project
City of Elmira, Chemung County
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Statement of Purpose and Basis

This document presents the remedy for the Castle Cleaners site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for the Castle Cleaners site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. Remedial Design -

A remedial design program, inclusive of a pre-design investigation, 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. Cover System -

A site cover currently exists consisting of the existing buildings and pavement; there is currently no exposed surface soil. A site cover will be maintained as a component of any future site development, to allow for the commercial use of the site, which will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

3. Wellhead Treatment -

An air stripping and/or granular activated carbon (GAC) adsorption system will be installed to remove volatile contaminants from groundwater extracted from Foster Island Wells 40, 41 & 42 as necessary. While Well 40 is not currently impacted and Well 41 remains below applicable standards, the combined flow streams of all three Foster Island wells will be treated by the selected remedy. The groundwater will pass through a stacked-column type air stripper to volatilize contaminants from groundwater to air. GAC will be used, if necessary, to further treat or "polish" extracted groundwater following treatment by air-stripping. If necessary, the extracted air stream containing the volatile contaminants will be treated using vapor-phase GAC prior to discharge to the atmosphere. Alternatively, groundwater may be passed through GAC alone in order to remove VOCs.

As an alternative to the wellhead treatment discussed above, the design (Element 1 above) will evaluate, in consultation with the City of Elmira Water Board, the construction of a new well on the City's Hudson Street lot or the construction of a new water main to connect the Sullivan Street wellfield to the City water treatment plant. The Hudson Street well installation location currently contains electrical service and infrastructure necessary for the siting of a new well. Construction of a replacement well would require: hydrogeologic survey, drilling of the well, permitting, and the construction of piping and appurtenances. The decision to treat water extracted from the Foster Island wellfield, install the additional water main, or, construct a new well on the Hudson Street lot will made in consultation with the City of Elmira Water Board during the design phase, following a hydrogeologic and economic assessment.

4. Soil Vapor Extraction (SVE) -

Soil vapor extraction (SVE) will be implemented to remove volatile organic compounds (VOCs) from the subsurface soils at the site. VOCs will be physically removed from the soil by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground surface but above the water table). The vacuum draws air through the soil matrix which carries the VOCs from the soil to the SVE well(s). The air extracted from the SVE well(s) is then treated as necessary prior to being discharged to the atmosphere.

5. Enhanced Bioremediation –

In-situ enhanced biodegradation will be employed to treat tetrachloroethene and associated daughter compounds in groundwater down-gradient of the site, in the plume area exhibiting concentrations greater than 100 ppb. This area of the plume shall be confirmed during the remedial design investigation. The naturally occurring biological breakdown of contaminants through anaerobic reductive de-chlorination will be enhanced by the injection of hydrogen release compounds, or similar material, into the subsurface via direct-push injection. The method and depth of injection will be determined during the remedial design. A Site Monitoring Plan will be developed in order to evaluate the effectiveness of the enhanced bioremediation and potential movement of the amendment in the subsurface.

6. 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 Chemung County Health Department; and
- require compliance with the Department approved Site Management Plan.

7. Site Management Plan

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 and Site Management Plan discussed above.

Engineering Controls: The soil cover discussed in paragraph 2, wellhead treatment discussed in Paragraph 3, soil vapor extraction system(s) discussed in Paragraph 4, and any necessary off-site sub-slab depressurization systems.

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 further investigation and remediation should redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. The nature and extent of contamination in areas where access was previously limited or

unavailable will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Department determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment. This includes the subject structure;

- descriptions of the provisions of the environmental easement including any land use, and/or groundwater use restrictions;
- provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site and for any off-site buildings in the area of groundwater contamination, including provisions 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.

8. Site Monitoring Plan

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;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any future buildings developed on the site and for any off-site buildings, as may be required by the Institutional and Engineering Control Plan discussed above.

New York State Department of Health Acceptance

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

Declaration

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

July 27, 2016
Date

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

RECORD OF DECISION

Castle Cleaners
City of Elmira, Chemung County
Site No. 808034
July 2016

SECTION 1: SUMMARY AND PURPOSE

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

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

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

SECTION 2: CITIZEN PARTICIPATION

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

Chemung County Library District
Steele Memorial Library
101 East Church Street
Elmira, NY 14901
Phone: 607-733-9175

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) were presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

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

Receive Site Citizen Participation Information by Email

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

SECTION 3: SITE DESCRIPTION AND HISTORY

Location:
The Castle Cleaners site is located at 221 Hoffman Street, in the City of Elmira, Chemung County. The site is on the west side of Hoffman Street, just south of West Church Street. Historically, the site address appeared as 219-225 Hoffman Street but was changed to 221 Hoffman Street as part of emergency response (911) planning.

Site Features:
The Castle Cleaners site property is a flat commercial 0.1 acre lot containing the dry cleaning structure and a small paved area on the west (back) side. There is a one-story masonry and metal-framed building on the parcel which contains two commercial spaces; a retail space is located on the south side with the active dry cleaner on the north side. The site is bordered by commercial properties to the north and south with common masonry walls shared by the two adjacent buildings. There is a paved parking area to the west of the site with residential properties further west. A multi-unit apartment building and a professional medical office are located north of the site across West Church Street. A convenience store/gas station and a funeral home are located east of the site across Hoffman Street.

Current Zoning and Land Use:
The site is currently zoned for commercial use and is an active dry cleaner.

Past Use of Site:
A commercial building has occupied the site since at least 1944 which has been an active dry cleaner since the mid 1950's, with Castle Cleaners first appearing in the Elmira City directories at the site in 1958. The site owner reported that the building caught fire in the late 1950's, at which time the dry cleaning machinery fell through the floor of the building into the basement. The site

was also flooded during the Chemung River flood events of 1972 after which the basement was filled, with a concrete slab poured at grade. The Elmira Department of Public Services reports that the water main along Hoffman Road was installed in approximately 1896 and the sewer line was installed in 1897 (18-inch vitrified clay pipe). It is assumed that Castle Cleaners has always been serviced by public water and sewer. The site remains an active drycleaner today. The 2006 Site Characterization report identified tetrachloroethene (PCE) as present in soil and groundwater at and down-gradient of the site. The presence of this contaminant is believed to be due to the fire in the structure and/or past housekeeping and spent solvent disposal practices.

Site Geology and Hydrogeology:
The site area is generally underlain by three primary geologic units, a silty sand and gravel underlain by lacustrine sands, silt and clay. Below the lacustrine deposit, a dense clayey silt, sand and gravel glacial till was encountered. The water table is present in the silty sand and gravel unit at depths ranging between eight (8) and 16 feet. Shallow groundwater beneath the study area moves southward, discharging into the Chemung River. The City of Elmira's Foster Island water supply wells (Nos. 40, 41 and 42) are located on Foster Island approximately 1,600 feet south of Castle Cleaners, on the bank of the Chemung River.

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 which restrict the use of the site to commercial use, as described in Part 375-1.8(g), were 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 standards, criteria and guidance (SCG) values for the identified commercial land use and the unrestricted use SCGs for the site contaminants is included in the Exhibit-A Tables for the respective media being evaluated.

SECTION 5: ENFORCEMENT STATUS

A Potentially Responsible Party (PRP) consists pf any entity which may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

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

Castle Fast Dry Cleaners, Inc. (Castle Cleaners)

The Department and Castle's Fast Dry Cleaners, Inc. (Respondent) entered into Order on Consent and Administrative Settlement (Order), Index No. B8-0779-08-04, on November 9th, 2009. The Order obligates the Respondent to implement a full remedial program, however, inadequate financial resources have limited the Respondent's participation in the remedial program to the RI and FS. After the remedy is selected, the Department will again provide the Respondent

opportunity to implement the selected remedy. If an agreement cannot be reached with the PRPs, the Department will evaluate the site for further action under the State Superfund. The PRPs are subject to legal actions by the State for recovery of all response costs the State has incurred.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation 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 fully in the RI Report which is available in the identified repository.

The following general activities are conducted during an RI:

- research of historical information,
- soil borings and monitoring well installations,
- sampling of subsurface soils, groundwater, and soil vapor, and;
- Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- drinking water ,
- groundwater,
- soil,
- indoor air, and
- soil 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 RI evaluated a broad range of contaminants and the data have been used to identify 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 primary contaminants

of concern identified at this site is:

- Tetrachloroethene
- Trichloroethene
- cis-1,2-Dichloroethene
- trans-1,2-Dichloroethene

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

- drinking water,
- soil,
- groundwater, and

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 has been completed at this site based on conditions observed during the RI.

Sub-slab depressurization systems (SSDS) were installed by Department contractors at four off-site properties in the fall of 2012 based on Remedial Investigation data gathering, and, results of the Soil Vapor Intrusion investigation. These structures overlie the identified PCE plume down-gradient of the subject site. The PRP has also installed a SSDS in the adjacent tenant space of the subject structure.

6.3: Summary of Environmental Assessment

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

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

Nature and Extent of Contamination:
Soils: Borings were advanced inside the site building footprint that evaluated the fill material used to backfill the former basement level of the site building and one additional boring sampled below the former basement floor. The concentrations of volatile compounds (VOCs), semi-volatile compounds (SVOCs) and PCBs reported in the soil samples did not exceed the soil cleanup objectives (SCO) for commercial use, or the protection of groundwater SCOs for any compound. Four boring were advanced exterior to the building on the west side of the on-site structure and two unsaturated soil samples exceeded the protection of groundwater SCO of 1.3 parts per million (ppm) for tetrachloroethene (PCE) but where below the commercial use SCO of 150 ppm. The PCE levels were 1.5 ppm at one location at a depth of 8 to 10 feet below ground surface (bgs) and 1.9 ppm from a second location at a depth of 10 to 12 feet bgs. Concentration gradients do not suggest an increasing or decreasing trend with depth.

Groundwater: PCE concentrations in samples collected from 10 of the 16 sample locations at and surrounding the site exceeded the New York State groundwater standard of 5 parts per billion (ppb) for PCE. PCE was detected at the highest concentrations in groundwater samples collected from locations adjacent to the rear entrance (west) of the site building (3,800 ppb) and immediately downgradient (south) of the site building (830 ppb). Concentrations and locations of PCE detected in groundwater indicate that PCE was released at the site (no PCE detections in upgradient samples) and analytical results indicate that contamination is migrating off-site in groundwater at concentrations above the standard for PCE and for several degradation products. Low concentrations of PCE have been detected in the City of Elmira's Foster Island municipal water supply wells No. 41 and well No. 42, with well No. 42 exceeding the 10 NYCRR Part 5 Maximum Contaminant Level for drinking water and the Class GA ambient water quality standards and guidance value for PCE of 5 ppb. Both wells are located approximately 1,600 feet south of the site on Foster Island. Groundwater elevation measurements indicate that groundwater flow is generally to the south toward the river and the municipal wells on Foster Island.

Soil Vapor and Indoor Air: PCE and TCE were detected in the indoor air on-site at levels above their respective air guidelines and actions were recommended to reduce exposure. PCE was also detected in an exterior soil gas sample, adjacent to a residential building down gradient of the site, at a concentration of 2,321 micrograms per cubic meter (µg/m3), trichloroethene (TCE) was also detected in the same soil gas sample at a concentration of 21.9 µg/m3. Soil vapor intrusion sampling was performed at 16 off-site structures. The results indicated actions to address exposures were warranted at 8 structures, additional sampling at 3 and no additional actions at 5 structures. Additional assessment of structures in the area of groundwater contamination is included as part of the remedy.

Special Resources Impacted or Threatened:
City of Elmira Public Water Supply Well No. 42 has been impacted by PCE at concentrations in contravention of applicable standards and was consequently removed from service. Well No. 41 also has PCE present, however, concentrations are below applicable standards.

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*.

Low concentrations of site-related contaminants have been detected in the down-gradient public water supply wells, located about 1,600 ft. away from the site. Municipal supply well No. 42 has been removed from service and water distributed to the public from well No. 40 and well No. 41 is tested regularly and shown to meet applicable standards. People will not come into contact with the contaminated soil unless they perform ground-intrusive work at the site. Volatile organic compounds in the groundwater may volatilize into soil gas and move into overlying buildings, affecting the indoor air quality of those structures. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Soil vapor intrusion sampling identified impacts to indoor air quality at levels that warranted action to reduce exposure. A Sub-slab depressurization system (a system that

ventilates/removes the air beneath the building) has been installed in a portion of the on-site building to prevent the indoor air quality from being affected by the contamination in soil vapor beneath the building. Environmental sampling off-site has indicated that the potential exists for inhalation of site-related contaminants due to soil vapor intrusion and actions to address this exposure pathway have been taken as necessary. Additional off-site investigation is needed to evaluate whether additional actions are needed.

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 practicable. 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 (RAOs) for this site are:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards; and,
- 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; and,
- Prevent the discharge of contaminants to surface water.

Soil

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination; and,
- Remove the source of groundwater or surface water contamination.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health, by site-related chemicals, resulting from existing, or potential, soil vapor intrusion.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected, the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, presented in Section 6.5. Potential remedial alternatives for the site were identified, screened and evaluated in the Feasibility Study (FS). In addition to those alternatives discussed by the PRP in the FS, the Department has generated an alternative, in consultation with the DOH and City of Elmira Water Board.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B and more fully discussed in the Feasibility Study. 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, nor does it assume that remediation will take 30 years to complete. A summary of the Remedial Alternatives Costs is included as Exhibit C.

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

The selected remedy is referred to as Municipal Wellhead Treatment with SVE and Bio-amendment (Alternative Four).

The elements of the selected remedy are as follows:

1. Remedial Design -

A remedial design program, inclusive of a pre-design investigation, 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. Cover System -

A site cover currently exists consisting of the existing buildings and pavement; there is currently no exposed surface soil. A site cover will be maintained as a component of any future site development, to allow for the commercial use of the site, which will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). Where the soil cover is required it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

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As an alternative to the wellhead treatment discussed above, the design (Element 1 above) will evaluate, in consultation with the City of Elmira Water Board, the construction of a new well on the City's Hudson Street lot or the construction of a new water main to connect the Sullivan Street wellfield to the City water treatment plant. The Hudson Street well installation location currently contains electrical service and infrastructure necessary for the siting of a new well. Construction of a replacement well would require: hydrogeologic survey, drilling of the well, permitting, and the construction of piping and appurtenances. The decision to treat water extracted from the Foster Island wellfield, install the additional water main, or, construct a new well on the Hudson Street lot will made in consultation with the City of Elmira Water Board during the design phase, following a hydrogeologic and economic assessment.

4. Soil Vapor Extraction (SVE) -

Soil vapor extraction (SVE) will be implemented to remove volatile organic compounds (VOCs) from the subsurface soils at the site. VOCs will be physically removed from the soil by applying a vacuum to wells that have been installed into the vadose zone (the area below the ground surface but above the water table). The vacuum draws air through the soil matrix which carries the VOCs from the soil to the SVE well(s). The air extracted from the SVE well(s) is then treated as necessary prior to being discharged to the atmosphere.

5. Enhanced Bioremediation –

In-situ enhanced biodegradation will be employed to treat tetrachloroethene and associated daughter compounds in groundwater down-gradient of the site, in the plume area exhibiting concentrations greater than 100 ppb. This area of the plume shall be confirmed during the remedial design investigation. The naturally occurring biological breakdown of contaminants through anaerobic reductive de-chlorination will be enhanced by the injection of hydrogen release compounds, or similar material, into the subsurface via direct-push injection. The method and depth of injection will be determined during the remedial design. A Site Monitoring Plan will be developed in order to evaluate the effectiveness of the enhanced bioremediation and potential movement of the amendment in the subsurface.

6. 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 Chemung County Health Department; and
- require compliance with the Department approved Site Management Plan.

7. Site Management Plan

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 and Site Management Plan discussed above.

Engineering Controls: The soil cover discussed in paragraph 2, wellhead treatment discussed in Paragraph 3, soil vapor extraction system(s) discussed in Paragraph 4, and any necessary off-site sub-slab depressurization systems.

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 further investigation and remediation should redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. The nature and extent of contamination in areas where access was previously limited or unavailable will be immediately and thoroughly investigated pursuant to a plan approved by the Department. Based on the investigation results and the Department determination of the need for a remedy, a Remedial Action Work Plan (RAWP) will be developed for the

final remedy for the site, including removal and/or treatment of any source areas to the extent feasible. Citizen Participation Plan (CPP) activities will continue through this process. Any necessary remediation will be completed prior to, or in association with, redevelopment. This includes the subject structure;

- descriptions of the provisions of the environmental easement including any land use, and/or groundwater use restrictions;
- provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site and for any off-site buildings in the area of groundwater contamination, including provisions 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.

8. Site Monitoring Plan

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;
- a schedule of monitoring and frequency of submittals to the Department;
- monitoring for vapor intrusion for any future buildings developed on the site and for any off-site buildings, 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 in which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the respective media and compares the data with the applicable Standards, Criteria or Guidance (SCGs) for the site. The contaminants are arranged into four (4) categories; volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), inorganics (metals and cyanide), and pesticides/polychlorinated biphenyls (PCBs). For comparison purposes, the SCGs for unrestricted use are provided for each medium. For soil, the Restricted Use - Commercial, SCGs identified in Section 4 and Section 6.1.1 are also presented.

Waste/Source Areas

As described in the RI report, source materials are suspected to be present at the site and may be impacting groundwater, soil and soil vapor.

Wastes are defined in 6 NYCRR Part 375-1.2(aw) and include solid, industrial and/or hazardous wastes. Source areas are defined in 6 NYCRR Part 375(au). Source areas are areas of concern at a site were substantial quantities of contaminants are found which can migrate and release significant levels of contaminants to another environmental medium. Wastes and source areas suspected to be present at the site include, soils beneath the active dry-cleaning facility shown in Figure 4.

These wastes are believed to be present as a result of flooding and/or fire that occurred at the site, or from inappropriate disposal methods. While dense non-aqueous phase liquid (DNAPL), or free-product, was not observed in any soil or groundwater sample, the presence of contaminants above respective SCGs indicate a potentially persistent source. The existence of the active structure makes a full discovery or delineation of the potential source impracticable at this time.

Groundwater

Groundwater samples were collected from overburden monitoring wells both on and off the subject site to assess groundwater conditions. Groundwater samples collected from monitoring wells and from temporary boring locations (Figure 2) in November 2010, April 2011 and January 2012 indicated the presence of site-related contaminants of concern (COCs) at the subject site, south to Winsor Street and present in two of three municipal wells located on Foster Island at the Chemung River (Figure 5). Other volatile organic compounds (VOCs) associated with petroleum fuels were also detected in groundwater. These VOCs originate from the petroleum filling station across Hoffman St. from the subject property and persisting south to West Water Street. The petroleum-related compounds are likely associated with a past petroleum release(s) (e.g. NYSDEC Spill #95-08867) from the previously mentioned filling station located on the southeast corner of Hoffman

and W. Church Streets. Groundwater gauging indicates the predominant flow direction is to the south toward the Chemung River (Figure 3).

On-site Groundwater

Potential source areas are suspected to be immediately outside the footprint of the site building (west side), and possibly under the structure itself. Direct push soil borings were performed in July 2010 at eight locations (5 exterior and 4 interior) on the site (Figure 4). The interior borings were achieved using an electric jackhammer to advance a macro-core sampler to refusal in an effort to provide an understanding of the below-slab conditions. Continuous soil samples were obtained at all boring locations until groundwater or equipment refusal was encountered. Soils encountered at the interior boring locations were silty sand and gravel with coal and ash. Equipment refusal was encountered above the groundwater table at three of four interior boring locations. Refusal was encountered at similar depths at these three locations, approximately 7.5 feet below grade, and concrete was observed within the sampler. One boring was able to be advanced to 13 feet below grade, and a groundwater sample was obtained for analysis. The exterior borings were spaced within the paved section on the west side of the building. Continuous soil samples were obtained at all boring locations until groundwater or equipment refusal was encountered. Soils encountered at the exterior boring locations were sand and gravel with variable silt content. Depth to groundwater generally ranged between 10 and 12 feet below ground surface (bgs). One boring was advanced to a depth of approximately 44 feet bgs. where a possible confining layer was encountered, but not penetrated, at approximately 43 feet bgs. Groundwater samples were obtained from each of the exterior borings. In addition to the borings advanced during the RI, the contractor located four (4) existing monitoring wells that were installed as part of the 2006 Site Characterization and one Town-owned monitoring well, located on the Elmira Water Board property. Groundwater samples were collected and analyzed from wells on November 17, 2010 and January 4, 2012. The existing monitoring wells, except for the Town-owned well, are screened at the intersection of the water table within the upper silty sand and gravel deposit.

Off-site Groundwater

Forty (40) soil borings were advanced in November 2010, April 2011 and November/December 2011 off-site (Figure 2). At 22 boring locations, one (1) - or two (2) - inch diameter PVC monitoring wells were constructed. Continuous soil samples were collected at the boring locations to depths ranging from 15 to 72 feet bgs. An upper silty sand and gravel unit was encountered underlain by deposits with variable clay, silt, and medium to fine sand content. Groundwater was encountered in the brown silty sand and gravel deposits at depths ranging approximately between eight (8) and 16 feet bgs. The screened intervals were either within the upper silty sand and gravel deposit at the intersection of the water table (shallow) or in the upper portion of the finer-grained silt with variable sand, gravel and clay content (deep) that underlies the silty sand and gravel, when encountered. Groundwater samples were collected from the five (5) existing monitoring wells and the 22 newly installed wells.

The groundwater sampling results indicate that the primary site-related COCs are the chlorinated volatile organic compounds (CVOCs) tetrachloroethene and its associated transformation products trichloroethene, dichloroethene and vinyl chloride, additionally, limited petroleum-related compounds were observed as described above. Contaminant concentrations in groundwater both on-site and off-site are elevated above applicable SCGs, having the greatest concentration

immediately south of the subject property along Hoffman St. with an attenuating plume present south of the site. The groundwater CVOC plume extends from the site to the Chemung River and the City of Elmira Foster Island Public Supply Wells No. 41 and No. 42 (Figure 5). The Town-owned municipal wells are approximately 45 feet deep, likely terminating within a fine-grain sand and silt deposit. The municipal wells are screen deeper than monitoring wells installed for the investigation, however, concentrations of site-related contaminants observed in No. 41 and No. 42 are consistent with the anticipated down-gradient migration of an attenuating plume. The petroleum-related contaminants observed on the eastern periphery of the plume are not considered contaminants of concern and will not be addressed by the remedy. These compounds have been observed to be attenuating naturally and monitoring of the petroleum-related plume is ongoing under the Spills Program (Spill No. 95-08876).

Table No. 1 - Groundwater

Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
VOCs			
Tetrachloroethene	3 J – 3,800 D	5	46/89
Trichlororethene	2 J – 680 D	5	18/89
cis-1,2-Dichloroethene	2 J – 2,300 D	5	28/89
trans-1,2-Dichloroethene	2 J – 30 JD	5	1/89
Vinyl Chloride	10 J – 24 JD	2	2/89
Methyl tert-butyl ether	2 J – 89 J	10	11/89
Ethylbenzene	320 DJ – 1,400	5	4/89
m,p-Xylenes	690 – 3700	5	4/89
o-Xylenes	20 DJ – 90 J	5	3/89
1,2,4-Trimethylbenzene	730 DJ – 2000	5	4/89
1,3,5-Trimethylbenzene	220 DJ – 280 JD	5	2/89
Cyclohexane	44 DJ – 270	---	----
Isopropylbenzene	33 DJ – 95 J	5	3/89
n-Propylbenzene	93 DJ – 260	5	4/89

Table No. 1 - Groundwater			
Detected Constituents	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)	Frequency Exceeding SCG
Benzene	4 J – 90 JD	1	2/89
Toluene	2 J – 40 J	5	1/89
Methylcyclohexane	130 DJ – 260	---	----
SVOCs			
None Detected			
Inorganics			
Barium	571 – 768	100	2/2
Cadmium	25.9 - 26.1	5	2/2
Iron	35,200 – 45,500	300	2/2
Lead	34 – 47	25	2/2
Manganese	3,710 – 6,400	300	2/2
Sodium	180,000 – 341,000	---	----
Pesticides/PCBs			
None Detected			

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) and PART 5 MCLs
D – Compound quantitated using a secondary dilution
J – Indicates that the associated numerical value is an estimated concentration

Groundwater samples collected on-site were submitted for VOCs, SVOCs, metals and PCBs. Following analysis of on-site samples and identification of the site-specific COCs, the analytical scope was reduced to VOC analysis of off-site samples. The groundwater sampling results indicate that the primary COCs are tetrachloroethene (PCE) and its transformation products trichloroethene (TCE) and cis-1,2-dichloroethene (cis-1,2-DCE). Contaminant concentrations in groundwater both on-site and off-site are elevated above applicable SCGs. Twenty-seven monitoring wells, seven of which are constructed as couplets (two wells screened at different depths), were installed as part of this RI starting from locations hydraulically up-gradient of the site and proceeding downgradient to the City of Elmira Foster Island Public Water Supply property. Nineteen of these

monitoring wells were installed with the screened interval straddling the water table, while seven deeper piezometric wells were installed with the screened section terminated at or seated in a confining layer with an eighth installed ostensibly at the top of bedrock. Groundwater elevations, when compared across the entire monitoring well network, are largely consistent showing no significant deviations and indicating the presence of only one aquifer, presumably devoid of confining units. Detections of PCE, TCE and cis-1,2-DCE were observed in 15 of 19 wells screened across the surface of the groundwater table with only two of the eight wells screened at deeper intervals reporting PCE detections. The two detections of site-related contaminant observed in deep well screened intervals were less than those observed at the water table, however, not significantly different. These two detections within the deep-screened interval are located at the downgradient, western and eastern extent of the monitoring well network; consistent with a denser-than-water CVOC plume that would have descended as groundwater flow carried it south. The groundwater VOC plume extends from the site to the Chemung River and the City of Elmira Public Supply Wells No. 41 and No. 42. Based on the findings of the RI, the presence of tetrachloroethene has resulted in the contamination of groundwater (Figure 6). 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
- Trichloroethene
- cis-1,2-Dichloroethene
- trans-1,2-Dichloroethene

Soil

The concentrations of volatile organic compounds, semi-volatile organic compounds and PCBs reported in the soil samples collected from the interior borings do not exceed the Restricted SCOs for Commercial Use or the Protection of Groundwater. Only one boring was able to be advanced beneath what is presumed to be the original basement floor of the dry-cleaning structure. The concentration of cadmium in one soil sample exceeds the Restricted SCO for the Protection of Groundwater, but was below the Restricted SCO for Commercial Use. Metals are not typically associated with dry cleaning operations and due to the location observed, assumed to be present in material used to fill the basement when abandoned. The soils that exhibited the highest concentrations of COCs were observed at the 6 to 8 foot interval below the building. The only COC that was detected in the soil samples submitted for analyses from the four on-site exterior boring locations was tetrachloroethene. The highest tetrachloroethene concentration, in contravention of the Protection of Groundwater SCO, was observed on the west side of the site building (Figure 7) in soils at the groundwater interface. Semi-volatile organic compounds (SVOCs) were detected in soil samples, however, the concentrations are below both the Restricted SCOs for the Commercial use and for the Protection of Groundwater. These compounds are not associated with dry cleaning solvents.

Table No. 2 - Soil					
Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
VOCs					
Tetrachloroethene	0.003 – 1.9	1.3	2/44	150	0/44
SVOCs					
None Detected					
Inorganics					
Iron	12,700 – 15,200	10,000	8/44	10,000	8/44
Calcium	2,480 - 50,600	10,000	4/44	10,000	4/44
Cadmium	5.98 – 8.02	7.5	2/44	9.3	0/44
Magnesium	1,830 – 10,300	10,000	1/44	10,000	1/44
Pesticides/PCBs					
None Detected					

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

The primary soil contaminant is tetrachloroethene from the operation of a dry-cleaner on the premises. As noted on Figure 7, the primary soil contamination is located within the footprint of the subject facility. The quality of soils beneath the Castle Cleaner site was evaluated by comparing the analytical results to both Restricted SCOs for Commercial Use and for the Protection of Groundwater. These comparisons found that the only VOC constituent that exceeded the Restricted SCOs for the Protection of Groundwater was tetrachloroethene; these concentrations were below the Restricted SCO for Commercial Use. The soils that exhibited the elevated levels were observed outside the building footprint at depths of 8 to 10 feet bgs and 10 to 12 feet bgs.

Soils immediately above and below these depths did not exceed the Restricted SCO for tetrachloroethene. Soil quality beneath the Castle Cleaner site was also evaluated by comparing the semi-volatile, metals and PCB results to Restricted SCOs for both the Commercial Use and for Protection of Groundwater. These comparisons found that the concentrations of the semi-volatile compounds and PCBs were below the Restricted SCOs values. Based on the findings of the Remedial Investigation, the presence of tetrachloroethene 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

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 sub-slab soil vapor under structures, and indoor air inside structures. At this site, due to the presence of buildings in the impacted area, a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring. Results are not presented herein to protect the privacy of structure owners.

Based on the concentrations detected, actions were taken to address the potential for exposures related to soil vapor intrusion as necessary and as described in Section 6.2. The evaluation of the potential for soil vapor intrusion resulting from the presence of site-related COCs in groundwater and soil was investigated by sampling sub-slab soil vapor under structures, indoor air inside the structures, and ambient outdoor air. The soil vapor intrusion sampling was conducted during the 2011 and 2012 heating seasons and included 16 structures. For each structure sub-slab soil vapor (if a concrete floor was present in the lowest portion of the structure) and indoor air samples were collected to assess the potential for exposure via soil vapor intrusion. Outdoor air samples were collected concurrently to evaluate outdoor air quality in the vicinity of the study area. The results of the soil vapor intrusion primarily indicated tetrachloroethene and trichloroethene were found in sub-slab vapors and indoor air at structures both on-site and off-site. Based on the findings of the Remedial Investigation, the presence of tetrachloroethene has resulted in the contamination of soil vapor. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of soil vapor to be addressed by the remedy selection process are, Tetrachloroethene and associated break-down products including, trichloroethene, cis-1,2-Dichloroethene, trans-1,2-Dichloroethene, and vinyl chloride. Additional structures are to be sampled as part of the selected remedy within the study area.

Exhibit B

Description of Remedial Alternatives

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

Alternative 1: No Action

The No Action alternative is evaluated as a procedural requirement and as a basis for comparison. No Action indicates that no remedial action will be conducted at the site or off-site. This option entails no future activities to contain or remediate COCs, provides no treatment of COCs, and provides no institutional or engineering protection to human health or the environment. This option assumes that physical conditions at the site remain unchanged, with no increase in the introduction of COCs into groundwater, and existing COCs in soil and groundwater would naturally attenuate. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative 2: Installation of Infrastructure for Treatment at Foster Island Well Field or Siting of a New Well or new water main, In-Situ Chemical Oxidation (ISCO), Vapor Mitigation of Residential Structures, and Site Management

This alternative is able to address impacted saturated soil and groundwater at the site and off-site further reducing any on-going source of COCs that may be impacting groundwater quality, address community exposure to impacted soil vapor, provide a mechanism for evaluating the effectiveness of the remedies, and implement Institutional Controls with a Site Management Plan and Environmental Easement for preventing inhalation of contaminated soil vapors and direct contact with contaminated soils at the site. The elements of this remedy are as follows:

- The installation of groundwater treatment equipment including air-stripping technologies, and granular activated carbon as necessary, will provide treatment of impacted groundwater at the Foster Island Well Field. This technology can allow the City of Elmira to place Well No. 42 back into production, and continue use of Well No. 40 and 41 thereby mitigating the complete exposure pathway to the community to contaminated groundwater. Alternatively, groundwater may be passed through GAC alone in order to remove VOCs.

  As an alternative to the wellhead treatment discussed above, but included under this remedial element, a new well may be constructed by the City of Elmira Water Board on the City's Hudson Street lot or a new water main could be constructed to connect the Sullivan Street wellfield to the City's treatment plant. For the well installation option, the proposed lot currently contains electrical service and infrastructure necessary for the siting of a new well. Construction of a replacement well would require: hydrogeologic survey, drilling of the well, permitting, and the construction of piping and appurtenances. The decision to treat water extracted from the Foster Island wellfield, install the additional

water main, or, construct a new well on the Hudson Street lot will made in consultation with the City of Elmira Water Board during the design phase, following a hydrogeologic and economic assessment.

- In-situ Chemical Oxidation (ISCO) is the introduction of a strong oxidant into a subsurface aquifer, typically via an injection well, to transform COCs and reduce their mass, mobility and/or toxicity. There are several types of commercially available oxidants designed to address the COCs, including hydrogen peroxide, potassium or sodium permanganate and sodium persulfate. While sodium and potassium permanganate are recognized oxidizing agents capable of destroying the double-bonded chlorinated 'ethene' compounds that make up part of the list of COCs, there are many logistical, safety and geological factors that can influence the applicability of ISCO and its effectiveness for this project. The feasibility of this technology is questionable due to the proximity of buried utilities in the study area, the presence of residential and commercial buildings with basements, the variability in the geology, and the close presence of water supply wells.

- Vapor Mitigation of residential structures is necessary when sampling indicates the potential for or actual occurrence of soil vapor intrusion. The purpose of a vapor mitigation system is to reduce the potential of contaminants in soil vapor from migrating into indoor air. A vapor mitigation system is vapor collection system generating a pressure difference between the sub-slab environment and the ambient air in the structure, removing potentially harmful vapors before they have a chance to enter the habitable space. A vapor mitigation system is not designed to directly influence contaminants in soils or groundwater, but rather as a stop-gap measure to protect building inhabitants from the impacts of soil vapor intrusion. Vapor mitigation is a recognized technology for reducing or eliminating the potential for exposure of COCs through inhalation to building occupants and the community.

- In addition to the active remedial processes being proposed, 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 from any contamination identified at the site. An Environmental Easement and a Site Management Plan (SMP) provides a notification mechanism for potential future redevelopment or change in use of the subject site. Exposure to utility, construction, and environmental workers to elevated COCs in media that currently underlies impermeable covers at the site (pavement and the building) can be addressed through Institutional Controls. Institutional Controls with a SMP and Environmental Easement would effectively prevent ingestion or direct contact with contaminant during future intrusive activities at the site.

Present Worth: *$1,330,000*
Capital Cost: *$900,000*
Annual Costs: *$28,000*

Alternative 3: Installation of Infrastructure for Treatment at Foster Island Well Field or Siting of a New Well or new water main, In-Situ Biostimulation, Vapor Mitigation of Residential Structures, and Site Management

This alternative is capable of addressing impacted saturated soil and groundwater within the contaminant plume generally defined within the 500 ppb concentration contour interval, addressing remaining residual COCs at the site, further reducing any on-going source of COCs that may be impacting groundwater quality, addressing community exposure to impacted soil vapor, provides a mechanism for evaluating the effectiveness of the remedies, and implement Institutional Controls with a SMP and Environmental Easement for preventing inhalation of contaminated soil vapors and direct contact with contaminated soils at the site.

- The installation of groundwater treatment equipment including air-stripping technologies, and granular activated carbon as necessary, will provide treatment of impacted groundwater at the Foster Island Well Field. This technology can allow the City of Elmira to place Well No. 42 back into production, and continue use of Well No. 40 and 41 thereby mitigating the complete exposure pathway to the community to contaminated groundwater. Alternatively, groundwater may be passed through GAC alone in order to remove VOCs.

  The options regarding a water main installation or new well discussed in alternative 2 are retained for alternative 3 as well.

- In-situ biostimulation is designed to increase the activity of a targeted biological mass throughout the contaminated aquifer, thereby achieving effective biodegradation of contaminants by existing and naturally occurring biota, however, Tetrachloroethene requires the addition of an electron donor to stimulate reductive dechlorination. The biostimulation of anaerobic activity is facilitated through the introduction of the necessary electron donor. There are several types of commercially available electron donors that produce molecular hydrogen (H2) through a fermentation process. These include, but are not limited to, HRC®, food grade molasses and vegetable oil. These products are released into the aquifer to stimulate the growth of targeted indigenous bacteria that are efficient in degrading a particular contaminant. In-situ dechlorination of COCs is dependent upon logistical, geological and geochemical factors, as well as competing biological reactions within the groundwater system that can influence the applicability of any Biostimulation substrate.

- Vapor mitigation of residential structures as discusses in Alternative 2.

- In addition to the active remedial processes being proposed, 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 from any contamination identified at the site. An Environmental Easement and a Site Management Plan (SMP) provides a notification mechanism for potential future redevelopment or change in use of the subject site. Exposure to utility, construction, and environmental workers to elevated

COCs in media that currently underlies impermeable covers at the site (pavement and the building) can be addressed through Institutional Controls. Institutional Controls with a SMP and Environmental Easement would effectively prevent ingestion or direct contact with contaminant during future intrusive activities at the site.

Present Worth:.....*$685,000*
Capital Cost:.....*$255,000*
Annual Costs:.....*$28,000*

Alternative 4: Installation of Infrastructure for Treatment at Foster Island Well Field or Siting of a New Well or new water main, In-situ Enhanced Bioremediation, Soil Vapor Extraction, Vapor Mitigation of Off-Site Residential Structures, and Site Management

This alternative provides for the treatment of the Foster Island Well Field drinking water preventing the ingestion of drinking water impacted by COCs, addresses impacted saturated soil and groundwater within the contaminant plume generally defined within the 500 ppb concentration contour interval, addresses remaining residual COCs at the site, further reducing any on-going source of COCs that may be impacting groundwater quality, addresses community exposure to impacted soil vapor, provides a mechanism for evaluating the effectiveness of the remedies, and implements Institutional Controls with a SMP and Environmental Easement for maintaining the vapor mitigation system and eliminating direct contact with contaminated soils at the site.

- The installation of groundwater treatment equipment including air-stripping technologies, and granular activated carbon as necessary, will provide treatment of impacted groundwater at the Foster Island Well Field. This technology can allow the City of Elmira to place Well No. 42 back into production, and continue use of Well No. 40 and 41 thereby mitigating the complete exposure pathway to the community to contaminated groundwater. Alternatively, groundwater may be passed through GAC alone in order to remove VOCs.

  The options regarding a water main installation or new well discussed in alternative 2 are retained for alternative 4 as well.

- In-situ biostimulation is designed to increase the activity of a targeted biological mass throughout the contaminated aquifer, thereby achieving effective biodegradation of contaminants by existing and naturally occurring biota, however, Tetrachloroethene requires the addition of an electron donor to stimulate reductive dechlorination. The biostimulation of anaerobic activity is facilitated through the introduction of the necessary electron donor. There are several types of commercially available electron donors that produce molecular hydrogen (H2) through a fermentation process. These include, but are not limited to, HRC®, food grade molasses and vegetable oil. These products are released into the aquifer to stimulate the growth of targeted indigenous bacteria that are efficient in degrading a particular contaminant. In-situ dechlorination of COCs is dependent upon logistical, geological and geochemical factors, as well as competing biological reactions within the groundwater system that can influence the applicability of any Biostimulation substrate.

- Soil Vapor Extraction is the removal of air from the pore space of the vadose zone by the application of vacuum to wells in and around a source area. The movement of air through the unsaturated soils effectively removes contaminant mass from the formation through concentration differential and partitioning. The objective of this remedy is to reduce the concentrations of COCs in soil at the site. While soil vapor extraction is not applicable to the saturated zone, it can be effective in reducing contaminant levels in the vadose and capillary fringe. Soil vapor extraction is able to influence contaminant concentrations under the site structure if extraction wells are appropriately designed and installed.

- Vapor mitigation of residential structures as discusses in Alternative 2.

- In addition to the active remedial processes being proposed, 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 from any contamination identified at the site. An Environmental Easement and a Site Management Plan (SMP) provides a notification mechanism for potential future redevelopment or change in use of the subject site. Exposure to utility, construction, and environmental workers to elevated COCs in media that currently underlies impermeable covers at the site (pavement and the building) can be addressed through Institutional Controls. Institutional Controls with a SMP and Environmental Easement would effectively prevent ingestion or direct contact with contaminant during future intrusive activities at the site.

Present Worth:.....*$2,122,000*
Capital Cost:.....*$815,000*
Annual Costs:.....*$85,000*

Alternative 5: Restoration to Pre-Disposal or Unrestricted Conditions

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative was not evaluated because of the urban setting which the subject property lies and the infeasibility that exists in achieving the requisite clean-up goals. Due to the total disruption of the lives and prosperity of individuals living and working in the area required to achieve pre-release conditions, this alternative will not be considered.

Exhibit C

Remedial Alternative Costs			
Remedial Alternative	**Capital Cost ($)**	**Annual Costs ($)**	**Total Present Worth ($)**
Alternative 1	$0	$0	$0
Alternative 2	$900,000	$28,000	$1,330,000
Alternative 3	$255,000	$28,000	$685,000
Alternative 4	$815,000	$85,000	$2,122,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department is proposing Alternative No. 4 - Installation of Infrastructure for Treatment at Foster Island Well Field or Siting of a New Well or new water main, Soil Vapor Extraction, In-situ Biostimulation of the CVOC plume at concentrations at or above 500 ppb, Vapor Mitigation of Off-Site Residential Structures as necessary, and Site Management, as the remedy for this site. Alternative No. 4 would achieve the remediation goals for the site by eliminating the exposure pathway present through consumption of impacted groundwater, removing the source material from the unsaturated overburden beneath and around the subject property, eliminating the potential for soil vapor intrusion, and mitigating the off-site plume. The elements of this remedy are described in Section 7 and include: 1). providing for the treatment of the Foster Island Well Field drinking water or siting of a new well, preventing the ingestion of drinking water impacted by site-related COCs; 2.) addressing impacted saturated soil and groundwater within the contaminant plume generally defined within the 500 ppb concentration contour interval; 3.) addressing community exposure to impacted soil vapor; 4.) providing a mechanism for evaluating the effectiveness of the remedies; and 5.) implementing Institutional Controls with a SMP and environmental easement for maintaining the vapor mitigation system and eliminating direct contact with contaminated soils at the site.

Basis for Selection

The selected remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375-1.8(f). A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

The selected remedy, Alternative 4 – Wellhead treatment or Siting of a New Well with In-situ Bio, Soil Vapor Extraction, Vapor Mitigation as warranted and Site Management would satisfy this criterion by reducing, or eliminating in the event of new well siting, the contaminant concentrations in production water at the Foster Island Well Field, once fully implemented, thereby allowing full capacity use of all three water supply wells or replacement by a new well. In-situ enhanced bioremediation can provide some protectiveness by reducing the amount of contaminant mass within the groundwater plume. The vapor mitigation component of the alternative directly eliminates the potential inhalation exposure to contaminated soil vapor into community structures. Institutional Controls with a SMP and environmental easement would be effective in requiring the assessment of potential exposures through direct contact with soils at the site and developing the requirements for maintaining the vapor mitigation system currently in operation at the site.

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 potentially complies with SCGs to the extent practicable. It also creates the conditions necessary to restore groundwater quality to the extent practicable. Alternatives 2 and 3 also comply with this criterion but to a lesser degree or with lower certainty. Because Alternatives 2 and 3 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site. It is expected Alternative 4 will achieve groundwater SCGs in 5 to 10 years, while groundwater contamination above SCGs will remain on-site under Alternatives 2 and 3 for many years. An aeration treatment system is an alternative for eliminating the complete exposure pathway to impacted groundwater through ingestion. The implementation of this alternative may provide unrestricted use of the site, and will reduce or eliminate the potential of exposure to contaminants via vapor intrusion within the community.

The next seven "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. The in-situ bio-stimulation component of this alternative has the potential of reducing long-term COC impact to groundwater quality beneath the down-gradient neighborhood and at the Foster Island Well Field.

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.

In addition to the volume, mobility and toxicity reduction potential through the implementation of bio-stimulation within the groundwater plume and the installation of a SVE system at the site, this alternative would eliminate the concentrations of COCs in municipal water extracted from the Foster Island Well Field.

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. The short-term impact of this remedial alternative has little potential of impacting human health and the environment during the implementation phase. There are little to no identified risks to the community from the storage, staging and injection of hydrogen producing substrates. Identifiable risks could be managed through an appropriate health and safety program. No potential risks have been identified associated with SVE, vapor mitigation and groundwater monitoring. Vapor mitigation systems would address the potential of vapor migration into structures within the community. The SVE component of this alternative would reduce remaining residual COCs at the site, further reducing

any on-going source of COCs that may be impacting groundwater quality. A SVE system at the site would have minimal effect on the community during its implementations. There is the potential of some disturbance to the community, mostly noise nuisance, during the installation of SVE wells, but no increase in risks associated with exposure to COCs. The performance of groundwater monitoring has minimal or no risks to the community. The short-term effectiveness or benefits of the placement of a treatment system at the Foster Island Well Field would allow full capacity use of the Foster Island Well Field.

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. In addition to the implementability of in-situ bio-stimulation, of the SVE system at the site and vapor mitigation within the community, Alternative - 4 would involve the design and installation of the infrastructure at the Foster Island Water Plant that would be required for the placement of a treatment system on the water supply or the siting of a new well. The installation of the infrastructure and the treatment system would be accomplished through conventional construction methods. Additional components to the Foster Island water system may need to be replaced or modified during the implementation of this alternative.

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.

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 implementation of this alternative may provide continued commercial use of the site and may eliminate exposure to COCs via vapor intrusion at the site. This criterion addresses the current, intended and reasonable anticipated future land use in the area impacted by this alternative.

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 this PRAP are evaluated by the Department. 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.

Installation of Infrastructure for Treatment at Foster Island Well Field or Siting of a New Well or new water main, In-situ enhanced bioremediation, Soil Vapor Extraction, Vapor Mitigation of Off-site Residential Structures, and Site Management (Alternative - 4) has been selected because, as described above, it satisfies the threshold criteria and provides the best balance of the remaining criterion.

N

Project North

GeoLogic

GeoLogic NY, Inc.

VICINITY PLAN
CASTLE CLEANERS SITE
221 HOFFMAN STREET
ELMIRA, NEW YORK

DRAWN BY:	SCALE:	PROJECT NO:
SC	1:24,000	209053
REVIEWED BY:	DATE:	DRAWING NO:
FCE	Feb. 2012	1

FILE:\..\209053/ri-fs/drawing 1

N

LEGEND:

- BORING LOCATION
- MONITORING WELL LOCATION
- ELMIRA MUNICIPAL WATER SUPPLY WELL LOCATION

MONITORING WELL NO.	LATITUDE	LONGITUDE	ELEVATION
GW-1D	42.085294	-76.823459	859.32
GW-1S	42.085297	-76.823444	858.82
GW-2	42.085545	-76.823084	858.82
GW-4	42.085012	-76.822933	858.45
GW-8D	42.084636	-76.822286	857.83
GW-8S	42.084642	-76.822283	858.02
GW-11	42.084375	-76.822149	857.84
GW-12D	42.084448	-76.823430	858.21
GW-12S	42.084451	-76.823419	858.23
GW-13S	42.084586	-76.822990	858.08
GW-14S	42.083878	-76.822031	858.52
GW-15D	42.083260	-76.823237	858.82
GW-15S	42.083255	-76.823252	858.66
GW-16S	42.083811	-76.821503	858.66
GW-17D	42.084137	-76.820407	861.00
GW-17S	42.084142	-76.820391	861.08
GW-18D	42.082255	-76.822966	855.01
GW-18S	42.082257	-76.822957	854.96
GW-19S	42.082466	-76.821373	856.05
GW-20D	42.083139	-76.820111	856.27
GW-20S	42.083136	-76.820120	856.24
OFDP 10.1	42.085248	-76.822774	858.30
OFDP 10.2	42.084760	-76.822510	857.71
OFDP 10.5	42.084836	-76.822117	857.95
OFDP 10.7	42.084833	-76.821818	858.71
OFDP 10.8	42.085286	-76.822631	858.25
PS-1	42.082455	-76.821367	858.84

APPROXIMATE SCALE:

0'10' 250' 500'

GeoLogic

GeoLogic NY, Inc., Homer, New York

BORING & MONITORING WELL LOCATION PLAN
CASTLE CLEANERS SITE
221 HOFFMAN STREET, ELMIRA, NEW YORK

DRAWN BY:	SCALE:	PROJECT NO.:
SMC/SDW	AS SHOWN	209053
REVIEWED BY:	DATE:	DRAWING NO.:
FCE	FEB. 2012	2

\..\209053\Tech\Drawings\Boring - MW Location Plan 02-2012

LEGEND:

- ELMIRA MUNICIPAL WATER SUPPLY WELL LOCATION
- MONITORING WELL LOCATION

SHALLOW WELLS:

- (848.63) GROUNDWATER ELEVATION (FT.)
- 846 GROUNDWATER ELEVATION CONTOUR
- DIRECTION OF GROUNDWATER FLOW

APPROXIMATE SCALE:

0' 10' 250' 500'

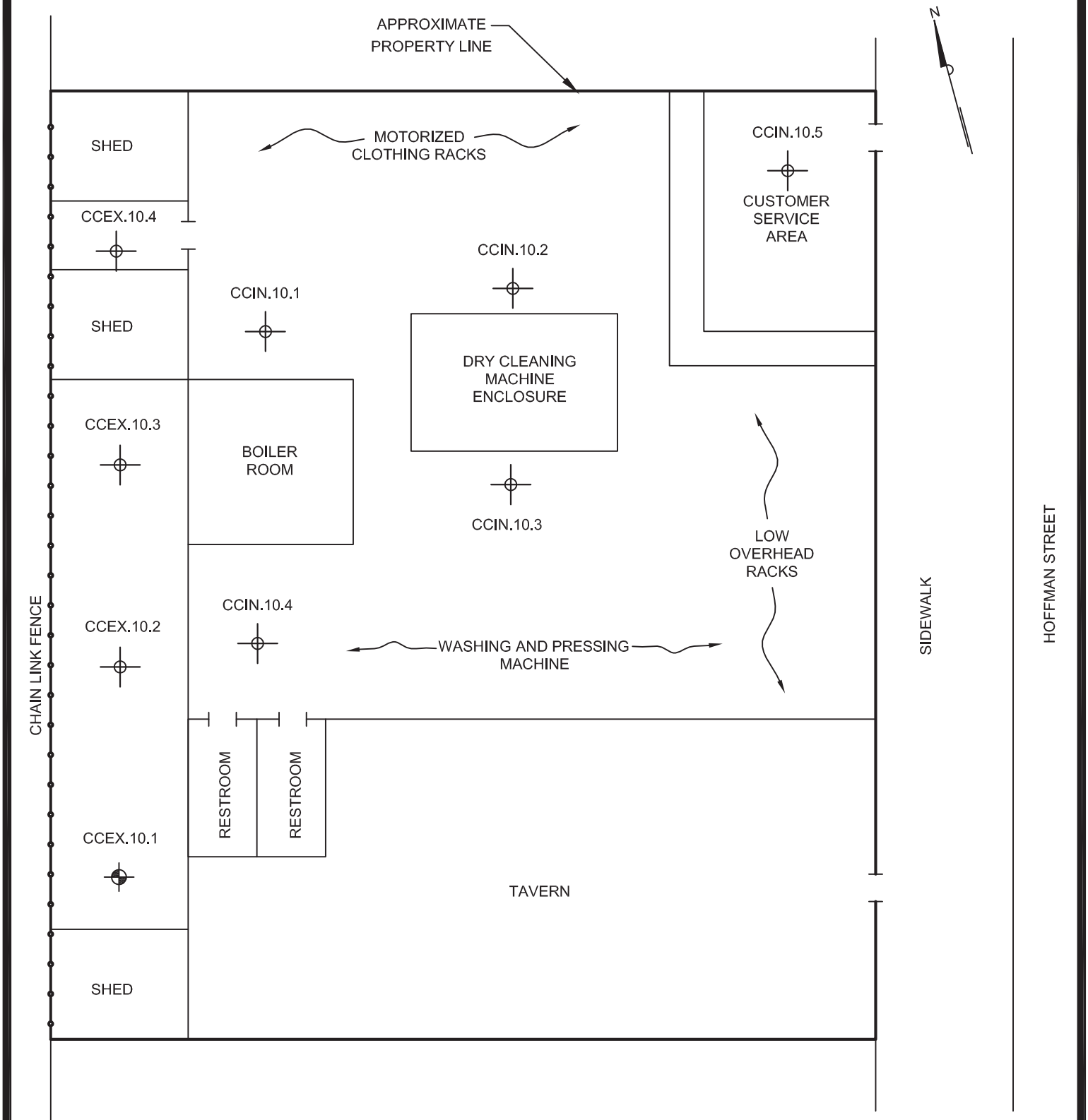
\..\209053\Tech\Drawings\Water Table Map Shallow Wells 02-2012.dwg

GeoLogic

GeoLogic NY, Inc., Homer, New York

WATER TABLE MAP FOR FEBRUARY 2012
CASTLE CLEANERS SITE
221 HOFFMAN STREET, ELMIRA, NEW YORK

DRAWN BY:	SCALE:	PROJECT NO.:
SMC/SDW	AS SHOWN	209053
REVIEWED BY:	DATE:	DRAWING NO.:
FCE	FEB. 2012	3



LEGEND:

DIRECT PUSH (DP) BORING LOCATION

DIRECT PUSH BORING LOCATION AND MONITORING WELL

APPROXIMATE SCALE:

0' 5' 10' 20'

GeoLogic

GeoLogic NY, Inc., Homer, New York

ON-SITE BORING LOCATION PLAN
CASTLE CLEANERS SITE
221 HOFFMAN STREET
ELMIRA, NEW YORK

DRAWN BY:	SCALE:	PROJECT NO.:
FCE/SDW	AS SHOWN	209053
REVIEWED BY:	DATE:	DRAWING NO.:
	AUG. 2010	4

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N

LEGEND:

- ELMIRA MUNICIPAL WATER SUPPLY WELL LOCATION
- MONITORING WELL LOCATION
- 10 ppb — HYDROCARBON PLUME CONTOUR IN SAND & GRAVEL
- 10 ppb — CHLORINATED COMPOUNDS PLUME CONTOUR IN SAND & GRAVEL

APPROXIMATE SCALE:

0'10' 250' 500'

GeoLogic

GeoLogic NY, Inc., Homer, New York

DISSOLVED PLUME CONTOUR PLAN FOR JANUARY 2012
CASTLE CLEANERS SITE
221 HOFFMAN STREET, ELMIRA, NEW YORK

DRAWN BY:	SCALE:	PROJECT NO.:
SMC/SDW	AS SHOWN	209053
REVIEWED BY:	DATE:	DRAWING NO.:
FCE	FEB. 2012	5

\..\209053\Tech\Drawings\Dissolved Plume Contour Plan for 01-2012.07-2012.dwg

N

LEGEND:

- ELMIRA MUNICIPAL WATER SUPPLY WELL LOCATION
- MONITORING WELL LOCATION
- 10 ppb — TETRACHLOROETHENE (PCE) PLUME CONTOUR IN SAND & GRAVEL

APPROXIMATE SCALE:

0'10' 250' 500'

GeoLogic

GeoLogic NY, Inc., Homer, New York

DISSOLVED PCE PLUME CONTOUR PLAN FOR JANUARY 2012
CASTLE CLEANERS SITE
221 HOFFMAN STREET, ELMIRA, NEW YORK

DRAWN BY:	SCALE:	PROJECT NO.:
SMC/SDW	AS SHOWN	209053
REVIEWED BY:	DATE:	DRAWING NO.:
FCE	MAY 2012	6

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North

>1,300 ug/mg, tetrachloroethene

<1,300 ug/mg, tetrachloroethene

Restricted SCO for the Protection of Groundwater for tetrachloroethene is 1,300 ug/kg

GeoLogic

GeoLogic NY, Inc.

SOIL CONTAMINANT CONCENTRATIONS
CASTLE CLEANERS SITE
211 HOFFMAN STREET
ELMIRA, NEW YORK

DRAWN BY:	SCALE:	PROJECT NO:
SC	Not To Scale	209053
REVIEWED BY:	DATE:	DRAWING NO:
FCE	OCTOBER 2012	7

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Castle Cleaners
State Superfund Project
City of Elmira, Chemung County, New York
Site No. 808034

The Proposed Remedial Action Plan (PRAP) for the Castle Cleaners site was prepared by the New York State Department of Environmental Conservation (Department or DEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on May 13, 2016. The PRAP outlined the remedial measure proposed for the contaminated soil, groundwater, and soil vapor at the Castle Cleaners site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on June 09, 2016, which included a presentation of the remedial investigation, feasibility study (RI/FS) for the Castle Cleaners site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to voice their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on June 21, 2016.

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

COMMENT 1: From a community standpoint, do dry cleaners have an increased potential from this kind of contamination?

RESPONSE 1: Yes, dry cleaners, like all industries that rely on hazardous chemicals, have an increased risk for accidental release of those chemicals to the environment, and, therefore have an inherent responsibility to handle those chemical in an appropriate manner.

COMMENT 2: How were you alerted to this problem?

RESPONSE 2: The City of Elmira Water Board notified County and State authorities immediately following the detection of tetrachloroethene (PCE) in Foster Island Well No. 42.

COMMENT 3: Have you monitored other dry cleaners in the area?

RESPONSE 3: The DEC Division of Air Resources maintains an inspection program to ensure the compliance of currently operating dry cleaning facilities with applicable rules and regulations. The DEC Division of Environmental Remediation addresses dry cleaners that have been identified as impacting the environment through improper disposal of dry cleaning chemicals.

COMMENT 4: Why has it taken so long, if you began in 2003 and its now 2016?

RESPONSE 4: The administrative process of identifying a site and working with potentially responsible parties to negotiate the clean-up of those sites can be lengthy. Throughout the time period stated, the DEC in consultation with the NYSDOH, worked to investigate the source and impact of the dry cleaning chemicals. In order to protect the public from exposure in the short term, Foster Island Well No. 42 was removed from service and water distributed to the public from Well No. 40 and Well No. 41 is tested regularly and shown to meet applicable standards. Soil vapor intrusion sampling was performed at 16 off-site structures. The results indicated actions to address exposures were warranted at eight structures, additional sampling at three and no additional actions at five structures.

COMMENT 5: It would be good for the public to know that some of the property owners refused vapor intrusion testing when offered and also that the Water Board removed the impacted public water supply well shortly when the results showed levels approaching the drinking water standard.

RESPONSE 5: As noted during the meeting, a number of property owners chose not to have vapor intrusion sampling conducted during the remedial investigation when it was offered. Also, Well No. 42 was shut down in 2003, when the level of PCE was rising but was still below drinking water standards.

COMMENT 6: What are the numbers for PCE for Well No. 41? Is that the alternate source for Well No. 42?

RESPONSE 6: Levels of PCE in Well No. 41 have remained below the reportable level of 2 parts per billion. Wells No. 40 and No. 41 are still used to provide water for the City of Elmira.

COMMENT 7: Aren't there thousands of old dry cleaner sites across the state?

RESPONSE 7: There are approximately 2,000 registered dry cleaners currently using PCE in the State of New York. There are over 170 dry cleaner sites on DEC Registry of Inactive Hazardous Waste Disposal Sites

COMMENT 8: The money as proposed, is that already authorized or will we have to wait for the legislature to pass?

RESPONSE 8: The funding for the proposed remedy will come from either an identified responsible party, the State Superfund, or a combination of the two. The Legislature does not have to pass a funding item specific to the proposed remedy for the DEC to move forward.

COMMENT 9: Do you brief the legislators on this only if you ask?

RESPONSE 9: This project was brought to the attention of the Governor's Water Quality Rapid Response Task Force because of the impact to a municipal water supply. Local and state government representatives were also notified and invited to attend the public meeting.

COMMENT 10: What happens if nothing is ever done?

RESPONSE 10: If no actions are taken to address the PCE currently present in soil and groundwater, the immediate impact to the Foster Island Well No. 42 would remain along with the

potential for soil vapor intrusion in homes and businesses down-gradient of the dry cleaner. Over the course of many years, naturally occurring conditions in the sub-surface may breakdown the PCE but we cannot wait for this.

COMMENT 11: I've heard of using enzymes and oxygen, is that what you'd use?
RESPONSE 11: We are proposing to evaluate the conditions that exist in the soil and groundwater and choose an appropriate biological amendment, such as Hydrogen Release Compound (HRC), based on that information.

COMMENT 12: Where does the plume (from your slide) go from there?

RESPONSE 12: The identified PCE plume originates at the Castle Cleaners site and travels south to the Chemung River.

COMMENT 13: When it hits the river, does it dissipate there?

RESPONSE 13: When the impacted groundwater enters the river it is diluted and dispersed, resulting in levels which are no longer detectable.

COMMENT 14: Should the downriver people worry?

RESPONSE 14: Based on the anticipated dilution/dispersion in the Chemung River, individuals downstream of the Foster Island area do not need to worry about being exposed.

COMMENT 15: Do the costs for Option 4 reflect if the water wells stay in place?

RESPONSE 15: The costs outlined in Option 4 are reflective of one of the three proposed choices, for example, leaving the Foster Island wells in operation with the addition of treatment at that location.

COMMENT 16: Is PCE illegal for use in dry cleaners?

RESPONSE 16: No, PCE remains an acceptable dry cleaning solvent.

COMMENT 17: Has every person in the plume area been contacted?

RESPONSE 17: As part of the soil vapor intrusion evaluation, the offer to sample was extended to all homes and businesses located in the area of known groundwater contamination and identified as having the potential for soil vapor intrusion to occur based on environmental sampling.

COMMENT 18: How many properties are there that need to be contacted? It is important for people to know that people have turned it down. Why do they? Are they worried about property values going down?

RESPONSE 18: As part of the proposed remedy, the Department will again undertake an outreach campaign and attempt to evaluate potential exposure via soil vapor intrusion at all structures located in the area of known groundwater contamination. Previous efforts resulted in approximately a 50% participation rate. There are many reasons why individuals choose not to have their properties evaluated, the Department does not maintain record of these.

COMMENT 19: After years of drinking and inhaling [PCE], have people complained of health problems?

RESPONSE 19: The Department of Health has not received any complaints of potential health problems associated with this site. However, it is important to note that Municipal supply Well No. 42 has been removed from service and water distributed to the public from Well No. 40 and Well No. 41 are tested regularly and shown to meet applicable standards. In addition, sub-slab depressurization systems (a system that ventilates/removes the air beneath the building) have been installed in a portion of the on-site building and at off-site buildings to prevent the indoor air quality from being affected by the contamination in soil vapor beneath the building.

COMMENT 20: How deep are the wells? Does it impact groundwater? Are we drinking river water?

RESPONSE 20: The Foster Island wells are reported to be approximately 40 feet deep and much of the water pumped from these wells comes from the river. Groundwater in the vicinity of the Foster Island wells is assumed to be impacted based on the levels detected in Wells No. 41 and No. 42.

APPENDIX B

Administrative Record

Administrative Record

Castle Cleaners
State Superfund Project
City of Elmira. Chemung County, New York
Site No. 808034

1. Proposed Remedial Action Plan for the Castle Cleaners site, dated May 2016, prepared by the Department.

2. Order on Consent and Administrative Settlement, Index No. B8-0779-08-04, between the Department and Castle's Fast Dry Cleaners, Inc. executed on November 09, 2009.

3. "Site Characterization Report", September 2006, prepared by MACTEC.

4. "Site Characterization/Remedial Investigation Work Plan", April 2010, prepared by Geologic NY, Inc.

5. "Site Characterization Task 1A Letter Report", September 2010, prepared by Geologic NY, Inc.

6. "Site Characterization Task 1B Letter Report", February 2011, prepared by Geologic NY, Inc.

7. "Remedial Investigation Report", January 2013, prepared by Geologic NY, Inc.

8. "Feasibility Study", February 2014, prepared by Geologic NY, Inc.