RECORD OF DECISION

Crown Cleaners of Watertown, Inc. Superfund Site
Herrings, Jefferson County, New York

Lithograph of Herring Mill (site first used to manufacture paper bags) circa 1900; Source: Carthage Library

United States Environmental Protection Agency
Region II
New York, New York
March 2012

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Crown Cleaners of Watertown, Inc. Superfund Site
Herrings, Jefferson County, New York

Superfund Site Identification Number: NYD986965333
Operable Unit: 01

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) documents the U.S. Environmental Protection Agency's (EPA's) selection of a remedy for the Crown Cleaners of Watertown, Inc. Superfund Site (Site), chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. Section 9601-9675, and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300. This decision document explains the factual and legal basis for selecting a remedy to address the source areas and contaminated groundwater at the Site. The attached index (see Appendix III) identifies the items that comprise the Administrative Record upon which the selected remedy is based.

The New York State Department of Environmental Conservation (NYSDEC) was consulted on the proposed remedy in accordance with CERCLA Section 121(f), 42 U.S.C. Section 9621(f), and it concurs with the selected remedy (see Appendix IV).

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy, which addresses contaminant source areas and contaminated groundwater, includes the following components:

- Decontamination and demolition of the main building;
- Excavation of polycyclic aromatic hydrocarbon (PAH)- and arsenic-contaminated soil to a depth of one foot[1] and excavation of tetrachloroethylene (PCE)-

[1] If the land use for the former facility property is changed from commercial to recreational before the design of the remedy is approved, then the PAH- and arsenic-contaminated soils will be excavated to a depth of two feet.

contaminated soils to a depth of four feet[2];

- Excavation of contaminated soils remaining within the footprint of the building;
- Excavation of PCE-contaminated sediment and soil from the adjacent wetlands to meet the protection of groundwater soil cleanup objective (SCO).
- Transportation for treatment/disposal of the building debris and the PCE-contaminated soils and sediments at an off-Site Resource Conservation and Recovery Act-compliant facility;
- Utilization of the excavated PAH- and arsenic-contaminated soils as backfill to a depth of not less than one foot below ground surface (bgs)[3] in the areas where PCE-contaminated soil will be excavated and in the footprint of the building;
- Backfilling with clean soil those areas where residual PAH- and arsenic-contaminated soil will remain after the installation of a readily-visible and permeable subsurface demarcation delineating the interface between the residually-contaminated native soils and the clean backfill;
- Backfilling the excavated wetland areas with soil that meets the unrestricted SCOs;
- Injection of an oxidizing agent into the contaminated groundwater at the source areas;
- Utilization of monitored natural attenuation (MNA)[4] for the groundwater with lower contaminant concentrations located outside the source areas;
- Utilization of institutional controls in the form of an environmental easement/restrictive covenant in the property records of Jefferson County to, at a minimum, restrict the use of the Site to commercial and industrial uses, unless the use is changed to recreational[5], restrict intrusive activities in areas where residual contamination remains unless the activities are in accordance with an EPA-approved Site Management Plan (SMP) (see below), and restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the New York State Department of Health or the County Department of Health[6]; and

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[2] Approximately 2,200 cubic yards of PAH and arsenic-contaminated soils and 8,400 cubic yards of PCE-contaminated soils and sediment would be excavated. If the land use for the former facility property is changed to recreational, then the volume of PAH- and arsenic-contaminated soils that would be excavated would increase by 1,650 cubic yards.

[3] The excavated PAH- and arsenic-contaminated soils will be utilized as backfill to a depth of not less than two feet bgs if the land use is changed to recreational.

[4] MNA is the process by which a natural system's ability to attenuate contaminant(s) at a specific site is confirmed, monitored and quantified. <u>See</u> *e.g., DER-10/Technical Guidance for Site Investigation and Remediation* 1.3(b)(31).

[5] If the land use for the former facility property is changed from commercial to recreational before the design of the remedy is approved, then the environmental easement/restrictive covenant will allow recreational, commercial, or industrial use of the property as defined by 6 NYCRR Part 375-1.8(g). The land use will, however, be subject to local requirements.

[6] The property owner will be responsible for implementing and maintaining the controls and NYSDEC will be responsible for enforcing them.

- Development of an SMP that will provide for the proper management of all post-construction remedy components[7].

During the design, a Phase 1B Cultural Resources Survey will be performed to document the Site's historic resources.

During the design, the building located in the rear of the former facility property will be assessed to determine whether it contains any hazardous substances. If hazardous substances are present and the building can be safely accessed, then the building will be decontaminated. If the building cannot be safely accessed, then it will be demolished and the debris will be decontaminated, if necessary, and disposed of off-Site.

During the design, samples will be collected to define the limits of the soil and sediment excavation.

Bench- and pilot-scale treatability studies will be performed during the design to optimize the effectiveness of the injection system and to determine optimum oxidant delivery rates and locations for the-injection-well points.

Performance and compliance monitoring and testing will be performed during and after the oxidizing agent injections to determine residual contaminant concentrations, assess the need for additional treatment, and monitor the natural attenuation of the contamination at the periphery of the plume.

The environmental benefits of the selected remedy may be enhanced by consideration, during the design, of technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green Energy Policy and NYSDEC's Green Remediation Policy[8]. This will include consideration of green remediation technologies and practices.

If in the future, structures are proposed to be built on the former facility property or any existing buildings are reoccupied, as required by the SMP, a soil vapor intrusion evaluation and vapor intrusion mitigation systems may be needed until the cleanup criteria have been achieved.

The selected remedy will address source materials constituting principal threats by

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[7] The SMP will describe procedures to confirm that the requisite engineering (subsurface demarcation) and a plan for institutional controls (*i.e.*, environmental easement/restrictive covenant) are in place and that nothing has occurred that will impair the ability of said controls to protect public health or the environment. The SMP will also include a soil management plan, an inventory of any use restrictions, the necessary provisions for the implementation of the requirements of the above-noted environmental easement and/or restrictive covenant; a provision for the performance of the operation, maintenance, and monitoring required by the remedy; and a provision that the property owner submit periodic certifications that the institutional and engineering controls are in place.

[8] See http://epa.gov/region2/superfund/green_remediation and http://www.dec.ny.gov/docs/remediation_hudson_pdf/der31.pdf.

excavating and treating the PCE-contaminated soil and sediment (if necessary for disposal) and through the in-situ treatment of the source area groundwater contamination, thereby satisfying the preference for treatment.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy meets the requirements for remedial actions set forth in CERCLA Section 121, 42 U.S.C. Section 9621, because it: 1) is protective of human health and the environment; 2) meets a level or standard of control of the hazardous substances, pollutants, and contaminants which at least attains the legally applicable or relevant and appropriate requirements under federal and state laws; 3) is cost-effective; and 4) utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. In keeping with the statutory preference for treatment that reduces toxicity, mobility, or volume of contaminated media as a principal element of the remedy, the contaminated soil, sediment, and groundwater will be treated by implementing the selected remedy.

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-Site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The ROD contains the remedy selection information noted below. More details may be found in the Administrative Record file for this Site.

- Contaminants of concern and their respective concentrations (see ROD, pages 4-7 and Appendix II, Tables 1-3);
- Baseline risk represented by the contaminants of concern (see ROD, pages 9-15 and Appendix II, Table 4A);
- Cleanup levels established for contaminants of concern and the basis for these levels (see ROD, Appendix II, Table 5);
- Manner of addressing source materials constituting principal threats (see ROD, pages iii-iv and page 32);
- Current and reasonably-anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and ROD (see ROD, page 8);
- Potential land and groundwater use that will be available at the Site as a result of the selected remedy (see ROD, page 36-37);
- Estimated capital, annual operation and maintenance, and present-worth costs; discount rate; and the number of years over which the remedy cost estimates are projected (see ROD, pages 31 and Appendix II, Tables 6 and 7); and

- Key factors used in selecting the remedy (*i.e.*, how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision)(see ROD, pages 38-39).

AUTHORIZING SIGNATURE

Walter E. Mugdan, Director
Emergency and Remedial Response Division

March 29, 2012
Date

RECORD OF DECISION FACT SHEET
EPA REGION II

Site

Site name:	Crown Cleaners of Watertown, Inc. Site
Site location:	Herrings, Jefferson County, New York
HRS score:	49.00
Listed on the NPL:	September 5, 2002

Record of Decision

Date signed:	March 29, 2012
Selected remedy:	Decontamination and demolition of the main on-Site building, excavation of contaminated wetland sediments and soils located adjacent to the former facility property, excavation of contaminated soil at the source area, off-Site treatment/disposal of the excavated sediments, soils, and building debris, in-situ treatment of the contaminated groundwater near the source using chemical oxidation and downgradient using natural attenuation, development of a Site Management Plan, and an environmental easement.
Capital cost:	$5.8 million
Annual operation, maintenance, and monitoring cost:	$505,000 for first year; $57,000 annually thereafter
Present-worth cost:	$6.9 million

Lead

EPA

Primary Contact:	Pamela Tames, Remedial Project Manager, (212) 637-4255
Secondary Contact:	Joel Singerman, Chief, Central New York Remediation Section, (212) 637-4258

Main PRPs

None

Waste

Waste type:	Volatile organic compounds and polyaromatic hydrocarbons
Waste origin:	On-site waste disposal activities
Contaminated media:	Soil, sediments, and groundwater

DECISION SUMMARY

Crown Cleaners of Watertown, Inc. Superfund Site
Herrings, Jefferson County, New York

United States Environmental Protection Agency
Region II
New York, New York
March 2012

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SITE NAME, LOCATION, AND DESCRIPTION

The 9-acre Crown Cleaners of Watertown, Inc. Site[1] (Site) is a former dry cleaning and laundry facility located in the Village of Herrings, Jefferson County on New York State Route 3 (see Figure 1 for a site location map[2]). There are three buildings in poor condition and an occupied mobile home located on the former facility property. Most of the former facility property is surrounded by a chain link fence.

The Site is located approximately 300 feet south of the Village of Herrings' public water supply well and its southern border is adjacent to the Black River. A park is located to the east of the Site and residences are located to the north and west.

A wetland area is located immediately west of the former facility property and another wetland area is located approximately 800 feet southwest of the former facility property. A significant amount of debris, including, paper waste from the former paper factory, old appliances, and several drum carcasses, is located in the wetland to the southwest.

See Figure 2 for a site map.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

From 1890 until the mid-1960's, the former facility property was used by the St. Regis Paper Co. to produce paper bags. A textile manufacturer subsequently operated on the former facility property for several years. In the late 1970's, the property was purchased by Crown Cleaners of Watertown, Inc. and was operated until 1991 as a dry cleaning and laundry facility. Tetrachloroethene (PCE) and machine oils and greases were used. Wastewater was discharged into basement storage pits, which then discharged through the foundation walls to the ground. Used dry cleaning machine filters were dumped on the former facility property.

The residences in the area use either private wells or a public supply well for potable water supply. In 1991, the New York State Department of Health (NYSDOH) determined that the Village of Herrings' water supply well was contaminated with PCE at concentrations ranging from 25 to 50 micrograms per liter (ug/L). Later that same year, NYSDEC installed a treatment system on the Village of Herrings' water supply system and determined that the source of PCE contamination was from the Site.

Several New York State investigations were conducted at the Site during the 1990's which resulted in the Site being referred to EPA for further evaluation in 2000.

In 2000, EPA sampled the facility's storage pits, oil tanks, on- and off-property soils, and the groundwater. Volatile organic compounds (VOCs), semi-volatile organic compounds

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[1] The Site's Superfund Site Identification Number is NYD986965333. The U.S. Environmental Protection Agency (EPA) is the lead agency; the New York State Department of Environmental Conservation (NYSDEC) is the support agency.

[2] Figures are located in Appendix I, attached hereto.

(SVOCs), polychlorinated biphenyls, copper, iron, mercury, zinc, beryllium, arsenic, and chromium were detected in the soils above NYSDEC's soil cleanup objectives (SCOs). The highest PCE concentration found in the shallow aquifer was 9,800 ug/L. In addition to this investigation, EPA secured the property, removed and disposed of VOC-contaminated sludge and debris, sump pit water, spent dry cleaning filters, removed friable asbestos-containing materials, demolished an unstable portion of the main building and disposed of approximately 5,000 gallons of waste oil. EPA also demolished a large smoke stack from which it is believed the PAHs emanated.

Because of the dilapidated condition of the building located in the rear of the former facility property, it could not be safely assessed.

On September 4, 2002, the Site was listed on EPA's Superfund National Priorities List.

EPA conducted field investigations at the Site from 2004 through 2011, which culminated in the completion of a remedial investigation and feasibility study (RI/FS)[3] report in December 2011.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The RI/FS report and a Proposed Plan[4] were released to the public for comment on December 12, 2011. These documents were made available to the public at information repositories maintained at the Carthage Free Library located at 412 Budd Street, Carthage, New York and the EPA Region II Office in New York City. A notice of availability for the above-referenced documents was published in the *Watertown Daily Times* on December 12, 2011. The public comment period ran from December 12, 2011 to January 17, 2012. On January 3, 2012, EPA conducted a public meeting at the Village of Herrings Town Hall to inform local officials and interested citizens about the Superfund process, to present the Proposed Plan for the Site, including the preferred remedy and to respond to questions and comments from the approximately 20 attendees. Public comment was related to addressing contamination in the on-Site buildings, addressing contaminants attributable to other sources, changing the land use to recreational, leaving contamination behind, and additional sources of contamination. Responses to the questions and comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary (see Appendix V).

During the public meeting, several members of the public expressed their views on the

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[3] An RI determines the nature and extent of the contamination at a site and evaluates the associated human health and ecological risks and an FS identifies and evaluates remedial alternatives to address the contamination.

[4] A Proposed Plan describes the remedial alternatives considered for a site and identifies the preferred remedy with the rationale for this preference.

reasonably-anticipated future land use (there is a strong local desire to change the land use from commercial to recreational). Since the area is served by municipal water and the aquifer is already designated as a drinking water source (although it is not likely that the groundwater underlying the former facility property will be used for potable purposes in the foreseeable future), the public's views on potential future beneficial groundwater uses were not solicited.

SCOPE AND ROLE OF THE OPERABLE UNIT

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP), at 40 CFR Section 300.5, defines an operable unit as a discrete action that comprises an incremental step toward comprehensively addressing Site problems. A discrete portion of a remedial response eliminates or mitigates a release, threat of a release, or pathway of exposure. The cleanup of a site can be divided into a number of operable units, depending on the complexity of the problems associated with the Site.

This response action applies a comprehensive approach to all Site problems; therefore, only one operable unit is required to remediate the Site. The primary objectives of this action are to remediate the sources of groundwater contamination at the Site, restore downgradient groundwater quality for drinking, and minimize any potential future health and environmental impacts from the contaminated soil, sediment, and groundwater.

SUMMARY OF SITE CHARACTERISTICS

The RI activities that were conducted at the Site included monitoring well installation, geological and hydrogeological investigations, an ecological assessment, wetlands delineation, a residential vapor intrusion investigation[5], and collecting samples from the surface soil (top two feet of soil), subsurface soil (below two feet), wetland sediments, surface water and sediment from the Black River, groundwater, residential wells, and the public supply well. Because of the historical significance of the structures on the former facility property, a Phase 1A Cultural Resources survey[6] was also performed.

The results of the RI are summarized below.

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[5] Vapor intrusion is a process by which VOCs move from a source below the ground surface (such as contaminated groundwater) into the indoor air of overlying or nearby buildings.

[6] A Phase I cultural resources survey is designed to determine the presence or absence of cultural resources in the project's potential impact area. The Phase I survey is divided into two progressive units of study--Phase IA, a literature search and sensitivity study and, if necessary based upon Phase 1A survey, a Phase IB, field investigation to search for resources.

Site Hydrology

The Site is located in the Erie-Ontario Lowlands physiographic province, which includes the Black River valley. Local surface water runoff flows toward the Black River, which runs adjacent to the Site along its southern boundary. The Black River in the area where it runs adjacent to the Site is classified by New York State as a "Class C" surface water body. These waters should be suitable for fish propagation and survival, as well as contact recreation (6 NYCRR Part 701.8). The Herrings Station dam is located just east of the Site and a roughly 20-foot surface water elevation difference is maintained across the dam.

Approximately 1.4 acres of the former dry cleaner property are located in the 100-year flood plain of the Black River according to the Federal Emergency Management Agency. The remainder of the Site is located outside the 500-year flood plain.

Site Hydrogeology

The hydrogeology is characterized by the existence of four units, Upper Carbonate, Middle Carbonate, Lower Carbonate, and Fractured Granitic Gneiss Units.

The upper part of the Site hydrogeologic unit, the Upper Carbonate Unit, consists of an unconfined, fractured unit with low permeability that is subject to seasonal variations. The Middle Carbonate Unit is a dense, massive, very low to no permeability unit, which appears to behave as a semi-confining to confining unit. Below this unit is a confined Lower Carbonate unit that provides water resources to the local area. The deepest unit evaluated during the RI investigation was the Fractured Granitic Gneiss unit, which underlies the Lower Carbonate unit. Groundwater in the Upper Carbonate unit primarily flows in a south-southwesterly direction along bedding planes partings, with secondary flow through fractures and joints. In the Lower Carbonate and Granitic Gneiss units, groundwater flow is controlled by secondary porosity through enlarged bedding planes and fractures. Groundwater in both of these units flows in a south-southwesterly direction and eventually discharges to the Black River.

Groundwater

EPA and New York State Department of Health have promulgated health-based protective Maximum Contaminant Levels (MCLs), which are enforceable standards for various drinking water contaminants. MCLs, which ensure that drinking water does not pose either a short- or long-term health risk, will be used as the cleanup criteria for the groundwater. The MCL for both PCE and trichloroethylene (TCE) is 5 ug/L.

Four rounds of groundwater sampling were conducted as part of the RI. During the first round in 2004, 24 existing monitoring wells, two piezometric wells and one residential well were sampled. In 2006, a second round of sampling was conducted and included the original 24 wells, 2 piezometric wells, 1 residential well, and eight newly installed monitoring wells. A third sampling round covering 31 monitoring wells, five newly installed multiport wells, and two piezometers was conducted in 2009. A fourth round of groundwater sampling was conducted on these same wells in mid-2011.

Groundwater samples contained PCE in 11 of the 31 monitoring wells. Concentrations in these wells ranged from 6.7 ug/L to 6,500 ug/L. PCE was not detected in the multiport wells. See Table 1 for a summary of the groundwater data[7] and Figure 3 for isoconcentration contours.

The groundwater data indicates that an approximately 350- by 300-foot wide and 145 foot deep contaminant plume radiates from the PCE source area located at the southwest corner of the main building on the former facility property.

The data also suggests that a separate area of PCE contamination is present in the upper unit bedrock aquifer in the wetland area located to the southwest of the former facility property. The dimensions of this plume are 275 by 225 feet wide and 40 feet deep. Isotopic analysis of samples collected from site wells and wells to the southwest of the former facility property indicates that the PCE detected in this area is of a similar origin to the PCE detected in groundwater elsewhere on the Site. Sample results from this area show decreasing PCE concentrations with increasing depth, suggesting a surface source in the vicinity. In addition, the measurement of groundwater levels at various elevations within the bedrock indicates a downward hydraulic gradient. Since the dumping of debris has occurred in this area, the origin of the groundwater impacts southwest of the former facility property is likely the result of the disposal of site-related wastes (*e.g.,* drum(s)) in this area.

Based upon the local groundwater flow direction (generally to the south) and groundwater quality data, contaminants in groundwater originating from the various suspected potential source areas have migrated, and will continue to migrate until dilution and removal mechanisms such as adsorption, degradation, precipitation, and limited volatilization result in their eventual non-detection or until the contaminated groundwater discharges to the potential wetland areas and/or the Black River, particularly if this migration occurs within the upper bedrock fractures. Vertically, groundwater data also shows that Site-related constituents have migrated to and within the lower unit fractured bedrock.

Based upon concentration trends, naturally-occurring processes appear, in general, to be reducing contaminant occurrence within the groundwater plume. The data show a declining trend in PCE levels within the plume. The data also shows the presence of PCE's reductive dechlorination products, known as daughter products, in many of the same wells as PCE, indicating the slow natural breakdown or attenuation of the contaminants. The extent to which any one process (*i.e.*, dilution, advection, dispersion,

[7] Tables are located in Appendix II, attached hereto.

etc.) is predominant cannot be determined with the available data.

Vapor Intrusion

Subslab, indoor air, and ambient air sampling in and around eight residences in the vicinity of the Site was conducted in March 2009. Only low levels of VOCs were detected in the soil gas and air samples, and no Site-related VOCs were detected in any of those samples. Based upon these data, EPA concluded that no further sampling or analysis of potential vapor intrusion was warranted for the Site.

Soils

NYSDEC has identified SCOs for the protection of the environment and for various contaminants based upon the assumed future usage of the Site (see Table 5 for the SCOs for the Site)[8]. Based upon the most recent active use of the Site, the Site will be cleaned up to "commercial" standards. The SCO for PCE for the protection of groundwater is 1.3 milligrams per kilogram (mg/kg) and 16 mg/kg for arsenic for commercial use. The commercial SCO for PAHs varies depending on the contaminant[9].

In 2004, soil samples were collected at 9 locations to a depth of 5 feet. An additional 42 soil locations were sampled in 2011 to a depth of 2 feet. Elevated PCE concentrations were found in five locations, primarily, adjacent to the northern and western corners of the main building in the west-northwestern portion of the Site (the highest concentration detected was 59,000 micrograms per kilogram [ug/kg]). These PCE-contaminated soils (hereinafter, "source area soils") are a source of contamination to the groundwater. In addition, elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) were detected in surface soil at 14 locations. The highest PAH concentration detected was 58.4 mg/kg.

See Table 2 for a summary of the soil data.

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[8] See 6 NYCRR Part 375, Environmental Remediation Programs, Subpart 375-6, New York State Department of Environmental Conservation, December 14, 2006.

[9] While the land use of the Site has historically been industrial/commercial, local elected officials have expressed a desire to develop a community park on the Site following its remediation. In order for the former facility property to be remediated using soil cleanup objectives that would be protective for a park (*i.e.,* restricted residential), a local governmental entity must acquire the property. The Village Mayor and Town Supervisor are presently pursuing several options to acquire the property and change its use to recreational. If the land use for the property is changed from commercial to recreational before the design of the remedy that is ultimately selected is approved, then restricted residential SCOs will be utilized. Otherwise, commercial SCOs will be utilized.

Sediments

Sediment samples were collected from 15 locations in the wetland areas located immediately west and southwest of the buildings. Eight VOCs were detected in the sediment samples, including PCE as high as 0.17 mg/kg. Samples collected from the wetland area located to the southwest also showed the presence of PAHs, pesticides, and metals. *S*ee Table 3 for a summary of the wetland sediment data. Cleanup levels for wetland sediments are outlined in the NYSDEC's Division of Fish, Wildlife, and Marine Resource's 1999 *Technical Guidance for Screening Contaminated Sediments.*

While attempts were made to obtain sediment samples from the Black River adjacent to the Site, there was insufficient sediment available to get a proper sample.

Contamination Fate and Transport

Historically, rainwater and snowmelt have percolated through the PCE-contaminated soil, resulting in contaminant releases to the groundwater. Presently, there are four source areas located adjacent to the main building and one in the wetland area located to the southwest of the former facility property that are sources of contamination to the groundwater. Figures 5 and 6 depict the current conceptual Site model[10].

Once site characterization data have been collected and a conceptual model has been developed, the efficacy of monitored natural attenuation (MNA) as a remedial alternative is evaluated. Site-specific data is used to estimate the rate of attenuation processes and the anticipated time required to achieve the remedial action objectives. A three-tiered evaluation is utilized consistent with OSWER Directive 9200.4-17P. The three "lines of evidence" are historical groundwater and/or soil chemistry data that demonstrate a clear and meaningful trend of decreasing contaminant mass and/or concentration over time at appropriate monitoring or sampling points, hydrogeologic and geochemical data that can be used to demonstrate indirectly the type(s) of natural attenuation processes active at the Site, the rate at which such processes will reduce contaminant concentrations to required levels, and data from field or microcosm studies which directly demonstrate the occurrence of a particular natural attenuation process at the Site and its ability to degrade the contaminants of concern.

The three lines-of-evidence for the Site are as follows:

• Primary Line of Evidence – Qualitative analysis of the trends of concentrations of the select VOCs shows that, generally, PCE is decreasing, TCE is either decreasing or not exhibiting a significant trend, cis-1,2-dichloroethylene (DCE) is not exhibiting significant trends, and vinyl chloride is mainly not detected. Due to the lack of sufficient, appropriately comparative rounds of sampling for the Site wells, it is difficult to ascertain "clear and meaningful trends" of contamination concentrations.

[10] A conceptual site model illustrates contaminant sources, release mechanisms, exposure pathways, migration routes, and potential human and ecological receptors.

• Secondary Line of Evidence – PCE daughter products (*e.g.,* TCE, cis-1,2-DCE) were detected within monitoring wells near the source and downgradient of the source/within the plume.

• Tertiary Line of Evidence – The isotopic analysis data follows a Rayleigh distillation model, and trends on a biodegradation kinetic isotope effect enrichment line, which is evidence of natural attenuation occurring via biodegradation.

Based upon preliminary modeling results, it has been estimated that natural attenuation of the contamination at the periphery of the source areas would achieve the cleanup standards in 30 years.

CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

Land Use

Although the former facility property was previously used for industrial purposes and the current usage is commercial, the Village intends to develop a community park on the property once it is remediated and available for reuse. The Mayor of Herrings and the Supervisor of the Town of Wilna are currently pursuing several options to acquire the privately-owned property and effect a change to the land use.

The Site is located south of the Village of Herrings' public water supply well and north of the Black River. The Black River where it runs adjacent to the Site is classified by New York State as a "Class C" surface water body. These waters should be suitable for fish propagation and survival, as well contact recreation (6 NYCRR Part 701.8). A park is located to the east of the former facility property and residences are located to the north and west. A wetland area is located immediately west of the former facility property and another wetland area is located approximately 800 feet southwest of the former facility property. A significant amount of debris, including, paper waste from the former paper factory, old appliances, and several drum carcasses, is located in the wetland to the southwest.

Groundwater Use

The groundwater underlying the Site is contaminated. Potable water for the former facility property is obtained from a public-supply source. The residences in the area use either private wells or a public supply well for potable water supply.

Although it is not likely that the groundwater underlying the former facility property or downgradient will be used for potable purposes in the foreseeable future, regional groundwater is designated as a drinking water source by NYSDEC.

SUMMARY OF SITE RISKS

A baseline risk assessment is an analysis of the potential adverse human health effects caused by the release of hazardous substances from a site in the absence of any actions to control or mitigate these under current and anticipated future land uses. EPA's baseline risk assessment for this Site, which is part of the RI/FS report, focused on contaminants in the soil, sediments, and groundwater that were likely to pose significant risks to human health and the environment. Potential indoor air vapor intrusion concerns were evaluated and found to not warrant further assessment. The risk assessment for this Site (see *Crown Cleaners of Watertown, Inc. Superfund Site Remedial Investigation Report*, Chapter 6.1 and Appendix O, Tetra Tech, December 2, 2011), is available in the Administrative Record.

Human Health Risk Assessment

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance exposure from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the contaminants of concern at the Site in various media (*i.e.*, soil, groundwater, surface water, sediment, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of, inhalation of, and dermal contact with contaminated soil. Factors relating to the exposure assessment include, but are not limited to, the concentrations to which people may be exposed and the potential frequency and duration of exposure. Using these factors, a reasonable maximum exposure scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with contaminant exposures and the relationship between the magnitude of exposure and the severity of adverse health effects are determined. Potential health effects are contaminant-specific and may include the risk of developing cancer over a lifetime or other noncancer health effects, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the liver or kidney). Some contaminants are capable of causing both cancer and noncancer health effects.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks. Exposures are evaluated based on the potential risk of developing cancer and the potential for noncancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a one-in-ten-thousand excess cancer risk; or, stated another way, one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions explained in the Exposure Assessment. Current Superfund guidelines for acceptable exposures are an individual lifetime site-related excess cancer risk in the range of 10^{-4} to 10^{-6} (corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk) with 10^{-6} being the point of departure. For noncancer health effects, a hazard index (HI) is calculated. An HI represents the sum of the individual exposure levels compared to their corresponding reference doses. The key concept for a noncancer HI is that a threshold level (measured as an HI of less than or equal to 1) exists below which noncancer health effects are not expected to occur.

As was noted above, most of the former facility property is surrounded by a chain link fence. With the exception of an occupied mobile home located on the former facility property outside the fence, the former facility property is not currently being used. Although the former facility property's historical usage was commercial/industrial, it is anticipated that the land use in the future will be recreational[11]. The possibility that the former facility property could be redeveloped for residential use was also considered.

The baseline risk assessment identified the current and potential future receptors that may be affected by contamination at the Site, the pathways by which these receptors may be exposed to site contaminants in various environmental media, and the parameters by which these exposures and risks were quantified. A trespasser was the receptor evaluated under the current scenario. Future scenarios considered a hypothetical future commercial worker, on and off-Site resident (adult and child), construction worker and utility worker.

The risks associated with potential exposures to the contaminated soils, sediment, and groundwater were assessed. Potential indoor air vapor intrusion concerns were evaluated and found to not warrant further assessment. Since the area is served by municipal water, it is not likely that the groundwater underlying the Site will be used for potable purposes in the foreseeable future; however, since regional groundwater is designated as a drinking water source by the State of New York, potential exposure to groundwater was evaluated.

The results of the baseline risk assessment indicate that the contaminated soils on the Site and the contaminated groundwater at the Site pose an unacceptable risk to human health due, primarily, to the presence of VOCs, SVOCs, and metals.

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[11] Local elected officials have expressed a desire to develop a community park on the former facility property following its remediation

Based on the anticipated future use of the Site, an excess lifetime cancer risk above the EPA reference cancer risk range or HI greater than the EPA threshold value were projected relative to any foreseeable current or future receptor exposed to site-related contaminants of concern (COCs) (PCE and its breakdown products) in soil, with a cancer risk estimated at 3.2×10^{-4} and a noncancer hazard index of 3.4. An excess lifetime cancer risk above the EPA reference cancer risk range is also attributable to the PAH, benzo(a)pyrene, in the soil for on-Site child resident at 3.2×10^{-4}.

All scenarios involving the use of the local groundwater as a drinking water source showed considerably elevated risks, due primarily to the presence of PCE. The greatest risk was estimated for the hypothetical on-Site resident (adult and child) at 4.3×10^{-2}. Concentrations of PCE also exceed the state and federal MCLs for this compound.

Ecological Risk Assessment

Potential risks to environmental receptors associated with the Site were identified in the ecological risk assessment (see *Crown Cleaners of Watertown, Inc. Superfund Site Remedial Investigation Report*, Chapter 6.2 and Appendix Q, Tetra Tech, Inc., December 2, 2011). This document is also available in the Administrative Record.

Terrestrial and wetland plants were determined to be at potential risk from toxic effects from copper, lead, and selenium, based upon the comparison to phytotoxic screening benchmarks; these constituents were identified as chemicals of ecological concern (COECs). However, a qualitative survey of vegetation cover-types present did not reveal any areas of stressed vegetation or areas devoid of vegetation. Based upon the exposure assessment, risk characterization, and associated uncertainties, the potential risk to this assessment endpoint was considered to be low.

The exposure assessment and risk characterization for soil and sediment invertebrates revealed potential risks from toxic effects from copper exposure in upland surface soils. Anecdotal evidence of an invertebrate community suggested this exposure is not acute in nature and the associated uncertainties would indicate this potential risk is limited to only one location. In the wetland sediments, the screening assessment, using benthic community benchmarks for community level impairment, identified PAHs, chlordane, antimony, arsenic, cadmium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, vanadium, and zinc as posing a potential risk to benthic community structure and function.

The short-tailed shrew was used as a representative mammalian species that is indigenous to New York and would utilize the available upland habitats present. A mean exposure evaluation employing conservative exposure parameters for upland habitats revealed no observable adverse effects level (NOAEL) hazard quotient (HQs) <1 for all COECs but cadmium and lead. No COECs with lowest observable adverse effects level (LOAEL) HQs >1 were identified. The lack of a LOAEL HQ>1, and the associated conservative uncertainty associated with the exposure assessment, suggests potential risks to terrestrial mammals should be considered to be low in the upland habitats. The wetland exposure evaluation for the shrew identified seven metals, aluminum, antimony, arsenic, cadmium, lead, selenium, and silver, with NOAEL HQs >1. Aluminum was the only COEC with a LOAEL HQ > 1.0 for this receptor. While exceedance of a LOAEL value may be a basis for the conclusion of significant risk, aluminum is one of the most abundant metals in the crust of the earth and is not typically associated with significant bioaccumulation in tissues. Therefore, the potential risks to mammals associated with these metals are considered to be low in the wetland areas. The American robin was used as a representative avian species that would utilize the available upland habitats present. A mean exposure evaluation employing conservative exposure parameters identified NOAEL HQs to remain <1 for all but cadmium, lead, and selenium. Of these, lead was the only metal with a mean exposure point dosage that exceeded the LOAEL-based exposure dosage. Based upon the exceedance of a LOAEL and given that lead is not an essential macronutrient for avian metabolism, lead was identified as a COEC in the upland soils. The mean exposure assessment for the wetland habitats revealed NOAEL HQs < 1 for all COECs except lead and zinc. Of these two metals, the mean lead exposure resulted in exceedance of the LOAEL dosage level for the receptor evaluated. Based upon the exceedance of a LOAEL, and that lead is not an essential macro-nutrient for avian nutrition, a potential significant risk exists for avian receptors from lead exposure in wetland sediments and is identified as a COEC for this environmental media.

No COECs were identified for surface waters of the Black River. PAHs, aluminum, barium, iron, and manganese were identified as being COECs for the surface waters of the Site wetlands. The risks from these COECs are associated with some degree of uncertainty given the lack of applicable background samples for similar wetland environments and the potential for colloidal particles to have been entrained in the surface water sample during collection.

Table 4 summarizes the risk data.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include the following: environmental chemistry sampling and analysis; environmental parameter measurement; fate and transport modeling; exposure parameter estimation; and toxicological data. Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there can be significant uncertainty as to the actual levels present. Environmental chemistry-analysis error can stem from several sources, including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual will actually come in contact with the chemicals of concern, the period of time over which such exposure will occur, and the fate and transport models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the risk assessment provides upper-bound estimates of the risks to populations near the Site, and it is highly unlikely to underestimate actual risks related to the Site.

For the baseline risk assessment, soil, sediment, and groundwater data collected from various sampling events were evaluated. The most recent sediment data were collected almost 5 years ago (*i.e.*, November 2006) while the most recent surface soil and groundwater data (for VOCs) were collected within the year (*i.e.*, 2011). Potential degradation of VOCs in an exposure medium over time may result in more toxic by-product constituents being formed from less toxic parent compounds (*e.g.*, the breakdown of less toxic chlorinated VOCs to the more toxic vinyl chloride). In such a case, the projected risks could be underestimated for exposure to VOCs in soil. However, this degradation does not appear to have occurred to a great extent in the former facility property soils to date, since the PCE/TCE degradation chain compounds have not been detected in soil at levels associated with threshold toxicity effects.

At the onset of the risk assessment, there was an indication that contamination in the surface soil (especially TCE) might be concentrated in the first 6 inches of the soil such that the soil thickness to be used to define the surface soil for exposure purposes might need to be reduced to be conservative. The concentration distribution of TCE with depth in the soil was evaluated to determine if there was a significant concentration difference between the TCE concentrations in the 0 to 0.5 foot soil samples and the 0.5 to 2 feet soil samples. This analysis revealed no clear difference and the default depth interval of 0 to 2 feet was seen to be appropriate for use as the "surface" soil interval.

Groundwater data collected from the most recent sampling round for each well of interest (*i.e.*, 2011) were selected for use in the baseline risk assessment as the best representation of current Site conditions. Previous investigations indicated at least two distinct groundwater flow systems (an upper and lower) existed in the bedrock beneath the Site. In some cases, the upper wells exhibited somewhat higher concentrations of the Site contaminants than the lower wells, and in other cases the trend was reversed. Since the groundwater units are indicated to be hydrologically connected, the groundwater data from both depth units were pooled for the baseline risk assessment. Due to the potential differences in exposure, the former facility property groundwater was evaluated separately from the wetland area located to the southwest of the former facility property's groundwater to explicitly examine this variability and allow for a comparison of potential exposures and risks in the two portions of the Site.

The analytical data used in the baseline risk assessment included estimated concentrations ("J" qualified), from a dilution analysis ("D" qualified), or validated as presumptive evidence for the presence of the compound ("N" qualified). All of the data qualified with these codes were used in the calculation of EPCs for the media assessed. The data with these qualifiers do not have a systematic high or low bias relative to the estimation of risk.

A conservative screening was used to select contaminants of potential concern (COPCs) for each exposure medium. Highly conservative screening levels were used to select which COPCs would be carried through the risk assessment. The screening levels used for soil, sediment, and groundwater were criteria developed for a residential soil and drinking water exposure scenario, which is an unlikely land use for this Site in the reasonably foreseeable future.

Background levels were not used to eliminate any chemicals from the quantitative risk assessment. This was, in part, due to the relatively small number of background samples collected for both soil and groundwater. The COPC screening process resulted in the conservative inclusion of a relatively broad set of constituents for assessment and the projection of some amount of risk that may be attributable to local or regional background levels of certain constituents (especially for soil).

A small number of chemicals were retained as COPCs because they did not have screening toxicity values to apply during the COPC screening and selection process. Typically, the risk associated with the intakes of these particular COPCs could not be quantified because of a lack of appropriate carcinogenic or non-carcinogenic health effect endpoint toxicity values. No surrogate values were used to calculate risks for these cases in the baseline risk assessment. The inability to estimate the contribution to risk from these specific COPCs in the baseline risk assessment may represent a small potential to underestimate the risks present.

This risk assessment considered the exposure to child and adult residents during the use of the groundwater for bathing and showering. The dermal absorption of volatile constituents through the skin as well as the inhalation of volatiles flashed out of the water during spraying and splashing could potentially result in exposures. In an actual situation, the same mass of volatile contaminant cannot both be absorbed and inhaled. Consequently, EPA Region 2 typically prefers to evaluate only inhalation exposure to volatiles during this activity, which is how this assessment was performed. By not including the dermal absorption intakes of these compounds, the risks attributable to this activity may be slightly underestimated for these compounds. However, as these exposure pathways were not significant risk drivers for these receptors, the exclusion of the dermal absorption intake does not significantly impact the overall risk estimates or the findings of the risk assessment for these receptors.

Separate assessments of the risks due to exposure to groundwater were performed using the characterized groundwater quality from the former facility property's wells and from the wetland area located to the southwest of the former facility property's wells. While this separation is of potential interest for certain site management considerations and was justified by the significant differences in the concentrations of the risk-driver contaminants (such as PCE and TCE) at the former facility property and within the wetland area located to the southwest of the former facility property, it may over-emphasize the potential difference in exposures that would be likely to occur. The groundwater from both areas is hydrologically connected and the radius of influence of a potential drinking water well in one area is likely to be larger than the areas delineated by the former facility property or wetland area located to the southwest of the former facility property area boundaries. As such, an actual well installed to provide domestic water would likely draw and mix water from both areas.

Considerable uncertainty can be associated with qualitative (hazard assessment) and quantitative (dose-response) evaluations. Hazard assessment characterizes the nature and strength of the evidence of causation or the likelihood a chemical that induces adverse effects in animals will induce adverse effects in humans. Hazard assessment of carcinogenicity is currently evaluated as a weight-of-evidence determination, using EPA (1989) classifications. Positive results in animal cancer tests suggest humans may also manifest a carcinogenic response, but animal data cannot necessarily be used to predict target tissues in humans. In the hazard assessment of noncarcinogenic effects, positive animal test results may suggest the nature of possible human effects (*i.e.*, target tissues and type of effects) (EPA, 1989).

These uncertainties are addressed using the uncertainty and modifying factors and assessment procedures prescribed by EPA in its guidance, and are reflected in the toxicity values recommended by EPA (*i.e.*, EPA's Integrated Risk Information System).

Summary of Human Health Risks

The results of the human health risk assessment indicate that the contaminated groundwater presents an unacceptable exposure risk and the ecological risk assessment indicates that the contaminated soils and sediments pose an unacceptable exposure risk.

Basis for Action

Based upon the quantitative human-health risk assessment and ecological evaluation, EPA has determined that actual or threatened releases of hazardous substances from the Site, if not addressed by the response action selected in this ROD, may present a current or potential threat to human health and the environment.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs), to-be-considered (TBC) guidance, and site-specific risk-based levels.

The following remedial action objectives were established for the Site:

- Reduce or eliminate any direct contact, ingestion, or inhalation threat associated with contaminated soils and sediments;
- Minimize exposure of wildlife to contaminated soils and sediments;
- Protect human health by preventing exposure to contaminated groundwater and soil vapor; and
- Restore groundwater to levels that meet state and federal standards within a reasonable time frame.

Soil cleanup objectives will be those established pursuant to 6 NYCRR Part 375, Environmental Remediation Programs, Subpart 375-6, effective December 14, 2006. These levels are the more stringent cleanup level between a human-health protection value and a value based on protection of groundwater. All of these levels fall within EPA's acceptable risk range.

Groundwater cleanup goals will be the more stringent of the state or federal promulgated standards.

The cleanup levels for the soil, sediments, and groundwater and their basis are presented in Table 5.

As was noted above, while the land use of the former facility property has historically been industrial/commercial, local elected officials have expressed a desire to develop a community park on the former facility property following its remediation. In order for the former facility property to be remediated using soil cleanup objectives that would be protective for a park (*i.e.,* restricted residential), a local governmental entity must acquire the property. The Village Mayor and Town Supervisor are presently pursuing several options to acquire the property and change its use to recreational. If the land use for the former facility property is changed from commercial to recreational before the design of the remedy that is selected is approved, then restricted residential SCOs will be utilized. Otherwise, commercial SCOs will be utilized.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA Section 121(b)(1), 42 U.S.C. §9621(b)(1), mandates that remedial actions must be protective of human health and the environment, be cost-effective, comply with ARARs, and utilize permanent solutions, alternative treatment technologies, and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants at a site. CERCLA §121(d), 42 U.S.C. §9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants that at least attains federal and state ARARs, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

Detailed descriptions of the remedial alternatives for addressing the contamination associated with the Site can be found in the FS report. The FS report presents four soil/wetland sediment alternatives and five groundwater alternatives. It should be noted that a capping alternative was considered in the FS report, but it was screened out due to questions about its effectiveness in preventing the migration of contaminants to the groundwater in high water table areas and technical difficulties in maintaining such a cap. In addition, in-situ vapor extraction was considered and was screened out due to questions about its effectiveness in high water table areas. To facilitate the presentation and evaluation of the alternatives, the FS report alternatives were reorganized to formulate the remedial alternatives discussed below.

The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with any potentially responsible parties, or procure contracts for design and construction.

The remedial alternatives are:

<u>Soil/Wetland Sediment Alternatives</u>

Alternative S-1: No Action

Capital Cost:	$0
Annual Operation and Maintenance (O&M) Cost:	$0
Present-Worth Cost:	$0
Construction Time:	0 months

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative for soil does not include any physical remedial measures that address the problem of soil and sediment contamination at the Site.

Because this alternative would result in contaminants remaining above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years. If justified by the review, remedial actions may be implemented to remove, treat, or contain the contaminated soils and sediments.

Alternative S-2: Building Demolition, Limited Excavation of Soils and Sediments, and On-Site Treatment of Soil via Ex-Situ Soil Vapor Extraction

Capital Cost:	$3,939,000
Annual O&M Cost:	$0
Present-Worth Cost:	$3,939,000
Construction Time:	12 months

This alternative consists of decontaminating and demolishing the main building to obtain access to all of the PCE-contaminated soils underneath, transport for treatment and disposal of the building debris at an off-Site Resource Conservation and Recovery Act (RCRA)-compliant disposal facility, excavation and off-Site disposal of approximately 2,200 cubic yards of PAH and arsenic-contaminated soils located on-Site to meet the commercial/industrial SCOs[12], and excavation and on-Site treatment with ex-situ soil vapor extraction (ESVE) of approximately 8,400 cubic yards of PCE-contaminated source area soils and PCE-contaminated sediment and soil from the adjacent wetlands to meet the protection of groundwater SCO. Under the ESVE treatment process, a temporary on-Site aboveground fully enclosed system would be constructed to contain the excavated PCE-contaminated soil and sediment. Air would be forced through a series of pipes within the structure to volatilize the PCE. The extracted vapors would be treated by granular activated carbon and/or other appropriate technologies before being vented to the atmosphere.

Following the demolition of the building, contaminated soils remaining within the footprint of the building would be addressed as described above.

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[12] If the land use for the former facility property is changed from commercial to recreational, then the PAH- and arsenic-contaminated soils would be excavated to a depth of two feet, increasing the volume of excavated soil by 1,650 cubic yards.

Cleared vegetation would be disposed of at a nonhazardous waste landfill or could be mulched and used elsewhere on-Site.

While the actual period of operation of the ESVE system would be based upon sampling results that demonstrate that the affected soil and sediments have been treated to soil cleanup levels, it is estimated that the system would operate for a period of three years.

The excavated source areas would be backfilled with treated and untreated soil and sediment. An estimated 90 cubic yards of excavated soils which would not be suitable for treatment and backfilling would be disposed of at a RCRA-compliant disposal facility. A one-foot deep cover of clean soil would be applied where necessary to meet the commercial SCOs. The wetland areas that would be excavated would be backfilled with soil that meets the unrestricted SCOs.

Areas where residual PAH- and arsenic-contaminated soil would remain would also require the placement of a readily-visible and permeable subsurface demarcation delineating the interface between the residually-contaminated native and/or backfilled soils and the clean soil cover layer. These areas, totaling approximately 3.6 acres, would be seeded with grass to stabilize the soil. The disturbed wetland areas would also be restored.

Under this alternative, institutional controls in the form of an environmental easement and/or restrictive covenant would be used to prohibit future residential development/use of the former facility property and restrict intrusive activities in areas where residual contamination remains unless the activities are in accordance with an EPA-approved Site Management Plan (SMP).

The SMP would provide for the proper management of all post-construction remedy components. Specifically, the SMP would describe procedures to confirm that the requisite engineering (*e.g.,* demarcation layer) and an institutional controls plan are in place and that nothing has occurred that would impair the ability of said controls to protect public health or the environment. The SMP would also include an excavation plan which details the provisions for management of future excavations in areas of remaining contamination; an inventory of any use restrictions; the necessary provisions for the implementation of the requirements of the above-noted environmental easement and/or restrictive covenant; a provision for the performance of the operation, maintenance, and monitoring required by the remedy; and a provision that the property owner or party implementing the remedy submit periodic certifications that the institutional and engineering controls are in place.

Because this alternative would result in contaminants remaining on-Site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years.

Alternative S-3: Building Demolition, Limited Excavation of Sediments, Excavation of Soil, and Off-Site Treatment/Disposal

Capital Cost:	$4,000,000
Annual O&M Cost:	$0
Present-Worth Cost:	$4,000,000
Construction Time:	9 months

This alternative is similar to Alternative S-2 except instead of treating the excavated soils and sediments on-Site using ESVE and using them for backfill, the excavated PCE-contaminated soil and sediment would be characterized and transported for treatment/disposal at an off-Site RCRA-compliant facility and the excavated PAH- and arsenic-contaminated soil would be used for backfill on-Site[13].

To meet the commercial SCOs, the excavated areas would be covered with one foot of clean soil and would be seeded with grass to stabilize the soil. Areas where residual PAH- and arsenic-contaminated soil would remain above the commercial SCOs would also require the placement of a readily-visible and permeable subsurface demarcation layer delineating the interface between the residually-contaminated native and/or backfilled soils and the clean soil cover layer. The disturbed wetland areas would also be restored.

Similar to Alternative S-2, institutional controls in the form of an environmental easement and/or restrictive covenant would be used to prohibit future residential development/use of the former facility property and restrict intrusive activities in areas where residual contamination remains unless the activities are in accordance with an EPA-approved SMP.

Because this alternative would result in contaminants remaining on-Site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years.

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[13] The PCE-contaminated soils pose an exposure risk and are a source of groundwater contamination. Since the PAH- and arsenic-contaminated soils only pose an exposure risk (*i.e.*, they are not a source of groundwater contamination), once they are removed from the surface, they can be used as backfill at depth.

Groundwater Alternatives

Alternative GW-1: No Action

Capital Cost:	$0
Annual O&M Cost:	$0
Present-Worth Cost:	$0
Construction Time:	0 months

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative for groundwater would not include any physical remedial measures to address the groundwater contamination at the Site.

Because this alternative would result in contaminants remaining on-Site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative GW-2: Source Area Enhanced Bioremediation and Downgradient Monitored Natural Attenuation

Capital Cost:	$806,700
Annual O&M Cost:	$686,000 for the first year; $57,000 annually thereafter
Present-Worth Cost:	$2,365,000
Construction Time:	12 months

Groundwater data for the Site indicate that some level of natural biodegradation is occurring within the aquifer. This alternative would involve injecting reagents into the aquifer to enhance the natural degradation process in the source areas. Lower contaminant concentrations outside the source areas would be addressed through MNA[14]

[14] MNA is the process by which a natural system's ability to attenuate contaminant(s) at a specific site is confirmed, monitored, and quantified. Contaminant concentrations may attenuate in natural systems through biodegradation, sorption, volatilization, radioactive decay, chemical or biological stabilization, transformation dispersion, dilution, and/or the destruction of contaminants (source:

For conceptual development of this alternative, it was assumed a supplemental carbon source (*e.g.,* hydrogen releasing compound) would be injected into the most contaminated portions of the groundwater (PCE concentrations greater than 10 times the MCL) at the center of the plume to stimulate bioactivity. For development of this alternative, spacing of injection points was conservatively estimated at 20 feet and the injection rate was estimated at 5 pounds per vertical foot of treatment zone per injection point. However, bench- and pilot-scale testing would be required to determine the nature of reagents necessary to stimulate biodegradation in the aquifer and determine the optimum strategy for introducing these materials.

Performance and compliance monitoring and testing would be performed during and after the injections to determine residual contaminant concentrations, assess the need for additional treatment, and monitor the natural attenuation of the contamination at the periphery of the plume.

The estimated time to implement this alternative, including bench- and pilot-scale testing, bidding, selecting a contractor, and initiating treatment of the high concentration source areas is 1 year. Multiple injections over several years would likely be necessary to sustain the enhanced biodegradation rates. Natural attenuation of the contamination at the periphery of the source areas would likely achieve the cleanup standards in 30 years.

Since the entire groundwater plume would not immediately achieve cleanup levels upon implementation of this alternative, an environmental easement would be required to prevent use of groundwater and would also require that future buildings on the Site either be subject to vapor intrusion study or be built with vapor intrusion mitigation systems in place until the cleanup criteria have been achieved throughout the entire area.

Because this alternative would result in contaminants remaining on-Site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years.

Alternative GW-3: Source Area In-Situ Chemical Oxidation and Downgradient Monitored Natural Attenuation

Capital Cost:	$1,800,000
Annual O&M Cost:	$505,000 for first year; $57,000 annually thereafter
Present-Worth Cost:	$2,924,000

DER-10/Technical Guidance for Site Investigation and Remediation 1.3(b)(31)).

Construction Time: 12 months

Under this alternative, an oxidizing agent would be injected into the contaminated groundwater at the source areas to chemically transform the VOCs into less toxic compounds or to carbon dioxide and water. Bench- and pilot-scale treatability studies would be performed to optimize the effectiveness of the injection system and to determine optimum oxidant delivery rates and locations for the injection-well points.

Lower contaminant concentrations outside the source areas would be addressed through MNA, a variety of *in-situ* processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in groundwater. For this Site, these *in-situ* processes include degradation, dispersion, dilution, and adsorption.

For conceptual development of this alternative, it was assumed the oxidant would be injected into the most contaminated groundwater (PCE concentrations greater than 10 times the MCL) at the center of the plume. For development of this alternative, spacing of injection points was conservatively estimated at 10 feet due to the rapid reaction time of oxidants, and the injection rate was estimated at 10 pounds per vertical foot of treatment zone per injection point. However, actual injection spacing and rates for remediation would need to be determined from pilot-scale treatability studies.

Performance and compliance monitoring and testing would be performed during and after the injections to determine residual contaminant concentrations, assess the need for additional treatment, and monitor the natural attenuation of the contamination at the periphery of the plume.

For this alternative, it is anticipated that treatment of the high concentration source areas by oxidation would achieve cleanup standards in the source area over a very short treatment period (*i.e.,* 1 year). Natural attenuation of the contamination at the periphery of the source areas would likely achieve the cleanup standards in 30 years.

Since the entire groundwater plume would not immediately achieve cleanup levels upon implementation of this alternative, an environmental easement would be required to prevent use of groundwater and would also require that future buildings on the Site either be subject to vapor intrusion studies or be built with vapor intrusion mitigation systems in place until the cleanup criteria have been achieved throughout the entire area.

Because this alternative would result in contaminants remaining on-Site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years.

Alternative GW-4: Former facility property Source Area Groundwater Extraction and Treatment and Off-Property and Downgradient Monitored Natural Attenuation

Capital Cost:	$5,404,000
Annual O&M Cost:	$555,000
Present-Worth Cost:	$13,987,000
Construction Time:	12 months

Under this alternative, six groundwater extraction wells would be installed to extract contaminated groundwater from the source area located on the former facility property. The source area located in the wetland and lower contaminant concentrations outside the source areas would be addressed through MNA.

The extracted water would be treated at an on-Site facility by air stripping, carbon adsorption, and methods appropriate for the treatment of metals. The treated water, which would meet applicable discharge requirements, would be discharged to surface water.

Air stripping involves pumping untreated groundwater to the top of a "packed" column, which contains a specified amount of inert packing material. The column receives ambient air under pressure in an upward direction from the bottom of the column as the water flows downward, transferring VOCs to the air phase. The air-stripping process would be followed by a groundwater polishing system using granular activated carbon and/or other appropriate technologies. To comply with New York State air guidelines, granular activated carbon treatment of the air stripper's air exhaust streams may be necessary.

Pilot testing, including pump tests, would be required to determine final pumping rates, well spacing, optimum well locations, well design, and treatment options.

In order to evaluate the performance of this alternative, periodic monitoring of the groundwater would be performed. Monitoring of the treatment system performance would also be required. The resulting data would be used to optimize the treatment process and evaluate the effectiveness of this remedial alternative.

It has been estimated that it would take thirty years to remediate the contaminated groundwater to federal and state standards under this alternative.

Since the entire groundwater plume would not immediately achieve cleanup levels upon implementation of this alternative, an environmental easement would be required to prevent use of groundwater and would also require that future buildings on the Site either be subject to vapor intrusion studies or be built with vapor intrusion mitigation systems in place until the cleanup criteria have been achieved throughout the entire area.

Because this alternative would result in contaminants remaining on-Site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years.

COMPARATIVE ANALYSIS OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely, overall protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, cost, and state and community acceptance.

The evaluation criteria are described below.

- Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

- Compliance with ARARs addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

- Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

- Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies, with respect to these parameters, which a remedy may employ.

- Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

- Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

- Cost includes estimated capital, O&M, and present-worth costs.

- State acceptance indicates if, based on its review of the 2011 FS report and Proposed Plan, the State concurs with the preferred remedy at the present time.

- Community acceptance refers to the public's general response to the alternatives described in the 2011 FS report and Proposed Plan.

A comparative analysis of these alternatives based upon the evaluation criteria noted above follows.

Overall Protection of Human Health and the Environment

Alternative S-1 would not be protective of human health and the environment, since it would not actively address the contaminated soil, which presents unacceptable risks of ecological exposure and is a source of groundwater contamination, which poses a human health risk. Alternatives S-2 and S-3 would be protective of human health and the environment, since both of the alternatives rely upon a remedial strategy or treatment technology capable of eliminating human and ecological exposure and removing the source of groundwater contamination.

Since Alternative GW-1 would rely on natural attenuation (a process which has been demonstrated to be occurring on-Site albeit slowly) to restore groundwater quality to drinking water standards, it would not be as protective as Alternatives GW-2, GW-3, and GW-4, which include active treatment of the groundwater either in-situ or ex-situ. The institutional controls under Alternatives GW-2, GW-3, and GW-4 would provide protection of public health until groundwater standards are met.

Under Alternative GW-1, the restoration of the groundwater would take a significantly longer time (estimated to be at least 100 years) in comparison to the other alternatives. All three of the active groundwater alternatives are estimated to restore groundwater quality significantly faster (approximately thirty years) and, therefore, would be protective of human health and the environment.

Compliance with ARARS

There are currently no federal or state promulgated standards for contaminant levels in sediments. There are, however, other federal or state advisories, criteria, or guidance (which are used as TBC criteria). Specifically, NYSDEC's sediment screening values are a TBC criteria. Soil cleanup objectives were evaluated against NYSDEC's 6 NYCRR Part 375, Environmental Remediation Programs, Subpart 375-6, effective December 14, 2006.

Since the contaminated soils and sediments would not be addressed under Alternative S-1, this alternative would not achieve the cleanup levels for soils and the sediment cleanup objectives.

Alternatives S-2 and S-3 would attain the cleanup levels for soils and the sediment cleanup objectives.

Both Alternative S-2 and S-3 would be subject to New York State and federal regulations related to the off-Site transportation of wastes.

Since Alternatives S-2 and S-3 would involve the excavation of contaminated soils and sediment, these alternatives would require compliance with fugitive dust and volatile organic compound emission regulations. In addition, this alternative would be subject to New York State and federal regulations related to the transportation and off-Site treatment/disposal of wastes. In the case of Alternatives S-2 and GW-4, compliance with air emission standards would be required for the ESVE and air stripper systems. Specifically, treatment of off-gases would have to meet the substantive requirements of New York State Regulations for Prevention and Control of Air Contamination and Air Pollution (6 NYCRR Part 200, *et seq.*) and comply with the substantive requirements of other state and federal air emission standards.

EPA and NYSDOH have promulgated health-based protective MCLs (40 CFR Part 141, and 10 NYCRR, Chapter 1), which are enforceable standards for various drinking water contaminants (chemical-specific ARARs). Although the groundwater at the Site is not presently being utilized as a potable water source, achieving MCLs in the groundwater is an applicable standard, because area groundwater is a source of drinking water.

Alternative GW-1 would not provide for any direct remediation of groundwater and would, therefore, rely upon natural processes to achieve chemical-specific ARARs. Alternatives GW-2, GW-3, and GW-4 would be more effective in reducing groundwater contaminant concentrations below MCLs, since they include active remediation of the contaminated groundwater source areas. Alternative GW-4 would also be subject to surface water discharge ARARs since treated water would be discharged into the Black River.

Long-Term Effectiveness and Permanence

Alternative S-1 would involve no active remedial measures and, therefore, would not be effective in eliminating the potential exposure to contaminants in soil and would allow the continued migration of contaminants from the soil to the groundwater. Alternatives S-2 and S-3 would both be effective in the long term and would provide permanent remediation by removing the contaminated source area soils and contaminated wetland sediment and either treat them on-Site or treat/dispose them off-Site.

Under Alternative S-2, pilot-scale treatability testing would be required to identify the configuration and number of vacuum extraction pipes within the treatment unit and to evaluate and characterize the extracted soil vapors and other performance parameters. These data would be used in the system design evaluation, and the system performance would be monitored with extracted vapor measurements and soil samples. Under Alternative S-2, the extracted vapors would be treated by granular activated carbon before being vented to the atmosphere. The granular activated carbon would have to be appropriately handled (off-Site treatment/disposal). Alternatives S-1 and S-3 would not generate such treatment residuals.

Both action alternatives would maintain reliable protection of human health and the environment over time.

Alternative GW-1 would be expected to have minimal long-term effectiveness, since it would rely upon natural attenuation to restore groundwater quality. Alternative GW-4 would generate treatment residues that would have to be appropriately handled; Alternatives GW-2 and GW-3 would not generate such residues.

Reduction in Toxicity, Mobility, or Volume Through Treatment

Alternative S-1 would provide no reduction in toxicity, mobility or volume. Under Alternative S-2, the toxicity, mobility, and volume of contaminants would be reduced or eliminated through on-Site treatment. Under Alternative S-3, the mobility of the contaminants would be eliminated by removing the VOC-contaminated soil from the former facility property and the toxicity would be reduced through treatment off-Site sediment (if necessary for disposal).

Alternative GW-1 would not effectively reduce the toxicity, mobility, or volume of contaminants in the groundwater, as this alternative involves no active remedial measures. This alternative would rely on natural attenuation to reduce the levels of contaminants, a process that has been slowly occurring at this site. Alternatives GW-2, GW-3, and GW-4, on the other hand, would reduce the toxicity, mobility, and volume of contaminants, thereby satisfying CERCLA's preference for treatment.

Short-Term Effectiveness

Alternative S-1 does not include any physical construction measures in any areas of contamination and, therefore, would not present any potential adverse impacts to remediation workers or the community as a result of its implementation. Alternatives S-2 and S-3 could present some limited adverse impacts to remediation workers through dermal contact and inhalation related to excavation activities. Noise from the treatment unit and the excavation work associated with Alternatives S-2 and S-3, respectively, could present some limited adverse impacts to remediation workers and nearby residents. In addition, interim and post-remediation soil sampling activities would pose some risk. The risks to remediation workers and nearby residents under all of the alternatives could, however, be mitigated by following appropriate health and safety protocols, by exercising sound engineering practices, and by utilizing proper protective equipment.

Since it is estimated that the on-Site treatment of the excavated soil and sediment with ESVE would require 3 years under Alternative S-2, the excavation would remain open until the soils could be backfilled. Therefore, the excavation would have to be secured to prevent on-Site worker injuries.

Alternative S-3 would require the off-Site transport of contaminated soil (approximately 350 truck loads), which would potentially adversely affect local traffic and may pose the potential for traffic accidents, which in turn could result in releases of hazardous substances.

For Alternatives S-2 and S-3, there is a potential for increased stormwater runoff and erosion during construction and excavation activities that would have to be properly managed to prevent or minimize any adverse impacts. For these alternatives, appropriate measures would have to be taken during excavation activities to prevent transport of fugitive dust and exposure of workers and downgradient receptors to PCE.

Since no actions would be performed under Alternative S-1, there would be no implementation time. It is estimated that Alternative S-2 would require three months to decontaminate and demolish the building, three months to construct the ESVE system, and six months to achieve the soil cleanup objectives. It is estimated that it would take require three months to decontaminate and demolish the building and three months to excavate and transport the contaminated soils to an EPA-approved treatment/disposal facility under Alternative S-3.

Alternative GW-1 would have no short-term impact to workers or the community and would have no adverse environmental impacts, since no actions would be taken. Alternatives GW-2, GW-3 and GW-4 might present some limited risk to remediation workers through dermal contact and inhalation related to groundwater sampling and injection activities. The installation of additional wells for the purpose of monitoring, groundwater extraction, and/or reagent injections would pose an additional risk to on-Site workers, since it would involve the installation of wells through potentially contaminated soils and groundwater. The risks to on-Site workers could, however, be minimized by utilizing proper protective equipment.

The time for implementing Alternative GW-2, including bench- and pilot-scale testing, bidding, selecting a contractor, and initiate treatment of the high concentration source areas, is estimated to be within 1 year of completion of the design. Multiple injections over several years would likely be necessary to sustain the enhanced biodegradation rates. The overall duration of this remedy to achieve the cleanup criteria throughout the entire groundwater plume is estimated to be 30 years.

For Alternative GW-3, treatment of the high concentration source areas by oxidation may achieve cleanup standards in the source area over a very short treatment period (*i.e.,* 1 year). Natural attenuation of the contamination at the periphery of the source areas would likely achieve the cleanup standards in 30 years.

For Alternative GW-4, the total time for implementing this alternative, including design, testing, bidding, selecting a contractor and the installation of the groundwater extraction and treatment system, is estimated to be 2 years. The overall duration of this remedy to achieve the cleanup criteria throughout the entire groundwater plume is estimated to be 30 years.

Implementability

Alternative S-1 would be the easiest soil alternative to implement, as there are no activities to undertake.

Both Alternatives S-2 and S-3 would employ technologies known to be reliable and that can be readily implemented. Equipment, services, and materials needed for Alternatives S-2 and S-3 are readily available, and the actions under these alternatives would be administratively feasible. Sufficient facilities are available for the treatment/disposal of the excavated materials under Alternative S-3.

While soil excavation under Alternatives S-2 and S-3 is technically feasible, there are several site-specific complications related to this remedial approach. Since there would be insufficient room on the Site to create a significant excavation stockpile, it is likely that the excavation and backfilling would need to be performed incrementally. At the same time, post-excavation sampling and rapid turnaround analyses would need to be integrated into the process. There would be a need to monitor for PCE and dust during the excavation, especially since there are nearby homes.

Monitoring the effectiveness of the ESVE system under Alternative S-2 would be easily accomplished through soil and soil-vapor sampling and analysis. Under Alternative S-3, determining the achievement of the soil cleanup objectives could be easily accomplished through post-excavation soil sampling and analysis.

The implementation of institutional controls would be relatively easy to implement under Alternatives S-2 and S-3.

Alternative GW-1 would be the easiest to implement and would require no implementation time since it would not entail the performance of any activities. Alternatives GW-2, GW-3, and GW-4 would each take about 12 months to implement.

Equipment, services, and materials needed for all of the groundwater action alternatives are readily available and the actions under these alternatives would be administratively feasible. Groundwater injections and extraction and treatment systems similar to those that would be used under Alternatives GW-2, GW-3 and GW-4 have been implemented successfully at numerous sites to treat contaminated groundwater.

For Alternative GW-2, bench- and pilot-scale testing would be required to determine the nature of reagents necessary to stimulate biodegradation in the aquifer and determine the optimum strategy for introducing these materials. For Alternative GW-3, bench- and pilot-scale treatability studies would need to be performed to optimize the effectiveness of the injection system and to determine optimum oxidant delivery rates and locations for the injection-well points.

The implementation of institutional controls would be relatively easy to implement under Alternatives GW-2, GW-3 and GW-4.

There are considerable uncertainties in the potential radius of influence of injections for Alternatives GW-2 and GW-3. Furthermore, injection of the reagent slurry for Alternative GW-2 may be hindered by bridging across fractures and limited mobility in tight fractures. Alternative GW-3 would not be subject to these limitations. There are also considerable uncertainties in the number and location of extraction wells and the achievable groundwater extraction rate for treatment for Alternative GW-4. In addition, it may be difficult to maintain continuous operations of an active treatment system (Alternative GW-4) during the winter months in this remote location, and Alternative GW-4 would require more maintenance than Alternatives GW-2 or GW-3.

Cost

The present-worth costs associated with the soil remedies are calculated using a discount rate of seven percent and a five-year time interval. The present-worth costs associated with the groundwater remedies are calculated using a discount rate of seven percent and a thirty-year time interval.

The estimated capital, O&M, and present-worth costs for each of the alternatives are presented below.

Alternative	Capital Cost	Annual O&M Cost	Total Present Worth Cost
S-1	$0	$0	$0
S-2	$3,939,000	$0	$3,939,000
S-3	$4,000,000	$0	$4,000,000
GW-1	$0	$0	$0
GW-2	$806,700	$686,000 for the first year and $57,000 annually thereafter	$2,365,000
GW-3	$1,800,000	$505,000 for the first year and	$2,924,000

		$57,000 annually thereafter	
GW-4	$5,404,000	$555,000	$13,987,000

As can be seen by the cost estimates, Alternative S-1 (no action) is the least costly soil/sediment alternative at $0. Alternative S-3 (building demolition, limited excavation of sediments, excavation of soil, and off-Site treatment/disposal) is the most costly soil alternative at $4,000,000. If the land use for the former facility property is changed from commercial to recreational before the design of the remedy is approved, then restricted residential SCOs would be utilized, which would allow for recreational use of the former facility property. Accordingly, the PAH- and arsenic-contaminated soils would be excavated to a depth of two feet and backfilled with clean soil. This change would result in the excavation of an additional 1,650 cubic yards of PAH- and arsenic-contaminated soils and would cost an additional $12,543 for both Alternatives S-2 (building demolition, limited excavation of sediments, and excavation of soils with on-Site treatment via ex-situ soil vapor extraction) and S-3.

The least costly groundwater remedy is Alternative GW-1 (no action) at $0. Alternative GW-4 (source area groundwater extraction and treatment and downgradient MNA) is the most costly groundwater alternative at an estimated cost of $13,987,000.

State Acceptance

NYSDEC concurs with the selected remedy; a letter of concurrence is attached (see Appendix IV).

Community Acceptance

Comments received during the public comment period indicate that the public generally supports the selected remedy. These comments are summarized and addressed in the Responsiveness Summary, which is attached as Appendix V to this document.

PRINCIPAL THREAT WASTE

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430 (a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for the migration of contamination to groundwater, surface water, or air, or act as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or will present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of alternatives, using the remedy-selection criteria that are described below. This analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element.

Elevated PCE concentrations in soil were found in five locations, primarily, adjacent to the northern and western corners of the main building in the west-northwestern portion of the former facility property (the highest concentration detected was 59,000 ug/kg). These source area soils are sources of contamination to the groundwater. The maximum concentration of PCE in the groundwater was 6,500 ug/L. Since the PCE in the source areas is highly mobile, cannot be reliably contained, and would present a significant risk to human health or the environment should exposure occur, it would constituent a principal threat waste.

Both soil/sediment Alternatives S-2 and S-3 address the PCE-contaminated soil and sediment through treatment and groundwater Alternatives GW-2, GW-3, and GW-4 address the source area groundwater contamination through treatment. Therefore, Alternatives S-2, S-3, GW-2, GW-3, and GW-4 meet the statutory preference for treatment of principal threat waste.

SELECTED REMEDY

Summary of the Rationale for the Selected Remedy

Based upon consideration of the requirements of CERCLA, the detailed analysis of the alternatives, and public comments, EPA has determined that Alternative S-3, building demolition, limited excavation of sediments, excavation of soil, and off-Site treatment/disposal, and Alternative GW-3, source area in-situ chemical oxidation and downgradient MNA, best satisfy the requirements of CERCLA Section 121, 42 U.S.C. §9621, and provides the best balance of tradeoffs among the remedial alternatives with respect to the NCP's nine evaluation criteria, 40 CFR § 300.430(e)(9).

Alternative S-2 and Alternative S-3 would both effectively achieve the soil cleanup levels. While Alternative S-3 is slightly more expensive than Alternative S-2, Alternative S-2 would take substantially longer to achieve the soil cleanup level than Alternative S-3. In addition, since it is estimated that the on-Site treatment of the excavated soil and sediment with ESVE would require 3 years under Alternative S-2, the excavation would remain open until the soils could be backfilled. Therefore, the excavation would have to be secured to prevent on-Site worker injuries. Therefore, EPA believes that Alternative S-3 would effectuate the soil cleanup while providing the best balance of tradeoffs with respect to the evaluating criteria.

There are considerable uncertainties in the number and location of extraction wells and the achievable groundwater extraction rate for treatment for Alternative GW-4. In addition, it may be difficult to maintain continuous operations of an active treatment system (Alternative GW-4) during the winter months in this remote location, and Alternative GW-4 would require more maintenance than Alternatives GW-2 or GW-3. In addition, Alternative GW-4 is significantly more expensive than the other two action alternatives. There are considerable uncertainties in the potential radius of influence of injections for Alternatives GW-2 and GW-3. Furthermore, injection of the reagent slurry for Alternative GW-2 may be hindered by bridging across fractures, and limited mobility in tight fractures. It is estimated that Alternative GW-3 would achieve groundwater standards in significantly less time than Alternatives GW-2 and GW-4. For these reasons, EPA has selected Alternative GW-3 as its groundwater alternative since it would effectuate the groundwater cleanup while providing the best balance of tradeoffs among the alternatives with respect to the evaluating criteria.

EPA has determined and NYSDEC agrees that the selected remedy (Alternatives S-3 and GW-3) is protective of human health and the environment; provides the greatest long-term effectiveness; is able to achieve ARARs more quickly than other alternatives; and is cost-effective. The selected remedy utilizes permanent solutions, alternative treatment technologies, and resource-recovery technologies to the maximum extent practicable. Furthermore, because air sparging/SVE and, if necessary, in-situ chemical oxidation will be performed, the selected remedy meets the statutory preference for the use of treatment as a principal element.

Description of the Selected Remedy

The selected remedy to address the source areas and contaminated groundwater includes the following components[15]:

- Decontamination and demolition of the main building;
- Excavation of PAH- and arsenic-contaminated soil to a depth of one foot[16] and excavation of PCE-contaminated soils to a depth of four feet[17];

[15] See Figures 7 and 8 for illustrations of the selected remedy.

[16] If the land use for the former facility property is changed from commercial to recreational before the design of the remedy is approved, then the PAH- and arsenic-contaminated soils will be excavated to a depth of two feet.

[17] Approximately 2,200 cubic yards of PAH and arsenic-contaminated soils and 8,400 cubic yards of PCE-contaminated soils and sediment would be excavated. If the land use for the former facility property is changed from commercial to recreational, then the estimated volume of PAH- and arsenic-contaminated soils that would be excavated would increase by 1,650 cubic yards.

- Excavation of contaminated soils remaining within the footprint of the building as described above;
- Excavation of PCE-contaminated sediment and soil from the adjacent wetlands to meet the protection of groundwater SCO.
- Transportation for treatment/disposal of the building debris and the PCE-contaminated soils and sediments at an off-Site Resource Conservation and Recovery Act-compliant facility;
- Utilization of the excavated PAH- and arsenic-contaminated soils as backfill to a depth of not less than 1 foot below ground surface (bgs)[18] in the areas where PCE-contaminated soil will be excavated and in the footprint of the building;
- Backfilling with clean soil those areas where residual PAH- and arsenic-contaminated soil will remain after the installation of a readily-visible and permeable subsurface demarcation delineating the interface between the residually-contaminated native soils and the clean backfill;
- Backfilling the excavated wetland areas with soil that meets the unrestricted SCOs;
- Injection of an oxidizing agent into the contaminated groundwater at the source areas;
- Utilization of MNA for the groundwater with lower contaminant concentrations located outside the source areas;
- Utilization of institutional controls in the form of an environmental easement/restrictive covenant in the property records of Jefferson County to, at a minimum, restrict the use of the former facility property to commercial and industrial uses, unless the use is changed to recreational[19], restrict intrusive activities in areas where residual contamination remains unless the activities are in accordance with an EPA-approved SMP (see below), and restrict the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the New York State Department of Health or the County Department of Health[20]; and
- Development of an SMP that will provide for the proper management of all post-construction remedy components[21].

[18] The excavated PAH- and arsenic-contaminated soils will be utilized as backfill to a depth of not less than 2 feet bgs if the land use is changed to recreational.

[19] If the land use for the former facility property is changed from commercial to recreational before the design of the remedy is approved, then the environmental easement/restrictive covenant will allow recreational, commercial, or industrial use of the property as defined by 6 NYCRR Part 375-1.8(g). The land use will, however, be subject to local requirements.

[20] The property owner will be responsible for implementing and maintaining the institutional controls and NYSDEC will be responsible for enforcing them.

[21] The SMP will describe procedures to confirm that the requisite engineering (subsurface demarcation) and a plan for institutional controls (*i.e.,* environmental easement/restrictive covenant) are in place and that nothing has occurred that will impair the ability of said controls to protect public health or the environment. The SMP will also include a soil management plan, an

During the design, a Phase 1B Cultural Resources Survey will be performed to document the Site's historic resources.

During the design, samples will be collected to define the limits of the soil and sediment excavation. During the design, the building located in the rear of the former facility property will be assessed to determine whether it contains any hazardous substances. If hazardous substances are present and the building can be safely accessed, then the building will be decontaminated. If the building cannot be safely accessed, then it will be demolished and the debris will be decontaminated, if necessary, and disposed of off-Site.

Bench- and pilot-scale treatability studies will be performed during the design to optimize the effectiveness of the injection system and to determine optimum oxidant delivery rates and locations for the injection-well points.

Performance and compliance monitoring and testing will be performed during and after the oxidizing agent injections to determine residual contaminant concentrations, assess the need for additional treatment, and monitor the natural attenuation of the contamination at the periphery of the plume.

The environmental benefits of the selected remedy may be enhanced by consideration, during the design, of technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green Energy Policy and NYSDEC's Green Remediation Policy[22]. This will include consideration of green remediation technologies and practices.

If, in the future, structures are proposed to be built on the former facility property or any existing buildings are reoccupied, as required by the SMP, a soil vapor intrusion evaluation and vapor intrusion mitigation systems may be needed until the cleanup criteria have been achieved.

Because this remedy will result in contaminants remaining on-Site that exceed acceptable health-based levels, CERCLA requires that the Site be reviewed every five years. If justified by the review, additional response actions may be implemented.

Summary of the Estimated Remedy Costs

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inventory of any use restrictions, the necessary provisions for the implementation of the requirements of the above-noted environmental easement and/or restrictive covenant; a provision for the performance of the operation, maintenance, and monitoring required by the remedy; and a provision that the property owner submit periodic certifications that the institutional and engineering controls are in place.

[22] See http://epa.gov/region2/superfund/green_remediation and http://www.dec.ny.gov/docs/remediation_hudson_pdf/der31.pdf.

The estimated capital, annual O&M, and total present-worth costs (using the federal standard 7% discount rate) for the selected remedy are $5.8 million, $57,000, and $6.9 million, respectively. If the land use for the former facility property is changed from commercial to recreational before the design of the remedy is approved, then restricted residential SCOs would be utilized, which would allow for recreational use of the former facility property. Accordingly, the PAH- and arsenic-contaminated soils would be excavated to a depth of two feet and backfilled with clean soil. This change would result in the excavation of an additional 1,650 cubic yards of PAH- and arsenic-contaminated soils and would cost an additional $12,543. Tables 6 and 7 provide the basis for the cost estimates for Alternatives S-3 and GW-3.

It should be noted that these cost estimates are order-of-magnitude engineering cost estimates that are expected to be within +50 to -30 percent of the actual project cost. These cost estimates are based on the best available information regarding the anticipated scope of the selected remedy. Changes in the cost elements are likely to occur as a result of new information and data collected during the engineering design of the remedy.

Expected Outcomes of the Selected Remedy

Land use associated with the former facility property is anticipated to change as a result of the implementation of the selected remedy. Although the former facility property was previously used for industrial purposes and the current usage is commercial, the Village intends to develop a community park on the former facility property once it is remediated and available for reuse. The Mayor of Herrings and the Supervisor of the Town of Wilna are currently pursuing several options to acquire the privately-owned property and effect a change to the land use.

The results of the risk assessment indicates that the PAH, benzo(a)pyrene, poses an excess lifetime cancer risk above the EPA reference cancer risk range. PCE in the soil serves as a source of contamination to the groundwater. All scenarios involving the use of groundwater as a drinking water source showed considerably elevated risks, due primarily to the presence of PCE in the groundwater. Under the selected remedy, the removal of the PAH- and arsenic-contaminated soils will eliminate the excess lifetime cancer risk. The removal of the PCE-contaminated soils, which will eliminate the source of the groundwater contamination, in combination with groundwater treatment in the source areas and natural attenuation in downgradient areas, will result in the restoration of water quality in the aquifer.

Potable water for the former facility property is currently obtained from the public-supply well system. Therefore, it is not anticipated that achieving the cleanup levels will alter groundwater use in the future. The remedial action is expected to restore groundwater quality to allow future uses for drinking, and should reduce the potential for contaminant

releases to lead to vapor intrusion exposures in buildings which exist now, or may in the future.
Under the selected remedy, it is estimated that it will require nine months to achieve soil cleanup levels, 1 year to achieve cleanup standards in the source area, and thirty years to achieve groundwater standards in downgradient areas.

STATUTORY DETERMINATIONS

Under CERCLA Section 121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with ARARs (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at a site.

For the reasons discussed below, EPA has determined that the selected remedy meets these statutory requirements.

Protection of Human Health and the Environment

The results of the risk assessment indicate that, if no action is taken, the hypothetical future use of the groundwater at the Site will pose an unacceptable increased future cancer risk.

The selected remedy will reduce exposure levels to protective ARAR levels or to within EPA's generally acceptable risk range of 10^{-4} to 10^{-6} for carcinogenic risk and below the HI of 1 for noncarcinogens in the soils, sediments, and groundwater. The implementation of the selected remedy will not pose unacceptable short-term risks or cross-media impacts that cannot be mitigated. The selected remedy will be protective of human health and the environment in that the excavation and off-Site treatment/disposal of the PCE-contaminated soil and sediment will eliminate the source of the groundwater contamination and in-situ groundwater treatment, in combination with natural attenuation, will eventually achieve groundwater standards. Combined with institutional controls, the selected remedy will provide protectiveness of human health and the environment over both the short- and long-term.

Compliance with ARARs and Other Environmental Criteria

A summary of the ARARs and “Other Criteria, Advisories, or Guidance TBCs” that will be complied with during implementation of the selected remedy and the amended 1994-ROD groundwater remedy, is presented below.

- Clean Air Act, National Ambient Air Quality Standards (40 CFR 50)
- Groundwater Quality Regulations (6 NYCRR Parts 700-705)
- National Primary Drinking Water Standards (MCLs and non-zero maximum contaminant level goals) (40 CFR 141)
- National Environmental Policy Act (40 CFR 1500 to 1508)
- National Emissions Standards for Hazardous Air Pollutants (40 CFR Parts 51, 52, 60, and 61)
- New York State Department of Health Drinking Water Standards (10 NYCRR Part 5)
- New York State Regulations for Prevention and Control of Air Contamination and Air Pollution (6 NYCRR Part 200)
- New York State Drinking Water Standards (NYCRR Part 5)
- New York State Air Cleanup Criteria, January 1990
- New York State Department of Environmental Conservation, Environmental Remediation Programs (6 NYCRR Part 375, Subpart 375-6)
- New York State Department of Environmental Conservation Guidelines for the Control of Toxic Ambient Air Contaminants, DAR-1, November 12, 1997
- New York Air Quality Standards (6 NYCRR Part 257)
- New York State Department of Environmental Conservation, Technical and Operational Guidance Series 1.1.1, November 1991
- Safe Drinking Water Act Proposed MCLs and nonzero MCL Goals

Cost-Effectiveness

A cost-effective remedy is one whose costs are proportional to its overall effectiveness (NCP §300.430(f)(1)(ii)(D)). Overall effectiveness is based on the evaluations of: long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness. Based on the comparison of overall effectiveness (discussed above) to cost, the selected remedy meets the statutory requirement that Superfund remedies be cost-effective in that it is the least-cost action alternative and would achieve the remediation goals in the same amount of time in comparison to the more costly alternatives.

Each of the alternatives underwent a detailed cost analysis. In that analysis, capital and annual O&M costs were estimated and used to develop present-worth costs. In the present-worth cost analysis, annual O&M costs were calculated for the estimated life of the groundwater alternatives using a 7% discount rate and a 30-year interval. The estimated capital, annual O&M, and total present-worth costs for the selected remedy are $5,800,000, $57,000, and $6,924,000, respectively. If the land use for the former facility property is changed from commercial to recreational, the capital and present-worth costs would increase by $12,543.

Both soil/sediment Alternatives S-2 and S-3 would effectively achieve the soil cleanup levels. Although Alternative S-3 is more expensive than Alternative S-2, Alternative S-2 would take considerably longer to achieve the soil cleanup level than Alternative S-3.

While there are uncertainties in the potential radius of influence of injections for Alternatives GW-2 and GW-3, it may be difficult to maintain continuous operations of an active treatment system (Alternative GW-4) during the winter months in this remote location. In addition, Alternative GW-4 is significantly more costly than the other two action alternatives. Although Alternative GW-3 is approximately $1 million more expensive than Alternative GW-2, it would achieve groundwater standards at the source areas in significantly less time than Alternatives GW-2 and GW-4. For these reasons, EPA believes that the cost of this alternative is proportional to its overall effectiveness.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy provides the best balance of tradeoffs among the alternatives with respect to the balancing criteria set forth in NCP §300.430(f)(1)(i)(B), such that it represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the Site.

The soil component of the selected remedy will employ off-Site treatment to reduce the toxicity, mobility, and volume of the PCE-contaminated soil and sediment in the source areas. The selected remedy will permanently address this soil contamination.

With regard to the groundwater, the selected remedy will provide a permanent remedy and will employ a treatment technology to reduce the toxicity, mobility, and volume of the contaminants in the groundwater.

Preference for Treatment as a Principal Element

The statutory preference for remedies that employ treatment as a principal element is satisfied under the selected remedy in that contaminated soils and sediments will be treated at an off-Site facility and in-situ treatment of the contaminated groundwater at the source areas will be used to reduce the toxicity, mobility, and volume of contamination and achieve cleanup levels.

Five-Year Review Requirements

The selected remedy will result in hazardous substances, pollutants, or contaminants remaining on-Site above levels that will allow for unlimited use and unrestricted exposure. Therefore, a statutory review will be conducted within five years after initiation of remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

DOCUMENTATION OF SIGNIFICANT CHANGES

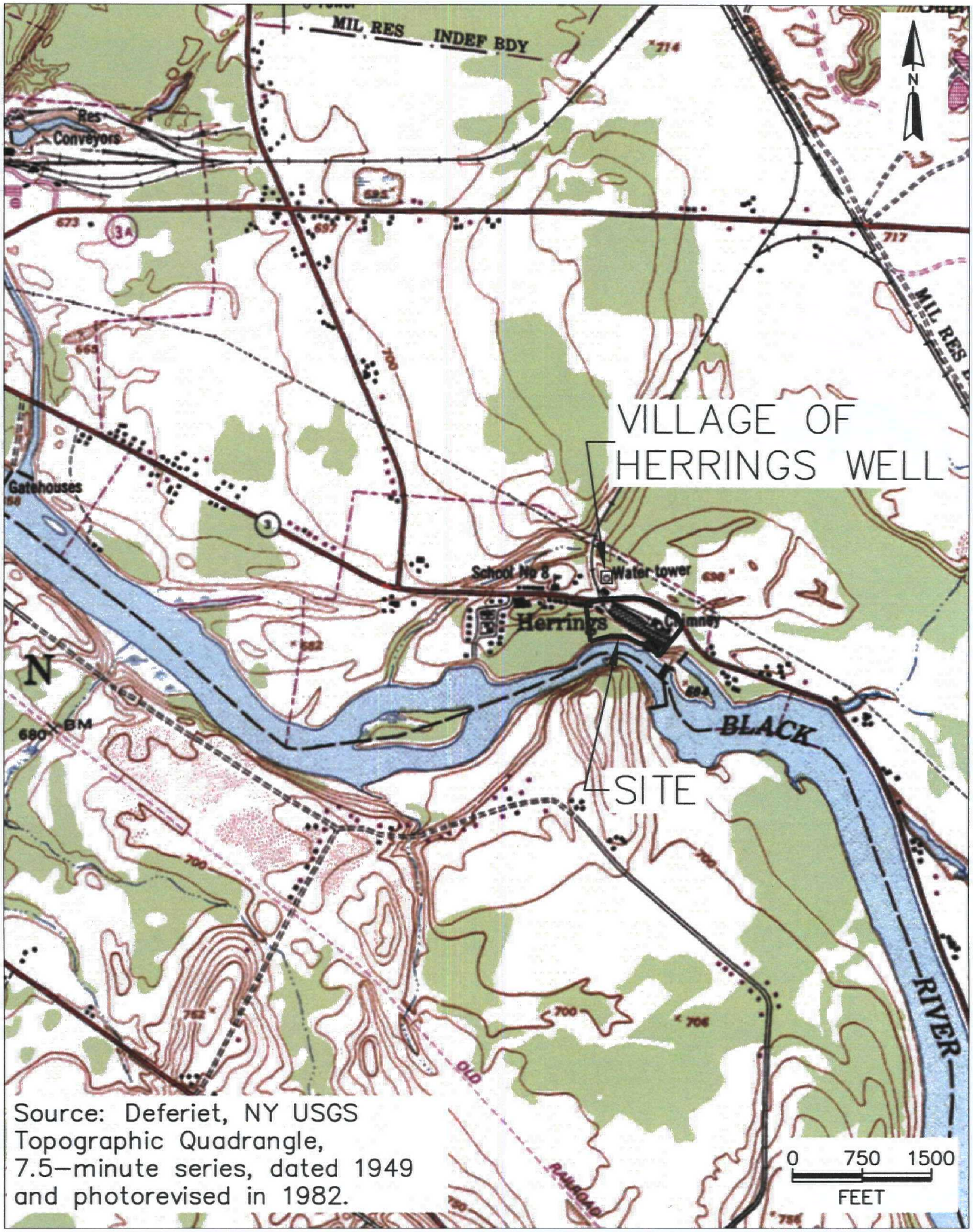
The Proposed Plan, released for public comment on December 12, 2011, identified Alternative S-3, building demolition, limited excavation of sediments, excavation of soil, and off-Site treatment/disposal, as the preferred soil remedy. For the preferred groundwater remedy, it identified Alternative GW-3 source area in-situ chemical oxidation and downgradient MNA. Based upon its review of the written and verbal comments submitted during the public comment period, EPA determined that no significant changes to the remedy, as originally identified in the Proposed Plan, were necessary or appropriate.

CROWN CLEANERS OF WATERTOWN, INC. SUPERFUND SITE
RECORD OF DECISION

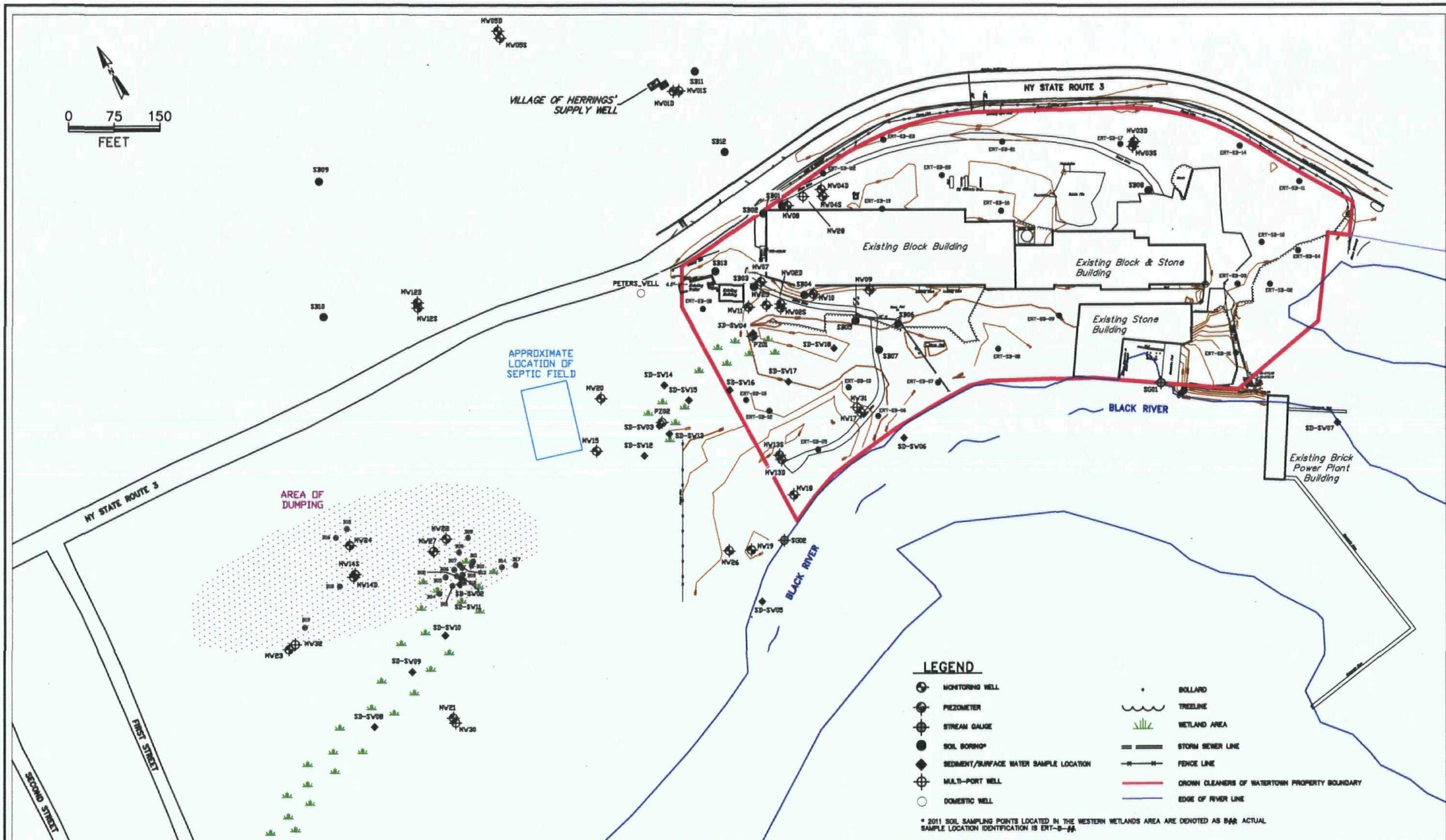
APPENDIX I

FIGURES

SUMMARY OF FIGURES

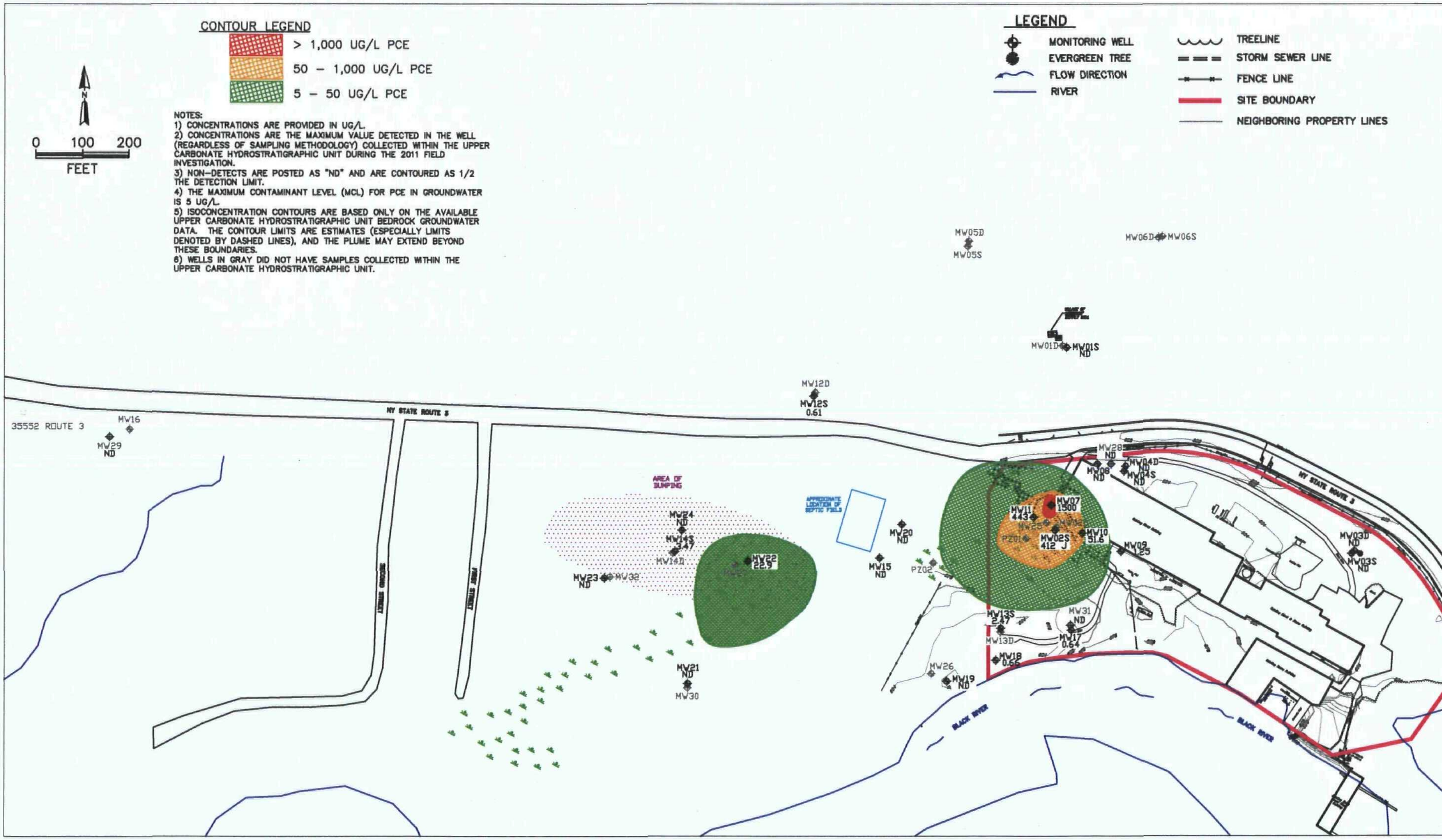


TETRA TECH EC, INC.	TITLE: SITE LOCATION Remedial Investigation Report Crown Cleaners of Watertown, Inc.	DWN: LMC CHKD: LEA DATE: 08/09/2011	DES.: CTS APPD: RCC REV.: 1	PROJECT NO.: 106-3810.0008 FIGURE 1



TETRA TECH EC, INC.

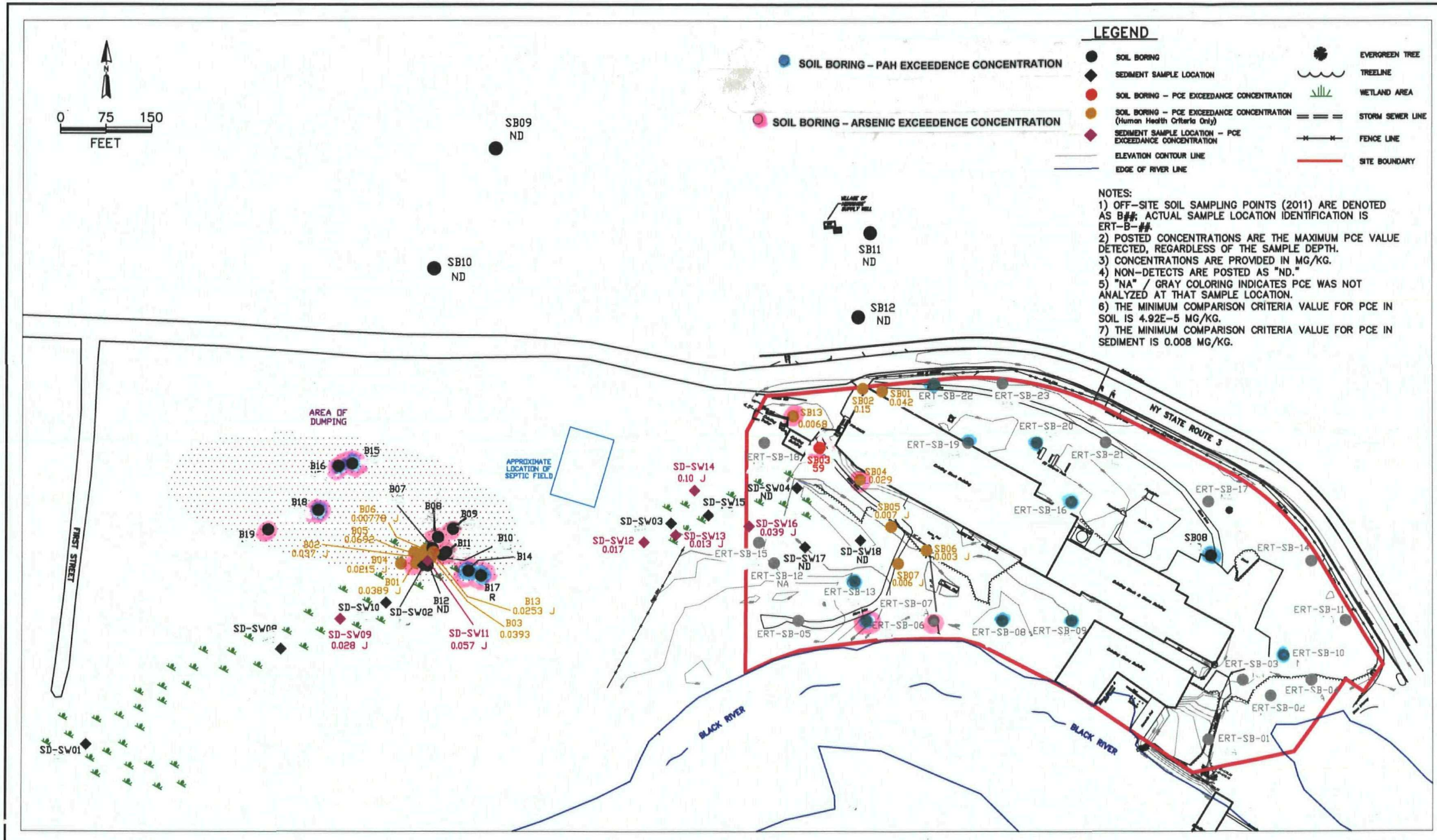
TITLE:	DWN.: LMB	DATE: 09/12/11	PROJECT NO.: 106-3810.0008
SITE MAP	CHKD:	REV.: 2	FIGURE NO.: 2
Crown Cleaners of Watertown, Inc.	DES.: LEA	APPD:	



TETRA TECH EC, INC.

TITLE:	DWN.: LEA	DATE: 08/10/11	PROJECT NO.: 106-3810.0008
ISOCONCENTRATION CONTOUR EXTENT OF PCE IN UPPER UNIT GROUNDWATER Remedial Investigation Report Crown Cleaners of Watertown, Inc.	CHKD:	REV.: 1	FIGURE 3
	DES.: LEA	APPD:	

N:\GIS\GISKEY\GISPROJ31\EPA CROWN CLEANERS\RI FIGURES\AUGUST 2011\FIGURE 4-7C GW 2011 PCE IN UPPER UNIT CONTOUR 081011.DWG

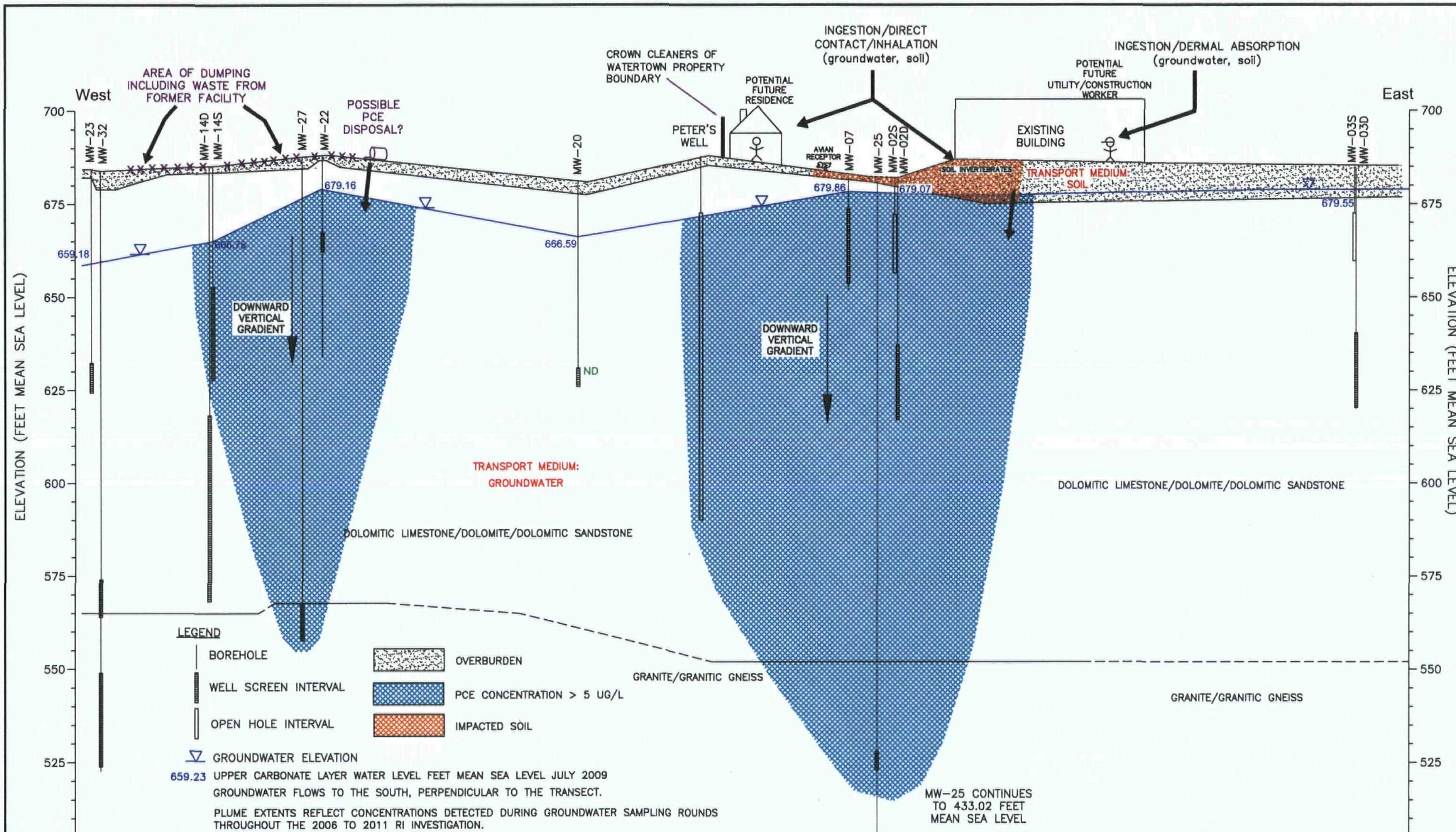


TETRA TECH EC, INC.

TITLE:
SOIL AND SEDIMENT LOCATIONS
Remedial Investigation Report
Crown Cleaners of Watertown, Inc.

DWN.: LMC	DATE: 08/09/11	PROJECT NO.: 106-3810.0008
CHKD:	REV.: 3	FIGURE NO.: 4-
DES.: LEA	APPD:	

N:\GIS\GISKEY\GISPROJ31\EPA CROWN CLEANERS\RI FIGURES\AUGUST 2011\FIGURE 4-3 SOIL AND SEDIMENT EXCEEDANCE LOCATIONS 080911.DWG



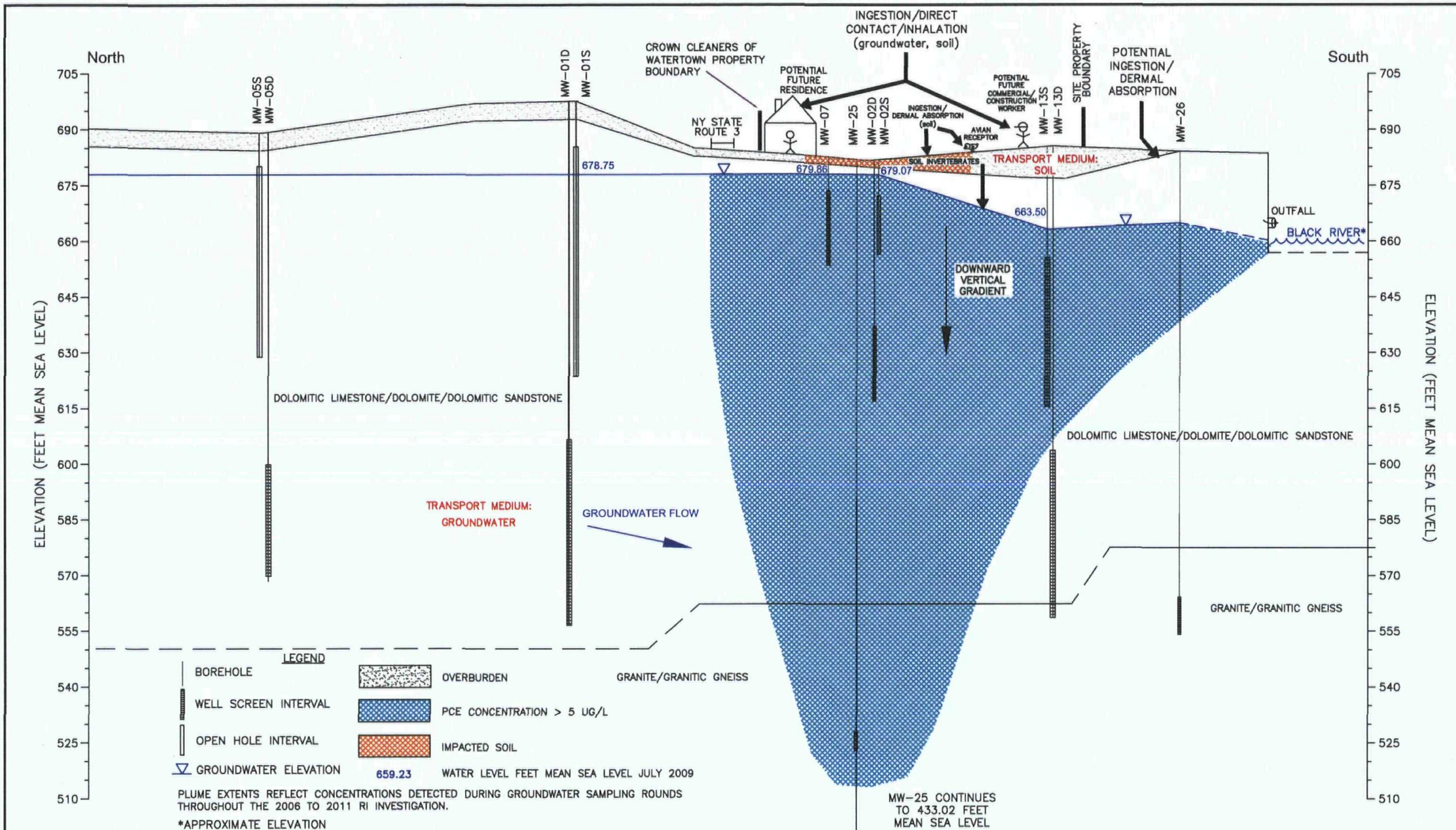
TETRA TECH EC, INC.

SITE CONCEPTUAL MODEL (WEST TO EAST)
Remedial Investigation Report
Crown Cleaners of Watertown, Inc.

0 90 180 FEET
VERTICAL SCALE: 5X

DWN.: LMC	DATE: 01/23/12	PROJECT NO.: 106-3810.0008
CHKD:	REV.: 3	FIGURE NO.: 5
DES.: LEA	APPD: RC	

N:\GIS\GISKEY\GISPROJ31\EPA CROWN CLEANERS\RI FIGURES\AUGUST 2011\FIGURE 7-1 SCM E-W 012312.DWG

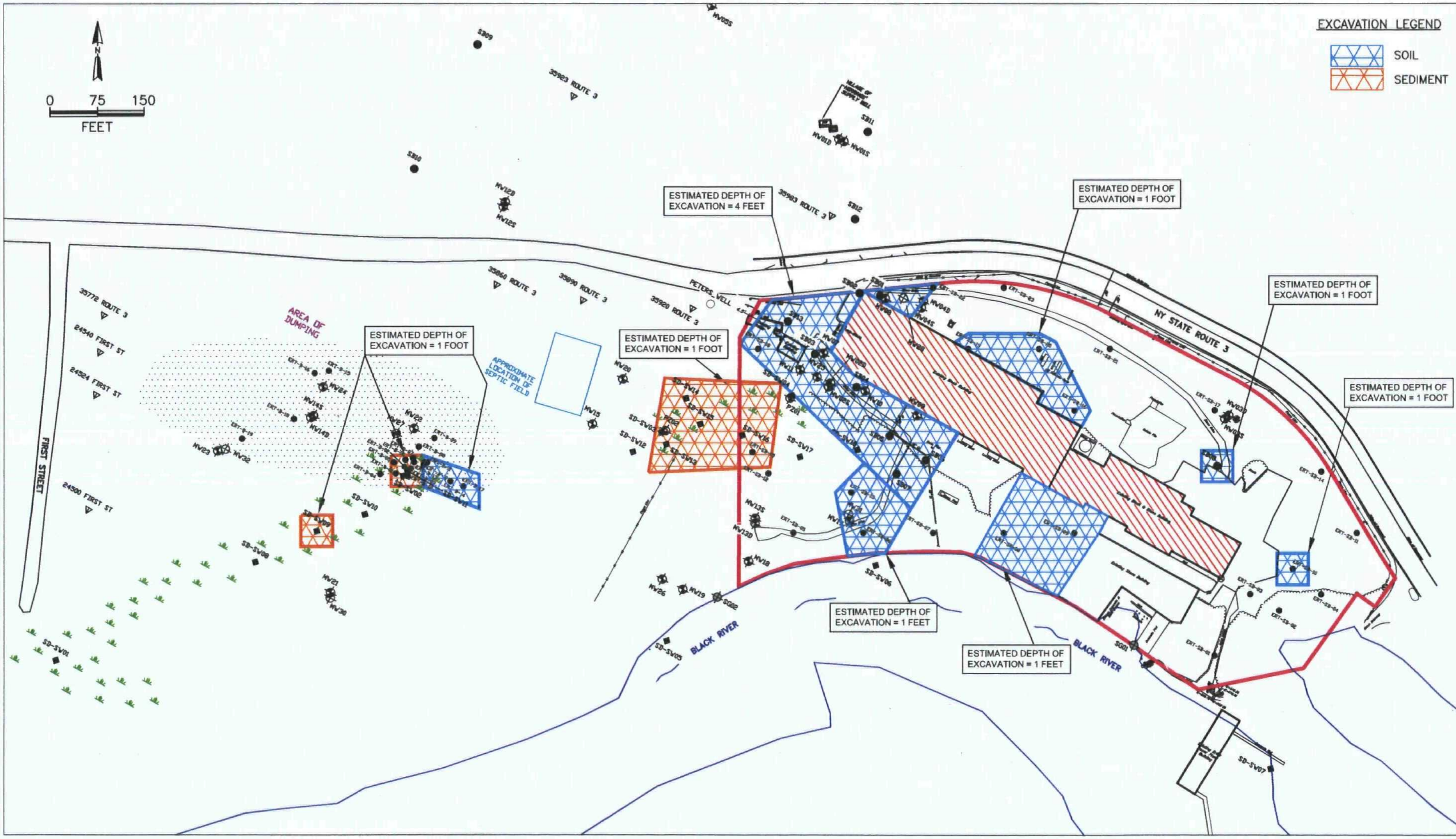


TETRA TECH EC, INC.

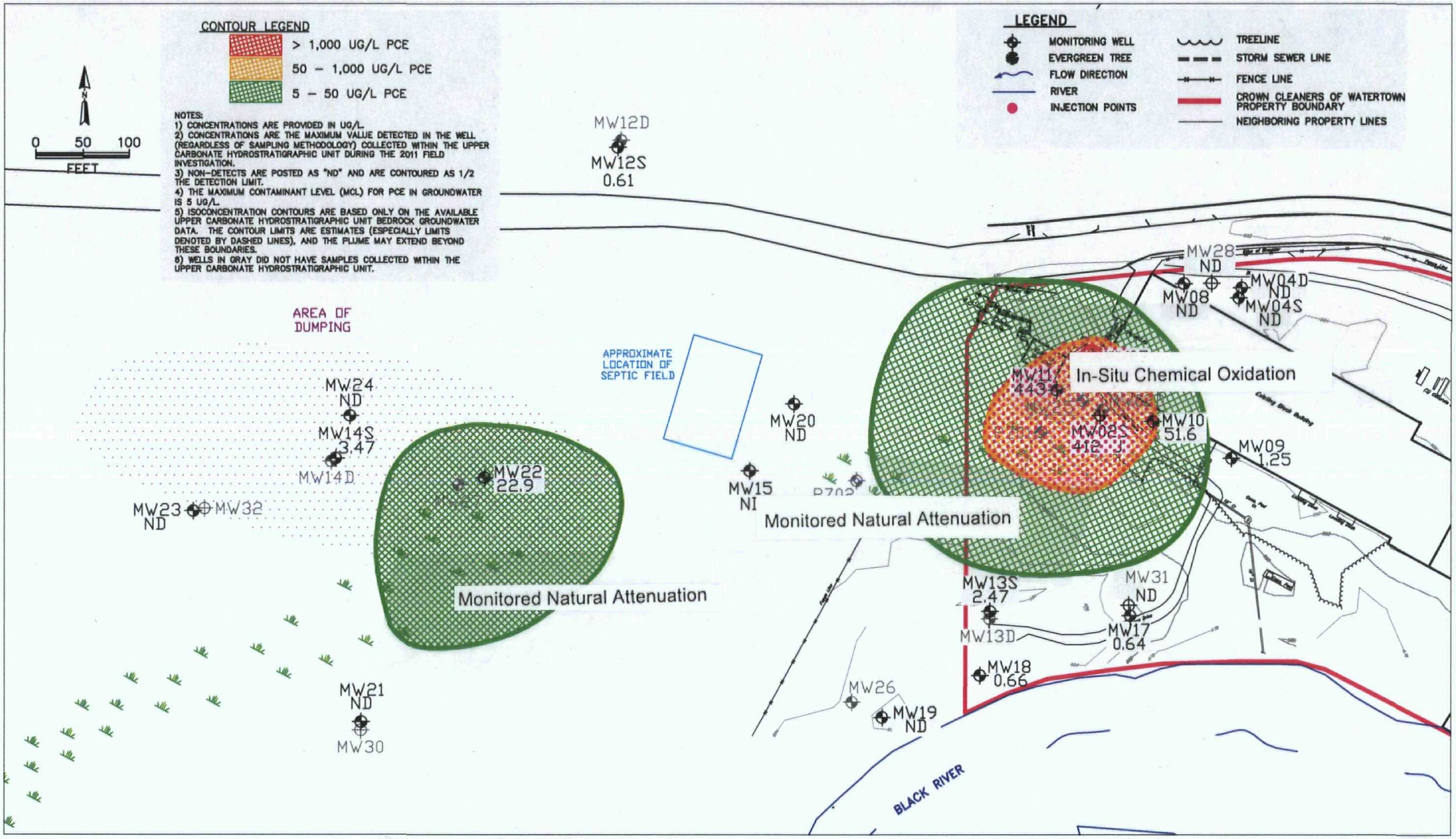
SITE CONCEPTUAL MODEL (NORTH TO SOUTH)
Remedial Investigation Report
Crown Cleaners of Watertown, Inc.

DWN.: LMC	DATE: 01/23/12	PROJECT NO.: 106-3810.0008	
CHKD:	REV.: 2	FIGURE NO.: 6	
DES.: LEA	APPD: RC		

N:\GIS\GISKEY\GISPROJ31\EPA CROWN CLEANERS\RI FIGURES\AUGUST 2011\FIGURE 7-2 SCM N-S 012312.DWG



TETRA TECH EC, INC.	TITLE: Soil and Sediment Excavation Areas	DWN.: LMC	DATE: 11/10/11	PROJECT NO.: 106-3810.0008
		CHKD:	REV.: 0	FIGURE 7
		DES.: RC	APPD:	



TETRA TECH EC, INC.

TITLE:	DWN.: LMC	DATE: 08/16/11	PROJECT NO.: 106-3810.0008
Groundwater Remedy	CHKD:	REV.: 0	FIGURE 8
	DES.: RC	APPD:	

CROWN CLEANERS OF WATERTOWN, INC. SUPERFUND SITE
RECORD OF DECISION

APPENDIX II

TABLES

SUMMARY OF TABLES

Table 1 (Sheet 1 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW01S	MW01S	MW01S	MW01S	MW01S	MW01S	MW01S	MW01S	MW01D	MW01D	MW01D	MW01D	MW01D	MW01D	MW01D
DATE	9/1/2004	12/5/2006	9/15/2009	9/15/2009	9/15/2009	7/7/2011	7/7/2011	7/7/2011	9/1/2004	12/5/2006	9/15/2009	9/15/2009	9/15/2009	7/7/2011	7/7/2011
AQUIFER DESIGNATION	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC
METHODOLOGY	LF	LF	DB	DB	DB	DB	DB	DB	LF	LF	DB	DB	DB	DB	DB
Volatile Organics (ug/L)															
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	--	NA	NA	NA	--	--	--	--	--	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	--	NA	NA	NA	--	--	--	--	--	NA	NA
2-Hexanone	--	--	--	--	--	NA	NA	NA	--	--	--	--	--	NA	NA
4-Methyl-2-pentanone	--	--	--	--	--	NA	NA	NA	--	--	--	--	--	NA	NA
Acetone	--	--	70	68	62	NA	NA	NA	--	--	61 K	60	66	NA	NA
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	R	R	R	--	--	--	--	--	R	R
Bromomethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	0.2 J	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	--	--	--	--	NA	NA	NA	--	--	--	--	--	NA	NA
Methyl Acetate	--	--	--	--	--	NA	NA	NA	--	--	--	--	--	NA	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	1.9	--	--	--	--	--	--	1.4	1.4	1.16	1.05
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)															
Bis(2-ethylhexyl)phthalate	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Caprolactam	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Isophorone	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Naphthalene	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Phenol	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Pesticides (ug/L)															
alpha-Chlordane	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
beta-BHC	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)															
Aluminum	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Antimony	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Arsenic	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Barium	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Beryllium	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Cadmium	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA

Table 1 (Sheet 2 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW01S	MW01S	MW01S	MW01S	MW01S	MW01S	MW01S	MW01S	MW01D	MW01D	MW01D	MW01D	MW01D	MW01D	MW01D
DATE	9/1/2004	12/5/2006	9/15/2009	9/15/2009	9/15/2009	7/7/2011	7/7/2011	7/7/2011	9/1/2004	12/5/2006	9/15/2009	9/15/2009	9/15/2009	7/7/2011	7/7/2011
AQUIFER DESIGNATION	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC
METHODOLOGY	LF	LF	DB	DB	DB	DB	DB	DB	LF	LF	DB	DB	DB	DB	DB
Calcium	92000	77400	NA	NA	NA	NA	NA	NA	46000	58000	NA	NA	NA	NA	NA
Chromium	--	1.4 J	NA	NA	NA	NA	NA	NA	--	1.9 J	NA	NA	NA	NA	NA
Cobalt	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Copper	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Iron	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Lead	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Magnesium	8200	6600	NA	NA	NA	NA	NA	NA	17000	10100	NA	NA	NA	NA	NA
Manganese	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Mercury	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Nickel	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Potassium	--	570 J	NA	NA	NA	NA	NA	NA	--	2510 J	NA	NA	NA	NA	NA
Selenium	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Sodium	5900	5070 J	NA	NA	NA	NA	NA	NA	12000	6680	NA	NA	NA	NA	NA
Vanadium	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA
Zinc	--	--	NA	NA	NA	NA	NA	NA	--	9.7 J	NA	NA	NA	NA	NA
Cyanide	--	--	NA	NA	NA	NA	NA	NA	--	--	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 3 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW02S	MW02S	MW02S	MW02S	MW02S	MW02S	MW02S	MW02D	MW02D	MW02D
DATE	9/13/2004	9/13/2004	12/14/2006	12/14/2006 Duplicate	9/15/2009	9/15/2009	7/7/2011	9/14/2004	9/15/2004	12/19/2006
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	LF	Bailer	LF	LF	DB	LF	LF	LF	LF	LF
Volatile Organics (ug/L)										
1,1,1-Trichloroethane	0.4 J	0.27 J	0.35 J	0.32 J	--	--	--	--	NA	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	--	--	NA	--	NA	--
1,1-Dichloroethane	--	--	--	--	--	--	--	--	NA	--
1,1-Dichloroethene	0.1 J	--	--	--	--	--	--	--	NA	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	NA	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	NA	--
2-Butanone	--	--	--	--	--	--	NA	--	NA	--
2-Hexanone	--	--	--	--	--	--	NA	--	NA	--
4-Methyl-2-pentanone	--	--	--	--	--	--	NA	--	NA	--
Acetone	--	--	--	--	66	--	NA	2.8 J	NA	--
Benzene	--	--	--	--	--	--	--	--	NA	--
Bromoform	--	--	--	--	--	--	R	--	NA	--
Bromomethane	--	--	--	--	--	1.7 K	--	--	NA	--
Carbon disulfide	--	2.8	--	--	--	--	--	--	NA	--
Chloroform	--	--	--	--	--	--	--	--	NA	--
Chloromethane	--	--	--	--	--	--	--	0.15 J	NA	--
cis-1,2-Dichloroethene	6.9 J	5.5	3.3	3	3.7	5.5	24.7 J	8.4	NA	2.3
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--	NA	--
Cyclohexane	--	--	--	--	--	--	NA	--	NA	--
Methyl Acetate	--	--	--	--	--	--	NA	R	NA	--
Methyl tert-butyl ether	--	--	--	--	--	--	--	0.14 J	NA	--
Tetrachloroethene	1500 DB	1500 DB	1000	1000 D	290 L	550	412 J	6.9	NA	20
Toluene	--	--	0.76	--	--	--	--	--	NA	--
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	0.27 J	NA	0.11 J
Trichloroethene	9.1	8.8	8.6	8.4	9.3 L	8.2	10.4 J	0.79	NA	0.25 J
Vinyl chloride	--	--	--	--	--	--	0.72 J	--	NA	--
Semi-Volatile Organics (ug/L)										
Bis(2-ethylhexyl)phthalate	--	NA	--	--	NA	NA	NA	--	NA	--
Caprolactam	--	NA	--	--	NA	NA	NA	--	NA	--
Isophorone	--	NA	--	--	NA	NA	NA	--	NA	--
Naphthalene	--	NA	--	--	NA	NA	NA	R	NA	--
Phenol	--	NA	--	--	NA	NA	NA	--	NA	--
Pesticides (ug/L)										
alpha-Chlordane	--	NA	--	--	NA	NA	NA	NA	0.012 J	--
beta-BHC	0.016 JN	NA	--	--	NA	NA	NA	NA	R	--
Metals and Cyanide (ug/L)										
Aluminum	--	NA	--	--	NA	NA	NA	--	NA	--
Antimony	--	NA	--	--	NA	NA	NA	--	NA	--
Arsenic	--	NA	--	--	NA	NA	NA	--	NA	--
Barium	--	NA	109 J	108 J	NA	NA	NA	--	NA	--
Beryllium	--	NA	--	--	NA	NA	NA	--	NA	--
Cadmium	--	NA	--	--	NA	NA	NA	--	NA	--

Table 1 (Sheet 4 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW02S	MW02S	MW02S	MW02S	MW02S	MW02S	MW02S	MW02D	MW02D	MW02D
DATE	9/13/2004	9/13/2004	12/14/2006	12/14/2006 Duplicate	9/15/2009	9/15/2009	7/7/2011	9/14/2004	9/15/2004	12/19/2006
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	LF	Bailer	LF	LF	DB	LF	LF	LF	LF	LF
Calcium	79000	NA	60100	59900	NA	NA	NA	23000	NA	17100
Chromium	--	NA	--	--	NA	NA	NA	--	NA	--
Cobalt	--	NA	--	--	NA	NA	NA	--	NA	--
Copper	--	NA	--	--	NA	NA	NA	--	NA	--
Iron	--	NA	--	--	NA	NA	NA	--	NA	--
Lead	--	NA	--	--	NA	NA	NA	--	NA	--
Magnesium	7500	NA	6550	6520	NA	NA	NA	--	NA	160 J
Manganese	--	NA	--	--	NA	NA	NA	--	NA	--
Mercury	--	NA	--	--	NA	NA	NA	--	NA	--
Nickel	--	NA	--	--	NA	NA	NA	--	NA	--
Potassium	--	NA	1320 J	1340 J	NA	NA	NA	5700	NA	4160 J
Selenium	--	NA	--	--	NA	NA	NA	--	NA	--
Sodium	240000	NA	172000	171000	NA	NA	NA	110000	NA	81000
Vanadium	--	NA	--	--	NA	NA	NA	--	NA	--
Zinc	--	NA	--	--	NA	NA	NA	--	NA	--
Cyanide	--	NA	--	--	NA	NA	NA	NA	--	--

Notes are provided on Page 43.

Table 1 (Sheet 5 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW03S	MW03S	MW03S	MW03S	MW03S	MW03S	MW03S	MW03D	MW03D	MW03D	MW03D	MW03D	MW03D
DATE	9/2/2004	9/3/2004	12/1/2006	12/11/2006	9/15/2009	9/15/2009 Duplicate	7/6/2011	9/9/2004	12/6/2006	9/15/2009	9/15/2009	7/6/2011	7/6/2011
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	Pump/Bailer	Pump/Bailer	DB	LF	DB	DB	DB	LF	LF	DB	DB	DB	DB
Volatile Organics (ug/L)													
1,1,1-Trichloroethane	--	NA	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	NA	--	0.14 J	--	--	NA	--	--	--	--	NA	NA
1,1-Dichloroethane	--	NA	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	NA	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	NA	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	NA	--	--	--	--	--	--	--	0.88	--	--	--
2-Butanone	--	NA	--	--	--	--	NA	--	--	--	--	NA	NA
2-Hexanone	--	NA	3.7 J	--	--	--	NA	--	--	--	--	NA	NA
4-Methyl-2-pentanone	--	NA	--	--	--	--	NA	--	--	--	--	NA	NA
Acetone	--	NA	--	--	60	62	NA	--	--	61	68	NA	NA
Benzene	--	NA	--	--	--	--	--	--	--	--	--	--	--
Bromoform	--	NA	--	--	--	--	R	--	--	--	--	R	R
Bromomethane	--	NA	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	NA	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	NA	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	--	NA	--	0.12 J	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	NA	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	NA	--	--	--	--	--	0 15 J	--	--	--	--	--
Cyclohexane	--	NA	0.16 J	--	--	--	NA	--	--	0.58 K	--	NA	NA
Methyl Acetate	--	NA	--	--	--	--	NA	--	--	--	--	NA	NA
Methyl tert-butyl ether	--	NA	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	NA	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	NA	--	--	--	--	--	--	--	2.9	0.71	--	--
trans-1,2-Dichloroethene	--	NA	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	--	NA	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	--	NA	--	--	--	--	--	--	--	--	1.7	--	1.03
Semi-Volatile Organics (ug/L)													
Bis(2-ethylhexyl)phthalate	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Caprolactam	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Isophorone	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Naphthalene	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Phenol	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Pesticides (ug/L)													
alpha-Chlordane	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
beta-BHC	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Metals and Cyanide (ug/L)													
Aluminum	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Antimony	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Arsenic	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Barium	NA	410	NA	370	NA	NA	NA	370	--	NA	NA	NA	NA
Beryllium	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Cadmium	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA

Table 1
(Sheet 6 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW03S	MW03S	MW03S	MW03S	MW03S	MW03S	MW03S	MW03D	MW03D	MW03D	MW03D	MW03D	MW03D
DATE	9/2/2004	9/3/2004	12/1/2006	12/11/2006	9/15/2009	9/15/2009 Duplicate	7/6/2011	9/9/2004	12/6/2006	9/15/2009	9/15/2009	7/6/2011	7/6/2011
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	Pump/Bailer	Pump/Bailer	DB	LF	DB	DB	DB	LF	LF	DB	DB	DB	DB
Calcium	NA	190000	NA	177000	NA	NA	NA	80000	54600	NA	NA	NA	NA
Chromium	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Cobalt	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Copper	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Iron	NA	1700	NA	1410	NA	NA	NA	--	--	NA	NA	NA	NA
Lead	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Magnesium	NA	26000	NA	22300	NA	NA	NA	14000	9750	NA	NA	NA	NA
Manganese	NA	1000	NA	666	NA	NA	NA	--	--	NA	NA	NA	NA
Mercury	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Nickel	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Potassium	NA	--	NA	3840 J	NA	NA	NA	--	1770 J	NA	NA	NA	NA
Selenium	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Sodium	NA	330000	NA	280000	NA	NA	NA	72000	15600	NA	NA	NA	NA
Vanadium	NA	--	NA	--	NA	NA	NA	--	--	NA	NA	NA	NA
Zinc	NA	--	NA	9.3 J	NA	NA	NA	--	--	NA	NA	NA	NA
Cyanide	NA	--	NA	--	NA	NA	NA	--	5.7 J	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 7 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW04S	MW04S	MW04S	MW04S	MW04S	MW04S	MW04S	MW04S	MW04S
DATE	9/7/2004	12/1/2006	12/7/2006	9/15/2009	9/15/2009	9/15/2009	7/6/2011	7/6/2011	7/6/2011
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	Pump/Bailer	DB	LF	DB	DB	DB	DB	DB	DB
Volatile Organics (ug/L)									
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	--	--	NA	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	--	--	NA	NA	NA
2-Hexanone	--	--	--	--	--	--	NA	NA	NA
4-Methyl-2-pentanone	--	--	--	--	--	--	NA	NA	NA
Acetone	--	--	--	62	63	62	NA	NA	NA
Benzene	--	--	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	R	R	R
Bromomethane	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	0.23 J	--	--	--	--	--	--	--	--
Cyclohexane	--	0.12 J	--	1.5 K	0.89 K	0.58 K	NA	NA	NA
Methyl Acetate	--	--	--	--	--	--	NA	NA	NA
Methyl tert-butyl ether	0.11 J	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)									
Bis(2-ethylhexyl)phthalate	--	NA	--	NA	NA	NA	NA	NA	NA
Caprolactam	--	NA	--	NA	NA	NA	NA	NA	NA
Isophorone	--	NA	--	NA	NA	NA	NA	NA	NA
Naphthalene	--	NA	--	NA	NA	NA	NA	NA	NA
Phenol	--	NA	--	NA	NA	NA	NA	NA	NA
Pesticides (ug/L)									
alpha-Chlordane	--	NA	--	NA	NA	NA	NA	NA	NA
beta-BHC	--	NA	--	NA	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)									
Aluminum	210	NA	--	NA	NA	NA	NA	NA	NA
Antimony	--	NA	--	NA	NA	NA	NA	NA	NA
Arsenic	--	NA	--	NA	NA	NA	NA	NA	NA
Barium	--	NA	--	NA	NA	NA	NA	NA	NA
Beryllium	--	NA	--	NA	NA	NA	NA	NA	NA
Cadmium	--	NA	--	NA	NA	NA	NA	NA	NA

Table 1 (Sheet 8 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW04S	MW04S	MW04S	MW04S	MW04S	MW04S	MW04S	MW04S	MW04S
DATE	9/7/2004	12/1/2006	12/7/2006	9/15/2009	9/15/2009	9/15/2009	7/6/2011	7/6/2011	7/6/2011
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	Pump/Bailer	DB	LF	DB	DB	DB	DB	DB	DB
Calcium	57000	NA	51800	NA	NA	NA	NA	NA	NA
Chromium	--	NA	--	NA	NA	NA	NA	NA	NA
Cobalt	--	NA	--	NA	NA	NA	NA	NA	NA
Copper	--	NA	--	NA	NA	NA	NA	NA	NA
Iron	110	NA	33.4 J	NA	NA	NA	NA	NA	NA
Lead	--	NA	--	NA	NA	NA	NA	NA	NA
Magnesium	6400	NA	9320	NA	NA	NA	NA	NA	NA
Manganese	--	NA	--	NA	NA	NA	NA	NA	NA
Mercury	--	NA	0.021 J	NA	NA	NA	NA	NA	NA
Nickel	--	NA	--	NA	NA	NA	NA	NA	NA
Potassium	--	NA	1210 J	NA	NA	NA	NA	NA	NA
Selenium	--	NA	--	NA	NA	NA	NA	NA	NA
Sodium	11000	NA	19000	NA	NA	NA	NA	NA	NA
Vanadium	--	NA	--	NA	NA	NA	NA	NA	NA
Zinc	--	NA	39.2 J	NA	NA	NA	NA	NA	NA
Cyanide	--	NA	--	NA	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 9 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW04D	MW04D	MW04D	MW04D	MW04D	MW04D	MW04D	MW04D	MW05S	MW05S	MW05D	MW05D	MW05D
DATE	9/8/2004	9/13/2004	12/1/2006	12/8/2006	9/15/2009	9/15/2009	7/6/2011	7/6/2011	9/2/2004	12/12/2006	9/9/2004	12/1/2006	12/12/2006
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	MC / LC	MC / LC	MC / LC
METHODOLOGY	Pump/Bailer	Pump/Bailer	DB	LF	DB	DB	DB	DB	LF	LF	Pump/Bailer	DB	LF
Volatile Organics (ug/L)													
1,1,1-Trichloroethane	--	NA	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	NA	--	--	--	--	NA	NA	--	--	--	--	--
1,1-Dichloroethane	--	NA	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	NA	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	NA	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	NA	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	NA	--	--	--	--	NA	NA	--	--	--	--	--
2-Hexanone	--	NA	--	--	--	--	NA	NA	--	--	--	--	--
4-Methyl-2-pentanone	--	NA	--	--	--	--	NA	NA	--	--	--	--	--
Acetone	--	NA	--	--	67	67	NA	NA	--	--	4.6 J	--	--
Benzene	--	NA	--	--	--	--	--	--	--	--	--	--	1.2
Bromoform	--	NA	--	--	--	--	R	R	--	--	--	--	--
Bromomethane	--	NA	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	NA	--	--	--	--	--	--	--	--	--	--	0.11 J
Chloroform	--	NA	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	0.12 J	NA	--	--	--	--	--	--	--	--	0.17 J	--	--
cis-1,2-Dichloroethene	--	NA	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	NA	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	NA	--	--	1.2 K	--	NA	NA	--	--	--	0.2 J	--
Methyl Acetate	--	NA	--	--	--	--	NA	NA	--	--	--	--	--
Methyl tert-butyl ether	--	NA	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	NA	--	--	--	--	--	--	--	--	--	--	--
Toluene	--	NA	--	0.47 J	0.8	1	--	--	--	--	--	--	0.75
trans-1,2-Dichloroethene	--	NA	--	0.12 J	--	--	--	--	--	--	--	--	--
Trichloroethene	--	NA	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	--	NA	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)													
Bis(2-ethylhexyl)phthalate	NA	4.6 J	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Caprolactam	NA	--	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Isophorone	NA	--	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Naphthalene	NA	--	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Phenol	NA	--	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Pesticides (ug/L)													
alpha-Chlordane	NA	--	NA	--	NA	NA	NA	NA	--	--	--	NA	--
beta-BHC	NA	--	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Metals and Cyanide (ug/L)													
Aluminum	1700	NA	NA	--	NA	NA	NA	NA	1400	--	--	NA	--
Antimony	--	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Arsenic	--	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Barium	--	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	412
Beryllium	--	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Cadmium	--	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	--

Table 1 (Sheet 10 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW04D	MW04D	MW04D	MW04D	MW04D	MW04D	MW04D	MW04D	MW05S	MW05S	MW05D	MW05D	MW05D
DATE	9/8/2004	9/13/2004	12/1/2006	12/8/2006	9/15/2009	9/15/2009	7/6/2011	7/6/2011	9/2/2004	12/12/2006	9/9/2004	12/1/2006	12/12/2006
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	MC / LC	MC / LC	MC / LC
METHODOLOGY	Pump/Bailer	Pump/Bailer	DB	LF	DB	DB	DB	DB	LF	LF	Pump/Bailer	DB	LF
Calcium	430000	NA	NA	95700	NA	NA	NA	NA	87000	66300	26000	NA	75900
Chromium	20	NA	NA	--	NA	NA	NA	NA	--	1.5 J	--	NA	5.8 J
Cobalt	--	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Copper	34	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Iron	2300	NA	NA	112	NA	NA	NA	NA	700	--	--	NA	--
Lead	--	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Magnesium	160000	NA	NA	30500	NA	NA	NA	NA	9400	--	22000	NA	--
Manganese	170	NA	NA	52.5	NA	NA	NA	NA	44	--	--	NA	--
Mercury	--	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Nickel	--	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	3.5 J
Potassium	31000	NA	NA	7660	NA	NA	NA	NA	--	496 J	15000	NA	11800
Selenium	--	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	--
Sodium	1400000	NA	NA	272000	NA	NA	NA	NA	12000	--	750000	NA	584000
Vanadium	--	NA	NA	--	NA	NA	NA	NA	--	--	--	NA	1.5 J
Zinc	94	NA	NA	17.4 J	NA	NA	NA	NA	--	--	--	NA	--
Cyanide	NA	--	NA	--	NA	NA	NA	NA	--	--	--	NA	--

Notes are provided on Page 43.

Table 1 (Sheet 11 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW06S	MW06S	MW06D	MW06D	MW07	MW07	MW07	MW07	MW07	MW07	MW07
DATE	9/3/2004	12/8/2006	9/3/2004	12/8/2006	9/8/2004	12/14/2006	12/14/2006 Duplicate	9/15/2009	9/15/2009	7/6/2011	7/6/2011
AQUIFER DESIGNATION	UC	UC	LC	LC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	LF	LF	LF	LF	LF	LF	LF	DB	DB	DB	DB
Volatile Organics (ug/L)											
1,1,1-Trichloroethane	--	--	--	--	0.25 J	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	--	--	--	--	--	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	0.26 J	--	0.14 J	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	0.12 J	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	5.4	--	--	--	--	18	--	--	--	NA	NA
2-Hexanone	--	--	--	--	--	--	--	--	--	NA	NA
4-Methyl-2-pentanone	--	--	--	--	--	--	--	--	--	NA	NA
Acetone	--	--	--	--	--	--	--	65	72	NA	NA
Benzene	--	--	--	--	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	--	--	--	--	R	R
Bromomethane	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	0.12 J	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	24	9.1	10	13	13	--	3.57 J
cis-1,3-Dichloropropene	0.15 J	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	--	--	--	--	--	--	--	--	NA	NA
Methyl Acetate	--	--	--	--	--	--	--	--	--	NA	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	1100 DB	1100 D	1300 D	6500	2800	1500	985
Toluene	--	--	--	0.49 J	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	--	--	--	--	0.44 J	--	--	--	--	--	--
Trichloroethene	--	--	--	--	7.9	9	10	35	29	182	6.2
Vinyl chloride	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)											
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--	NA	NA	NA	NA
Caprolactam	--	--	--	--	--	--	--	NA	NA	NA	NA
Isophorone	--	--	--	--	--	--	--	NA	NA	NA	NA
Naphthalene	--	--	--	--	--	--	--	NA	NA	NA	NA
Phenol	--	--	--	--	--	--	--	NA	NA	NA	NA
Pesticides (ug/L)											
alpha-Chlordane	--	--	--	--	--	--	--	NA	NA	NA	NA
beta-BHC	--	--	--	--	--	--	--	NA	NA	NA	NA
Metals and Cyanide (ug/L)											
Aluminum	--	--	--	--	--	--	--	NA	NA	NA	NA
Antimony	--	--	--	--	--	--	--	NA	NA	NA	NA
Arsenic	--	--	--	--	--	--	--	NA	NA	NA	NA
Barium	--	--	--	--	--	61.7 J	60.3 J	NA	NA	NA	NA
Beryllium	--	--	--	--	--	--	--	NA	NA	NA	NA
Cadmium	--	--	--	--	--	--	--	NA	NA	NA	NA

Table 1 (Sheet 12 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW06S	MW06S	MW06D	MW06D	MW07	MW07	MW07	MW07	MW07	MW07	MW07
DATE	9/3/2004	12/8/2006	9/3/2004	12/8/2006	9/8/2004	12/14/2006	12/14/2006 Duplicate	9/15/2009	9/15/2009	7/6/2011	7/6/2011
AQUIFER DESIGNATION	UC	UC	LC	LC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	LF	LF	LF	LF	LF	LF	LF	DB	DB	DB	DB
Calcium	59000	63000	5100	7170	73000	62500	62900	NA	NA	NA	NA
Chromium	--	--	--	--	--	2.6 J	1.3 J	NA	NA	NA	NA
Cobalt	--	--	--	--	--	--	--	NA	NA	NA	NA
Copper	--	--	--	--	--	--	--	NA	NA	NA	NA
Iron	--	--	--	--	--	28 2 J	--	NA	NA	NA	NA
Lead	--	--	--	--	--	--	--	NA	NA	NA	NA
Magnesium	--	4900 J	--	1240 J	--	4560 J	4500 J	NA	NA	NA	NA
Manganese	--	--	--	--	--	1.1 J	--	NA	NA	NA	NA
Mercury	--	--	--	--	--	--	--	NA	NA	NA	NA
Nickel	--	--	--	--	--	--	--	NA	NA	NA	NA
Potassium	--	363 J	--	2380 J	--	1020 J	1030 J	NA	NA	NA	NA
Selenium	--	--	--	--	--	--	--	NA	NA	NA	NA
Sodium	--	--	61000	65000	210000	160000	159000	NA	NA	NA	NA
Vanadium	--	--	--	--	--	--	--	NA	NA	NA	NA
Zinc	--	--	--	--	--	--	--	NA	NA	NA	NA
Cyanide	--	--	--	--	1.1 J	--	4.1 J	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 13 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW08	MW08	MW08	MW08	MW08	MW09	MW09	MW09	MW09	MW09	MW10	MW10	MW10	MW10	MW10
DATE	9/7/2004	12/5/2006	9/15/2009	9/15/2009 Duplicate	7/6/2011	9/10/2004	9/10/2004	12/13/2006	9/15/2009	7/6/2011	9/10/2004	12/13/2006	12/14/2006	9/15/2009	7/6/2011
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	LF	LF	DB	DB	DB	LF	Bailer	LF	DB	DB	LF	LF	LF	DB	DB
Volatile Organics (ug/L)															
1,1,1-Trichloroethane	–	–	–	–	–	0.3 J	0.27 J	0.17 J	–	–	1.3	1	NA	–	0.53
1,1,2-Trichloro-1,2,2-trifluoroethane	–	–	–	–	NA	–	–	–	–	NA	–	–	NA	–	NA
1,1-Dichloroethane	–	–	–	–	–	–	–	–	–	–	2.5	1.9	NA	1.8	1.13
1,1-Dichloroethene	–	–	–	–	–	–	–	–	–	–	0.15 J	–	NA	–	–
1,2-Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–	NA	–	–
1,2-Dichloroethane	–	–	–	–	–	–	–	–	–	–	–	–	NA	–	–
2-Butanone	–	–	–	–	NA	–	–	–	–	NA	–	–	NA	–	NA
2-Hexanone	–	–	–	–	NA	–	–	–	–	NA	–	–	NA	–	NA
4-Methyl-2-pentanone	–	–	–	–	NA	–	–	–	–	NA	–	–	NA	–	NA
Acetone	–	–	66	66	NA	–	–	–	63	NA	–	–	NA	62	NA
Benzene	–	–	–	–	–	–	–	–	–	–	–	–	NA	–	–
Bromoform	–	–	–	–	R	–	–	–	–	R	–	–	NA	–	R
Bromomethane	–	–	–	–	–	–	–	–	–	–	–	–	NA	1.4 K	–
Carbon disulfide	–	–	–	–	–	–	–	–	–	–	–	–	NA	–	–
Chloroform	–	–	–	–	–	–	–	–	–	–	–	–	NA	–	–
Chloromethane	–	–	–	–	–	–	–	–	–	–	–	–	NA	–	–
cis-1,2-Dichloroethene	–	–	–	–	–	–	–	–	–	–	52 D	49 D	NA	64	38.5
cis-1,3-Dichloropropene	0.18 J	–	–	–	–	–	–	–	–	–	–	–	NA	–	–
Cyclohexane	–	–	–	–	NA	–	–	–	–	NA	–	–	NA	–	NA
Methyl Acetate	–	–	–	–	NA	–	–	–	–	NA	–	–	NA	–	NA
Methyl tert-butyl ether	–	–	–	–	–	–	–	–	–	–	–	–	NA	–	–
Tetrachloroethene	0.49 J	0.12 J	–	0.53	–	8.7	9.3	3.6	2.4	1.25	140 DB	160 D	NA	21	51.6
Toluene	–	–	–	–	–	–	–	–	–	–	–	–	NA	1.5	–
trans-1,2-Dichloroethene	–	–	–	–	–	–	–	–	–	–	0.23 J	0.15 J	NA	–	–
Trichloroethene	–	–	–	–	–	0.13 J	–	–	–	–	29 D	25 D	NA	19	25
Vinyl chloride	–	–	–	–	–	–	–	–	–	–	–	–	NA	–	–
Semi-Volatile Organics (ug/L)															
Bis(2-ethylhexyl)phthalate	–	–	NA	NA	NA	–	NA	–	NA	NA	–	–	NA	NA	NA
Caprolactam	–	–	NA	NA	NA	–	NA	–	NA	NA	–	–	NA	NA	NA
Isophorone	–	–	NA	NA	NA	–	NA	–	NA	NA	–	–	NA	NA	NA
Naphthalene	–	–	NA	NA	NA	–	NA	–	NA	NA	–	0.96 J	NA	NA	NA
Phenol	–	–	NA	NA	NA	–	NA	–	NA	NA	–	–	NA	NA	NA
Pesticides (ug/L)															
alpha-Chlordane	–	–	NA	NA	NA	–	NA	–	NA	NA	–	–	NA	NA	NA
beta-BHC	–	–	NA	NA	NA	0.0092 J	NA	–	NA	NA	0.016 J	–	NA	NA	NA
Metals and Cyanide (ug/L)															
Aluminum	220	58.5 J	NA	NA	NA	–	NA	–	NA	NA	–	NA	–	NA	NA
Antimony	–	–	NA	NA	NA	–	NA	–	NA	NA	–	NA	–	NA	NA
Arsenic	–	–	NA	NA	NA	–	NA	–	NA	NA	–	NA	–	NA	NA
Barium	–	–	NA	NA	NA	–	NA	48.2 J	NA	NA	–	NA	161 J	NA	NA
Beryllium	–	–	NA	NA	NA	–	NA	–	NA	NA	–	NA	–	NA	NA
Cadmium	–	–	NA	NA	NA	–	NA	–	NA	NA	–	NA	–	NA	NA

Table 1 (Sheet 14 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW08	MW08	MW08	MW08	MW08	MW09	MW09	MW09	MW09	MW09	MW10	MW10	MW10	MW10	MW10
DATE	9/7/2004	12/5/2006	9/15/2009	9/15/2009 Duplicate	7/6/2011	9/10/2004	9/10/2004	12/13/2006	9/15/2009	7/6/2011	9/10/2004	12/13/2006	12/14/2006	9/15/2009	7/6/2011
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	LF	LF	DB	DB	DB	LF	Bailer	LF	DB	DB	LF	LF	LF	DB	DB
Calcium	74000	53300	NA	NA	NA	65000	NA	67700	NA	NA	96000	NA	79900	NA	NA
Chromium	--	2.5 J	NA	NA	NA	--	NA	1.3 J	NA	NA	--	NA	3.3 J	NA	NA
Cobalt	--	--	NA	NA	NA	--	NA	--	NA	NA	--	NA	--	NA	NA
Copper	--	--	NA	NA	NA	--	NA	--	NA	NA	--	NA	--	NA	NA
Iron	210	--	NA	NA	NA	--	NA	--	NA	NA	--	NA	--	NA	NA
Lead	--	--	NA	NA	NA	--	NA	--	NA	NA	--	NA	--	NA	NA
Magnesium	5500	4040 J	NA	NA	NA	6400	NA	6590	NA	NA	13000	NA	9310	NA	NA
Manganese	--	--	NA	NA	NA	--	NA	--	NA	NA	120	NA	93.1	NA	NA
Mercury	--	--	NA	NA	NA	--	NA	--	NA	NA	--	NA	--	NA	NA
Nickel	--	2 J	NA	NA	NA	--	NA	--	NA	NA	--	NA	3.8 J	NA	NA
Potassium	--	934 J	NA	NA	NA	--	NA	428 J	NA	NA	--	NA	3060 J	NA	NA
Selenium	--	--	NA	NA	NA	--	NA	--	NA	NA	--	NA	5.2 J	NA	NA
Sodium	210000	191000	NA	NA	NA	26000	NA	12400	NA	NA	250000	NA	176000	NA	NA
Vanadium	--	--	NA	NA	NA	--	NA	--	NA	NA	--	NA	--	NA	NA
Zinc	--	14.5 J	NA	NA	NA	--	NA	14.5 J	NA	NA	100	NA	11.7 J	NA	NA
Cyanide	--	--	NA	NA	NA	--	NA	--	NA	NA	--	NA	--	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 15 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW11	MW11	MW11	MW11	MW11	MW12S	MW12S	MW12S	MW12S	MW12S	MW12S	MW12S	MW12S
DATE	9/10/2004	12/14/2006	9/15/2009	9/16/2009	7/6/2011	8/30/2004	12/6/2006	9/16/2009	9/16/2009	9/16/2009	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	Pump/Bailer	LF	LF	DB	DB	LF	LF	DB	DB	DB	DB	DB	DB
Volatile Organics (ug/L)													
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	NA	--	--	--	--	--	NA	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	0.1 J	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	0.52	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	NA	--	--	--	--	--	NA	NA	NA
2-Hexanone	--	--	--	--	NA	--	--	--	--	--	NA	NA	NA
4-Methyl-2-pentanone	--	--	--	--	NA	--	--	--	--	--	NA	NA	NA
Acetone	--	--	61	59	NA	--	--	72	69	61	NA	NA	NA
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	--	--	--	--	R	--	--	--	--	--	R	R	R
Bromomethane	--	--	1.3 K	1.2 K	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	1.4	3.4	--	35.2 J	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	--	0.98	0.54	NA	--	--	--	--	--	NA	NA	NA
Methyl Acetate	--	--	--	--	NA	--	--	--	--	--	NA	NA	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	490	270 D	34	--	443	--	--	--	--	--	0.61	--	--
Toluene	--	--	0.98	--	--	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	--	--	--	--	0.52 J	--	--	--	--	--	--	--	--
Trichloroethene	15 J	3.8	8.5	--	223 J	--	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)													
Bis(2-ethylhexyl)phthalate	--	2 J	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Caprolactam	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Isophorone	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Naphthalene	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Phenol	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Pesticides (ug/L)													
alpha-Chlordane	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
beta-BHC	0.011	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)													
Aluminum	--	--	NA	NA	NA	330	--	NA	NA	NA	NA	NA	NA
Antimony	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Arsenic	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Barium	--	123 J	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Beryllium	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Cadmium	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA

Table 1
(Sheet 16 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE DATE AQUIFER DESIGNATION METHODOLOGY	MW11 9/10/2004 UC Pump/Bailer	MW11 12/14/2006 UC LF	MW11 9/15/2009 UC LF	MW11 9/16/2009 UC DB	MW11 7/6/2011 UC DB	MW12S 8/30/2004 UC LF	MW12S 12/6/2006 UC LF	MW12S 9/16/2009 UC DB	MW12S 9/16/2009 UC DB	MW12S 9/16/2009 UC DB	MW12S 7/7/2011 UC DB	MW12S 7/7/2011 UC DB	MW12S 7/7/2011 UC DB
Calcium	110000	83400	NA	NA	NA	20000	19400	NA	NA	NA	NA	NA	NA
Chromium	--	--	NA	NA	NA	--	11.1	NA	NA	NA	NA	NA	NA
Cobalt	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Copper	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Iron	110	--	NA	NA	NA	640	59.2 J	NA	NA	NA	NA	NA	NA
Lead	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Magnesium	17000	12000	NA	NA	NA	6900	6720	NA	NA	NA	NA	NA	NA
Manganese	30	10.6 J	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Mercury	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Nickel	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Potassium	--	2020 J	NA	NA	NA	--	1420 J	NA	NA	NA	NA	NA	NA
Selenium	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Sodium	350000	226000	NA	NA	NA	15000	13800	NA	NA	NA	NA	NA	NA
Vanadium	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Zinc	64	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA
Cyanide	--	--	NA	NA	NA	--	--	NA	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1

(Sheet 17 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW12D	MW12D	MW12D	MW12D	MW12D	MW12D	MW12D	MW12D
DATE	8/30/2004	12/6/2006	9/16/2009	9/16/2009	9/16/2009	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	LC	LC	LC	LC	LC	LC	LC	LC
METHODOLOGY	LF	LF	DB	DB	DB	DB	DB	DB
Volatile Organics (ug/L)								
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	--	NA	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	--	NA	NA	NA
2-Hexanone	--	--	--	--	--	NA	NA	NA
4-Methyl-2-pentanone	--	--	--	--	--	NA	NA	NA
Acetone	--	--	67	62	65	NA	NA	NA
Benzene	--	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	R	R	R
Bromomethane	--	--	--	1.1 K	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--
Cyclohexane	--	--	0.85	0.7	--	NA	NA	NA
Methyl Acetate	--	--	--	--	--	NA	NA	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)								
Bis(2-ethylhexyl)phthalate	--	--	NA	NA	NA	NA	NA	NA
Caprolactam	--	--	NA	NA	NA	NA	NA	NA
Isophorone	--	--	NA	NA	NA	NA	NA	NA
Naphthalene	--	--	NA	NA	NA	NA	NA	NA
Phenol	--	--	NA	NA	NA	NA	NA	NA
Pesticides (ug/L)								
alpha-Chlordane	--	--	NA	NA	NA	NA	NA	NA
beta-BHC	--	--	NA	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)								
Aluminum	--	--	NA	NA	NA	NA	NA	NA
Antimony	--	--	NA	NA	NA	NA	NA	NA
Arsenic	--	--	NA	NA	NA	NA	NA	NA
Barium	--	--	NA	NA	NA	NA	NA	NA
Beryllium	--	--	NA	NA	NA	NA	NA	NA
Cadmium	--	--	NA	NA	NA	NA	NA	NA

Table 1 (Sheet 18 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW12D	MW12D	MW12D	MW12D	MW12D	MW12D	MW12D	MW12D
DATE	8/30/2004	12/6/2006	9/16/2009	9/16/2009	9/16/2009	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	LC	LC	LC	LC	LC	LC	LC	LC
METHODOLOGY	*LF*	*LF*	DB	DB	DB	DB	DB	DB
Calcium	9500	10200	NA	NA	NA	NA	NA	NA
Chromium	--	3.2 J	NA	NA	NA	NA	NA	NA
Cobalt	--	--	NA	NA	NA	NA	NA	NA
Copper	--	--	NA	NA	NA	NA	NA	NA
Iron	--	--	NA	NA	NA	NA	NA	NA
Lead	--	--	NA	NA	NA	NA	NA	NA
Magnesium	5600	6120	NA	NA	NA	NA	NA	NA
Manganese	--	--	NA	NA	NA	NA	NA	NA
Mercury	--	--	NA	NA	NA	NA	NA	NA
Nickel	--	1.7 J	NA	NA	NA	NA	NA	NA
Potassium	--	2990 J	NA	NA	NA	NA	NA	NA
Selenium	--	--	NA	NA	NA	NA	NA	NA
Sodium	14000	13100	NA	NA	NA	NA	NA	NA
Vanadium	--	--	NA	NA	NA	NA	NA	NA
Zinc	--	--	NA	NA	NA	NA	NA	NA
Cyanide	--	4.5 J	NA	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 19 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW13S	MW13S	MW13S	MW13S	MW13S	MW13S	MW13S	MW13S
DATE	9/8/2004	12/11/2006	9/15/2009	9/15/2009	9/15/2009	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC
METHODOLOGY	LF	LF	DB	DB	DB	DB	DB	DB
Volatile Organics (ug/L)								
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	--	NA	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	--	NA	NA	NA
2-Hexanone	--	--	--	--	--	NA	NA	NA
4-Methyl-2-pentanone	--	--	--	--	--	NA	NA	NA
Acetone	--	--	68	70	64	NA	NA	NA
Benzene	--	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	R	R	R
Bromomethane	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--
Chloromethane	--	0.16 J	--	--	--	--	--	--
cis-1,2-Dichloroethene	0.9	0.78	--	--	7.8	--	--	6.31
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--
Cyclohexane	--	--	0.53	--	--	NA	NA	NA
Methyl Acetate	--	--	--	--	--	NA	NA	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--
Tetrachloroethene	12	15	1.5	1.7	--	2.02	2.47	--
Toluene	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--
Trichloroethene	0.85	0.63	0.96	0.79	--	0.58	--	--
Vinyl chloride	--	--	--	--	0.52	--	--	0.73 J
Semi-Volatile Organics (ug/L)								
Bis(2-ethylhexyl)phthalate	--	6.6	NA	NA	NA	NA	NA	NA
Caprolactam	--	--	NA	NA	NA	NA	NA	NA
Isophorone	--	--	NA	NA	NA	NA	NA	NA
Naphthalene	--	--	NA	NA	NA	NA	NA	NA
Phenol	--	--	NA	NA	NA	NA	NA	NA
Pesticides (ug/L)								
alpha-Chlordane	--	--	NA	NA	NA	NA	NA	NA
beta-BHC	--	--	NA	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)								
Aluminum	--	--	NA	NA	NA	NA	NA	NA
Antimony	--	--	NA	NA	NA	NA	NA	NA
Arsenic	--	--	NA	NA	NA	NA	NA	NA
Barium	--	--	NA	NA	NA	NA	NA	NA
Beryllium	--	--	NA	NA	NA	NA	NA	NA
Cadmium	--	--	NA	NA	NA	NA	NA	NA

Table 1 (Sheet 20 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW13S	MW13S	MW13S	MW13S	MW13S	MW13S	MW13S	MW13S
DATE	9/8/2004	12/11/2006	9/15/2009	9/15/2009	9/15/2009	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC	UC / MC
METHODOLOGY	LF	LF	DB	DB	DB	DB	DB	DB
Calcium	29000	25200	NA	NA	NA	NA	NA	NA
Chromium	--	--	NA	NA	NA	NA	NA	NA
Cobalt	--	--	NA	NA	NA	NA	NA	NA
Copper	--	--	NA	NA	NA	NA	NA	NA
Iron	170	41.8 J	NA	NA	NA	NA	NA	NA
Lead	--	--	NA	NA	NA	NA	NA	NA
Magnesium	8200	8260	NA	NA	NA	NA	NA	NA
Manganese	18	--	NA	NA	NA	NA	NA	NA
Mercury	--	--	NA	NA	NA	NA	NA	NA
Nickel	--	--	NA	NA	NA	NA	NA	NA
Potassium	--	2430 J	NA	NA	NA	NA	NA	NA
Selenium	--	--	NA	NA	NA	NA	NA	NA
Sodium	32000	29600	NA	NA	NA	NA	NA	NA
Vanadium	--	--	NA	NA	NA	NA	NA	NA
Zinc	--	10.1 J	NA	NA	NA	NA	NA	NA
Cyanide	--	--	NA	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 21 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW13D	MW13D	MW13D	MW13D	MW13D	MW13D	MW13D	MW13D
DATE	9/8/2004	12/11/2006	9/15/2009	9/15/2009	9/15/2009	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	LC	LC	LC	LC	LC	LC	LC	LC
METHODOLOGY	LF	LF	DB	DB	DB	DB	DB	DB
Volatile Organics (ug/L)								
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	--	NA	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	--	NA	NA	NA
2-Hexanone	--	--	--	--	--	NA	NA	NA
4-Methyl-2-pentanone	--	--	--	--	--	NA	NA	NA
Acetone	--	--	76	76	71	NA	NA	NA
Benzene	--	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	R	R	R
Bromomethane	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--
Chloromethane	--	0.12 J	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--
Cyclohexane	--	--	--	--	--	NA	NA	NA
Methyl Acetate	1.2	--	--	--	--	NA	NA	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--
Trichloroethene	0.67	0.23 J	--	--	0.88	--	--	0.77
Vinyl chloride	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)								
Bis(2-ethylhexyl)phthalate	--	--	NA	NA	NA	NA	NA	NA
Caprolactam	--	--	NA	NA	NA	NA	NA	NA
Isophorone	--	--	NA	NA	NA	NA	NA	NA
Naphthalene	--	--	NA	NA	NA	NA	NA	NA
Phenol	--	--	NA	NA	NA	NA	NA	NA
Pesticides (ug/L)								
alpha-Chlordane	--	--	NA	NA	NA	NA	NA	NA
beta-BHC	--	--	NA	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)								
Aluminum	--	--	NA	NA	NA	NA	NA	NA
Antimony	--	--	NA	NA	NA	NA	NA	NA
Arsenic	--	--	NA	NA	NA	NA	NA	NA
Barium	520	421	NA	NA	NA	NA	NA	NA
Beryllium	--	--	NA	NA	NA	NA	NA	NA
Cadmium	--	--	NA	NA	NA	NA	NA	NA

Table 1 (Sheet 22 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW13D	MW13D	MW13D	MW13D	MW13D	MW13D	MW13D	MW13D
DATE	9/8/2004	12/11/2006	9/15/2009	9/15/2009	9/15/2009	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	LC	LC	LC	LC	LC	LC	LC	LC
METHODOLOGY	LF	LF	DB	DB	DB	DB	DB	DB
Calcium	52000	39000	NA	NA	NA	NA	NA	NA
Chromium	--	--	NA	NA	NA	NA	NA	NA
Cobalt	--	--	NA	NA	NA	NA	NA	NA
Copper	--	--	NA	NA	NA	NA	NA	NA
Iron	210	127	NA	NA	NA	NA	NA	NA
Lead	--	--	NA	NA	NA	NA	NA	NA
Magnesium	19000	14300	NA	NA	NA	NA	NA	NA
Manganese	--	--	NA	NA	NA	NA	NA	NA
Mercury	--	--	NA	NA	NA	NA	NA	NA
Nickel	--	--	NA	NA	NA	NA	NA	NA
Potassium	5400	4040 J	NA	NA	NA	NA	NA	NA
Selenium	--	--	NA	NA	NA	NA	NA	NA
Sodium	140000	111000	NA	NA	NA	NA	NA	NA
Vanadium	--	--	NA	NA	NA	NA	NA	NA
Zinc	--	--	NA	NA	NA	NA	NA	NA
Cyanide	--	--	NA	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1

(Sheet 23 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW14S	MW14S	MW14S	MW14S	MW14S	MW14S	MW14S	MW14S
DATE	8/31/2004	12/7/2006	9/16/2009	9/16/2009	9/16/2009	7/7/2011	7/7/2011	7/7/2011 Duplicate
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	LF	LF	LF	DB	DB	DB	DB	DB
Volatile Organics (ug/L)								
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	--	NA	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	--	NA	NA	NA
2-Hexanone	--	--	--	--	--	NA	NA	NA
4-Methyl-2-pentanone	--	--	--	--	--	NA	NA	NA
Acetone	--	--	66	66	70	NA	NA	NA
Benzene	--	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	R	R	R
Bromomethane	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--
Chloroform	*0.15 J*	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	1.08
cis-1,2-Dichloroethene	2	1.1	1.5	--	3.7	1.52	1.79	1.93
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--
Cyclohexane	--	--	--	--	--	NA	NA	NA
Methyl Acetate	R	--	--	--	--	NA	NA	NA
Methyl tert-butyl ether	0.38 J	--	--	--	--	--	--	--
Tetrachloroethene	30 D	20	0.77	--	2.8	3.19	3.47	3.44
Toluene	--	--	1.1	--	--	--	--	--
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--
Trichloroethene	3.5	1	1.3	--	3.1	1.69	1.56	1.58
Vinyl chloride	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)								
Bis(2-ethylhexyl)phthalate	--	--	NA	NA	NA	NA	NA	NA
Caprolactam	--	--	NA	NA	NA	NA	NA	NA
Isophorone	--	--	NA	NA	NA	NA	NA	NA
Naphthalene	--	--	NA	NA	NA	NA	NA	NA
Phenol	--	--	NA	NA	NA	NA	NA	NA
Pesticides (ug/L)								
alpha-Chlordane	--	--	NA	NA	NA	NA	NA	NA
beta-BHC	--	--	NA	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)								
Aluminum	--	--	NA	NA	NA	NA	NA	NA
Antimony	--	--	NA	NA	NA	NA	NA	NA
Arsenic	--	--	NA	NA	NA	NA	NA	NA
Barium	220	--	NA	NA	NA	NA	NA	NA
Beryllium	--	--	NA	NA	NA	NA	NA	NA
Cadmium	--	--	NA	NA	NA	NA	NA	NA

Table 1

(Sheet 24 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW14S	MW14S	MW14S	MW14S	MW14S	MW14S	MW14S	MW14S
DATE	8/31/2004	12/7/2006	9/16/2009	9/16/2009	9/16/2009	7/7/2011	7/7/2011	7/7/2011 Duplicate
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	LF	LF	LF	DB	DB	DB	DB	DB
Calcium	140000	95400	NA	NA	NA	NA	NA	NA
Chromium	--	--	NA	NA	NA	NA	NA	NA
Cobalt	--	--	NA	NA	NA	NA	NA	NA
Copper	--	--	NA	NA	NA	NA	NA	NA
Iron	--	20.6 J	NA	NA	NA	NA	NA	NA
Lead	--	--	NA	NA	NA	NA	NA	NA
Magnesium	16000	13200	NA	NA	NA	NA	NA	NA
Manganese	--	--	NA	NA	NA	NA	NA	NA
Mercury	--	--	NA	NA	NA	NA	NA	NA
Nickel	--	--	NA	NA	NA	NA	NA	NA
Potassium	--	3510 J	NA	NA	NA	NA	NA	NA
Selenium	--	--	NA	NA	NA	NA	NA	NA
Sodium	290000	111000	NA	NA	NA	NA	NA	NA
Vanadium	--	--	NA	NA	NA	NA	NA	NA
Zinc	--	8.9 J	NA	NA	NA	NA	NA	NA
Cyanide	--	5.7 J	NA	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 25 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW14D	MW14D	MW14D	MW14D	MW14D	MW14D	MW14D
DATE	8/31/2004	12/7/2006	9/16/2009	9/16/2009	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC
METHODOLOGY	LF	LF	DB	DB	DB	DB	DB
Volatile Organics (ug/L)							
1,1,1-Trichloroethane	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	NA	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	NA	NA	NA
2-Hexanone	--	--	--	--	NA	NA	NA
4-Methyl-2-pentanone	--	--	--	--	NA	NA	NA
Acetone	--	--	68	64	NA	NA	NA
Benzene	--	--	--	--	--	--	--
Bromoform	2.9 J	--	--	--	R	R	R
Bromomethane	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--
Cyclohexane	--	--	0.81	--	NA	NA	NA
Methyl Acetate	R	--	--	--	NA	NA	NA
Methyl tert-butyl ether	0.21 J	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--
Toluene	--	--	0.62	--	--	--	--
trans-1,2-Dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)							
Bis(2-ethylhexyl)phthalate	--	--	NA	NA	NA	NA	NA
Caprolactam	--	--	NA	NA	NA	NA	NA
Isophorone	--	--	NA	NA	NA	NA	NA
Naphthalene	--	--	NA	NA	NA	NA	NA
Phenol	--	--	NA	NA	NA	NA	NA
Pesticides (ug/L)							
alpha-Chlordane	--	--	NA	NA	NA	NA	NA
beta-BHC	--	--	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)							
Aluminum	--	--	NA	NA	NA	NA	NA
Antimony	--	--	NA	NA	NA	NA	NA
Arsenic	--	--	NA	NA	NA	NA	NA
Barium	--	--	NA	NA	NA	NA	NA
Beryllium	--	--	NA	NA	NA	NA	NA
Cadmium	--	--	NA	NA	NA	NA	NA

Table 1

(Sheet 26 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW14D	MW14D	MW14D	MW14D	MW14D	MW14D	MW14D
DATE	8/31/2004	12/7/2006	9/16/2009	9/16/2009	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC
METHODOLOGY	LF	LF	DB	DB	DB	DB	DB
Calcium	7800	9240	NA	NA	NA	NA	NA
Chromium	--	--	NA	NA	NA	NA	NA
Cobalt	--	--	NA	NA	NA	NA	NA
Copper	--	--	NA	NA	NA	NA	NA
Iron	--	37 J	NA	NA	NA	NA	NA
Lead	--	--	NA	NA	NA	NA	NA
Magnesium	--	5110 J	NA	NA	NA	NA	NA
Manganese	--	--	NA	NA	NA	NA	NA
Mercury	--	--	NA	NA	NA	NA	NA
Nickel	--	--	NA	NA	NA	NA	NA
Potassium	--	3240 J	NA	NA	NA	NA	NA
Selenium	--	--	NA	NA	NA	NA	NA
Sodium	22000	21400	NA	NA	NA	NA	NA
Vanadium	--	--	NA	NA	NA	NA	NA
Zinc	--	--	NA	NA	NA	NA	NA
Cyanide	--	3.8 J	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 27 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW15	MW15	MW15	MW15	MW15	MW15	MW15	MW15	MW16	MW16	MW16	MW16	MW16	MW16
DATE	9/1/2004	9/15/2004	12/1/2006	12/14/2006	9/16/2009	9/16/2009	7/7/2011	7/7/2011	9/16/2009	9/16/2009	9/16/2009	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC
METHODOLOGY	Pump/Bailer	Pump/Bailer	DB	LF	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Volatile Organics (ug/L)														
1,1,1-Trichloroethane	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	NA	--	--	--	--	NA	NA	--	--	--	NA	NA	NA
1,1-Dichloroethane	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	NA	--	--	--	--	NA	NA	--	--	--	NA	NA	NA
2-Hexanone	--	NA	--	--	--	--	NA	NA	--	--	--	NA	NA	NA
4-Methyl-2-pentanone	--	NA	--	--	--	--	NA	NA	--	--	--	NA	NA	NA
Acetone	--	NA	--	--	56	72	NA	NA	68	63	62	NA	NA	NA
Benzene	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	--	NA	--	--	--	--	R	R	--	--	--	R	R	R
Bromomethane	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	20	NA	23 D	18	19	19 K	6.61	15.7	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	NA	0.13 J	--	--	--	NA	NA	--	--	--	NA	NA	NA
Methyl Acetate	--	NA	--	--	--	--	NA	NA	--	--	--	NA	NA	NA
Methyl tert-butyl ether	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	1.4	NA	--	0.35 J	--	--	--	--	--	--	--	--	--	--
Toluene	--	NA	--	--	--	1.1	--	--	--	--	0.77	--	--	--
trans-1,2-Dichloroethene	--	NA	--	0.53	--	--	--	--	--	--	--	--	--	--
Trichloroethene	3.1	NA	0.43 J	0.55	--	0.5	--	--	--	--	--	--	--	--
Vinyl chloride	--	NA	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)														
Bis(2-ethylhexyl)phthalate	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	NA	5.7 J	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (ug/L)														
alpha-Chlordane	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)														
Aluminum	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NA	--	NA	74.5 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1 (Sheet 28 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW15	MW15	MW15	MW15	MW15	MW15	MW15	MW15	MW16	MW16	MW16	MW16	MW16	MW16
DATE	9/1/2004	9/15/2004	12/1/2006	12/14/2006	9/16/2009	9/16/2009	7/7/2011	7/7/2011	9/16/2009	9/16/2009	9/16/2009	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC	MC / LC
METHODOLOGY	Pump/Bailer	Pump/Bailer	DB	LF	DB	DB	DB	DB	DB	DB	DB	DB	DB	DB
Calcium	NA	100000	NA	105000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	260	NA	114	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NA	52000	NA	52400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	33	NA	26.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	NA	--	NA	39.2 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NA	13000	NA	11400	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NA	150000	NA	139000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	--	NA	15.6 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	NA	--	NA	--	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1
(Sheet 29 of 43)
Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW17	MW17	MW17	MW18	MW18	MW18	MW18	MW19	MW19	MW19	MW19	MW20	MW20	MW20
DATE	12/19/2006	9/15/2009	7/7/2011	12/20/2006	9/15/2009	7/7/2011	7/7/2011 Duplicate	12/20/2006	9/15/2009	7/7/2011	7/7/2011 Duplicate	12/20/2006	9/16/2009	7/7/2011
AQUIFER DESIGNATION	UC	UC		UC	UC			UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	LF	DB	DB	LF	DB	DB	DB	LF	DB	DB	DB	LF	DB	DB
Volatile Organics (ug/L)														
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	NA	--	--	NA	NA	--	--	NA	NA	--	--	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	NA	--	--	NA	NA	--	--	NA	NA	--	--	NA
2-Hexanone	--	--	NA	--	--	NA	NA	--	--	NA	NA	--	--	NA
4-Methyl-2-pentanone	--	--	NA	--	--	NA	NA	--	--	NA	NA	--	--	NA
Acetone	--	63	NA	--	69 K	NA	NA	--	67	NA	NA	--	67	NA
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	--	--	R	--	--	R	R	--	--	R	R	--	--	R
Bromomethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	2.8	--	--	0.11 J	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	--	NA	--	--	NA	NA	--	1	NA	NA	--	--	NA
Methyl Acetate	--	--	NA	--	--	NA	NA	--	--	NA	NA	--	--	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	3.1	0.61	0.64	--	0.57	0.66	0.63	--	--	--	--	2.8	--	--
Toluene	--	--	--	--	--	--	--	--	1	--	--	--	--	--
trans-1,2-Dichloroethene	0.14 J	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	1.2	--	--	0.19 J	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)														
Bis(2-ethylhexyl)phthalate	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Caprolactam	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Isophorone	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Naphthalene	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Phenol	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Pesticides (ug/L)														
alpha-Chlordane	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
beta-BHC	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Metals and Cyanide (ug/L)														
Aluminum	76.6 J	NA	NA	75 J	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Antimony	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Arsenic	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Barium	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Beryllium	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Cadmium	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA

Table 1 (Sheet 30 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW17	MW17	MW17	MW18	MW18	MW18	MW18	MW19	MW19	MW19	MW19	MW20	MW20	MW20
DATE	12/19/2006	9/15/2009	7/7/2011	12/20/2006	9/15/2009	7/7/2011	7/7/2011 Duplicate	12/20/2006	9/15/2009	7/7/2011	7/7/2011 Duplicate	12/20/2006	9/16/2009	7/7/2011
AQUIFER DESIGNATION	UC	UC		UC	UC			UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	LF	DB	DB	LF	DB	DB	DB	LF	DB	DB	DB	LF	DB	DB
Calcium	52700	NA	NA	63900	NA	NA	NA	94900	NA	NA	NA	60300	NA	NA
Chromium	--	NA	NA	26.3	NA	NA	NA	--	NA	NA	NA	25.4	NA	NA
Cobalt	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Copper	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Iron	--	NA	NA	155	NA	NA	NA	37.5 J	NA	NA	NA	414	NA	NA
Lead	--	NA	NA	2.4 J	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Magnesium	6810	NA	NA	22500	NA	NA	NA	16700	NA	NA	NA	11200	NA	NA
Manganese	20.2	NA	NA	19.9	NA	NA	NA	22	NA	NA	NA	34.2	NA	NA
Mercury	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Nickel	5.1 J	NA	NA	12.9 J	NA	NA	NA	8.9 J	NA	NA	NA	24.7 J	NA	NA
Potassium	2730 J	NA	NA	8390	NA	NA	NA	3680 J	NA	NA	NA	16200	NA	NA
Selenium	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Sodium	97500	NA	NA	57200	NA	NA	NA	53100	NA	NA	NA	221000	NA	NA
Vanadium	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA
Zinc	25.1 J	NA	NA	11.7 J	NA	NA	NA	10.8 J	NA	NA	NA	14.6 J	NA	NA
Cyanide	--	NA	NA	--	NA	NA	NA	--	NA	NA	NA	--	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 31 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW21	MW21	MW21	MW22	MW22	MW22	MW23	MW23	MW23	MW24	MW24	MW24
DATE	12/21/2006	9/16/2009	7/7/2011	12/18/2006	9/16/2009	7/7/2011	12/18/2006	9/16/2009	7/7/2011	12/19/2006	9/16/2009	7/7/2011
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	Pump/Bailer	DB	DB	LF	DB	DB	LF	DB	DB	Pump/Bailer	DB	DB
Volatile Organics (ug/L)												
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	NA	--	--	NA	--	--	NA	--	--	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	NA	--	--	NA	--	--	NA	--	--	NA
2-Hexanone	--	--	NA	--	--	NA	--	--	NA	--	--	NA
4-Methyl-2-pentanone	--	--	NA	--	--	NA	--	--	NA	--	--	NA
Acetone	--	66	NA	--	68	NA	--	62 K	NA	--	66 K	NA
Benzene	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	--	--	R	--	--	R	--	--	R	--	--	R
Bromomethane	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	3.3	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	--	NA	--	0.62	NA	--	--	NA	--	--	NA
Methyl Acetate	--	--	NA	--	--	NA	--	--	NA	--	--	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	53 D	78	22.9	--	--	--	--	--	--
Toluene	0.51	--	--	--	--	--	--	--	--	--	0.98	--
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	2.7	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)												
Bis(2-ethylhexyl)phthalate	--	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Caprolactam	--	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Isophorone	--	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Naphthalene	--	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Phenol	--	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Pesticides (ug/L)												
alpha-Chlordane	--	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
beta-BHC	--	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Metals and Cyanide (ug/L)												
Aluminum	16200	NA	NA	--	NA	NA	202 J	NA	NA	373	NA	NA
Antimony	5.2 J	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Arsenic	4.2 J	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Barium	346	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Beryllium	1 J	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Cadmium	1.2 J	NA	NA	--	NA	NA	--	NA	NA	0.47 J	NA	NA

Table 1
(Sheet 32 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW21	MW21	MW21	MW22	MW22	MW22	MW23	MW23	MW23	MW24	MW24	MW24
DATE	12/21/2006	9/16/2009	7/7/2011	12/18/2006	9/16/2009	7/7/2011	12/18/2006	9/16/2009	7/7/2011	12/19/2006	9/16/2009	7/7/2011
AQUIFER DESIGNATION	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC	UC
METHODOLOGY	Pump/Bailer	DB	DB	LF	DB	DB	LF	DB	DB	Pump/Bailer	DB	DB
Calcium	257000	NA	NA	105000	NA	NA	62800	NA	NA	109000	NA	NA
Chromium	88.1	NA	NA	--	NA	NA	11.5	NA	NA	12 3	NA	NA
Cobalt	13 J	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Copper	51.1	NA	NA	--	NA	NA	--	NA	NA	6.3 J	NA	NA
Iron	31200	NA	NA	--	NA	NA	141	NA	NA	490	NA	NA
Lead	39.3	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Magnesium	48900	NA	NA	8350	NA	NA	17500	NA	NA	21600	NA	NA
Manganese	1130	NA	NA	--	NA	NA	19.1	NA	NA	71.8	NA	NA
Mercury	0.19 J	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Nickel	57.1	NA	NA	2 J	NA	NA	7.2 J	NA	NA	9.9 J	NA	NA
Potassium	10100	NA	NA	2670 J	NA	NA	7630	NA	NA	8560	NA	NA
Selenium	--	NA	NA	4.8 J	NA	NA	--	NA	NA	--	NA	NA
Sodium	93200	NA	NA	148000	NA	NA	95800	NA	NA	64500	NA	NA
Vanadium	--	NA	NA	--	NA	NA	--	NA	NA	--	NA	NA
Zinc	106	NA	NA	--	NA	NA	13.1 J	NA	NA	284	NA	NA
Cyanide	--	NA	NA	--	NA	NA	--	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 33 of 43)
Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW25	MW25	MW25	MW26	MW26	MW26	MW27	MW27	MW27	MW27
DATE	4/15/2008	9/15/2009	7/6/2011	9/11/2007	9/15/2009	7/7/2011	9/11/2007	9/11/2007 Duplicate	9/16/2009	7/7/2011
AQUIFER DESIGNATION	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN
METHODOLOGY	LF	DB	DB	LF	DB	DB	LF	LF	DB	DB
Volatile Organics (ug/L)										
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	NA	--	--	NA	--	--	--	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	NA	--	--	NA	--	--	--	NA
2-Hexanone	--	--	NA	--	--	NA	--	--	--	NA
4-Methyl-2-pentanone	--	--	NA	--	--	NA	--	--	--	NA
Acetone	--	59	NA	--	65 K	NA	--	--	67 K	NA
Benzene	--	--	--	--	--	--	--	--	--	--
Bromoform	--	--	R	--	--	R	--	--	--	R
Bromomethane	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--	--	--
Chloroform	1.2	--	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	0.14 J	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	--	NA	--	1	NA	--	--	--	NA
Methyl Acetate	--	--	NA	--	--	NA	--	--	--	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	12	6.7	2.78	--	--	--	7.9	8	--	--
Toluene	1.3	1.9	0.66	0.3 J	--	--	--	--	--	--
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--
Trichloroethene	2.9	1.2	0.53	--	--	--	0.51	0.49 J	--	--
Vinyl chloride	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)										
Bis(2-ethylhexyl)phthalate	--	NA	NA	--	NA	NA	--	--	NA	NA
Caprolactam	--	NA	NA	--	NA	NA	--	--	NA	NA
Isophorone	0.2 J	NA	NA	--	NA	NA	--	--	NA	NA
Naphthalene	--	NA	NA	--	NA	NA	--	--	NA	NA
Phenol	1.8 J	NA	NA	--	NA	NA	--	--	NA	NA
Pesticides (ug/L)										
alpha-Chlordane	--	NA	NA	--	NA	NA	--	--	NA	NA
beta-BHC	--	NA	NA	--	NA	NA	--	--	NA	NA
Metals and Cyanide (ug/L)										
Aluminum	200	NA	NA	--	NA	NA	--	--	NA	NA
Antimony	--	NA	NA	--	NA	NA	--	--	NA	NA
Arsenic	--	NA	NA	--	NA	NA	--	2 J	NA	NA
Barium	--	NA	NA	418	NA	NA	234	235	NA	NA
Beryllium	--	NA	NA	--	NA	NA	--	--	NA	NA
Cadmium	--	NA	NA	--	NA	NA	--	--	NA	NA

Table 1 (Sheet 34 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW25	MW25	MW25	MW26	MW26	MW26	MW27	MW27	MW27	MW27
DATE	4/15/2008	9/15/2009	7/6/2011	9/11/2007	9/15/2009	7/7/2011	9/11/2007	9/11/2007 Duplicate	9/16/2009	7/7/2011
AQUIFER DESIGNATION	GN	GN	GN	GN	GN	GN	GN	GN	GN	GN
METHODOLOGY	LF	DB	DB	LF	DB	DB	LF	LF	DB	DB
Calcium	46000	NA	NA	83200	NA	NA	42500	42300	NA	NA
Chromium	17	NA	NA	3.3 J	NA	NA	2.6 J	2.9 J	NA	NA
Cobalt	--	NA	NA	0.36 J	NA	NA	0.44 J	0.35 J	NA	NA
Copper	--	NA	NA	0.45 J	NA	NA	--	--	NA	NA
Iron	64	NA	NA	199	NA	NA	74.9 J	81.1 J	NA	NA
Lead	--	NA	NA	--	NA	NA	--	--	NA	NA
Magnesium	3000	NA	NA	22100	NA	NA	14600	14600	NA	NA
Manganese	12	NA	NA	17.6 J	NA	NA	21.6 J	22.4 J	NA	NA
Mercury	--	NA	NA	--	NA	NA	--	--	NA	NA
Nickel	--	NA	NA	3.5 J	NA	NA	4.5 J	5 J	NA	NA
Potassium	27000	NA	NA	5100 J	NA	NA	4570 J	4600 J	NA	NA
Selenium	--	NA	NA	--	NA	NA	--	--	NA	NA
Sodium	160000	NA	NA	96400	NA	NA	57000	61200	NA	NA
Vanadium	--	NA	NA	--	NA	NA	0.18 J	0.26 J	NA	NA
Zinc	--	NA	NA	--	NA	NA	--	--	NA	NA
Cyanide	--	NA	NA	--	NA	NA	--	--	NA	NA

Notes are provided on Page 43.

Table 1

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Summary of Detected Constituents in Groundwater

Crown Cleaners of Watertown, Inc.

Village of Herrings, Jefferson County, New York

SITE	MW28	MW28	MW28	MW28	MW28	MW28	MW28	MW28	MW28	MW28
DATE	9/15/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011
AQUIFER DESIGNATION	UC	UC	MC	LC	LC	UC	UC	MC	LC	LC
METHODOLOGY	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port
Volatile Organics (ug/L)										
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	--	NA	NA	NA	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	5.8	NA	NA	NA	NA	NA
2-Hexanone	--	--	--	--	--	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	--	--	--	--	--	NA	NA	NA	NA	NA
Acetone	--	--	--	--	6.5	NA	NA	NA	NA	NA
Benzene	--	--	--	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	R	R	R	R	R
Bromomethane	1.9	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	--	--	--	--	NA	NA	NA	NA	NA
Methyl Acetate	--	--	--	--	--	NA	NA	NA	NA	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--	--	--
Toluene	0.84	0.58	--	--	62	--	--	--	--	27
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)										
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (ug/L)										
alpha-Chlordane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)										
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1

(Sheet 36 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW28	MW28	MW28	MW28	MW28	MW28	MW28	MW28	MW28	MW28
DATE	9/15/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011
AQUIFER DESIGNATION	UC	UC	MC	LC	LC	UC	UC	MC	LC	LC
METHODOLOGY	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1

(Sheet 37 of 43)
Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE DATE AQUIFER DESIGNATION METHODOLOGY	MW29 9/16/2009 UC Multi-Port	MW29 9/16/2009 UC Multi-Port	MW29 9/16/2009 LC Multi-Port	MW29 9/16/2009 LC Multi-Port	MW29 9/16/2009 LC Multi-Port	MW29 7/7/2011 UC Multi-Port	MW29 7/7/2011 UC Multi-Port	MW29 7/6/2011 Duplicate UC Multi-Port	MW29 7/7/2011 LC Multi-Port	MW29 7/7/2011 LC Multi-Port	MW29 7/7/2011 LC Multi-Port
Volatile Organics (ug/L)											
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	--	--	NA	NA	NA	NA	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	--	--	NA	NA	NA	NA	NA	NA
2-Hexanone	--	--	--	--	--	NA	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	--	--	--	--	--	NA	NA	NA	NA	NA	NA
Acetone	--	--	--	--	6.4	NA	NA	NA	NA	NA	NA
Benzene	--	--	--	--	--	--	--	--	--	--	--
Bromoform	--	--	--	--	--	R	R	R	R	R	R
Bromomethane	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	--	--	--	--	NA	NA	NA	NA	NA	NA
Methyl Acetate	--	--	--	--	--	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--	--	--	--
Toluene	34 J	83	29	21	6.7	--	6.73	11	8.61	4.8	2.15
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)											
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (ug/L)											
alpha-Chlordane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)											
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1

(Sheet 38 of 43)

Summary of Detected Constituents in Groundwater

Crown Cleaners of Watertown, Inc.

Village of Herrings, Jefferson County, New York

SITE	MW29	MW29	MW29	MW29	MW29	MW29	MW29	MW29	MW29	MW29	MW29
DATE	9/16/2009	9/16/2009	9/16/2009	9/16/2009	9/16/2009	7/7/2011	7/7/2011	7/6/2011 Duplicate	7/7/2011	7/7/2011	7/7/2011
AQUIFER DESIGNATION	UC	UC	LC	LC	LC	UC	UC	UC	LC	LC	LC
METHODOLOGY	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 39 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW30	MW30	MW30	MW30	MW31	MW31	MW31	MW31	MW31	MW31	MW31	MW31	MW31	MW31
DATE	9/16/2009	9/16/2009	7/7/2011	7/7/2011	9/15/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011
AQUIFER DESIGNATION	LC	LC	LC	LC	UC	MC	LC	LC	LC	UC	MC	LC	LC	LC
METHODOLOGY	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port
Volatile Organics (ug/L)														
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	NA	NA	--	--	--	--	--	NA	NA	NA	NA	NA
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	NA	NA	140	--	--	--	--	NA	NA	NA	NA	NA
2-Hexanone	--	--	NA	NA	--	--	--	--	--	NA	NA	NA	NA	NA
4-Methyl-2-pentanone	--	--	NA	NA	8.8	--	--	--	--	NA	NA	NA	NA	NA
Acetone	--	--	NA	NA	280	5.1	--	--	6.5	NA	NA	NA	NA	NA
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	--	--	R	R	--	--	--	--	--	R	R	R	R	R
Bromomethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	1.1	--	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	--	NA	NA	--	--	--	--	--	NA	NA	NA	NA	NA
Methyl Acetate	--	--	NA	NA	--	--	--	--	--	NA	NA	NA	NA	NA
Methyl tert-butyl ether	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Toluene	1.3	19	0.89	18.8	190	140 K	2.8	15	31	32 J	5.26	--	--	8.16
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Trichloroethene	0.77	--	--	--	--	--	--	--	--	--	--	--	--	--
Vinyl chloride	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (ug/L)														
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Caprolactam	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isophorone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pesticides (ug/L)														
alpha-Chlordane	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals and Cyanide (ug/L)														
Aluminum	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Table 1 (Sheet 40 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW30	MW30	MW30	MW30	MW31	MW31	MW31	MW31	MW31	MW31	MW31	MW31	MW31	MW31
DATE	9/16/2009	9/16/2009	7/7/2011	7/7/2011	9/15/2009	9/15/2009	9/15/2009	9/15/2009	9/15/2009	7/6/2011	7/6/2011	7/6/2011	7/6/2011	7/6/2011
AQUIFER DESIGNATION	LC	LC	LC	LC	UC	MC	LC	LC	LC	UC	MC	LC	LC	LC
METHODOLOGY	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port
Calcium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes are provided on Page 43.

Table 1 (Sheet 41 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE DATE AQUIFER DESIGNATION METHODOLOGY	MW32 9/17/2009 LC Multi-Port	MW32 9/17/2009 Duplicate LC Multi-Port	MW32 9/17/2009 LC Multi-Port	MW32 7/7/2011 LC Multi-Port	MW32 7/7/2011 LC Multi-Port	PETER'S WELL 9/14/2004 UC / MC / LC LF	PETER'S WELL 9/14/2004 Duplicate UC / MC / LC LF	PETER'S WELL 9/14/2004 UC / MC / LC Bailer	PETER'S WELL 12/15/2006 UC / MC / LC LF	35552 ROUTE 3 10/2/2008 NA LF	PZ01 9/13/2004 NA LF	PZ01 12/12/2006 NA LF	PZ02 9/14/2004 NA LF	PZ02 12/12/2006 NA LF
Volatile Organics (ug/L)														
1,1,1-Trichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1,2-Trichloro-1,2,2-trifluoroethane	--	--	--	NA	NA	--	--	--	--	--	--	--	--	--
1,1-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,1-Dichloroethene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
1,2-Dichloroethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Butanone	--	--	--	NA	NA	--	--	--	--	--	--	--	--	--
2-Hexanone	--	--	--	NA	NA	--	--	--	--	--	--	--	--	--
4-Methyl-2-pentanone	--	--	--	NA	NA	--	--	--	--	--	--	--	--	--
Acetone	--	--	--	NA	NA	--	--	--	--	--	5.3	--	3.2 J	--
Benzene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bromoform	--	--	--	R	R	--	--	--	--	--	--	--	--	--
Bromomethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloroform	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chloromethane	--	--	--	--	--	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	0.41 J	0.44 J	0.63	--	--	22	6.2	--	0.18 J
cis-1,3-Dichloropropene	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cyclohexane	--	--	--	NA	NA	--	--	--	--	--	--	--	--	--
Methyl Acetate	--	--	--	NA	NA	--	--	--	--	--	--	--	R	--
Methyl tert-butyl ether	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	380 D	370 D	490 D	47 D	7.6	4.7	10	--	--
Toluene	0.89	0.85	21 L	--	18.6	--	--	--	--	--	--	--	--	--
trans-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--	--	2	0.41 J	0.36 J	--
Trichloroethene	--	--	--	--	--	2	2.1	2.4	1.2	--	3.4	2.6	0.15 J	0.12 J
Vinyl chloride	--	--	--	--	--	--	--	--	--	--	6 J	0.47 J	--	--
Semi-Volatile Organics (ug/L)														
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	--	--	NA	--	NA	4.2 J	--	--	--
Caprolactam	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Isophorone	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Naphthalene	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Phenol	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Pesticides (ug/L)														
alpha-Chlordane	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
beta-BHC	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	R	--
Metals and Cyanide (ug/L)														
Aluminum	NA	NA	NA	NA	NA	--	--	NA	--	NA	420	--	--	--
Antimony	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Arsenic	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Barium	NA	NA	NA	NA	NA	--	--	NA	16.8 J	NA	--	--	--	--
Beryllium	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Cadmium	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--

Table 1 (Sheet 42 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	MW32	MW32	MW32	MW32	MW32	PETER'S WELL	PETER'S WELL	PETER'S WELL	PETER'S WELL	35552 ROUTE 3	PZ01	PZ01	PZ02	PZ02
DATE	9/17/2009	9/17/2009 Duplicate	9/17/2009	7/7/2011	7/7/2011	9/14/2004	9/14/2004 Duplicate	9/14/2004	12/15/2006	10/2/2008	9/13/2004	12/12/2006	9/14/2004	12/12/2006
AQUIFER DESIGNATION	LC	LC	LC	LC	LC	UC / MC / LC	UC / MC / LC	UC / MC / LC	UC / MC / LC	NA	NA	NA	NA	NA
METHODOLOGY	Multi-Port	Multi-Port	Multi-Port	Multi-Port	Multi-Port	LF	LF	Bailer	LF	LF	LF	LF	LF	LF
Calcium	NA	NA	NA	NA	NA	28000	28000	NA	11400	NA	93000	60000	130000	123000
Chromium	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Cobalt	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Copper	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Iron	NA	NA	NA	NA	NA	280	270	NA	31 J	NA	3900	1800	16000	7020
Lead	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	2.9 J	--	--
Magnesium	NA	NA	NA	NA	NA	8400	8300	NA	4660 J	NA	5700	--	8900	8820
Manganese	NA	NA	NA	NA	NA	--	--	NA	8 J	NA	240	47.2	540	507
Mercury	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Nickel	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Potassium	NA	NA	NA	NA	NA	--	--	NA	3020 J	NA	--	1240 J	--	981 J
Selenium	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	6.3 J
Sodium	NA	NA	NA	NA	NA	69000	68000	NA	26500	NA	210000	142000	350000	295000
Vanadium	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--
Zinc	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	16.5 J	--	19.5 J
Cyanide	NA	NA	NA	NA	NA	--	--	NA	--	NA	--	--	--	--

Notes are provided on Page 43.

Table 1 (Sheet 43 of 43)

Summary of Detected Constituents in Groundwater
Crown Cleaners of Watertown Site
Village of Herrings, Jefferson County, New York

NOTES:
"--" indicates not detected.
"NA" indicates not analyzed or not applicable.
"DB" indicates diffusion bag methodology.
"LF" indicates low-flow methodology.
"Multi-Port" indicates FLUTe system multi-port sampler methodology.
"Pump/Bailer" indicates purged using pump, sampled using bailer methodology.
"UC" indicates Upper Carbonate Hydrostratigraphic Unit.
"MC" indicates Middle Carbonate Hydrostratigraphic Unit.
"LC" indicates Lower Carbonate Hydrostratigraphic Unit.
"GN" indicates Granitic Gneiss Hydrostratigraphic Unit.
"B" qualifier (organics) indicates the constituent was also detected in an associated blank sample.
"D" qualifier indicates concentration value from a dilution analysis.
"J" qualifier indicates estimated concentration value.
"K" qualifier indicates concentration value may be biased high.
"L" qualifier indicates concentration value may be biased low.
"N" qualifier indicates presumptive evidence exists for the presence of the compound.
"R" qualifier indicates rejected (unusable) value.

Shaded values exceed comparison criteria for groundwater (see Table 4-4), as indicated:

Exceeds human health-based values.

Exceeds state values.

Exceeds both of the above values.

Table 2A(Sheet 1 of 3)

Summary of Detected Constituents in On-Site Surface Soils
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SB01	SB02	SB03	SB03	SB04	SB05	SB06	SB07	SB08	SB13
DATE	8/19/2004	8/18/2004	8/18/2004	8/18/2004 Duplicate	8/24/2004	8/24/2004	8/25/2004	8/25/2004	8/24/2004	11/8/2006
START DEPTH (feet)	0	0	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Volatile Organics (mg/kg)										
2-Butanone	--	--	0.29 J	--	--	--	--	--	--	--
Isopropylbenzene	--	--	0.073 J	--	--	--	--	--	--	R
m/p-Xylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0024 J
Methylcyclohexane	--	--	--	--	--	--	--	--	--	0.0045 J
Tetrachloroethene	0.007 J	0.03	8.5	0.54	0.013	0.007 J	--	--	--	R
Semi-Volatile Organics (mg/kg)										
2-Methylnaphthalene	--	--	0.083 J	--	0.97 J	--	--	0.18 J	--	0.21 J
4-Methylphenol	--	--	--	--	0.45 J	--	--	--	--	--
Acenaphthene	0.12 J	0.18 J	--	--	2.3	0.13 J	--	0.49	--	--
Acenaphthylene	0.088 J	0.18 J	0.22 J	0.17 J	0.39 J	0.34 J	0.14 J	0.16 J	--	--
Anthracene	0.31 J	0.52 J	0.21 J	0.18 J	4	0.45	0.17 J	1.1	--	--
Benzo(a)anthracene	0.93 J	1.6 J	0.88 J	0.76 J	14 D	1.4	0.72	2.5	0.12 J	1.5
Benzo(a)pyrene	0.88 J	1.5 J	0.95 J	0.80 J	12 D	1.2	0.77	2.3	0.097 J	1.1
Benzo(b)fluoranthene	1 J	2 J	1 J	0.99 J	12 D	1.1	0.84	2.8	0.15 J	2.4
Benzo(g,h,i)perylene	0.38 J	0.86 J	0.36 J	0.43 J	4.6	0.62	0.51	1.2	--	--
Benzo(k)fluoranthene	0.8 J	1.2 J	0.85 J	0.81 J	6.3	1.0	0.72	1.6	0.088 J	1.7
Biphenyl	--	--	--	--	0.34 J	--	--	--	--	--
Bis(2-ethylhexyl)phthalate	--	--	0.082 J	--	--	--	0.12 J	--	--	--
Carbazole	0.19 J	0.29 J	0.082 J	0.086 J	3.8	0.15 J	--	0.66	--	--
Chrysene	1.0 J	1.9 J	1.2 J	0.95 J	15 D	1.5	0.88	2.8	0.19 J	2.0
Dibenz(a,h)anthracene	0.17 J	0.36 J	0.28 J	0.17 J	2.4	0.26 J	0.21 J	0.55	--	0.61 J
Dibenzofuran	0.094 J	0.12 J	--	--	2.1	--	--	0.42 J	--	--
Fluoranthene	1.7 J	3.1 J	1.5 J	1.3 J	33 D	2.2	1.1	5.8 D	0.22 J	2.5
Fluorene	0.14 J	0.19 J	--	--	2.6	0.095 J	--	0.54	--	--
Indeno(1,2,3-cd)pyrene	0.50 J	1.0 J	0.70 J	0.55 J	--	0.73	0.63	1.7	--	1.3
Naphthalene	0.12 J	0.11 J	--	--	3.9	--	--	0.46	--	--
Phenanthrene	1.3 J	2.1 J	0.60 J	0.62 J	29 D	1.3	0.60	5.6 D	0.19 J	0.71 J
Phenol	--	--	--	--	0.35 J	--	--	--	--	--
Pyrene	1.8 J	2.8 J	1.5 J	1.4 J	28 D	2.3	1.2	5.4 D	0.24 J	1.6

Table 2A Sheet 2 of 3)

Summary of Detected Constituents in On-Site Surface Soils
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SB01	SB02	SB03	SB03	SB04	SB05	SB06	SB07	SB08	SB13
DATE	8/19/2004	8/18/2004	8/18/2004	8/18/2004 Duplicate	8/24/2004	8/24/2004	8/25/2004	8/25/2004	8/24/2004	11/8/2006
START DEPTH (feet)	0	0	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Pesticides (mg/kg)										
4,4'-DDD	--	--	--	--	--	--	--	0.014	--	--
4,4'-DDE	--	R	R	0.005 J	R	R	0.007 JN	R	--	--
4,4'-DDT	--	--	0.01 J	--	0.04 J	--	--	0.017 J	--	0.021 JN
alpha-Chlordane	--	--	--	0.0025 J	--	--	--	--	0.0014 J	--
Dieldrin	--	--	--	--	--	--	--	--	0.0049 J	--
Endosulfan I	--	--	--	--	--	--	--	0.0048	--	--
Endosulfan sulfate	--	--	--	--	0.032 JN	--	--	--	--	--
Endrin aldehyde	--	--	--	--	R	--	--	0.025 JN	--	--
Endrin ketone	--	--	--	--	0.12 J	--	--	0.11	--	--
gamma-Chlordane	--	0.011 JN	--	R	--	--	--	0.061 JN	0.0041 J	--
Heptachlor	0.00084 J	--	--	--	--	--	--	--	--	--
Methoxychlor	0.02 J	0.013 J	--	0.011 J	0.12 J	0.024 J	0.014 J	R	0.0087 J	--
Aroclor 1260	--	--	--	--	--	--	--	--	--	0.11 J
Metals and Cyanide (mg/kg)										
Aluminum	2520	3900	2210	3050	7350	6300	3960	3550	3140	1790 J
Antimony	--	1.3 J	--	--	2.2 J	--	1.7 J	3.1 J	--	--
Arsenic	7.9	4	6	7.7	28.6	8.6	14.8	15.7	17.8	24.4 J
Barium	33	77.2	42.4	57.3	472	312	93.6	270	60.8	47.8 J
Beryllium	0.23 J	0.35 J	0.25 J	0.32 J	0.88	0.67	0.49 J	0.47 J	0.49 J	--
Cadmium	0.43 J	0.86	0.71	1.2	3.1	0.79	1	--	0.3 J	0.71
Calcium	49900	37700	92800	68000	21600	19100	15500	6840	40600	63500 J
Chromium	5.1	6.7	5.5	6.5	10.8	7.1	9.8	5.9	4.7	6.3 J
Cobalt	2.5 J	3.5 J	2.8 J	3.6 J	5.8 J	7.9	5.2 J	5 J	2.4 J	4.3 J
Copper	12.1	17.2	29.4	32.7	541	24.9	48.2	56.6	33	58.3 J
Iron	6690	11400	7440	10900	26700	18700	17000	31500	7350	22800 J
Lead	49.4	112	237	260	324	56.6	107	241	28.7	103 J
Magnesium	4710 J	5300 J	7100 J	7270	5340	2270	1630	1140	1160	2660 J
Manganese	314 J	356 J	313 J	298	932	2210	270	309	77.4	232 J
Mercury	0.07 J	0.05 J	0.12	0.04 J	R	R	R	0.21	0.05 J	0.092 J

Table 2A (Sheet 3 of 3)
Summary of Detected Constituents in On-Site Surface Soils
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SB01	SB02	SB03	SB03	SB04	SB05	SB06	SB07	SB08	SB13
DATE	8/19/2004	8/18/2004	8/18/2004	8/18/2004 Duplicate	8/24/2004	8/24/2004	8/25/2004	8/25/2004	8/24/2004	11/8/2006
START DEPTH (feet)	0	0	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Nickel	4.2 J	6.6	5.6	7.7	18.9	16.1	12.3	8.6	5.8	8.7
Potassium	451 J	544 J	477 J	758 J	858 J	944 J	481 J	671 J	311 J	316 J
Selenium	--	--	--	--	0.95 J	--	0.85 J	1.6 J	0.55 J	--
Silver	--	--	--	--	--	--	--	--	--	0.96 J
Sodium	99 J	97.1 J	122 J	167 J	282 J	88.5 J	78.3 J	65 J	152 J	353 J
Thallium	--	--	--	--	--	--	--	0.78 J	--	3.3
Vanadium	6.3	9.9	7.4	10.3 J	13.4 J	15.4 J	14.7 J	16.5	14.1 J	12.2 J
Zinc	63.1	124	83.8	98.2	276	63.1	89.8	132	33.2	68.6
Cyanide	--	--	0.51 J	0.27 J	0.21 J	--	0.29 J	0.33 J	--	--

NOTES:
"--" indicates not detected.
"J" qualifier indicates estimated concentration value.
"D" qualifier indicates concentration value from a dilution analysis.
"R" qualifier indicates rejected (unusable) value.
"N" qualifier indicates presumptive evidence exists for the presence of the compound.
Shaded values exceed comparison criteria for surface soil (see Table 4-1), as indicated:

Exceeds human health-based values.

Exceeds ecological-based values.

Exceeds state values.

Exceeds background values.

Exceeds two or more of the above values.

Table 2B (Sheet 1 of 7)

Summary of Detected Constituents in On-Site Subsurface Soils
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SB01	SB01	SB02	SB02	SB03	SB03	SB04	SB04	SB05	SB05
DATE	8/19/2004	8/19/2004	8/18/2004	8/18/2004	8/18/2004	8/18/2004	8/25/2004	8/25/2004	8/24/2004	8/24/2004
START DEPTH (feet)	0.5	2	0.5	2	0.5	2	0.5	3	1	2
END DEPTH (feet)	2	2.6	2	3.6	2	3	1.8	3.8	2	3
Volatile Organics (mg/kg)										
2-Hexanone	--	--	--	--	--	--	--	--	--	--
Acetone	--	--	--	--	--	0.027	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--	--	0.021	--	--
Ethylbenzene	--	--	--	--	--	--	--	--	--	--
m/p-Xylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	0.024	0.042	0.051	0.15	59	55 D	0.015	0.029	0.006 J	0.005 J
Trichloroethene	--	--	--	--	--	--	--	0.009 J	--	--
Semi-Volatile Organics (mg/kg)										
2-Methylnaphthalene	0.12 J	--	0.098 J	--	--	--	--	--	--	--
Acenaphthene	0.21 J	--	0.34 J	0.15 J	--	--	0.08 J	--	--	--
Acenaphthylene	0.46 J	--	--	--	--	--	--	--	0.088 J	--
Anthracene	0.87 J	--	0.76 J	0.25 J	--	--	0.17 J	--	0.14 J	--
Benzaldehyde	--	--	--	--	--	--	--	--	--	--
Benzo(a)anthracene	2.7 J	0.098 J	1.6 J	0.63 J	0.11 J	--	0.49	--	0.50	0.22 J
Benzo(a)pyrene	3.1 J	--	1.2 J	0.49 J	0.1 J	--	0.42	--	0.41 J	0.19 J
Benzo(b)fluoranthene	3.7 JD	--	1.3 J	0.55 J	0.11 J	--	0.40	--	0.45	0.17 J
Benzo(g,h,i)perylene	1.3 J	--	0.7 J	0.3 J	--	--	0.26 J	--	0.26 J	0.12 J
Benzo(k)fluoranthene	2.1 J	--	1.2 J	0.48 J	0.1 J	--	0.42	--	0.36 J	0.19 J
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--	--	--	--
Carbazole	0.53 J	--	0.51 J	0.2 J	--	--	0.11 J	--	--	--
Chrysene	3.0 JD	0.11 J	1.7 J	0.67 J	0.17 J	--	0.55	--	0.55	0.24 J
Dibenz(a,h)anthracene	0.66 J	--	0.26 J	0.12 J	--	--	0.12 J	--	0.10 J	--
Dibenzofuran	0.18 J	--	0.29 J	0.11 J	--	--	--	--	--	--
Di-n-octylphthalate	--	--	--	--	0.11 J	--	--	--	--	--

Table 2B (Sheet 2 of 7)
Summary of Detected Constituents in On-Site Subsurface Soils
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SB01	SB01	SB02	SB02	SB03	SB03	SB04	SB04	SB05	SB05
DATE	8/19/2004	8/19/2004	8/18/2004	8/18/2004	8/18/2004	8/18/2004	8/25/2004	8/25/2004	8/24/2004	8/24/2004
START DEPTH (feet)	0.5	2	0.5	2	0.5	2	0.5	3	1	2
END DEPTH (feet)	2	2.6	2	3.6	2	3	1.8	3.8	2	3
Fluoranthene	4.2 JD	0.18 J	4.1 JD	1.5 J	0.16 J	--	0.99	--	0.83	0.39 J
Fluorene	0.26 J	--	0.36 J	0.16 J	--	--	0.09 J	--	--	--
Indeno(1,2,3-cd)pyrene	1.8 J	--	0.81 J	0.35 J	0.094 J	--	0.33 J	--	0.28 J	--
Naphthalene	0.18 J	--	0.27 J	--	--	--	0.08 J	--	--	--
Phenanthrene	2.8 J	0.28 J	4.1 JD	1.4 J	0.15 J	--	0.88	--	0.51	0.27 J
Phenol	--	--	--	--	--	--	--	--	--	--
Pyrene	4.0 JD	0.27 J	3.5 JD	1.3 J	0.2 J	--	0.89	--	0.86	0.38 J
Pesticides (mg/kg)										
4,4'-DDE	R	--	--	0.00068 J	--	--	--	--	0.0045	--
4,4'-DDT	--	--	--	--	--	--	--	--	0.0057	0.0066
Endosulfan II	--	--	--	--	--	--	--	--	--	0.0045 J
Endrin	R	--	0.0054 J	0.0014 J	0.002 J	--	--	--	--	--
Endrin aldehyde	0.01 JN	--	--	--	--	--	--	--	--	--
Methoxychlor	0.04 JN	--	--	--	--	--	0.0091 J	--	--	--
Metals and Cyanide (mg/kg)										
Aluminum	5440	9100	8530	11500	3500	11100	2890	16700	2970	3630
Antimony	--	--	--	--	1.6 J	--	2.5 J	--	--	0.77 J
Arsenic	28.8	4	5.1	3	13.6	2.3	9.3	2.3	6.6	5.9
Barium	39.3	108	148	149	133	102	122	158	56.5	60.3
Beryllium	0.43 J	0.75	0.82	0.79	0.65	0.84	0.55 J	1.4	0.49 J	0.64
Cadmium	0.32 J	0.61 J	0.75	0.57 J	0.52 J	0.55 J	0.5 J	0.68	0.32 J	0.36 J
Calcium	10900	30700	10800	8660	13700	5420	3390	3490	3900	3990
Chromium	4	7.6	7.7	8.9	5.1	10.5	4.8	12.8	5.4	4.4
Cobalt	3.6 J	6.3	9.2	8.8	4.7 J	8.5	5.5 J	11.4	4.4 J	5.2 J
Copper	22.3	8	19.1	9.8	55	8.5	35	14.1	20	21.7

Table 2B (Sheet 3 of 7)

Summary of Detected Constituents in On-Site Subsurface Soils
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SB01	SB01	SB02	SB02	SB03	SB03	SB04	SB04	SB05	SB05
DATE	8/19/2004	8/19/2004	8/18/2004	8/18/2004	8/18/2004	8/18/2004	8/25/2004	8/25/2004	8/24/2004	8/24/2004
START DEPTH (feet)	0.5	2	0.5	2	0.5	2	0.5	3	1	2
END DEPTH (feet)	2	2.6	2	3.6	2	3	1.8	3.8	2	3
Iron	11800	20100	21600	22300	15100	21100	27600	30000	17400	19400
Lead	44.7	9.7	49.2	12.4	123	11.6	57.4	5.6	30.5	29
Magnesium	1530 J	2380 J	2350 J	2390 J	1020 J	2500 J	482 J	4010	652	560 J
Manganese	221 J	1320 J	1530 J	899 J	285 J	704 J	124	1040	180	230
Mercury	0.06 J	0.06 J	--	--	0.1 J	0.09 J	0.07 J	0.04 J	0.08 J	0.06 J
Nickel	4.2 J	7.8	9.6	10.5	9	10.5	9.4	13.7	8.1	10.6
Potassium	339 J	640 J	608 J	520 J	368 J	574 J	436 J	1550 J	463 J	428 J
Selenium	--	--	--	--	--	--	1.2 J	--	1.2 J	0.88 J
Silver	--	--	--	--	--	--	--	--	--	--
Sodium	84.7 J	93.8 J	72.6 J	120 J	114 J	178 J	102 J	197 J	74.7 J	82.5 J
Thallium	--	--	--	--	--	--	--	--	--	--
Vanadium	9.1	17	17.9	20.2	11.6	18.6	15.9 J	26.3 J	14 J	13.1 J
Zinc	30.6	34.8	71.8	50.3	53	50.4	R	83.2	44.7	36.7
Cyanide	--	--	--	--	0.78 J	--	0.35 J	--	--	--

Notes are provided on Page 7.

Table 2B (Sheet 4 of 7)

Summary of Detected Constituents in On-Site Subsurface Soils
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SB06	SB06	SB07	SB07	SB07	SB08	SB08	SB13	SB13
DATE	8/25/2004	8/25/2004	8/25/2004	8/25/2004 Duplicate	8/25/2004	8/24/2004	8/24/2004	11/9/2006	11/9/2006 Duplicate
START DEPTH (feet)	1.5	2	1	1	2	1	4	0.5	0.5
END DEPTH (feet)	2	2.9	2	2	2.5	2	5	2	2
Volatile Organics (mg/kg)									
2-Hexanone	--	--	--	--	--	--	--	--	0.0071 J
Acetone	--	--	--	--	--	--	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--	--	--	--
Ethylbenzene	--	--	--	--	--	--	--	--	0.0023 J
m/p-Xylene	NA	NA	NA	NA	NA	NA	NA	--	0.005 J
Tetrachloroethene	--	0.003 J	--	0.003 J	0.006 J	--	--	0.0068	0.0056
Trichloroethene	--	--	--	--	--	--	--	--	--
Semi-Volatile Organics (mg/kg)									
2-Methylnaphthalene	--	--	0.095 J	--	--	--	--	0.23	0.27
Acenaphthene	--	--	0.31 J	0.18 J	0.12 J	--	--	--	0.063 J
Acenaphthylene	--	--	0.28 J	--	0.095 J	--	0.13 J	0.046 J	0.053 J
Anthracene	--	--	0.44	0.32 J	--	--	0.22 J	0.12 J	0.26
Benzaldehyde	--	--	--	--	--	--	--	0.051 J	0.059 J
Benzo(a)anthracene	--	--	1.8	0.8	0.3 J	--	0.69	0.97	1.6
Benzo(a)pyrene	--	--	2.1	0.75	0.39 J	--	0.37 J	1.1	1.6
Benzo(b)fluoranthene	--	--	2.6	0.79	0.47	--	0.51	1.2	1.7
Benzo(g,h,i)perylene	--	--	1.2	0.43	0.29 J	--	0.22 J	0.39	0.45
Benzo(k)fluoranthene	--	--	1.5	0.64	0.36 J	--	0.49	1.0	1.4
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	--	0.16 J	0.13 J
Carbazole	--	--	0.72	0.26 J	0.2 J	--	0.21 J	0.072 J	0.11 J
Chrysene	--	--	2.8	0.98	0.55	--	0.68	1.2	1.8
Dibenz(a,h)anthracene	--	--	0.52	0.18 J	--	--	0.11 J	0.25	0.40
Dibenzofuran	--	--	0.39	0.18 J	0.19 J	--	--	0.088 J	0.11 J
Di-n-octylphthalate	--	--	--	--	--	--	--	--	--

Table 2B (Sheet 5 of 7)
Summary of Detected Constituents in On-Site Subsurface Soils
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SB06	SB06	SB07	SB07	SB07	SB08	SB08	SB13	SB13
DATE	8/25/2004	8/25/2004	8/25/2004	8/25/2004 Duplicate	8/25/2004	8/24/2004	8/24/2004	11/9/2006	11/9/2006 Duplicate
START DEPTH (feet)	1.5	2	1	1	2	1	4	0.5	0.5
END DEPTH (feet)	2	2.9	2	2	2.5	2	5	2	2
Fluoranthene	--	--	7.1 D	2.2	1.8	--	1.5	1.7	2.6
Fluorene	--	--	0.45	0.23 J	0.14 J	--	0.15 J	--	0.075 J
Indeno(1,2,3-cd)pyrene	--	--	1.7	0.58	0.32 J	--	0.3 J	0.84	1.2
Naphthalene	--	--	0.30 J	0.22 J	0.16 J	--	--	0.15 J	0.17 J
Phenanthrene	--	--	7.2 D	2.3	2.3	--	1.3	0.64	1.1
Phenol	--	--	--	--	--	--	--	--	0.042 J
Pyrene	--	--	6.2	2.0	1.7	--	1.2	1.4	2.3
Pesticides (mg/kg)									
4,4'-DDE	--	--	--	--	--	--	--	--	--
4,4'-DDT	--	--	0.00091 J	--	--	--	--	0.011 J	0.011 J
Endosulfan II	--	--	--	--	--	--	--	--	--
Endrin	--	--	--	--	--	--	--	--	--
Endrin aldehyde	--	--	--	0.0028 J	--	--	--	--	--
Methoxychlor	--	--	0.014 J	--	--	--	--	--	--
Metals and Cyanide (mg/kg)									
Aluminum	13900	17200	10900	10100	13400	10800	5880	5250 J	4040 J
Antimony	--	--	--	1.6 J	--	--	--	--	--
Arsenic	2.8	5.4	4.1	4.6	3.7	12.6	3.1	12.1 J	15 J
Barium	88.6	102	265	312	185	157	64.3	90.6 J	91.5 J
Beryllium	0.93	1.4	0.9	0.81	1	1.1	0.58	--	--
Cadmium	0.67	--	0.13 J	0.19 J	--	0.66	0.29 J	0.61	0.41 J
Calcium	3200	3700	4780	4470	4420	4020	1750	26500 J	30300 J
Chromium	12.3	16.2	9.9	9.4	12.1	11.5	4.8	7.3 J	5.5 J
Cobalt	9.7	12.7	8.6	8.3	10.1	8.8	5.1 J	6.6	4.9 J
Copper	11.6	20	25.7	29	11.2	16.8	9	54.1 J	52 J

Table 2B (Sheet 6 of 7)

Summary of Detected Constituents in On-Site Subsurface Soils
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SB06	SB06	SB07	SB07	SB07	SB08	SB08	SB13	SB13
DATE	8/25/2004	8/25/2004	8/25/2004	8/25/2004	8/25/2004	8/24/2004	8/24/2004	11/9/2006	11/9/2006
				Duplicate					Duplicate
START DEPTH (feet)	1.5	2	1	1	2	1	4	0.5	0.5
END DEPTH (feet)	2	2.9	2	2	2.5	2	5	2	2
Iron	25500	37700	24200	23900	28800	29000	18900	23800 J	17500 J
Lead	8.6	9	54	73.3	12	38.8	8.7	128 J	91.3 J
Magnesium	3060	3770	2400	2030	2570	2340	1310	2150 J	1650 J
Manganese	1220	2670	1300	1290	2310	1280	602	358 J	339 J
Mercury	0.07 J	0.06 J	0.04 J	--	--	--	0.04 J	0.12	0.12
Nickel	14.8	21.3	13.1	13.3	13.5	12.1	6.5	11.8	8.4
Potassium	740 J	1340 J	818 J	784 J	849 J	883 J	425 J	597	535 J
Selenium	--	--	0.63 J	--	--	0.89 J	--	--	--
Silver	--	--	--	--	--	--	--	1.2	0.79 J
Sodium	81.8 J	--	88 J	82.4 J	65.8 J	61.5 J	53.6 J	356 J	341 J
Thallium	--	--	--	--	--	--	--	3.6	--
Vanadium	21.6 J	29.1	19.3	18.6	22.9	24.7 J	13.6 J	13 J	10.2 J
Zinc	72.9	94.7	106	129	61.3	62.1	37.1	61.2	40.9
Cyanide	--	--	--	--	--	--	--	R	R

Notes are provided on Page 7.

Table 2B (Sheet 7 of 7)
Summary of Detected Constituents in On-Site Subsurface Soils
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

NOTES:

"--" indicates not detected.

"J" qualifier indicates estimated concentration value.

"D" qualifier indicates concentration value from a dilution analysis.

"R" qualifier indicates rejected (unusable) value.

"N" qualifier indicates presumptive evidence exists for the presence of the compound.

Shaded values exceed comparison criteria for surface soil (see Table 4-2), as indicated:

Exceeds human health-based values.

Exceeds state values.

Exceeds background values.

Exceeds two or more of the above values.

Table 2C (Sheet 1 of 10)

Summary of Detected Constituents in Off-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-B-01	ERT-B-02	ERT-B-03	ERT-B-04	ERT-B-05	ERT-B-06	ERT-B-07
DATE	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011
START DEPTH (feet)	0	0	0	0	0	0	0
END DEPTH (feet)	0.167	0.167	0.167	0.167	0.167	0.167	0.25
Volatile Organics (mg/kg)							
1,2,3-Trichlorobenzene	--	--	--	--	--	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--	--	--
2-Butanone	0.0707	0.115	0.177	0.133	0.0795	0.137	0.137
2-Hexanone	--	--	--	--	--	--	--
Acetone	0.665	0.805	1.8 J	1.07	0.979	1.52 J	1.03
Benzene	--	--	--	--	--	--	--
Carbon Disulfide	0.0491	0.049 J	0.00913 J	--	--	--	--
cis-1,2-Dichloroethene	0.0133 J	--	--	--	--	--	--
p-Isopropyltoluene	--	0.0155 J	0.213	--	--	--	--
Tetrachloroethene	0.0389 J	0.037 J	0.0393	0.0215 J	0.0692	0.00778 J	--
Toluene	0.0115 J	0.0172 J	0.011 J	0.0339 J	--	0.0117 J	0.0158 J
trans-1,2-Dichloroethene	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--
Vinyl Chloride	--	--	--	--	--	--	--
Semi-Volatile Organics (mg/kg)							
2-Methylnaphthalene	--	--	--	--	--	--	--
4-Methylphenol	0.82 J	--	--	--	--	--	--
4-Nitroaniline	--	--	--	--	--	--	--
Acenaphthene	--	--	--	--	--	--	--
Acenaphthylene	--	--	--	--	--	--	--
Anthracene	0.996	1.54	--	--	--	--	--
Benzo(a)anthracene	7.48	12.9	--	--	--	--	--
Benzo(a)pyrene	6.48	10.2	0.324 J	--	--	--	--
Benzo(b)fluoranthene	6.36	10.2	0.365 J	--	--	--	--
Benzo(g,h,i)perylene	3.42	5.06	--	--	--	--	--

Table 2C (Sheet 2 of 10)

Summary of Detected Constituents in Off-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-B-01	ERT-B-02	ERT-B-03	ERT-B-04	ERT-B-05	ERT-B-06	ERT-B-07
DATE	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011
START DEPTH (feet)	0	0	0	0	0	0	0
END DEPTH (feet)	0.167	0.167	0.167	0.167	0.167	0.167	0.25
Benzo(k)fluoranthene	5.86	9.18	0.312 J	--	--	--	--
Bis-(2-ethylhexyl) phthalate	--	--	--	--	--	--	--
Butylbenzylphthalate	--	--	--	--	--	--	--
Carbazole	--	--	--	--	--	--	--
Chrysene	7.76	12.6	0.408 J	--	--	--	--
Dibenzo(a,h)anthracene	1.27	1.99	--	--	--	--	--
Dibenzofuran	--	--	--	--	--	--	--
Di-n-butylphthalate	--	--	--	--	--	0.463 J	--
Di-n-octylphthalate	--	--	--	--	--	--	--
Fluoranthene	10.4	17.5	0.512 J	--	0.708 J	--	--
Fluorene	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	3.22	4.99	--	--	--	--	--
Naphthalene	--	--	--	--	--	--	--
Phenanthrene	3.52	3.78	--	--	--	--	--
Phenol	--	--	--	--	--	--	--
Pyrene	9.92	16.6	0.472 J	--	--	--	--
Pesticides and PCBs (mg/kg)							
4,4'-DDD	0.0149 J	--	--	--	--	--	--
4,4'-DDE	0.0119 J	0.00691 J	--	--	--	0.00381 J	--
4,4'-DDT	--	--	0.00825 J	--	--	0.0102 J	0.0117
delta-BHC	--	--	0.00436 J	--	--	--	--
Dieldrin	--	--	--	--	--	--	--
gamma-BHC	--	--	--	--	--	--	--
Heptachlor epoxide	--	--	--	--	--	--	--
Methoxychlor	--	--	--	--	--	--	--
Aroclor-1016	--	--	0.197	--	--	--	--
Aroclor-1254	0.26	0.271 J	0.261	--	--	--	--

Table 2C (Sheet 3 of 10)

Summary of Detected Constituents in Off-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-B-01	ERT-B-02	ERT-B-03	ERT-B-04	ERT-B-05	ERT-B-06	ERT-B-07
DATE	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011
START DEPTH (feet)	0	0	0	0	0	0	0
END DEPTH (feet)	0.167	0.167	0.167	0.167	0.167	0.167	0.25
Metals (mg/kg)							
Aluminum	6320	4640	3170	6540	3120	5240	913
Antimony	--	--	--	--	--	--	7.73
Arsenic	9.12	--	--	--	--	5.68	67.8
Barium	634	453	210	427	396	1260	446
Beryllium	0.816	--	--	0.684	--	0.407	--
Cadmium	1.66	2.2	1.06	--	--	1.54	8.25
Calcium	24100	81700	30200	32300	32700	32200	14800
Chromium	21.5	21.7	16.7	20.5	9.12	12.9	93.8
Cobalt	8.39	3.78	2.61	2.92	1.5	3.4	18.3
Copper	90.2 J	100 J	30.2 J	37.8 J	277 J	31.7 J	105 J
Iron	34000 J	16400 J	10600 J	11100 J	4760 J	10500 J	241000 J
Lead	90.4 J	144 J	258 J	99 J	49.2 J	146 J	210 J
Magnesium	1550 J	1660 J	2480 J	1420 J	1050 J	1300 J	571 J
Manganese	2130	1030	1050	865	627	3120	1410
Mercury	0.347	0.39	0.228	0.289	--	0.415	0.177
Nickel	26.1 J	26.4 J	6.13 J	13.1 J	7.72 J	10.3 J	78.9 J
Potassium	1560 J	1310 J	957 J	1660 J	947 J	1490 J	284 J
Selenium	6.67	15	--	--	--	--	--
Silver	--	--	--	--	--	--	--
Sodium	1370	2140	--	1260	318	--	--
Vanadium	13.5 J	11 J	8.83 J	12.5 J	5.5 J	10.5 J	3.64 J
Zinc	379 J	437 J	559 J	126 J	85.7 J	499 J	646 J

Notes are provided on Page 10.

Table 2C (Sheet 4 of 10)

Summary of Detected Constituents in Off-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE DATE START DEPTH (feet) END DEPTH (feet)	ERT-B-08 6/23/2011 0 0.167	ERT-B-8 6/23/2011 Duplicate (B-FD) 0 0.167	ERT-B-09 6/23/2011 0 0.167	ERT-B-10 6/23/2011 0 0.25	ERT-B-11 6/23/2011 0 0.167	ERT-B-12 6/23/2011 0 0.25	ERT-B-13 6/23/2011 0 0.5
Volatile Organics (mg/kg)							
1,2,3-Trichlorobenzene	--	--	--	0.00724 J	--	--	--
1,2,4-Trichlorobenzene	--	--	--	0.00713 J	--	--	--
2-Butanone	0.0683	0.132	0.0346	0.0266 J	0.152	0.198	0.0592
2-Hexanone	--	--	--	--	--	--	--
Acetone	0.505 J	1.07 J	0.769 J	1.26 J	1.64 J	2.34 J	0.519
Benzene	--	--	--	--	--	--	--
Carbon Disulfide	--	--	--	--	--	--	0.0293 J
cis-1,2-Dichloroethene	--	--	--	--	--	--	0.0223 J
p-Isopropyltoluene	--	--	--	--	0.0127 J	--	--
Tetrachloroethene	--	--	--	--	--	--	0.0253 J
Toluene	--	0.00302 J	0.00539 J	--	0.0108 J	0.124	0.0181 J
trans-1,2-Dichloroethene	--	--	--	--	--	--	0.0126 J
Trichloroethene	--	--	--	--	--	--	0.0086 J
Vinyl Chloride	--	--	--	--	--	--	0.0319
Semi-Volatile Organics (mg/kg)							
2-Methylnaphthalene	--	--	--	--	--	--	0.689 J
4-Methylphenol	--	--	--	--	--	--	4.56
4-Nitroaniline	--	--	--	--	--	--	0.528 J
Acenaphthene	--	--	--	--	0.411 J	--	13.9
Acenaphthylene	--	--	--	--	--	--	--
Anthracene	--	--	--	R	1.05	--	78.2
Benzo(a)anthracene	--	--	--	--	3.75	0.814	532
Benzo(a)pyrene	--	--	--	--	3.84	1.42	387
Benzo(b)fluoranthene	--	--	--	--	3.95	1.1	408
Benzo(g,h,i)perylene	--	--	--	--	2.45	1.38	143

Table 2C (Sheet 5 of 10)

Summary of Detected Constituents in Off-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-B-08	ERT-B-8	ERT-B-09	ERT-B-10	ERT-B-11	ERT-B-12	ERT-B-13
DATE	6/23/2011	6/23/2011 Duplicate (B-FD)	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011
START DEPTH (feet)	0	0	0	0	0	0	0
END DEPTH (feet)	0.167	0.167	0.167	0.25	0.167	0.25	0.5
Benzo(k)fluoranthene	--	--	--	--	3.31	0.919	245
Bis-(2-ethylhexyl) phthalate	--	--	--	--	0.926	--	3.63 J
Butylbenzylphthalate	--	--	--	--	--	--	--
Carbazole	--	--	--	R	0.726	--	36.7
Chrysene	--	--	--	--	3.85	0.908	504
Dibenzo(a,h)anthracene	--	--	--	--	0.858	--	66.3
Dibenzofuran	--	--	--	--	--	--	4.72
Di-n-butylphthalate	--	--	--	R	--	--	--
Di-n-octylphthalate	--	--	--	--	--	--	--
Fluoranthene	0.194 J	0.215 J	0.244 J	R	7.47	1.45	837
Fluorene	--	--	--	--	0.515 J	--	13.5
Indeno(1,2,3-cd)pyrene	--	--	--	--	2.3	1.16	147
Naphthalene	--	--	--	0.013 J	--	--	0.576 J
Phenanthrene	--	--	--	R	4.82	0.949	216
Phenol	--	--	--	--	--	--	0.48 J
Pyrene	--	0.181 J	0.204 J	R	5.89	1.23	736
Pesticides and PCBs (mg/kg)							
4,4'-DDD	--	--	--	--	--	--	--
4,4'-DDE	--	--	--	--	0.0137 J	--	--
4,4'-DDT	0.00291 J	--	--	--	0.0318 J	--	--
delta-BHC	--	--	--	--	--	--	--
Dieldrin	--	--	--	--	--	--	--
gamma-BHC	--	--	--	--	--	--	0.0106 J
Heptachlor epoxide	--	--	--	--	0.0195 J	--	--
Methoxychlor	--	--	--	--	--	--	0.1146 J
Aroclor-1016	--	--	--	--	--	--	--
Aroclor-1254	--	--	--	0.75	0.761	1.86	--

Table 2C (Sheet 6 of 10)

Summary of Detected Constituents in Off-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-B-08	ERT-B-8	ERT-B-09	ERT-B-10	ERT-B-11	ERT-B-12	ERT-B-13
DATE	6/23/2011	6/23/2011 Duplicate (B-FD)	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011
START DEPTH (feet)	0	0	0	0	0	0	0
END DEPTH (feet)	0.167	0.167	0.167	0.25	0.167	0.25	0.5
Metals (mg/kg)							
Aluminum	11700	12000	12700	6890	8010	3520	3780
Antimony	--	--	--	--	--	--	4.48
Arsenic	10.7	11.6	14.2	--	7.08	--	83.3
Barium	748	738	1170	97.1	151	227	449
Beryllium	0.995	1.01	1.31	--	--	--	0.47
Cadmium	11.7	12.7	2.48	--	0.857	1.16	1.75
Calcium	33300	30900	24300	8960	23000	33500	39600
Chromium	19	20.9	25.3	18.2	34.7	15.9	37.3
Cobalt	8.44	8.85	9.63	11.5	2.53	2.96	12.1
Copper	38.6 J	49 J	50.6 J	101 J	113 J	172 J	171 J
Iron	31200 J	37100 J	49800 J	123000 J	19000 J	26300 J	103000 J
Lead	90.4 J	97.7 J	81.2 J	35.9 J	333 J	270 J	88 J
Magnesium	2330 J	2230 J	2550 J	702 J	1490 J	1310 J	1420 J
Manganese	3780	3910	6100	372	429	1380	994
Mercury	0.28	0.277	0.334	--	0.554	0.304	0.282
Nickel	23.1 J	25.9 J	33.2 J	13.2 J	15.9 J	11.3 J	32 J
Potassium	3050 J	2870 J	3530 J	751 J	705 J	1050 J	802 J
Selenium	--	--	--	--	--	--	10.7
Silver	--	--	1.22	--	--	--	--
Sodium	--	--	--	--	--	--	1550
Vanadium	20.8 J	20.8 J	19.2 J	10.8 J	12.1 J	7.21 J	11.8 J
Zinc	156 J	161 J	341 J	77.8 J	307 J	561 J	500 J

Notes are provided on Page 10.

Table 2C (Sheet 7 of 10)

Summary of Detected Constituents in Off-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-B-14	ERT-B-15	ERT-B-16	ERT-B-17	ERT-B-18	ERT-B-19
DATE	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011
START DEPTH (feet)	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5
Volatile Organics (mg/kg)						
1,2,3-Trichlorobenzene	--	--	--	R	--	--
1,2,4-Trichlorobenzene	--	--	--	--	--	--
2-Butanone	0.0357	0.0381	0.0641	0.131	0.0894	0.0393
2-Hexanone	--	--	--	0.0144 J	--	--
Acetone	0.399	0.329	0.554 J	0.633	0.657 J	0.4 J
Benzene	0.00747 J	--	--	--	--	--
Carbon Disulfide	--	--	0.00211 J	--	--	--
cis-1,2-Dichloroethene	--	--	--	--	--	--
p-Isopropyltoluene	--	0.00233 J	--	R	--	--
Tetrachloroethene	--	--	--	R	--	--
Toluene	0.00847 J	--	--	R	0.00214 J	--
trans-1,2-Dichloroethene	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--
Vinyl Chloride	--	--	--	--	--	--
Semi-Volatile Organics (mg/kg)						
2-Methylnaphthalene	0.889	--	--	--	--	--
4-Methylphenol	0.145 J	--	--	--	--	--
4-Nitroaniline	--	--	--	--	--	--
Acenaphthene	2.62	--	--	--	--	--
Acenaphthylene	0.799	0.382	--	--	--	--
Anthracene	5.56	0.249	--	--	--	--
Benzo(a)anthracene	18.9	1.26	0.128 J	--	0.234 J	--
Benzo(a)pyrene	17	1.56	--	2.55 J	0.231 J	--
Benzo(b)fluoranthene	16.3	1.28	0.133 J	3.2 J	0.259	--
Benzo(g,h,i)perylene	10.3	1.71	--	2.12 J	0.173 J	--

Table 2C (Sheet 8 of 10)

Summary of Detected Constituents in Off-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-B-14	ERT-B-15	ERT-B-16	ERT-B-17	ERT-B-18	ERT-B-19
DATE	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011
START DEPTH (feet)	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5
Benzo(k)fluoranthene	15.3	1.12	--	2.07 J	0.186 J	--
Bis-(2-ethylhexyl) phthalate	--	18.5	--	--	--	--
Butylbenzylphthalate	--	--	--	--	--	0.339
Carbazole	4.64	--	--	--	--	--
Chrysene	19.4	1.29	0.168 J	3.22 J	0.265	--
Dibenzo(a,h)anthracene	3.82	0.366	--	--	--	--
Dibenzofuran	2.14	--	--	--	--	--
Di-n-butylphthalate	--	0.728	0.118 J	--	--	--
Di-n-octylphthalate	--	1.33	--	--	--	--
Fluoranthene	40.1	1.65	0.223 J	5.53	0.51	--
Fluorene	2.98	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	10.3	1.02	--	--	0.15 J	--
Naphthalene	1.91	--	--	--	--	--
Phenanthrene	33.7	0.439	--	4.06	0.3	--
Phenol	--	--	--	--	--	--
Pyrene	32	1.66	0.193 J	4.28	0.428	--
Pesticides and PCBs (mg/kg)						
4,4'-DDD	0.0332 J	--	--	0.0642 J	--	--
4,4'-DDE	--	0.00127 J	--	0.0482 J	--	--
4,4'-DDT	--	0.00588 J	--	0.229 J	--	--
delta-BHC	--	--	--	--	--	--
Dieldrin	0.0228 J	--	--	0.0398 J	--	--
gamma-BHC	--	--	--	--	--	--
Heptachlor epoxide	--	--	--	--	--	--
Methoxychlor	--	--	--	0.0827 J	--	--
Aroclor-1016	--	--	--	--	--	--
Aroclor-1254	1.65 J	--	--	1.84 J	--	--

Table 2C (Sheet 9 of 10)

Summary of Detected Constituents in Off-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-B-14	ERT-B-15	ERT-B-16	ERT-B-17	ERT-B-18	ERT-B-19
DATE	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011	6/23/2011
START DEPTH (feet)	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5
Metals (mg/kg)						
Aluminum	11200	7950	5470	6190	11500	10000
Antimony	2.57	--	2	3.02	--	--
Arsenic	17.8	8.11	37.7	7.68	7.52	24.5
Barium	472	245	288	598	5280	125
Beryllium	0.715	0.406	0.347	--	1.07	0.365
Cadmium	4.85	1.3	3.19	3.53	1.26	0.361
Calcium	36400	5390	7350	17300	9790	5220
Chromium	27.5	16.6	53.1	133	17	12.6
Cobalt	7.91	5.87	12.8	11.4	6.64	5.17
Copper	117 J	64.4 J	80 J	176 J	15.3 J	16.7 J
Iron	40800 J	59000 J	220000 J	34200 J	17200 J	20400 J
Lead	1340 J	153 J	506 J	3190 J	82 J	49.6 J
Magnesium	4360 J	1010 J	3600 J	2080 J	1510 J	1420 J
Manganese	825	1050	1780	494	4390	1130
Mercury	0.712	0.123	0.7	1.09	0.234	0.0979
Nickel	21.4 J	23.8 J	46.8 J	51.1 J	15.1 J	8.45 J
Potassium	1050 J	1320 J	638 J	739 J	2790 J	979 J
Selenium	2.47	--	--	--	--	--
Silver	--	--	0.839	--	--	--
Sodium	352	--	--	422	--	38.4
Vanadium	29.8 J	10.4 J	19.5 J	103 J	17.7 J	17.3 J
Zinc	1170 J	178 J	994 J	8770 J	92.2 J	157 J

Notes are provided on Page 10.

Table 2C Sheet 10 of 10)

Summary of Detected Constituents in Off-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

NOTES:

"--" indicates not detected.

"J" qualifier indicates estimated concentration value.

"R" qualifier indicates rejected (unusable) value.

Shaded values exceed comparison criteria for surface soil (see Table 4-1), as indicated:

Exceeds human health-based values.

Exceeds ecological-based values.

Exceeds state values.

Exceeds background values.

Exceeds two or more of the above values.

Table 2D (Sheet 1 of 4)

Summary of Detected Constituents in On-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-SB-01	ERT-SB-02	ERT-SB-03	ERT-SB-04	ERT-SB-05	ERT-SB-06	ERT-SB-07	ERT-SB-07	ERT-SB-08	ERT-SB-08
DATE	6/22/2011	6/22/2011	6/21/2011	6/21/2011	6/21/2011	6/21/2011	6/22/2011	6/22/2011 Duplicate (FD-03)	6/22/2011	6/22/2011 Duplicate (FD-04)
START DEPTH (feet)	0	0	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
Semi-Volatile Organics (mg/kg)										
2-Methylnaphthalene	--	--	0.166 J	0.351	--	0.336	0.136 J	0.173 J	0.406	0.492
Acenaphthene	--	--	--	--	--	0.114 J	--	0.112 J	0.97 J	1.53
Acenaphthylene	--	--	--	--	--	0.632	0.148 J	0.163 J	0.247	0.298
Anthracene	--	--	0.142 J	--	--	2.41	0.121 J	0.347	2.13	2.97
Benzo(a)anthracene	--	--	0.419	0.273	0.136 J	5.08	--	0.83	5.14	7.08
Benzo(a)pyrene	--	0.217 J	0.379	0.243	0.144 J	4.12	0.334	0.466	4.62	3.88
Benzo(b)fluoranthene	--	0.258 J	0.459	0.28	0.151 J	3.32	0.405	0.468	4.42	5.58
Benzo(g,h,i)perylene	--	0.154 J	0.25	0.157 J	--	1.99	0.242	0.429	3.11	4.04
Benzo(k)fluoranthene	--	0.217 J	0.34	0.19 J	0.138 J	3.61	0.29	0.839	3.39	5.65
Carbazole	--	--	0.113 J	--	--	0.312	--	0.192 J	1.17	1.88
Chrysene	--	0.282	0.543	0.369	0.164 J	4.42	0.431	0.876	5.08	6.97
Dibenzo(a,h)anthracene	--	--	0.104 J	--	--	0.816	0.112 J	0.197 J	--	1.66
Dibenzofuran	--	--	--	--	--	0.257	--	0.141 J	0.676	0.931
Fluoranthene	0.128 J	0.391	0.944	0.471	0.302	10.4	0.683	1.88	10.7	14.9
Fluorene	--	--	--	--	--	0.679	--	0.156 J	0.978	1.35
Indeno(1,2,3-cd)pyrene	--	0.143 J	0.232	0.133 J	--	2.07	0.222	0.431	2.7	4.02
Naphthalene	--	--	0.0944 J	0.242	--	0.286	--	0.13 J	0.805	1.17
Phenanthrene	0.108 J	0.23 J	0.918	0.438	0.191 J	6.02	0.352	1.5	9.21	13
Pyrene	0.104 J	0.356	0.764	0.4	0.25	6.13	0.591	1.52	9.42 J	13
Lead (mg/kg)										
Lead	18.4	91.4	249	121	27.2	323	27.1	27.1	776	144

Notes are provided on Page 4.

Table 2D (Sheet 2 of 4)

Summary of Detected Constituents in On-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-SB-09	ERT-SB-09	ERT-SB-10	ERT-SB-11	ERT-SB-12	ERT-SB-12	ERT-SB-13	ERT-SB-14	ERT-SB-15	ERT-SB-16
DATE	6/22/2011	6/22/2011 Duplicate (FD-05)	6/21/2011	6/21/2011	6/22/2011	6/22/2011 Duplicate (FD-02)	6/22/2011	6/21/2011	6/22/2011	6/21/2011
START DEPTH (feet)	0	0	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
Semi-Volatile Organics (mg/kg)										
2-Methylnaphthalene	1.97	0.483	0.636 J	--	0.525	0.44	0.282	0.281	--	0.718
Acenaphthene	1.91	0.394	--	--	--	--	0.672	--	--	0.215
Acenaphthylene	0.996	0.849	--	--	--	--	0.236	--	--	0.27
Anthracene	4.62	1.54	1.2	--	--	--	1.4	0.156 J	--	0.733
Benzo(a)anthracene	8.57	3.95	2.86	0.645 J	0.295	--	3.62	0.661	--	2.55
Benzo(a)pyrene	3.91	2.95	2.42	0.73 J	0.262	0.258	3.27	0.65	--	2.41
Benzo(b)fluoranthene	5.67	3.57	2.63	0.904 J	0.297	0.283	3.04	0.83	--	2.78
Benzo(g,h,i)perylene	4.86	2.47	1.4	--	0.174 J	0.179 J	1.89	0.419	--	1.52
Benzo(k)fluoranthene	5.55	4.18	2	0.614 J	0.233	0.196 J	2.86	0.56	--	2.43
Carbazole	2.99	0.735	0.634 J	--	--	--	1.03	--	--	0.489
Chrysene	9.08	4.68	3.1	0.976 J	0.413	0.37	3.74	0.953	--	3.51
Dibenzo(a,h)anthracene	--	1.09	--	--	--	--	0.739	0.164 J	--	0.643
Dibenzofuran	2.35	0.362	--	--	0.167 J	0.137 J	0.622	--	--	0.358
Fluoranthene	20.6	8.09	6.08	1.45	0.485	0.454	8.19	1.32	0.309 J	4.55
Fluorene	2.53	0.454	--	--	--	--	0.74	--	--	0.293
Indeno(1,2,3-cd)pyrene	4.37	2.31	1.36	--	0.148 J	0.158 J	1.86	0.414	--	1.51
Naphthalene	4.07	0.443	--	--	0.212 J	0.184 J	0.331	0.158 J	--	0.56
Phenanthrene	22.2	5.4	6.0	0.95 J	0.7	0.5	8.3	1.0	--	3.5
Pyrene	17	7.41	4.89	1.2	0.405	0.408	5.4	1.02	0.27 J	3.68
Lead (mg/kg)										
Lead	622	465	303	110	72.6	84.6	360	114	67.4	121

Notes are provided on Page 4.

Table 2D (Sheet 3 of 4)

Summary of Detected Constituents in On-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-SB-17	ERT-SB-18	ERT-SB-18	ERT-SB-19	ERT-SB-20	ERT-SB-21	ERT-SB-22	ERT-SB-23
DATE	6/21/2011	6/22/2011	6/22/2011 Duplicate (FD-01)	6/21/2011	6/21/2011	6/21/2011	6/21/2011	6/21/2011
START DEPTH (feet)	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167
Semi-Volatile Organics (mg/kg)								
2-Methylnaphthalene	4.73	--	--	0.72 J	0.286	0.531	--	0.116 J
Acenaphthene	--	--	--	2.4	0.222	--	--	--
Acenaphthylene	--	--	--	1.28	0.131 J	--	--	--
Anthracene	--	--	--	6.01	0.62	0.164 J	--	--
Benzo(a)anthracene	0.147 J	0.295	0.275	13.5	2.24	0.546	0.192	0.418
Benzo(a)pyrene	0.128 J	0.299	0.274	12.6	2	0.43	0.191	0.442
Benzo(b)fluoranthene	0.204	0.34	0.318	13	1.99	0.652	0.262	0.528
Benzo(g,h,i)perylene	0.104 J	0.208	0.213	8.87	1.24	0.246	0.136 J	0.294
Benzo(k)fluoranthene	0.109 J	0.276	0.234	9.96	1.55	0.376	0.162 J	0.39
Carbazole	--	--	--	3.77	0.273	0.115 J	--	--
Chrysene	0.36	0.356	0.332	13.8	2.45	1	0.283	0.539
Dibenzo(a,h)anthracene	--	--	--	3.04	0.469	0.106 J	--	--
Dibenzofuran	0.193	--	--	1.87	0.175 J	0.195	--	--
Fluoranthene	0.311	0.492	0.529	34.4	3.75	1.26	0.427	0.875
Fluorene	--	--	--	3.27	0.223	--	--	--
Indeno(1,2,3-cd)pyrene	--	0.196 J	0.191 J	7.47	1.14	0.252	0.125 J	0.287
Naphthalene	1.21	--	--	1.53	0.189 J	0.374	--	--
Phenanthrene	0.6	0.3	0.2	26.2	3.1	1.1	0.3	0.5
Pyrene	0.258	0.428	0.452	26	3.53	0.888	0.321	0.697
Lead (mg/kg)								
Lead	65.3	113	95.6	144	248	22.5	21.2	40.5

Notes are provided on Page 4.

Table 2D (Sheet 4 of 4)

Summary of Detected Constituents in On-Site Surface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

NOTES:

"--" indicates not detected.

"J" qualifier indicates estimated concentration value.

Shaded values exceed comparison criteria for surface soil (see Table 4-1), as indicated:

Exceeds human health-based values.

Exceeds ecological-based values.

Exceeds state values.

Exceeds background values.

Exceeds two or more of the above values.

Table 2E (Sheet 1 of 3)

Summary of Detected Constituents in On-Site Subsurface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	ERT-SB-06	ERT-SB-07	ERT-SB-07	ERT-SB-08	ERT-SB-08	ERT-SB-08	ERT-SB-09	ERT-SB-09	ERT-SB-10
DATE	6/21/2011	6/22/2011	6/22/2011	6/22/2011	6/22/2011	6/22/2011	6/22/2011	6/22/2011	6/21/2011
START DEPTH (feet)	0.5	0.5	1	0.5	1	1.5	0.5	1	0.5
END DEPTH (feet)	1	1	1.5	1	1.5	2	1	1.5	1
Semi-Volatile Organics (mg/kg)									
2-Methylnaphthalene	--	0.12 J	0.145 J	0.325	0.561	2.6	0.708	1.73	0.113 J
Acenaphthene	--	0.10 J	--	0.359	1.32	4.1	0.752	5.84	--
Acenaphthylene	--	0.259	0.134 J	1.1	1.44	4.27	1.4	0.382	0.168 J
Anthracene	--	0.295	0.15 J	1.42	4.59	16.6	2.94	13.3	0.304
Benzo(a)anthracene	0.108 J	0.93	0.606 J	4.34	10.1 J	30.3 J	7.19	24.4 J	1.06
Benzo(a)pyrene	0.104 J	0.858	0.553	4.21	9.51	27.1	6.48	20.8	1
Benzo(b)fluoranthene	0.104 J	1.01 J	0.553 J	4.02 J	9.55 J	25 J	7.39 J	20.8 J	0.931
Benzo(g,h,i)perylene	--	0.537	0.352	2.59	6.22	16.8	4.46	13.5	0.624
Benzo(k)fluoranthene	--	0.78	0.484	3.85	7.28	21.3	5.42	15.6	0.912
Carbazole	--	0.177 J	--	0.586	2.49 J	7.88 J	1.41	7.39 J	0.137 J
Chrysene	0.122 J	1.12	0.725 J	4.53	10.1 J	27.7 J	7.9	24.3 J	1.12
Dibenzo(a,h)anthracene	--	0.199	0.136 J	0.982	2.36	6.86	1.61	5.62	0.225
Dibenzofuran	--	0.114 J	--	0.298	1.22	5.2	0.7	4.89	--
Fluoranthene	0.219	1.87	1.21	7.76	21.6	72.2	13.7	56.5	2
Fluorene	--	0.0981 J	--	0.451	1.77	9.19	0.914	6.51	--
Indeno(1,2,3-cd)pyrene	--	0.541	0.342	2.53	6	16.6	4.28	12.4	0.589
Naphthalene	--	0.129 J	0.143 J	0.324	1.04	6.57	0.707	3.79	--
Phenanthrene	0.144 J	1.26	0.733	4.22	17.1	56.9	9.7	58.4	1.3
Pyrene	0.182 J	1.52	0.99	5.81	17.2	50	12	46.5	1.72
Lead (mg/kg)									
Lead	NA	NA	NA	107	NA	NA	308	NA	NA

Notes are provided on Page 3.

Table 2E (Sheet 2 of 3)

Summary of Detected Constituents in On-Site Subsurface Soils Sampled by the EPA Environmental Response Team (2011)

Crown Cleaners of Watertown, Inc.

Village of Herrings, Jefferson County, New York

SITE	ERT-SB-10	ERT-SB-11	ERT-SB-13	ERT-SB-13	ERT-SB-16	ERT-SB-19	ERT-SB-19	ERT-SB-19	ERT-SB-20
DATE	6/21/2011	6/21/2011	6/22/2011	6/22/2011	6/21/2011	6/21/2011	6/21/2011	6/21/2011	6/21/2011
START DEPTH (feet)	1	0.5	0.5	1	0.5	0.5	1	1.5	0.5
END DEPTH (feet)	1.5	1	1	1.5	1	1	1.5	2	1
Semi-Volatile Organics (mg/kg)									
2-Methylnaphthalene	--	0.102 J	0.381	1.4	0.264	0.858	0.761	0.267	0.116 J
Acenaphthene	--	--	--	--	--	2.24	0.972	--	--
Acenaphthylene	--	--	0.63	--	--	0.998	0.118 J	--	--
Anthracene	--	--	0.724	--	0.269	5.35	2.18	0.256	0.152 J
Benzo(a)anthracene	--	0.127 J	2.77	0.174 J	0.83	15.2	5.71 J	0.87 J	0.547
Benzo(a)pyrene	--	0.103 J	2.69	0.136 J	0.679	13	4.16	0.777	0.496
Benzo(b)fluoranthene	--	0.186 J	2.41 J	0.128 J	0.94 J	12.2 J	3.22 J	0.682 J	0.477 J
Benzo(g,h,i)perylene	--	--	1.57	--	0.459	7.47	2.63	0.488	0.312
Benzo(k)fluoranthene	--	--	2	--	0.594	9.63	3.05	0.566	0.388
Carbazole	--	--	0.464	--	0.161 J	2.37	0.544 J	--	--
Chrysene	--	0.353	2.73	0.268 J	1.53	15.9	5.27 J	0.969 J	0.628
Dibenzo(a,h)anthracene	--	--	0.538	--	0.191	2.76	0.821	--	0.117 J
Dibenzofuran	--	--	0.205	0.338	0.156 J	1.26	0.446	0.103 J	--
Fluoranthene	0.184 J	0.221	4.03	0.219	1.84	29.2	9.37	1.47	1.02
Fluorene	--	--	0.187 J	--	0.126 J	2.45	0.922	--	--
Indeno(1,2,3-cd)pyrene	--	--	1.52	--	0.423	6.72	2.22	0.419	0.277
Naphthalene	--	--	0.21	0.648	0.218	1.06	0.689	0.141 J	--
Phenanthrene	0.121 J	0.4	2.7	0.8	1.8	28.7	10.5	1.3	0.9
Pyrene	0.156 J	0.183 J	3.54	0.199	1.38	29.5	10.6	1.57	0.978
Lead (mg/kg)									
Lead	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes are provided on Page 3.

Table 2E (Sheet 3 of 3)

Summary of Detected Constituents in On-Site Subsurface Soils Sampled by the EPA Environmental Response Team (2011)
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

NOTES:

"--" indicates not detected.

"J" qualifier indicates estimated concentration value.

Shaded values exceed comparison criteria for surface soil (see Table 4-2), as indicated:

Exceeds human health-based values.

Exceeds state values.

Exceeds background values.

Exceeds two or more of the above values.

Table 3 (Sheet 1 of 7)
Summary of Detected Constituents in Sediments
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SD-SW01	SD-SW02	SD-SW03	SD-SW03	SD-SW04	SD-SW08	SD-SW09	SD-SW10
DATE	8/23/2004	8/23/2004	8/23/2004	8/23/2004 Duplicate	8/23/2004	11/10/2006	11/13/2006	11/13/2006
START DEPTH (feet)	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Volatile Organics (mg/kg)								
2-Butanone	--	--	0.16 J	--	--	R	0.15 J	0.071
2-Hexanone	--	--	--	--	--	0.44 J	0.12 J	--
Acetone	0.51 J	0.51 J	0.41 J	0.40 J	0.26 J	0.15 J	0.21 J	0.21
cis-1,2-Dichloroethylene	--	0.048 J	--	--	--	--	--	--
Tetrachloroethene	--	--	--	--	--	--	0.028 J	--
trans-1,2-Dichloroethene	--	0.039 J	--	--	--	--	--	--
Trichloroethene	--	0.026 J	--	--	--	--	0.037 J	--
Vinyl chloride	--	--	--	--	0.012 J	--	--	--
Semi-Volatile Organics (mg/kg)								
2-Methylnaphthalene	--	--	--	--	--	--	--	--
Acenaphthene	--	--	--	--	--	--	--	--
Acetophenone	--	--	--	--	--	2.8 J	0.83 J	0.58
Anthracene	--	2.6 J	0.54 J	--	--	--	--	--
Benzaldehyde	--	--	--	--	--	0.75 J	0.28 J	0.37 J
Benzo(a)anthracene	--	28 JD	1.8 J	1.2 J	1.3 J	--	--	--
Benzo(a)pyrene	--	21 JD	1.4 J	1.0 J	1.1 J	--	--	0.12 J
Benzo(b)fluoranthene	--	26 JD	1.3 J	0.91 J	1.1 J	--	--	--
Benzo(g,h,i)perylene	--	6.2 J	0.86 J	0.74 J	0.75 J	--	--	--
Benzo(k)fluoranthene	--	13 J	1.1 J	0.85 J	0.91 J	--	--	--
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	0.3 J	--	0.18 J
Carbazole	--	0.87 J	--	--	--	--	--	--
Chrysene	--	28 JD	2.1 J	1.5 J	1.7 J	--	--	--
Dibenz(a,h)anthracene	--	3.5 J	--	--	--	--	--	--
Dibenzofuran	--	--	--	--	--	--	--	--

Table 3 (Sheet 2 of 7)

Summary of Detected Constituents in Sediments
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SD-SW01	SD-SW02	SD-SW03	SD-SW03	SD-SW04	SD-SW08	SD-SW09	SD-SW10
DATE	8/23/2004	8/23/2004	8/23/2004	8/23/2004 Duplicate	8/23/2004	11/10/2006	11/13/2006	11/13/2006
START DEPTH (feet)	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Diethylphthalate	--	--	--	--	--	--	--	0.36 J
Fluoranthene	--	37 JD	3.5 J	2.0 J	2.4 J	--	0.15 J	0.26 J
Fluorene	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	--	9 J	0.82 J	0.63 J	0.68 J	--	--	--
Phenanthrene	--	8.5 J	2.8 J	1.3 J	1.5 J	--	--	--
Phenol	--	--	--	--	--	0.99 J	--	0.23 JB
Pyrene	--	39 JD	5.0 J	3.0 J	3.6 J	--	--	0.2 J
Pesticides/PCBs (mg/kg)								
4,4'-DDD	--	--	--	--	--	--	R	0.0052 J
4,4'-DDE	0.0082 J	--	0.004 J	0.0083 J	0.012 J	--	R	0.0082 J
4,4'-DDT	--	--	--	0.0095 J	--	--	R	--
alpha-Chlordane	--	--	--	--	--	--	R	--
Dieldrin	--	--	--	--	--	--	0.0038 J	--
Endrin	--	--	0.0048 J	--	--	--	R	--
gamma-Chlordane	--	--	--	--	--	--	0.0058 J	0.0024 J
Aroclor-1254	--	--	--	--	0.27 J	--	--	--
Aroclor-1260	--	--	--	--	--	--	--	0.054 J
Metals and Cyanide (mg/kg)								
Aluminum	11100 J	3190 J	11300 J	8810 J	R	3030 J	6840 J	6410 J
Antimony	--	3.7 J	6.1 J	--	R	--	--	3.8 J
Arsenic	--	2 J	7 J	5.4 J	R	18.1 J	18.3 J	15.6 J
Barium	473 J	440 J	214 J	178 J	R	805 J	560 J	504 J
Beryllium	0.98 J	0.51 J	0.89 J	0.74 J	R	--	--	--
Cadmium	1.9 J	2.6 J	2.6 J	1.9 J	R	1.6 J	0.99 J	2.2 J
Calcium	28500 J	49300 J	22600 J	19100 J	R	102000 J	36800 J	18200 J

Table 3 (Sheet 3 of 7)

Summary of Detected Constituents in Sediments
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SD-SW01	SD-SW02	SD-SW03	SD-SW03	SD-SW04	SD-SW08	SD-SW09	SD-SW10
DATE	8/23/2004	8/23/2004	8/23/2004	8/23/2004	8/23/2004	11/10/2006	11/13/2006	11/13/2006
				Duplicate				
START DEPTH (feet)	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Chromium	16.2 J	14.5 J	20.3 J	14.8 J	R	8.2 J	15.2 J	19.8 J
Cobalt	5.2 J	6.8 J	8.5 J	7.1 J	R	2.8 J	4.5 J	7.6 J
Copper	**61.9 J**	**133 J**	**155 J**	**125 J**	R	**76.3 J**	**55.5 J**	**148 J**
Iron	12400 J	19900 J	**24300 J**	**21000 J**	R	9970 J	11400 J	14400 J
Lead	**128 J**	**84.4 J**	**171 J**	**124 J**	R	**59.6 J**	**57.8 J**	**108 J**
Magnesium	3170 J	1600 J	3250 J	2660 J	R	1100 J	1660 J	1480 J
Manganese	**812 J**	**2390 J**	161 J	132 J	R	**1510 J**	**1930 J**	**550 J**
Mercury	**0.35 J**	**0.4 J**	**0.38 J**	--	R	--	--	**0.5 J**
Nickel	**15 J**	**27.9 J**	**20.9 J**	**17.7 J**	R	12.9 J	14.3 J	**22.1 J**
Potassium	933 J	578 J	1020 J	737 J	R	622 J	1080 J	866 J
Selenium	3.9 J	7.2 J	9 J	7.6 J	R	11.1 J	4.1 J	5.3 J
Silver	--	--	--	--	R	--	--	**1.2 J**
Sodium	1670 J	2200 J	2740 J	2300 J	R	4120 J	2440 J	2140 J
Vanadium	24.3 J	9.3 J	24.2 J	19.3 J	R	11.3 J	12.6 J	12 J
Zinc	**326 J**	**531 J**	**511 J**	**469 J**	R	**396 J**	**180 J**	**360 J**
Cyanide	--	--	--	--	R	--	--	--

Notes provided on Page 7.

Table 3 (Sheet 4 of 7)

Summary of Detected Constituents in Sediments
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SD-SW11	SD-SW11	SD-SW12	SD-SW13	SD-SW14	SD-SW15	SD-SW16	SD-SW17	SD-SW18
DATE	11/13/2006	11/13/2006 Duplicate	11/14/2006	11/14/2006	11/14/2006	11/14/2006	11/15/2006	11/15/2006	11/15/2006
START DEPTH (feet)	0	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Volatile Organics (mg/kg)									
2-Butanone	0.070 J	0.023 J	0.019	0.10 J	0.45 J	0.12 J	0.39 J	--	0.22 J
2-Hexanone	0.075 J	0.020 J	0.016	0.11 J	0.37 J	0.14 J	0.21 J	0.022 J	0.081 J
Acetone	0.16 J	0.053	--	0.056 J	0.40 J	0.11 J	1.0 J	0.026	0.43 J
cis-1,2-Dichloroethylene	0.012 J	0.0064 J	--	--	--	--	R	--	--
Tetrachloroethene	0.057 J	--	0.017	0.013 J	0.10 J	--	0.039 J	--	--
trans-1,2-Dichloroethene	--	--	--	--	--	--	R	--	--
Trichloroethene	0.017 J	--	--	0.027	0.066 J	0.024 J	0.040 J	--	--
Vinyl chloride	--	--	--	--	--	--	R	--	--
Semi-Volatile Organics (mg/kg)									
2-Methylnaphthalene	--	--	--	--	--	--	R	--	0.17 J
Acenaphthene	0.96 J	0.96 J	--	--	--	--	R	--	0.37 J
Acetophenone	--	--	0.14 JB	--	--	--	R	--	--
Anthracene	4.9 J	4.6	--	--	0.79 J	--	R	--	0.95 J
Benzaldehyde	--	--	--	1.4	2.2 J	2 J	R	--	1.1 J
Benzo(a)anthracene	31 J	24 D	--	0.20 J	2.7 J	--	R	--	3.6 J
Benzo(a)pyrene	25 J	19	--	0.24 J	2.6 J	--	R	--	3.8 J
Benzo(b)fluoranthene	24 J	19	--	0.36 J	2.5 J	--	R	--	3.5 J
Benzo(g,h,i)perylene	13 J	8.4	--	--	1.3 J	--	R	--	2.0 J
Benzo(k)fluoranthene	21 J	16	--	--	2.0 J	--	R	--	3.3 J
Bis(2-ethylhexyl)phthalate	--	--	--	--	--	--	R	--	0.22 J
Carbazole	2.6 J	3.0	--	--	0.41 J	--	R	--	0.43 J
Chrysene	33 J	25 D	--	0.42 J	2.8 J	--	R	--	3.8 J
Dibenz(a,h)anthracene	7.2 J	4.6	--	--	0.77 J	--	R	--	1.0 J
Dibenzofuran	--	0.41 J	--	--	--	--	R	--	0.18 J

Table 3 (Sheet 5 of 7)

Summary of Detected Constituents in Sediments
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SD-SW11	SD-SW11	SD-SW12	SD-SW13	SD-SW14	SD-SW15	SD-SW16	SD-SW17	SD-SW18
DATE	11/13/2006	11/13/2006 Duplicate	11/14/2006	11/14/2006	11/14/2006	11/14/2006	11/15/2006	11/15/2006	11/15/2006
START DEPTH (feet)	0	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Diethylphthalate	--	--	--	--	--	--	1.5 J	--	--
Fluoranthene	43 J	42 JD	--	0.24 J	5.8 J	0.58 J	R	0.14 J	7.1 J
Fluorene	0.85 J	0.95 J	--	--	--	--	R	--	0.35 J
Indeno(1,2,3-cd)pyrene	17 J	9.6	--	--	1.6 J	--	R	--	2.6 J
Phenanthrene	16 J	15	--	0.14 J	3.3 J	0.30 J	R	--	3.5 J
Phenol	--	2.1	1.0	1.5	3.3 J	2.6 J	R	--	6.3 J
Pyrene	42 J	30 JD	--	0.22 J	4.3 J	0.43 J	R	0.11 J	5.9 J
Pesticides/PCBs (mg/kg)									
4,4'-DDD	0.054 J	--	--	--	R	--	R	--	--
4,4'-DDE	0.014 J	--	0.00082 J	--	R	--	R	--	--
4,4'-DDT	0.034 J	--	--	--	R	--	R	--	0.032 J
alpha-Chlordane	0.027 J	--	--	--	R	--	R	--	--
Dieldrin	--	--	--	--	R	--	R	--	--
Endrin	--	--	--	--	R	--	R	--	--
gamma-Chlordane	0.026 J	--	--	--	R	--	R	--	--
Aroclor-1254	--	--	--	--	--	--	R	--	--
Aroclor-1260	0.16 J	0.034 J	--	--	--	--	R	--	--
Metals and Cyanide (mg/kg)									
Aluminum	5640 J	4710 J	2320 J	6530 J	2090 J	7340 J	1770 J	3970 J	12400 J
Antimony	2.5 J	4.9 J	--	--	--	--	11.2 J	--	5.9 J
Arsenic	20.9 J	17.4 J	7.3	7.3 J	14 J	31 J	31.4 J	8.1 J	22 J
Barium	1040 J	1030 J	R	R	--	--	--	--	R
Beryllium	--	--	--	--	--	--	--	--	--
Cadmium	2.3 J	3.3 J	--	--	--	--	--	--	--
Calcium	26700 J	26500 J	62600 J	7440 J	17800 J	49300 J	22700 J	4860 J	11100 J

Table 3 (Sheet 6 of 7)

Summary of Detected Constituents in Sediments
Crown Cleaners of Watertown, Inc.
Village of Herrings, Jefferson County, New York

SITE	SD-SW11	SD-SW11	SD-SW12	SD-SW13	SD-SW14	SD-SW15	SD-SW16	SD-SW17	SD-SW18
DATE	11/13/2006	11/13/2006 Duplicate	11/14/2006	11/14/2006	11/14/2006	11/14/2006	11/15/2006	11/15/2006	11/15/2006
START DEPTH (feet)	0	0	0	0	0	0	0	0	0
END DEPTH (feet)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Chromium	22.2 J	18.8 J	4.6	8.7 J	5.9 J	11.7 J	4.6 J	5.7 J	18.9 J
Cobalt	13.5 J	12.9 J	--	--	--	--	--	--	--
Copper	88.9 J	108 J	20.6	40.4 J	72.8 J	101 J	70.8 J	27.7 J	77.9 J
Iron	59500 J	50000 J	12200 J	10600 J	3450 J	18000 J	10000 J	9830 J	44700 J
Lead	76.1 J	82.7 J	17.5 J	1480 J	112 J	195 J	86.9 J	150 J	220 J
Magnesium	1380 J	1270 J	10500 J	--	--	1850 J	578 J	833 J	2660 J
Manganese	6250 J	7150 J	303 J	94.4 J	13.7 J	117 J	86.4 J	120 J	395 J
Mercury	0.3 J	0.2 J	--	0.33 J	--	--	--	0.17 J	--
Nickel	39.6 J	41.4 J	4.9 J	9.3 J	28.3 J	16.5 J	10.5 J	5.8 J	20.6 J
Potassium	882 J	795 J	--	--	--	--	--	--	--
Selenium	2.5 J	4.9 J	--	3.1 J	12.3 J	10.6 J	12.4 J	--	--
Silver	2.8 J	2.5 J	1.3 J	1.4 J	--	4.9 J	--	1.6 J	4.9 J
Sodium	1310 J	1610 J	704 J	2240 J	4440 J	8410 J	5080 J	1680 J	2380 J
Vanadium	14.7 J	15.9 J	R	R	R	R	R	R	R
Zinc	549 J	828 J	81.8	478 J	184 J	1250 J	306 J	256 J	260 J
Cyanide	10.5 J	--	0.29 J	0.38 J	1.3 J	2.4 J	2.3 J	0.31 J	0.86 J

Notes provided on Page 7.

Table 3 (Sheet 7 of 7)
Summary of Detected Constituents in Sediments
Crown Cleaners of Watertown Site
Village of Herrings, Jefferson County, New York

NOTES:

"--" indicates not detected.
"J" qualifier indicates estimated concentration value.
"D" qualifier indicates concentration value from a dilution analysis.
"R" qualifier indicates rejected (unusable) value.
"N" qualifier indicates presumptive evidence exists for the presence of the compound.
Shaded values exceed comparison criteria for sediments (see Tables 4-5A and 4-5B), as indicated:

Exceeds ecological-based values.

Exceeds state values.

Exceeds both of the above values.

TABLE 4A

Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: On-Site Surface Soil

Exposure Point	Chemical of Concern	Concentration Detected		Concentration Units	Frequency of Detection	Exposure Point Concentration (EPC)	EPC Units	Statistical Measure
		Min	Max					
On-Site Surface Soil	Benzo(a)pyrene	0.097	14	mg/kg	16/18	5.0	mg/kg	95% Chebyshev
	Tetrachloroethene	0.006	59	mg/kg	11/17	39	mg/kg	99% Chebyshev
	Vanadium[1]	6.3	25	mg/kg	18/18	16	mg/kg	Student-t

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Point	Chemical of Concern	Concentration Detected		Concentration Units	Frequency of Detection	Exposure Point Concentration (EPC)	EPC Units	Statistical Measure
		Min	Max					
Groundwater	Tetrachloroethene	0.57	6500	ug/L	14/23	3487	ug/L	99% Chebyshev
	Manganese[1]	1.1	666	ug/L	8/15	151	ug/L	95% UCL (BCA)

99% Chebyshev: 95% Upper Confidence Limit for Nonparametric Data; Chebyshev

95% Chebyshev: 95% Upper Confidence Limit for Nonparametric Data; Chebyshev

Student-t: 95% Upper Confidence Limit for Normal Distribution

95% UCL (BCA): 95% Upper Confidence Limit for Gamma Distribution

Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

This table presents the chemicals of concern (COCs) and exposure point concentrations (EPCs) for each of the COCs detected in soil and groundwater (i.e., the concentration that will be used to estimate the exposure and risk from each COC). The table includes the range of concentrations detected for each COC, as well as the frequency of detection (i.e., the number of times the chemical was detected in the samples collected at the site), the EPC, and how it was derived.

[1] While these contaminants contribute to the risk, they are not believed to be site related.

TABLE 4B

Non-Cancer Toxicity Data Summary

Pathway: Oral/Dermal

Chemical of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Absorp. Efficiency (Dermal)	Adjusted RfD (Dermal)	Adj. Dermal RfD Units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD: Target Organ	Dates of RfD:
Benzo(a)pyrene	--	--	--	--	--	--	--	--	IRIS	4/9/2010
Tetrachloroethene	Chronic	1.0E-02	mg/kg-day	100%	1.0E-02	mg/kg-day	Liver	1000	IRIS	4/9/2010
Manganese (Water)	Chronic	2.4E-02	mg/kg-day	4%	9.6E-04	mg/kg-day	CNS	1	IRIS	4/9/2010
Vanadium	Chronic	7.0E-05	mg/kg-day	3%	2.6E-05	mg/kg-day	Kidney	3000	PPRTV	9/30/2009

Pathway: Inhalation

Chemical of Concern	Chronic/ Subchronic	Inhalation RfC	Inhalation RfC Units	Inhalation RfD	Inhalation RfD Units	Primary Target Organ	Combined Uncertainty /Modifying Factors	Sources of RfD: Target Organ	Dates:
Benzo(a)pyrene	Chronic	NA	--	NA	NA	--	--	IRIS	4/9/2010
Tetrachloroethene	Chronic	2.7E-01	mg/m3	NA	NA	Brain	--	ATSDR	9/1/1997
Manganese (Water)	Chronic	5.0E-05	mg/m3	NA	NA	Brain	1000	IRIS	4/9/2010
Vanadium	Chronic	--	--	NA	NA	--	--	IRIS	4/9/2010

Key

NA: No information available; noncarcinogenic toxicity values (RfD and RfC) are not available for benzo(a)pyrene; an RfC is not available for Vanadium.
IRIS: Integrated Risk Information System, U.S. EPA
PPRTV: Provisional Peer Review Toxicity Value Database, U.S. EPA
ATSDR: Agency for Toxic Substances and Disease Registry
CNS: Central Nervous System

Summary of Toxicity Assessment

This table provides non-carcinogenic risk information which is relevant to the contaminants of concern in soil and groundwater.

TABLE 4C

Cancer Toxicity Data Summary

Pathway: Oral/Dermal

Chemical of Concern	Oral Cancer Slope Factor	Units	Adjusted Cancer Slope Factor (for Dermal)	Slope Factor Units	Weight of Evidence/ Cancer Guideline Description	Source	Date
Benzo(a)pyrene	7.3E+00	$(mg/kg/day)^{-1}$	8.2E+00	$(mg/kg/day)^{-1}$	B2	IRIS	4/9/2010
Tetrachloroethene	5.4E-01	$(mg/kg/day)^{-1}$	5.4E-01	$(mg/kg/day)^{-1}$	B2	CalEPA	4/9/2010
Manganese	--	--	--	--	D	IRIS	4/9/2010
Vanadium	--	--	--	--	NA	IRIS	4/9/2010

Pathway: Inhalation

Chemical of Concern	Unit Risk	Units	Inhalation Slope Factor	Slope Factor Units	Weight of Evidence/ Cancer Guideline Description	Source	Date
Benzo(a)pyrene	1.1E+00	$(mg/m^3)^{-1}$	NA	NA	B2	CalEPA	4/9/2010
Tetrachloroethene	5.9E-03	$(mg/m^3)^{-1}$	NA	NA	2A	CalEPA	4/9/2010
Manganese	--	--	--	--	D	IRIS	4/9/2010
Vanadium	--	--	--	--	NA	IRIS	4/9/2010

Key:

IRIS: Integrated Risk Information System. U.S. EPA
NA: No information available
CalEPA: California Environmental Protection Agency

EPA Weight of Evidence:

A - Human carcinogen
B1 - Probable Human Carcinogen-Indicates that limited human data are available
B2 - Probable Human Carcinogen-Indicates sufficient evidence in animals associated with the site and inadequate or no evidence in humans
C - Possible human carcinogen
D - Not classifiable as a human carcinogen
E- Evidence of noncarcinogenicity

2A – CalEPA: Probably Carcinogenic to Humans

Summary of Toxicity Assessment

This table provides carcinogenic risk information which is relevant to the contaminants of concern in soil and groundwater. Toxicity data are provided for both the oral and inhalation routes of exposure.

TABLE 4D

Risk Characterization Summary - Noncarcinogens

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil	Benzo(a)pyrene	--	--	--	--	--
			Tetrachloroethene	Liver	5.0E-02	1.7E-01	4.2E-03	2.2E-01
			Vanadium	Kidney	3.0E+00	--	2.2E-01	3.2E+00
							Soil Hazard Index Total =	3.4E+00

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Ground-water	Ground-Water	Ground-Water	Tetrachloroethene	Liver	6.5E-02	2.3E-02	2.5E-02	1.1E-01
			Manganese	CNS	5.8E-01	--	3.3E-02	6.1E-01
							Hazard Index Total =	7.2E-02

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ				
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Ground-water	Ground-Water	Ground-Water	Tetrachloroethene	Liver	1.5E-01	8.4E-02	6.6E-02	3.0E-01
			Manganese	CNS	1.4E+00	--	1.3E-01	1.5E+00
							Hazard Index Total =	1.8E+00

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Risk			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Ground-water	Ground-Water	Ground-Water	Tetrachloroethene	Liver	9.6E+00	3.4E+00	3.7E+00	1.7E+01
			Manganese	CNS	1.7E-01	--	9.7E-03	1.8E-01
							Hazard Index Total =	1.9E+01

Scenario Timeframe:	Future							
Receptor Population:	On-Site Resident							
Receptor Age:	Child							
Medium	**Exposure Medium**	**Exposure Point**	**Chemical of Concern**	**Primary Target Organ**	**Non-Carcinogenic Risk**			
					Ingestion	**Inhalation**	**Dermal**	**Exposure Routes Total**
Ground-water	Ground-Water	Ground-Water	Tetrachloroethene	Liver	2.2E+01	1.2E+01	1.4E-03	2.8E-01
			Manganese	CNS	4.0E-01	3.8E-02	4.4E-01	8.8E-01
							Hazard Index Total =	1.2E+00

Summary of Risk Characterization - Non-Carcinogens

The table presents hazard quotients (HQs) for each route of exposure and the hazard index (sum of hazard quotients) for all routes of exposure. The Risk Assessment Guidance for Superfund states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse non-cancer effects.

TABLE 4E
Risk Characterization Summary - Carcinogens

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soil	Surface Soil	Benzo(a)pyrene	1.9E-04	1.6E-09	7.7E-05	2.7E-04
			Tetrachloroethene	2.3E-05	2.3E-05	1.9E-06	4.8E-05
			Vanadium	--	--	--	--
						Total Risk =	3.2E-04

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Groundwater	Tetrachloroethene	1.2E-04	1.3E-05	4.7E-05	1.8E-04
			Manganese	--	--	--	--
						Total Risk =	1.8E-04

Scenario Timeframe: Current/Future
Receptor Population: Off-Site Resident
Receptor Age: Child

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Groundwater	Tetrachloroethene	7.0E-05	1.1E-03	3.1E-05	1.1E-04
			Manganese	--	--	--	--
						Total Risk =	1.1E-04

Scenario Timeframe: Future
Receptor Population: On-Site Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater	Groundwater	Tetrachloroethene	1.8E-02	1.9E-03	6.9E-03	2.6E-02
			Manganese	--	--	--	--
						Total Risk =	2.6E-02

Scenario Timeframe:		Future					
Receptor Population:		On-Site Resident					
Receptor Age:		Child					
Medium	**Exposure Medium**	**Exposure Point**	**Chemical of Concern**	**Carcinogenic Risk**			
				Ingestion	**Inhalation**	**Dermal**	**Exposure Routes Total**
Groundwater	Groundwater	Groundwater	Tetrachloroethene	1.0E-02	1.7E-03	4.5E-03	1.7E-02
			Manganese	--	--	--	--
						Total Risk =	1.7E-02

Summary of Risk Characterization - Carcinogens

The table presents cancer risks for each route of exposure and for all routes of exposure combined. As stated in the National Contingency Plan, the acceptable risk range for site-related exposure is 10^{-6} to 10^{-4}, with 10^{-6} as the point of departure.

Table 5 – Cleanup Levels for Chemicals of Concern

Media: Surface and Subsurface Soils
Site Area: On-Site
Available Use: Commercial/Industrial
Controls to Ensure Restricted Use: Yes

Chemical of Concern	Cleanup Level	Basis for Cleanup Level	Risk at Cleanup Level
Benzo(a)pyrene	1.0 mg/kg	NYSDEC Commercial Soil Clean-up Objectives	Cancer risk = 1×10^{-6}
Tetrachloroethene	1.3 mg/kg	NYSDEC Protection of GW Soil Cleanup Objectives	Cancer risk = 1×10^{-6}

Media: Groundwater
Site Area:
Available Use:
Controls to Ensure Restricted Use: Yes

Chemical of Concern	Cleanup Level	Basis for Cleanup Level	Risk at Cleanup Level
Tetrachloroethene	5 µg/l	EPA Drinking Water Regulations	Cancer risk = 1×10^{-6}

Media: Sediment
Site Area: Western Wetlands
Available Use: Commercial
Controls to Ensure Restricted Use: NA

Chemicals of Concern	Cleanup Level	Basis for Cleanup Level	Risk at Cleanup Level
Tetrachloroethene	0.008 mg/kg	NYSDEC Sediment Criteria	

The purpose of this response is to control risks posed by direct contact with soil and groundwater and to minimize the migration of contaminants to groundwater. The results of the baseline risk assessment indicate that existing conditions at the site pose an excess lifetime cancer risk of 3.2×10^{-4} from direct contact with contaminated soils and 1.7×10^{-2} from ingestion of contaminated groundwater. This risk relates to the benzo(a)pyrene and Tetrachloroethene concentrations in soil and groundwater. This remedy shall address all soils contaminated with benzo(a)pyrene in excess of 1.0 mg/kg and Tetrachloroethene in excess of 1.3 mg/kg. The action levels were determined through New York State ARARs. Treatment shall be monitored to ensure that cleanup levels are achieved. The site is expected to be available for commercial land use as a result of the remedy.

Table 6 - Cost Estimate Summary for the Selected Remedy

Description	Quantity	Unit	Unit Cost ($)	Cost ($)
Capital Costs for Remedy Component – Soil				
PLANS/REPORTS				
Project Plans/Reports	1	:LS	100,000	100,000
MOBILIZATION/DEMOBILIZATION				
Mobilization	1	LS	50,000	50,000
SITE PREPARATION				
Clearing and grubbing	15,344	SY	2.0	30,688
Building Demolition	1	LS	500,000	500,000
SUPPORT FACILITIES				
Office Trailers	12	MO	2,000	24,000
EROSION & SEDIMENT CONTROL				
Silt Fence & Installation	4,513	LF	10	45,130
EXCAVATION				
Soil Excavation (above water table)	10,512	CY	20	210,235
Material Handling	10,512	CY	4	42,047
OFF-SITE TREATMENT & DISPOSAL				
Non-hazardous soil	12,570	Ton	100	1,256,950
SITE RESTORATION				
Reusable soil	2,132	CY	10	21,321
Clean Fill	6,726	CY	25	168,158
Top Soil	3,461	CY	40	138,456
Seeding	3.6	Acres	2,000	7,115
Wetland Restoration	0.7	Acres	5,000	3,668
MISCELLANEOUS				
Pre-Design Investigation	1	LS	75,000	75,000
Wetland Identification/Delineation	1	LS	10,000	10,000
Misc. Disposal	1	LS	10,000	10,000
Health and Safety Oversight	12	MO	20,000	240,000
			Subtotal	**2,932,769***
			Contingency (20%)	586,554
			Engineering (10%)	293,277
			Legal & Administrative (5%)	146,638
			Total	**3,959,238***
Capital Costs for Remedy Component -- Groundwater				
PLANS/REPORTS				
Project Plans/Reports	1	LS	100,000	100,000
ADMINISTRATIVE ACTIONS				
Institutional Controls	2	LS	10,000	20,000
MOBILIZATION/DEMOBILIZATION				
Mobilization/Demobilization	1	LS	20,000	20,000
SUPPORT FACILITIES				
Office Trailers	1	LS	10,000	10,000
IN SITU TREATMENT				
Injection well	132	EA	7,500	990,000

*If the land use for the property is changed from commercial to recreational, then restricted residential Soil Cleanup Objectives would be utilized, which would allow for recreational use of the property. Accordingly, the PAH-contaminated soils would be excavated to a depth of two feet and backfilled with clean soil. This change would result in the excavation of an additional 1,650 cubic yards of PAH-contaminated soils and would cost an additional $12,543.

Pre-Design Investigation	1	LS	200,000	200,000
			Subtotal	**1,340,000**
			Contingency (20%)	268,000
			Engineering (10%)	134,000
Description	**Quantity**	**Unit**	**Unit Cost ($)**	**Cost ($)**
			Legal & Administrative (5%)	67,000
			Total	**1,809,000**
			GRAND TOTAL	**5,768,238***

Description	Quantity	Unit	Unit Cost	Cost
1. Plans/Reports				
2. Mobilization/Demobilization		LS		$11,925
3. Site Preparation				
Perform Site Survey	3	Day	$910.00	$2,730
Install Temporary Construction Fencing	3,000	LF	$5.65	$16,950
Remove & Replace Existing Monitoring Wells	11	Well	$3,500.00	$38,500
4. Structural Demolition and Disposal				
Building Demolition		LS		$195,314
Dispose of Drums w/Contaminated Materials	374	Drum	$136.00	$50,864
Recycle misc. Items (tires, auto tanks, pipes, etc.)	25	Ton	$75.00	$1,875
5. Storage Tank Removal & Reclamation	8	Tank	$6,750.00	$54,000
6. Water Control Construct Dewatering Pad	2,500	SY	$45.17	$112,925
Install Diversion Ditches and Berms	1,650	LF	$3.64	$6,006

Institutional Controls implemented for Site only	
Total excavation area (sf) based on Figure 4-2	138,098
Total excavation perimeter (ft) based on Figure 4-2	4,513
Total excavation volume (cy)	10,512
Area (sf) of soil for restoration	106,139
Area (sf) of wetlands for restoration	31,959
Area (sf) of building footprint	48,818
Volume (cy) of excavation for reuse	2,132
On-site excavation volume	9,442
Off-site excavation volume	1,070
Volume (cy) for off-site disposal	8,380

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*If the land use for the property is changed from commercial to recreational, then restricted residential Soil Cleanup Objectives would be utilized, which would allow for recreational use of the property. Accordingly, the PAH-contaminated soils would be excavated to a depth of two feet and backfilled with clean soil. This change would result in the excavation of an additional 1,650 cubic yards of PAH-contaminated soils and would cost an additional $12,543.

Table 7 – Cost Estimate Summary for the Selected Remedy

Operation and Maintenance Costs for Alternative GW-3 (Year 1)

Description	Quantity	Unit of measure	Unit Cost (material/labor) ($)	Annual Cost ($)
Groundwater Treatment				
In-Situ Oxidation Materials	26,400	LB	5	132,000
In-Situ Oxidation Labor/Equipment	2	EA	100,000	200,000
Subtotal				332,000
Contingency (20%)				66,400
Engineering (10%)				33,200
Legal & Administrative (5%)				16,600
Groundwater Monitoring			(See Below)	56,800
			Grand Total (First Year)	**505,000**

Annual Operation and Maintenance Costs for Remedy Alternative GW-3 (Years 2-30)

Description	Quantity	Unit of measure	Unit Cost (material/labor) ($)	Annual Cost ($)
Groundwater Monitoring				
Groundwater sampling (labor)	120	Hr/yr	100	12,000
Laboratory analysis	24	/yr	500	12,000
Data Analysis/Reporting	1	/yr	25,000	25,000
Sampling supplies/Equipment	2	event	1,000	2,000
Misc. Disposal Costs	2	Drum	300	600
Subtotal				51,600
Contingency Allowances (10%)				5,200
Total Annual O&M Cost				**56,800**

Summary of Present-Worth Analysis

Year	Capital Cost	Annual O&M cost	Total Cost	Discount Factor (7%)	Present Worth
0	$1,800,000		$1,800,000	1.000	$1,800,000
1		$505,000	$505,000	0.935	$472,175
2		$56,800	$56,800	0.873	$49,586
3		$56,800	$56,800	0.816	$46,349
4		$56,800	$56,800	0.763	$43,338
5		$56,800	$56,800	0.713	$40,498

Year	Capital Cost	Annual O&M cost	Total Cost	Discount Factor (7%)	Present Worth
6		$56,800	$56,800	0.666	$37,829
7		$56,800	$56,800	0.623	$35,386
8		$56,800	$56,800	0.582	$33,058
9		$56,800	$56,800	0.544	$30,899
10		$56,800	$56,800	0.508	$28,854
11		$56,800	$56,800	0.475	$26,980
12		$56,800	$56,800	0.444	$25,219
13		$56,800	$56,800	0.415	$23,572
14		$56,800	$56,800	0.388	$22,038
15		$56,800	$56,800	0.362	$20,562
16		$56,800	$56,800	0.339	$19,255
17		$56,800	$56,800	0.317	$18,006
18		$56,800	$56,800	0.296	$16,813
19		$56,800	$56,800	0.277	$15,734
20		$56,800	$56,800	0.258	$14,654
21		$56,800	$56,800	0.242	$13,746
22		$56,800	$56,800	0.226	$12,837
23		$56,800	$56,800	0.211	$11,985
24		$56,800	$56,800	0.197	$11,190
25		$56,800	$56,800	0.184	$10,451
26		$56,800	$56,800	0.172	$9,770
27		$56,800	$56,800	0.161	$9,145
28		$56,800	$56,800	0.150	$8,520
29		$56,800	$56,800	0.141	$8,009
30		$56,800	$56,800	0.131	$7,441
Totals		**$1,704,000**	**$3,504,000**		**$2,923,899**

Total Groundwater Present-Worth Cost **$2,924,000**

Total Soil and Groundwater Remedy Present-Worth Cost **$6,924,000**

CROWN CLEANERS OF WATERTOWN, INC. SUPERFUND SITE
RECORD OF DECISION

APPENDIX III

ADMINISTRATIVE RECORD INDEX

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

DRAFT

03/29/2012 **Region Id: 02**

Site Name: CROWN CLEANERS OF WATERTOWN INC.
CERCLIS: NYD986965333
OUID: 01
SSID: 02QF
Action:

Region Id: 02
Docid: 112846
Bates: **To:**
Date: 03/29/2012
Pages: 4
Title: ADMINISTRATIVE RECORD INDEX FOR OU1 FOR THE CROWN CLEANERS OF WATERTOWN, INC. SITE
Doc Type: INDEX

	Name	Organization
Author:	,	US ENVIRONMENTAL PROTECTION AGENCY

Region Id: 02
Docid: 115779
Bates: R2-0000001 **To:** R2-0000001
Date: 01/15/2004
Pages: 1
Title: TRANSMITTAL OF THE DRAFT REMEDIAL INVESTIGATION / FEASIBILITY STUDY WORK PLAN FOR THE CROWN CLEANERS OF WATERTOWN INCORPORATED SITE
Doc Type: PLAN

	Name	Organization
Author:	COLVIN, WILLIAM R	TETRA TECH, INC.

	Name	Organization
Addressee:	BACHMANN JR., JOHN	EPA, REGION 2

Region Id: 02
Docid: 115782
Bates: R2-0000002 **To:** R2-0000037
Date: 01/15/2004
Pages: 36
Title: DRAFT REMEDIAL INVESTIGATION / FEASIBILITY STUDY WORK PLAN FOR THE CROWN CLEANERS OF WATERTOWN INCORPORATED SITE
Doc Type: MAP
PLAN
FIGURE

	Name	Organization
Author:	VOZZA, SCOTT	TETRA TECH FW, INC.

	Name	Organization
Addressee:	TAMES, PAMELA	EPA

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

DRAFT

03/29/2012 **Region Id: 02**

Site Name: CROWN CLEANERS OF WATERTOWN INC.
CERCLIS: NYD986965333
OUID: 01
SSID: 02QF
Action:

Region Id: 02
Docid: 115783
Bates: R2-0000038 **To:** R2-0000401
Date: 06/07/2004
Pages: 364
Title: APPENDICES A AND B TO THE WORK PLAN FOR THE REMEDIAL INVESTIGATION / FEASIBILITY STUDY FOR THE CROWN CLEANERS OF WATERTOWN INCORPORATED SITE
Doc Type: PLAN

	Name	Organization
Author:	,	TETRA TECH FW, INC.
	,	US ENVIRONMENTAL PROTECTION AGENCY

Region Id: 02
Docid: 115784
Bates: R2-0000402 **To:** R2-0000402
Date: 06/07/2004
Pages: 1
Title: TRANSMITTAL OF APPENDICES A AND B TO THE WORK PLAN FOR THE REMEDIAL INVESTIGATION / FEASIBILITY STUDY FOR THE CROWN CLEANERS OF WATERTOWN INCORPORATED SITE
Doc Type: LETTER

	Name	Organization
Author:	VOZZA, SCOTT	TETRA TECH FW, INC.

	Name	Organization
Addressee:	TAMES, PAMELA	EPA

Region Id: 02
Docid: 115781
Bates: R2-0000403 **To:** R2-0000570
Date: 08/04/2004
Pages: 168
Title: FINAL QUALITY ASSURANCE PROJECT PLAN FOR THE REMEDIAL INVESTIGATION / FEASIBILITY STUDY FOR THE CROWN CLEANERS OF WATERTOWN INCORPORATED SITE
Doc Type: PLAN

	Name	Organization
Author:	COLVIN, WILLIAM R	TETRA TECH, INC.
	TAMES, PAMELA	EPA
	SIELSKI, MARK	TETRA TECH FW, INC.

Site Name: CROWN CLEANERS OF WATERTOWN INC.
CERCLIS: NYD986965333
OUID: 01
SSID: 02QF
Action:

	Name	Organization
Author:	GABRY, JON	TETRA TECH FW, INC.
	VOZZA, SCOTT	TETRA TECH FW, INC.
	ARABIA, LYNN	TETRA TECH FW, INC.

Region Id: 02
Docid: 115785
Bates: R2-0000571 **To:** R2-0000571
Date: 08/04/2004
Pages: 1
Title: TRANSMITTAL OF THE FINAL QUALITY ASSURANCE PROJECT PLAN FOR THE CROWN CLEANERS OF WATERTOWN INCORPORATED SITE
Doc Type: LETTER

	Name	Organization
Author:	VOZZA, SCOTT	TETRA TECH FW, INC.

	Name	Organization
Addressee:	TAMES, PAMELA	EPA

Region Id: 02
Docid: 112845
Bates: R2-0000572 **To:** R2-0002369
Date: 12/02/2011
Pages: 1798
Title: FINAL REMEDIAL INVESTIGATION REPORT FOR THE CROWN CLEANERS OF WATERTOWN, INC. SITE
Doc Type: CHART / TABLE
REPORT
FORM
FIGURE

	Name	Organization
Author:	,	TETRA TECH, INC.

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

DRAFT

03/29/2012 **Region Id: 02**

Site Name: CROWN CLEANERS OF WATERTOWN INC.
CERCLIS: NYD986965333
OUID: 01
SSID: 02QF
Action:

Region Id: 02
Docid: 112843
Bates: R2-0002370 **To:** R2-0002478
Date: 12/02/2011
Pages: 109
Title: FINAL FEASIBILITY STUDY REPORT FOR THE CROWN CLEANERS OF WATERTOWN, INC. SITE
Doc Type: CHART / TABLE
REPORT
FIGURE

	Name	Organization
Author:	,	TETRA TECH, INC

Region Id: 02
Docid: 112844
Bates: R2-0002479 **To:** R2-0002498
Date: 12/12/2011
Pages: 20
Title: SUPERFUND PROPOSED PLAN FOR THE CROWN CLEANERS OF WATERTOWN, INC. SITE
Doc Type: PLAN
FIGURE

	Name	Organization
Author:	,	US ENVIRONMENTAL PROTECTION AGENCY

CROWN CLEANERS OF WATERTOWN, INC. SUPERFUND SITE
RECORD OF DECISION

APPENDIX IV

STATE LETTER OF CONCURRENCE

New York State Department of Environmental Conservation
Division of Environmental Remediation
Office of the Director, 12th Floor
625 Broadway, Albany, New York 12233-7011
Phone: (518) 402-9706 • **Fax:** (518) 402-9020
Website: www.dec.ny.gov

Joe Martens
Commissioner

Sent Via Email Only

March 27, 2012

Mr. Walter Mugdan, Director (mugdan.walter@epa.gov)
Emergency and Remedial Response Division
U.S. Environmental Protection Agency, Region 2
290 Broadway
New York, NY 10007-1866

RE: Record of Decision
Crown Cleaners of Watertown, Inc.
NYSDEC Site No. 623010 / USEPA Site No. NYD986965333
Village of Herrings, Jefferson County

Dear Mr. Mugdan:

The New York State Department of Environmental Conservation (Department) and the New York State Department of Health (NYSDOH) have reviewed the March 2012 Record of Decision for the Crown Cleaners of Watertown, Inc. Site, prepared by the United States Environmental Protection Agency (USEPA). The site is located in the Village of Herrings, Jefferson County.

USEPA's Selected Remedy is Alternative S-3 for soils and sediments (building demolition, limited excavation of sediments, excavation of soil, and off-site disposal), and Alternative GW-3 for groundwater (source-area in-situ chemical oxidation and downgradient monitored natural attenuation).

The soil component for the Selected Remedy will include the excavation of PAH-contaminated soil to a depth of one foot (two feet if the land use for the property is changed from commercial to recreational use as a municipal public park before the design is finalized), and the excavation of PCE-contaminated soils to a depth of four feet. The excavated PAH-contaminated soils would also be utilized as backfill to a depth of not less than one foot (two feet in the case of a land use change to recreational, which would be restricted residential in 6NYCCR Part 375) below the ground surface in the areas where PCE-contaminated soil would be excavated. Before backfilling with clean soil those areas where residual PAH-contaminated soil would remain, a readily-visible and permeable subsurface demarcation delineating the interface between the residually-contaminated native soils and the clean backfill would be installed. PCE-contaminated sediment and soil from the adjacent wetlands will also be excavated to meet the protection of groundwater soil cleanup objectives (SCO), to be backfilled with clean soil. Implementation of the soil component of the Selected Remedy will require decontamination and demolition of the main on-site building to access contaminated soils. Following the demolition of the buildings, contaminated soils remaining within the footprint of the buildings will be addressed as described above. Building debris and the PCE-contaminated soils and sediments will be transported for disposal off-site.

Under the groundwater component of the Selected Remedy, an oxidizing agent would be injected into the contaminated groundwater at the source areas, which would chemically transform the VOCs into less toxic compounds or to carbon dioxide, and water. Lower contaminant concentrations in the groundwater outside the source areas would be addressed through monitored natural attenuation.

Because some contaminated soils will remain on-site following implementation of the Selected Remedy, and since the entire groundwater plume will not immediately achieve cleanup levels upon implementation of this alternative, an environmental easement will be filed in the property records of Jefferson County. A Site Management Plan would provide for the proper management of all post-construction remedy activities. The easement will, at a minimum, restrict the use of the site to commercial uses (or recreational use, in the event the Site-use is changed prior to design for future development of a public park), restrict intrusive activities in areas where residual contamination remains unless the activities are in accordance with an EPA-approved Site Management Plan, and prevent use of groundwater as a source of potable or process water unless groundwater quality standards are met.

It is my understanding that the USEPA has agreed to prepare the environmental easement, Site Management Plan (SMP) and Final Engineering Report consistent with Department guidance. Based on this information, the Department concurs with the Selected Remedy and believes it is protective of human health and the environment. If you have any questions, please contact Mr. David Crosby at (518) 402-9662 or Mr. Lincoln Fancher at (315) 785-2513.

Sincerely,

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

ec: D. Garbarini, USEPA (garbarini.doug@epa.gov)
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P. Tames, USEPA (Tames.pam@Epa.gov)
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R. Fedigan, NYSDOH (rjf01@health.state.ny.us)
G. Rys, NYSDOH (gar02@health.state.ny.us)
M. Ryan
D. Crosby
P. Taylor
L. Fancher

CROWN CLEANERS OF WATERTOWN, INC. SUPERFUND SITE
RECORD OF DECISION

APPENDIX V

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY
FOR THE
RECORD OF DECISION
CROWN CLEANERS OF WATERTOWN, INC. SUPERFUND SITE
HERRINGS, JEFFERSON COUNTY, NEW YORK

INTRODUCTION

This Responsiveness Summary provides a summary of citizens' comments and concerns received during the public comment period related to the Crown Cleaners of Watertown, Inc. Superfund site (Site) Proposed Plan and provides the U.S. Environmental Protection Agency's (EPA's) responses to those comments and concerns. All comments summarized in this document have been considered in EPA's final decision in the selection of a remedy to address the contamination at the Site.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

EPA conducted field investigations at the Site from 2004 through 2011, which culminated in the completion of a remedial investigation and feasibility study (RI/FS)[1] report in December 2011. EPA's preferred remedy and the basis for that preference were identified in a Proposed Plan[2]. The RI/FS report and a Proposed Plan were released to the public for comment on December 12, 2011. These documents were made available to the public at information repositories maintained at the Carthage Free Library located at 412 Budd Street, Carthage, New York and the EPA Region II Office in New York City. A notice of availability for the above-referenced documents was published in the *Watertown Daily Times* on December 12, 2011. The public comment period ran from December 12, 2011 to January 17, 2012. On January 3, 2012, EPA conducted a public meeting at the Village of Herrings Town Hall to inform local officials and interested citizens about the Superfund process, to present the Proposed Plan for the Site, including the preferred remedy and to respond to questions and comments from the approximately 20 attendees. Approximately 20 people, including residents, the media, local business people, and local government officials, attended the public meeting. On the basis of comments received during the public comment period, the public generally supports the selected remedy.

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[1] An RI determines the nature and extent of the contamination at a site and evaluates the associated human health and ecological risks and an FS identifies and evaluates remedial alternatives to address the contamination.

[2] A Proposed Plan describes the remedial alternatives considered for a site and identifies the preferred remedy with the rationale for this preference.

SUMMARY OF COMMENTS AND RESPONSES

Comments were received at the public meeting and in writing. Written comments were received from:

- Paul Smith, Supervisor, Town of Wilna, via a January 9, 2012 letter.

- Francis J. Burke via a January 10, 2012 e-mail.

The transcript from the public meeting can be found in Appendix V-d.

The written comments submitted during the public comment period can be found in Appendix V-e.

A summary of the comments provided at the public meeting and in writing, as well as EPA's responses to them, are provided below.

Addressing Contamination in the On-Site Buildings

Comment #1: A commenter asked whether any asbestos was found in the basements of any of the buildings during the investigation of the site.

Response #1: Several New York State investigations were conducted at the site during the 1990s that resulted in the site being referred to EPA for further evaluation in 2000. As part of this effort, EPA removed friable asbestos-containing materials from the main building. While it is believed that asbestos may also be present in the basement of the building, because of concerns about the building's structural integrity, workers could not safely enter the basement. The selected remedy includes the decontamination and demolition of the building.

During the design, the building located in the rear of the property will be assessed to determine whether it contains any hazardous substances such as asbestos. If hazardous substances are present and the building can be safely accessed, then the building will be decontaminated. If the building cannot be safely accessed, then it will be demolished and the debris will be decontaminated, if necessary, and disposed of off-site.

Comment #2: A commenter asked how the asbestos would be removed if it is present.

Response #2: The procedures related to the decontamination and demolition of the building will be determined during the design of the selected remedy.

Comment #3: Several commenters expressed concern about the structural integrity and the potential that asbestos is present in the building located in the rear of the property.

Response #3: Because of the dilapidated condition of the building, it could not be safely assessed by EPA during its investigation of the site. During the design, the building will be assessed to determine whether it contains any hazardous substances. If hazardous substances are present and the building can be safely accessed, then the building will be decontaminated. If the building cannot be safely accessed, then it will be demolished and the debris will be decontaminated, if necessary, and disposed of off-site.

Addressing Contaminants Attributable to Other Sources

Comment #4: A commenter noted that after the St. Regis Paper Company left the property, the facility was used to manufacture textiles. While the tetrachloroethylene (PCE) at the site is attributable to the disposal practices of the Crown Cleaners dry-cleaning facility, the commenter asked if contamination associated with the textile manufacturing process contributed any contamination to the site.

Response #4: During the investigation of the site, the soil and groundwater was thoroughly sampled for numerous contaminants. PCE and polycyclicaromatic hydrocarbons (PAHs) were determined to be the primary contaminants of concern. While the dry cleaning facility is the likely source of the PCE, it is not likely that it is the source of the PAHs. It is possible that the St. Regis Paper Company and/or the textile manufacturing facility are the source of the PAHs. Nevertheless, both PCE and PAHs will be addressed as part of the remedy for the site.

Changing the Land Use to Recreational

Comment #5: A commenter remarked that the Village of Herrings and the Town of Wilna are presently pursuing several options to acquire the property and change its use to recreational. If such a change is made, another commenter wanted to know how changing the land use would affect the cost of the remedy.

Response #5: If the land use for the property is changed from commercial to recreational before the design of the remedy is approved, then EPA will use soil cleanup objectives that will allow for recreational use of the property. Accordingly, the PAH-contaminated soils would be excavated to a depth of two feet and backfilled with clean soil. This change would result in the excavation of an additional 1,650 cubic yards of PAH-contaminated soils and would cost an additional $12,543.

Leaving Contamination Behind

Comment #6: A commenter noted that a request has been made to the New York State Department of Transportation to straighten out the curve in the road located adjacent to the site to prevent traffic accidents. Since the construction of the road would likely require an excavation deeper than the 1 foot of PAH-contaminated soil that would need to be removed as called for in the remedy, the commenter inquired to whether or not contaminated soils would be encountered.

Response #6: The PAH-contaminated soil along the road is not deeper than one foot. Therefore, all of the PAH-contaminated soil will be removed at this location.

Comment #7: If the land use is changed to recreational, several commenters inquired as to whether the backfilling of PAH-contaminated soils in the areas where PCE-contaminated soil will be excavated and in the footprint of the building preclude intrusive activities on the site under a recreational use scenario (such as the planting of trees, installation of footers for swing sets, or constructing a water line for a water fountain?

Response #7: Under the recreational scenario, two feet of clean fill will be placed over the PAH-contaminated soils. Before backfilling with clean soil in these areas, a readily-visible and permeable subsurface demarcation delineating the interface between the residually-contaminated native soils and the clean backfill will be installed. Intrusive activities in areas where residual contamination will remain will be permitted as long as they are performed in accordance with a Site Management Plan (SMP), which EPA will develop. All work performed in accordance with the SMP will need to be coordinated with the New York State Department of Environmental Conservation. It is anticipated that the SMP will not restrict intrusive activities above the subsurface demarcation.

Additional Sources of Contamination

Comment #8: A commenter asked whether a dry cleaner that existed in a garage located to the east of the site was a source of contamination.

Response #8: The groundwater data did not show any additional sources to the east of the site.

SUMMARY OF DOCUMENTS

RESPONSIVENESS SUMMARY

APPENDIX V-a

DECEMBER 2011 PROPOSED PLAN

Crown Cleaners of Watertown, Inc. Superfund Site

Jefferson County, New York

EPA

December 2011

PURPOSE OF THIS DOCUMENT

This document describes the remedial alternatives considered for the Crown Cleaners of Watertown, Inc. Superfund site and identifies the preferred remedy with the rationale for this preference. This Proposed Plan was developed by the U.S. Environmental Protection Agency (EPA) in consultation with the New York State Department of Environmental Conservation (NYSDEC). EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Sections 300.430(f) and 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The nature and extent of the contamination at the site and the remedial alternatives summarized in this Proposed Plan are described in the August 2010 remedial investigation (RI) report and August 2010 feasibility study (FS) report, respectively. EPA and NYSDEC encourage the public to review these documents to gain a more comprehensive understanding of the site and the Superfund activities that have been conducted at the site.

This Proposed Plan is being provided as a supplement to the RI/FS reports to inform the public of EPA and NYSDEC's preferred remedy and to solicit public comments pertaining to all of the remedial alternatives evaluated, including the preferred alternatives. The preferred remedy consists of decontamination and demolition of the main on-site building, excavation of contaminated wetland sediments and soils located adjacent to the former cleaner property, excavation of contaminated soil at the source area, off-site treatment/disposal of the excavated sediments, soils, and building debris, in-situ treatment of the contaminated groundwater near the source using chemical oxidation and downgradient using natural attenuation[1], development of a Site Management Plan, and an environmental easement.

The remedy described in this Proposed Plan is the preferred remedy for the site. Changes to the preferred remedy, or a change from the preferred remedy to another remedy, may be made if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding the selected remedy will be made after EPA has taken into consideration all public comments. EPA is soliciting public comment on all of the alternatives considered in the Proposed Plan and in the detailed analysis section of the RI/FS report because EPA and NYSDEC may select a remedy other than the preferred remedy.

[1] Natural attenuation is a variety of *in-situ* processes that under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in groundwater.

MARK YOUR CALENDAR

December 12, 2011 – January 17, 2012: *Public comment period related to this Proposed Plan.*

January 3, 2012 at 7:00 P.M.: *Public meeting at the Village of Herrings Town Hall, Herrings, NY.*

Copies of supporting documentation are available at the following information repositories:

Carthage Free Library
412 Budd Street
Carthage, New York
315-493-2620
and
USEPA-Region II
Superfund Records Center
290 Broadway, 18th Floor
New York, NY 10007-1866
212-637-4308

EPA and NYSDEC rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, the RI and FS reports and this Proposed Plan have been made available to the public for a public comment period that begins on December 12, 2011 and concludes on January 17, 2012.

A public meeting will be held during the public comment period at the Village of Herrings Town Hall on January 3, 2012 at 7:00 p.m. to present the conclusions of the RI/FS, to elaborate further on the reasons for recommending the preferred remedy, and to receive public comments.

Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), the document that formalizes the selection of the remedy.

COMMUNITY ROLE IN SELECTION PROCESS

Written comments on the Proposed Plan should be addressed to:

Pamela Tames, P.E.
Remedial Project Manager
Central New York Remediation Section
U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, New York 10007-1866

Telefax: (212) 637-3966
Internet: Tames.pam@epa.gov

SCOPE AND ROLE OF ACTION

The primary objectives of this action are to remediate the sources of soil, sediment, and groundwater contamination, to minimize the migration of contaminants, and to minimize any potential future health and environmental impacts.

SITE BACKGROUND

Site Description

The 9-acre Crown Cleaners of Watertown, Inc. site is a former dry cleaning and laundry facility located in the Village of Herrings, Jefferson County on New York State Route 3. The site is located approximately 300 feet south of the Village of Herrings' public water supply well, to the east and west of residential properties and vacant land and to the north of the Black River.

There are three buildings in poor condition and a mobile home on the site. The site is surrounded by a chain link fence.

One wetland area is located immediately west of the site and another wetland area is located approximately 800 feet southwest of the site. A significant amount of debris, including, paper waste from the former paper factory, old appliances, and several drum carcasses, is located in the wetland to the southwest.

Site History

From 1890 until the mid-1960's, the site was used by the St. Regis Paper Co. to produce paper bags. In the late 1970's, the property was purchased by Crown Cleaners of Watertown, Inc. and was operated until 1991 as a dry cleaning and laundry facility. Tetrachloroethene (PCE) and machine oils and greases were used. Wastewater was discharged into basement storage pits, which then discharged through the foundation walls to the ground. Used dry cleaning machine filters were dumped on the site property.

The residences in the area use either private wells or a public supply well for potable water supply. In 1991, the New York State Department of Health (NYSDOH) determined that the Village of Herrings' water supply well was contaminated with PCE at concentrations ranging from 25 to 50 micrograms per liter (ug/L). Later that same year, NYSDEC installed a treatment system on the Village of Herrings' water supply system and determined that the source of PCE contamination was from the site.

Several New York State investigations were conducted at the site during the 1990's which resulted in the site being referred to EPA for further evaluation in 2000.

In 2000, EPA sampled the facility's storage pits, oil tanks, on- and off-property soils, and the groundwater. Volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), PCBs, copper, iron, mercury, zinc, beryllium, arsenic, and chromium were detected in the soils above NYSDEC's soil cleanup objectives. The highest PCE concentration found in the shallow aquifer was 9,800 ug/L. In addition to this investigation, EPA secured the property, removed and disposed of VOC-contaminated sludge and debris, sump pit water, spent dry cleaning filters, removed friable asbestos-containing materials, demolished an unstable portion of the main building and disposed of approximately 5,000 gallons of waste oil.

On September 4, 2002, the site was listed on EPA's Superfund National Priorities List.

EPA conducted several field investigations at the site from 2004 through 2011. The activities included monitoring well installation, geological and hydrogeological investigations, an ecological assessment, wetlands delineation, a residential vapor intrusion investigation[2], and collecting samples from the surface soil (top two feet of soil), subsurface soil (below two feet), wetland sediments, surface water and sediment from the Black River, groundwater, residential wells, and the public supply well. Because of the historical significance of the

[2] Vapor intrusion is a process by which VOCs move from a source below the ground surface (such as contaminated groundwater) into the indoor air of overlying or nearby buildings.

structures on the property, a Phase 1A Cultural Resources survey was performed in 2007[3].

SITE HYDROLOGY/HYDROGEOLOGY

Site Hydrology

The site is located in the Erie-Ontario Lowlands physiographic province, which includes the Black River valley. Local surface water runoff flows toward the Black River, which runs adjacent to the site along its southern boundary. The Black River in the area where it runs adjacent to the site is classified by New York State as a "Class C" surface water body. These waters should be suitable for fish propagation and survival, as well contact recreation (6 NYCRR Part 701.8). The Herrings Station dam is located just east of the site and a roughly 20-foot surface water elevation difference is maintained across the dam.

Approximately 1.4 acres of the former dry cleaner property are located in the 100-year flood plain of the Black River according to the federal Emergency Management Agency. The remainder of the site is located outside the 500-year flood plain.

Site Hydrogeology

The hydrogeology is characterized by the existence of four units, Upper Carbonate, Middle Carbonate, Lower Carbonate, and Fractured Granitic Gneiss Units.

The upper part of the site hydrogeologic unit, the Upper Carbonate Unit, consists of an unconfined, fractured unit with low permeability that is subject to seasonal variations. The Middle Carbonate Unit is a dense, massive, very low to no permeability unit, which appears to behave as a semi-confining to confining unit. Below this unit is a confined Lower Carbonate unit that provides water resources to the local area. The deepest unit evaluated during the RI investigation was the Fractured Granitic Gneiss unit, which underlies the Lower Carbonate unit. Groundwater in the Upper Carbonate unit primarily flows in a south-southwesterly direction along bedding planes partings, with secondary flow through fractures and joints. In the Lower Carbonate and Granitic Gneiss units, groundwater flow is controlled by secondary porosity through enlarged bedding planes and fractures. Groundwater in both of these units flows in a south-southwesterly direction and eventually discharges to the Black River.

RESULTS OF THE REMEDIAL INVESTIGATION

Based upon the results of the RI, EPA has concluded that VOCs are the predominant contaminants in the groundwater, soils, and sediments in the wetlands. The primary contaminant of concern (COC) identified for the site is PCE and its breakdown products, primarily trichloroethylene (TCE).

Groundwater

EPA and New York State Department of Health have promulgated health-based protective Maximum Contaminant Levels (MCLs), which are enforceable standards for various drinking water contaminants. MCLs, which ensure that drinking water does not pose either a short- or long-term health risk, will be used as the cleanup criteria for the groundwater. The MCL for both PCE and TCE is 5 ug/L.

Four rounds of groundwater sampling were conducted as part of the RI. During the first round in 2004, 24 existing monitoring wells, two piezometric wells and one residential well were sampled. In 2006, a second round of sampling was conducted and included the original 24 wells, two piezometric wells and one residential well plus 8 newly installed monitoring wells. A third sampling round covering 31 monitoring wells, five newly installed multiport wells, and two piezometers was conducted in 2009. A fourth round of groundwater sampling was conducted on these same wells in mid-2011.

Groundwater samples contained PCE in 11 of the 31 monitoring wells. Concentrations in these wells ranged from 6.7 ug/L to 6,500 ug/L. PCE was not detected in the multiport wells. The data indicates that the horizontal limit of the contaminant plume is defined by the Black River to the south, Route 3 to the north and is approximately 300 feet wide. The source of the plume occurs at the southwest corner of the main building on the property.

The data also suggests that a separate area of PCE contamination is present in the upper unit bedrock aquifer to the west-southwest of the site. Isotopic analysis of samples collected from site wells and wells to the west-southwest of the site indicates that the PCE detected in this area is of a similar origin to the PCE detected in groundwater on-site. Sample results from this area show decreasing PCE concentrations with increasing depth, suggesting a surface source in the vicinity. In addition, the measurement of groundwater levels at various

[3] A Phase I cultural resources survey is designed to determine the presence or absence of cultural resources in the project's potential impact area. The Phase I survey is divided into two progressive units of study--Phase IA, a literature search and sensitivity study and, if necessary based upon Phase 1A survey, a Phase IB, field investigation to search for resources.

elevations within the bedrock indicates a downward hydraulic gradient. Since the dumping of debris has occurred in this area, the origin of the groundwater impacts west-southwest of the site is likely the result of the disposal of site-related wastes (e.g., drum(s)) in this area.

The data also shows a declining trend in PCE levels within the plume. Additionally, PCE's reductive dechlorination products, also known as daughter products, were detected in many of the same wells as PCE, indicating the slow natural breakdown or attenuation of the contaminants.

Soils

NYSDEC has identified soil cleanup objectives (SCOs) for the protection of the environment and for various contaminants based upon the assumed future usage of the site. Based upon the most recent active use of the site, the site will be cleaned up to "commercial" standards. The SCO for PCE for the protection of groundwater is 1.3 mg/kg[4], and 16 mg/kg for arsenic for commercial use. The commercial SCO for PAHs varies depending on the contaminant [5].

In 2004, soil samples were collected at 9 locations to a depth of 5 feet. An additional 42 soil locations were sampled in 2011 to a depth of 2 feet. Elevated PCE concentrations were found in five locations; primarily adjacent to the northern and western corners of the main building in the west-northwestern portion of the site (the highest concentration detected was 59,000 micrograms per kilogram [ug/kg]). These PCE-contaminated soils (hereinafter, "source area soils") are a source of contamination to the groundwater. In addition, elevated concentrations of polyaromatic hydrocarbons (PAHs) were detected in surface soil at 14 locations. The highest PAH concentrations detected were 58.4 mg/kg. Arsenic was detected in surface soil at one location at a concentration of 17.8 mg/kg.

Sediments

Sediment samples were collected from 15 locations in the wetland areas located immediately west and southwest of the buildings. Eight VOCs were detected in the sediment samples, including PCE as high as 0.17 mg/kg. Samples collected from the wetland area located to the southwest also showed the presence of PAHs, pesticides, and metals. Cleanup levels for wetland sediments are outlined in the NYSDEC's Guidelines for Screening Contaminated Sediments.

Attempts were made to obtain sediment samples from the Black River adjacent to the site, but there was insufficient sediment available to get a proper sample.

SITE RISKS

Based upon the results of the RI, a baseline risk assessment was conducted to estimate the risks associated with current and future property conditions. A baseline risk assessment is an analysis of the potential adverse human health effects caused by hazardous-substance exposure in the absence of any actions to control or mitigate these under current and reasonably anticipated future land uses[6].

The human health estimates summarized below are based on current reasonable maximum exposure scenarios and were developed by taking into account various conservative estimates about the frequency and duration of an individual's exposure to the COCs, as well as the toxicity of these contaminants.

A screening level ecological risk assessment (SLERA) was also conducted to assess the risk posed to ecological receptors due to site-related contamination, which resulted in the performance of a BERA, which is discussed below.

[4] 6 NYCRR PART 375, Environmental Remediation Programs, Subpart 375-6, New York State Department of Environmental Conservation, December 14, 2006.

[5] While the land use of the site has historically been industrial/commercial, local elected officials have expressed a desire to develop a community park on the site following its remediation. In order for the property to be remediated using soil cleanup objectives that would be protective for a park (i.e. restricted residential), a local governmental entity must acquire the property. The Village Mayor and Town Supervisor are presently pursuing several options to acquire the property and change its use to recreational. If the land use for the property is changed from commercial to recreational before the design of the remedy that is ultimately selected is approved, then restricted residential SCOs would be utilized. Otherwise, commercial SCOs would be utilized.

[6] As was noted in Footnote 5, while the land use of the site has historically been industrial/commercial, the Village Mayor and Town Supervisor are presently pursuing several options to acquire the property and change its use to recreational.

Human Health Risk Assessment

As was noted above, the former Crown Cleaners property is not currently being used and is surrounded by a locked chain link fence. Although the site's historical usage was commercial/industrial, it is anticipated that the land use in the future will be recreational. The possibility that the site could be redeveloped for residential use was also considered.

The baseline risk assessment identified the current and potential future receptors that may be affected by contamination at the site, the pathways by which these receptors may be exposed to site contaminants in various environmental media, and the parameters by which these exposures and risks were quantified. A trespasser was the receptor evaluated under the current scenario. Future scenarios considered a hypothetical future commercial worker, on and off-site resident (adult and child), construction worker and utility worker.

The risks associated with potential exposures to the area-wide soils and sediment, and on-site and off-site groundwater were assessed. Potential indoor air vapor intrusion concerns were previously evaluated by EPA and found to not warrant further assessment. Since the area is served by municipal water, it is not likely that the groundwater underlying the site will be used for potable purposes in the foreseeable future; however, since regional groundwater is designated as a drinking water source, potential exposure to groundwater was evaluated.

Based on anticipated future use of the site, no excess lifetime cancer risk above the EPA reference cancer risk range or HI greater than the EPA threshold value were projected relative to any foreseeable current or future receptor exposed to site-related COCs (PCE and its breakdown products) in soil or sediment. However, PCE in the soil serves as a source of contamination to the groundwater. All scenarios involving the use of the local groundwater as a drinking water source showed considerably elevated risks, due primarily to the presence of PCE in the groundwater. The greatest risk was estimated for the hypothetical on-site child resident at 2×10^{-2}. Concentrations of PCE also exceed the state and federal MCLs for this compound.

Ecological Risk Assessment

Terrestrial and wetland plants were determined to be at potential risk from toxic effects from copper, lead, and selenium, based upon the comparison to phytotoxic screening benchmarks; these constituents were identified as chemicals of ecological concern (COECs). However, a qualitative survey of vegetation cover-types present did

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the chemicals of potential concern (COPCs) at the site in various media (*i.e.*, soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants in air, water, soil, etc. identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil and ingestion of and dermal contact with contaminated groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the frequency and duration of that exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health hazards, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health hazards.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks for all COPCs. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions identified in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-6}, corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk. For non-cancer health effects, a "hazard index" (HI) is calculated. The key concept for a non-cancer HI is that a threshold (measured as an HI of less than or equal to 1) exists below which non-cancer health hazards are not expected to occur. The goal of protection is 10^{-6} for cancer risk and an HI of 1 for a non-cancer health hazard. Chemicals that exceed a 10^{-4} cancer risk or an HI of 1 are typically those that will require remedial action at the site and are referred to as COCs in the ROD.

not reveal any areas of stressed vegetation or areas devoid of vegetation. Based upon the exposure assessment, risk characterization, and associated uncertainties, the potential risk to this assessment endpoint was considered to be low.

The exposure assessment and risk characterization for soil and sediment invertebrates revealed potential risks from toxic effects from copper exposure in upland surface soils. Anecdotal evidence of an invertebrate community suggested this exposure is not acute in nature and the associated uncertainties would indicate this potential risk is limited to only one location. In the wetland sediments, the screening assessment, using benthic community benchmarks for community level impairment, identified PAHs, chlordane, antimony, arsenic, cadmium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, vanadium, and zinc as posing a potential risk to benthic community structure and function.

The short-tailed shrew was used as a representative mammalian species that is indigenous to New York and would utilize the available upland habitats present. A mean exposure evaluation employing conservative exposure parameters for upland habitats revealed no observable adverse effects level (NOAEL) hazard quotient (HQs) <1 for all COPECs but cadmium and lead. No COPECs with lowest observable adverse effects level (LOAEL) HQs >1 were identified. The lack of a LOAEL HQ>1, and the associated conservative uncertainty associated with the exposure assessment, suggests potential risks to terrestrial mammals should be considered to be low in the upland habitats. The wetland exposure evaluation for the shrew identified seven metals, aluminum, antimony, arsenic, cadmium, lead, selenium, and silver, with NOAEL HQs >1. Aluminum was the only COPEC with a LOAEL HQ > 1.0 for this receptor. While exceedance of a LOAEL value may be a basis for the conclusion of significant risk, aluminum is one of the most abundant metals in the crust of the earth and is not typically associated with significant bioaccumulation in tissues. Therefore, the potential risks to mammals associated with these metals are considered to be low in the wetland areas. The American robin was used as a representative avian species that would utilize the available upland habitats present. A mean exposure evaluation employing conservative exposure parameters identified NOAEL HQs to remain <1 for all but cadmium, lead, and selenium. Of these, lead was the only metal with a mean exposure point dosage that exceeded the LOAEL-based exposure dosage. Based upon the exceedance of a LOAEL and given that lead is not an essential macronutrient for avian metabolism, lead was identified as a COEC in the upland soils. The mean exposure assessment for the wetland habitats revealed NOAEL HQs < 1 for all COPECs except lead and zinc. Of these two metals, the mean lead exposure resulted in exceedance of the LOAEL dosage level for the receptor evaluated. Based upon the exceedance of a LOAEL, and that lead is not an essential macro-nutrient for avian nutrition, a potential significant risk exists for avian receptors from lead exposure in wetland sediments and is identified as a COEC for this environmental media.

No COECs were identified for surface waters of the Black River. PAHs, aluminum, barium, iron, and manganese were identified as being COECs for the surface waters of the site wetlands. The risks from these COECs are associated with some degree of uncertainty given the lack of applicable background samples for similar wetland environments and the potential for colloidal particles to have been entrained in the surface water sample during collection.

<u>Summary of Human Health and Ecological Risks</u>

The results of the human health risk assessment indicate that the contaminated groundwater presents an unacceptable exposure risk and the ecological risk assessment indicates that the contaminated soils and sediments pose an unacceptable exposure risk.

Based upon the results of the RI and the risk assessment, EPA has determined that actual or threatened releases of hazardous substances from the site, if not addressed by the preferred remedy or one of the other active measures considered, may present a current or potential threat to human health and the environment.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs), to-be-considered (TBC) guidance, and site-specific risk-based levels.

The following remedial action objectives were established for the site:

- Reduce or eliminate any direct contact, ingestion, or inhalation threat associated with contaminated soils and sediments;
- Minimize exposure of wildlife or fish to contaminated soils and sediments;
- Protect human health by preventing exposure to contaminated groundwater and soil vapor; and

- Restore groundwater to levels that meet state and federal standards within a reasonable time frame.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA '121(b)(1), 42 U.S.C. '9621(b)(1), mandates that remedial actions must be protective of human health and the environment, cost-effective, comply with ARARS, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants and contaminants at a site. CERCLA '121(d), 42 U.S.C. '9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA '121(d)(4), 42 U.S.C. '9621(d)(4).

Detailed descriptions of the remedial alternatives for addressing the contamination associated with the site can be found in the FS report. The FS report presents four soil/wetland sediment alternatives, and five groundwater alternatives. It should be noted that a capping alternative was considered in the FS report, but was screened out due to questions about its effectiveness in preventing the migration of contaminants to the groundwater in high water table areas and technical difficulties in maintaining such a cap. In addition, in-situ vapor extraction was considered and was screened out due to questions about its effectiveness in high water table areas. To facilitate the presentation and evaluation of the alternatives, the FS report alternatives were reorganized in this Proposed Plan to formulate the remedial alternatives discussed below.

The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with any potentially responsible parties, or procure contracts for design and construction.

The remedial alternatives are:

__Soil/Wetland Sediment Alternatives__

Alternative S-1: No Action

Capital Cost:	$0
Annual Operation, Maintenance, and Monitoring (OM&M) Cost:	$0
Present-Worth Cost:	$0
Construction Time:	0 months

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative for soil does not include any physical remedial measures that address the problem of soil and sediment contamination at the property.

Because this alternative would result in contaminants remaining above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the site be reviewed at least once every five years. If justified by the review, remedial actions may be implemented to remove, treat, or contain the contaminated soils and sediments.

Alternative S-2: Building Demolition, Limited Excavation of Sediments, and Excavation of Soils with On-Site Treatment via Ex-Situ Soil Vapor Extraction

Capital Cost:	$3,939,000
Annual OM&M Cost:	$0
Present-Worth Cost:	$3,939,000
Construction Time:	12 months

This alternative consists of decontaminating and demolishing the main building to obtain access to all of the PCE-contaminated soils underneath, transport for treatment and disposal of the building debris at an off-site Resource Conservation and Recovery Act (RCRA)-compliant disposal facility, excavation and offsite disposal of approximately 2,200 cubic yards of PAH and arsenic-contaminated soils located on-site to meet the commercial/industrial SCOs, and excavation and on-site treatment with ex-situ soil vapor extraction (ESVE) of approximately 8,400 cubic yards of PCE-contaminated source area soils and PCE-contaminated sediment and soil from the adjacent wetlands to meet the protection of groundwater SCO. Under the ESVE treatment process, a temporary on-site aboveground fully enclosed system would be constructed to contain the excavated PCE-contaminated soil and sediment. Air would be forced through a series of pipes within the structure to volatilize the PCE. The extracted vapors would be treated by granular activated carbon and/or other appropriate technologies before being vented to the atmosphere.

Following the demolition of the building, contaminated soils remaining within the footprint of the building would be addressed as described above.

Cleared vegetation would be disposed of at a nonhazardous waste landfill or could be mulched and used elsewhere on-site.

While the actual period of operation of the ESVE system would be based upon sampling results that demonstrate that the affected soil and sediments have been treated to soil cleanup levels, it is estimated that the system would operate for a period of three years.

The excavated source areas would be backfilled with treated and untreated soil and sediment. Approximately 90 cubic yards of excavated soils which would not be suitable for treatment and backfilling, would be disposed of at a RCRA-compliant disposal facility. A one-foot deep cover of clean soil would be applied where necessary to meet the commercial SCOs. The wetland areas that would be excavated would be backfilled with soil that meets the unrestricted SCOs.

Areas where residual PAH-contaminated soil would remain would also require the placement of a readily-visible and permeable subsurface demarcation delineating the interface between the residually-contaminated native and/or backfilled soils and the clean soil cover layer. These areas, totaling approximately 3.6 acres, would be seeded with grass to stabilize the soil. The disturbed wetland areas would also be restored.

Under this alternative, institutional controls in the form of an environmental easement and/or restrictive covenant would be used to prohibit future residential development/use of the site and restrict intrusive activities in areas where residual contamination remains unless the activities are in accordance with an EPA-approved Site Management Plan.

The Site Management Plan would provide for the proper management of all post-construction remedy components. Specifically, the Site Management Plan would describe procedures to confirm that the requisite engineering (*e.g.,* demarcation layer) and institutional controls are in place and that nothing has occurred that would impair the ability of said controls to protect public health or the environment. The Site Management Plan would also include an excavation plan which details the provisions for management of future excavations in areas of remaining contamination; an inventory of any use restrictions; the necessary provisions for the implementation of the requirements of the above-noted environmental easement and/or restrictive covenant; a provision for the performance of the operation, maintenance, and monitoring required by the remedy; and a provision that the property owner or party implementing the remedy submit periodic certifications that the institutional and engineering controls are in place.

Because this alternative would result in contaminants remaining on-site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the site be reviewed at least once every five years.

Alternative S-3: Building Demolition, Limited Excavation of Sediments, Excavation of Soil, and Off-Site Treatment/Disposal

Capital Cost:	$4,253,000
Annual OM&M Cost:	$0
Present-Worth Cost:	$4,253,000
Construction Time:	9 months

This alternative is similar to Alternative S-2 except instead of treating the excavated soils and sediments on-site using ESVE and using them for backfill, the excavated PCE-contaminated soil and sediment would be characterized and transported for treatment/disposal at an off-site RCRA-compliant facility and the excavated PAH and arsenic contaminated soil would be used for backfill on-site.

To meet the commercial SCOs, the excavated areas would be covered with one foot of clean soil and would be seeded with grass to stabilize the soil. Areas where residual PAH-contaminated soil would remain above the commercial SCOs would also require the placement of a readily-visible and permeable subsurface demarcation layer delineating the interface between the residually-contaminated native and/or backfilled soils and the clean soil cover layer. The disturbed wetland areas would also be restored.

Similar to Alternative S-2, institutional controls in the form of an environmental easement and/or restrictive covenant would be used to prohibit future residential development/use of the site and restrict intrusive activities in areas where residual contamination remains unless the activities are in accordance with an EPA-approved Site Management Plan.

Because this alternative would result in contaminants remaining on-site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the site be reviewed at least once every five years.

__Groundwater Alternatives__

Alternative GW-1: No Action

Capital Cost:	$0
Annual OM&M Cost:	$0
Present-Worth Cost:	$0
Construction Time:	0 months

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative would not include any physical remedial measures to address the groundwater contamination at the site.

Because this alternative would result in contaminants remaining on-site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the site be reviewed at least once every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative GW-2: Source Area Enhanced Bioremediation and Downgradient Monitored Natural Attenuation

Capital Cost:	$1,435,800
Annual OM&M Cost:	$57,000
Present-Worth Cost:	$2,365,000
Construction Time:	12 months

Groundwater data for the site indicate that some level of natural biodegradation is occurring within the aquifer. This alternative would involve injecting reagents into the aquifer to enhance the natural degradation process in the source areas. Lower contaminant concentrations outside the source areas would be addressed through monitored natural attenuation, a variety of *in-situ* processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in groundwater. For this site, these *in-situ* processes include degradation, dispersion, dilution, and adsorption.

For conceptual development of this alternative, it was assumed a supplemental carbon source (e.g., hydrogen releasing compound) would be injected into the most contaminated portions of the groundwater (PCE concentrations greater than 10 times the MCL) at the center of the plume to stimulate bioactivity. For development of this alternative, spacing of injection points was conservatively estimated at 20 feet and the injection rate was estimated at 5 pounds per vertical foot of treatment zone per injection point. However, bench- and pilot-scale testing would be required to determine the nature of reagents necessary to stimulate biodegradation in the aquifer and determine the optimum strategy for introducing these materials.

Performance and compliance monitoring and testing would be performed during and after the injections to determine residual contaminant concentrations, assess the need for additional treatment, and monitor the natural attenuation[7] of the contamination at the periphery of the plume.

It has been estimated that it would take thirty years to remediate the contaminated groundwater to federal and state standards under this alternative.

Since the entire groundwater plume would not immediately achieve cleanup levels upon implementation of this alternative, an environmental easement would be required to prevent use of groundwater and would also require that future buildings on the site either be subject to vapor intrusion study or be built with vapor intrusion mitigation systems in place until the cleanup criteria have been achieved throughout the entire area.

Because this alternative would result in contaminants remaining on-site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the site be reviewed at least once every five years.

[7] Monitored natural attenuation is the process by which a natural systems ability to attenuate contaminant(s) at a specific site is confirmed, monitored and quantified. Contaminant concentrations may attenuate in natural systems through biodegradation; sorption; volatilization; radioactive decay; chemical or biological stabilization; transformation dispersion; dilution and/or the destruction of contaminants (DER-10 1.3(b)(31).

Alternative GW-3: Source Area In-Situ Chemical Oxidation and Downgradient Monitored Natural Attenuation

Capital Cost:	$2,424,000
Annual OM&M Cost:	$57,000
Present-Worth Cost:	$3,353,000
Construction Time:	12 months

Under this alternative, an oxidizing agent would be injected into the contaminated groundwater at the source areas to chemically transform the VOCs into less toxic compounds or to carbon dioxide, and water. Bench- and pilot-scale treatability studies would be performed to optimize the effectiveness of the injection system and to determine optimum oxidant delivery rates and locations for the injection-well points.

Lower contaminant concentrations outside the source areas would be addressed through monitored natural attenuation, a variety of *in-situ* processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in groundwater. For this site, these *in-situ* processes include degradation, dispersion, dilution, and adsorption.

For conceptual development of this alternative, it was assumed the oxidant would be injected into the most contaminated groundwater (PCE concentrations greater than 10 times the MCL) at the center of the plume. For development of this alternative, spacing of injection points was conservatively estimated at 10 feet due to the rapid reaction time of oxidants, and the injection rate was estimated at 10 pounds per vertical foot of treatment zone per injection point. However, actual injection spacing and rates for remediation would need to be determined from pilot-scale treatability studies.

Performance and compliance monitoring and testing would be performed during and after the injections to determine residual contaminant concentrations, assess the need for additional treatment, and monitor the natural attenuation of the contamination at the periphery of the plume.

It has been estimated that it would take thirty years to remediate the contaminated groundwater to federal and state standards under this alternative.

Since the entire groundwater plume would not immediately achieve cleanup levels upon implementation of this alternative, an environmental easement would be required to prevent use of groundwater and would also require that future buildings on the site either be subject to vapor intrusion studies or be built with vapor intrusion mitigation systems in place until the cleanup criteria have been achieved throughout the entire area.

Because this alternative would result in contaminants remaining on-site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the site be reviewed at least once every five years.

Alternative GW-4: Source Area Groundwater Extraction and Treatment and Downgradient Monitored Natural Attenuation

Capital Cost:	$5,404,000
Annual OM&M Cost:	$555,000
Present-Worth Cost:	$13,987,000
Construction Time:	12 months

Under this alternative, four groundwater extraction wells would be installed to extract contaminated groundwater from the source areas.

Lower contaminant concentrations outside the source areas would be addressed through monitored natural attenuation, a variety of *in-situ* processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in groundwater. For this site, these *in-situ* processes include degradation, dispersion, dilution, and adsorption.

The extracted water would be treated at an on-site facility by air stripping, carbon adsorption, and methods appropriate for the treatment of metals. The treated water, which would meet applicable discharge requirements, would be discharged to surface water.

Air stripping involves pumping untreated groundwater to the top of a "packed" column, which contains a specified amount of inert packing material. The column receives ambient air under pressure in an upward direction from the bottom of the column as the water flows downward, transferring VOCs to the air phase. The air-stripping process would be followed by a groundwater polishing system using granular activated carbon and/or other appropriate technologies. To comply with New York State air guidelines, granular activated carbon treatment of the air strippers' air exhaust streams may be necessary.

Pilot testing, including pump tests, would be required to determine final pumping rates, well spacing, optimum well locations, well design, and treatment options.

In order to evaluate the performance of this alternative, periodic monitoring of the groundwater would be performed. Monitoring of the treatment system performance would also be required. The resulting data would be used to optimize the treatment process and evaluate the effectiveness of this remedial alternative.

It has been estimated that it would take thirty years to remediate the contaminated groundwater to federal and state standards under this alternative.

Since the entire groundwater plume would not immediately achieve cleanup levels upon implementation of this alternative, an environmental easement would be required to prevent use of groundwater and would also require that future buildings on the site either be subject to vapor intrusion studies or be built with vapor intrusion mitigation systems in place until the cleanup criteria have been achieved throughout the entire area.

Because this alternative would result in contaminants remaining on-site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the site be reviewed at least once every five years.

COMPARATIVE ANALYSIS OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely, overall protection of human health and the environment, compliance with applicable or relevant and appropriate requirements, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, cost, and state and community acceptance.

The evaluation criteria are described below.

X Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

X Compliance with ARARs addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

X Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

X Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies, with respect to these parameters, a remedy may employ.

X Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

X Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

X Cost includes estimated capital and OM&M costs, and net present-worth costs.

X State acceptance indicates if, based on its review of the RI/FS and Proposed Plan, the state concurs with the preferred remedy at the present time.

X Community acceptance will be assessed in the ROD and refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports.

A comparative analysis of these alternatives based upon the evaluation criteria noted above follows.

Overall Protection of Human Health and the Environment

Alternative S-1 would not be protective of the environment, since it would not actively address the contaminated sediments, which present an ecological risk. Alternative S-1 would also not be protective of human health and the environment, since it would not actively address the contaminated soil, which presents unacceptable risks of ecological exposure and is a source of groundwater contamination, which poses a human health risk. Alternatives S-2 and S-3 would be protective of human health and the environment, since both of the alternatives rely upon a remedial strategy or treatment technology capable of eliminating human and ecological exposure and removing the source of groundwater contamination.

Since Alternative GW-1 would rely on natural attenuation (a process which has been demonstrated to be occurring on-site albeit slowly) to restore groundwater quality to drinking water standards, it would not be as protective as Alternatives GW-2, GW-3, and GW-4, which include active treatment of the groundwater either in-situ or ex-situ. The institutional controls under Alternatives GW-2, GW-3, and GW-4 would provide protection of public health until groundwater standards are met.

Under Alternative GW-1, the restoration of the groundwater would take a significantly longer time (estimated to be at least 100 years) in comparison to the other alternatives. All three of the active groundwater alternatives are estimated to restore groundwater quality significantly faster (approximately thirty years) and, therefore, would be protective of human health and the environment.

Compliance with ARARS

There are currently no federal or state promulgated standards for contaminant levels in sediments. There are, however, other federal or state advisories, criteria, or guidance (which are used as TBC criteria). Specifically, NYSDEC's sediment screening values are a TBC criteria. Soil cleanup objectives were evaluated against NYSDEC's 6 NYCRR Part 375, Environmental Remediation Programs, Subpart 375-6, effective December 14, 2006.

Since the contaminated soils and sediments would not be addressed under Alternative S-1, this alternative would not achieve the cleanup levels for soils and the sediment cleanup objectives.

Alternatives S-2 and S-3 would attain the cleanup levels for soils and the sediment cleanup objectives.

Both Alternative S-2 and S-3 would be subject to New York State and federal regulations related to the off-site transportation of wastes.

Since Alternatives S-2 and S-3 would involve the excavation of contaminated soils and sediment, these alternatives would require compliance with fugitive dust and volatile organic compound emission regulations. In addition, this alternative would be subject to New York State and federal regulations related to the transportation and off-site treatment/disposal of wastes. In the case of Alternatives S-2 and GW-4, compliance with air emission standards would be required for the ESVE and air stripper systems. Specifically, treatment of off-gases would have to meet the substantive requirements of New York State Regulations for Prevention and Control of Air Contamination and Air Pollution (6 NYCRR Part 200, *et seq.*) and comply with the substantive requirements of other state and federal air emission standards.

EPA and NYSDOH have promulgated health-based protective MCLs (40 CFR Part 141, and 10NYCRR, Chapter 1), which are enforceable standards for various drinking water contaminants (chemical-specific ARARs). Although the groundwater at the site is not presently being utilized as a potable water source, achieving MCLs in the groundwater is an applicable standard, because area groundwater is a source of drinking water.

Alternative GW-1 would not provide for any direct remediation of groundwater and would, therefore, rely upon natural processes to achieve chemical-specific ARARs. Alternatives GW-2, GW-3, and GW-4 would be more effective in reducing groundwater contaminant concentrations below MCLs, since they include active remediation of the contaminated groundwater source areas. Alternative GW-4 would also be subject to surface water discharge ARARs since treated water would be discharged into the Black River.

The provisions of New York State Environmental Conservation Law Section 27-1318, Institutional and Engineering Controls, is applicable to the environmental easements in Alternatives GW-2, GW-3, and GW-4.

Long-Term Effectiveness and Permanence

Alternative S-1 would involve no active remedial measures and, therefore, would not be effective in eliminating the potential exposure to contaminants in soil and would allow the continued migration of contaminants from the soil to the groundwater. Alternatives S-2 and S-3 would both be effective in the long term and would provide permanent remediation by removing the contaminated source area soils and contaminated wetland sediment and either treat them on-site or treat/dispose them off-site.

Under Alternative S-2, pilot-scale treatability testing would be required for the purpose of identifying the configuration and number of vacuum extraction pipes within the treatment unit and evaluating and characterizing the extracted soil vapors and other performance parameters. These data would be used in the system design evaluation, and the system performance would be monitored with extracted vapor measurements and soil samples. Under Alternative S-2, the extracted vapors would be treated by granular activated carbon before being vented to the atmosphere. The granular activated carbon would have to be appropriately handled (off-site treatment/disposal). Alternatives S-1 and S-3 would not generate such treatment residuals.

Both action alternatives would maintain reliable protection of human health and the environment over time.

Alternative GW-1 would be expected to have minimal long-term effectiveness, since it would rely upon natural attenuation to restore groundwater quality. Alternative GW-4 would generate treatment residues that would have to be appropriately handled; Alternatives GW-2 and GW-3 would not generate such residues.

<u>Reduction in Toxicity, Mobility, or Volume Through Treatment</u>

Alternative S-1 would provide no reduction in toxicity, mobility or volume. Under Alternative S-2, the toxicity, mobility, and volume of contaminants would be reduced or eliminated through on-site treatment. Under Alternative S-3, the mobility of the contaminants would be eliminated by removing the VOC-contaminated soil from the property and the toxicity would be reduced through treatment off-site.

Alternative GW-1 would not effectively reduce the toxicity, mobility, or volume of contaminants in the groundwater, as this alternative involves no active remedial measures. This alternative would rely on natural attenuation to reduce the levels of contaminants; a process that has been slowly occurring at this site. Alternatives GW-2, GW-3, and GW-4, on the other hand, would reduce the toxicity, mobility, and volume of contaminants, thereby satisfying CERCLA's preference for treatment.

<u>Short-Term Effectiveness</u>

Alternative S-1 does not include any physical construction measures in any areas of contamination and, therefore, would not present any potential adverse impacts to remediation workers or the community as a result of its implementation. Alternatives S-2 and S-3 could present some limited adverse impacts to remediation workers through dermal contact and inhalation related to excavation activities. Noise from the treatment unit and the excavation work associated with Alternatives S-2 and S-3, respectively, could present some limited adverse impacts to remediation workers and nearby residents. In addition, interim and post-remediation soil sampling activities would pose some risk. The risks to remediation workers and nearby residents under all of the alternatives could, however, be mitigated by following appropriate health and safety protocols, by exercising sound engineering practices, and by utilizing proper protective equipment.

Since it is estimated that the on-site treatment of the excavated soil and sediment with ESVE would require 3 years under Alternative S-2, the excavation would remain open until the soils could be backfilled. Therefore, the excavation would have to be secured to prevent on-site worker injuries.

Alternative S-3 would require the off-site transport of contaminated soil (approximately 350 truck loads), which would potentially adversely affect local traffic and may pose the potential for traffic accidents, which in turn could result in releases of hazardous substances.

For Alternatives S-2 and S-3, there is a potential for increased stormwater runoff and erosion during construction and excavation activities that would have to be properly managed to prevent or minimize any adverse impacts. For these alternatives, appropriate measures would have to be taken during excavation activities to prevent transport of fugitive dust and exposure of workers and downgradient receptors to PCE.

Since no actions would be performed under Alternative S-1, there would be no implementation time. It is estimated that Alternative S-2 would require three months to decontaminate and demolish the building, three months to construct the ESVE system, and six months to achieve the soil cleanup objectives. It is estimated that it would take require three months to decontaminate and demolish the building and three months to excavate and transport the contaminated soils to an EPA-approved treatment/disposal facility under Alternative S-3.

Alternative GW-1 would have no short-term impact to workers or the community and would have no adverse environmental impacts, since no actions would be taken. Alternatives GW-2, GW-3 and GW-4 might present some limited risk to remediation workers through dermal contact and inhalation related to groundwater sampling and injection activities. The installation of additional wells for the purpose of monitoring, groundwater extraction, and/or reagent injections would pose an additional risk to on-site workers, since it would involve the installation of wells through potentially contaminated soils and groundwater. The risks to on-site workers could, however, be minimized by utilizing proper protective equipment.

The time for implementing Alternative GW-2, including bench- and pilot-scale testing, bidding, selecting a contractor, and initiate treatment of the high concentration source areas, is estimated to be within 1 year of completion of the design. Multiple injections over several years would likely be necessary to sustain the enhanced biodegradation rates. The overall duration of this remedy to achieve the cleanup criteria throughout the entire groundwater plume is estimated to be 30 years.

For Alternative GW-3, treatment of the high concentration source areas by oxidation may achieve cleanup standards in the source area over a very short treatment period (*e.g.,* less than 1 year). Natural attenuation of the contamination at the periphery of the source areas would likely achieve the cleanup standards in 30 years.

For Alternative GW-4, the total time for implementing this alternative, including design, testing, bidding, selecting a contractor and the installation of the groundwater extraction and treatment systems, is estimated to be 2 years. The overall duration of this remedy to achieve the cleanup criteria throughout the entire groundwater plume is estimated to be 30 years.

<u>Implementability</u>

Alternative S-1 would be the easiest soil alternative to implement, as there are no activities to undertake.

Both Alternatives S-2 and S-3 would employ technologies known to be reliable and that can be readily implemented. Equipment, services, and materials needed for Alternatives S-2 and S-3 are readily available, and the actions under these alternatives would be administratively feasible. Sufficient facilities are available for the treatment/disposal of the excavated materials under Alternative S-3.

While soil excavation under Alternatives S-2 and S-3 is technically feasible, there are several site-specific complications related to this remedial approach. Since there would be insufficient room on the site to create a significant excavation stockpile, it is likely that the excavation and backfilling would need to be performed incrementally. At the same time, post-excavation sampling and rapid turnaround analyses would need to be integrated into the process. There would be a need to monitor for PCE and dust during the excavation, especially since there are nearby homes.

Monitoring the effectiveness of the ESVE system under Alternative S-2 would be easily accomplished through soil and soil-vapor sampling and analysis. Under Alternative S-3, determining the achievement of the soil cleanup objectives could be easily accomplished through post-excavation soil sampling and analysis.

Since no action would be performed under Alternative GW-1, there would be no implementation time. Alternatives GW-2, GW-3, and GW-4 would each take about 12 months to implement.
Alternative GW-1 would be the easiest to implement, since they would not entail the performance of any activities.

Equipment, services, and materials needed for all of the groundwater action alternatives are readily available and the actions under these alternatives would be administratively feasible. Groundwater injections and extraction and treatment systems similar to that which would be used under Alternatives GW-2, GW-3 and GW-4 have been implemented successfully at numerous sites to treat contaminated groundwater.

The implementation of institutional controls would be relatively easy to implement under the groundwater alternatives.

There are considerable uncertainties in the potential radius of influence of injections for Alternatives GW-2 and GW-3. Furthermore, injection of the reagent slurry for Alternative GW-2 may be hindered by bridging across fractures, and limited mobility in tight fractures. Alternative GW-3 would not be subject to these limitations. There are also considerable uncertainties in the number and location of extraction wells and the achievable groundwater extraction rate for treatment for Alternative GW-4. In addition, it may be difficult to maintain continuous operations of an active treatment system (Alternative GW-4) during the winter months in this remote location, and Alternative GW-4 would require more maintenance than Alternatives GW-2 or GW-3.

<u>Cost</u>

The present-worth costs associated with the soil remedies are calculated using a discount rate of seven percent and a five-year time interval. The present-worth costs associated with the groundwater remedies are calculated using a discount rate of seven percent and a thirty-year time interval.

The estimated capital, OM&M, and present-worth costs for each of the alternatives are presented below.

Alternative	Capital	Annual O&M	Total Present Worth
S-1	$0	$0	$0
S-2	$3,939,000	$0	$3,939,000
S-3	$4,253,000	$0	$4,253,000
GW-1	$0	$0	$0
GW-2	$1,436,000	$57,000	$2,365,000
GW-3	$2,424,000	$57,000	$3,353,000
GW-4	$5,404,000	$555,000	$13,987,000

State Acceptance

NYSDEC concurs with the proposed remedy.

Community Acceptance

Community acceptance of the preferred alternative will be addressed in the ROD following review of the public comments received on the Proposed Plan.

PROPOSED REMEDY

Based upon an evaluation of the various alternatives, EPA, in consultation with NYSDEC, recommends Alternative S-3 (building demolition, limited excavation of sediments, and excavation and disposal of soil) as the preferred alternative to address the contaminated soil and sediment at the site and Alternative GW-3 (source area in-situ chemical oxidation and downgradient monitored natural attenuation) as the preferred alternative for the groundwater.

The soil component for this remedy would include the excavation of PAH-contaminated soil to a depth of one foot[8] and the excavation of PCE-contaminated soils to a depth of four feet. The excavated PAH-contaminated soils would also be utilized as backfill to a depth of not less than 1 foot below the ground surface (bgs)[9] in the areas where PCE-contaminated soil would be excavated. Before backfilling with clean soil those areas where residual PAH-contaminated soil would remain, a readily-visible and permeable subsurface demarcation delineating the interface between the residually-contaminated native soils and the clean backfill would be installed. Following the demolition of the building, contaminated soils remaining within the footprint of the building will be addressed as described above. The wetland areas that would be excavated would be backfilled with soil that meets the unrestricted SCOs.

The remedy would also include the excavation of PCE-contaminated sediment and soil from the adjacent wetlands to meet the protection of groundwater SCO. These areas would be backfilled with clean soil.

Under the groundwater component of this remedy, the oxidizing agent that would be injected into the contaminated groundwater at the source areas would chemically transform the VOCs into less toxic compounds or to carbon dioxide, and water. Lower contaminant concentrations outside the source areas would be addressed through monitored natural attenuation.

During the design, samples would be collected to define the limits of the soil and sediment excavation.

Bench- and pilot-scale treatability studies would be performed to optimize the effectiveness of the injection system and to determine optimum oxidant delivery rates and locations for the injection-well points.

Performance and compliance monitoring and testing would be performed during and after the injections to determine residual contaminant concentrations, assess the need for additional treatment, and monitor the natural attenuation of the contamination at the periphery of the plume.

During the design, a Phase 1B Cultural Resources Survey would be performed to document the site's historic resources.

Since the entire groundwater plume will not immediately achieve cleanup levels upon implementation of this alternative, an environmental easement/restrictive covenant would be filed in the property records of Jefferson County. The easement/covenant would, at a minimum, restrict the use of the site to commercial and industrial uses, restrict intrusive activities in areas where residual contamination remains unless the activities are in accordance with an EPA-approved Site Management Plan (see below), and restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by NYSDOH or the County Department of Health.

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[8] If the land use for the property is changed from commercial to recreational before the design of the remedy is approved, then restricted residential SCOs would be utilized, which would allow for recreational use of the property. Accordingly, the PAH-contaminated soils would be excavated to a depth of two feet and backfilled with clean soil. This change would result in the excavation of an additional 1,650 cubic yards of PAH-contaminated soils and would cost an additional $900,000.

[9] The excavated PAH-contaminated soils would be utilized as backfill to a depth of not less than 2 feet bgs if the land use is changed to recreational.

The Site Management Plan would provide for the proper management of all post-construction remedy components. Specifically, the Site Management Plan would describe procedures to confirm that the requisite engineering (subsurface demarcation) and institutional controls are in place and that nothing has occurred that would impair the ability of said controls to protect public health or the environment. The Site Management Plan would also include a soil management plan, an inventory of any use restrictions, the necessary provisions for the implementation of the requirements of the above-noted environmental easement and/or restrictive covenant; a provision for the performance of the operation, maintenance, and monitoring required by the remedy; and a provision that the property owner or party implementing the remedy submit periodic certifications that the institutional and engineering controls are in place. In addition, if in the future, structures are proposed to be built on the property or any existing buildings are reoccupied, as required by the SMP, a soil vapor intrusion evaluation and, potentially, vapor intrusion mitigation systems may be needed until the cleanup criteria have been achieved throughout the entire area

Because this remedy would result in contaminants remaining on-site above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the site be reviewed at least once every five years.

Basis for the Remedy Preference

Alternative S-2 and Alternative S-3 would both effectively achieve the soil cleanup levels. While Alternative S-3 is slightly more expensive than Alternative S-2, Alternative S-2 would require the performance of pilot-scale treatability studies and would take longer to achieve the soil cleanup level than Alternative S-3. In addition, since it is estimated that the on-site treatment of the excavated soil and sediment with ESVE would require 3 years under Alternative S-2, the excavation would remain open until the soils could be backfilled. Therefore, the excavation would have to be secured to prevent on-site worker injuries. Therefore, EPA believes that Alternative S-3 would effectuate the soil cleanup while providing the best balance of tradeoffs with respect to the evaluating criteria.

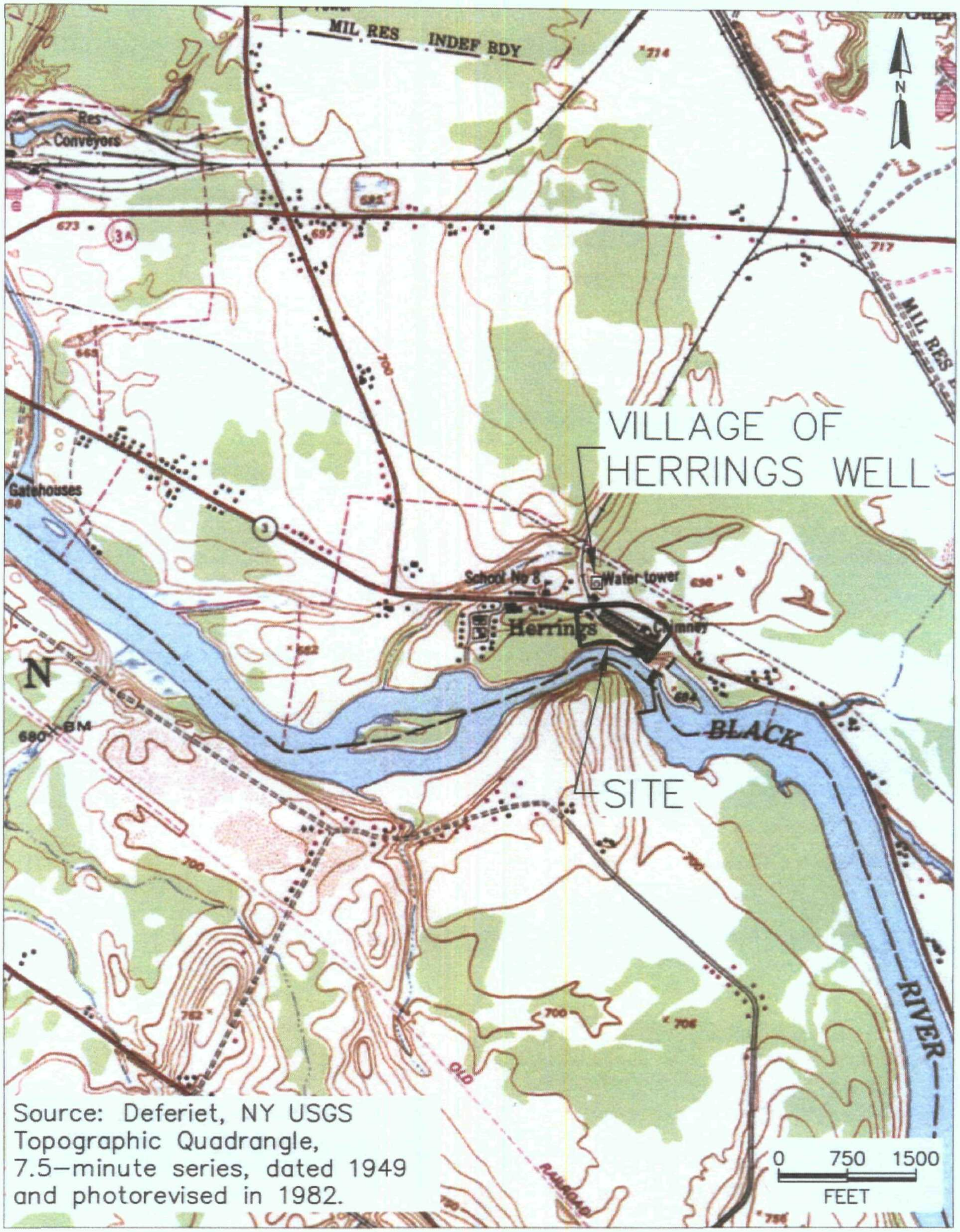
There are considerable uncertainties in the number and location of extraction wells and the achievable groundwater extraction rate for treatment for Alternative GW-4. In addition, it may be difficult to maintain continuous operations of an active treatment system (Alternative GW-4) during the winter months in this remote location, and Alternative GW-4 would require more maintenance than Alternatives GW-2 or GW-3. In addition, Alternative GW-4 is significantly more expensive than the other two action alternatives. There are considerable uncertainties in the potential radius of influence of injections for Alternatives GW-2 and GW-3. Furthermore, injection of the reagent slurry for Alternative GW-2 may be hindered by bridging across fractures, and limited mobility in tight fractures. It is estimated that Alternative GW-3 would achieve groundwater standards in significantly less time than Alternatives GW-2 and GW-4.

For these reasons, EPA has identified Alternative GW-3 as its preferred groundwater alternative since it would effectuate the groundwater cleanup while providing the best balance of tradeoffs among the alternatives with respect to the evaluating criteria.

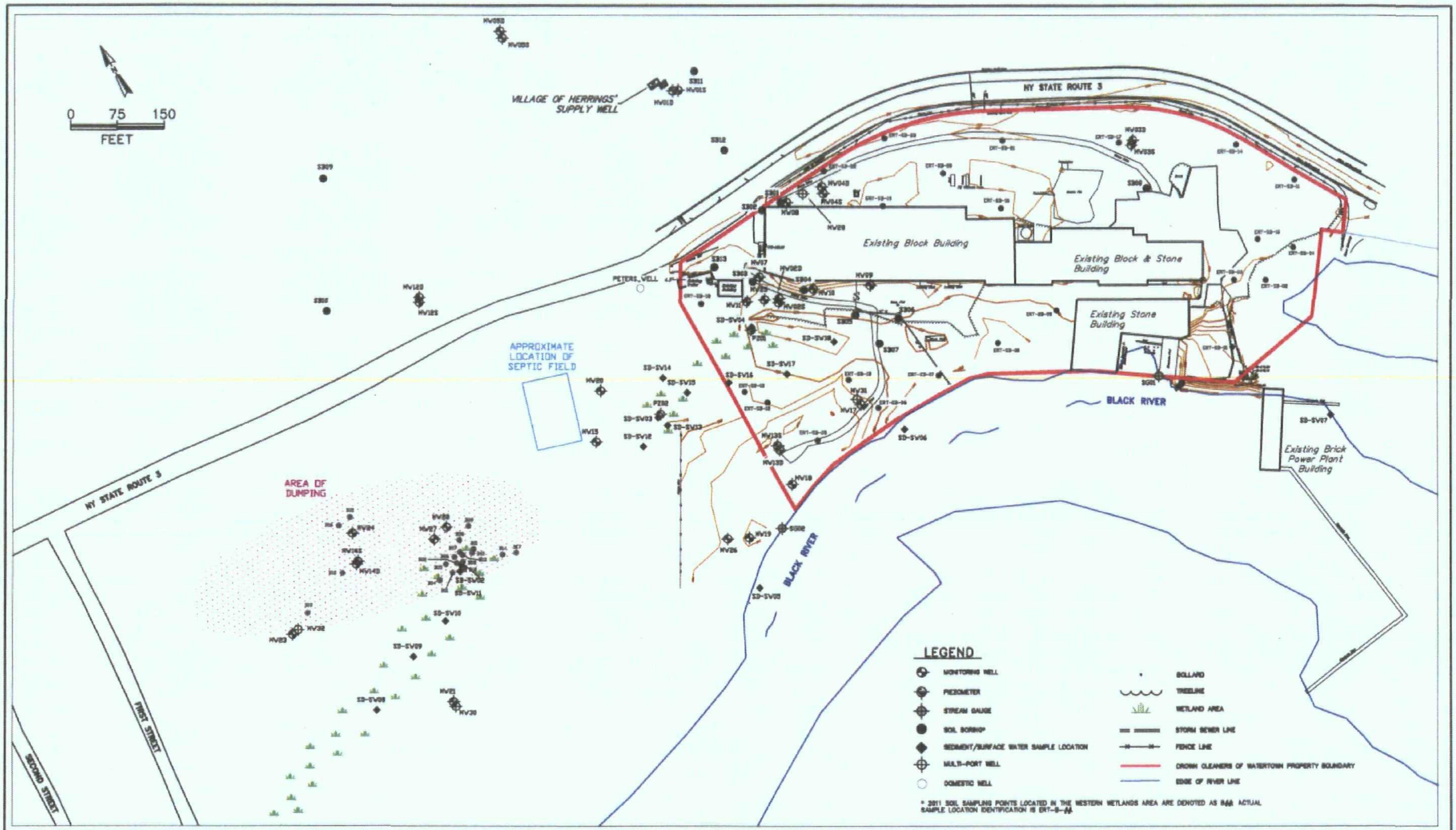
The preferred remedy is believed to provide the greatest protection of human health and the environment, provide the greatest long-term effectiveness, be able to achieve the ARARs more quickly, or as quickly, as the other alternatives, and is cost effective. Therefore, the preferred remedy will provide the best balance of tradeoffs among alternatives with respect to the evaluating criteria. EPA and NYSDEC believe that the preferred remedy will treat principal threats, be protective of human health and the environment, comply with ARARs, be cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. The preferred remedy also will meet the statutory preference for the use of treatment as a principal element.

The environmental benefits of the preferred remedy may be enhanced by consideration, during the design, of technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green Energy Policy and NYSDEC's Green Remediation Policy[10]. This will include consideration of green remediation technologies and practices.

[10] See http://epa.gov/region2/superfund/green_remediation and http://www.dec.ny.gov/docs/remediation_hudson_pdf/der31.pdf.

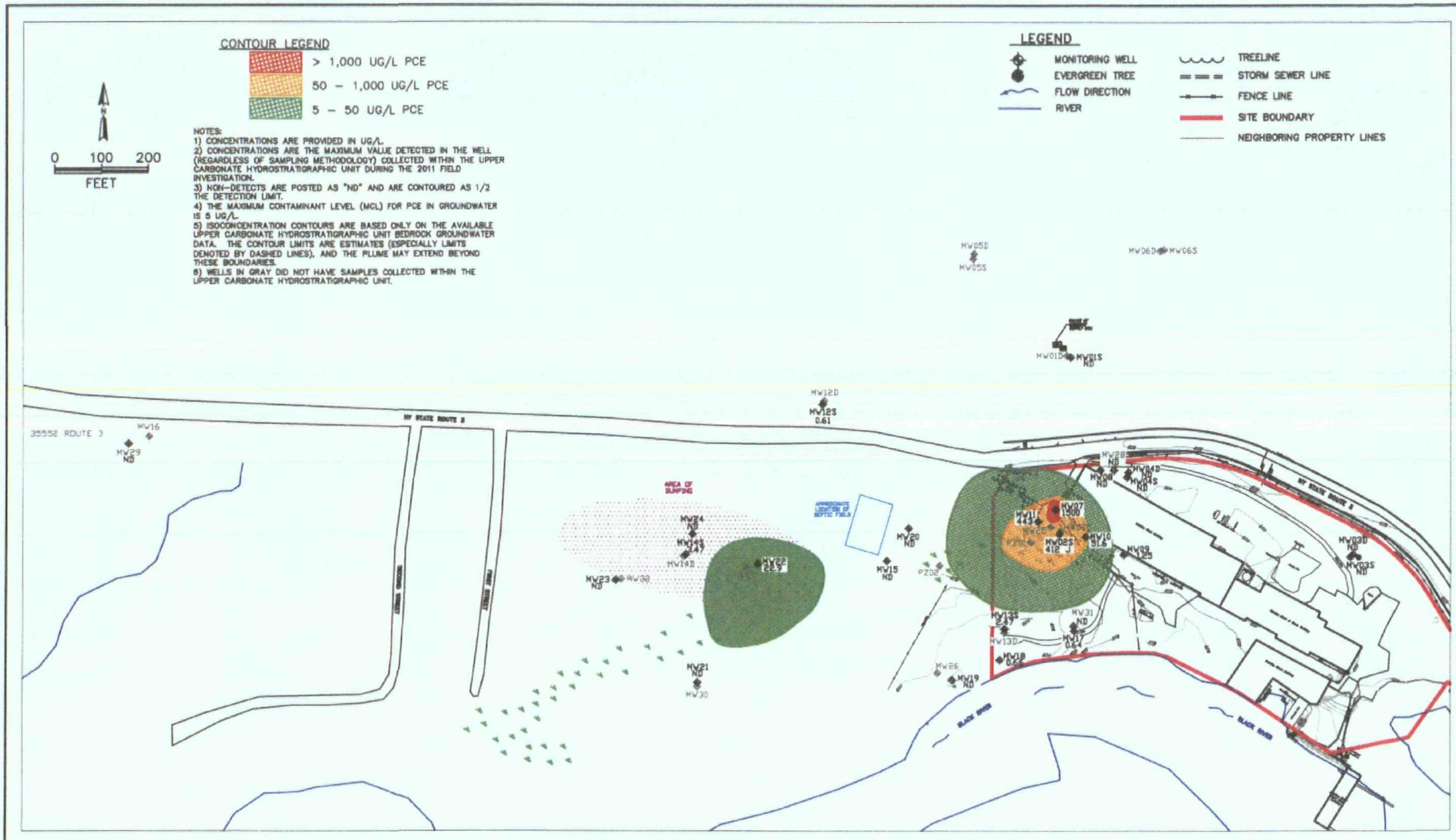


TETRA TECH EC, INC.	TITLE: SITE LOCATION	DWN: LMC	DES.: CTS	PROJECT NO.: 106–3810.0008
	Remedial Investigation Report	CHKD: LEA	APPD: RCC	FIGURE
	Crown Cleaners of Watertown, Inc.	DATE: 08/09/2011	REV.: 1	1



TETRA TECH EC, INC.

TITLE: SITE MAP Crown Cleaners of Watertown, Inc.	DWN.: LMB CHKD: DES.: LEA	DATE: 09/12/11 REV.: 2 APPD:	PROJECT NO.: 106-3810.0008 FIGURE NO.: 2



TETRA TECH EC, INC.	TITLE: ISOCONCENTRATION CONTOUR EXTENT OF PCE IN UPPER UNIT GROUNDWATER - 2011 Remedial Investigation Report Crown Cleaners of Watertown, Inc.	DWN.: LEA CHKD: DES.: LEA	DATE: 08/10/11 REV.: 1 APPD:
			PROJECT NO.: 106-3810.0008 FIGURE No. 3

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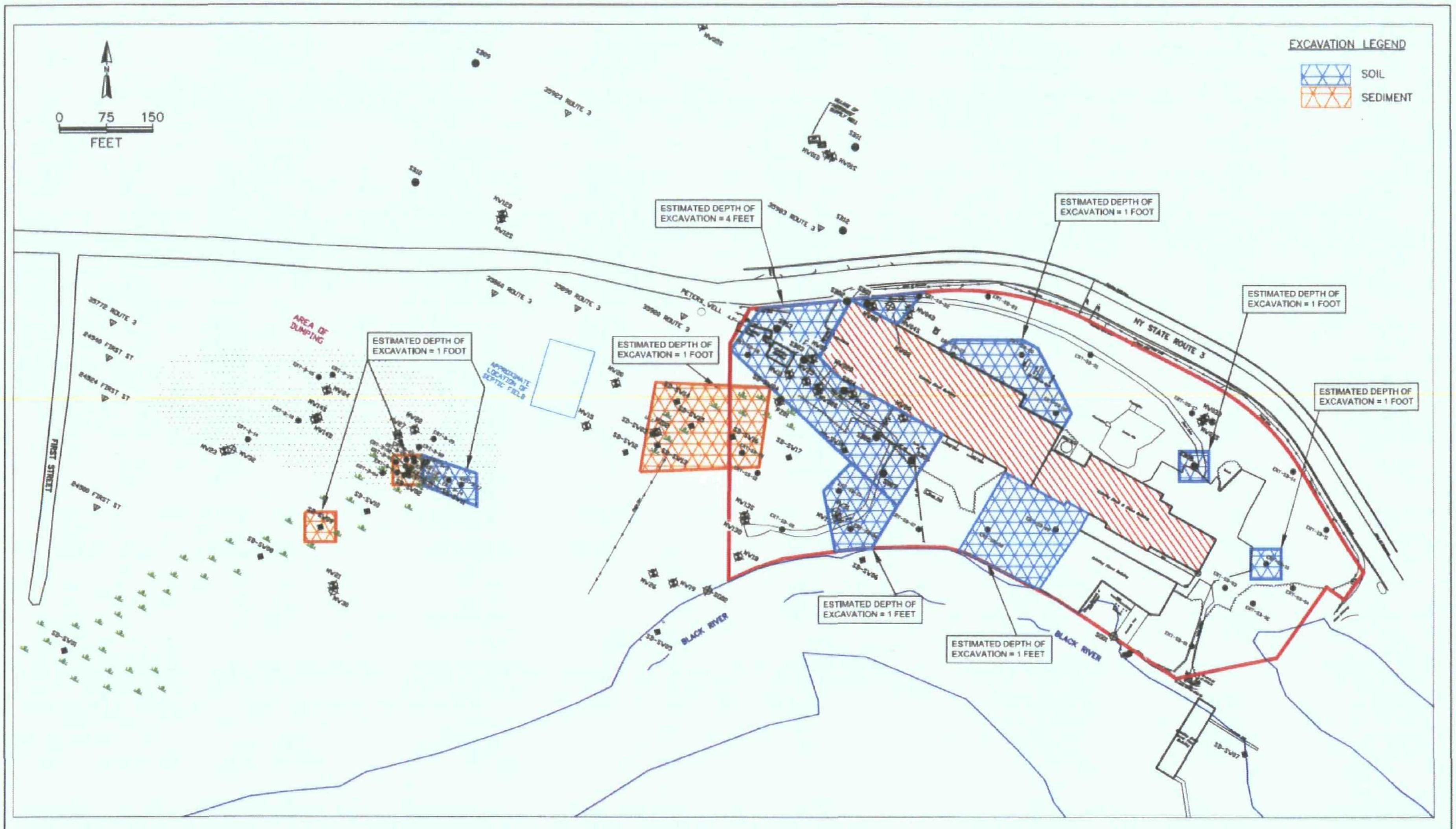

TETRA TECH EC, INC.	TITLE: ESTIMATED EXTENT OF EXCAVATION (ALTERNATIVE S-3 and S-4) Feasibility Study Report Crown Cleaners of Watertown, Inc.	DWN.: LMC CHKD: DES.: RC	DATE: 11/10/11 REV.: 0 APPD:
		PROJECT NO.: 106-3810.0008	FIGURE NO.: 4

RESPONSIVENESS SUMMARY

APPENDIX V-b

PUBLIC NOTICE PUBLISHED IN THE *WATERTOWN DAILY TIMES* ON DECEMBER 12, 2011

U. S. Environmental Protection Agency to Hold Public Meeting for Cleanup of Crown Cleaners Of Watertown, Inc. Superfund Site, Village of Herrings, New York

The United States Environmental Protection Agency (EPA) has released a Proposed Plan that evaluates potential cleanup alternatives for the contaminated soil and groundwater at the Crown Cleaners of Watertown, Inc. Superfund site located on NYS Route 3, Village of Herrings, Town of Wilna, Jefferson County, New York. EPA, in concert with The New York State Department of Environmental Conservation, recommends the removal of contaminated soils from the site and treatment of the source area groundwater as the preferred remedy.

A public meeting to discuss the results of EPA's investigation, outline the preferred remedy and answer the public's questions will be held on Tuesday, January 3, 2012 at 7:00 pm at the Village of Herrings Municipal Office, 35983 NYS Route 3, Herrings, New York.

Documents in support of the preferred remedy are contained in the administrative record located at the Carthage Free Library located at 412 Budd Street, Carthage, New York and the EPA Region 2 Records Center, 290 Broadway, 18th Floor, New York, NY 10007-1866.

Should you have any comments regarding EPA's preferred remedy or the documents contained in the administrative record, they can be submitted by January 17, 2012 to Ms. Pamela Tames, Remedial Project Manager, U.S. Environmental Protection Agency, 290 Broadway, 20th Floor, New York, NY 10007-1866, or tames.pam@epa.gov or to Mike Basile, EPA Community Involvement Coordinator, Western New York Public Information Office, 186 Exchange Street, Buffalo, NY 14204 or basile.michael@epa.gov.

RESPONSIVENESS SUMMARY

APPENDIX V-c

JANUARY 3, 2012 PUBLIC MEETING SIGN-IN SHEET

U S EPA Public Availability Sessions

Tuesday January 3, 2012

Crown Cleaners Superfund Site

(Please Print)

Name: John Arcar Jr
Street Address: St Rt 3
City, State, Zip Code: Carthage NY 13619
Daytime Phone #: 486-6413

- -

Name: Richard A. Bennett Mayor
Street Address: 35772 NYS Rt 3
City, State, Zip Code: ~~Carthage~~ HERRINGS, NY 13619
Daytime Phone #: 315-486-2563

- -

Name: Mona Thomas
Street Address: 24519 First St
City, State, Zip Code: Herrings NY 13619
Daytime Phone #: 315-493-4002

- -

Name: Elaine Avallone Carthage Tribune
Street Address: 237 State St.
City, State, Zip Code: Carthage, NY 13619
Daytime Phone #: 315 493-1276

U S EPA Public Availability Sessions

Tuesday January 3, 2012

Crown Cleaners Superfund Site

(Please Print)

Name: Jennifer Harvill
Street Address: NYS Tug Hill Commission
City, State, Zip Code: 317 Washington St., Watertown, NY 13601
Daytime Phone #: (315)785-2392 jennifer@tughill.org

- -

Name: Denver Deuesedaw
Street Address: 35923 NYS Rt 3
City, State, Zip Code: CARTHAGE 13619
Daytime Phone #: 315 493 6548

- -

Name: Gregory Ris
Street Address: NYSDOH - Herkimer
City, State, Zip Code:
Daytime Phone #:

- -

Name: LINCOLN FANCHER NYSDEC
Street Address: 317 WASHINGTON ST.
City, State, Zip Code: WATERTOWN, NY 13601
Daytime Phone #: 315-785-2513

U S EPA Public Availability Sessions

Tuesday January 3, 2012

Crown Cleaners Superfund Site

(Please Print)

Name: LEON C BARLOW
Street Address: 35827 NYS. RT 3
City, State, Zip Code: HERRING N.Y. 13619
Daytime Phone #: 778-5001

- -

Name: Mary M. McMahon Wilna Town Clerk
Street Address: 414 State St
City, State, Zip Code: Carthage, NY 13619
Daytime Phone #: 315 493-2771 EXT 1 WORK

- -

Name: Mike Storms T/O Wilna Councilman
Street Address: 37248 NYS Rt3
City, State, Zip Code: Carthage N.Y. 13619
Daytime Phone #: 493-1563

- -

Name: Lance Mrack
Street Address: 36252 St. Rt. 3
City, State, Zip Code: Carthage, N.Y. 13619
Daytime Phone #: 315-493-2865

U S EPA Public Availability Sessions

Tuesday January 3, 2012

Crown Cleaners Superfund Site

(Please Print)

Name: FRANCIS M. SKVORAK

Street Address: 39860 N.Y.S. RT. 3

City, State, Zip Code: CARTHAGE N.Y.

Daytime Phone #: 493-2207

- -

Name: Paul H Smith

Street Address: 20101 Strickland Rd.

City, State, Zip Code: Carthage NY 13619

Daytime Phone #: 315 493-2549

- -

Name: Dan Richardson

Street Address: RD 2

City, State, Zip Code: CARTHAGE NY 13619

Daytime Phone #: 778 5142 AREA CODE 315

- -

Name: James C. Childers

Street Address: 24509 First st.

City, State, Zip Code: Carthage NY 13619

Daytime Phone #: (315) 493-2963

U S EPA Public Availability Sessions

Tuesday January 3, 2012

Crown Cleaners Superfund Site

(Please Print)

Name: Delores Peck

Street Address: 35950 NYS RT 3

City, State, Zip Code: Herring NY 13619

Daytime Phone #: 493 3504

Name: DAN NEVILLS

Street Address: 42494 NYS RT. 3 N

City, State, Zip Code: NATURAL BRIDGE N.Y.

Daytime Phone #: 315 644 4875

Name:

Street Address:

City, State, Zip Code:

Daytime Phone #:

Name:

Street Address:

City, State, Zip Code:

Daytime Phone #:

U S EPA Public Availability Sessions

Tuesday January 3, 2012

Crown Cleaners Superfund Site

(Please Print)

Name: Bob Cantagallo - Tetra Tech

Street Address: 1000 The American Road

City, State, Zip Code: Morris Plains, NJ 07950

Daytime Phone #: 973-630-8132

Name: Janet Rica

Street Address: 35950 NYS Rt 3

City, State, Zip Code: Herrings, N.Y. 13619

Daytime Phone #: 493-3504

Name: Jon A. Muslak

Street Address: 35802 NYS. Rt 3

City, State, Zip Code: Herrings 13619 3340

Daytime Phone #: 493-9829

Name: BRETT SURALE

Street Address: P.O. Box 491

City, State, Zip Code: CARTHAGE, NY 13619

Daytime Phone #: 493-1769

RESPONSIVENESS SUMMARY

APPENDIX V-d

JANUARY 3, 2012 PUBLIC MEETING TRANSCRIPT

* *
CROWN CLEANERS OF WATERTOWN, INC. SUPERFUND SITE
TOWN HALL PUBLIC MEETING
* *

HELD AT: TOWN OF HERRINGS TOWN HALL
Herrings, New York
January 3, 2012

TOWN HALL PUBLIC MEETING

APPEARANCES:

ENVIRONMENTAL PROTECTION AGENCY
290 Broadway, 20th Floor
New York, New York 10007-1688
BY: MICHAEL BASILE, COMMUNITY INVOLVEMENT COORDINATOR
JOEL SINGERMAN, CHIEF, CENTRAL NEW YORK REMEDIATION
PAMELA TAMES, P.E., REMEDIAL PROJECT MANAGER

TETRA TECH, INC.
1000 The America Road
Morris Plains, New Jersey 07950
BY: ROBERT CANTAGALLO, SENIOR PROJECT MANAGER

NEW YORK STATE DEPARTMENT OF HEALTH
5665 State Route 5
Herkimer, New York 13350
BY: GREGORY RYS, PUBLIC HEALTH SPECIALIST

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF ENVIRONMENTAL REMEDIATION
317 Washington Street
Watertown, New York 13601-3787
BY: LINCOLN FANCHER, ENGINEERING GEOLOGIST II

Danielle A. Whitham,
Reporter.

Job No. NJ369820

PUBLIC MEETING AGENDA

(The following proceedings began at 7:00 p.m.)

MR. BASILE: Welcome. My name is Mike Basile. I'm the Community Involvement Coordinator for the United States Environmental Protection Agency. I want to thank you for taking the time to come up to the meeting this evening. You have a copy of the agenda in front of you. I just want to go over the agenda and who's going to be speaking, then I have some people before you that I want to introduce who are here from different agencies and entities who won't be speaking this evening.

First of all, let me begin by welcoming you to this Crown Cleaners National Priority Meeting. The purpose of this meeting this evening is to explain to you about what the State and what the Federal Government - that's the agency that I work for - have proposed, and solicit your input. We are in what is called a public comment period, which began on December the 12th and goes to January the 17th. Any comments that you have this evening, they will be recorded by the court stenographer. Our court stenographer is Danielle Whitham. I'm going to ask you this evening, not only for her purpose, but for the purpose of some of the newspapers that are here, that during the question and answer period, if you have a question, I'd ask that you just -- I'll recognize you, if you wouldn't mind stating your name and spelling your name for the stenographer as well as giving your current address, just so we have it for the record. We will be looking at your comments this evening and anything that you have in writing between now and January the 17th, that's when our public comment period ends. If you fail to ask a question tonight and you remember it next week and you would still like to comment, at the bottom of the agenda is an address that you can send that to. I will be introducing to you someone who will be speaking this evening. Her name is Pam Tames. She's our Remedial Project Manager for this site. Her mailing address is at the bottom of the agenda. So if tonight you forget to ask a question and you want to put it in writing, you can still do that until January the 17th and you can mail it to her address at the bottom of the agenda.

I would also like to introduce some individuals that I'd like to recognize who won't be participating actively in the agenda this evening. I'd like to, first of all, thank the Mayor of the Village of Herrings, Rick Beirman, for making this facility available. He's been very, very responsive to our agency, so thank you very much. I'd like to recognize Mr. Paul Smith, the Supervisor for the Town of Wilna. We have two individuals who have worked for a long time on this site and they represent two State agencies. Greg Rys with the Department of Health, he's a health specialist. And Lincoln Fancher, he's an engineering geologist with the Department of Environmental Conservation. He's with the DEC up here in the Watertown area. Again, my name is Mike Basile. I'm the Community *Involvement Coordinator.* I *work for the* EPA. We have a field office in Buffalo, New York and our regional office is in New York City. Everyone from the EPA that you will be listening to this evening works for the EPA for Region 2. Our region covers the New York, New Jersey, the Virginia Islands and Puerto Rico.

To begin this evening's presentations, I'd like to call upon Joel Singerman. Joel is in charge of the Remediation Section for Central New York, and he's going to explain to you about the Superfund process. Joel.

MR. SINGERMAN: Several well publicized toxic waste disposal actions in the late 1970s shocked the nation and highlighted the fact that the past ways of hazardous waste disposal practices were not safe. In 1980 congress responded with a Comprehensive Environmental Response Compensation and Liability Law, more commonly known as Superfund. The Superfund law provides a federal fund for cleanup of hazardous waste sites and enables the EPA to respond to emergencies involving hazardous waste. In addition, the EPA was empowered to compel responsible parties to pay for hazardous waste removal and conduct necessary response actions.

The work you see is very complex and takes place in many stages. Once a site is discovered, an inspection further identifies the hazards of the contaminates. A determination is then made whether to approve the site to be placed on the Superfund National Priority List, a list of the nation's worst hazardous waste sites. Sites placed on the national priority list are primarily scored on the Hazard Ranking System, which lists the risk posed by the site. Only sites that are place on the National Priority List are eligible for removal of waste under Superfund.

The selection of sites for the National Priority List are done by two studies, remedial investigations and feasibility studies. The purpose of the remedial investigation is to determine the nature and extent of contamination and provide you with studies of the risks on public health and the environment. The purpose of the feasibility study is to identify and evaluate the possible ways to clean up the site.

As a part of a Superfund process, the public is invited to participate in the decisions that were made to the site through community relations. Public meetings, such as this one, are held as necessary to keep the public informed of what's happening to each site. The public is also encouraged to ask questions about the remediation investigation that was done.

After considering the public's comments regarding a proposed plan, a Record of Decision is signed. The Record of Decision is a document that documents the decision based on what is or what is not appropriate for the site.

Following the selection of the purposed remedy, it then enters the remedial design phase with plans chosen to implement the cleanup.

Once a site no longer proposes a threat to any healthy environment, at that time the site can be taken off the Superfund's National Priorities List.

MR. BASILE: Our next speaker is Robert Cantagallo. He is from Tetra Tech and he is going to explain to you a little bit about the history of this site and the remedial investigation. Bob.

MR. CANTAGALLO: Thank you very much. My name is Bob Cantagallo. I'm the Project Manager. I work for Tetra Tech and we're a consultant for the EPS. Some of you folks may have seen me around here for the last five or six years. We are the company that did the large part of the remediation investigation overlooking the Crown Cleaners site.

In the late 1800s the Crown Cleaner site wasn't a dry cleaner, it was a paper mill. It was a paper mill primarily for the purpose of creating paper to be use in the manufacturing of paper bags for insecticides. As you can see, it was a fairly substantial facility. There was a mill, actually, right on the river itself. Portions of that building are still there today. There were rail lines or rail spurs coming in, and what appears to be, in the upper part of the picture, an on-site power plant. The St. Regis Paper Company used that site until the mid 1960s. At that point the property was then purchased by Crown Cleaners of Watertown in the late 1970s and operated until 1991 in the Watertown facility. It was my understanding that it served, among other entities, Fort Drum.

The primary containments of concern, because they were a dry cleaner, were PCE and TCE. These were two common chemicals and they're used to dry clean clothes. They're still used today, in fact.

In addition to these two containments of concern, other things which we were concerned about, among other things, were PAHs. PAHs are common organic compounds that are found -- when you grill your meat and you char that meat, that black material that is on your steak is PAH.

PCBs. PCBs are found in plant forms and pesticides. At some point somebody wanted to knock down the mosquito population and went out, probably with a hand sprayer, and started sprayed.

Here are a few pictures of the site. Now, obviously, you folks who live around here are familiar with what that site looks like. And I think that one very interesting landmark is the water tower that is shown there. The tower has been there for, perhaps, 120 to 150 years. On the upper right you can see what's left of the mill that was right on the river. Then, of course, a beautiful shot, in the upper left, of the Black River itself.

It really is a beautiful body of water.

In 1991 it was discovered that PCE was in the Town of Herrings wells, which led to a series of investigations headed by the DEC from 1991 to 2000. In 2000 to 2001 the EPA continued investigations and also continued removal actions. What that means is, if they had any knowledge of the source of contamination of that site, at that point they removed the dirt. For example, behind the building, at one point, there was a pile of spent filters. During the dry cleaning processes, TCEs and PCEs were used and passed through filters so they could be used more than once. It was our understanding that some of the these filters were then deposited in the ground behind the building. So in light of that, at this time is when all of those filters were removed.

In 2002, Crown Cleaners was put on the NPL list, and my company was tasked with the RI at the site in September of 2002. If you recall from the slides from earlier, the RI process is right smack in the middle in the Superfund process. Discovery has already occurred, actions have been initiated, and then we were tasked with determining what is the extent of the contamination and how it can best be cleaned up.

Tetra Tech developed an investigation approach in 2003 to be conducted. Our first item of fieldwork, back in 2004, was relatively brief. It consisted of a full round of groundwater sampling, and at the time there were 24 wells put on the site. We collected the surface water and sediment samples from the Black River and some of the wetlands adjacent to the site and we conducted soil sampling. We summarized our findings in a Data Evaluation Report in 2005, and this allowed us to move onto the next phase of the investigation that started in 2006. We began with the installation of some additional wells at that point. These were deeper bedrock wells. These were wells in which we did some groundwater samplings. We did something called down hole geophysics to monitor some things. What we did was, we did some hammering into the rocks to see where there were cracks were in the rock. We also did some Packer Testing. Those cracks in the rocks that we saw, we wanted to see if those fractures were contaminated, so we did packer testing of our samples. We also conducted a fractor trace analysis. This is just to help us to determine what direction -- if there were fractures in the rock, what direction the fractures were going. We conducted a cultural resources survey. We conducted some additional surface and water and sediment samplings in the wetlands.

In 2007 we felt it was necessary to install three more wells. We also conducted something that's called isotopic analysis of on-site and side gradient wells. This was basically a process where we took a sample from the groundwater off site and sampled it from groundwater from the rest of the site. When I say, "site," I'm talking about, in this sence, the Crown Cleaners property. We compared those two groundwater samplings to determine if the PCE that was in it was the same PCE that came from the site. It did come from the same place. The answer is, yes.

In 2008 we deepened that MW-25. We also sent a groundwater isotopic sampling of residential wells for analysis. I don't know if anyone is here tonight who has a treatment system on their well. We attempted to conduct the analysis on the wells that we were able to sample. The PCE levels were too low. They were so low, in fact, that we couldn't conduct the analysis. And, also, latter in 2008 we installed new fencing in this site.

In 2009 the EPA installed five additional boreholes which were later turned into wells. They follow a similar process as the geophysics and packer sampling. They installed wells in each of those locations and they also did some vapor intrusion sampling. The purpose of that was to determine if the containments had any impact on the homes by vapors or gases coming in from the rain. This year another round of groundwater sampling was collected, as well as some additional soil sampling on the Crown Cleaners property itself, kind of, focusing the area that is going to be addressed in the feasibility study. In other words, where exactly are we going to have to clean up.

This is a figure that shows the Crown Cleaner Property, itself. Each one of those dots is a location where we collected a sample. The bull's-eye-looking symbols are monitoring wells. The solid black dots are either soil samples of surface soil or water samples. As you can see, we collected quite a few samples on and around the site to see what was occurring. Next slide.

This is, kind of, the second half of that area. It shows the wetlands area that is west to the site. If you're looking at the building this way, what you're seeing there is off to the right and down into the woods. There's an area of wetlands down there. As you can see, there were quite a few samples collected there as well.

I'd like to describe the site briefly. I'm sure you're all aware that the Black River, it flows east to west. When we attempted to collect sediment for sampling in the Black River, there was no sediment right adjacent to the site. What that means is, that water is running right on top of bedrock adjacent to the site. And, of course, there are wetlands to the west as we have shown you.

The soil at the site is relatively thin. It's known as what is called a thin overburden. It's mostly silts and fill. You can actually see the bedrock. I think the most we saw was six to eight feet. Underneath it is bedrock. It's a type of bedrock that is common in the area of Watertown. It's kind of like a limestone. It's called dolomitic limestone. That goes down about 150 feet blow the surface of the ground. What we found from our fracture survey was that the bedrock dips to the south. Next slide.

This is a figure which we included on our report that explains to you the subsurface area that

I just described. That, sort of, white, thin layer on top is what is referred to as the silt and fill overburden. The area below it that looks like bricks at an angle, if you will, is known as the dolomitic limestone. 150 feet below that you've reached the top of the what's called basement rock. That's a nice very, hard volcanic-like rock. Next slide.

Groundwater at the site. That's the site where water actually occurs in the ground. In this case we're talking about in the bedrock itself. Because the overburden is so thin, it doesn't have a separate layer of groundwater except what's trickling down from the bedrock. The groundwater of the bedrock flows to the south towards the river. The groundwater that we first encountered in shallow bedrock was from about 5 to 25 feet below ground surface. In other words, if you bore a hole in the rock - which we did - you'll start running into groundwater at about that level, 5 to 25 feet; it depends on where on the site you look. We also found that there was a downward gradient of groundwater on that site. In other words, the groundwater -- many of you may be familiar with the term artesian conditions. In those kind of conditions water is being forced up. What's more common, which is what we have here at this site, is a situation where the groundwater is flowing down through the formation. Next slide.

Most of the early investigations at the site that were overseen by the DEC were to find potential contaminant sources. Some of the things that they noted there was a former filter storage area at the southwestern side of the site building. There was an area in the northern corner of the building where they brought in the PCE to be used for dry cleaning. And, of course, within and around the building there were collection tanks and piping systems that potentially could have leaked. Next slide please.

What we found from the analysis of our soil samplings was, that PCE - that is the main dry cleaning agent - is present in the soils at the site at levels that are above criteria. The highest concentration of PCE contamination were generally contained in the western end of the main building. That coincides with where others found sources of contamination. That's the area where the storage of the filters had taken place.

Lead, pesticides and PAHs were also detected in the soil on the property. Lead is probably from just lead paint that was used on the buildings on the property and had flaked off. Pesticides. As I mentioned before, it's likely that the with the wetlands that were there that, at some point, somebody decided to knock down some of the mosquitos by spraying. And the PAHs are from a number of things that we found. Oil was found. That was from burning. So they could have gotten there in any different kind of forms. Next slide please.

In the groundwater the primary containments that were found and that we were concerned about was PCE. PCE contamination is in the upper portion of the bedrock at the site. It does extend to the west of the site. In addition to the west of the site, underneath that wetland area there is a separate zone, if you will, or an area of PCE contamination in the water. We found that a natural continuation of contamination is occurring. In other words, there are concern conditions in the subsurface of the ground that will allow this material, PCE, to break down over time, and those conditions exist here at the site. What you can't see at the bottom, but obviously is very important, is that we found from a number of groundwater samplings that the plume doesn't extend into the town water. No impacts were noted in the Black River although the PCE was present in the surface water and sediment in the wetland areas. There are some wetlands right on the edge of the Crown Cleaners property and then to the west. There were very little amounts of PCE there. Also noted in that area were PCBs and pesticides. Next slide.

Now, in trying to evaluate our data, we do this in a number of different of ways. One way is to look at the data that we have and look at criteria - in this case it would be New York State criteria and and federal criteria - and see if our sample or our concentration of samples are numbers that exceed criteria ratios. That's step one.

Step two is to conduct an ecological risk assessment. That's where we take this information and we say, "Okay. We know it's there and about where it is. How has it effected the ecology? How is it effecting the plants and animals at the site?" What we found out -- what we determined is, that there's a low potential risk to terrestrial and wetland vegetation. In other words, the plants and invertebrates aren't being effected - those are things like earthworms - from metals. In the wetland sediments, things like PHAs, pesticides, metals were identified to pose a potential risk to those invertebrates. Those are, essentially, the bugs that live on the bottom of these areas. That's important, because those insects serve as a food source for other animals. No risk was determined for carnivorous mammals or birds; in other words, foxes or red-tail hawks. No risks were identified for the surface water of the Black River. Potential risks to small mammals, things like mice, were very low. But there was a potential significant risk for avian receptors. By avian receptors we're talking about common birds, like Robins. They might land on the site and eat earthworms and ingest some of the soil. Next slide.

The third methodology that we used was to assess the site and to conduct a human health risk assessment. What we do is, we take the data and try to determine if there are any vapor intrusion risks to the mammals there and to human health. We've determined that there are areas where there are vapor intrusion risks when that sampling was done. The contamination were extremely low, if they existed at all.

There was a potential long-term risk from the western wetland areas. There's a potential future risk for future residents at the Crown Cleaner property if the surface soil contamination is not addressed. Some of you may be wondering why we are going to bother to assess risk for people who aren't there. And the answer to that is, there are a number of things that could be done with that property. One of them, of course, is it could be used as a park. Another one could be that it is used as potential housing. We're required to evaluate those situations and determine, "Okay. If somebody were to build houses over there, would there be a risk?" It was also determined that groundwater on the site would pose a risk if it were used for drinking. If they put houses at the site and they sunk wells right down into the most contaminated part of the ground and pulled water out, then, over a period of time, it would be a risk to those people. Next slide, please. And that's it.

MR. BASILE: Thank you very much, Bob. And now I'm going to introduce our Regional Project Manager, Pamela Tames. She'll present to you the proposed plan that we're going to recommend for addressing the remediation of this site, after Bob has just given you the results of the remediation investigation.

MS. TAMES: I want to thank everyone for coming. We've looked at a number of different alternatives for the best way for cleaning up the contamination that we found on the Crown Cleaners property and the property adjacent where we found contamination.

So, first, we looked at the soil and the wetlands sediment. We looked at no action. We're required to look at a no-action alternative. That means doing nothing, just letting nature do its thing and no active remediation at all.

Then we looked at Alternative S-2, which is demolishing the building. We would do limited excavation of the contaminated sediments and we would excavate the soil that is contaminated. The soil that is contaminated with PCE, we would excavate that and then treat it on site using what's called ex-situ soil extraction. We would basically build a shed and aerate the soil within this facility and treat the air to clean it up. PCE evaporates. If you pass enough air through the soil, it will clean up the soil. Unfortunately, you can't do that with soil that's contaminated with PAHs. So with this alternative we would clean up the soil that just had the PCE, clean it up and then put it back in the excavated holes. And the PAH contaminated soil would be deposited of off site in a landfill. Next slide please.

The third alternative that we looked at at this facility also required that we cleanup the soil and it also included building demolition, the excavation of sediments, the excavation of soil and off-site treatment and disposal of the PCE contaminated soil. The PAH contaminated soils were not a threat to the groundwater, so they could be reused on site. We would fill the holes left by the excavation with the PAH contaminated soil and then put a foot or two, depending on the eventual use of the property, on top.

MR. DRUESEDOW: Foot or two of what?

MS. TAMES: Clean soil. For the groundwater alternatives we looked at, also, no action; letting the area clean itself out.

The second alternative was what we called the source area enhanced bioremediation and downgradient monitored natural attenuation. Enhanced bioremediation would include adding, basically, food for bacteria that would help the bacteria break up the contaminates in the groundwater. The monitor national attenuation, we would monitor wells and just keep sampling the water on a regular basis to see how it is flushing itself out, but the most contaminated parts would be treated with the bioremediation.

The third alternative would use in-situ chemical oxidation and downgradient monitored natural attenuation. With the chemical oxidation, instead of using food for bacteria, we would use a chemical that would break down the PCE and TCE with an organic chemical. And by adding an oxidator, it would break down the chemicals into basically water; hydrogen and oxygen.

The fourth remaining alternative that we looked at was groundwater extraction and treatment, where we put in wells and pump water out and it goes through an airstripper which you pump up to the top of the tower and as the water trickles down you're blowing air up the tower and you're evaporating the PCE off the water. The air that comes off is then put through activated carbon. Next slide, please.

In each of these alternatives that I just mentioned we evaluated using different criteria. We looked at the overall protection of human health and the environment. We looked at if they're compliant with applicable or relevant and appropriate requirements. Those are rules. New York State has certain cleanup standards. The federal government has certain cleanup standards. With long-term effectiveness and permanence we want to make sure our remediation will last. With the reduction of toxicity, mobility and volume, we'll try to reduce the amount of contamination that is left on-site. With short-term effectiveness and implementability, we want to be make sure that whatever we've chosen we can actually do. We look at cost for each alternative. With state acceptance, New York State has to concur with whatever remedy we choose. And with community acceptance, that's why we're here tonight to present a plan to you and to get your feedback and and your comments.

So the proposed remedy that we think will work best for this site is Alternative S-3, the third soil alternative, and Ground GW-3, which includes demolition of the building, the excavation of the PCE and PAH contaminated soils and limited excavation of the wetland sediments, in-situ chemical oxidation with monitored natural attenuation and then long-term monitoring.

So this slide shows the areas that would be excavated -- where the soil would be excavated. This is the building right here. This is the wetland area.

Now, these cleanup standards that we're using on this slide are for an industrial commercial cleanup. I know there's been some talk about the village acquiring the property and turning the property into a park, and we're hoping that we're able to work that out. Then I have another slide which shows the additional excavation that we would need to do if this is going to be used as a park.

This is the slide showing the plumes that we're trying to clean up. So the yellow and orange areas on the right is where we would make the injection of the chemical oxidation. The green area is the area that will be monitored during the long-term monitoring. On the left plume we are removing some of the contaminated soil which is acting as a source, so that will eventually clean itself out. Next slide, please.

This is the cost of the entire remedy. The soil and sediment remediation is 4.2 million. The groundwater is an additional almost 2 million. The operation of maintenance for the first year is $505,000. That includes the injections of chemicals for the chemical oxidation. And then annually the natural monitoring that we would be doing of the plumes, taking the groundwater samples is $57,000. So present worth of all of those parts of the remedy come up to 7.6 million.

So as I mentioned before, the current proposal is for commercial industrial cleanup. If the area is going to become a park, it will require restricted residential cleanup standards. And in order to have the property cleaned up to those additional standards, the village or the county or the town must acquire the property before we can adjust the design. And that's the additional -- that's the excavation that would have to be done for the restricted residential cleanup standards.

MR. BASILE: Thank you, Pam. Okay. I'm sure you have some questions, and I'll just ask if you wouldn't mind raising your hand, and remember you're going to have to tell the stenographer your name, spell your name and give her your address for the record.

MR. DRUESEDOW: Denver Druesedo, D-R-U-E-S-E-D-O-W. 35923 State Route 3, right next door. A couple of corrections on your map here. Every one of those things you got Xed in those locations, those are inactive and no long in use since the village put in a sewer system, so can you take that off your maps. Okay? During the investigation was there any asbestos noted in the basements of any of the buildings with the heating and all of that stuff?

MS. TAMES: When we did the removal, we did remove some asbestos. There is some asbestos I think, in the basement, but at the time the buildings were not in good enough shape to send people to the basement to clean it up.

MR. DRUESEDOW: So are you going to open those basements up mechanically and then get the asbestos that way or are you just going to crush it down or what?

MS. TAMES: The building will be taken down and removed however they decide, whatever the best way is to do it. The contractors, with the EPA's oversight, will figure that out when the time comes.

MR. DRUESEDOW: Back on page one, on site history, you have St. Regis Paper Company which becomes another paper company, etcetera, etcetera, then the Crown Cleaners. In the interim, Lolly's was in the area and they manufactured insulated underwear, long underwear. So I don't know what processes or anything else was used during that manufacturing of those text tiles.

MS. TAMES: There use to be a big smokestack, which we took down in 2001. That smokestack is probably where a lot of the PAHs came out of, because the PAH contamination on the Crown Cleaners property is very shallow. It doesn't go down that far. But the perchloroethylene and trichloroethylene, the PCE and TCE, those are typically used in dry cleaning and cleaning metal parts. And we did remove the dry cleaning machine filters, and those filters were found -- I don't know if you want to go back to one of the maps. They were found around here. If you go back to the one with the plumes, that is the hottest spot. That red spot is the hottest spot.

MR. DRUESEDOW: Go back to the map just before that, please. I see the red crosses that are in those areas. Are those buildings that are purposed to be torn down?

MS. TAMES: Yes.

MR. DRUESEDOW: My question is, we'd be taking those down because of the contaminates or because of the safety hazards?

MS. TAMES: Because we need to get into that corner of the building. And if we remove that corner of the building, the rest of the building would probably-- we can't leave an unstable building.

MR. DRUESEDOW: Because the white building -- the L-shaped white building, that's a very unsafe building. It's presently falling down. And I don't know how it's connected with the other buildings with piping or what have you, but I feel that should be included in this also. All right? Because there's probably asbestos. It's been used as a dump by passersbys, etcetera, etcetera. I don't know what's in the bottom of the other building.

I like your results. I like lots of what I've read and everything else. I'm actually thrilled, because I live next door. Congratulations folks. I hope you come to a very good resolution on this whole project.

MR. BASILE: Thank you. Any other questions? Does anyone else have a question? Yes, Mr. Mayor.

MR. BEIRMAN: Richard Beirman, B-E-I-R-M-A-N. I'm the mayor for the Village of Herrings. Could you go over which buildings are going off? Just the main ones and the garage right here, right? Across the garage, that little caved-in garage, right there --

MR. SINGERMAN: That's actually attached to that.

MR. BEIRMAN: Now, back to that L-shape building, you're not touching that, right?

MS. TAMES: We didn't really find contamination back there.

MR. BEIRMAN: But the building, like you guys said, was built in the late 1800s. And I've done a lot of research on it and it started right around the same time the village started in 1895, and it was in the 1800s that it was started and there's got to be lead in there. There's got to be asbestos. And I've got pictures of a lot of the safety issues in this building. The turbines in the back, I'm afraid that a kid is going to fall in one of those and never be found where the old turbines used to be. I just feel that it's a huge safety issue and plus the possibility of lead and asbestos and I just fear for the people around it if that gets left.

MR. SINGERMAN: Is the building structurally sound?

MR. BEIRMAN: No. There are pictures where you can see big huge holes where part of the walls are already down. The foundation is in one of those pictures. I have those on a floppy too, if anybody needs them. There's a lot of devastation in that building and I just fear for the safety of my villagers. That's all I have.

MR. BASILE: Thank you, Mr. Mayor. Joel, did you want to make a comment?

MR. SINGERMAN: Well, basically, we're not going to make a selection until we hear your comments and then we'll assign a Record of Decision. And at this point we were hoping that, with an ambitious schedule, that perhaps by the end of January, early February is where we could make that decision, designs during the spring. And then, best case scenario if we have sufficient funds, to go start construction this summer. We have a very ambitious schedule. If we have sufficient funds to do -- I mean, it's 7.6 million, so that's a need before we start.

MR. BASILE: Thank you, Joel. I failed to mention that in each of these areas where we're doing remediations like this, and I have -- this is 1 of 38 sites that I have a responsibility for. We established a repository. Your repository is noted in the proposed plan at the Carthage Free Library.

Bob's presentation and Pamela's presentation on the purposed plan, all of this information sits in the Carthage Library, on Budd Street. So it you're ever looking for documents about this site, you can definitely go to the Carthage Library. Yes.

MR. SKVORAK: Frank Skvorak, S-K-V-O-R-A-K, with the Wilna Town Counsel. A few things. First of all, I believe that L-shape building is partly cantilevered over the river. Am I right? So in other words, what you're talking about is another safety hazard if you have holes in the floor or whatever.

Part of your thing on contamination. Years ago St. Regis Paper Company had a paper mill here and used a chemical. It was for a multi-ply trap bags. They dispersed a solution. And I had the opportunity, many times, to run this machine that they had. And unfortunately, back then, no one was concerned about pollution. And one time the paper machine went down. They had to shut the mill down. And the foreman had a swift discussion, "Dump it." Where it did it go? Straight to the river. I'm talking 250 gallons of this stuff. There was roughly 75 pounds in this 200 plus gallon batch. You saw it on the ground; it wasn't just on the ground. And they made this paper for many years for insecticides, a multi-layer paper bag for seeds or whatever to keep the bugs out.

And being the State of the New York has blown in the wind about whether to straighten this road out. With this plan that you people are proposing, who is going to pay for putting in the substrate or whatever if we ever straighten that road out? They've been saying they're going to straighten that road out forever. Is that plan actually going to make it to a point where they can straighten the road out if the Village of Herrings wishes to do that or allows them to do it or is forced into doing it? Is your plan such that they could do that?

MS. TAMES: We wouldn't have anything against the Department of Transportation straightening the road.

MR. SKVORAK: If you take one foot off the top of the soil and they have to go down more than one foot for a substrate, now they're into contaminated soil, if you, in fact, say we're only going down that far. That's my question. What are you planning to do with this chemical, industrial cleanup that you're talking about? Then also, can the State of New York put a roadway through there without going through pollution controls, etcetera?

MS. TAMES: If you straighten the road this way, right here, this will only be removing a foot of soil, then we will be putting back clean soil.

MS. VENTIQUATTRO-THOMAS: What about what's underneath that contaminated soil is what their getting at? Because when they put the PAH contamination --

MS. TAMES: Oh, no. The PAH contamination is very shallow.

MR. CANTAGALLO: The answer is, the contamination is very superficial, so nothing that we would do as part of this remedy would impact the State's ability to straighten the road out.

MR. SKVOARK: So this industrial commercial removal of one foot of the contaminated soil, that's not permissible for the park system or building of homes on it, right? With the plan you're suggesting, for a village or park to do all of the things they would need to do with the footers for swingsets and footers for a water line or whatever is needed for a water fountain, with what you're purposing, is that adequate for all the things that we would need to do to get it to that point?

MR. SINGERMAN: They would have to abide by the site manager's plan that would clean that. They may have to excavate more soil to protect any of the workers and the public. You could also avoid that area so that they may not take that into effect, because there may not be contamination. That is what I would recommend. Anything that would come into the design for a residential or park area, that you look at the site where the contamination is and try to go in an area where there's not contamination or you may have to have expose all of the soil, and then it's an issue of how to handle and manage it.

MR. SKVORAK: To say, "Okay, guys. You're on your own now. We would like to do this, but we're not here yet because we didn't go far enough." That's kind of the question. I don't want to hammer and talk this down, but it just seems to me that these people are standing alone on this here. They are holding the bag in a sense. So thank you for your attention.

MR. BASILE: Any other questions?

MR. SMITH: Paul Smith, Town of Wilna. S-M-I-T-H. You say that it's 7.6 million to do this. What is the cost if you bring it back to a recreational site?

MS. TAMES: I believe it was approximately a

$900,000 difference.

MR. SMITH: More to the project?

MS. TAMES: Yes.

MR. SMITH: You're not sure about the buildings that are going to be taken down, if they are contaminated, if they are going to be taken off site? And will the old dryer pits, will they be filled with soil and not the blocks from the building itself?

MS. TAMES: I would think the foundation would be removed. The buildings are built directly on rock.

MR. SMITH: But usually when they put a paper machine in, like they did in Carthage, they pushed it in in Carthage. But then the problem arises that over years, all the soil you put on top seeps through holes in the crevasses and it takes quite a while to fill the holes up. And even when you put blacktop over it, you still have the underlying dirt going down through all of these crevasses. So I would hope that somewhere along the line you would remove the blocks and take them to some landfill that would be preferable for this use. And I just hope that the Town and the Village of Herrings, that we can come through with the ability to get this property and have use to get it back to a recreational stage, because it's hard enough to get a grant for any type of these things. So the more we could pressure you to get it to a recreational site -- we are in the process of trying to take over ownership, but there are some legalities with the DEC and maybe your areas. If we can get to an agreement on who is going to be liable in the future, in case there are some problems, would be good. And I do believe we had a discussion if anything like a tree or a footer has to go in, in the future, we will have to sit down with the DEC and make sure that we are in the process of doing something right, that we don't jeopardize anyone's health and stuff. Thank you.

MR. BASILE: Thank you, Paul. Are there any other questions? Yes, sir.

MR. STORMS: Mike Storms, S-T-O-R-M-S. Town of Wilna. I just feel that with this great project that we're proposing here, and it's taking care of an eye-sore, but there's no sense of cutting it short, that we're able to bring this to a park grade should be the minimal, because the chances of anyone ever building commercially over there are slim to none in the North Country. What we should do is remove all and any soils that we possibly can, have them replaced with clean soil and try to beat any of these questions of what you're going to do down the road. If you're going to put in a pavilion and running water, any time you poke a hole in the ground, you don't want to have to go through six months worth of procedures and site visits and this and that and the other thing. It would just simplify things for us. And I am quite positive, with talks I've heard from Paul and the Mayor, that between the village and the town that something is going to be done park-wise with this. In a sense, in going through all of the billions of dollars and then stopping just short of what we really should have, doesn't make sence. Thank you.

MR. BASILE: Thank you. Any other questions? Does anyone have any other questions? If you don't have any other questions, I would just remind you that if you still have comments after this evening's meeting, you can use this agenda for the address to send comments to Pamela Tames.

On behalf of the State, the Environmental Protection Agency, the contractors, the Town and the Village and the Mayor, I want to thank you for your attendance. We want to thank you for your input.

It's really valuable to hear from you. Thank you for taking the time to come out here tonight.

After we end the meeting, please feel free to speak to them if you have any more questions or concerns. Thank you very much and have a great year. Thank you.

MS. TAMES: I want an e-transcript, if that makes it easier for you.

(Whereupon, the Meeting concluded at 8:10 p.m.)

-oOo-

RESPONSIVENESS SUMMARY

APPENDIX V-e

LETTERS RECEIVED DURING THE COMMENT PERIOD

TOWN OF WILNA

414 State Street
Carthage, New York 13619-1414
TDD# 1-800-622-1220

Town Clerk
Mary M. McMahon
Office: (315) 493-2771
Fax: (315) 493-8155

Highway Supt.
Patrick O'Meara
Office: (315) 493-3330
Fax: (315) 493-3330
Home: (315) 493-6109

Supervisor
Paul H. Smith
Office: (315) 493-3058
Fax: (315) 493-8155
Home: (315) 493-2549

Councilman
Marco Franchini
Michael Storms
Daniel Nevills
Francis Skvorak

January 9, 2012

Ms. Pamela Tames, P.E.
US Environmental Protection Agency
Region 2
290 Broadway, 20th Floor
New York, NY 10007-1866

Re: Site 623010, Crown Cleaners, Herrings (V), Jefferson County

Dear Ms. Tames:

I first want to take this opportunity to thank you for your ongoing efforts through EPA to address short/long-term issues/concerns associated with contaminate/s in the Village of Herrings water supply, stemming from the Crown Cleaners of Watertown, Inc. Superfund Site. Also, I want to convey to you the interest and intent of the town and village in acquiring the property for public use and developing it as an active recreation park.

While privately owned at this time, the property owner has expressed interest and intent in giving the site to the Village of Herrings and/or the Town of Wilna for use as a public recreation park. Committed to assuming responsible public ownership of the property, the town and village have invested in legal counsel to guide next steps to indemnify the municipalities from future liabilities originating from the site. At such time indemnification can be assured, local officials will be in a position to advance efforts to acquire the property.

Constructed in the late 1800's from materials commonly used in paper mills, the wooden roof and floors have rotted through to the cellar to expose the building remnants to the natural elements. Once a vibrant and vital part of our community and local economy during the late 1800's through the mid 1900's as a paper mill, the 9-acre site now reflects a fenced in area with overgrown underbrush and vegetation surrounded by partially collapsed, decaying, blighted and dangerous industrial buildings. Vacant for over 20 years, time will only expedite the existing conditions of the buildings. Furthermore, lead and/or asbestos remnants remaining in the buildings will continue to leach contaminates into the area. As a local official I am concerned that if the issues/concerns associated with the site are not fully addressed at this time, public safety will be further jeopardized while costs to construct an active public recreation park any time soon will be prohibitive to the local community.

I want to take this opportunity to reiterate my appreciation for your ongoing efforts to resolve this matter and to clearly state my support for expanding the preferred EPA remedy as presented at the January 3, 2012 public meeting at the Village of Herrings Municipal Building to address the broader safety issues/concerns associated with the Crown Cleaners of Watertown, Inc. A forbidden & attractive nuisance passively inviting curious youth and unsuspecting passersby to explore, needs to give way to the public for reuse as a recreation park, realignment of NYS Route 3 and downtown revitalization efforts. Therefore, I am requesting EPA fully invest an additional $900,000 to the proposed $7,606,000 to address the broader issues/concerns of public safety, facilitate public reuse of the site and maximize cost efficiencies and effectiveness. If you have any questions/comments regarding this matter, please feel free to contact me at (315) 493-2771.

Sincerely,

Paul Smith

Paul Smith
Supervisor

Cc: Richard Beirman, Mayor of the Village of Herrings
Lincoln Fancher, NYS DEC Region 6
Congressman William Owens
Senator Patty Ritchie
Senator Charles Schumer
Senator Kristin Gillibrand
Assemblyman Kenneth Blankenbush

Herrigs EPA Report
Francis J. Burke
to:
Pam Tames
01/10/2012 04:20 PM
Hide Details
From: "Francis J. Burke" <fjburke@swbell.net>

To: Pam Tames/R2/USEPA/US@EPA

Dear Pamela,

I lived in the area for my first 18 years and read with interest in the January 5, 2012 edition of the Carthage Republican Tribune about the recent meeting with regard to the clean up of what was left by the Crown Cleaners at the former St Regis Paper Mill in the village of Herrings, New York.

I did not live in the area when the Crown Cleaners was in operation but I did live in the area when a Dry Cleaning service existed in the garage adjacent to the house across the road from the entrance to the Hydro-Electric Powerhouse at Herrings. (Look up the location on Google Earth)

I am wondering if per chance any spillage from this dry cleaning service was taken into account with regard to your pollution findings.

Sincerely,

Francis J Burke
Tulsa, Ok

CROWN CLEANERS OF WATERTOWN, INC. SUPERFUND SITE
RECORD OF DECISION

APPENDIX VI

STATEMENT OF FINDINGS: FLOODPLAINS AND WETLANDS

RECORD OF DECISION
CROWN CLEANERS OF WATERTOWN, INC. SUPERFUND SITE
STATEMENT OF FINDINGS: FLOODPLAINS AND WETLANDS

Need to Affect Floodplains and Wetlands

Approximately 1.4 acres of a 100-year floodplain is located within the site boundary. The floodplain is associated with the Black River and occupies the southern extent of the study area. No portions of the 500-year floodplain are located within the Study area.

New York State Department of Environmental Conservation (NYSDEC) and United States Department of the Interior National Wetland Inventory (NWI) data regarding mapped freshwater wetlands were reviewed for the study area. Two NWI mapped wetlands were identified on the site. Approximately 0.79 acre of these mapped features occurred within the site boundary. These NWI mapped wetlands included a palustrine scrub shrub broad leaved deciduous seasonally flooded/saturated wetland located along the western site boundary and a lower perennial riverine, unconsolidated bottom, permanently flooded surface water body (the Black River) located along the southern site boundary. Two additional NWI mapped wetlands occur within the off-site portion of the study area, approximately 800 feet southwest of the site. These mapped wetlands total 0.84 acre and consist of palustrine forested, broad leaved deciduous, seasonally flooded/saturated wetlands. NYSDEC mapped wetlands were not identified within the Study area.

A significant amount of debris, including, paper waste from the former paper factory, old appliances, and several drum carcasses, is located in the wetland to the southwest.

Soils located on the floodplain and sediments located in the wetland located immediately west of the site and the wetland located to the southwest of the site are contaminated with volatile organic compounds (VOCs), metals, and polycyclic aromatic hydrocarbons (PAHs). The Baseline Ecological Risk Assessment prepared for this site determined that these contaminated areas pose risks to ecological receptors. Specifically, in the wetland sediments, the screening assessment, using benthic community benchmarks for community level impairment, identified PAHs, chlordane, antimony, arsenic, cadmium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, vanadium, and zinc as posing a potential risk to benthic community structure and function. The results of the baseline risk assessment indicate that the contaminated soils on the site, including those located in the floodplain pose an unacceptable risk to human health due, primarily, to the presence of VOCs, PAHs, and metals. Accordingly, remedial action alternatives were developed in the feasibility study (FS) report to remediate site soils and the wetland and floodplain areas. The selected remedial alternative S-3 includes, among other things, the excavation of contaminated soils and sediments from the floodplain and wetlands.

In addition to the selected remedy, the FS also considered a No Action alternative, which does not entail excavation of contaminated wetlands/floodplains sediments/soils. Under the No Action alternative, the highly contaminated sediments/soils would remain in place, posing a high risk to on-site ecological receptors, and would remain as a source of contamination for other areas. Thus, the no action alternative would not be protective of ecological or human receptors. The implementation of any of the action alternatives developed in FS would be more protective of human health and the environment than the no-action alternative since they would meet the remedial action objectives and preliminary remediation goals for the site and would result in residual risks less than the no-action alternative.

The Environmental Protection Agency (EPA) and NYSDEC have determined that there is no practicable alternative that is sufficiently protective of human health and the environment which would not result in the excavation of the sediments and soils located in the floodplain and wetlands. Consequently, since remedial action is necessary, any remedial action that might be taken would necessarily affect the floodplain and wetlands associated with the Crown Cleaners of Watertown, Inc. site.

Effects of Proposed Action on the Natural and Beneficial Values of Floodplains and Wetlands

Excavation of contaminated sediments and soils in the wetlands and floodplain will result in temporary, localized disturbance to the wetlands and floodplain. The total construction period is estimated at nine months. It is not anticipated that implementation of the selected remedy will result in any significant alteration of the existing site hydrology, which is critical for wetland restoration.

The principal benefit of EPA's selected remedy will be the removal of sediment-bound contaminant mass from the wetlands and soil-bound contaminant mass from the floodplain. The contaminated sediments will be removed from the wetlands and will no longer function as a source of contamination for the downstream areas or pose risk to ecological receptors. In this context, the selected remedy will have a substantial positive impact on both the natural and beneficial values of the floodplain and wetlands.

Compliance with Applicable State or Local Floodplain Protection Standards

All remedial work in the wetlands and floodplain bed will need to comply with the substantive requirements of with New York State Environmental Conservation Law Article 24 and 6 NYCRR Part 663 requirements, as well as Executive Order 11990, 40 CFR Part 6 Appendix A, "Statement of Procedures on Floodplains Management & Wetlands Protection," and Section 404 of the Clean Water Act.

Measures to Mitigate Potential Harm to the Floodplains and Wetlands

The following mitigation measures will be undertaken to reduce impacts on floodplains and wetlands:

- Engineering procedures (*e.g.,* berms, silt curtains, etc.) will be applied to the wetlands during remediation to prevent spreading of contaminated sediments particularly during a flood event.

- Restoration of the disturbed remediated wetlands and floodplain soils will include backfilling the excavated areas with clean material that is compatible with wetland, floodplain, and stream restoration, and the areas will be re-planted with appropriate native species.

- Existing floodplain resources that will be affected by the selected remedial action will be addressed and restored.

- During the remedial design phase of the project, a wetlands restoration monitoring plan will be devised, to ensure that wetlands restoration achieves the desired results, and to protect against the establishment of unwanted invasive species.

- Routine inspection of the restored wetlands will be conducted for several years to ensure adequate survival of the planted vegetation. Replanting will be performed, if necessary.