RECORD OF DECISION

Smithtown Groundwater Contamination Superfund Site

Smithtown
Suffolk County, New York

United States Environmental Protection Agency
Region II
New York, New York
September 2004

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Smithtown Groundwater Contamination Site
Villages of Nissequogue, Head of the Harbor and St. James, Suffolk County, New York

Superfund Identification Number: NY0002318889

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedy for the Smithtown Groundwater Contamination Superfund Site (the Site), which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision document explains the factual and legal basis for selecting the remedy for the Site.

The New York State Department of Environmental Conservation (NYSDEC) concurs with the selected remedy. A letter of concurrence from NYSDEC is attached to this document (APPENDIX IV).

The information supporting this remedial action decision is contained in the administrative record. The index for the administrative record is attached to this document (APPENDIX III).

ASSESSMENT OF THE SITE

The response action selected in this Record of Decision (ROD) is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

DESCRIPTION OF THE SELECTED REMEDY

The remedial action described in this document addresses contaminated groundwater at the Smithtown Groundwater Contamination Site. In particular, it addresses residential areas impacted by contaminated groundwater from unidentified upgradient sources. This remedial action supplements a removal action undertaken by EPA to address residential wells with chlorinated volatile organic compounds (VOCs), particularly perchloroethylene, which exceeds the federal Maximum Contaminant Levels (MCLs).

Selected Groundwater Response and Alternate Water Supply Remedy

The selected remedy includes an alternate water supply to homes currently and potentially affected by the groundwater contamination and long-term groundwater monitoring.

The major components of the remedy include:

- Approximately 270 homes within the affected area of the Site will be connected to either the Suffolk County Water Authority or St. James Water District for their future potable water needs. This action will provide the physical connection from the houses to the water mains near the houses. After hookup to the water mains, the residential wells will be properly abandoned (in accordance with New York State requirements) to eliminate possible risk to human health.

- No active groundwater remedy is being utilized. However, aquifer restoration is anticipated to occur within a reasonable time frame based on natural processes such as dispersion, dilution and volatilization. Long-term monitoring to ensure aquifer restoration will include groundwater and surface water sampling. Surface water samples will be collected in select locations along the Nissequogue River and Stony Brook Harbor. Groundwater will be sampled from selected monitoring wells to monitor the contaminant concentrations and migration over time. Additional monitoring wells will be installed as necessary to allow for effective monitoring of the contamination.

- Institutional controls such as groundwater use restrictions (through well drilling permit restrictions) will be utilized to prevent future use of contaminated groundwater.

- A review of Site conditions will be conducted no less often than once every five years using data obtained through the annual groundwater sampling program. The Site reviews will include an evaluation of the extent of contamination and an assessment of contamination migration and attenuation over time. The long-term monitoring program may be modified, if necessary, based on the monitoring results.

The Remedial Action Objectives for groundwater are to protect human health from exposure (via ingestion and dermal contact) to VOCs in groundwater at concentrations in excess of New York State groundwater standards and Federal MCLs and also to restore the aquifer to meet these State and Federal standards in a reasonable time frame.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy meets the requirements for remedial actions set forth in CERCLA §121. It is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective.

The alternate water supply component of the selected remedy satisfies the statutory preference for permanent solutions. While the groundwater component of the selected remedy does not satisfy the statutory preference to reduce the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants through treatment, the groundwater contamination will continue to decrease through natural processes such as dispersion, dilution, and volatilization. Thus, aquifer restoration is expected within a reasonable time frame. The use of a treatment technology would not result in a significant decrease in the toxicity, mobility or volume of the hazardous substances within in a reasonable time frame.

Because this remedy will result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, and it will take more than five years to attain remedial action objectives for groundwater contaminants, a review will be conducted no less often than once every five years after start of the construction of the remedial action components for the Site to ensure that the remedy is, or will be, protective of human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The Decision Summary of this ROD contains the remedy selection information noted below. More details may be found in the administrative record file for this Site.

Chemicals of concern and their respective concentrations (see ROD, pages 9 through 22, and tables 3 through 12);

Baseline risk represented by the chemicals of concern (see ROD pages 25 through 38, and tables 18 through 19);

Cleanup levels established for chemicals of concern and the basis for these levels (see ROD page 38, and tables 1 and 5);

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 pages 24 through 27);

Potential land and groundwater use that will be available at the Site as a result of the selected remedy (see ROD pages 57 and 58);

Estimated capital, annual operation and maintenance, and total present worth costs, discount rate, and the number of years over which the remedy cost estimates are projected (see ROD pages 53 and 57, and Table 20); and,

Key factor(s) that led to 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 59 through 62).

AUTHORIZING SIGNATURE

William McCabe (signature) — 9-30-04

for George Pavlou, Division Director
Emergency and Remedial Response
Division

Date

ROD FACT SHEET

SITE

Site name:	Smithtown Groundwater Contamination Site
Site location:	Smithtown, Suffolk County, New York
EPA Region:	II
HRS score:	50
Site ID #:	NY0002318889

ROD

Date signed:	September 30, 2004
Operable Unit:	OU-1
Selected Remedy:	Alternate Water Supplies/Long-Term Monitoring/Institutional Controls
Capital Cost:	$ 3,462,104
Annual O & M Cost:	$ 46,820
Present-Worth Cost:	$ 4,061,219

LEAD

United States Environmental Protection Agency

Primary Contact:	Syed M. Quadri (212) 637-4233
Secondary Contact:	Kevin M. Lynch (212) 637-4287

WASTE

Waste type:	Chlorinated Volatile Organic Compounds Particularly, Perchloroethylene (PCE)
Waste origin:	Unknown
Contaminated media:	Groundwater

DECISION SUMMARY

Smithtown Groundwater Contamination Superfund Site

Smithtown
Suffolk County, New York

United States Environmental Protection Agency
Region II
New York, New York
September 2004

TABLE OF CONTENTS

SITE NAME, LOCATION AND DESCRIPTION

The Smithtown Groundwater Contamination Superfund Site (the Site) includes an area with contaminated groundwater in the Villages of Nissequogue and Head of the Harbor, and the Hamlet of St. James, Smithtown, in northern Suffolk County, New York. FIGURE 1 and FIGURE 2 provide a Site location map and Site map, respectively.

The Site is situated in an approximately four-square mile residential area bounded by Stony Brook Harbor and an east-west line defined by Spring Hollow Road to the north; the Nissequogue River to the west; Edgewood Avenue and North County Road to the south; and Hitherbrook Road to the east. The Site is bounded by bodies of water to the northeast (Stony Brook Harbor) and west (Nissequogue River), and residential developments to the north and east. Homes in this predominantly residential area primarily use private wells for potable drinking water and septic systems for sanitary wastewater disposal. Some business/retail development is located in St. James to the south/southeast.

The wells at the Site are within the unconfined Upper Glacial/Magothy aquifer unit. The aquifer is approximately 500 feet thick; the depth to the water table ranges from less than 5 feet to 200 feet below ground surface (bgs). The groundwater flow direction is complex in the Site vicinity. The regional flow is toward the north from the business/retail area towards the predominantly residential area; however, the two major bodies of water, the Nissequogue River and Stony Brook Harbor induce flow to the west and east, respectively.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

History

On October 9, 1997, EPA received a written request from the New York State Department of Environmental Conservation (NYSDEC) requesting assistance in funding alternative water supplies for residences affected by contaminated groundwater. Attached to NYSDEC's request for assistance was a private well sampling survey, prepared by the Suffolk County Department of Health Services (SCDHS), which presented drinking water results from 35 private wells in the area (SCDHS 1997). Analytical data from this survey indicated that several wells were contaminated with volatile organic compounds (VOCs), primarily tetrachloroethylene (PCE).

SCDHS collected samples from approximately 150 homes throughout the area of the Site. Analytical results from these data indicated that 23 residences were contaminated with PCE at concentrations exceeding the State and federal maximum contaminant level (MCL) of 5 parts per billion (ppb). Four of these residences had PCE concentrations exceeding EPA's Removal Action Level (RAL) of 70 ppb. As a follow-up to the SCDHS sampling, in April 1998, EPA collected 330 samples from 295 private wells to further delineate the extent of PCE contamination. Based on the SCDHS and EPA analytical data, a total of 35 residential wells were identified as contaminated with PCE (or its breakdown products) at concentrations above the MCLs. The RAL for PCE was exceeded in six homes. The SCDHS advised all affected residents not to use the well water for drinking or cooking purposes and to limit exposure through direct contact.

In April 1998, EPA began the delivery of bottled water on an emergency basis to the affected homes where the RAL was exceeded. In June, 1998, EPA expanded its delivery of bottled water to all residences where the MCLs for PCE or its breakdown products were exceeded. By July 1998, all residences had received the water sampling results.

On July 23, 1998, an EPA Action Memorandum was signed that authorized Removal Action activities to be conducted at the Site. Removal activities were restricted to homes that exceeded EPA's MCLs. For homes where the MCL was exceeded and where public water was available, EPA provided the service connection to the public supply from the Suffolk County Water Authority (SCWA) distribution system to the household water distribution system. Existing wells were disconnected. For homes where the MCL was exceeded and public water was not available, EPA installed individual household granular activated carbon (GAC) treatment systems or upgraded the existing treatment systems installed independently by the residents.

Since 1998, EPA has collected samples from several hundred private wells in the Smithtown area. EPA has provided hookup to the public water supply or treatment at the tap for 39 private wells with PCE levels above or equal to 5 ppb.

A Hazard Ranking System (HRS) Report was prepared for the Smithtown Groundwater Contamination Site in August 1998. On January 19, 1999, the Site was placed on the National Priorities List (NPL).

Enforcement Activity

SCDHS sampled 11 current and former commercial facilities located south/southeast of the contaminated wells from November 1997 through April 1998 to identify potential sources of the contaminated groundwater. These investigations included the installation and subsequent sampling of test wells in the area of these facilities. Each facility utilizes a private sanitary sewerage disposal system consisting of septic tanks, cesspools/leaching pits, and/or other on-site wastewater disposal. Sample results showed detections of a number of VOCs, suggesting that several of the suspected source facilities were discharging hazardous wastes to the subsurface through their septic systems. Concentrations of PCE in liquid samples ranged from non-detectatable levels to 65,000,000 ppb. PCE in sludge samples ranged from non-detectatable levels to 160,000 ppb. At the direction of SCDHS, the septic systems were cleaned out subsequent to the 1997/1998 sampling. SCDHS issued letters to each property owner that clean outs were adequate and that no further action was necessary.

In 1999, EPA sent requests for information to the owner/operators of the 11 suspected source area seeking, among other things, information regarding historical disposal practices at these locations. Despite the resulting documentary evidence collected by EPA and the data previously generated by the SCDHS, EPA's Remedial Investigation (RI) field work has been unable to confirm that any suspected source area is now or was previously contributing to the groundwater contamination.

Specifically, in the Spring of 2003, initial groundwater screening using vertical profile wells (VPW) was performed at the 11 locations of the potential source areas. Twenty-five VPW groundwater screening samples were collected. The groundwater MCL screening criteria for Site-related chlorinated VOCs were exceeded at only one location, at which a monitoring well was installed. Septic system sludge and wastewater samples were also collected. The resulting data indicates that waste handling practices were improved at the 11 facilities since septic systems were cleaned out in the late 1990's and that these facilities are not currently contributing contamination to the groundwater.

The inability to pinpoint the source (s) of contamination at this Site is affected by factors which include the possibility that disposal occurred more than 30 years ago and may have involved a relatively small total volume (e.g., several drums or less); disposal may have occurred in relatively small volumes over extended time periods; the contamination has likely been subject to dispersion, dilution and volatilization; and the disposal more likely than not occurred in multiple locations (including hundreds of septic sources) spread over a significant land area with varied topography and geological strata. In the event that EPA obtains information which indicates that one or more parties may be liable, EPA may seek to have such parties participate in, or reimburse EPA for, performance of the remedy.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Proposed Plan was prepared by EPA, with concurrence by NYSDEC, and finalized in June 2004. A notice of the Proposed Plan and public comment period was placed in the Smithtown Messenger and The Smithtown News on June 17, 2004, consistent with the requirements of NCP §300.430(f)(3)(i)(A), and a copy of the Proposed Plan was mailed to all persons on the Site mailing list. The public notice established a thirty-day comment period from June 16, 2004 to July 17, 2004. The Proposed Plan and all relevant documents in the Administrative Record (see Administrative Record Index, Appendix III) have been made available to the public at two information repositories maintained at the EPA Docket Room in Region II, New York, NY and the Smithtown Library Smithtown Library, 1 North Country Road, Smithtown, NY 11781 (Contact: Reference Desk).

EPA hosted a public meeting on June 29, 2004 at the Smithtown Middle School, Smithtown, New York, to discuss the Proposed Plan. At this meeting, representatives from EPA and NYSDEC answered questions about contamination at the Site and the remedial alternatives. EPA's responses to comments received during the public meeting, along with responses to other written comments received during the public comment period, are included in the Responsiveness Summary (APPENDIX V).

SCOPE AND ROLE OF RESPONSE ACTION

Cleanup at the Site is currently being addressed as one operable unit (OU). As noted above, to date, the following removal action has occurred at the Site:

- installation of water main hookups or point of entry GAC filters on 39 homes adversely impacted by the VOC plume.

This Record of Decision (ROD) describes the comprehensive long-term remediation plan for the entire Site and is expected to be the only ROD issued for the Site. The components of this ROD will protect human health from risks associated with contaminated groundwater and provide an alternate water supply for impacted and threatened residences.

The remedy also includes continued maintenance of the GAC filters until the comprehensive alternate water supply remedy can be implemented.

SUMMARY OF SITE CHARACTERISTICS

In 1998, Site characterization was performed by EPA's Removal Program in order to implement the removal action. This work consisted of a residential well sampling and survey.

An RI report was finalized by EPA in June 2004.

The purpose of the RI was to define the nature and extent of groundwater contamination and to attempt to pinpoint the source of the contamination. EPA's fieldwork for the RI was conducted from July 1999 to September 1999, April to June 2001, January to March 2002 and February to June 2003. The RI included the following activities:

- residential water well sampling;
- groundwater screening survey;
- surface water sampling;
- sediment sampling;
- groundwater monitoring well and piezometer installation and sampling;
- septic system wastewater and sludge sampling at potential source areas;
- human health risk assessment; and,
- screening level ecological risk assessment

To determine which media (groundwater, sediment, surface water, etc.) contain contamination at levels of concern, the analytical data were compared to applicable or relevant and appropriate requirements (ARARs), or other relevant guidance if no ARARs were available.

Based upon the results of the RI and the additional EPA field investigations, a risk assessment was performed that concluded that groundwater at the Site poses an unacceptable risk to human health. Results of these investigations are summarized in this ROD; however, more complete information can be found in the RI and other documents which are included in the administrative record for the Site (APPENDIX III), and are available at the Site information repositories.

Physical Site Conditions

The Site is primarily residential, with commercial strip malls and small businesses clustered along Lake Avenue and North Country Road. The Site topography is complex, with elevations ranging from sea level near the surface water bodies, Stony Brook Harbor and the Nissequogue River, to more than 200 feet above sea level. The Site area has been incised into steep-sided valleys which contain ephemeral streams; visual observations suggest these streams only flow during significant storm water surface runoff events. Groundwater is the sole source of drinking water on Long Island. Over the past several years, the Suffolk County Water Authority (SCWA) has extended water mains along all the roads in the Site. Many residents have connected into the water mains and no longer use their private wells for drinking water. However, a significant number of homes continue to use private wells as their source of drinking water.

The adjacent reaches of the Nissequogue River and Stony Brook Harbor are influenced by semi-diurnal tidal variations in water level. Extensive mud and sand flats are exposed at low tide. Net flow direction of waters in the Nissequogue River is dominantly to the north towards Long Island Sound, especially during ebb tides. The dominant current direction within Stony Brook Harbor is controlled by tidal oscillations rather than an effluent stream flow from the land. The average tidal range (measured between mean high and low water levels) for the period 1960 to 1978 was 6.6 feet at nearby Port Jefferson Harbor, which is a similar size and geometry to Stony Brook Harbor.

Geology and Hydrogeology

The Site is located within the Atlantic Coastal Plain Physiographic Province. A history of coastal submergence and emergence spanning the Cretaceous Period, significant differential erosion during the Cenozoic, and glaciation during the Quaternary is reflected in the present day geology of the area.

The geology of Long Island is characterized by a southeastward-thickening wedge of unconsolidated Late Cretaceous sediments unconformably overlying gently-dipping basement bedrock. Basement rock is composed of Precambrian to Early Paleozoic igneous or metamorphic consolidated bedrock. The unconsolidated sedimentary wedge unconformably overlies the bedrock, and is comprised of the fluvio-deltaic Raritan and Magothy formations. The Late Cretaceous sedimentary wedge deposits are unconformably overlain by glacial Pliocene and Pleistocene deposits. A brief discussion of the depositional sequence is presented below and shown in FIGURE 3.

Raritan and Magothy Formations: The Raritan Clay is exposed at the unconformity surface beneath the Smithtown Site, defining a lower limit of deep contaminant migration. However, little data are available to confirm the presence of the Raritan Clay beneath the Site. Within the vicinity of the Site, published well data indicate that the Magothy has been omitted due to erosion.

Cretaceous - Tertiary/Quaternary Boundary: The top of the Cretaceous unconformity is deeper than 400 feet below sea level within the area of the Site. Well data from those wells located within the boundary of the Site and in its vicinity, within the center of the paleovalley, do not penetrate deep enough to encounter a top-Cretaceous erosion surface. Published Suffolk County well data show that changes in altitude of the top-Magothy can be dramatic over short distances in the Smithtown vicinity. These and other well data suggest that a roughly north-northwest to south-southeast trending buried valley, possibly eroded by an ancestral Nissequogue River, lies beneath the Nissequogue River and Stony Brook Harbor area. No Tertiary deposits have been recognized beneath the Site.

Pliocene and Pleistocene Deposits: The Upper Pleistocene Deposits in the Smithtown area include:

- At least one and possibly two sheets of glacial till deposited as ground moraine by continental ice
- Ice contact deposits within the Harbor Hill terminal moraine;
- A considerable thickness of glaciofluvial deposits laid down by meltwater streams on outwash plains and spillways during the advance, stagnation, and recession of the ice; and
- Discontinuous bodies of silt and clay (including the Smithtown Clay) deposited in glacial lakes.

The Smithtown Clay is almost continuous across much of the Smithtown area. Well data suggest the surface of the clay unit dips gradually to the north or northwest from an elevation of approximately 30 to 50 feet above sea level south of the Site to about 40 to 60 feet below sea level north of the Site, in the Village of Nissequogue.

Six major hydrogeologic units have been identified beneath Long Island: consolidated bedrock, the Lloyd aquifer, the Raritan confining unit, the Magothy aquifer, the Smithtown Clay, and the Upper Glacial aquifer. The unconsolidated depositional units of Late Cretaceous to Pleistocene age which overlie the virtually impermeable basement bedrock constitute the regional aquifer system within the Long Island Coastal Plain. The Lloyd aquifer is confined by the overlying Raritan confining unit. The Magothy and Upper Glacial aquifers overlying the Raritan confining unit can be confined, semi-confined, and unconfined aquifers, depending on the presence of clay layers, such as the Smithtown Clay. Combined, these two aquifers are the most productive and heavily utilized groundwater resource on Long Island.

<u>Magothy Aquifer</u>: Flow in the Magothy aquifer is controlled by regional-scale flow systems. Calculations of the flow velocity ranged from 0.4 to 0.6 foot/day, with average transmissivities of 240,000 gallons per day/foot (gpd/ft). The average hydraulic conductivity is 1,300 gallons per day/square foot (gpd/ft^2).

<u>Smithtown Clay/Upper Glacial Aquifer</u>: The shallow unconfined water table aquifer over most of Long Island is within the Upper Glacial aquifer unit. Groundwater movement generally follows water table contours. In general, water north of the regional groundwater divide, which trends east-west across the island, moves northward towards Long Island Sound, and water south of the divide flows southward toward the Atlantic Ocean. The rate of horizontal flow in the Upper Glacial aquifer is controlled by the hydraulic gradient of the water table and by the water-transmitting characteristics of the aquifer material. Horizontal velocity in the Upper Glacial aquifer generally ranges from 1 to 2 feet/day; vertical flow is much slower, especially where confining layers restrict the upward or downward movement of water. Transmissivity within the Upper Glacial aquifer is 200,000 gpd/ft. Average hydraulic conductivities are high (1,700 gpd/ft^2).

<u>Depth to Groundwater</u>: Depth to groundwater at the Site ranges less than 5 feet along the shores of Stony Brook Harbor and the

Nissequogue River to approximately 220 feet in the center of the Site. The depth to groundwater primarily is determined by the island's glacial geology and associated topographic features. The water table is a subdued expression of the island's topography; the depth to water generally is greater in the topographically high areas.

Groundwater Flow: Groundwater flow is complex in the vicinity of the Site. Water level measurements were collected in 2001 and 2003 at 14 Site monitoring wells and 6 piezometers. Based on these data, general groundwater flow in the shallow aquifer is to the northwest, with discharge to the Nissequogue River in the western area of the Site and to Stony Brook Harbor to the northeast (FIGURES 4 and 5).

Groundwater, Sediment, Surface Water, Sludge and Wastewater Contamination

The field work and sampling performed during the RI and the removal action characterized the nature and extent of chemical contamination at the Smithtown Site. A general discussion of these findings is presented below, organized by media sampled (e.g., groundwater). See TABLES 3 - 11 for analytical data; see the RI report for a more complete examination of the analytical results. This information is available in the administrative record (index attached as APPENDIX III).

Groundwater Sampling

The results of the Site investigations indicate that chlorinated VOC groundwater contamination at the Site is derived from multiple small point sources, most likely septic systems. The area does not have municipal sewer systems, so all residents and businesses utilize septic systems for wastewater disposal. A groundwater plume cannot be mapped at the Site. The primary VOCs are tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (1,1-DCE) and 1,1,1-trichloroethane (1,1,1-TCA). These VOCs exceed Federal and NYS MCLs [40 CFR Part 141.11-141.16 and Part 141.60-141.63, and New York Code of Rules and Regulations (NYCRR) Title 10, Chapter I, Subpart 5-1, respectively]. The NYS MCL for each of these VOCs is 5 parts per billion (ppb). Groundwater screening criteria are shown in TABLE 1.

From 2001 to 2003, EPA installed 23 temporary vertical profile wells (VPWs), with 12 in the residential areas of the Site and 11 at facilities in commercial areas of the Site. In the residential areas, VPWs were drilled to pre-determined depths and groundwater screening samples were collected every 10 feet to the top of the water table. At the commercial facilities, 2 or 3 groundwater samples were collected, generally near the top of the water table and approximately 10 feet into the groundwater. In the residential area 126 VPW groundwater screening samples were collected.

Sporadic detections of chlorinated VOCs were encountered in some samples, with levels generally below the MCL screening criteria. VPW-24, located at Harbor Hill Road near Stony Brook Harbor, had the most VOC detections. PCE exceeded the 5 micrograms/liter (ug/L) screening criterion in three samples: 64 - 69 feet below ground surface (bgs) at 5.6 ug/L; 44 - 49 feet bgs at 7.3 ug/L; and 24 - 29 feet bgs at 7.5 ug/L. One additional compound, 1,1,1-TCA at 5.7 ug/L, exceeded the 5 ug/L screening criterion in the sample from 174 - 179 feet bgs. Numerous other chlorinated VOCs were detected, at levels below the MCL screening criteria. In the commercial areas where 25 VPW groundwater screening samples were collected, the groundwater MCL screening criteria for Site-related chlorinated VOCs were exceeded at only one location. PCE exceeded its screening criterion at VPW-5, with a detection at 118 - 122 feet bgs of 15 ug/L. Methyl tert butyl ether (MTBE) was detected in several samples, but exceeded its screening criterion in one sample at VPW-11 (128 - 132 feet bgs). Several other chlorinated VOCs were detected, but were generally below 1 ug/L.

In 2001 and 2002, 6 piezometers and 13 monitoring wells were installed at the Site, with 1 additional monitoring well installed in 2003. All monitoring wells and piezometers are screened in the Upper Glacial Aquifer, with 10-foot screens at various depths of the aquifer (TABLE 2 and FIGURE 6).

Groundwater samples were collected from five of the six piezometers in June 2001. The 2001 piezometer samples were analyzed for low-detection limit VOCs only. Round 1 groundwater samples were collected from 13 monitoring wells and 6 piezometers in March 2002. Round 2 groundwater samples were collected from 14 monitoring wells and 6 piezometers in June 2003. The 2002 and 2003 samples were analyzed for full Target Compound List (TCL) and Target Analyte List (TAL) parameters. Each round of sampling is discussed below. TABLE 3 shows detections of selected VOCs in Rounds 1 and 2.

<u>2001 Piezometer Results</u>: Samples collected from five piezometers in June 2001 showed one screening criterion exceedence for 1,1,1-

TCA at 7.2 ug/L in MW-E. Several other piezometer samples contained several chlorinated VOCs below screening criteria (see Table 4-7 in the RI report).

<u>Round 1 Sample Results</u>: TABLE 3 indicates the VOCs detected in monitoring wells and piezometers in March 2002. Several VOCs exceeded screening criteria, including:

- MW-3S, in the central, southern part of the residential area, contained cis-1,2-dichloroethene (cis-1,2-DCE) at 50 D (diluted) ug/L and PCE at 12 ug/L
- MW-4I, in the central part of the residential area, contained PCE at 16 ug/L
- MW-4D, in the central part of the residential area, contained PCE at 38 D ug/L
- MW-6S, in the northeastern part of the residential area, contained 1,1,1-TCA at 150 D ug/L and 1,1-DCE at 31 D ug/L
- MW-E, in the central part of the residential area, contained 1,1,1-TCA at 7.1 ug/L
- MW-F, the southern-most sampling point, contained TCE at 5.8 ug/L

Numerous other chlorinated VOCs were detected in monitoring well/piezometer samples in March 2002, at levels below screening criteria. Semivolatile organic compounds (SVOCs) were sporadically detected in groundwater samples, with only bis(2-ethylhexyl)phthalate exceeding its screening criterion of 5 ug/L in MW-1I at 15 ug/L and MW-4S at 6 J (estimated) ug/L. Other SVOC detections included benzaldehyde at 1 J ug/L in MW-F; phenanthrene at 0.9 J ug/L in MW-C; and di-n-butylphthalate at 1 J ug/L in MW-6S. No pesticides or PCBs were detected in monitoring well or piezometer samples.

Several inorganic analytes were detected in monitoring well and piezometer samples. The chromium MCL screening criterion of 50 ug/L was exceeded in MW-4S, with a detection of 81.6 ug/L. The sodium criterion of 20,000 ug/L was exceeded in three wells, MW-4I at 23,300 ug/L; MW-5I at 30,900 ug/L; and MW-5D at 37,000 ug/L. The secondary groundwater screening criteria for aluminum, iron, and manganese were exceeded as follows: for aluminum and iron, 17 of 19 wells exceeded the criteria; for manganese, 2 wells exceeded the criterion. Inorganic analytes are not considered Site-related contaminants.

Round 2 Sample Results: TABLE 3 indicates the VOCs detected in monitoring wells and piezometers in June 2003. Several VOCs exceeded screening criteria, including:

- MW-2, in the west-central part of the residential area, contained PCE at 5.6 ug/L;
- MW-3S, in the central, southern part of the residential area, contained cis-1,2-DCE at 120 D ug/L, PCE at 10 ug/L, and TCE at 6.1 ug/L;
- MW-3I, in the central, southern part of the residential area, contained cis-1,2-DCE at 7.5 ug/L;
- MW-6S, in the northeastern part of the residential area, contained 1,1,1-TCA at 92 D ug/L and PCE at 5.7 J ug/L;
- MW-E, in the central part of the residential area, contained 1,1,1-TCA at 8.4 ug/L;
- MW-F, the southern-most sampling point, contained TCE at 6.7 ug/L.

Numerous other chlorinated VOCs were detected in monitoring well/piezometer samples in June 2003, at levels below screening criteria. One SVOC compound was detected at levels below screening criteria. Bis(2ethyl-hexyl)phthalate was detected in MW-1I at 1 J ug/L, in MW-E at 2 J ug/L, and in the duplicate sample from MW-G at 3 J ug/L. No pesticides or PCBs were detected in monitoring well or piezometer samples.

Several inorganic analytes were detected in monitoring well and piezometer samples. The chromium screening criterion of 50 ug/L was exceeded in MW-3I at 208 ug/L, MW-4S at 63.4 ug/L, MW-5S at 135 J ug/L, MW-5I at 832 ug/L, MW-5D at 797 ug/L, MW-6I at 88.9 J ug/L, and MW-E at 70.9 J ug/L. The nickel screening criterion of 100 ug/L was exceeded in MW-5D at 623 ug/L. The sodium criterion of 20,000 ug/L was exceeded in five wells, MW-3I at 24,000 ug/L; MW-4I at 21,100 J ug/L; MW-5S at 408,000 D ug/L; MW-5I at 33,500 ug/L; and MW-5D at 35,600 ug/L. The secondary groundwater screening criteria for aluminum, iron, and manganese were exceeded: for aluminum in 16 of 20 wells; for iron in 19 of 20 wells, and for manganese in 1 well.

Detections of selected inorganic analytes in Smithtown groundwater were compared with data from upgradient wells at nearby Suffolk County Superfund sites and SCWA analyses presented in their 2002 water quality report (available at <SCWA.com>) to determine if inorganic levels are comparable and represent background for Suffolk County groundwater. Levels of copper, iron, lead, manganese, silver, and zinc in Smithtown monitoring wells (summarized in columns 2 through 5 in Table 2, Appendix J of the RI) fall within the ranges in upgradient wells from nearby Superfund sites (column 6 in Table 2, Appendix J of the RI) or the SCWA results (columns 7 and 8 in Table 2, Appendix J of the RI). These inorganic analytes are, therefore, not considered Site contaminants of concern.

Levels of aluminum, chromium, and nickel in some Smithtown monitoring wells are above the range of the comparison wells (Table 2, Appendix J of the RI). A review of Smithtown monitoring well results for aluminum, chromium, and nickel (Table 3, Appendix J of the RI) show that many Site wells contain levels of these analytes that are within the range of upgradient wells at other Superfund sites. For aluminum, 30 of the 39 detections are below 900 ug/L (high end of the aluminum range in upgradient wells). For chromium, 29 of the 37 detections are below 60 ug/L (high end of the chromium range in upgradient wells). For nickel, 8 of the 37 detections are below or equal to 9 ug/L (high end of the nickel range in upgradient wells). Although the monitoring wells were developed according to specifications, some well samples had elevated turbidity levels (Appendix E of the RI).

Further evidence that turbidity affects the levels of inorganic analytes was provided by SCDHS. Inorganic analytical results from 1997/1998 for numerous private wells within the boundaries of the Smithtown Site indicate low levels of aluminum, chromium, and nickel (Table 4, Appendix J of the RI). Since residential wells are pumped on a regular, daily basis, fine particulates are removed from the screen interval, resulting in water with low turbidity. In addition, it is unlikely that the particulates observed as high turbidity readings in some of the Site monitoring wells are mobile in the groundwater. The residential inorganic data, therefore, are more representative of groundwater that would discharge to surface water bodies.

The geology of the Smithtown area is a complex mix of glacial sediments, including sands, silts, and clays. As such, nickel and chromium are common components of the minerals that make up these sediments, especially the finer-grained deposits.

Based on these discussions and the knowledge that inorganics are not associated with dry cleaning operations, the inorganic analytes detected in Site media are not considered to be related to the

Smithtown Site. Inorganics are not, therefore, Site-related contaminants of potential concern.

The RI concluded that groundwater contamination in the Smithtown area was identified in isolated pockets which most likely represent small slugs of contamination that were input into the groundwater in the distant past. Groundwater flow on a regional scale is generally toward the north/northwest and Long Island Sound. On a local scale, groundwater flow is complex. The two major water bodies in the area, the Nissequogue River to the west and Stony Brook Harbor to the northeast, act as discharge points for groundwater.

The RI was not able to pinpoint the exact sources of groundwater contamination. The groundwater model suggests the contamination observed in the residential areas may have originated in the commercially developed areas of the Site. However, based on groundwater flow rates, contamination detected in the residential wells and/or monitoring well network during the RI, was input to the groundwater many years ago. Locations of dry cleaners or other businesses that may have used chlorinated solvents may have changed over the years, but the general commercial areas upgradient of the residential areas have not changed significantly. The septic systems at the businesses investigated ranged from 8 to 15 feet in depth below the ground surface, with an approximate diameter of 10 feet. Leach fields vary in size, depending on the size of the associated building. The size of the septic systems indicates that contaminant releases through these systems would be limited in areal extent.

FIGURE 7, generated by the Site groundwater model, shows estimated entry points of contamination to the water table. Observed contamination in residential wells was "backtracked" by moving the groundwater back toward its origin. The figure indicates that contamination may have contacted the groundwater table as much as 30 years ago. Given a 30-year time frame, contaminant entry points to the water table cannot be pinpointed to an exact location.

Because of the sporadic nature and isolated pockets of the contamination observed in the residential wells, a contiguous groundwater plume cannot be mapped. The detections may represent small, isolated slugs of contamination that may have been released periodically in the past, as small point sources through septic systems. The area has no large, municipal sanitary systems. Most businesses and homes in the area use individual septic systems for sanitary waste disposal. Contamination that may have been discharged to septic systems in the past would move with the groundwater as small, isolated pockets. Contamination released periodically from small-scale septic systems explains the pattern of disconnected pockets of contamination observed over the years in the many rounds of residential sampling. Wells with contamination occur in small clusters, or isolated contaminated wells surrounded by wells with no contamination. Well completion records for the residential area are incomplete, and residential wells are often completed at variable depths. Therefore, wells that produce contaminated water may tap a different depth and flow zone of the aquifer than other nearby, adjacent wells that are not contaminated. The observed patterns of groundwater contamination in the residential areas do not represent a mappable groundwater plume and no clear link was established between the residential area and areas where contaminants may have been released.

Two areas of contamination in the residential area appear to have higher levels of VOCs. Area One is near Harbor Hill Road and Stony Brook Harbor on the east side of the Site. Groundwater depth ranges from approximately 5 feet to 150 feet and the thickness of contaminated groundwater is approximately 100 feet. The maximum PCE concentration is 140 ug/L.

Area Two is near the Waterford Stables and the Nature Conservancy property on the west side of the Site. Groundwater is approximately 150 feet bgs and the thickness of contaminated groundwater is approximately 125 feet. The maximum PCE concentration is 63 ug/L.

Residential Well Sampling

Four rounds of residential wells sampling were conducted during the RI. All samples were analyzed for low detection limit VOCs. The first round was collected in July and August 1999; 121 wells were sampled. The second round of samples was collected in May and June 2001; 77 wells were sampled. A limited third round of samples was collected in early 2002; 11 wells were sampled. The fourth round residential well samples was collected in April, May, and June 2003; 85 samples were collected. TABLE 4 shows residential well results for selected chlorinated VOCs.

FIGURE 8 shows the highest detection in each residential well sampled throughout the four rounds of sampling. Contamination in residential wells appears to be present in isolated areas; no contiguous groundwater plume could be mapped.

Spring/Seep Surface Water and Sediment Sampling

Along both Stony Brook Harbor and the Nissequogue River, numerous groundwater discharge seeps were noted during the initial reconnaissance. These seeps are exposed only at low tide; therefore, samples were collected at, or just after, slack low tide to insure that the sample collected represented discharging groundwater.

Spring/seep surface water and sediment samples were collected in April 2001 from locations adjacent to Stony Brook Harbor and the Nissequogue River. The water and sediment samples were co-located. Eleven spring/seep surface water (SWS) samples and 12 spring/seep sediment (SSS) samples included SWS-1 through SWS-3 and SWS-7 on the western shore of Stony Brook Harbor. Two background spring/seep surface water samples, SWS-5 and SWS-6, were collected along the eastern shore of Stony Brook Harbor. Samples SWS-8 through SWS-12 were collected along the eastern shore of the Nissequogue River. At location SSS-4 no surface water was observed. Surface water and sediment sample locations are shown on FIGURE 9.

Dunton Spring is located approximately 100 feet west of Stony Brook Harbor, north of 3 Harbor Road. Throughout the field investigation, water was discharging through a garden hose at a rate of about 5 gallons per minute. The hose is located a few feet from an old, roofless stone structure. A water sample (DSW-1) was collected from the garden hose. No associated sediment sample was collected. The property owner at 3 Harbor Road indicated that the discharge from the garden hose is not a spring, but overflow from the homeowner's artesian well. The owner stated that a pipe runs from the old stone structure to his residential supply well. When his well is not pumping, artesian pressure forces groundwater through buried piping to the old spring house. Other interviews with long time area residents indicated that at one time a perennially flowing spring originated from the ground inside the stone structure.

Surface water and sediment screening criteria are shown on TABLES 5 and 6, respectively. TABLES 7 and 8 show VOC results in surface water and sediment, respectively. As per NYSDEC sediment screening criteria, sample-specific adjustments were made based on total organic carbon (TABLE 8).

Spring/Seep Surface Water Results: VOCs were detected in 4 of the 12 samples collected; PCE at 2 ug/L in DSW-001, the sample from Dunton Spring at the edge of Stony Brook Harbor, exceeded the 1 ug/L screening criterion. Sample SWS-008, located along the Nissequogue River, was the only sample with more than one VOC detected; four were detected. SVOCs were detected in three samples: SWS-006 and SWS-010 had bis(2-ethylhexyl)phthalate at 1 J ug/L, below the 5 ug/L freshwater screening criterion; SWS-010 also had diethylphthalate at 0.5 J ug/L. SWS-008 contained 10 SVOC compounds, primarily polycyclic aromatic hydrocarbons (PAHs). Several of the PAH detections exceeded screening criteria of 0.002 ug/L.

Three samples had detections of pesticides: SWS-001 had 4,4'-DDE at 0.04 ug/L; SWS-005 had 4,4'-DDE at 0.045 ug/L and 4,4'-DDD at 0.037 ug/L; and SWS-007 had 4,4'-DDE at 0.039 ug/L. All detections exceeded the screening criteria.

Several inorganic analytes were detected in surface water samples. Saline water criteria were utilized except for aluminum, barium, iron, magnesium, and manganese. Copper's screening criterion of 3.4 ug/L was exceeded in 8 of 10 detections. The lead criterion of 8 ug/L was exceeded in one of three detections and all seven cyanide detections exceeded the 1 ug/L screening criterion. Exceedances of fresh water criteria include 8 of 12 samples for aluminum; 3 of 12 samples for iron; and 1 sample for magnesium.

Comparison of detected compounds/analytes against the highest detections in the Stony Brook Harbor background samples (see Appendix G of the RI report) indicate frequent exceedances of background in the highest detection in the environmental samples, especially for inorganic analytes. Inorganic analytes are not considered related to the Site.

Sediment Sample Results: Two VOCs exceeded their sample-specific screening criteria: in sample SSS-001, located on the southwestern shore of Stony Brook Harbor, 1,2-dichlorobenzene, detected at 11 J micrograms/kilogram (ug/kg), exceeded its criterion of 6.528 ug/Kg. In samples SSS-010, the northern-most sample along the Nissequogue River, and SSS-011, also along the Nissequogue River, 1,1-DCE was detected at 2 J ug/kg and 14 J ug/kg, respectively, exceeding sample-specific screening criteria of 0.0316 ug/kg and 0.58 ug/kg, respectively.

Several SVOCs, mainly PAHs, were detected, but did not exceed criteria.

Three samples had pesticide detections that exceeded sample-specific screening criteria, for the pesticides delta BHC, endrin, and alpha BHC. PCB Aroclors 1242 and 1260 were detected in sample SSS-008 at 1.2 J ug/kg and 1.3 J ug/kg, respectively. The sample-specific screening criterion is 0.00346 ug/kg. In sample SSS-005 Aroclor 1242, at 7.3 J ug/kg, exceeded its criterion of 0.04888 ug/kg.

Several inorganic analytes were detected. Lead exceeded its 31 milligram/kilogram (mg/kg) screening criterion in sample SSS-002 at 39.2 mg/kg and in SSS-008 at 47.6 mg/kg. Copper slightly exceeded its criterion of 16 mg/kg in samples SSS-005 at 16.2 J mg/kg and SSS-011 at 16.1 mg/kg.

Comparison of detected compounds/analytes against the highest detections in the Stony Brook Harbor background samples (see Appendix G in the RI report) indicate frequent exceedances of background in the highest detection in the environmental samples, especially for inorganic analytes. Inorganic analytes are not considered related to the Site (see pages 12 and 13).

Wetland Surface Water and Sediment Sampling

Wetland surface water and sediment samples were collected adjacent to the western shore of Stony Brook Harbor and behind Harbor Hill Road. Samples were collected during low tide. The sediment samples were collected in an area adjacent to the surface water samples. In April 2001, nine wetland surface water (SWW) samples and 30 wetland sediment (SDW) samples were collected. Wetland surface water sample SWW-1 was on the north side of the Harbor Road bridge, while SWW-2 through SWW-9 were collected from the wetlands behind Harbor Hill Road. Sediment samples SDW-1 through SDW-5 were collected from the wetlands on the western shore of Stony Brook Harbor. Wetland sediment samples SDW-7 (co-located with SWW-1) was collected from the wetlands just north of the Harbor Road bridge. Wetland sediment samples SDW-8 through SDW-15 (co-located with SWW-2 through SWW-9) were collected from the wetlands behind Harbor Hill Road. A background sediment sample (SDW-6) was collected from the wetlands on the eastern shore of Stony Brook Harbor. A background surface water sample was not collected at this location because at the time of sampling no standing surface water was present. Sediment samples were collected from two depths: the surface to 6 inches bgs and 18 to 24 inches bgs. FIGURE 9 shows surface water and sediment sample locations.

Wetland Surface Water Results: VOCs were detected in all nine samples collected; the PCE screening criterion of 1 ug/L was exceeded in two samples (SWW-001 at 3 ug/L and SWW-002 at 2 ug/L). 1,1,1-TCA was detected in all nine samples, with one (SWW-009) equaling the fresh water criteria of 5 ug/L. 1,1-DCA was detected in seven samples and 1,1-DCE was detected in five. Two samples had detections of bis(2-ethylhexyl)phthalate: SWW-002 at 24 ug/L and SWW-006 at 1 J ug/L. The detection in SWW-002 exceeded the screening criterion of 5 ug/L.

Two samples had detections of the pesticide gamma-BHC (lindane) that exceeded the 0.008 ug/L screening criterion: SWW-005 at 0.026 ug/L and SWW-006 at 0024 ug/L. No PCBs were detected in wetland surface water samples.

Several inorganic analytes were detected in surface water samples. Cyanide was detected in eight of nine samples; all detections exceeded the 1 ug/L screening criterion. Inorganic analytes are not considered related to the Site.

Wetland Sediment Results: No detected VOCs exceeded their sample-specific screening criteria. Several SVOCs, mainly PAHs, exceeded screening criteria. The pesticides 4,4'DDD and 4,4'DDE were detected in numerous samples, all of which exceeded the sample-specific screening criteria. In addition, dieldrin exceeded criterion in three samples, while gamma BHC (lindane) exceeded its criterion in one sample. No PCBs were detected.

Detections were noted for nearly all inorganic analytes; numerous analytes exceeded their screening criteria. Antimony had 5 exceedances; arsenic had 9; chromium had 17; copper had 25; lead had 22; manganese had 1; mercury had 8; nickel had 14, and silver had 4 exceedances. Inorganic analytes are not considered related to the Site.

Storm Drain Sediment Sampling

In April 2001, 13 storm drain sediment samples were collected from catch basins and storm drains in the Smithtown area to determine if the drains were used to dispose of contaminated material associated with the Site. Nine samples were collected from storm drains and catch basins on private roads in the Village of Nissequogue; four samples were collected from storm drains and catch basins on public roads in the Village of Head of the Harbor. FIGURE 9 shows storm drain sample locations.

The most commonly detected VOC compound was trichlorofluoromethane, which was detected in 8 of 13 samples. Other VOCs with multiple detections (each detected twice) included 2-butanone, toluene, and xylene. VOCs with single detections included acetone, carbon disulfide, methyl acetate, chloroform, cyclohexane, methylcyclohexane, MTBE, ethylbenzene, and isopropylbenzene. Sample SDS-004, located on Swan Place near the western side of Stony Brook Harbor, had the most VOC compounds, with six detected.

Numerous SVOCs, primarily PAHs, were frequently detected in many of the samples, most likely originating from storm water runoff from the asphalt roads adjacent to the storm drains.

Several pesticides were detected, as detailed on Table 4-20 in the RI report. Two Aroclors (PCBs) were detected in sample SDS-011, located at the end of Quail Path on the western side of the residential area.

Detections were noted for nearly all inorganic analytes. Elevated levels of aluminum, arsenic, chromium, copper, iron, lead, nickel, vanadium, and zinc were observed in samples SDS-001, SDS-010, and SDS-011. In addition, copper was elevated in sample SDS-013; lead in SDS-004; and zinc in SDS-003. However, inorganic analytes are not considered related to the Site.

Septic System Wastewater and Sludge Sampling

Sanitary waste samples were collected from 11 septic systems of the potential groundwater contamination source facilities. The objective of the septic system sampling was to determine if the facilities were discharging VOCs that were similar to the contamination identified in the residential areas. In February 2003, 10 wastewater samples (WW) were collected; the septic system at one location was not in service. Nine sludge (SL) samples co-located with the wastewater samples were also collected. Sludge would not lodge in the sampling at 2 locations. TABLE 9 provides septic system wastewater and sludge screening criteria. FIGURE 9 shows the wastewater and sludge sample locations. TABLES 10 and 11 provide all detections in wastewater and sludge samples, respectively.

<u>Wastewater Sample Results</u>: Total VOCs ranged from 148 ug/L to 731 ug/L, below the 1,000 ug/L screening criterion. Several SVOCs were detected in each sample; however, no screening criteria are available for wastewater samples. No pesticides or PCBs were detected.

Numerous inorganic analytes were detected in all samples. Sample WW-7, located at 400 North Country Road (Four Seasons Cesspool), had notably higher detections of several analytes, including aluminum, barium, chromium, copper, lead, mercury, nickel, and zinc.

<u>Sludge Sample Results</u>: Several VOCs were detected in all samples, but only two detections of toluene exceeded the 3,000 ug/kg screening criterion: SL-7 at 28,000 ug/kg and SL-8 at 30,000 ug/kg. SL-7 was collected at 400 North Country Road (Four Seasons Cesspool) and SL-8 was collected at 430-11 North Country Road (North Country Cleaners). Several SVOCs with no screening criteria were detected in six samples. Four of the seven detected SVOCs were phthalate compounds. No SVOCs were detected in three samples (SL-5, SL-8, and SL-10).

Five pesticides with no screening criteria were detected in sample SL-4, located at 617-621 Lake Avenue (Sal's Auto Body). The remaining eight sludge samples had no pesticides or PCBs detected.

Numerous inorganic analytes were detected in all samples. Three detections exceeded screening criteria: in SL-7, copper at 659 EJ mg/kg exceeded the 500 mg/kg screening criterion and mercury at 2.1 J slightly exceeded the 2 mg/kg criterion. Mercury also exceeded its criterion at SL-3, located at 561 Lake Avenue (St. James Cleaners).

Air Sample Results

EPA collected air samples on March 11-13, 2003 at 12 homes in the vicinity of the Site, with air sampling canisters located in home basements or the first floor in homes with no basements. Analytical results were compared to the Risk Based Concentrations (RBC) developed by EPA Region 3 (October 2003) for ambient air. For two compounds, TCE and 1,2-dibromoethane, laboratory detection limits were higher than the RBCs. No other compounds exceeded the RBCs.

Air sampling results were compared to residential groundwater results at the residences which also participated in the residential well sampling activities. Seven of the 12 residences were sampled during both well sampling activities. There was no correlation between the indoor air and groundwater results. The VOCs detected in residential well water were not reflected in the air sample results. Therefore, it appears that indoor air detections are not directly linked to the groundwater contamination.

Ecology and Cultural Resources

The area in the vicinity of the Site is residential, with homes on lots generally one acre or larger in size. Ecological resources are primarily concentrated around the surface water bodies of Stony Brook Harbor and the Nissequogue River.

Stony Brook Harbor: Stony Brook Harbor is an estuarine inlet off of Smithtown Bay of Long Island Sound. The surface water is given an SA saline surface water classification by NYSDEC. The best usages for Class SA saline surface waters are shell fishing for market purposes, primary and secondary contact recreation, and fishing.

Extensive mud and sand flats are exposed at low tide. Numerous seeps discharge groundwater from the shallow unconfined aquifer to intertidal zone of the harbor. The basic habitat of this intertidal zone is the salt marsh, where the dominant vegetative species is smooth cordgrass (*Spartina alterniflora*) and the dominant wildlife species is ribbed mussel (*Guekensia demissa*).

A small wetland (approximately one acre) is located at the southern end of Stony Brook Harbor, where a small stream enters a low-lying area next to the inlet. Salinity readings of the wetland water indicate groundwater discharges to the wetland. This wetland is adjacent to the western shore of Stony Brook Harbor, behind Harbor Hill Road. At high tide, water from Stony Brook Harbor flows into this wetland. At low tide, water drains from the wetlands into Stony Brook Harbor through a corrugated pipe under a bridge on Harbor Road. The wetland appears also to have a small freshwater drainage, likely intermittent, coming into it from the upland side.

This wetland is dominated by common reed (*Phragmites austalis*) and red-winged blackbirds (*Agelaius phoeniceus*).

Nissequogue River: The Nissequogue River is a tidal river flowing to the Smithtown Bay of Long Island Sound. The surface water of the river in the area of the Site is classified by NYSDEC as SC saline surface water. The best usage for SC saline surface waters is fishing. The State of New York designates that these waters be suitable for fish survival.

Similarly to the shore of Stony Brook Harbor, numerous seeps discharge groundwater from the shallow unconfined aquifer to intertidal zone of the river at the Site. The salt marsh, similar in appearance to that described for the harbor, is the predominant habitat of the intertidal zone. Extensive mud and sand flats are exposed at low tide.

Threatened, Endangered Species/Sensitive Environments: Information on threatened, endangered, protected species was provided by the US Fish and Wildlife Service) and the NYSDEC Natural Heritage Program. Information on the fisheries resources of the Stony Brook Harbor and Nissequogue River areas was provided by the National Marine Fisheries Service (NMFS).

The NYSDEC Natural Heritage Program indicated that the Site is part of a significant Coastal Fish and Wildlife Habitat located at Stony Brook Harbor. The Site is located about one mile from a low salt marsh, a listed ecological community, and a nesting area to a listed rare species, the common tern (*Sterna hirundo*).

The USFWS reported that no federally listed or proposed endangered or threatened species under the jurisdiction of the USFWS are known to exist within the project area. Additionally, no habitat in the project area is currently designated or proposed critical habitat in accordance with the provisions of the Endangered Species Act.

The NMFS indicated that four federally threatened or endangered sea turtles and three species of endangered whales are present in the Northeast. Sea turtles in the northeastern near shore waters typically are small juveniles. The most abundant is the federally threatened loggerhead (*Caretta caretta*), followed in abundance by the federally endangered Kemp's ridley (*Lepidochelys kempi*). The waters off Long Island are warm enough from June to October to support federally endangered green turtles (*Chelonia mydas*). Federally endangered leatherback sea turtles (*Dermochelys coriacea*) have been observed in concentrations off the south shore of Long Island during the summer months. Federally endangered Northern right wales (*Eubalaena glacialis*), humpback whales (*Megaptera novaeangliae*), and fin whales (*Balaenoptera physalus)* may be found in New York waters during certain times of the year.

A cultural resources survey was not conducted for the Site as part of the RI but will be conducted during the remedial design.

CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USERS

The Smithtown Site is located in a residential area covering portions of the Villages of Nissequogue and Head of the Harbor within the Town of Smithtown, just north of the Hamlet of St. James, Suffolk County, New York. The predominant land use within the boundaries of the Site is residential (single family). The residential lot sizes are over one acre on average. A horse farm is located within the north-central portion of the Site along Moriches Road. The Nature Conservancy - Long Island Chapter owns a parcel of property approximately 67 acres in size in the central portion of the Site. Self-guided marked trails are available for hiking, bird watching, and other outdoor nature-related activities.

Prior to the discovery of contaminated groundwater, residents of both villages used private wells for both drinking and irrigation. Emergency action by EPA and the SCDHS put the homeowners whose residential wells exceeded the RAL for PCE on bottled water until a treatment system could be installed in the residence. The SCWA began running water mains into both villages, giving residents the option to abandon the residential wells and connect to the mains. Many residents have either public water or treatment on their residential well. Sanitary waste solids are collected in septic tanks, sanitary liquids are recharged to the shallow aquifer through cesspools and leaching fields.

Limited commercial retail, office development (including gasoline stations and strip malls), and a high school are located south of the residential area. The more densely-developed residential and commercial retail districts of St. James are located less than one-quarter mile from the Site, south of the Port Jefferson Branch of the Long Island Railroad. Future use of the Site is expected to remain unchanged.

SUMMARY OF SITE RISKS

A Human Health Risk Assessment (HHRA) was conducted by EPA to provide a quantitative assessment of the health risks to humans under current and future land-use scenarios. In addition a Screening Level Ecological Risk Assessment (SLERA) evaluated the potential for risks to ecological receptors around Stony Brook Harbor and the Nissequogue River.

Human Health Risk Assessment

A four-step process is utilized for assessing Site-related human health risks for a reasonable maximum exposure scenario: *Hazard Identification* - identifies the contaminants of potential concern (COPCs) at the Site based on several factors such as toxicity, frequency of occurrence and concentration. *Exposure Assessment* - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water by which humans are potentially exposed). *Toxicity Assessment* - determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). *Risk Characterization* - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of Site-related risks. The reasonable maximum exposure was evaluated.

Current Federal guidelines for acceptable exposures are an individual lifetime excess carcinogenic risk in the range of 10^{-4} to 10^{-6} (e.g., a one-in-ten-thousand to a one-in-one-million excess cancer risk) and a health Hazard Index (HI) (which reflects the likelihood for noncarcinogenic effects for a human receptor) equal to or less than 1.0. (A HI greater than 1.0 indicates a potential for noncarcinogenic health effects.)

Hazard Identification

Contaminants of potential concern (COPCs) were identified in the Human Health Risk Assessment conducted as part of the RI. Based on the RI data, COPCs were identified based on the frequency of detection, range of detected concentrations, and relative toxicity of Site contaminants. The data from EPA's residential well sampling, the RI monitoring well data, surface water and sediment data were used in the assessment. The chemicals of potential concern include all chemicals detected above screening levels, regardless of their source. Thus, inorganic and semivolatile chemicals that are not associated with the groundwater contamination at the Site were evaluated along with Site-related VOCs. The essential nutrients (i.e., calcium, magnesium, potassium, and sodium) were not quantitatively addressed as their potential toxicity is significantly lower than other inorganics at the Site, and most existing toxicological data pertain to dietary intake. COPCs were identified for groundwater, surface water and sediments. Acetone, chloroform, cis-1,2-dichloroethene, methyl tert-butyl ether, PCE, TCE, bis(2-ethylhexyl)phthalate, aluminum, arsenic, chromium, iron, manganese, nickel and vanadium were identified as COPCs for groundwater. For Nissequogue River surface water, TCE, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, indeno(1,2,3-cd)pyrene, phenanthrene, arsenic and iron were selected as COPCs. For Nissequogue River sediment, benzo(a)anthracene, benzo(a)pyrene, dibenz(a,h)anthracene, arsenic and iron were selected as COPCs. For Stony Brook Harbor surface water, PCE, bis(2-ehtylhexyl)phthalate, manganese and thallium were selected as COPCs. For Stony Brook Harbor sediments, benzo(a)pyrene, aluminum, antimony, arsenic, chromium, iron and manganese were selected as COPCs. TABLE 12 presents the COPCs for each medium.

Exposure Assessment

In the HHRA, contaminants in various media at the Site were quantitatively evaluated for potential health threats to the following receptors:

- Current and future residential users (adults and children) of groundwater (ingestion, dermal contact and inhalation during showering);

- Current and future recreational users (adults and children) of the Nissequogue River (surface water and sediment: incidental ingestion and dermal contact); and

- Current and future recreational users (adults and children) of the Stony Brook Harbor and wetland area (surface water and sediment: incidental ingestion and dermal contact).

The estimates of cancer risk and noncancer health hazard, and the greatest chemical contributors to these estimates were identified.

Exposure routes and human receptor groups were identified and quantitative estimates of the magnitude, frequency, and duration of exposure were made. Exposure points were estimated using the minimum of the 95 percent Upper Confidence Limit (UCL) and the maximum concentration. Chronic daily intakes were calculated based on the Reasonable Maximum Exposure (RME) (the highest exposure reasonably expected to occur at a Site). The intent is to estimate a conservative exposure case that is still within the range of possible exposures. Central Tendency (CT) exposure assumptions were also developed.

A more detailed discussion of the Human Health Exposure Assessment can be found in Chapter 4 of the HHRA Report. TABLE 13 identifies all exposure pathways, media, potential receptors, and the rationale used to select these pathways.

Toxicity Assessment

Current toxicological human health data were provided by the Integrated Risk Information System (IRIS) database, Health Effects Assessment Summary Tables (HEAST), and EPA's National Center for Environmental Assessment. This information is presented in TABLES 14 and 15 for noncarcinogenic toxicity data and TABLES 16 and 17 for carcinogenic toxicity data. For more information on the documented health effects of the COPCs, see Section 5 of the HHRA Report.

Risk Characterization

Risk characterization involved integrating the exposure and toxicity assessments into quantitative expressions of risks/health effects. Specifically, chronic daily intakes were compared with concentrations known or suspected to present health risks or hazards.

For carcinogens, risks are generally expressed as the incremental probability of an individual's developing cancer over a lifetime as a result of exposure to the carcinogen. Excess lifetime cancer risk is calculated from the following equation:

Risk = CDI x SF

where: risk = a unitless probability (e.g., $2x10^{-5}$) of an individual's developing cancer
CDI = chronic daily intake averaged over 70 years (mg/kg-

day)
SF = slope factor, expressed as $(mg/kg\text{-}day)^{-1}$.

These risks are probabilities that usually are expressed in scientific notation (e.g., $1x10^{-6}$). An excess lifetime cancer risk of $1x10^{-6}$ indicates that an individual experiencing the reasonable maximum exposure estimate has a 1 in 1,000,000 chance of developing cancer as a result of Site-related exposure. This is referred to as an "excess lifetime cancer risk" because it represents the number of additional cancers that would be expected to be seen if a population is exposed to the contaminants in a manner consistent with the scenario defined in the exposure assessment. EPA's generally acceptable risk range for Site-related exposures is 10^{-4} to 10^{-6}.

The potential for noncarcinogenic effects is evaluated by comparing an exposure level over a specified time period (e.g., life-time) with a reference dose (RfD) derived for a similar exposure period. An RfD represents a level that an individual may be exposed to that is not expected to cause any deleterious effect. The ratio of exposure to toxicity is called a hazard quotient (HQ). An HQ < 1 indicates that a receptor's dose of a single contaminant is less than the RfD, and that toxic noncarcinogenic effects from that chemical are unlikely. The HI is generated by adding the HQs for all chemical(s) of concern that affect the same target organ (e.g., liver) or that act through the same mechanism of action within a medium or across all media to which a given individual may reasonably be exposed. An HI < 1 indicates that, based on the sum of all HQ's from different contaminants and exposure routes, toxic, noncarcinogenic effects from exposure to all contaminants are unlikely. An HI > 1 indicates that Site-related exposures may present a risk to human health.

The HQ is calculated as follows:

Noncancer HQ = CDI/RfD

where:

CDI = Chronic daily intake averaged over the exposure duration
RfD = reference dose.

CDI and RfD are expressed in the same units and represent the same exposure period (i.e., chronic, subchronic, or short-term).

The results of the risk characterization are presented below and summarized on TABLES 18 and 19.

Risks to Residential Users of Groundwater

Because all fresh groundwater in New York State is classified for use as a potable water supply, potential risks were estimated for adult and child residents assuming exposure to groundwater that is used as tap water. The total RME cancer risk for adult and child resident exposures was 4 x 10^{-4} (four in ten thousand), which exceeds the EPA range of 10^{-6} to 10^{-4}. This risk is primarily associated with arsenic, TCE and PCE in groundwater. When CT exposure assumptions are used, the total cancer risk for adult and child residents decreases to 1 x 10^{-4}, which is at the upper end of the range of 10^{-6} to 10^{-4}. Arsenic, which accounted for 51 percent of the estimated risk, is not a Site-related contaminant and had a maximum concentration below State and Federal drinking water standards.

The total RME hazard index (HI) for both adult and child residents exceeded the threshold of 1 for noncancer effects (HI of 4 for adults and 20 for children), indicating that noncancer health effects may occur from RME exposures to groundwater by residents. When the hazard index is broken out by target organ, the hazard index exceeded unity for effects to the liver and gastrointestinal (GI) tract for adults and to the liver, GI tract, and skin for children. Noncancer effects to the liver were primarily associated with ingestion and inhalation of chloroform (HI of 0.97 for adults and 14 for children). Noncancer effects to the GI tract were associated with ingestion of chromium (HI of 1 for adults and 2.4 for children). Noncancer effects to the skin for children were associated with ingestion of arsenic in groundwater (HI of 1.4 for children). When CT exposure assumptions (i.e., more typical exposures) are used, the hazard indices for adult and child residents still exceeded the threshold of one (i.e., 2 for adults and 6 for children).

Risks to Recreational Users of the Nissequogue River

Risks associated with recreational use of the Nissequogue River were estimated for adults and children (0 to 6 yrs), and based on incidental ingestion and dermal contact with sediment and surface water. Total excess lifetime cancer risk for adult recreational users was 2 x 10^{-4} (two in ten thousand) for the RME scenario, just above EPA's target risk range of 10^{-6} to 10^{-4}. But the cancer risk is within the range for the more typical CT exposures (3×10^{-5}). The total excess lifetime cancer risk for child recreational users was 1×10^{-4} for the RME scenario, which is at the upper boundary of EPA's target risk range of 10^{-6} to 10^{-4}. Cancer risk for child recreational users was within the range for the more typical CT exposures (5×10^{-5}).

These cancer risks at the Nissequogue River are due to the presence of PAHs that are likely to be associated with sources other than the VOCs in groundwater from the Smithtown Site. PAHs were not detected at elevated concentrations in groundwater at the Site. They may be present due to runoff from human activities such as combustion of fossil fuels, refuse burning, industrial processes and vehicle exhaust. The noncancer hazard indices for Nissequogue River users were well below the threshold of 1 at 0.04 for adults and 0.2 for children for the RME scenario.

Risks to Recreational Users of the Stony Brook Harbor

Risks associated with recreational activities at Stony Brook Harbor and wetland were estimated for adults and children (0 to 6 yrs), and based on incidental ingestion and dermal contact with sediment and surface water. Total excess lifetime cancer risk for each adult and child recreational users was 7×10^{-6} (seven in one million), within EPA's target risk range of 10^{-6} to 10^{-4}. Cancer risk is below the range for the more typical CT exposures for adult recreational users (9×10^{-7}) and within the target range for CT exposures for child recreational users (2×10^{-6}).

These cancer risks at the Stony Brook Harbor and wetland are due to the presence of PAHs that are likely to be associated with sources other than the VOCs in groundwater from the Smithtown Site. PAHs were not detected at elevated concentrations in groundwater at the Site. They may be present due to runoff from human activities such as combustion of fossil fuels, refuse burning, industrial processes and vehicle exhaust. The noncancer hazard indices for Stony Brook Harbor users were well below the threshold of 1 at 0.08 for adults and 0.6 for children for the RME scenario.

Basis for Action

The results of the baseline risk assessment indicate that the groundwater at the Site poses an unacceptable risk to human health. Actual or threatened releases of hazardous substances from this Site, if not addressed by the preferred alternative or one of the other active measures considered, may present a current or potential threat to public health or welfare.

Discussion of Uncertainties in Risk Assessment

The procedure 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:

- 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 is 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 would actually come in contact with the contaminants of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the contaminants 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 baseline human health risk assessment provides upper-bound estimates of the risks to populations at and near the Site, and it is highly unlikely to underestimate actual risks related to the Site.

Specifically, several aspects of risk estimation contribute uncertainty to the projected risks. EPA recommends that an arithmetic average concentration of the data be used for evaluating long-term exposure and that, because of the uncertainty associated with estimating the true average concentration at a Site, the 95%

UCL on the arithmetic average be used as the exposure point concentration. The 95% UCL provides reasonable confidence that the true average will not be underestimated. Exposure point concentrations were calculated from residential, monitoring well, surface water and sediment sample data sets to represent the RME to various current and future populations. Uncertainty associated with sample laboratory analysis and data evaluation is considered low as a result of quality assurance and data validation.

In addition to the calculation of exposure point concentrations, several Site-specific assumptions regarding future land use scenarios, intake parameters, and exposure pathways are a part of the exposure assessment stage of a baseline risk assessment. Assumptions were based on Site-specific conditions to the greatest degree possible, and default parameter values found in EPA risk assessment guidance documents were used in the absence of Site-specific data. However, there remains some uncertainty in the prediction of future use scenarios and their associated intake parameters and exposure pathways. The exposure pathways selected for current scenarios were based on the Site conceptual model and related RI and FS data. The uncertainty associated with the selected pathways for these scenarios is low because Site conditions support the conceptual model.

Standard dose conversion factors, risk slope factors, and reference doses are used to estimate the carcinogenic and noncarcinogenic hazards associated with Site contaminants. The risk estimators used in this assessment are generally accepted by the scientific community as representing reasonable projections of the hazards associated with exposure to the various chemicals of potential concern.

Screening Level Ecological Risk Assessment

The potential risks to ecological receptors at the Smithtown Groundwater Contamination Site were assessed by several methods:

- Food chain risks were estimated for the food chain receptors (great blue heron, spotted sandpiper, marsh wren, and muskrat) by comparing estimated exposure levels (daily doses) with dose-based ingestion ecotoxicological benchmarks. Risks to the food chain receptors were evaluated using hazard quotients (HQs) which were determined for each contaminant of ecological concern (COEC) by dividing estimated daily contaminant doses by ingestion benchmark toxicity values.

- Risks from aquatic exposures were estimated for aquatic receptors estuarine fish and estuarine crab) by comparing surface water contaminant concentrations to aquatic toxicological benchmark values based on direct surface water exposure. Risks to these receptors were determined using HQs which were determined for each COEC by dividing the maximum contaminant concentrations by the benchmark toxicity values.

- Risks from aquatic exposures were estimated for the freshwater benthic invertebrate community by comparing surface water/sediment contaminants concentrations to surface water/sediment quality criteria/guidance values derived for the protection of benthic species.

For the estuarine fish, estuarine crab, and receptors with food chain exposures, HIs were determined by summing the COEC HQs for each ecological receptor. Cumulative HIs were ranked in accordance with a ranking scheme that was used to evaluate potential ecological risks to individual organisms. The ranking scheme is as follows:

HI $\leq$ 1	no adverse effects
HI >1	possible adverse effects

It is important to note that this methodology is not a measure of, and cannot be used to determine, absolute quantitative risk. Use of this technique, however, can indicate the potential for the ecological receptor to be at risk to an adverse effect from exposure to Site COECs.

Estimation of Aquatic Risk

Potential ecological risks to contaminants in the sediment and surface water of the Site were assessed using direct comparisons of contaminant concentrations in sediment and surface water with criteria, guidelines, and benchmark concentration values based on aquatic ecotoxicity.

Comparisons were made between the maximum detected contaminant levels and associated values during the screening phase for COECs. This resulted in a number of COECs for surface water and for sediment. For the aquatic invertebrate community, the potential for adverse ecological risks to contaminants appears to exist in both the surface water and sediment from the following chemical parameter groups:

- Surface water - inorganics are a potential concern for aquatic invertebrates

- Sediment - volatile organic compounds (acetone, 2-butanone, carbon disulfide, and trichlorofluoromethane. Only trichlorofluormethane is potentially a Site-related contaminant as only chlorinated VOCs are considered to be Site-related), semivolatile organic compounds, pesticides, and inorganics are a potential concern for aquatic invertebrates.

The estuarine fish and crabs were used as a receptor species to further assess the potential ecological risks from surface water contamination. The potential risks to these receptors were assessed by direct comparisons of contaminant concentrations in surface water with saltwater fish and crab ecotoxicity benchmark values. Tables 5-1 through 5-3 in the SLERA report provide the comparison for estuarine fish. Tables 5-4 through 5-6 in the SLERA report provide the comparison for estuarine crabs. The potential risk from exposure to surface water for the fish and crabs can be summarized as follows by each area examined:

Nissequogue River

- The estimated hazard index for estuarine fish of approximately 36 indicates the potential for some chance of adverse effects resulting from exposure to Site surface water. The primary risk contributor is copper, which contributes over 99 percent of the potential risk.

- The estimated hazard index for estuarine crab of approximately 375 indicates the potential for some adverse effects resulting from exposure to Site surface water. The primary risk contributor is lead, which contributes over 99 percent of the potential risk.

Stony Brook Harbor

- The estimated hazard index for estuarine fish of less than 8 indicates the potential for adverse effects resulting from exposure to Site surface water. The potential for adverse effects is relatively low and comes from copper.

- The estimated hazard index for estuarine crab of less than 1 indicates no expected adverse effects resulting from exposure to Site surface water.

Harbor Wetland

- The estimated hazard index for estuarine fish of approximately 25 indicates the potential for some adverse effects resulting from exposure to Site surface water. The primary risk contributor is copper, which contributes over 99 percent of the potential risk.

- The estimated hazard index for estuarine crab of approximately 374 indicates the potential for some chance of adverse effects resulting from exposure to Site surface water. The primary risk contributor is lead, which contributes over 99 percent of the potential risk.

The potential risks to estuarine fish and crabs from chemicals in the surface water are not likely to be a Site-related issue, as the metals presenting the potential for ecological risk are not groundwater contaminants associated with the Site.

Estimation of Food Chain Risk

Potential ecological risks to contaminant uptake through the food chain were estimated for food chain receptors: great blue heron, spotted sandpiper, marsh wren, and muskrat. Exposures to the food chain receptors were modeled, as follows:

- The great blue heron is expected to be exposed to contaminants in the sediment, surface water and in fish (exposed to the contaminated sediment and surface water).

- The spotted sandpiper and marsh wren are expected to be exposed to contaminants in the sediment, surface water and aquatic invertebrates (exposed to the contaminated sediment and surface water).

- The muskrat is expected to be exposed to contaminants in the sediment, surface water, and vegetation (exposed to the contaminated sediments and surface water).

Potential risks to the food chain receptors were assessed by comparing estimated exposure dose levels with dose-based toxicological benchmark values. Resultant HQs for each COEC and HIs (cumulative HQs) are provided in Tables D-6 through D-12 in the SLERA report. Potential ecological risk results are discussed below.

Nissequogue River

Piscivorous birds

The hazard index of approximately 2 for the great blue heron indicates that there is some small potential for ecological risks to piscivorous birds from food chain exposure to contaminants in river sediment and surface water. The primary contributors to the potential risk is lead, contributing greater than 99 percent to the potential risk.

Insectivorous birds

The hazard index of approximately 28 for the spotted sandpiper indicates that there is a potential for ecological risks to insectivorous birds from food chain exposure to contaminants in river sediment and surface water. The primary contributors are lead, alpha-chlordane, and naphthalene with contribution to the potential risk of 41, 26, and 11 percent, respectively.

Stony Brook Harbor

Piscivorous birds

The hazard index of less than 2 for the great blue heron indicates that there is some potential for ecological risks to piscivorous birds from food chain exposure to contaminants in harbor sediment and surface water. The primary contributor is lead, with a contribution to the potential risk of 97 percent.

Insectivorous birds

The hazard index of approximately 79 for the spotted sandpiper indicates that there is a potential for ecological risks to insectivorous birds from food chain exposure to contaminants in harbor sediment and surface water. The primary contributor is bis(2-ethylhexyl)phthalate, with a contribution to the potential risk of 80 percent.

Harbor Wetland

Piscivorous birds

The hazard index of approximately 20 for the great blue heron indicates that there is a potential for ecological risks to piscivorous birds from food chain exposure to contaminants in wetland sediment and surface water. The primary contributors to the potential risk are chromium and lead, with contributions to the potential risk of 52 and 29 percent, respectively.

Insectivorous birds

The hazard index of 39 for the marsh wren indicates that there is a potential for ecological risks to insectivorous birds from food chain exposure to contaminants in wetland sediment and surface water. The primary contributors to the potential risk are chromium, lead, and arsenic with a contribution to the potential risk of 15, 17, and 39 percent, respectively.

Herbivorous mammals

The hazard index of 136 for the muskrat indicates that there is a potential for ecological risks to herbivorous mammals from food chain exposure to contaminants in wetland sediment and surface water. The primary contributors are manganese, antimony, and iron with their contribution to the potential risk of 38, 35, and 18 percent, respectively.

The potential risks to ecological receptors with food chain exposures to chemicals in the surface water and sediment are not likely to be a Site-related issue, as the metals presenting the potential for ecological risk are not groundwater contaminants associated with the Site.

Risk Summary: Results of the screening level ecological risk assessment process indicate that the potential exists for ecological risk at the Site resulting from exposure to chemicals detected in Site sediment and surface water. Contaminants of potential ecological concern may present a risk to the aquatic invertebrates and receptors with food chain exposures from surface water and sediment of the seepage areas of the Nissequogue River and Stony Brook Harbor and the harbor wetland. For estuarine fish and crabs, contaminants of potential ecological concern in the surface water of the river, water discharging to the harbor (as determined from groundwater concentrations), and the harbor wetland may pose a potential risk. Primary risk contributors are metals and are not associated with Site-related groundwater contamination. The chemicals that are responsible for the potential risk to ecological receptors are not the low levels of Site-related contamination (volatile compounds in the 1 to 2 ppb range) in the groundwater that is discharging into the surface water of the Nissequogue River and Stony Brook Harbor.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are specific goals to protect human health and the environment. The objectives for the Smithtown Site are based on available information and standards, such as groundwater MCLs, which are considered ARARs for the Site. The RAOs which were developed for groundwater are designed, in part, to mitigate the health threat posed by ingestion and inhalation (through showering) of groundwater.

The following remedial action objectives for groundwater were established for the Site:

- Prevent or minimize potential current and future human exposures including ingestion and dermal contact with VOC-contaminated groundwater that exceeds Federal and State drinking water standards, and

- Restore groundwater to levels which meet Federal and State drinking water standards within a reasonable time frame.

The RAO for surface water was developed to verify that no significant impact on surface water quality will occur from VOC contamination reaching the Nissequogue River and Stony Brook Harbor. VOCs do not appear to be concentrating in surface water and the areas are subjected to daily tidal flushes.

- Verify that no significant impact on the surface water quality will occur from VOC contamination reaching the Nissequogue River and the Stony Brook Harbor.

Groundwater, drinking water and surface water standards identified for the Site are based on Federal Safe Drinking Water Act, 40 CFR Part 141 et seq., as well as Federal Ambient Water Quality Standards or more stringent NYSDEC Ambient Water Quality Standards and Guidance Values and Part 5 of NYS Sanitary Code. The contaminant and media-specific (groundwater and surface water) cleanup levels are presented in TABLES 1 and 5.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA requires that each selected remedy be protective of human health and the environment, be cost-effective, comply with other laws, utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

The Proposed Plan and FS evaluate, in detail, the alternate water supply and groundwater extraction and treatment for the Smithtown Site. These alternatives are presented below. The No Action alternative is also evaluated.

The implementation time for each alternative reflects only the time required to construct or implement the remedy and not the time required to design the remedy or procure contracts for design and construction.

Alternative 1 - No Action

Present Worth:	$ 0
Capital Cost:	$ 0
Annual Operation and Maintenance (O&M):	$ 0
Time to Implement:	0 years

The Superfund Program requires that the "No-Action" Alternative be considered as a baseline for comparison with the other alternatives. The No-Action Alternative includes no active remedial measures. Under this alternative, monitoring and maintenance of the 9 currently operational point-of-use (POU) GAC systems for private well owners would be discontinued. Further maintenance of these systems would be the responsibility of the homeowner.

Alternative 2 - Alternate Water Supply/Institutional Controls/Long-term Monitoring

Alternative 2 was developed to provide a permanent, safe water supply for all the private well owners impacted or threatened by contamination from the Site, prohibit future installation of private drinking water wells, and provide long-term monitoring of the aquifer.

Present Worth:	$4,061,219
Capital Cost:	$3,462,104
Annual O&M (30 year O&M period):	$46,820
Time to Implement:	2-3 years

Alternative 2 consists of the following components:

- Alternate water supply,
- Institutional controls,
- Long-term groundwater and surface water monitoring, and
- Periodic Site reviews.

Alternate Water Supply: An alternate water supply would be provided to residences potentially affected by the contamination, as projected by the site groundwater model with 30-year forward movement of the contamination (FIGURE 10). The alternate water supply recommends that each residence within the affected areas (FIGURE 12) would be connected to either SCWA or St. James Water District. The alternative would provide the connection from the house to the water mains near the house. After the hookup to the water mains, the private wells would be properly abandoned accordingly to the New York State requirements. Based on information provided by SCWA and St. James Water District, approximately 270 residences (including the 9 residences with currently operational POU GAC systems that were installed by EPA)would need to be connected to the water mains. A survey would be conducted during the design phase to provide a more accurate count of residences requiring the alternate water supply.

Soil cuttings resulting from the connection of the hookups to the water mains would be characterized for disposal. It is assumed that this material would be drummed and disposed off-Site as non-hazardous waste.

Institutional Controls: Institutional controls would include relying on existing requirements that deny well drilling permits in the affected areas (FIGURE 12). The intent is to reduce potential future exposure to contaminants by legally restricting use of potentially contaminated groundwater. Suffolk County currently has permit requirements for drilling private water supply wells. The County denies a well permit if there are existing public water supplies in the area. It is assumed that Suffolk County would continue to enforce this requirement at least as long as the groundwater is affected by the contaminants.

Long-term Groundwater and Surface Water Monitoring: No active groundwater remedy is being utilized. However, aquifer restoration is anticipated to occur within a reasonable time frame based on natural processes such as dispersion, dilution and volatilization. To ensure protectiveness a long-term groundwater and surface water monitoring program would be instituted to collect data on contaminant concentrations and movement at the Site. Seventeen existing monitoring wells and three residential wells would be used for the long-term groundwater monitoring program. Additionally, six surface water samples would be collected from Stony Brook Harbor and the Nissequogue River. Locations of existing and proposed monitoring wells and surface water samples are shown in FIGURE 11. Surface water (seep) sampling locations were determined based on the groundwater modeling projected surface water discharge locations. Groundwater and surface water (seeps observed at low tide) samples would be collected annually and analyzed for VOCs using low detection limit analytical methods.

The monitoring data collected would be evaluated and used to assess the migration and attenuation of the groundwater contamination through time and to plan for remedial action, if required.

Periodic Site Reviews: A review of Site conditions would be conducted no less often than once every five years using data obtained through the annual groundwater and surface water sampling program. The Site reviews would include an evaluation of the extent of contamination and an assessment of contaminant migration and attenuation over time. The long-term groundwater monitoring program may be modified based on the monitoring results.

Duration of Alternative: Contaminants were detected sporadically in the monitoring and residential wells. Since biodegradation of COPCs is not prevalent, as discussed in Section 2.5.3 of the FS report, the non-destructive physical processes are the only mechanism for the reduction of contaminant concentrations. The concentrations for PCE and cis-1,2 DCE, the two major contaminants with the highest detected concentrations, were decreasing during the past several years. The groundwater modeling predicts the contaminant mass will decrease over time, as groundwater and the contaminants migrate and discharge to surface water bodies. The model predicts that 70% of the contaminant mass will be removed in seven years from the groundwater flushing action (see Appendix A, Figure 9 in the FS report). Therefore, based on the low contaminant concentrations detected and the model predictions, it is expected that the contaminant concentrations would drop to below the groundwater quality standards within the next 30 years. The long-term monitoring program would monitor the migration and reduction of the contaminants through time. For costing purposes, it is assumed the alternative would be evaluated for the 30-year FS evaluation period.

Alternative 3 - Alternate Water Supply/Groundwater Extraction/Treatment/On-Site Injection/Institutional Controls/Long-term Monitoring

Present Worth:	$7,170,861
Capital Cost:	$5,708,114
Annual O&M (30 year O&M period):	$166,909
Time to Implement:	2-3 years

The two objectives of this alternative are: 1) to provide a potable water source to the residences that are potentially effected by the contaminated groundwater and 2) to prevent contaminated groundwater from migrating off-site by hydraulically containing the contaminant plume, and to accelerate the cleanup of contaminated groundwater in the impacted areas. Alternative 3 would consist of the following components:

- Alternate water supply,
- Groundwater extraction,
- Treatment,
- On-site injection,
- Institutional controls,
- Long-term groundwater and surface water monitoring, and
- Periodic Site reviews.

<u>Alternate Water Supply</u>: An alternate water supply would be provided to residences as described under Alternative 2.

Groundwater Extraction: A system of extraction wells would be constructed within and along the perimeter of each of the areas of concern in order to obtain hydraulic control, thereby preventing contaminated groundwater from migrating off-site. The contaminated groundwater would be extracted and treated ex-situ. Traditional pumping wells would be used for groundwater extraction. Based on groundwater modeling, 3 extraction wells at 100 gallons per minute (gpm) each would be required for Area One, and three extraction wells at 100 gpm each would be required for Area Two. The locations of the extraction wells are depicted in FIGURE 13. The locations and numbers of the extraction wells and the pumping rates are preliminary and would need to be confirmed during the remedial design.

Soil cuttings resulting from installation of the extraction wells would be characterized for disposal. It is assumed that this material would be drummed and disposed off-site as non-hazardous waste.

Groundwater Treatment: For costing purposes, liquid-phase carbon adsorption was used as the representative process option to remove the contaminants from the extracted groundwater. During the design phase, other treatment processes, such as air stripping and vapor-phase carbon adsorption, should also be evaluated. In this process, the groundwater is pumped from a series of extraction wells to the treatment facilities. Extracted water would be filtered to remove suspended solids that may interfere with subsequent treatment processes. Currently it is assumed that precipitation to remove metals would not be required. This assumption would be confirmed during the design phase.

The next step in the groundwater treatment train would be carbon adsorption, which would involve the transfer of volatile contaminants from water to the activated carbon. GAC systems for liquid treatment typically consist of one or more vessels filled with carbon connected in series or parallel, operating under atmospheric or positive pressure. Contaminated water would be pumped through the reactor vessel(s), where contaminants would be adsorbed to the GAC and removed. The GAC would be gradually expended as it adsorbs contaminants. Once the GAC is saturated with contaminants (i.e., breakthrough is observed), the GAC would be replaced. The spent GAC would be sent off-site for reactivation, regeneration, or landfill disposal.

For costing purposes, one centralized facility is proposed for Area Two but three separate water treatment facilities are proposed for Area One because of space limitations, pipe routing restrictions, and distance between the extraction wells. Each facility would be sized to match the extraction rate for that area. The proposed locations of the treatment facilities are depicted in FIGURE 13. The facilities in Area One would be located underground in adequately sized concrete vaults to minimize impact to the residential neighborhood. The number of facilities and locations would need to be evaluated during the design phase.

Maintenance of the wells, pumps, filters, and replacement of spent GAC would be conducted, as required, during the operation of the groundwater extraction and treatment system. Periodic samples would be collected from various sample locations along the groundwater treatment train to verify the effectiveness of each treatment process. Effluent samples would be collected to verify compliance with the State Pollution Discharge Elimination System (SPDES) discharge requirements. Results from the long-term groundwater monitoring program would be used to evaluate performance and adjust operating parameters for the extraction system, as necessary.

On-site Injection: Following the treatment step, the treated groundwater would be sampled periodically to verify compliance with discharge requirements prior to disposal. For costing purposes, re-injection using injection wells are assumed. For Area One, single injection wells are located next to the treatment facilities. For Area Two, re-injection wells would be located between the extraction wells and are connected through a central header. For costing purposes, nine injection wells (three in Area One and six in Area Two) at 100 feet deep are assumed.

Institutional Controls: Institutional controls would be implemented as described under Alternative 2.

Long-term Groundwater and Surface Water Monitoring: Long-term groundwater and surface water monitoring would be implemented as described under Alternative 2.

Periodic Site Reviews: A review of Site conditions would be conducted no less often than once every five years using data obtained through the annual groundwater and surface water sampling program. The Site reviews would include an evaluation of the extent of contamination and effectiveness of treatment. If contamination remains, the Site reviews would also include an assessment of contaminant migration and attenuation over time.

Duration of Alternative: The concentrations for PCE and cis-1,2 DCE, the two major contaminants with the highest detected concentrations, were decreasing during the past several years. The groundwater modeling predicts 75% of contaminant mass would be removed from the pumping and flushing actions in five years (see Appendix A, Figure 9, FS report). Based on the low contaminant concentrations detected and the modeling results, and for costing purposes, the contaminant concentrations are assumed to be below the drinking water standards in 10 years. At the end of this period, a new evaluation would be performed based on the data available at that time.

EVALUATION OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria. These nine criteria are as follows: 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, and 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 applicable or relevant and appropriate requirements (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.

- 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. This criteria 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, 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 and operation and maintenance (O&M) costs, and net present worth costs.

- State acceptance indicates whether the State concurs with, opposes, or has no comment on the preferred remedy.

- 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.

COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

Overall Protection of Human Health and the Environment

Alternative 1 would not provide protection of human health, since contamination would remain in groundwater for some time in the future, and potential exposure to contaminated groundwater would not be restricted. Currently there are risks to human health because the groundwater at the Site is used as a source of drinking water.

Alternatives 1 and 2 would rely on natural mechanisms to reduce the groundwater contamination. Alternative 2 would monitor the conditions of groundwater and additional remedies could be implemented if necessary.

Alternative 2 would provide a potable water source for the area; however, it would not provide any active treatment but rely on natural processes to reduce contaminant mass. Alternative 2 would be protective of human health because contaminated groundwater would no longer be utilized as the source of drinking water for the residents at the Smithtown Site. Residences within the impacted areas would be connected to the water mains. Existing private water wells would be abandoned to eliminate future use. Use of contaminated groundwater in the future would be avoided through the well drilling permit restrictions. Therefore, this alternative would be protective of human health.

Contaminants were detected sporadically in the monitoring and residential wells. Since biodegradation of COPCs is not prevalent, the non-destructive natural attenuation processes are the major mechanisms for the reduction of contaminant concentrations. The sampling results for PCE and cis-1,2 DCE, the two major contaminants with the highest detected concentrations in the impacted areas, indicate that PCE and cis-1,2 DCE concentrations were generally decreasing from 1998 to 2003. The groundwater modeling predicts that the majority of the contaminant mass would be removed in several years due to migration and discharge of the contaminants to the surface water bodies, where the contaminants eventually volatilize into the atmosphere and degrade. Based on the low contaminant concentrations detected and the modeling results, it is expected that the contaminant concentrations would drop to below the groundwater quality standards within the next 30 years. The long-term monitoring program would monitor the migration and reduction of the contaminant concentration through time. Alternative 2 would achieve the remedial action objectives.

Alternative 3 would provide a potable water source and utilize active treatment processes to slightly hasten the reduction of the toxicity, mobility, and volume of the contaminants, in addition to the natural processes. Alternative 3 would be protective of human health because contaminated groundwater would no longer be utilized as the source of drinking water for the residents at the Smithtown Site. Residences within the impacted areas would be hooked up to the water mains. Existing private water wells would be abandoned and sealed to eliminate future use. Use of contaminated groundwater in the future would be avoided through the well drilling permit restrictions. Therefore, this alternative would be protective of human health. Alternative 3 would provide some additional protection of the environment as the contaminant cleanup would be slightly accelerated by active pumping.

The goal of pumping groundwater is to create an inward gradient that would limit downgradient migration of the contaminants and to accelerate the cleanup of contaminated groundwater in the affected areas. Since contamination source areas have not been identified and there is no consistent plume in the groundwater, it is expected that the groundwater would meet the RAOs in a reasonable time frame without treatment. PCE and cis-1,2 DCE, the two major contaminants with the highest detected concentrations in the impacted areas, decreased from 1998 to 2003. As can be seen from the sample results, the contaminant concentrations were generally decreasing over the past several years. The decreasing trend is expected to continue.

The groundwater modeling predicts that 75% of the contaminant mass would be removed after five years of flushing and active pumping. Figure 9 in Appendix A in the FS report depicts the mass reduction through time at various pumping rates. Based on the fact that the contaminant concentrations were only marginally above the drinking water standards in the 2003 results, and the contaminant concentrations decrease due to active pumping, it is expected that the contaminant concentrations would drop to below the groundwater quality standards within the next 10 years. Long-term monitoring would be implemented to monitor the groundwater quality during the remediation period. In addition, institutional controls (well drilling permit restrictions) are in place to prevent exposure to contaminated groundwater during remediation. Alternative 3 would be protective of human health and the environment.

Compliance with ARARs

All alternatives would attain the RAOs within 30 years. Alternative 3 would accelerate the cleanup time through active pumping while Alternatives 1 and 2 would rely on natural mechanisms to reduce the contaminant concentrations. Long-term groundwater monitoring is a component of Alternatives 2 and 3 to assess the degree of compliance achieved over time. All alternatives would comply with location- and action-specific ARARs.

Alternative 2 would meet the chemical-specific ARARs. Most of the detected contaminant concentrations were only marginally above the groundwater quality standards and no continuous source is known to exist. It is expected that the contaminant concentrations will be reduced through the non-destructive attenuation processes to below the groundwater quality standards within the next 30 years.

Implementation of Alternative 2 may impact coastal resources, as a portion of the project area that would be hooked up to the municipal water supply, as delineated on FIGURE 12, is located within the coastal zone as designated by the State of New York. A coastal zone consistency assessment would be prepared during the design phase, to evaluate the proposed remedial action for consistency with the applicable policies of the New York State Coastal Management Program, as well as the Town of Smithtown's Local Waterfront Revitalization Program.

Alternative 2 would be designed to comply with action-specific ARARs. Tables 2-2 and 2-3 in the FS summarize the requirements of the location- and action-specific ARARs and their FS considerations. A Stage I Cultural Resources Survey would be conducted during the design phase. Alternative 2 would not impact wetlands and floodplains, as construction would be limited to roadways and residential properties, outside of the limits of the wetlands and floodplains. There are no known endangered species in the area.

Alternative 3 would meet the chemical-specific ARARs. Contaminant concentrations in the groundwater are expected to decrease over time. It is anticipated that the RAOs would be met in the near future. Long-term groundwater monitoring would be conducted to assess the degree of compliance achieved over time.

The treatment plants in Alternative 3 would be located outside of the 100-year floodplains and wetlands. Implementation of Alternative 3 may impact coastal resources, as infrastructure associated with the implementation of this alternative (treatment wells, on-site injection wells, and treatment plants) appears to lie within, or in close proximity to, the State-designated coastal zone. A coastal zone consistency assessment would be prepared during the design phase, to evaluate the proposed remedial action for consistency with the applicable policies of the New York State Coastal Management Program, as well as the Town of Smithtown's Local Waterfront Revitalization Program.

No other location-specific ARARs were identified. Treated water would comply with the discharge requirements. Alternative 3 would be designed to comply with other action-specific ARARs. Tables 2-2 and 2-3 in the FS summarize the requirements of the location- and action-specific ARARs and their FS considerations.

Long-Term Effectiveness and Permanence

Alternative 1 would not be effective or permanent, since there would be no mechanism to prevent current and future exposure to contaminated groundwater. Alternatives 2 and 3 would be effective and permanent since an alternate water supply would be reliable when combined with institutional controls and long-term monitoring. Pumping and treatment under Alternative 3 would only provide marginal improvement in contaminant removal.

Alternative 2 & 3 would have long-term effectiveness and permanence. The residents would not be exposed to contaminated groundwater once their houses are connected to the municipal water supplies. Their existing private wells would be abandoned. Institutional controls would restrict drilling of new drinking water wells. Since there is no known continuous source, residual contaminated groundwater is expected to continue to gradually decrease over time.

Alternative 2 & 3 would provide adequate control of risk to human health. For Alternative 2 and 3, municipal water supplies are considered reliable. Suffolk County would need to continue enforcing a well permit program that would prevent new private drinking water wells to be drilled in this area. Long-term groundwater monitoring would monitor the change in groundwater conditions. If necessary, additional remedial action could be implemented.

Under Alternative 3, extraction and treatment of contaminated groundwater would limit downgradient migration of the contaminants and accelerate the cleanup of the two affected areas. It is expected that groundwater would meet the RAOs in the near future, based on the groundwater modeling results.

Alternative 3's pump and treat would be considered effective in removing the contaminant plume as it has been demonstrated at other sites. However, the extraction wells may not intercept some or all of the contaminant flows, thus missing the contaminants. The additional effectiveness of groundwater extraction is small when compared to the removal of contaminants through the groundwater flushing action. As illustrated in Figure 9 of Appendix A in the FS report, pumping would only contribute to approximately 10 percent of the contaminant removal after ten years; approximately 90% of the contaminant removal would be through groundwater flushing.

The long-term effectiveness of Alternative 3 would be assessed through routine groundwater monitoring and five-year reviews. As part of the monitoring program, groundwater would be sampled to monitor groundwater quality over time to verify that contaminant concentrations would not be increasing over time or posing an unacceptable risk to human health and the environment.

Reduction of Toxicity, Mobility, or Volume through Treatment

Alternatives 1 and 2 would not reduce the VOCs through treatment as no active treatment of contaminated groundwater occurs. The toxicity and volume would eventually be reduced for Alternatives 1 and 2 due to natural processes. Alternative 3 would reduce the mobility and volume of the contaminants. This alternative also involves the treatment of the contaminated groundwater thus reducing toxicity. However, pumping and treatment under Alternative 3 would only provide marginal improvement in contaminant removal.

Alternative 2 has no direct effect in reducing the toxicity, mobility, or volume of residual contaminants through treatment, since no active treatment is part of this alternative. Biodegradation of chlorinated VOCs would not be likely because of the aerobic nature of the groundwater. However, the toxicity and volume (mass) of contaminants in groundwater would be gradually reduced over time through non-destructive attenuation processes such as dilution, dispersion and volatilization.

Under Alternative 3, the toxicity, mobility, and volume of the contaminants in groundwater would be reduced through pumping and treatment and natural groundwater flushing. Since site conditions result in pump and treat having a limited effect, only a small portion of the contaminants would be removed through groundwater extraction. The reduction of contaminants in the groundwater would mainly rely on natural flushing in the area. The contaminants collected on the carbon would be destroyed during the carbon regeneration or reactivation process where they would pose no threat to human health or the environment. The mobility of the remaining contaminants in groundwater would be reduced as a result of the establishment of the inward gradient towards the extraction wells.

Short-Term Effectiveness

For Alternative 1 protection of the community and workers would not be applicable as no remedial action occurs. There will be short term inconveniences to the residence for Alternatives 2 and 3 and no major adverse impacts would be expected. Air monitoring, engineering controls, and appropriate worker PPE would be used to protect the community and workers for Alternatives 2 and 3.

Under Alternative 2, the use of personal protective equipment (PPE) by workers during groundwater monitoring would minimize the exposure. There would be no adverse environmental impacts to habitats or vegetation due to the implementation of this alternative.

Under Alternative 2, it is estimated that it would take approximately two years to connect all the residences to the water mains. A time period of 30 years is assumed for the long-term monitoring of Alternative 2.

Under Alternative 3, limited Site work and installation of the extraction wells and groundwater treatment system would be performed without significant risk to the community. Site workers would wear appropriate PPE to minimize exposure to contamination and as protection from physical hazards. No adverse impacts to habitats or vegetation would be anticipated from activities associated with implementation of Alternative 3.

Under Alternative 3, the estimated period for connecting all the residents to the water mains is two years. Within the two year period, construction of the treatment facility would occur simultaneously, estimated at one year for construction (mobilization/site preparation/demobilization three months, treatment plant procurement/ installation nine months). A 10-year duration for Alternative 3 was assumed for operation and maintenance of the pumping and treatment systems and for long-term groundwater monitoring.

Implementability

Alternative 1 would be easiest both technically and administratively to implement. Alternative 2 would be the second easiest to implement. Alternative 3 would be easy to implement technically but could be administratively difficult to implement because of the space limitations and the potential difficulty in obtaining community acceptance of the locations for the treatment plants.

The residential hookup portion of Alternatives 2 & 3 would be easily implemented. Supplies and services for connections to the water mains and long-term groundwater monitoring would be readily obtainable. No problems would be forecasted for the implementation and enforcement of the institutional controls.

The pump and treat portion of Alternative 3 is technically implementable using conventional construction methods and equipment. The technical feasibility of pump and treat has been established at other sites. No technical difficulties are anticipated for installation of the groundwater extraction and treatment system. Services and materials for implementation of Alternative 3 are readily available. Competitive bids can be obtained from a number of equipment vendors and remediation contractors. However, the pump and treat portion of Alternate 3 may be administratively difficult to implement.

There is very limited space available at the Site. Most of the properties are privately owned. Obtaining permission and right of way for installing the extraction wells, routing the piping and locating the treatment plants could be difficult.

Cost

The capital costs, annual operations and maintenance (O&M) costs and the present worth costs associated with each of the alternative are summarized below. Present worth costs were calculated over a 30-year period for Alternative 2 and a 10-year period for Alternative 3. The discount rate was 7 percent for Alternatives 2 and 3.

Alternative	Capital Cost	Annual O&M	Present Worth
Alternative 1	$ 0	$ 0	$ 0
Alternative 2	$ 3,462,104	$ 46,820	$ 4,061,219
Alternative 3	$ 5,708,114	$ 166,909	$ 7,170,861

State Acceptance

NYSDEC concurs with the selected remedy. A letter of concurrence is attached (APPENDIX IV).

Community Acceptance

Community acceptance of the proposed remedy for alternate water supply was assessed during the public comment period. EPA believes that the community generally supports this approach. Specific responses to public comments are addressed in the Responsiveness Summary (APPENDIX V).

PRINCIPAL THREAT WASTES

Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. Contaminated groundwater generally is not considered to be source material; accordingly, there are no source materials defined as principal threat wastes at the Smithtown Site.

SELECTED REMEDY

Alternate Water Supply/Institutional Controls/Long-term Monitoring

Based upon an evaluation of the alternatives and consideration of community acceptance, EPA has selected Alternative 2: Alternate Water Supply/Institutional Controls/Long-term Monitoring as the remedy for the Smithtown Groundwater Contamination Site.

Summary of the Rationale for the Selected Remedy

The selected remedy will provide the best balance of trade-offs among alternatives with respect to the evaluating criteria, as described below.

Alternative 2 eliminates inhalation, ingestion and dermal contact with contaminated groundwater associated with the Site that does not meet the State or Federal drinking water standards by providing an alternate water supply, and because it is considered to be a permanent and reliable source of potable water. Groundwater contaminant levels have declined from 1998 to 2003 and are expected to continue to decline to below Federal and State MCLs via natural processes in the aquifer. Alternative 2 also will prevent future private well installation in the affected area through use of existing institutional controls prohibiting future well drilling. Alternative 2 provides for long-term monitoring of the aquifer to verify the groundwater contamination levels continue to decline. Alternative 2 will not actively reduce the toxicity, mobility or volume of contamination present in the groundwater. Alternative 3, in addition to alternative water supplies, includes an active pump and treat system in two locations. Alternative 3 is thus the only alternative that would actively achieve ARARs in two areas of groundwater contamination. However, the active groundwater extraction is predicted to reduce the time the groundwater is restored to levels below MCLs only a few years more rapidly than natural processes in the aquifer. In addition, because of the heavily developed nature of the area, locating the complete treatment system is expected to be problematical.

Since Alternative 2 will eliminate current and future exposure to groundwater contamination by providing an effective and permanent alternate water supply, the additional cost of approximately $ 3.1 million in Alternative 3 for groundwater extraction and treatment would not be justified for the benefit achieved. Therefore, Alternative 2 is reliable, cost effective and more preferable than Alternative 3. The selected Alternative 2 will provide the best balance of trade-offs among alternatives with respect to the evaluation criteria.

Description of Selected Remedy

Alternative 2 consists of the following components:

- Alternate water supply,
- Institutional controls,
- Long-term groundwater and surface water monitoring, and
- Periodic Site reviews.

Alternate Water Supply: An alternate water supply will be provided to residences potentially affected by the contamination. The alternate water supply recommends that each residence within the affected areas (FIGURE 12) will be connected to either SCWA or the St. James Water District. The alternative will provide the connection from the house to the water mains near the house. After the hookup to the water mains, the private wells will be properly abandoned accordingly to the New York State requirements. Based on information provided by SCWA and the St. James Water District, EPA has determined that approximately 270 residences will need to be connected to the water mains. A survey will be conducted during the design phase to provide a more accurate count of residences requiring the alternate water supply.

Institutional Controls: The intent of the institutional controls is to reduce potential future exposure to contaminants by legally restricting use of potentially contaminated groundwater. Suffolk County currently has permit requirements for drilling private water supply wells. The County denies a well permit if there are existing public water supplies in the area. It is assumed that Suffolk County will continue to enforce this requirement at least as long as the groundwater is affected by the contaminants.

Long-term Groundwater and Surface Water Monitoring: No active groundwater remedy is being utilized. However, aquifer restoration is anticipated to occur within a reasonable time frame based on natural processes such as dispersion, dilution and volatilization. The use of a treatment technology would not result in a significant decrease in the toxicity, mobility and volume of the hazardous substances. To ensure protectiveness, a long-term groundwater and surface water monitoring program will be instituted to collect data on contaminant concentrations and movement at the Site. Seventeen existing monitoring wells will be used for the long-term groundwater monitoring program. Additionally, six surface water samples will be collected from Stony Brook Harbor and the Nissequogue River. Locations of existing and proposed monitoring wells and surface water samples are shown in FIGURE 11. Surface water (seep) sampling locations were determined based on groundwater modeling which projected surface water discharge locations. Groundwater and surface water (seeps observed at low tide) samples will be collected annually and analyzed for VOCs using low detection limit analytical methods.

Periodic Site Reviews: A review of Site conditions will be conducted no less often than once every five years using data obtained through the annual groundwater and surface water sampling program. The Site reviews will include an evaluation of the extent of contamination and an assessment of contaminant migration and attenuation over time. The long-term groundwater monitoring program may be modified based on the monitoring results.

Duration of Alternative: Contaminants were detected sporadically in the monitoring and residential wells. Since biodegradation of COPCs is not prevalent, as discussed in Section 2.5.3 of the FS report, the non-destructive natural attenuation processes are the only mechanism for the reduction of contaminant concentrations.

The concentrations for PCE and cis-1,2 DCE, the two major contaminants with the highest detected concentrations, were decreasing during the past several years. The groundwater modeling predicts the contaminant mass will decrease over time, as groundwater and the contaminants migrate and discharge to surface water bodies. The model predicts that 70% of the contaminant mass will be removed in seven years from the groundwater flushing action (see Appendix A, Figure 9 in the FS report). Therefore, based on the low contaminant concentrations detected and the model predictions, it is expected that the contaminant concentrations will drop to below the groundwater quality standards within the next 30 years. The long-term monitoring program will monitor the migration and reduction of the contaminants through time. For costing purpose, it is assumed the alternative will be evaluated for the 30-year FS evaluation period.

Summary of Estimated Remedy Costs

The total estimated present worth cost for the selected remedy alternatives is $4,061,219. This includes an estimated $580,989 in O&M for 30 years.

The information in this cost estimate summary is based on the best available information regarding the anticipated scope of Alternative 2. These are order-of-magnitude engineering cost estimates that are expected to be within +50 to -30 percent of the actual cost of the project. Changes in the cost elements are likely to occur as a result of updated information on the number of homes that need connections to the public water supplies during the engineering design of the components of this remedial alternative. Major changes may be documented in the form of a memorandum in the administrative record file, an Explanation of Significant Differences, or a ROD amendment.

Expected Outcomes of Selected Remedy

Implementation of Alternative 2 will eliminate potential risks associated with exposure to contaminated groundwater in private residential wells. Upon implementation, this remedy will provide safe potable water to the threatened and impacted residences and/or businesses within the designated hookup area. Design and construction of the system is expected to take approximately two to three years.

Based on preliminary groundwater modeling in the FS, it is estimated that groundwater contaminant levels will continue to decrease and will achieve Site ARARs for groundwater within the next 30 years through natural processes of dispersion, dilution and volatilization. By achieving cleanup levels, the groundwater will be available for its best use (as a source of potable water supply).

The cleanup levels for groundwater and drinking water are contained in TABLES 1 and 5 (i.e., EPA and NYSDEC groundwater and drinking water standards).

Existing institutional controls in the form of county law that prohibits installation of private drinking water wells in the affected area will prevent new drilling of wells which could result in exposure to groundwater contamination.

Implementation of a long-term monitoring program which includes annual sampling of monitoring wells will serve to verify that the groundwater contamination levels continue to decline. Annual monitoring is expected to continue for 30 years.

STATUTORY DETERMINATIONS

Under its legal authorities, EPA's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA and the NCP establish several other statutory requirements and preferences. These specify that the selected remedial action for this Site must comply with ARARs unless a waiver is justified. The selected remedy also must be cost-effective and utilize permanent solutions and alternative treatment technologies or resource-recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous substances, as available. The following sections discuss how the selected remedy meets these statutory requirements.

EPA and NYSDEC believe that the selected remedy will be protective of human health and the environment, comply with ARARs, be cost-effective, and utilize permanent solutions to the maximum extent practicable.

Protection of Human Health and the Environment

The selected remedy is protective of human health and the environment. Alternative 2 is protective of human health because it will eliminate human exposure to water above NYS and Federal MCLs by providing an alternate water supply. Existing institutional controls will prevent future installation of private drinking water wells within the affected area. The long-term monitoring of the groundwater will verify the reduction of contaminant levels in the aquifer. Groundwater modeling for the Site predicts that contaminant levels in the aquifer will continue to decline by natural process such as dispersion, dilution and volatilization. Groundwater contaminant levels are estimated to decline below regulatory levels within the next 30 years. Implementation of the selected remedy will not pose unacceptable short-term risks, and no adverse cross-media impacts are expected.

Compliance with ARARs

The NCP (§§300.430(f)(5)(ii)(B) and (C)) requires that the selected remedy attain Federal and State ARARs. The remedy will comply with the following action-, chemical- and location-specific ARARs as well as other criteria identified for the Site and will be demonstrated through monitoring, as appropriate.

Action-Specific ARARs:

Air Quality:

- Clean Air Act (CAA), National Ambient Air Quality Standards (NAAQs), 40 CFR 50.
- New York General Prohibitions, 6 NYCRR Part 211.
- New York Air Quality Standards, 6 NYCRR Part 257.

Hazardous Waste:

- Department of Transportation (DOT) Rules for Transportation of Hazardous Materials, 49 CFR Parts 107, 171,172, 177, 179.
- New York State DOT regulations Standards for Handling, Transportation and Disposal of Hazardous Waste, 6 NYCRR Parts 370-376.

Chemical-Specific ARARs:

- Clean Water Act, 33 U.S.C. §§ 1251-1387.

- Safe Drinking Water Act, 42 U.S.C. §§ 300f et seq.
- Federal Safe Drinking Water Act Maximum Contaminant Levels (MCLs), 40 CFR Part 141.
- Ambient Air Quality Standards, 6 NYCRR Parts 256 and 257.
- Groundwater Quality Standards and Groundwater Effluent Standards, 6 NYCRR Part 703.
- Clean Water Act Water Quality Criteria (Federal Ambient Water Quality Criteria and Guidance Values), 40 CFR 131.36.

Location-Specific ARARs:

- National Historic Preservation Act, 40 CFR 6.301.
- Coastal Zone Management Act,16 USC 33.

To-Be-Considered:

- Suffolk County Sanitary Code, § 406.4, Suffolk County Private Water System Standards, Article 4 - Water Supply.
- New York State Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, TOGS 1.1.1.

Cost-Effectiveness

A cost-effective remedy is one whose costs are proportional to its overall effectiveness (NCP §§300.430(f)(1)(i)(B)). 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 to cost, the selected remedy meets the statutory requirement that Superfund remedies be cost-effective (NCP §§300.430(f)(1)(ii)(D)).

Each of the alternatives has undergone a detailed cost analysis. In that analysis, capital costs and O&M costs have been estimated and used to develop present-worth costs. In the present-worth cost analysis, annual costs were calculated for 30 years for Alternative 2 and 10 years for Alternative 3 (estimated life of each alternative) using a seven percent discount rate (consistent with the FS and Proposed Plan). Alternative 3's active groundwater extraction is predicted to reduce only a small portion of contaminants since Site conditions would result in pump and treat having a limited effect. Therefore, EPA believes that the additional cost of approximately $ 3.1 million for Alternative 3 would not be justified for the benefit achieved. For a detailed breakdown of costs associated with the selected remedy, please see TABLE 20.

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

EPA has determined that the selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized. The alternate water supply component of the selected remedy utilizes permanent solutions to eliminate human health risks associated with consumption of contaminated groundwater by provision of a drinking water supply. While the groundwater component of the selected remedy does not satisfy the statutory preference to reduce the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants, the groundwater contamination will continue to decrease through natural processes such as dispersion, dilution, and volatilization. Thus aquifer restoration is expected within a reasonable time frame.

The selected remedy represents the most appropriate solution at the Site because it provides the best balance of trade-offs among the alternatives with respect to the evaluation criteria.

Preference for Treatment as a Principal Element

The statutory preference for remedies that employ treatment as a principal element is not fully satisfied through the implementation of groundwater component of the selected remedy. However, the toxicity of the contaminated groundwater will be reduced through natural processes mainly attributed to the mobility, dilution and volatilization of contaminants in the groundwater. The use of a treatment technology would not result in a significant decrease in the toxicity, mobility or volume of the hazardous substances within a reasonable time frame.

Five-Year Review Requirements

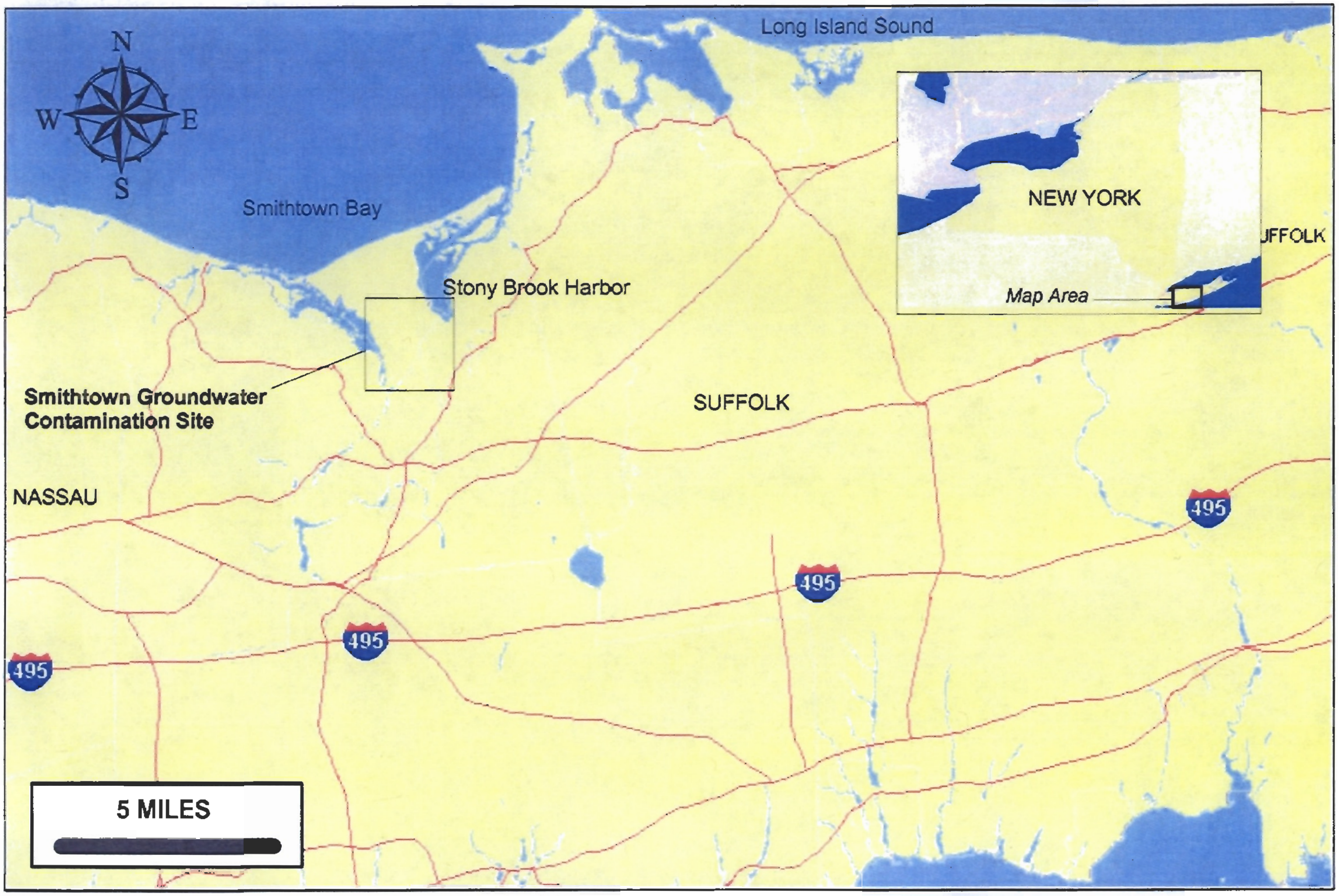
A review of Site conditions will be conducted no less often than once every five years after start of the construction of the public water supply connections, using data obtained through the annual groundwater and surface water sampling program. The Site reviews will include an evaluation of the extent of contamination and an assessment of contaminant migration and attenuation over time. The long-term groundwater monitoring program will be modified based on the monitoring results.

DOCUMENTATION OF SIGNIFICANT CHANGES

There were no significant changes from the preferred remedy presented in the Proposed Plan.

APPENDIX I

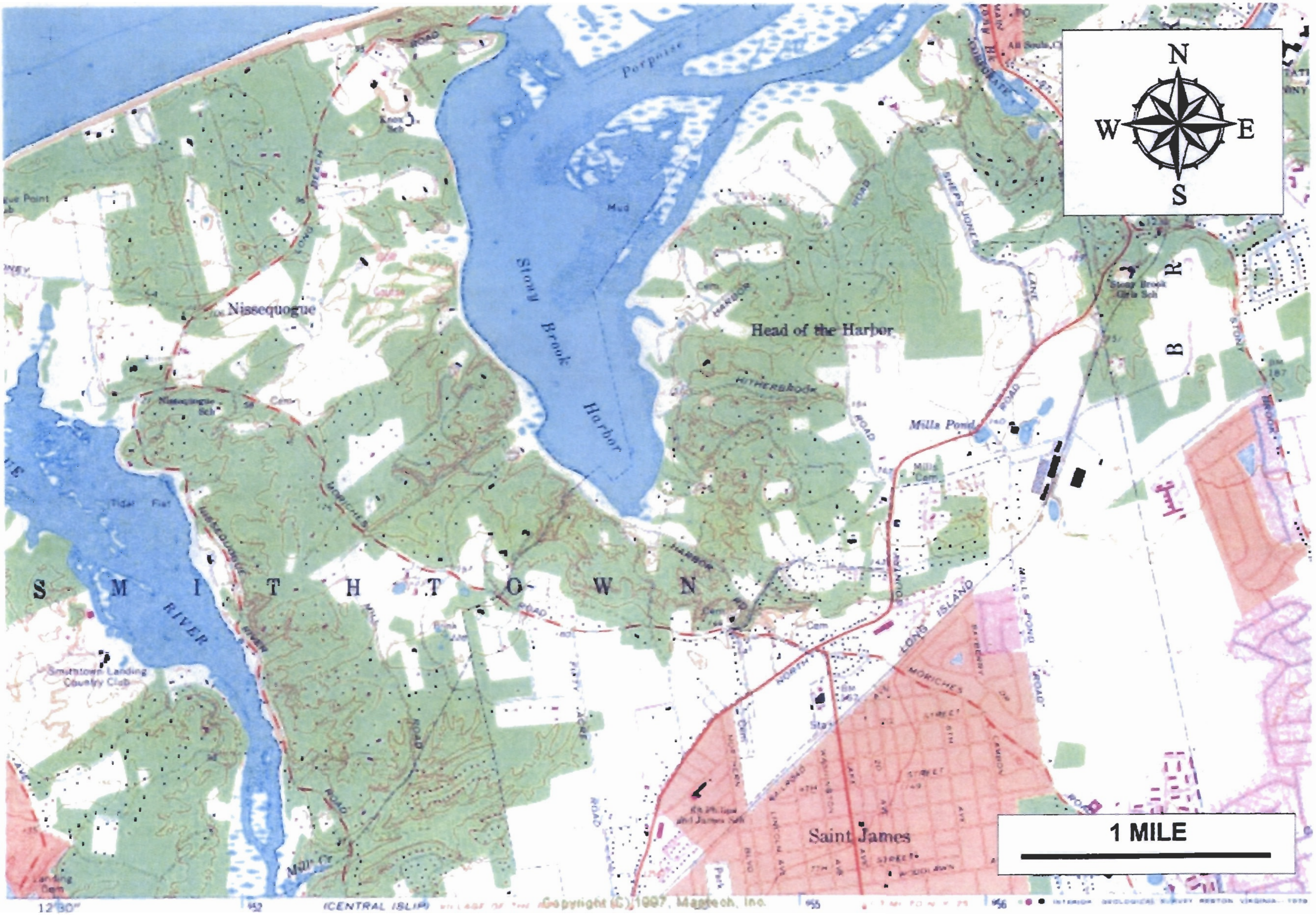
FIGURES



adapted from NYSDEC Interactive Mapping Gateway: http://www.nysgis.state.ny.us/gateway/index.html

CDM.

Figure 1
Site Location Map
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



from USGS Saint James 7.5 minute Quadrangle, New York, dated 1967

CDM.

Figure 2
Site Map
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

System	Series	Stratigraphic unit	Thickness (feet)	Character of deposits	Water-bearing properties
Quaternary	Recent	Recent deposits Artificial fill, marsh deposits, beach deposits, and surficial soil.	0–20±	Sand, gravel, silt, and clay; organic mud, peat, loam, and shells. Colors are brown, yellow and gray.	Sandy and gravelly beach deposits may locally yield small supplies of fresh to brackish water to wells. Marine silt and clay in north-shore harbors retard salt-water encroachment and confine underlying aquifers.
Quaternary	Pleistocene	Upper Pleistocene deposits.	0–300±	Till composed of unassorted clay, sand, and boulders as ground moraine in area north of Harbor Hill terminal moraine and possibly as buried ground moraine of the Ronkonkoma ice. Outwash deposits of brown well-stratified sand and gravel—predominantly quartzose but containing biotite and other dark minerals and igneous and metamorphic rock fragments—including advance outwash, channel and valley-fill, and outwash-plain deposits. Ice-contact deposits of crudely stratified sand and gravel and isolated masses of till in the Ronkonkoma and Harbor Hill terminal moraines. Glaciolacustrine deposits of brown and gray silt and clay intercalated with outwash deposits in buried valleys.	Till, relatively impermeable; commonly causes perched-water bodies to form locally and impedes recharge from precipitation. Outwash and ice-contact deposits are moderately to highly permeable. Wells screened in outwash deposits generally at depths of less than 250 ft yield as much as 1,700 gpm. Specific capacities of public-supply wells range from 22 to 222 gpm per ft of drawdown. Water is generally fresh and unconfined. Chief source of water for domestic, public-supply, industrial, and irrigation wells in project area. Glaciolacustrine deposits of silt and clay are relatively impermeable and locally retard movement of water between adjacent water-bearing beds in Pleistocene and Cretaceous deposits.
		---Unconformity?---			
		Pleistocene deposits undifferentiated.	0–400±	Sand, gravel, clay, and silt. Lignite present in some silt or clay layers. Colors are brown and gray. These deposits are present in deep buried valleys and may include equivalents of the Gardiners clay and the Jameco gravel found elsewhere on Long Island. This unit may include some Pliocene(?) deposits, but evidence is scanty.	Coarser sand and gravel beds are permeable and would presumably yield moderate to large supplies to properly constructed wells. One well, S16,127, screened in these deposits yields 1,400 gpm, and has a specific capacity of 46 gpm per ft of drawdown. Silt and clay beds confine water in adjacent water-bearing beds.
		---Unconformity?---			
Tertiary(?)	Pliocene(?)	Mannetto gravel	0–300±	Stratified sand and gravel and scattered clay lenses; unit is predominantly quartzose; igneous and metamorphic rock fragments are scarce. Colors are pale to yellowish brown. Caps hills in western part of Huntington and locally present in buried valleys.	Deposits are moderately to highly permeable but generally lie above the zone of saturation. Locally, water supplies for domestic use are obtained from these deposits, such as at wells 84, 8208 and 8927. No large public-supply or industrial wells were screened in these deposits in 1960.
		--- Unconformity ---			
Cretaceous	Upper Cretaceous	Magothy(?) formation	0–800±	Sand, clayey, with silt, clay, and some gravel. Colors are white, gray, brown, yellow, and red. The upper part of the formation commonly includes interbedded clay, fine to medium sand, silt, and some lignite; the lower part is largely coarse sand, gravel, and some clay.	Generally ranges from moderately to highly permeable. The lower part of the formation is more permeable than the upper part. Several public-supply wells screened in the basal zone have yields ranging from 1,000 to 1,500 gpm and specific capacities from 30 to 90 gpm per ft of drawdown. Water is generally of excellent quality. Second most important source of water to wells. Unconfined conditions are common in uppermost part of formation, but confined conditions prevail in the lower part; some wells flow.
		--- Unconformity ---			
Cretaceous	Upper Cretaceous	Raritan formation — Clay member	0(?)–188±	Clay and silt, and a few layers of sand. Lignite and pyrite concretions are common. Colors are mostly gray, white, and red.	Relatively impermeable. Acts as a confining bed, which retards but does not prevent movement of water between the Magothy(?) formation and the Lloyd sand member.
Cretaceous	Upper Cretaceous	Raritan formation — Lloyd sand member	200–265±	Sand, fine to coarse, and gravel, mixed with some clay and some layers of silt and clay. Colors are white to pale yellow.	Moderately permeable. Not extensively developed. Several public-supply and industrial wells yield as much as 250 gpm in northern Huntington, but potential yields from properly constructed wells are much greater. Water is confined and some wells flow. Water is generally of excellent quality, but on Eaton Neck it is brackish.
		--- Unconformity ---			
Precambrian to lower Paleozoic		Bedrock		Crystalline metamorphic and igneous rocks.	Relatively impermeable. Forms the floor of the ground-water reservoir.

(adapted from Lubke, 1964)

CDM

Figure 3
Generalized Regional Stratigraphy
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

File Path: c:\egis\smithtown\smith1apr.apr

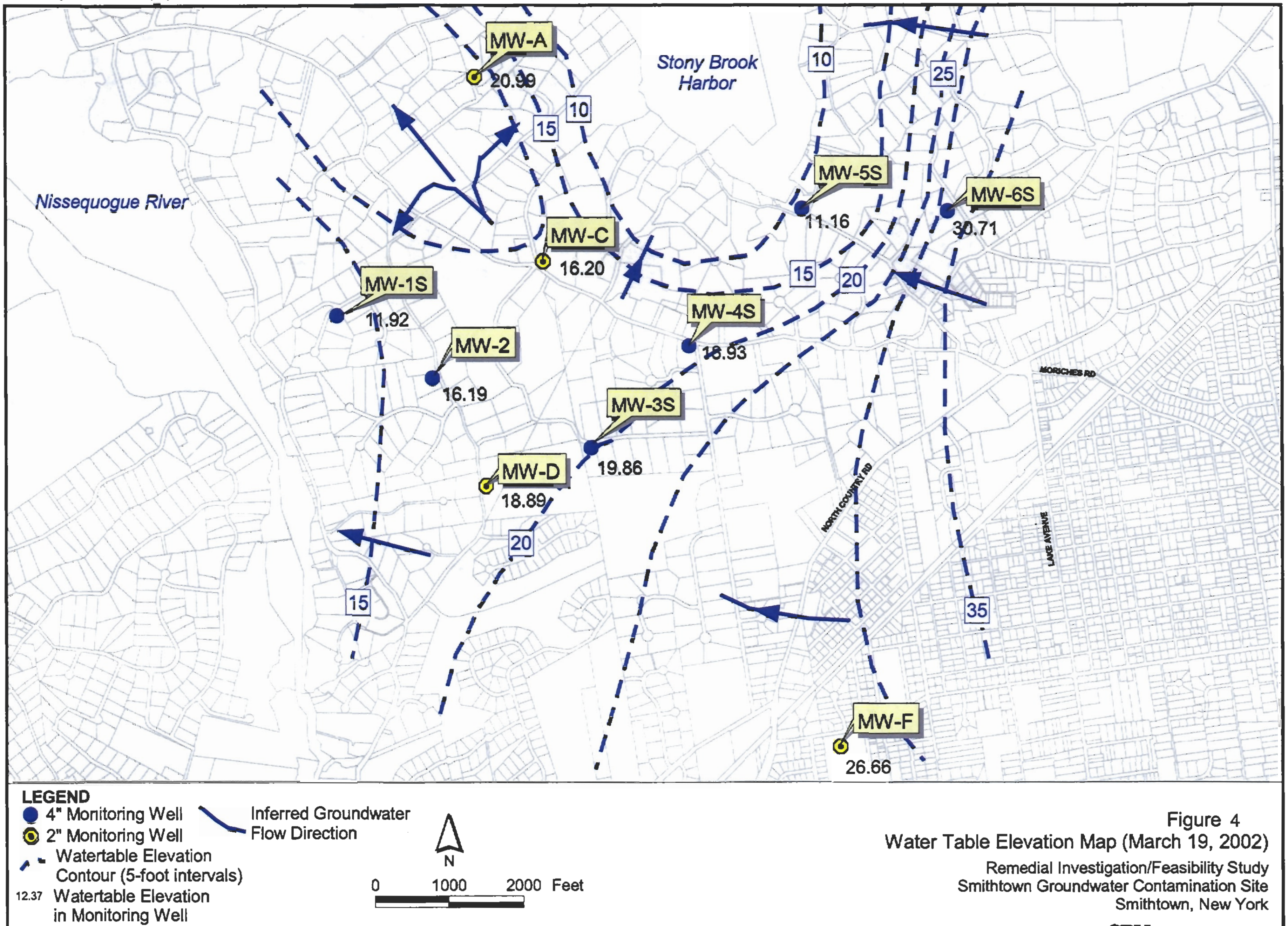
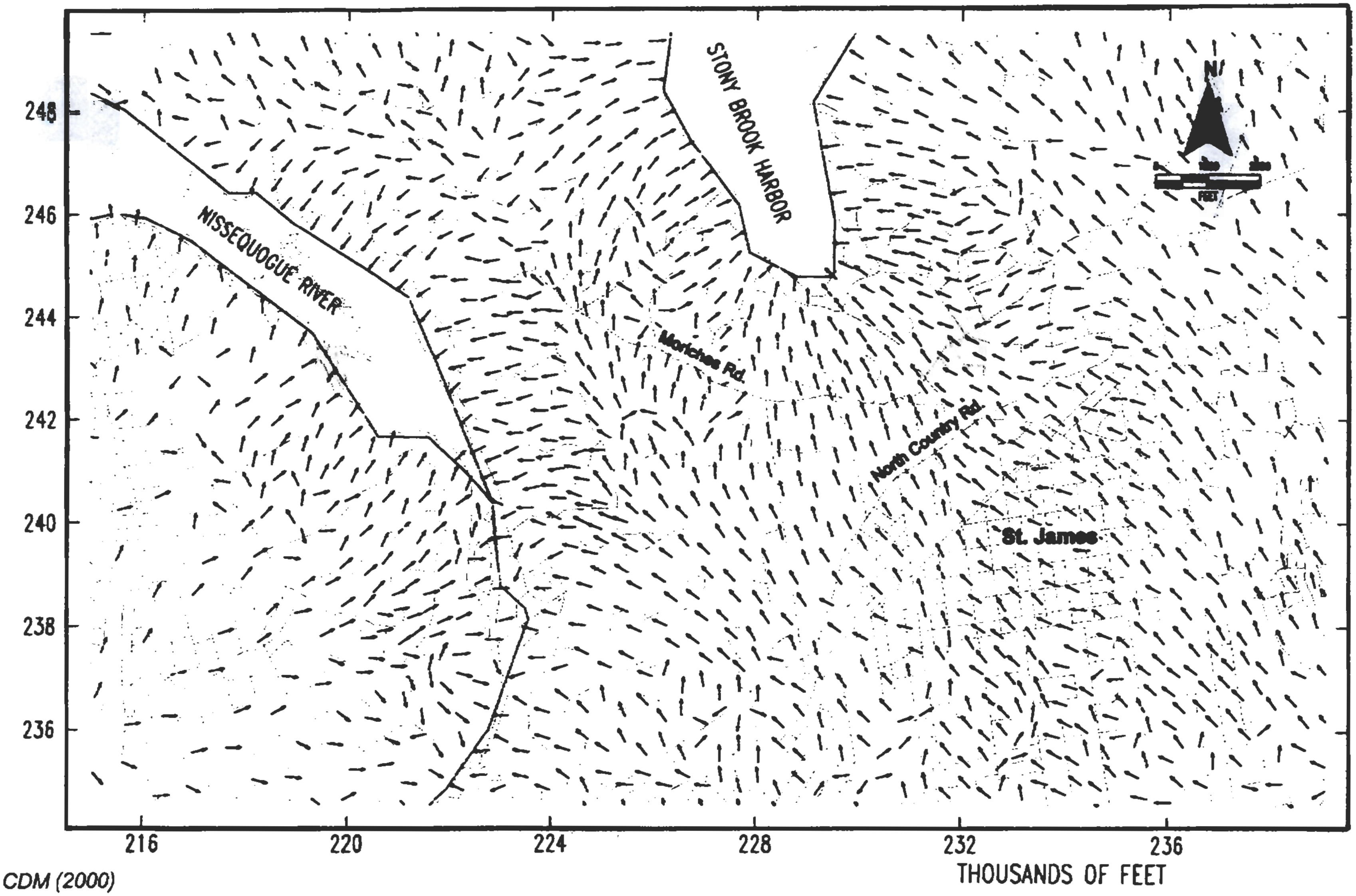


Figure 4
Water Table Elevation Map (March 19, 2002)
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York

CDM

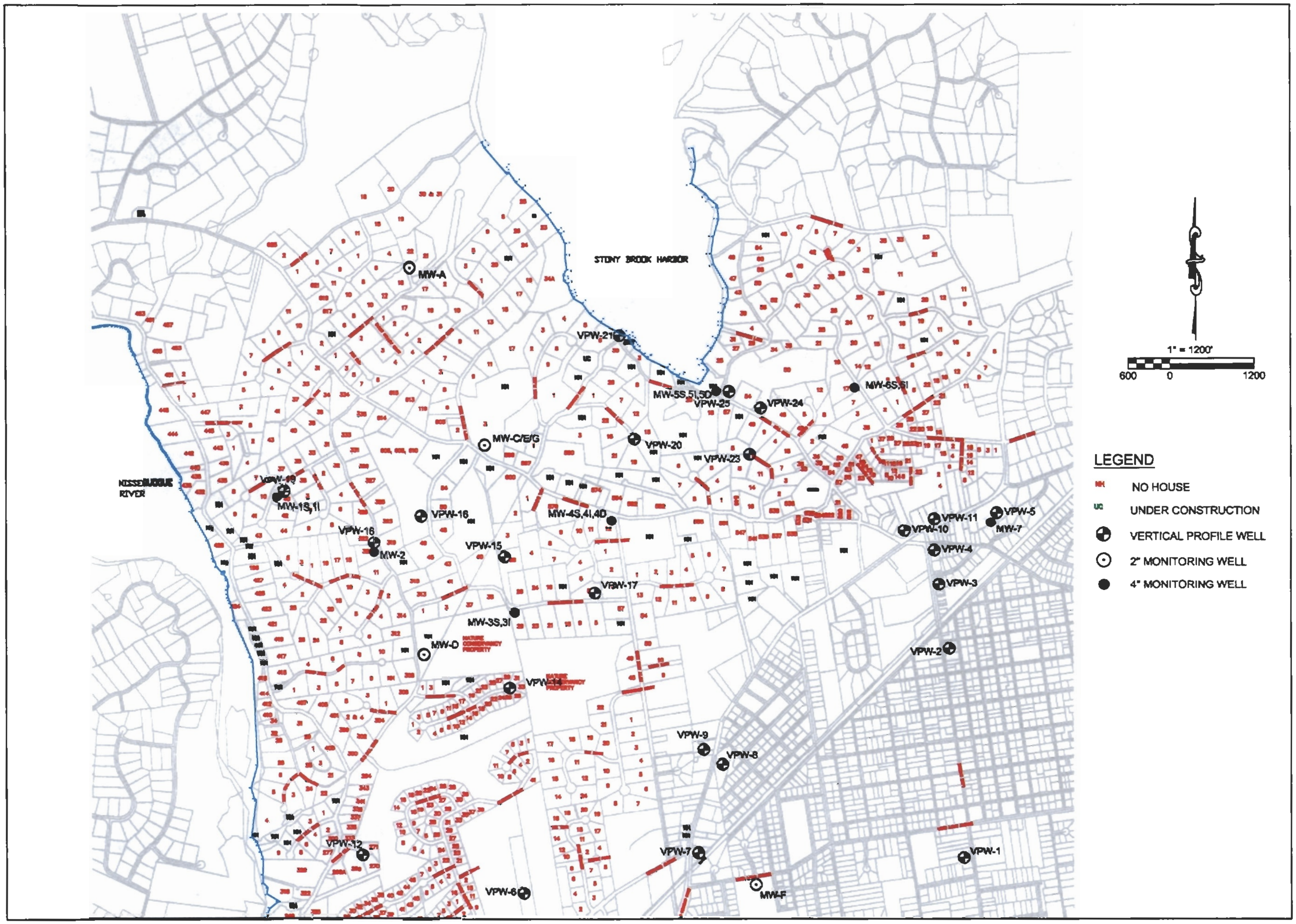


from CDM (2000)

Figure 5
Simulated Direction of Groundwater Flow for the Upper Glacial Aquifer

CDM

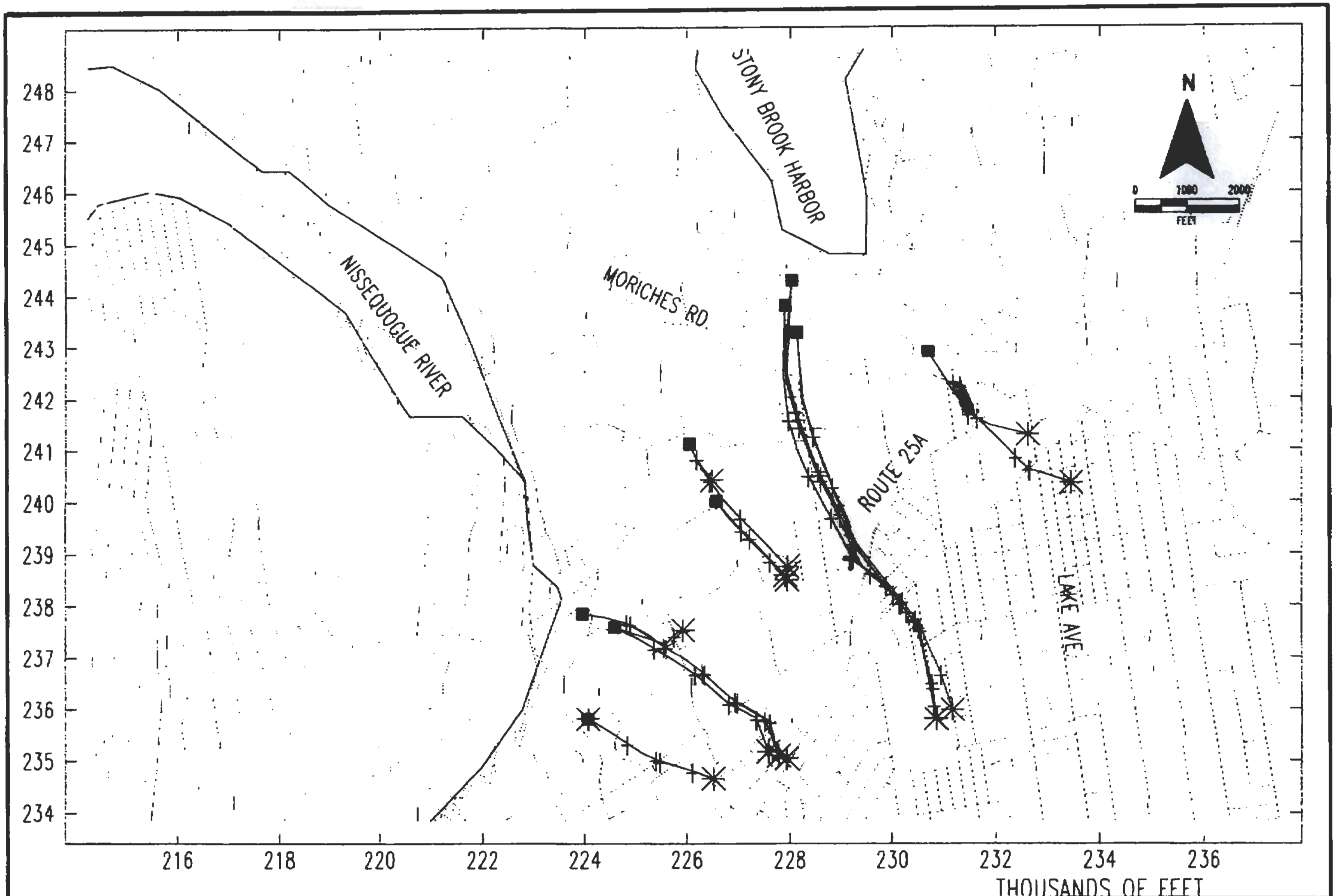
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



CDM

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

Figure 6
VERTICAL PROFILE WELL/MONITORING WELL LOCATION MAP
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

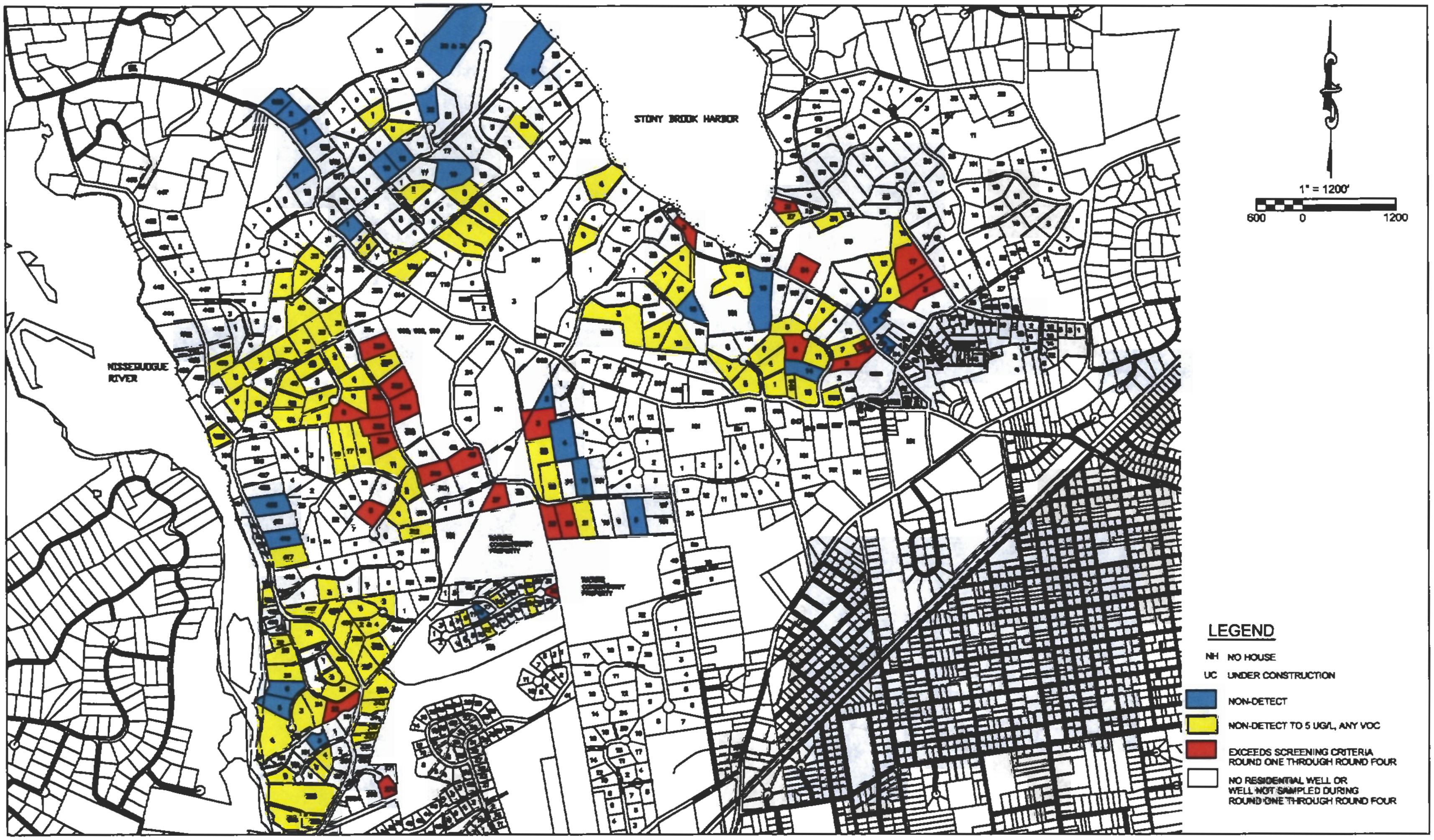


from CDM (2000)

CDM

Note:
Tick marks denote 2 year intervals
Red = 20 feet below water table
Blue = 40 feet below water table

Figure 7
Particle Backtracks
from Selected Private Wells
Remedial Investigation/Feasibility Study
Smithtown Groundwater Contamination Site
Smithtown, New York



CDM

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

Figure 8
ROUND ONE THROUGH ROUND FOUR RESIDENTIAL
MAXIMUM VOC CONCENTRATION DETECTED DURING ANY ROUND
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

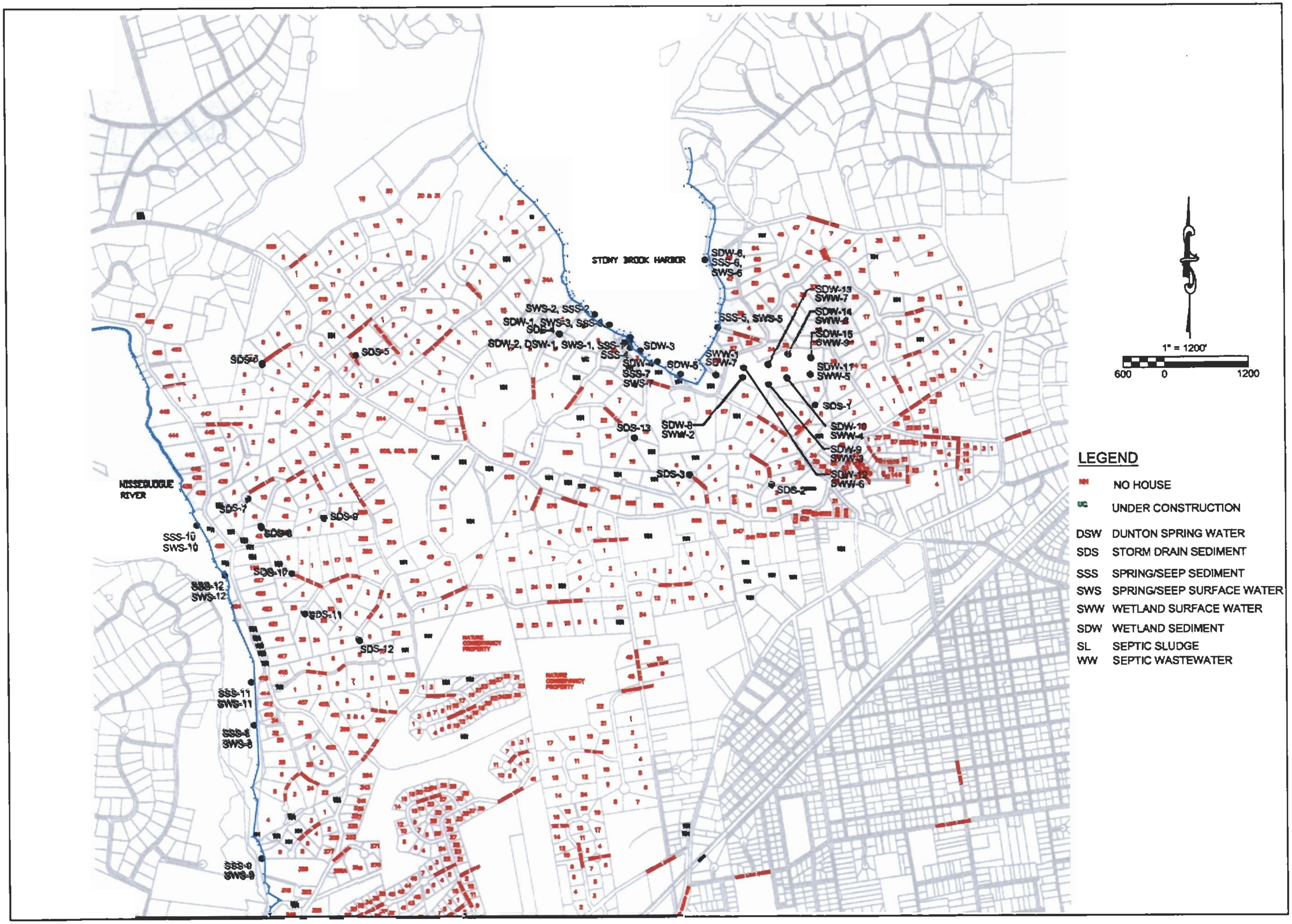
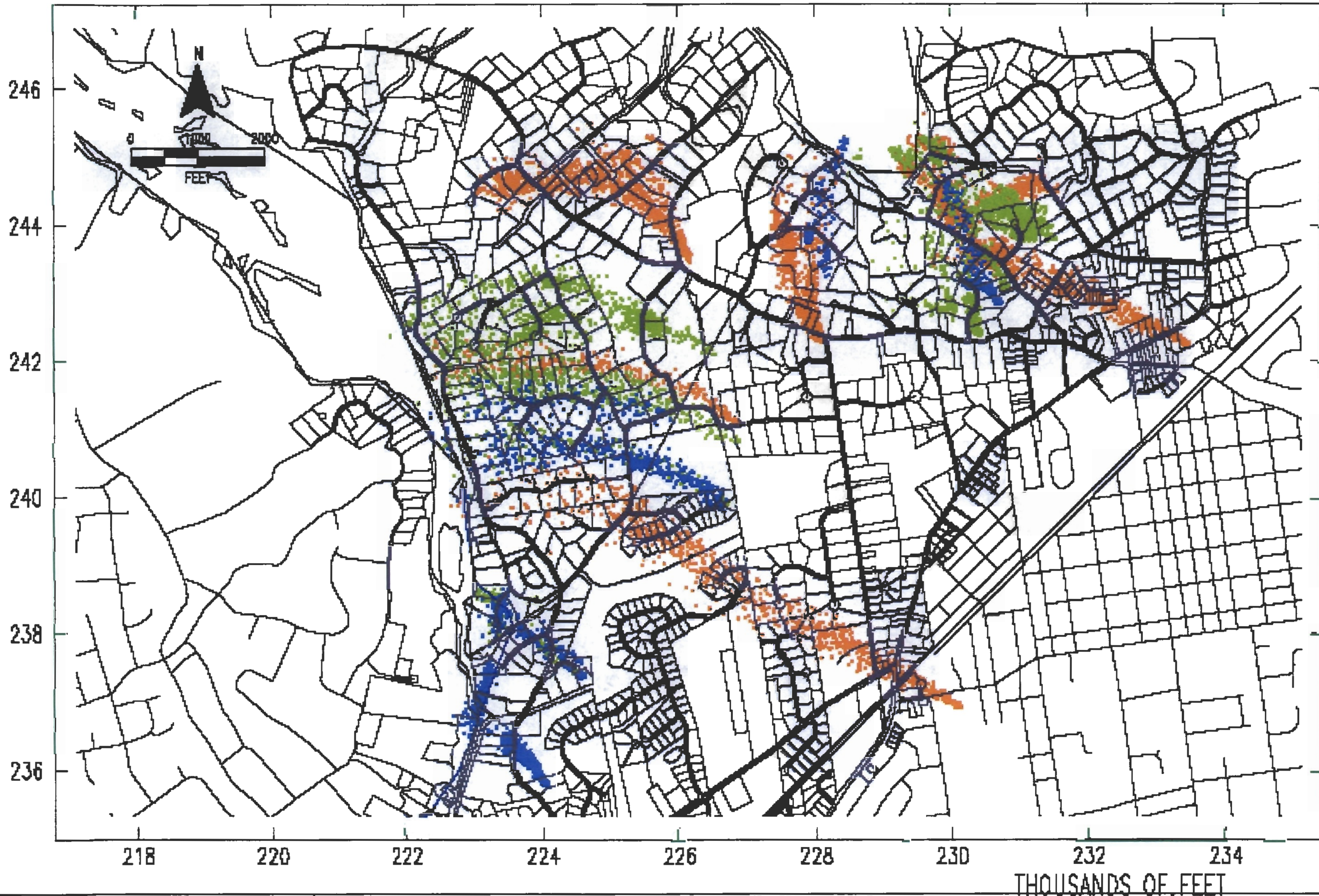


Figure 9
SEEP/SPRING SURFACE WATER/SEDIMENT, WETLAND SURFACE WATER/SEDIMENT
SEPTIC SLUDGE/WASTEWATER STORM DRAIN SEDIMENT SAMPLING LOCATIONS
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

CDM

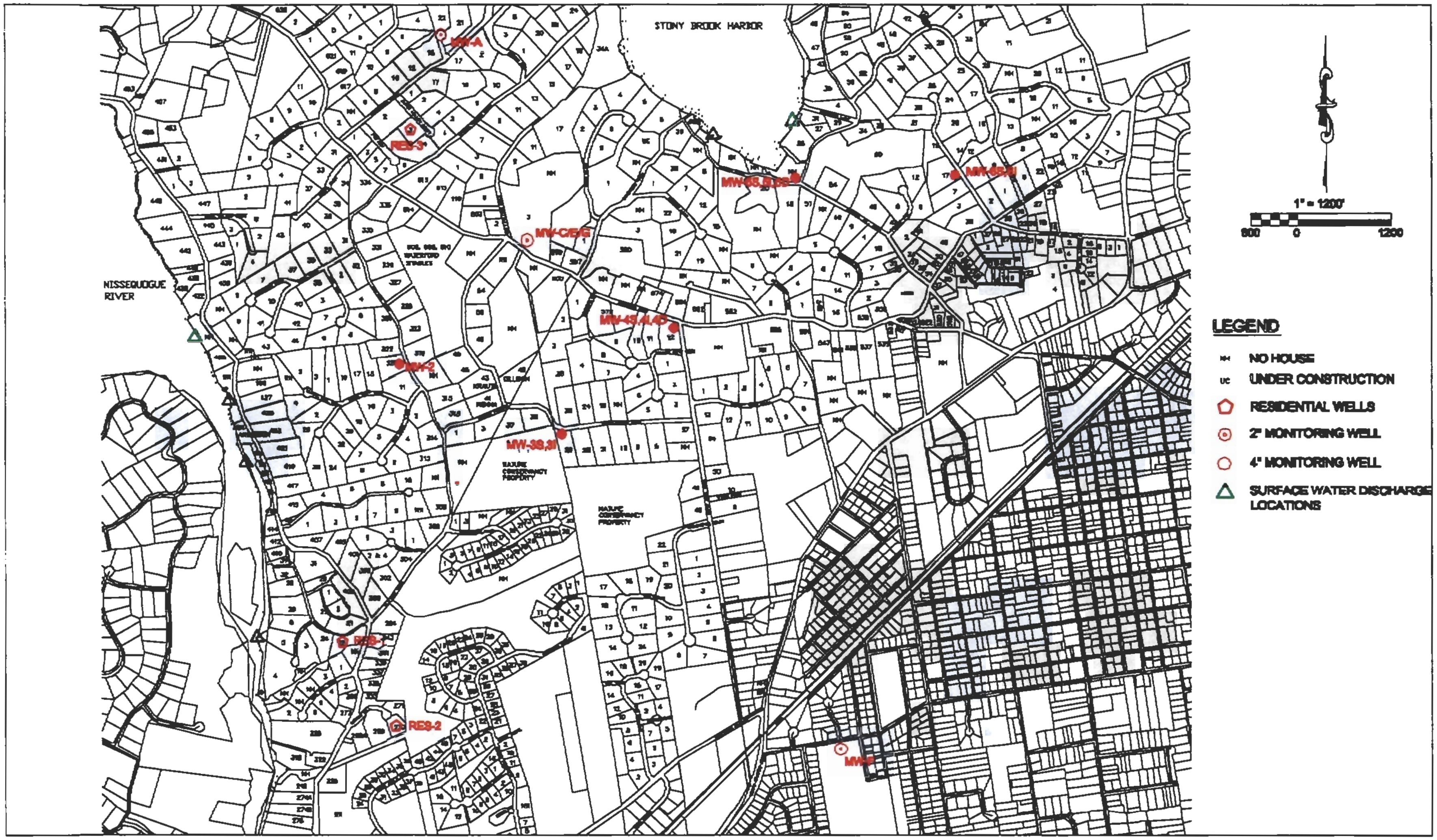


consulting engineering construction operations

CDM

30-YEAR PARTICLE TRACKS
FROM VPWs, MWs, PIEZOMETERS (ORANGE) AND PRIVATE WELLS (GREEN, '99-'03; BLUE '97-'98) WITH VOCs DETECTED ABOVE SCREENING CRITERIA

FIGURE 10



CDM

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

Figure 11
PROPOSED LONG-TERM MONITORING PROGRAMS
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

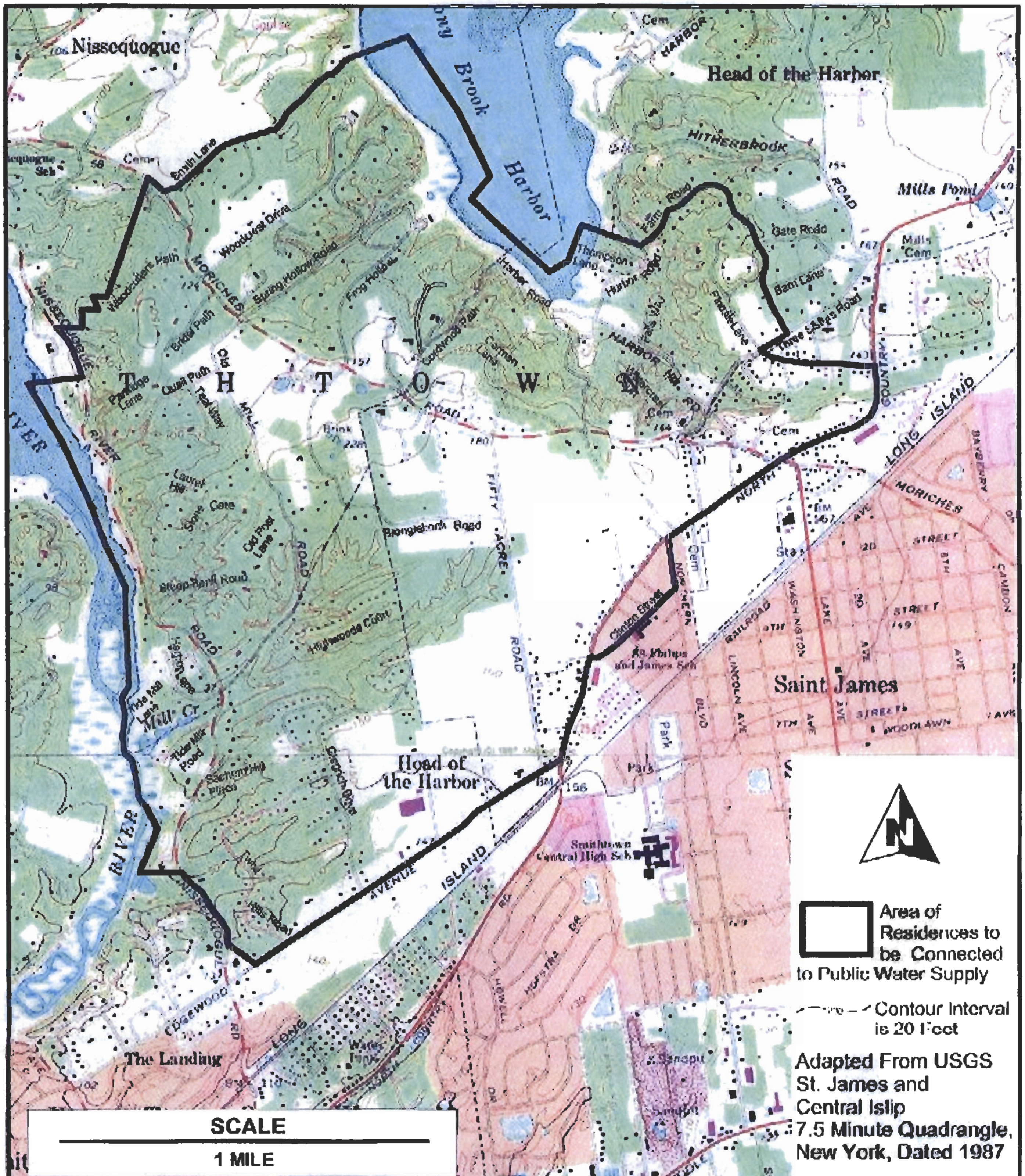
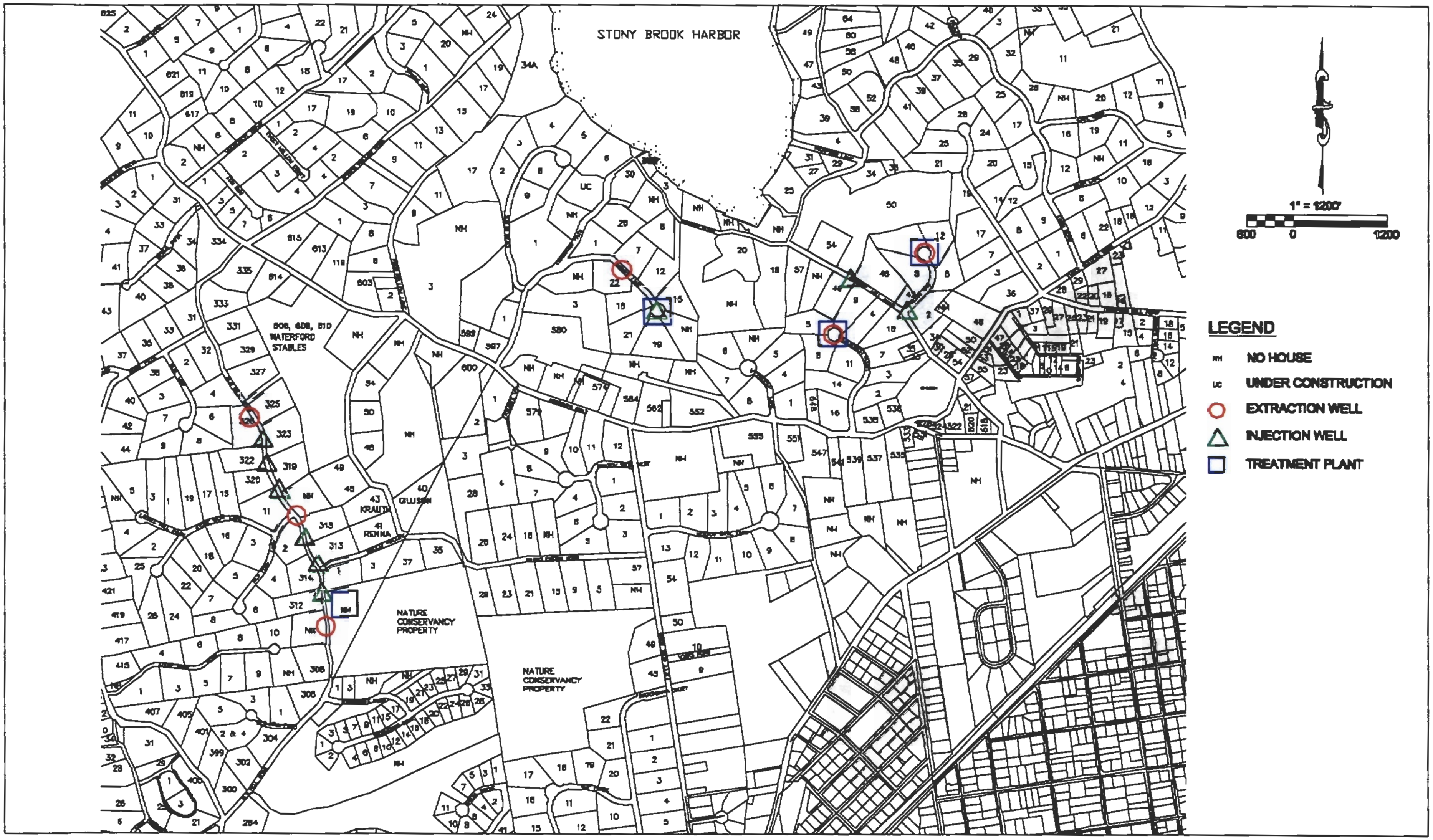


Figure 12
Residences to be Connected to Public Water Supply

Smithtown Groundwater Contamination Site
Smithtown, New York



CDM

SMITHTOWN GROUNDWATER CONTAMINATION SITE
SMITHTOWN, NEW YORK

Figure 13
PROPOSED LOCATIONS FOR EXTRACTION WELLS, INJECTION WELLS, AND TREATMENT PLANTS
REMEDIAL INVESTIGATION/FEASIBILITY STUDY

TABLE 1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)	NYSDEC GW Quality Standards (2)	NYSDOH Drinking Water Quality Standards (3)	Smithtown GW Screening Criteria (4)
Volatile Organic Compounds					
1,1,1-Trichloroethane	ug/l	200	5	5	5
1,1,2,2-Tetrachloroethane	ug/l	NL	5	5	5
1,1,2-Trichloro-1,2,2-trifluoroethane	ug/l	NL	5	NL	5
1,1,2-Trichloroethane	ug/l	5	1	5	1
1,1-Dichloroethane	ug/l	NL	5	5	5
1,1-Dichloroethene	ug/l	7	5	5	5
1,2,3-Trichlorobenzene	ug/l	NL	5	5	5
1,2,4-Trichlorobenzene	ug/l	70	5	5	5
1,2-Dibromo-3-chloropropane	ug/l	0.2	0.04	0.2	0.04
1,2-Dibromoethane	ug/l	0.05	0.0006	0.05	0.0006
1,2-Dichlorobenzene	ug/l	600	3	5	3
1,2-Dichloroethane	ug/l	5	0.6	5	0.6
1,2-Dichloropropane	ug/l	5	1	5	1
1,3-Dichlorobenzene	ug/l	NL	3	5	3
1,4-Dichlorobenzene	ug/l	75	3	5	3
2-Butanone	ug/l	NL	50	NL	50
2-Hexanone	ug/l	NL	50	50	50
4-Methyl-2-pentanone	ug/l	NL	NL	50	50
Acetone	ug/l	NL	50	50	50
Benzene	ug/l	5	1	5	1
Bromochloromethane	ug/l	NL	5	5	5
Bromodichloromethane	ug/l	NL	50	100	50
Bromoform	ug/l	NL	50	100	50
Bromomethane	ug/l	NL	5	5	5
Carbon Disulfide	ug/l	NL	60	50	50
Carbon Tetrachloride	ug/l	5	5	5	5
Chlorobenzene	ug/l	100	5	5	5
Chloroethane	ug/l	NL	5	5	5
Chloroform	ug/l	NL	7	100	7
Chloromethane	ug/l	NL	5	5	5

TABLE 1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)	NYSDEC GW Quality Standards (2)		NYSDOH Drinking Water Quality Standards (3)	Smithtown GW Screening Criteria (4)
cis-1,2-Dichloroethene	ug/l	70	5		5	5
cis-1,3-Dichloropropene	ug/l	NL	0.4		5	0.4
Cyclohexane	ug/l	NL	NL		NL	NL
Dibromochloromethane	ug/l	NL	50		100	50
Dichlorodifluoromethane	ug/l	NL	5		5	5
Ethylbenzene	ug/l	700	5		5	5
Isopropylbenzene	ug/l	NL	5		5	5
Methyl Acetate	ug/l	NL	NL		NL	NL
Methyl Tert-Butyl Ether	ug/l	NL	10		NA	10
Methylcyclohexane	ug/l	NL	NL		NL	NL
Methylene Chloride	ug/l	5	5		5	5
m-Xylene	ug/l	NL	5		5	5
o-Xylene	ug/l	NL	5		5	5
p-Xylene	ug/l	NL	5		5	5
Styrene	ug/l	100	5		5	5
Tetrachloroethene	ug/l	5	5		5	5
Toluene	ug/l	1,000	5		5	5
trans-1,2-Dichloroethene	ug/l	100	5		5	5
trans-1,3-Dichloropropene	ug/l	NL	0.4		5	0.4
Trichloroethene	ug/l	5	5		5	5
Trichlorofluoromethane	ug/l	NL	5		5	5
Vinyl Chloride	ug/l	2	2		2	2
Xylenes (total)	ug/l	10,000	5		5	5
Semi-Volatile Organics						
1,1'Biphenyl	ug/l	NL	5		NL	5
2,2'-oxybis(1-Chloropropane)	ug/l	NL	5		NL	5
2,4,5-Trichlorophenol	ug/l	NL	1	X	5	1
2,4,6-Trichlorophenol	ug/l	NL	1	X	5	1
2,4-Dichlorophenol	ug/l	NL	5	X	NL	5
2,4-Dimethylphenol	ug/l	NL	50	X	50	50
2,4-Dinitrophenol	ug/l	NL	10	X	NL	10

TABLE 1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)	NYSDEC GW Quality Standards (2)		NYSDOH Drinking Water Quality Standards (3)	Smithtown GW Screening Criteria (4)
2,4-Dinitrotoluene	ug/l	NL	5		50	5
2,6-Dinitrotoluene	ug/l	NL	5		50	5
2-Chloronaphthalene	ug/l	NL	10		5	5
2-Chlorophenol	ug/l	NL	1	X	5	1
2-Methylnaphthalene	ug/l	NL	NL		NL	NL
2-Methylphenol	ug/l	NL	1	X	50	1
2-Nitroaniline	ug/l	NL	5		5	5
2-Nitrophenol	ug/l	NL	1	X	50	1
3,3'-Dichlorobenzidine	ug/l	NL	5		5	5
3-Nitroaniline	ug/l	NL	5		5	5
4,6-Dinitro-2-methylphenol	ug/l	NL	1	X	50	1
4-Bromophenyl-phenylether	ug/l	NL	NL		50	50
4-Chloro-3-methylphenol	ug/l	NL	1	X	5	1
4-Chloroaniline	ug/l	NL	5		5	5
4-Chlorophenyl-phenylether	ug/l	NL	NL		50	50
4-Methylphenol	ug/l	NL	1	X	50	1
4-Nitroaniline	ug/l	NL	5		5	5
4-Nitrophenol	ug/l	NL	1	X	50	1
Acenaphthene	ug/l	NL	20		50	20
Acenaphthylene	ug/l	NL	NL		50	50
Acetophenone	ug/l	NL	NL		50	50
Anthracene	ug/l	NL	50		50	50
Atrazine	ug/l	3	7.5		3	3
Benzaldehyde	ug/l	NL	NL		NL	NL
Benzo(a)anthracene	ug/l	NL	0.002		50	0.002
Benzo(a)pyrene	ug/l	0.2	ND		0.2	0.2
Benzo(b)fluoranthene	ug/l	NL	0.002		50	0.002
Benzo(g,h,i)perylene	ug/l	NL	NL		50	50
Benzo(k)fluoranthene	ug/l	NL	0.002		50	0.002
bis(2-Chloroethoxy)methane	ug/l	NL	5		5	5
bis(2-Chloroethyl)ether	ug/l	NL	1		5	1

TABLE 1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)	NYSDEC GW Quality Standards (2)		NYSDOH Drinking Water Quality Standards (3)	Smithtown GW Screening Criteria (4)
bis(2-Ethylhexyl)phthalate	ug/l	6	5		6	5
Butylbenzylphthalate	ug/l	NL	50		50	50
Caprolactam	ug/l	NL	NL		NL	NL
Carbazole	ug/l	NL	NL		50	50
Chrysene	ug/l	NL	0.002		50	0.002
Dibenz(a,h)anthracene	ug/l	NL	NL		50	50
Dibenzofuran	ug/l	NL	NL		50	50
Diethylphthalate	ug/l	NL	50		50	50
Dimethylphthalate	ug/l	NL	50		50	50
Di-n-butylphthalate	ug/l	NL	50		NL	50
Di-n-octyl phthalate	ug/l	NL	50		50	50
Fluoranthene	ug/l	NL	50		50	50
Fluorene	ug/l	NL	50		NL	50
Hexachlorobenzene	ug/l	1	0.04		1	0.04
Hexachlorobutadiene	ug/l	NL	0.5		5	0.5
Hexachlorocyclopentadiene	ug/l	50	5		5	5
Hexachloroethane	ug/l	NL	5		5	5
Indeno(1,2,3-cd)pyrene	ug/l	NL	0.002		50	0.002
Isophorone	ug/l	NL	50		50	50
Naphthalene	ug/l	NL	10		50	10
Nitrobenzene	ug/l	NL	0.4		5	0.4
N-Nitroso-di-n-propylamine	ug/l	NL	NL		50	50
N-Nitrosodiphenylamine	ug/l	NL	50		50	50
Pentachlorophenol	ug/l	1	1	X	1	1
Phenanthrene	ug/l	NL	50		50	50
Phenol	ug/l	NL	1	X	50	1
Pyrene	ug/l	NL	50		50	50
Pesticides/PCBs						
4,4'-DDD	ug/l	NL	0.3		5	0.3
4,4'-DDE	ug/l	NL	0.2		NL	0.2
4,4'-DDT	ug/l	NL	0.2		5	0.2

TABLE 1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)		NYSDEC GW Quality Standards (2)		NYSDOH Drinking Water Quality Standards (3)		Smithtown GW Screening Criteria (4)	
Aldrin	ug/l	NL		ND		5		5	
Alpha-BHC	ug/l	NL		0.01		5		0.01	
alpha-Chlordane	ug/l	2	##	0.05		2		0.05	
Aroclor-1016	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1221	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1232	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1242	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1248	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1254	ug/l	0.5		0.09	W	0.5		0.09	
Aroclor-1260	ug/l	0.5		0.09	W	0.5		0.09	
Beta-BHC	ug/l	NL		0.04		5		0.04	
Delta-BHC	ug/l	NL		0.04		5		0.04	
Dieldrin	ug/l	NL		0.004		5		0.004	
Endosulfan I	ug/l	NL		NL		50		50	
Endosulfan II	ug/l	NL		NL		50		50	
Endosulfan sulfate	ug/l	NL		NL		50		50	
Endrin	ug/l	2		ND		2		2	
Endrin aldehyde	ug/l	NL		5		5		5	
Endrin ketone	ug/l	NL		5		NL		5	
gamma-BHC (Lindane)	ug/l	0.2		0.05		0.2		0.05	
gamma-Chlordane	ug/l	2	##	0.05		2		0.05	
Heptachlor	ug/l	0.4		0.04		0.4		0.04	
Heptachlor epoxide	ug/l	0.2		0.03		0.2		0.03	
Methoxychlor	ug/l	40		35		40		35	
Toxaphene	ug/l	3		0.06		3		0.06	
Inorganic Analytes								NL	
Aluminum	ug/l	NL		NL		NL		NL	
Antimony	ug/l	6		3		6		3	
Arsenic	ug/l	50		25		50		25	
Barium	ug/l	2,000		1,000		2,000		1000	
Beryllium	ug/l	4		3		4		3	

TABLE 1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)		NYSDEC GW Quality Standards (2)		NYSDOH Drinking Water Quality Standards (3)		Smithtown GW Screening Criteria (4)	
Cadmium	ug/l	5		5		5		5	
Calcium	ug/l	NL		NL		NL		NL	
Chromium	ug/l	100		50	Z	100		50	
Cobalt	ug/l	NL		NL		NL		NL	
Copper	ug/l	1,300	TT	200		1,300		200	
Cyanide	ug/l	200		200		200		200	
Iron	ug/l	NL		300	Y	300		300	
Lead	ug/l	15	TT	25		15		15	
Magnesium	ug/l	NL		35,000		NL		35000	
Manganese	ug/l	NL		300	Y	300		300	
Mercury	ug/l	2		0.7		2		0.7	
Nickel	ug/l	NL		100		NL		100	
Potassium	ug/l	NL		NL		NL		NL	
Selenium	ug/l	50		10		50		10	
Silver	ug/l	NL		50		100		50	
Sodium	ug/l	NL		20,000		NL		20000	
Sulfate	ug/l	NL		250,000		250,000		250000	
Thallium	ug/l	2		0.5		2		0.5	
Vanadium	ug/l	NL		NL		NL		NL	
Zinc	ug/l	NL		2,000		5,000		2000	

Notes:
1. EPA National Primary Drinking Water Standards (web page), EPA 816-F-01-007, March 2001
2. New York Ground Water Quality Standards, August 4, 1999
3. New York State Department of Health Drinking Water Standards
4. Smithtown Groundwater Screening Criteria is the lowest value of the EPA National Primary Drinking Water Standards, New York Ground Water Quality Standards, and the New York Department of Health Drinking Water Standards

MCL - Maximum Contaminant Level
NA - Chemical name listed but no value available
NL - Chemical name not listed or screening value of this type not listed for the chemical
ND - The criteria for this compound is below any detection limit

TABLE 1
Groundwater Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical Name	Unit	National Primary Drinking Water Standards (1)	NYSDEC GW Quality Standards (2)	NYSDOH Drinking Water Quality Standards (3)	Smithtown GW Screening Criteria (4)

TT - Treatment Technique
Criteria is for Chlordane
Z Also applies to hexavalent chromium
Y The sum of iron and manganese should not exceed 500 ug/l
X This value applies to a sum of all phenolic compounds
W This value applies to a sum of all PCB compounds

TABLE 2
Monitoring Well Construction Details
Smithtown Groundwater Contamination Site
Smithtown, New York

MW Identification Number	Total Depth (ft bgs)	Screen Interval (ft bgs)		TOC Elevation (ft amsl)	Ground Elevation (ft amsl)	Screen Elevation (ft a/b msl)		MW Diameter (in)	Cons.	Comments
		top	bottom			top	bottom			
MW-1S	110	100	110	102.75	103	3	-7	4	SS	
MW-1I	150	140	150	99.82	100	-40	-50	4	SS	
MW-2	190	180	190	167.43	168	-12	-22	4	SS	
MW-3S	177	167	177	168.17	168	1	-9	4	SS	
MW-3I	208	198	208	167.62	168	-30	-40	4	SS	
MW-4S	180	170	180	178.7	179	9	-1	4	SS	
MW-4I	210	200	210	178.15	178	-22	-32	4	SS	
MW-4D	253	243	253	178.36	179	-64	-74	4	SS	
MW-5S	50	40	50	12.84	13	-27	-37	4	SS	
MW-5I	119	109	119	13.84	14	-95	-105	4	SS	
MW-5D	170	160	170	13.31	14	-146	-156	4	SS	
MW-6S	198	188	198	175.64	176	-12	-22	4	SS	
MW-6I	229	219	229	175.45	176	-43	-53	4	SS	
MW-7	134	124	134	154.15	154	30	20	4	SS	
MW-A	150	140	150	133.58	133	-7	-17	2	PVC	
MW-C	175	165	175	161.51	162	-3	-13	2	PVC	
MW-D	195	185	195	94.17	91	-94	-104	2	PVC	Standpipe
MW-E	245	235	245	161.13	161	-74	-84	2	PVC	
MW-F	197	187	197	146.28	146	-41	-51	2	PVC	
MW-G	300	290	300	161.07	161	-129	-139	2	PVC	

Abbreviations:
ft bgs = feet below ground surface
TOC = top of casing
ft amsl = feet above mean sea level
ft a/b msl = feet above/below mean sea level
Cons. = construction material
SS = stainless steel
PVC = polyvinyl chloride

TABLE 3
Round 1 and Round 2 Selected Volatile Organic Compound Results in Monitoring Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Screen Interval (ft bgs)	Elevation (a/b msl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	chloro-form	trans 1,2-DCE	MTBE
Screening Criteria (ug/L) (1)			**5**	**5**	**5**	**5**	**5**	**5**	**7**	**5**	**10**
MW-1S/R1	100 to 110	3 to -7	ND	1.1	0.47 J	0.82	0.31 J	ND	0.50	ND	ND
MW-1S/R2	100 to 110	3 to -7	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-1I/R1	140 to 150	-40 to -50	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-1I/R2	140 to 150	-40 to -50	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2/R1	180 to 190	-12 to -22	ND	1.3	1.0	4.4	0.52	ND	ND	ND	ND
MW-2/R2	180 to 190	-12 to -22	0.23 J	1.2	0.57	**5.6**	0.41 J	ND	ND	ND	ND
MW-3S/R1	167 to 177	1 to -9	ND	**50 D**	ND	**12**	ND	ND	ND	0.48 J	ND
MW-3S/R2	167 to 177	1 to -9	ND	**120 D**	ND	**10**	**6.1**	ND	ND	1.4 J	ND
MW-3I/R1	198 to 208	-30 to -40	ND	1.7	0.42 J	0.82	0.40 J	ND	ND	ND	1.2
MW-3I/R2	198 to 208	-30 to -40	ND	**7.6**	ND	0.66 J	0.35 J	ND	0.20 J	0.22 J	ND
MW-4S/R1	170 to 180	9 to -1	ND	ND	ND	2.3	ND	ND	ND	ND	ND
MW-4S/R2	170 to 180	9 to -1	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4I/R1	200 to 210	-22 to -32	ND	2.9	0.15 J	**16**	0.68	ND	ND	ND	ND
MW-4I/R2	200 to 210	-22 to -32	ND	ND	ND	1.0	ND	ND	ND	ND	ND
MW-4D/R1	242 to 252	-63 to -73	0.56	1.4	0.58	**38 D**	0.94	ND	ND	ND	ND

TABLE 3
Round 1 and Round 2 Selected Volatile Organic Compound Results in Monitoring Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Screen Interval (ft bgs)	Elevation (a/b msl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	chloro-form	trans 1,2-DCE	MTBE
Screening Criteria (ug/L) (1)			**5**	**5**	**5**	**5**	**5**	**5**	**7**	**5**	**10**
MW-4D/R2	242 to 252	-63 to -73	ND	ND	ND	1.4	ND	ND	ND	ND	ND
MW-5S/R1	40 to 50	-27 to -37	ND	ND	0.40 J	3.6	ND	ND	ND	ND	ND
MW-5S/R2	40 to 50	-27 to -37	ND	ND	ND	ND	ND	ND	0.62	ND	ND
MW-5I/R1	109 to 119	-95 to -105	0.20 J	0.44 J	0.37 J	1.6	1.5	ND	ND	ND	0.78
MW-5I/R2	109 to 119	-95 to -105	0.27 J	0.62	0.57	1.7	2.0	ND	0.49 J	ND	1.4
MW-5D/R1	160 to 170	-146 to -156	ND	0.37 J	0.35 J	1.0	0.90	ND	ND	ND	1.2
MW-5D/R2	160 to 170	-146 to -156	ND	0.25 J	0.32 J	0.72	0.67	ND	ND	ND	1.8
MW-6S/R1	188 to 198	-12 to -22	ND	ND	**150 D**	**5.3**	2.2	**31 D**	0.63 J	ND	ND
MW-6S/R2	188 to 198	-12 to -22	ND	ND	**92 D**	**5.7 J**	2.0 J	ND	ND	ND	1.1
MW-6I/R1	219 to 229	-43 to -53	ND	ND	0.31 J	ND	ND	ND	ND	ND	ND
MW-6I/R2	219 to 229	-43 to -53	ND	ND	0.23 J	ND	ND	ND	ND	ND	ND
MW-7/R2	124 to 134	20 to 30	ND	0.32 J	ND	4.6	0.25 J	ND	ND	ND	ND
MW-A/R1	140 to 150	-7 to -17	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-A/R2	140 to 150	-7 to -17	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-C/R1	165 to 175	-3 to -13	ND	ND	0.17 J	ND	ND	ND	ND	ND	1.3

TABLE 3
Round 1 and Round 2 Selected Volatile Organic Compound Results in Monitoring Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number	Screen Interval (ft bgs)	Elevation (a/b msl)	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	PCE	TCE	1,1-DCE	chloro-form	trans 1,2-DCE	MTBE
Screening Criteria (ug/L) (1)			**5**	**5**	**5**	**5**	**5**	**5**	**7**	**5**	**10**
MW-C/R2	165 to 175	-3 to -13	ND	ND	ND	ND	ND	ND	ND	ND	0.87
MW-D/R1	185 to 195	-94 to -104	0.48 J	ND	0.74	ND	0.27 J	ND	ND	ND	ND
MW-D/R2	185 to 195	-94 to -104	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-E/R1	235 to 245	-74 to -84	3.0	ND	**7.1**	ND	1.9	1.7	ND	ND	ND
MW-E/R2	235 to 245	-74 to -84	3.7	0.43 J	**8.4**	0.17 J	3.8	ND	ND	ND	ND
MW-F/R1	187 to 197	-41 to -51	2.6	1.2	1.7	0.16 J	**5.8**	ND	0.40 J	ND	ND
MW-F/R2	187 to 197	-41 to -51	2.1	1.3	1.4	0.16 J	**6.7**	ND	ND	ND	ND
MW-G/R1	290 to 300	-129 to -139	ND	ND	0.46 J	ND	0.21 J	ND	ND	ND	ND
MW-G/R2	290 to 300	-129 to -139	ND	ND	ND	ND	ND	ND	ND	ND	ND

All values in micrograms/liter (ug/L); **bold** = exceeds screening criteria
Abbreviations: ft bgs = feet below ground surface; a/b msl = above/below mean sea level; 1,1-DCA = 1,1-dichloroethane; cis-1,2-DCE = cis-1,2-dichloroethene; 1,1,1-TCA = 1,1,1-trichloroethane; PCE = tetrachloroethene; 1,1-DCE = 1,1-dichloroethene; trans-1,2-DCE = trans-1,2-dichloroethene;MTBE = methyl tert butyl ether; ND = non-detect; J = estimated value; D = value from diluted sample
R1 = Round 1; R2 = Round 2
Note 1: Smithtown screening criteria are the lowest values of the EPA National Primary Drinking Water Standards, the New York Groundwater Quality Standards, or the New York Department of Health Drinking Water Standards

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
All Rounds in micrograms per liter (ug/L)											
5-BGBK-R1	5 Branglebrink	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
5-BGBK-R2	5 Branglebrink	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
16-BGBK-R1	16 Branglebrink	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
16-BGBK-R2	16 Branglebrink	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
41-BGBK-R1	41 Branglebrink	Renna	ND	0.5J	ND	ND	ND	ND	4	ND	ND
21-BGBK-R2	21 Branglebrink	NA	2	1	ND	ND	**6**	4	ND	ND	ND
21-BGBK-R3	21 Branglebrink	NA	1.3	0.72	ND	ND	4.8	2.5	ND	ND	ND
21-BGBK-R4	21 Branglebrink	NA	ND	0.37J	ND	ND	1.1	1.1	ND	ND	ND
23-BGBK-R1	23 Branglebrink	NA	ND	ND	**14**	0.4J	1	3	4	ND	ND
23-BGBK-R2	23 Branglebrink	NA	ND	ND	**74D**	2	0.6J	**12**	**63D**	ND	ND
23-BGBK-R4	23 Branglebrink	NA	ND	ND	**6**	ND	0.48J	0.75	1.8	ND	ND
26-BGBK-R1	26 Branglebrink	NA	ND	ND	ND	ND	1	0.7J	ND	ND	ND
26-BGBK-R2	26 Branglebrink	NA	ND	ND	ND	ND	0.5J	ND	ND	ND	ND
28-BGBK-R3	28 Branglebrink	NA	ND	ND	ND	ND	0.24J	0.16J	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
28-BGBK-R4	28 Branglebrink	NA	ND	ND	ND	ND	0.3J	0.24J	0.21J	ND	ND
29-BGBK-R1	29 Branglebrink	NA	ND	ND	2	ND	ND	ND	8	ND	ND
37-BGBK-R1	37 Branglebrink	NA	ND	ND	**140**	ND	ND	ND	**33**	ND	ND
37-BGBK-R2	37 Branglebrink	NA	ND	ND	**16**	0.6J	ND	0.9J	**18**	ND	ND
37-BGBK-R4	37 Branglebrink	NA	ND	ND	**47DJ**	0.36J	0.23J	**8.7J**	**21DJ**	R	ND
43-BGBK-R1	43 Branglebrink	Krauth	ND	ND	**23**	ND	1	1	**12**	ND	ND
37-BRIDLEP-R4	37 Bridle Path	9	ND	ND	ND	ND	0.26J	ND	0.15J	ND	ND
33-BRIDLEP-R4	33 Bridle Path	6	ND	ND	ND	ND	ND	ND	ND	ND	ND
40-BRIDLEP-R4	40 Bridle Path	15	ND	0.24J	ND	ND	0.51	ND	ND	ND	ND
41-BRIDLEP-R4	41 Bridle Path	12	ND	ND	ND	ND	ND	ND	ND	ND	ND
7-CARL-R1	7 Carmen Lane	NA	ND	1	ND	ND	2	1	**9**	ND	ND
7-CARL-R2	7 Carmen Lane	NA	ND	0.7J	ND	ND	1	0.6J	4	ND	ND
7-CARL-R4	7 Carmen Lane	NA	ND	0.29J	ND	ND	0.69	0.29J	1.3	ND	ND
15-CARL-R1	15 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-CARL-R2	15 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-CARL-R4	15 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
19-CARL-R1	19 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
19-CARL-R2	19 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
19-CARL-R4	19 Carmen Lane	NA	ND	ND	ND	ND	0.17J	0.11J	ND	ND	ND
21-CARL-R1	21 Carmen Lane	NA	ND	ND	ND	ND	ND	ND	0.6J	ND	ND
3-CORD-R1	3 Cordwood Path	NA	ND	0.3J	ND	ND	1	ND	0.9J	ND	ND
8-FELLS-R1	8 Fells Way	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-FELLS-R1	12 Fells Way	NA	ND	ND	1	ND	1	ND	ND	ND	ND
12-FELLS-R2	12 Fells Way	NA	ND	ND	4	ND	1	1	2	ND	ND
1-FOXRUN-R4	1 Fox Run	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
5-FOXR-R4	5 Fox Run	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-FOXR-R4	6 Fox Run	NA	ND	0.31J	ND	ND	0.88	ND	ND	ND	ND
2-FRIENW-R1	2 Friends Way	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-FRIENW-R2	3 Friends Way	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-FRIENW-R4	3 Friends Way	NA	ND	ND	ND	ND	ND	ND	0.12J	ND	ND
4-FRIENW-R2	4 Friends Way	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-GATER-R2	3 Gate Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
12-HARBH-R2	12 Harbor Hill Road	NA	ND	ND	ND	ND	ND	ND	1	ND	ND
28-HARBH-R1	28 Harbor Hill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
35-HARBH-R2	35 Harbor Hill Road	NA	ND	ND	ND	ND	ND	ND	2	ND	ND
42-HARBH-R1	42 Harbor Hill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
50-HARBH-R1	50 Harbor Hill Road	NA	0.6J	ND	ND	ND	**5**	ND	ND	ND	ND
21-HARBL-R1	21 Harbor Lane	1	ND	0.8J	ND	ND	ND	ND	ND	ND	ND
22-HARBL-R2	22 Harbor Lane	3	ND	0.6J	2	ND	ND	ND	**5**	ND	ND
22-HARBL-R4	22 Harbor Lane	3	ND	0.77	1.7	ND	ND	0.32J	2.6	ND	ND
24-HARBL-R1	24 Harbor Lane	1	ND	ND	ND	ND	0.7J	ND	2	ND	ND
26-HARBL-R1	26 Harbor Lane	7	ND	ND	ND	ND	0.8J	0.5J	0.6J	ND	ND
26-HARBL-R2	26 Harbor Lane	7	ND	ND	ND	ND	ND	ND	ND	ND	ND
26-HARBL-R4	26 Harbor Lane	7	ND	0.2J	ND	ND	0.54	0.26J	0.44J	0.14J	ND
28-HARBL-R1	28 Harbor Lane	8	ND	ND	ND	ND	0.4J	ND	ND	ND	ND
31-HARBL-R1	31 Harbor Lane	11	ND	ND	ND	ND	ND	ND	ND	ND	ND
32-HARBL-R2	32 Harbor Lane	12	ND	0.6J	ND	ND	0.9J	ND	3	ND	ND
32-HARBL-R4	32 Harbor Lane	12	ND	0.43J	ND	ND	0.77	0.28J	1.9	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			5	5	5	5	5	5	5	5	5
3-HARBR-R1	3 Harbor Road	NA	ND	ND	ND	ND	ND	ND	2	ND	ND
3-HARBR-R2	3 Harbor Road	NA	ND	ND	ND	ND	ND	ND	3	ND	ND
3-HARBR-R4	3 Harbor Road	NA	ND	ND	ND	ND	0.22J	0.16J	5.1	ND	ND
8-HARBR-R1	8 Harbor Road	NA	ND	ND	ND	ND	0.7J	ND	3	ND	ND
8-HARBR-R2	8 Harbor Road	NA	ND	ND	ND	ND	ND	ND	2	ND	ND
8-HARBR-R4	8 Harbor Road	NA	ND	ND	ND	ND	0.36J	0.22J	2.7	ND	ND
12-HARBR-R1	12 Harbor Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-HARBR-R4	12 Harbor Road	NA	ND	ND	ND	ND	0.24J	0.12J	0.85	ND	ND
18-HARBR-R1	18 Harbor Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
18-HARBR-R4	18 Harbor Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
20-HARBR-R1	20 Harbor Road	NA	ND	ND	ND	ND	0.7J	2	ND	ND	ND
27-HARBR-R1	27 Harbor Road	NA	ND	ND	ND	ND	0.5J	ND	ND	ND	ND
27-HARBR-R2	27 Harbor Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
27-HARBR-R4	27 Harbor Road	NA	ND	ND	ND	ND	0.39J	ND	0.1J	ND	ND
34-HARBR-R1	34 Harbor Road	NA	ND	ND	ND	ND	2	ND	ND	ND	ND
1-HIGH-R1	1 Highwoods Court	NA	ND	2	ND	ND	2	2	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			5	5	5	5	5	5	5	5	5
9-HIGH-R1	9 Highwoods Court	NA	ND	ND	1	ND	ND	ND	1	ND	ND
9-HIGH-R2	9 Highwoods Court	NA	ND	ND	0.9J	ND	ND	ND	1	ND	ND
12-HIGH-R1	12 Highwoods Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-HIGH-R2	12 Highwoods Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-HIGH-R4	12 Highwoods Court	NA	ND	ND	ND	ND	ND	ND	0.21J	ND	ND
15-HIGH-R1	15 Highwoods Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-HIGH-R2	15 Highwoods Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-HIGH-R4	15 Highwoods Court	NA	ND	ND	ND	ND	ND	0.1J	0.41J	ND	ND
24-HIGH-R1	24 Highwoods Court	NA	ND	0.8J	ND	ND	1	ND	ND	ND	ND
27-HIGH-R1	27 Highwoods Court	NA	ND	ND	0.6J	ND	0.7J	0.6J	3	ND	ND
27-HIGH-R2	27 Highwoods Court	NA	ND	ND	ND	ND	0.6J	0.7J	1	ND	ND
27-HIGH-R4	27 Highwoods Court	NA	ND	0.34J	0.27J	ND	0.94J	2J	2.8J	ND	ND
33-HIGH-R1	33 Highwoods Court	NA	ND	ND	2	ND	4	ND	**43**	ND	ND
33-HIGH-R2	33 Highwoods Court	NA	ND	ND	0.4J	ND	0.9J	ND	**17**	ND	0.9J
16-MORI-R1	16 Moriches Road	???	0.5J	2	3	ND	3	1	3	ND	ND
538-MORI-R1	538 Moriches Road	324	ND	2	ND	ND	ND	1	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	**Current Full Address**	**Old #**	**1,1-DCE**	**1,1-DCA**	**cis-1,2-DCE**	**trans 1,2 DCE**	**1,1,1-TCA**	**TCE**	**PCE**	**1,2-DCA**	**chloro ethane**
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
537-MORI-R1	537 Moriches Road	NA	ND	ND	ND	ND	0.6J	0.7J	ND	ND	ND
546-MORI-R2	546 Moriches Road	NA	ND	0.3J	ND	ND	0.4J	0.9J	ND		1
615-MORI-R4	615 Moriches Road	27A	ND	ND	0.38J	ND	0.24J	ND	0.18J	ND	ND
625-MORI-R3	625 Moriches Road	UNK	ND	ND	ND	ND	ND	ND	ND	ND	ND
625-MORI-R4	625 Moriches Road	UNK	ND	ND	ND	ND	ND	ND	ND	ND	ND
300-OMR-R1	300 Old Mill Road	212	ND	0.6J	ND	ND	1	0.7J	1	ND	ND
300-OMR-R2	300 Old Mill Road	212	ND	1	ND	ND	2	0.7J	1	ND	ND
300-OMR-R4	300 Old Mill Road	212	ND	0.24J	ND	ND	0.57	0.29J	0.49J	ND	ND
302-OMR-R1	302 Old Mill Road	261A	ND	0.7J	2	ND	0.9J	ND	1	ND	ND
325-OMR-R1	325 Old Mill Road	262S	1	2	**6**	ND	**6**	3	3	ND	ND
315-OMR-R1	315 Old Mill Road	262A	ND	0.6J	ND	ND	ND	ND	3	ND	ND
315-OMR-R2	315 Old Mill Road	262A	ND	ND	ND	ND	ND	ND	ND	ND	ND
315-OMR-R4	315 Old Mill Road	262A	ND	0.43J	25D	ND	0.9	4.1	1J	ND	ND
320-OMR-R1	320 Old Mill Road	245K	ND	0.6J	ND	ND	2	0.7J	4	ND	ND
320-OMR-R2	320 Old Mill Road	245K	ND	0.6J	ND	ND	2	0.5J	**5**	ND	ND
320-OMR-R4	320 Old Mill Road	245K	0.59	0.53	0.32J	ND	1.3	0.21J	**5.2**	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
322-OMR-R1	322 Old Mill Road	245	ND	4	ND	ND	**6**	2	ND	ND	ND
322-OMR-R2	322 Old Mill Road	245	ND	ND	ND	ND	ND	ND	3	ND	ND
322-OMR-R4	322 Old Mill Road	245	ND	0.11J	ND	ND	0.19J	0.21J	3.9	ND	ND
323-OMR-R3	323 Old Mill Road	262M	0.69	2.5	**5.7**	ND	3.6	1.7	2.5	ND	ND
323-OMR-R4	323 Old Mill Road	262M	ND	2	**7.2**	ND	3.8	1.9	3.3	ND	ND
326-OMR-R1	326 Old Mill Road	245A	ND	ND	ND	ND	0.6J	ND	3	ND	ND
326-OMR-R2	326 Old Mill Road	245A	2	4.9	0.54	ND	9.3	3.4	ND	ND	ND
326-OMR-R4	326 Old Mill Road	245A	ND	4.9	0.14J	ND	16J	4J	0.5J	ND	ND
327-OMR-R1	327 Old Mill Road	262B	2	3	0.9J	ND	8	2	1	ND	ND
327-OMR-R2	327 Old Mill Road	262B	1	2	2	ND	5	2	1	ND	ND
327-OMR-R4	327 Old Mill Road	262B	ND	ND	ND	ND	ND	ND	0.34J	ND	ND
329-OMR-R1	329 Old Mill Road	262J	0.5J	1	6	ND	2	2	4	ND	ND
329-OMR-R2	329 Old Mill Road	262J	ND	0.7J	20	ND	2	4	**8**	ND	ND
3-OMP-R2	3 Old Mill Path	261D	ND	0.9J	ND	ND	1	0.6J	ND	ND	ND
3-OMP-R3	3 Old Mill Path	261D	ND	0.53	ND	ND	0.75	0.3J	ND	ND	ND
3-OMP-R4	3 Old Mill Path	261D	ND	0.5	ND	ND	0.66	0.3J	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			5	5	5	5	5	5	5	5	5
4-OMP-R1	4 Old Mill Path	261T	ND	ND	3	ND	0.7J	ND	1	ND	ND
4-OMP-R2	4 Old Mill Path	261T	ND	ND	1	ND	0.5J	ND	0.6J	ND	ND
4-OMP-R4	4 Old Mill Path	261T	ND	ND	0.23J	ND	0.62	ND	0.17J	ND	ND
5-OMP-R1	5 Old Mill Path	261R	ND	ND	ND	ND	0.6J	0.5J	ND	ND	ND
5-OMP-R2	5 Old Mill Path	261R	ND	0.7J	ND	ND	0.6J	0.6J	ND	ND	ND
5-OMP-R4	5 Old Mill Path	261R	ND	0.23J	0.59J	ND	0.49J	0.68	1.9	ND	ND
2-OPL-R1	2 Old Post Lane	259A	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-OPL-R2	2 Old Post Lane	259A	ND	2	ND	ND	4	ND	0.9J	ND	ND
2-OPL-R4	2 Old Post Lane	259A	ND	0.57	ND	ND	0.93J	ND	ND	R	ND
4-OPL-R1	4 Old Post Lane	259B	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-OPL-R2	4 Old Post Lane	259B	ND	ND	ND	ND	0.6J	ND	ND	ND	ND
4-OPL-R4	4 Old Post Lane	259B	ND	0.39J	ND	ND	0.58J	ND	0.12J	ND	ND
5-OPL-R1	5 Old Post Lane	255	1	**5**	ND	ND	5	7	0.6J	ND	ND
5-OPL-R2	5 Old Post Lane	255	ND	4	ND	ND	4	4	0.7J	ND	ND
5-OPL-R4	5 Old Post Lane	255	ND	2.7	ND	ND	3.3	2.3	0.5	ND	ND
3-PART-R1	3 Partridge Lane	NA	ND	0.8J	ND	ND	ND	0.7J	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			5	5	5	5	5	5	5	5	5
8-PART-R1	8 Partridge Lane	NA	ND	0.6J	ND	ND	0.6J	0.9J	ND	ND	ND
8-PART-R2	8 Partridge Lane	NA	ND	0.3J	ND	ND	0.4J	0.4J	ND	ND	ND
8-PART-R4	8 Partridge Lane	NA	ND	0.21J	ND	ND	0.24J	0.25J	ND	ND	ND
9-PART-R1	9 Partridge Lane	NA	ND	0.7J	0.6J	ND	1	ND	0.9J	ND	ND
3-PIN-R1	3 Pin Oak Lane	NA	ND	ND	**25**	0.6J	2	4	**11**	ND	ND
7-PIN-R1	7 Pin Oak Lane	NA	16	ND	4J	ND	**76**	ND	ND	ND	ND
17-PIN-R1	17 Pin Oak Lane	NA	1	ND	ND	ND	**8**	ND	ND	ND	ND
17-PIN-R2	17 Pin Oak Lane	NA	ND	ND	ND	ND	**6.3**	ND	ND	ND	ND
17-PIN-R4	17 Pin Oak Lane	NA	ND	ND	ND	ND	**5.4**	ND	ND	ND	ND
19-PIN-R1	19 Pin Oak Lane	NA	ND	ND	ND	ND	3	ND	ND	ND	ND
31-QUAIL-R1	31 Quail Path	1	ND	0.5J	ND	ND	ND	ND	ND	ND	ND
33-QUAIL-R1	33 Quail Path	2	ND	0.8J	ND	ND	2	ND	ND	ND	ND
37-QUAIL-R1	37 Quail Path	4	ND	0.8J	ND	ND	2	ND	ND	ND	ND
41-QUAIL-R1	41 Quail Path	11	ND	0.7J	0.8J	ND	1	ND	1	ND	ND
44-QUAIL-R1	44 Quail Path	12	0.6J	2	2	ND	3	2	2	ND	ND
42-QUAIL-R1	42 Quail Path	14	ND	0.8J	2	ND	1	ND	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			5	5	5	5	5	5	5	5	5
38-QUAIL-R1	38 Quail Path	16	ND	0.8J	ND	ND	1	ND	0.7J	ND	ND
35-QUAIL-R1	35 Quail Path	5	ND	0.6J	ND	ND	1	ND	ND	ND	ND
35-QUAIL-R2	35 Quail Path	5	ND	0.7J	ND	ND	1	0.6J	ND	ND	ND
35-QUAIL-R4	35 Quail Path	5	ND	0.41J	ND	ND	0.68	0.47J	ND	ND	ND
40-QUAIL-R1	40 Quail Path	15	ND	1	3	ND	1	0.9J	2	ND	ND
40-QUAIL-R2	40 Quail Path	15	0.6J	1	2	ND	2	0.8J	2	ND	ND
428-RIVER-R1	428 River Road	194A	ND	ND	3	ND	0.8J	ND	2	ND	ND
419-RIVER-R1	419 River Road	198	ND	ND	ND	ND	ND	ND	ND	ND	ND
418-RIVER-R1	418 River Road	199	ND	ND	ND	ND	ND	ND	ND	ND	ND
417-RIVER-R1	417 River Road	199A	ND	ND	ND	ND	ND	ND	0.5J	ND	ND
3-RIVER-R1	3 River Road	211	ND	ND	ND	ND	0.5J	ND	0.4J	ND	ND
405-RIVER-R1	405 River Road	211A	ND	0.5J	ND	ND	1	1	ND	ND	ND
407-RIVER-R1	407 River Road	211C	ND	0.6J	ND	ND	0.7J	0.9J	ND	ND	ND
264-RIVER-R1	264 River Road	264A	ND	ND	ND	ND	ND	ND	ND	ND	ND
264-RIVER-R2	264 River Road	264A	ND	ND	ND	ND	ND	ND	ND	ND	ND
264-RIVER-R4	264 River Road	264A	ND	ND	ND	ND	R	R	R	R	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			5	5	5	5	5	5	5	5	5
318-RIVER-R2	318 River Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
318-RIVER-R4	318 River Road	NA	ND	R	ND	ND	ND	ND	ND	R	ND
322-RIVER-R1	322 River Road	NA	ND	ND	ND	ND	0.6J	ND	2	ND	ND
322-RIVER-R2	322 River Road	NA	ND	ND	ND	ND	0.6J	ND	2	ND	ND
322-RIVER-R4	322 River Road	NA	ND	ND	ND	ND	0.12J	ND	ND	ND	ND
326-RIVER-R1	326 River Road	NA	ND	0.3J	ND	ND	0.5J	ND	0.8J	ND	ND
337-RIVER-R1	337 River Road	NA	ND	ND	ND	ND	0.9J	ND	1	ND	ND
337-RIVER-R2	337 River Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
337-RIVER-R4	337 River Road	NA	ND	0.27J	ND	ND	0.66	ND	ND	ND	ND
339-RIVER-R1	339 River Road	NA	ND	ND	ND	ND	0.6J	ND	ND	ND	ND
339-RIVER-R2	339 River Road	NA	ND	ND	ND	ND	ND	ND	0.7J	ND	ND
339-RIVER-R4	339 River Road	NA	0.27J	ND	ND	ND	0.38J	ND	0.73	0.25J	ND
343-RIVER-R1	343 River Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
343-RIVER-R2	343 River Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
343-RIVER-R4	343 River Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
400-RIVER-R1	400 River Road	211B	ND	ND	ND	ND	ND	ND	1	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
400-RIVER-R2	400 River Road	211B	ND	ND	ND	ND	0.6J	ND	ND	ND	ND
400-RIVER-R4	400 River Road	211B	ND	0.34J	ND	ND	0.42J	ND	0.27J	ND	ND
401-RIVER-R1	401 River Road	208	ND	ND	1	ND	ND	ND	ND	ND	ND
401-RIVER -R2	401 River Road	208	ND	2	2	ND	2	1	1	ND	ND
401-RIVER-R4	401 River Road	208	ND	0.62	2.6	ND	0.42J	0.26J	0.38J	ND	ND
414-RIVER-R1	414 River Road	201	ND	ND	ND	ND	ND	ND	ND	ND	ND
414-RIVER-R2	414 River Road	201	ND	ND	ND	ND	ND	ND	ND	ND	ND
414-RIVER-R4	414 River Road	201	ND	0.19J	ND	ND	0.2J	0.16J	0.42J	ND	ND
423-RIVER-R1	423 River Road	197S	ND	ND	ND	ND	ND	ND	ND	ND	ND
423-RIVER-R2	423 River Road	197S	ND	ND	ND	ND	ND	ND	ND	ND	ND
435-RIVER-R1	435 River Road	194B	ND	ND	ND	ND	ND	ND	ND	ND	ND
435-RIVER-R2	435 River Road	194B	ND	ND	ND	ND	ND	ND	ND	ND	ND
435-RIVER-R4	435 River Road	194B	ND	ND	ND	ND	ND	ND	ND	ND	ND
270-SACHP-R1	270 Sachem Hill Place	NA	0.7J	2	3	ND	3	0.8J	**9**	ND	ND
1-SMITHL-R4	1 Smith Lane	48	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-SMITHL-R4	2 Smith Lane	60A	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			5	5	5	5	5	5	5	5	5
31-SMITHL-R4	31 Smith Lane	UNK	ND	ND	ND	ND	ND	ND	ND	ND	ND
8-SPRHILL-R3	8 Spring Hill Road	35C	ND	ND	ND	ND	ND	ND	ND	ND	ND
8-SPRHILL-R4	8 Spring Hill Road	35C	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-SPRINGH-R4	6 Spring Hollow Road	41	ND	ND	ND	ND	1.8	ND	0.52	ND	ND
7-SPRINGH-R3	7 Spring Hollow Road	32	ND	ND	ND	ND	0.41J	ND	ND	ND	ND
7-SPRINGH-R4	7 Spring Hollow Road	32	ND	ND	ND	ND	0.36J	ND	ND	ND	ND
9-SPRINGH-R4	9 Spring Hollow Road	33	ND	ND	ND	ND	ND	ND	ND	ND	ND
20-SPRINGH-R4	20 Spring Hollow Road	34	ND	ND	ND	ND	0.17J	ND	ND	ND	ND
3-STEEPB-R4	3 Steep Bank Road	205	ND	ND	ND	ND	ND	0.19J	0.64	ND	ND
15-STONE-R1	15 Stone Gate Road	246	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-STONE-R2	15 Stone Gate Road	246	ND	ND	ND	ND	ND	ND	ND	ND	ND
15-STONE-R4	15 Stone Gate Road	246	ND	ND	ND	ND	ND	ND	ND	ND	ND
17-STONE-R1	17 Stone Gate Road	247	ND	2	ND	ND	2	0.8J	0.5J	ND	ND
17-STONE-R2	17 Stone Gate Road	247	ND	3	ND	ND	4	1	0.8J	ND	ND
17-STONE-R3	17 Stone Gate Road	247	0.69	1.6	ND	ND	2.5	0.71	0.61	ND	ND
17-STONE-R4	17 Stone Gate Road	247	0.79	1.2	ND	ND	1.9	0.48J	0.37J	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			5	5	5	5	5	5	5	5	5
11-STONE-R1	11 Stone Gate Road	246A	ND	ND	ND	ND	ND	ND	0.5J	ND	ND
19-STONE-R1	19 Stone Gate Road	247A	ND	0.9J	ND	ND	ND	0.5J	ND	ND	ND
4-SWAN-R1	4 Swan Place	NA	0.7J	1	ND	ND	3	ND	ND	ND	ND
9-SWAN-R1	9 Swan Place	NA	ND	ND	ND	ND	1	ND	ND	ND	ND
9-SWAN-R2	9 Swan Place	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
9-SWAN-R4	9 Swan Place	NA	ND	ND	ND	ND	0.2J	ND	ND	ND	ND
2-SWEETH-R4	2 Sweet Hollow Court	NA	ND	0.4J	ND	ND	1	ND	ND	ND	ND
3-SWEETH-R4	3 Sweet Hollow Court	NA	ND	ND	ND	ND	0.44J	ND	0.22J	ND	0.15J
3-TEAL-R2	3 Teal Way	17	0.4J	1	0.5J	ND	2	0.7J	0.8J	ND	ND
8-TEAL-R1	8 Teal Way	20	ND	1	3	ND	2	0.9J	4	ND	ND
8-TEAL-R2	8 Teal Way	20	ND	0.9J	6	ND	2	0.7J	**5**	ND	ND
8-TEAL-R4	8 Teal Way	20	ND	0.4J	3.2	ND	0.6	1.2	4.3	ND	ND
9-TEAL-R1	9 Teal Way	19	0.6J	2	0.3J	ND	3	2	0.7J	ND	ND
9-TEAL-R2	9 Teal Way	19	ND	1	ND	ND	2	1	0.8J	ND	ND
9-TEAL-R4	9 Teal Way	19	1.3	1.3	0.12J	ND	3.6	0.98	1.4	ND	ND
7-TEAL-R1	7 Teal Way	18	0.7J	2	ND	ND	2	1	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
6-TEAL-R1	6 Teal Way	21	ND	2	0.7J	ND	3	2	ND	ND	ND
4-TEAL-R1	4 Teal Way	22	0.6J	2	ND	ND	2	0.8J	0.6J	ND	ND
2-TEAL-R1	2 Teal Way	24	ND	0.6J	ND	ND	1	ND	0.6J	ND	ND
31-THOM-R1	31 Thompson Lane	NA	2	**5**	ND	ND	0.6J	3	ND	ND	ND
31-THOM-R2	31 Thompson Lane	NA	2	**6**	ND	ND	**8**	3	ND	ND	ND
31-THOM-R3	31 Thompson Lane	NA	0.74	4.5	ND	ND	**6.6**	2.7	0.33J	ND	ND
31-THOM-R4	31 Thompson Lane	NA	2.7	4.1	ND	ND	**8.6J**	2.5J	0.33J	ND	ND
3-TIDEL-R1	3 Tide Mill Lane	NA	ND	ND	ND	ND	0.8J	ND	4	ND	ND
3-TIDEL-R2	3 Tide Mill Lane	NA	ND	ND	ND	ND	0.7J	ND	2	ND	ND
3-TIDEL-R3	3 Tide Mill Lane	NA	ND	0.5	ND	ND	0.82J	ND	3.9	ND	ND
3-TIDEL-R4	3 Tide Mill Lane	NA	ND	0.18J	ND	ND	0.45J	ND	1.3	ND	ND
4-TIDEL-R1	4 Tide Mill Lane	NA	ND	ND	ND	ND	ND	ND	0.7J	ND	ND
5-TIDEL-R1	5 Tide Mill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-TIDEL-R1	6 Tide Mill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-TIDEL-R2	6 Tide Mill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-TIDER-R1	3 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			5	5	5	5	5	5	5	5	5
4-TIDER-R1	4 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-TIDER-R2	4 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-TIDER-R4	4 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-TIDER-R2	6 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-TIDER-R4	6 Tide Mill Road	NA	ND	0.13J	ND	ND	0.31J	ND	0.98	ND	ND
9-TIDER-R1	9 Tide Mill Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
9-TIDER-R2	9 Tide Mill Road	NA	ND	0.3J	0.4J	ND	0.4J	ND	2	ND	1
9-TIDER-R4	9 Tide Mill Road	NA	ND	ND	ND	ND	R	R	R	R	ND
1-TRACKL-R4	1 Tracklot Road	53	ND	0.3J	ND	ND	0.26J	ND	ND	ND	ND
6-TRACKL-R4	6 Tracklot Road	57	ND	ND	ND	ND	0.4J	ND	ND	ND	ND
10-TURTCR-R2	10 Turtle Crossing Road	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
10-TURTCR-R4	10 Turtle Crossing Road	NA	ND	ND	ND	ND	ND	ND	ND	0.1J	ND
2-WATER-R1	2 Watercrest Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-WATER-R1	3 Watercrest Court	NA	ND	ND	ND	ND	ND	ND	140	ND	ND
5-WATER-R1	5 Watercrest Court	NA	ND	ND	ND	ND	0.4J	ND	0.3J	ND	ND
5-WATER-R2	5 Watercrest Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
8-WATER-R1	8 Watercrest Court	NA	ND	0.7J	2	ND	0.9J	**6**	**8**	**7**	ND
8-WATER-R2	8 Watercrest Court	NA	ND	ND	1	ND	0.6J	**5**	0.6	6	ND
8-WATER-R4	8 Watercrest Court	NA	ND	0.23J	ND	ND	ND	ND	ND	1.7	ND
9-WATER-R1	9 Watercrest Court	NA	ND	0.5J	0.7J	ND	2	0.9J	2	ND	ND
11-WATER-R1	11 Watercrest Court	NA	ND	ND	0.5J	ND	ND	2	1	ND	ND
14-WATER-R1	14 Watercrest Court	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
16-WATER-R1	16 Watercrest Court	NA	ND	ND	ND	ND	0.7J	2	0.7J	2	ND
16-WATER-R2	16 Watercrest Court	NA	ND	ND	ND	ND	ND	0.8J	ND	0.8J	ND
1-WETHL-R1	1 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-WETHL-R2	1 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-WETHL-R4	1 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-WETHL-R1	4 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-WETHL-R2	4 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-WETHL-R4	4 Wetherill Lane	NA	ND	R	ND	ND	0.23J	R	0.12J	ND	ND
5-WETHL-R1	5 Wetherill Lane	NA	ND	ND	ND	ND	0.4J	ND	ND	ND	ND
7-WETHL-R2	7 Wetherill Lane	NA	ND	ND	ND	ND	0.5J	ND	ND	ND	ND

TABLE 4
Selected Chlorinated VOC Results in Residential Wells
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Code	Current Full Address	Old #	1,1-DCE	1,1-DCA	cis-1,2-DCE	trans 1,2 DCE	1,1,1-TCA	TCE	PCE	1,2-DCA	chloro ethane
Screening Criteria			**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**
7-WETHL-R4	7 Wetherill Lane	NA	ND	ND	ND	ND	0.42J	0.28J	ND	ND	ND
8-WETHL-R2	8 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
8-WETHL-R4	8 Wetherill Lane	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
10-WOODCR-R4	10 Woodcrest Drive	44	ND	ND	ND	ND	ND	ND	ND	ND	ND
12-WOODCR-R4	12 Woodcrest Drive	43A	ND	ND	ND	ND	ND	ND	ND	ND	ND
16-WOODCR-R4	16 Woodcrest Drive	41	ND	ND	ND	ND	ND	ND	ND	ND	ND
22-WOODCR-R4	22 Woodcrest Drive	45	ND	ND	ND	ND	ND	ND	ND	ND	ND
11-WOODCUT-R4	11 Woodcutters Path	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

Units in micrograms/liter (ug/L)
bold = exceeds screening criteria
Abbreviations: 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1-dichloroethane; cis-1,2-DCE = cis-1,2-dichloroethene; trans1,2DCE = trans-1,2-dichloroethene; 1,1,1-TCA = 1,1,1-trichloroethane; TCE = trichloroethene; PCE = tetrachloroethene; 1,2-DCA = 1,2-dichloroethane; NA = not applicable; UNK = unknown; ND = non-detect; J = estimated value; D = diluted sample

TABLE 5
Surface Water Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Contaminant	Unit	NY Surface Water Quality Standards for Fish Propagation - Saline Waters (1)		NY Surface Water Quality Standards for Wildlife Protection - Saline Waters (2)		NY Surface Water Quality Standards for Human Fish Consumption - Saline Waters (3)		NY Surface Water Quality Standards for Fresh Water (4)	Smithtown Surface Water Screening Criteria (5)	
Volatile Organic Compounds										
1,1,1-Trichloroethane	ug/l	NL		NL		NL		5	5	
1,1,2,2-Tetrachloroethane	ug/l	NL		NL		NL		NL	NL	
1,1,2-Trichloroethane	ug/l	NL		NL		NL		1	1	
1,1,2-Tricholoro-1,2,2-trifluoroethane	ug/l	NL		NL		NL		5	5	
1,1-Dichloroethane	ug/l	NL		NL		NL		5	5	
1,1-Dichloroethene	ug/l	NL		NL		NL		NL	NL	
1,2,3-Trichlorobenzene	ug/l	5	D	NL		NL		NL	5	D
1,2,4-Trichlorobenzene	ug/l	5	D	NL		NL		5	5	D
1,2-Dibromo-3-chloropropane	ug/l	NL		NL		NL		0.04	NL	
1,2-Dibromoethane	ug/l	NL		NL		NL		5	NL	
1,2-Dichlorobenzene	ug/l	5	H	NL		NL		3	5	H
1,2-Dichloroethane	ug/l	NL		NL		NL		0.6	NL	
1,2-Dichloropropane	ug/l	NL		NL		NL		1	NL	
1,3-Dichlorobenzene	ug/l	5	H	NL		NL		3	5	H
1,4-Dichlorobenzene	ug/l	5	H	NL		NL		3	5	H
2-Butanone	ug/l	NL		NL		NL		NL	NL	
2-Hexanone	ug/l	NL		NL		NL		NL	NL	
4-Methyl-2-pentanone	ug/l	NL		NL		NL		NL	NL	
Acetone	ug/l	NL		NL		NL		NL	NL	
Benzene	ug/l	190		NL		10		1	10	
Bromochloromethane	ug/l	NL		NL		NL		NL	NL	
Bromodichloromethane	ug/l	NL		NL		NL		NL	NL	
Bromoform	ug/l	NL		NL		NL		NL	NL	
Bromomethane	ug/l	NL		NL		NL		5	5	
Carbon Disulfide	ug/l	NL		NL		NL		NL	NL	
Carbon Tetrachloride	ug/l	NL		NL		NL		NL	NL	
Chlorobenzene	ug/l	5		NL		400		5	5	
Chloroethane	ug/l	NL		NL		NL		NL	NL	
Chloroform	ug/l	NL		NL		NL		7	7	
Chloromethane	ug/l	NL		NL		NL		5	5	
cis-1,2-Dichloroethene	ug/l	NL		NL		NL		5	5	
cis-1,3-Dichloropropene	ug/l	NL		NL		NL		0.4	0.4	
Cyclohexane	ug/l	NL		NL		NL		NL	NL	
Dibromochloromethane	ug/l	NL		NL		NL		NL	NL	
Dichlorodifluoromethane	ug/l	NL		NL		NL		NL	NL	
Dichlorofluoromethane	ug/l	NL		NL		NL		5	5	
Ethylbenzene	ug/l	4.5		NL		NL		5	4.5	
Isopropylbenzene	ug/l	NL		NL		NL		NL	NL	
Methyl Acetate	ug/l	NL		NL		NL		NL	NL	
Methyl Tert-Butyl Ether	ug/l	NL		NL		NL		NL	NL	
Methylcyclohexane	ug/l	NL		NL		NL		NL	NL	
Methylene Chloride	ug/l	NL		NL		200		5	200	
m-Xylene	ug/l	19	I	NL		NL		5	19	I
o-Xylene	ug/l	19	I	NL		NL		5	19	I
p-Xylene	ug/l	19	I	NL		NL		5	19	I
Styrene	ug/l	NL		NL		NL		50	50	
Tetrachloroethene	ug/l	NL		NL		1		NL	1	
Toluene	ug/l	92		NL		6000		5	92	

TABLE 5
Surface Water Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Contaminant	Unit	NY Surface Water Quality Standards for Fish Propagation - Saline Waters (1)		NY Surface Water Quality Standards for Wildlife Protection - Saline Waters (2)		NY Surface Water Quality Standards for Human Fish Consumption - Saline Waters (3)		NY Surface Water Quality Standards for Fresh Water (4)	Smithtown Surface Water Screening Criteria (5)	
trans-1,2-Dichloroethene	ug/l	NL		NL		NL		5	5	
trans-1,3-Dichloropropene	ug/l	NL		NL		NL		0.4	0.4	
Trichloroethene	ug/l	NL		NL		40		5	40	
Trichlorofloromethane	ug/l	NL		NL		NL		5	5	
Vinyl Chloride	ug/l	NL		NL		NL		NL	NL	
Xylenes (total)	ug/l	19		NL		NL		NL	19	
Semi-Volatime Organics										
1,1'-Biphenyl	ug/l	NL		NL		NL		NL	NL	
2,2'-oxybis(1-Chloropropane)	ug/l	NL		NL		NL		5	5	
2,4,5-Trichlorophenol	ug/l	NL		NL		NL		1	1	
2,4,6-Trichlorophenol	ug/l	NL		NL		NL		1	1	
2,4-Dichlorophenol	ug/l	NL		NL		NL		0.3	0.3	
2,4-Dimethylphenol	ug/l	NL		NL		1000		1000	1000	
2,4-Dinitrophenol	ug/l	NL		NL		400		400	400	
2,4-Dinitrotoluene	ug/l	NL		NL		NL		NL	NL	
2,6-Dinitrotoluene	ug/l	NL		NL		NL		NL	NL	
2-Chloronaphthalene	ug/l	NL		NL		NL		10	10	
2-Chlorophenol	ug/l	NL		NL		NL		1	1	
2-Methylnaphthalene	ug/l	4.2		NL		NL		NL	4.2	
2-Methylphenol	ug/l	NL		NL		NL		1	1	
2-Nitroaniline	ug/l	NL		NL		NL		NL	NL	
2-Nitrophenol	ug/l	NL		NL		NL		NL	NL	
3,3'-Dichlorobenzidine	ug/l	NL		NL		NL		NL	NL	
3-Nitroaniline	ug/l	NL		NL		NL		NL	NL	
4,6-Dinitro-2-methylphenol	ug/l	NL		NL		NL		1	1	
4-Bromophenyl-phenylether	ug/l	NL		NL		NL		5	5	
4-Chloro-3-methylphenol	ug/l	NL		NL		NL		1	1	
4-Chloroaniline	ug/l	NL		NL		NL		NL	NL	
4-Chlorophenyl-phenylether	ug/l	NL		NL		NL		5	5	
4-Methylphenol	ug/l	NL		NL		NL		1	1	
4-Nitroaniline	ug/l	NL		NL		NL		NL	NL	
4-Nitrophenol	ug/l	NL		NL		NL		1	1	
Acenaphthene	ug/l	6.6		NL		NL		20	6.6	
Acenaphthylene	ug/l	NL		NL		NL		NL	NL	
Acetophenone	ug/l	NL		NL		NL		NL	NL	
Anthracene	ug/l	NL		NL		NL		NL	NL	
Atrazine	ug/l	NL		NL		NL		NL	NL	
Benzaldehyde	ug/l	NL		NL		NL		5	5	
Benzo(a)anthracene	ug/l	NL		NL		NL		NL	NL	
Benzo(a)pyrene	ug/l	NL		NL		0.0006		NL	0.0006	
Benzo(b)fluoranthene	ug/l	NL		NL		NL		NL	NL	
Benzo(g,h,i)perylene	ug/l	NL		NL		NL		NL	NL	
Benzo(k)fluoranthene	ug/l	NL		NL		NL		NL	NL	
bis(2-Chloroethoxy)methane	ug/l	NL		NL		NL		NL	NL	
bis(2-Chloroethyl)ether	ug/l	NL		NL		NL		NL	NL	

TABLE 5
Surface Water Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Contaminant	Unit	NY Surface Water Quality Standards for Fish Propagation - Saline Waters (1)		NY Surface Water Quality Standards for Wildlife Protection - Saline Waters (2)		NY Surface Water Quality Standards for Human Fish Consumption - Saline Waters (3)		NY Surface Water Quality Standards for Fresh Water (4)	Smithtown Surface Water Screening Criteria (5)	
bis-(2-Ethylhexyl)phthalate	ug/l	NL		NL		NL		5	5	
Butylbenzylphthalate	ug/l	NL		NL		NL		NL	NL	
Caprolactam	ug/l	NL		NL		NL		NL	NL	
Carbazole	ug/l	NL		NL		NL		5	5	
Chrysene	ug/l	NL		NL		NL		NL	NL	
Dibenz(a,h)anthracene	ug/l	NL		NL		NL		NL	NL	
Dibenzofuran	ug/l	NL		NL		NL		NL	NL	
Diethylphthalate	ug/l	NL		NL		NL		NL	NL	
Dimethylphthalate	ug/l	NL		NL		NL		NL	NL	
Di-n-butylphthalate	ug/l	NL		NL		NL		NL	NL	
Di-n-octyl phthalate	ug/l	NL		NL		NL		NL	NL	
Fluoranthene	ug/l	NL		NL		NL		NL	NL	
Fluorene	ug/l	2.5		NL		NL		5	2.5	
Hexachlorobenzene	ug/l	NL		NL		0.00003		0.04	0.00003	
Hexachlorobutadiene	ug/l	0.3		NL		0.01		0.5	0.01	
Hexachlorocyclopentadiene	ug/l	0.07		NL		NL		0.45	0.07	
Hexachloroethane	ug/l	NL		NL		0.6		5	0.6	
Indeno(1,2,3-cd)pyrene	ug/l	NL		NL		NL		NL	NL	
Isophorone	ug/l	NL		NL		NL		NL	NL	
Naphthalene	ug/l	16		NL		NL		10	16	
Nitrobenzene	ug/l	NL		NL		NL		0.4	0.4	
N-Nitroso-di-n-propylamine	ug/l	NL		NL		NL		5	5	
N-Nitrosodiphenylamine	ug/l	NL		NL		NL		5	5	
Pentachlorophenol	ug/l	NL		NL		NL		NL	NL	
Phenanthrene	ug/l	1.5		NL		NL		NL	1.5	
Phenol	ug/l	NL		NL		NL		1	1	
Pyrene	ug/l	NL		NL		NL		NL	NL	
Pesticides/PCBs										
4,4'-DDD	ug/l	NL		0.000011	J	0.00008		0.3	0.000011	J
4,4'-DDE	ug/l	NL		0.000011	J	0.000007		0.2	0.000007	
4,4'-DDT	ug/l	NL		0.000011	J	0.00001		0.2	0.00001	
Aldrin	ug/l	NL		NL		0.001	A	0.001	0.001	A
alpha-BHC	ug/l	NL		NL		0.002		0.01	0.002	
alpha-Chlordane	ug/l	NL		NL		0.00002	K	0.05	0.00002	K
Aroclor-1016	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1221	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1232	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1242	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1248	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1254	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
Aroclor-1260	ug/l	NL		0.00012	C	0.000001	C	0.09	0.000001	C
beta-BHC	ug/l	NL		NL		0.007		0.04	0.007	
delta-BHC	ug/l	NL		NL		0.008		0.04	0.008	
Dieldrin	ug/l	NL		NL		0.0000006		0.004	0.0000006	
Endosulfan I	ug/l	0.001		NL		NL		NL	0.001	
Endosulfan II	ug/l	0.001		NL		NL		NL	0.001	
Endosulfan sulfate	ug/l	NL		NL		NL		NL	NL	
Endrin	ug/l	NL		NL		0.002		0.2	0.002	
Endrin aldehyde	ug/l	NL		NL		NL		NL	NL	
Endrin ketone	ug/l	NL		NL		NL		NL	NL	

TABLE 5
Surface Water Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Contaminant	Unit	NY Surface Water Quality Standards for Fish Propagation - Saline Waters (1)		NY Surface Water Quality Standards for Wildlife Protection - Saline Waters (2)		NY Surface Water Quality Standards for Human Fish Consumption - Saline Waters (3)		NY Surface Water Quality Standards for Fresh Water (4)	Smithtown Surface Water Screening Criteria (5)	
gamma-BHC (Lindane)	ug/l	NL		NL		0.008		0.05	0.008	
gamma-Chlordane	ug/l	NL		NL		0.00002	K	0.05	0.00002	K
Heptachlor	ug/l	NL		NL		0.0002		0.04	0.0002	
Heptachlor epoxide	ug/l	NL		NL		0.0003		0.03	0.0003	
Methoxychlor	ug/l	0.03		NL		NL		0.5	0.03	
Toxaphene	ug/l	0.005		NL		0.000006		0.06	0.000006	
Inorganic Analytes										
Aluminum	ug/l	NL		NL		NL		100	100	
Antimony	ug/l	NL		NL		NL		3	3	
Arsenic	ug/l	63		NL		NL		50	63	
Barium	ug/l	NL		NL		NL		1000	1000	
Beryllium	ug/l	NL		NL		NL		NL	NL	
Cadmium	ug/l	7.7		NL		2.7		10	2.7	
Calcium	ug/l	NL		NL		NL		NL	NL	
Chromium	ug/l	54	L	NL		NL		8	54	L
Cobalt	ug/l	NL		NL		NL		5	5	
Copper	ug/l	3.4		NL		NL		2.1	3.4	
Cyanide	ug/l	1		NL		9,000		200	1	
Iron	ug/l	NL		NL		NL		300	300	
Lead	ug/l	8		NL		NL		6.4	8	
Magnesium	ug/l	NL		NL		NL		35000	35000	
Manganese	ug/l	NL		NL		NL		300	300	
Mercury	ug/l	NL		0.0026	F	0.0007	F	0.7	0.0007	F
Nickel	ug/l	8.2		NL		NL		3.5	8.2	
Potassium	ug/l	NL		NL		NL		NL	NL	
Selenium	ug/l	NL		NL		NL		10	10	
Silver	ug/l	NL		NL		NL		50	50	
Sodium	ug/l	NL		NL		NL		NL	NL	
Sulfate	ug/l	NL		NL		NL		NL	NL	
Thallium	ug/l	NL		NL		NL		8	8	
Vanadium	ug/l	NL		NL		NL		14	14	
Zinc	ug/l	66		NL		NL		110	66	

Notes:
1. New York Ambient Water Quality Standards and Guidance Values, August 4, 1999. Fish Propagation (saline waters)
2. New York Ambient Water Quality Standards and Guidance Values, August 4, 1999. Wildlife Protection (saline waters)
3. New York Ambient Water Quality Standards and Guidance Values, August 4, 1999. Human Consumption of Fish (saline waters)
4. New York Surface Water Quality Standards 6NYCRR Chapter X Part 703, 1999
5. Smithtown Surface Water Screening Criteria is the lowest New York Ambient Water Quality Standard or Guidance value.

A Applies to the sum of Aldrin and Dieldrin
C Standard applied to the sum of the PCB compounds
D Standard applied to the sum of 1,2,3-, 1,2,4- and 1,3,5-trichlorobenzene
F Applies to dissolved Hg
H Applies to the sum of 1,2-, 1,3-, and 1,4-dichlorobenzene
I Applies to the sum of o-, m-, and p-xylene
J Applies to the sum of 4,4'-DDD, 4,4'-DDE, and 4,4'-DDT
K Applies to the sum of alpha- and gamma-chlordane
L Applies to the acid-soluble form of hexavalent chromium
NL - Chemical name not listed or screening value of this type not listed for the chemical

TABLE 6
Sediment Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

CAS Number	Chemical Name	Unit	Sediment Quality Criteria - Human Health Bioaccumulation - SW (1)		Sediment Quality Criteria - Benthic Aquatic Life, Chronic Toxicity, SW (1)		Sediment Quality Criteria - Wildlife Bioaccumulation, SW (1)		Smithtown Sediment Screening Criteria (2)	
	Volatile Organic Compounds									
71-55-6	1,1,1-Trichloroethane	ug/gOC	NL		NL		NL		NL	
79-34-5	1,1,2,2-Tetrachloroethane	ug/gOC	0.3		NL		NL		0.3	
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ug/gOC	NL		NL		NL		NL	
79-00-5	1,1,2-Trichloroethane	ug/gOC	0.6		NL		NL		0.6	
75-34-3	1,1-Dichloroethane	ug/gOC	NL		NL		NL		NL	
75-35-4	1,1-Dichloroethene	ug/gOC	0.02		NL		NL		0.02	
120-82-1	1,2,4-Trichlorobenzene	ug/gOC	NL		91	E	NL		91	E
96-12-8	1,2-Dibromo-3-chloropropane	ug/gOC	NL		NL		NL		NL	
106-93-4	1,2-Dibromoethane	ug/gOC	NL		NL		NL		NL	
95-50-1	1,2-Dichlorobenzene	ug/gOC	NL		12	D	NL		12	D
107-06-2	1,2-Dichloroethane	ug/gOC	0.7		NL		NL		0.7	
78-87-5	1,2-Dichloropropane	ug/gOC	NL		NL		NL		NL	
541-73-1	1,3-Dichlorobenzene	ug/gOC	NL		12	D	NL		12	D
106-46-7	1,4-Dichlorobenzene	ug/gOC	NL		12	D	NL		12	D
78-93-3	2-Butanone	ug/gOC	NL		NL		NL		NL	
591-78-6	2-Hexanone	ug/gOC	NL		NL		NL		NL	
108-10-1	4-Methyl-2-pentanone	ug/gOC	NL		NL		NL		NL	
67-64-1	Acetone	ug/gOC	NL		NL		NL		NL	
71-43-2	Benzene	ug/gOC	0.6		26		NL		0.6	
75-27-4	Bromodichloromethane	ug/gOC	NL		NL		NL		NL	
75-25-2	Bromoform	ug/gOC	NL		NL		NL		NL	
74-83-9	Bromomethane	ug/gOC	NL		NL		NL		NL	
75-15-0	Carbon Disulfide	ug/gOC	NL		NL		NL		NL	
56-23-5	Carbon Tetrachloride	ug/gOC	0.6		NL		NL		0.6	
108-90-7	Chlorobenzene	ug/gOC	NL		3.5		NL		3.5	
75-00-3	Chloroethane	ug/gOC	NL		NL		NL		NL	
67-66-3	Chloroform	ug/gOC	NL		NL		NL		NL	
74-87-3	Chloromethane	ug/gOC	NL		NL		NL		NL	
156-59-2	cis-1,2-Dichloroethene	ug/gOC	NL		NL		NL		NL	
10061-01-5	cis-1,3-Dichloropropene	ug/gOC	NL		NL		NL		NL	
110-82-7	Cyclohexane	ug/gOC	NL		NL		NL		NL	
124-48-1	Dibromochloromethane	ug/gOC	NL		NL		NL		NL	
75-71-8	Dichlorodifluoromethane	ug/gOC	NL		NL		NL		NL	
100-41-4	Ethylbenzene	ug/gOC	NL		6.4		NL		6.4	
98-82-8	Isopropylbenzene	ug/gOC	NL		12 FW		NL		12 FW	
79-20-9	Methyl Acetate	ug/gOC	NL		NL		NL		NL	
1634-04-4	Methyl Tert-Butyl Ether	ug/gOC	NL		NL		NL		NL	
75-09-2	Methylene Chloride	ug/gOC	NL		NL		NL		NL	
108-87-2	Metylcyclohexane	ug/gOC	NL		NL		NL		NL	
100-42-5	Styrene	ug/gOC	NL		NL		NL		NL	
127-18-4	Tetrachloroethene	ug/gOC	0.8		NL		NL		0.8	
108-88-3	Toluene	ug/gOC	NL		45		NL		45	
156-60-5	trans-1,2-Dichloroethene	ug/gOC	NL		NL		NL		NL	
10061-02-6	trans-1,3-Dichloropropene	ug/gOC	NL		NL		NL		NL	
79-01-6	Trichloroethene	ug/gOC	2		NL		NL		2	
75-69-4	Trichlorofluoromethane	ug/gOC	NL		NL		NL		NL	
75-01-4	Vinyl Chloride	ug/gOC	0.07		NL		NL		0.07	
1330-20-7	Xylenes (total)	ug/gOC	NL		27	F	NL		27	F
	Semi-Volatile Organics									
92-52-4	1,1'-Biphenyl	ug/gOC	NL		NL		NL		NL	
108-60-1	2,2'-oxybis(1-Chloropropane)	ug/gOC	NL		NL		NL		NL	
95-95-4	2,4,5-Trichlorophenol	ug/gOC	NL		NL		NL		NL	
88-06-2	2,4,6-Trichlorophenol	ug/gOC	NL		NL		NL		NL	
120-83-2	2,4-Dichlorophenol	ug/gOC	NL		NL		NL		NL	
105-67-9	2,4-Dimethylphenol	ug/gOC	NL		NL		NL		NL	
51-28-5	2,4-Dinitrophenol	ug/gOC	NL		NL		NL		NL	
121-14-2	2,4-Dinitrotoluene	ug/gOC	NL		NL		NL		NL	
606-20-2	2,6-Dinitrotoluene	ug/gOC	NL		NL		NL		NL	
91-58-7	2-Chloronaphthalene	ug/gOC	NL		NL		NL		NL	
95-57-8	2-Chlorophenol	ug/gOC	NL		NL		NL		NL	

TABLE 6
Sediment Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

CAS Number	Chemical Name	Unit	Sediment Quality Criteria - Human Health Bioaccumulation - SW (1)		Sediment Quality Criteria - Benthic Aquatic Life, Chronic Toxicity, SW (1)		Sediment Quality Criteria - Wildlife Bioaccumulation, SW (1)		Smithtown Sediment Screening Criteria (2)	
91-57-6	2-Methylnaphthalene	ug/gOC	NL		30		NL		30	
95-48-7	2-Methylphenol	ug/gOC	NL		NL		NL		NL	
88-74-4	2-Nitroaniline	ug/gOC	NL		NL		NL		NL	
88-75-5	2-Nitrophenol	ug/gOC	NL		NL		NL		NL	
91-94-1	3,3'-Dichlorobenzidine	ug/gOC	NL		NL		NL		NL	
99-09-2	3-Nitroaniline	ug/gOC	NL		NL		NL		NL	
534-52-1	4,6-Dinitro-2-methylphenol	ug/gOC	NL		NL		NL		NL	
101-55-3	4-Bromophenyl-phenylether	ug/gOC	NL		NL		NL		NL	
59-50-7	4-Chloro-3-methylphenol	ug/gOC	NL		NL		NL		NL	
106-47-8	4-Chloroaniline	ug/gOC	NL		NL		NL		NL	
7005-72-3	4-Chlorophenyl-phenylether	ug/gOC	NL		NL		NL		NL	
106-44-5	4-Methylphenol	ug/gOC	NL		NL		NL		NL	
100-01-6	4-Nitroaniline	ug/gOC	NL		NL		NL		NL	
100-02-7	4-Nitrophenol	ug/gOC	NL		NL		NL		NL	
83-32-9	Acenaphthene	ug/gOC	NL		240		NL		240	
208-96-8	Acenaphthylene	ug/gOC	NL		NL		NL		NL	
98-86-2	Acetophenone	ug/gOC	NL		NL		NL		NL	
120-12-7	Anthracene	ug/gOC	NL		107		NL		107	
1912-24-9	Atrazine	ug/gOC	NL		NL		NL		NL	
100-52-7	Benzaldehyde	ug/gOC	NL		NL		NL		NL	
56-55-3	Benzo(a)anthracene	ug/gOC	NL		12 FW		NL		12 FW	
50-32-8	Benzo(a)pyrene	ug/gOC	0.7		NL		NL		0.7	
205-99-2	Benzo(b)fluoranthene	ug/gOC	NL		NL		NL		NL	
191-24-2	Benzo(g,h,i)perylene	ug/gOC	NL		NL		NL		NL	
207-08-9	Benzo(k)fluoranthene	ug/gOC	NL		NL		NL		NL	
111-91-1	bis(2-Chloroethoxy)methane	ug/gOC	NL		NL		NL		NL	
111-44-4	bis(2-Chloroethyl)ether	ug/gOC	0.03		NL		NL		0.03	
117-81-7	bis(2-Ethylhexyl)phthalate	ug/gOC	NL		199.5 FW		NL		199.5 FW	
85-68-7	Butylbenzylphthalate	ug/gOC	NL		NL		NL		NL	
105-60-2	Caprolactam	ug/gOC	NL		NL		NL		NL	
86-74-8	Carbazole	ug/gOC	NL		NL		NL		NL	
218-01-9	Chrysene	ug/gOC	NL		NL		NL		NL	
53-70-3	Dibenz(a,h)anthracene	ug/gOC	NL		NL		NL		NL	
132-64-9	Dibenzofuran	ug/gOC	NL		NL		NL		NL	
84-66-2	Diethylphthalate	ug/gOC	NL		NL		NL		NL	
131-11-3	Dimethylphthalate	ug/gOC	NL		NL		NL		NL	
84-74-2	Di-n-butylphthalate	ug/gOC	NL		NL		NL		NL	
117-84-0	Di-n-octylphthalate	ug/gOC	NL		NL		NL		NL	
206-44-0	Fluoranthene	ug/gOC	NL		1340		NL		1340	
86-73-7	Fluorene	ug/gOC	NL		38		NL		38	
118-74-1	Hexachlorobenzene	ug/gOC	NL		NL		NL		NL	
87-68-3	Hexachlorobutadiene	ug/gOC	0.3		1.6		4		0.3	
77-47-4	Hexachlorocyclopentadiene	ug/gOC	NL		0.7		NL		0.7	
67-72-1	Hexachloroethane	ug/gOC	NL		NL		NL		NL	
193-39-5	Indeno(1,2,3-cd)pyrene	ug/gOC	NL		NL		NL		NL	
78-59-1	Isophorone	ug/gOC	NL		NL		NL		NL	
91-20-3	Naphthalene	ug/gOC	NL		38		NL		38	
98-95-3	Nitrobenzene	ug/gOC	NL		NL		NL		NL	
621-64-7	N-Nitroso-di-n-propylamine	ug/gOC	NL		NL		NL		NL	
86-30-6	N-Nitrosodiphenylamine	ug/gOC	NL		NL		NL		NL	
87-86-5	Pentachlorophenol	ug/gOC	NL		40 FW		NL		40 FW	
85-01-8	Phenanthrene	ug/gOC	NL		160		NL		160	
108-95-2	Phenol	ug/gOC	NL		0.6 FW		NL		0.6 FW	
129-00-0	Pyrene	ug/gOC	NL		961		NL		961	
	Pesticides/PCBs									
72-54-8	4,4'-DDD	ug/gOC	0.01	A	NL		1	A	0.01	A
72-55-9	4,4'-DDE	ug/gOC	0.01	A	NL		1	A	0.01	A
50-29-3	4,4'-DDT	ug/gOC	0.01	A	1		1	A	0.01	A
309-00-2	Aldrin	ug/gOC	0.1	B	NL		0.77	B	0.1	B
319-84-6	alpha-BHC	ug/gOC	0.06	G	0.03	G	1.5	G	0.03	G
5103-71-9	alpha-Chlordane	ug/gOC	0.001	C	0.002	C	0.006	C	0.001	C

TABLE 6
Sediment Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

CAS Number	Chemical Name	Unit	Sediment Quality Criteria - Human Health Bioaccumulation - SW (1)		Sediment Quality Criteria - Benthic Aquatic Life, Chronic Toxicity, SW (1)		Sediment Quality Criteria - Wildlife Bioaccumulation, SW (1)		Smithtown Sediment Screening Criteria (2)	
12674-11-2	Aroclor-1016	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
11104-28-2	Aroclor-1221	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
11141-16-5	Aroclor-1232	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
53469-21-9	Aroclor-1242	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
12672-29-6	Aroclor-1248	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
11097-69-1	Aroclor-1254	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
11096-82-5	Aroclor-1260	ug/gOC	0.0008	H	41.4	H	1.4	H	0.0008	H
319-85-7	beta-BHC	ug/gOC	0.06	G	0.03	G	1.5	G	0.03	G
319-86-8	delta-BHC	ug/gOC	0.06	G	0.03	G	1.5	G	0.03	G
60-57-1	Dieldrin	ug/gOC	0.1	B	17		0.77	B	0.1	B
959-98-8	Endosulfan I	ug/gOC	NL		0.004		NL		0.004	
33213-65-9	Endosulfan II	ug/gOC	NL		0.004		NL		0.004	
1031-07-8	Endosulfan sulfate	ug/gOC	NL		NL		NL		NL	
72-20-8	Endrin	ug/gOC	NL		0.73		NL		0.73	
7421-93-4	Endrin aldehyde	ug/gOC	NL		NL		NL		NL	
53494-70-5	Endrin ketone	ug/gOC	NL		NL		NL		NL	
58-89-9	gamma-BHC (Lindane)	ug/gOC	0.06	G	0.03	G	1.5	G	0.03	G
5103-74-2	gamma-Chlordane	ug/gOC	0.001	C	0.002	C	0.006	C	0.001	C
76-44-8	Heptachlor	ug/gOC	0.0008	I	0.09	I	NL		0.0008	I
1024-57-3	Heptachlor epoxide	ug/gOC	0.0008	I	0.09	I	NL		0.0008	I
72-43-5	Methoxychlor	ug/gOC	NL		0.6		NL		0.6	
8001-35-2	Toxaphene	ug/gOC	0.02		0.01		NL		0.01	
	Inorganic Analytes									
7429-90-5	Aluminum	ug/g	NL		NL		NL		NL	
7440-36-0	Antimony	ug/g	NL		2	J	NL		2	J
7440-38-2	Arsenic	ug/g	NL		6	J	NL		6	J
7440-39-3	Barium	ug/g	NL		NL		NL		NL	
7440-41-7	Beryllium	ug/g	NL		NL		NL		NL	
7440-43-9	Cadmium	ug/g	NL		0.6	J	NL		0.6	J
7440-70-2	Calcium	ug/g	NL		NL		NL		NL	
7440-47-3	Chromium	ug/g	NL		26	J	NL		26	J
7440-48-4	Cobalt	ug/g	NL		NL		NL		NL	
7440-50-8	Copper	ug/g	NL		16	J	NL		16	J
7439-89-6	Iron	ug/g	NL		20000	J	NL		20000	J
7439-92-1	Lead	ug/g	NL		31	J	NL		31	J
7439-95-4	Magnesium	ug/g	NL		NL		NL		NL	
7439-96-5	Manganese	ug/g	NL		460	J	NL		460	J
7439-97-6	Mercury	ug/g	NL		0.15	J	NL		0.15	J
7440-02-0	Nickel	ug/g	NL		16	J	NL		16	J
7440-09-7	Potassium	ug/g	NL		NL		NL		NL	
7782-49-2	Selenium	ug/g	NL		NL		NL		NL	
7440-22-4	Silver	ug/g	NL		1	J	NL		1	J
7440-23-5	Sodium	ug/g	NL		NL		NL		NL	
7440-28-0	Thallium	ug/g	NL		NL		NL		NL	
7440-62-2	Vanadium	ug/g	NL		NL		NL		NL	
7440-66-6	Zinc	ug/g	NL		120	J	NL		120	J
57-12-5	Cyanide	ug/g	NL		NL		NL		NL	

Notes:

1. Source: Technical Guidance for Screening Contaminated Sediments, Division of Fish, Wildlife and Marine Resources, January 25, 1999. Salt water sediment values used as preference. Fresh water values indicatd with FW.
2. Smithtown Sediment Screening Criteria are the lowest of the NYS screening criteria for salt water or fresh water sediment.

Values shown in units of ug/gOC are calculated based on unit organic carbon concentration (1 gOC/kg). Values shown will be multiplied by the measured sample-specific organic carbon content to derive the criteria applicable to each sediment sample.

NL - Chemical name not listed or screening value of this type not listed for the chemical
A Value applies to the sum of DDD, DDE, DDT
B Value applies to the sum of aldrin and dieldrin
C Value applies to total Chlordane
D Value applies to total Dichlorobenzenes

TABLE 6
Sediment Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

CAS Number	Chemical Name	Unit	Sediment Quality Criteria - Human Health Bioaccumulation - SW (1)	Sediment Quality Criteria - Benthic Aquatic Life, Chronic Toxicity, SW (1)	Sediment Quality Criteria - Wildlife Bioaccumulation, SW (1)	Smithtown Sediment Screening Criteria (2)
	E Value applies to total Trichlorobenzenes					
	F Value applies to total Xylenes					
	G Value applies to total BHCs (total hexachlorocyclohexanes)					
	H Value applies to total PCBs					
	I Value applies to the sum of heptaclor and heptachlor epoxide					
	J Value is Lowest Effect Level (LEL) for aquatic life. NYSDEC criteria do not distinguish between fresh and salt water sediment for inorganics.					

TABLE 7
Volatile Organic Compound Results in Surface Water
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number		Ace-tone	1,1-DCE	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	TCE	PCE
Screening Criteria (ug/L) (1)	**Salinity (%)**	**NS**	**NS**	**5 (2)**	**5 (2)**	**5 (2)**	**40**	**1**
Spring/Seep Surface Water Samples								
Dunton Spring								
DSW-001	NA	ND	ND	ND	ND	ND	ND	**2**
Stony Brook Harbor								
SWS-001	NA	ND	ND	ND	ND	ND	ND	ND
SWS-002	NA	ND	ND	ND	ND	ND	ND	0.3 J
SWS-003	NA	ND	ND	ND	ND	ND	ND	ND
SWS-005	NA	ND	ND	ND	ND	ND	ND	ND
SWS-006	NA	ND	ND	ND	ND	ND	ND	ND
SWS-007	NA	ND	ND	ND	ND	ND	ND	ND
Nissoquogue River								
SWS-008	0	ND	ND	0.5 J	0.5 J	0.4 J	0.4 J	ND
SWS-009	0	ND	ND	ND	ND	ND	ND	ND
SWS-010	0	ND	ND	ND	ND	ND	ND	ND
SWS-011	0	9 J	ND	ND	ND	ND	ND	ND
SWS-012	0	ND	ND	ND	ND	ND	ND	ND
Wetland Surface Water Samples								
SWW-001	0.2	ND	ND	0.4 J	ND	2	ND	**3**
SWW-002	0.2	ND	ND	ND	ND	1	ND	**2**
SWW-003	0.1	15 J	ND	0.3 J	ND	2	ND	0.6 J
SWW-004	0	ND	0.5 J	0.4 J	ND	3	ND	ND
SWW-005	0	ND	ND	ND	ND	1	ND	ND

APPENDIX II

TABLES

TABLE 7
Volatile Organic Compound Results in Surface Water
Smithtown Groundwater Contamination Site
Smithtown, New York

Sample Number		Ace-tone	1,1-DCE	1,1-DCA	cis-1,2-DCE	1,1,1-TCA	TCE	PCE
Screening Criteria (ug/L) (1)	**Salinity (%)**	**NS**	**NS**	**5 (2)**	**5 (2)**	**5 (2)**	**40**	**1**
SWW-006	0	ND	0.3 J	0.4 J	ND	2	ND	0.9 J
SWW-007	0	ND	0.4 J	0.4 J	ND	3	ND	ND
SWW-008	0	ND	0.5 J	0.3 J	ND	3	ND	ND
SWW-009	0	ND	1	0.4 J	ND	**5**	ND	ND

All values in micrograms/liter (ug/L)
bold = equals or exceeds screening criteria
Abbreviations:
NS = No Standard; 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1,-dichloroethane; cis-1,2-DCE = cis-1,2-dichloroethene; 1,1,1-TCA = 1,1,1-trichloroethane; TCE = trichloroethene; PCE = tetrachloroethene; NA = not available; ND = non-detect; J = estimated value; DSW = Dunton Spring surface water sample; SWS = surface water seep; SWW = surface water wetland

Notes:
1: Screening criteria - New York Ambient Water Quality Standards and Guidance Values, August 4, 1999. Saline Waters
2. Fresh water criteria

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-001-A		SDW-001-B		SDW-002-A		SDW-002-B		SDW-003-A		SDW-003-B		SDW-004-A		SDW-004-B		SDW-005-A	
		Sample Name																		
		Sample Date	4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/13/2001	
Cas Rn	Chemical Name	Depth	0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6	
TOC	Total organic carbon	gOC/kg	27 2		8 44		6 49		2.68		83 3		54.5		80		74 3		108	
TOC	Total organic carbon	%OC	2.72%		0.84%		0.65%		0.27%		8.33%		5 45%		8 00%		7 43%		10.80%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
	Volatile Organic Compounds																			
71-55-6	1,1,1-Trichloroethane	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
79-34-5	1,1,2,2-Tetrachloroethane	0 3	8.16	24 UJ	2.532	20 U	1.947	20 U	0.804	12 U	24.99	43 UJ	16.35	43 UJ	24	48 UJ	22.29	61 UJ	32.4	74 UJ
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	NL	24 UJ	NL	20 UJ	NL	20 UJ	NL	12 UJ	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
79-00-5	1,1,2-Trichloroethane	0.6	16.32	24 UJ	5.064	20 U	3.894	20 U	1.608	12 U	49.98	43 UJ	32.7	43 UJ	48	48 UJ	44.58	61 UJ	64.8	74 UJ
75-34-3	1,1-Dichloroethane	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
75-35-4	1,1-Dichloroethene	0.02	0.544	24 UJ	0 1688	20 U	0.1298	20 U	0.0536	12 U	1.666	43 UJ	1 09	43 UJ	1.6	48 UJ	1.486	61 UJ	2.16	74 UJ
120-82-1	1,2,4-Trichlorobenzene	91	2475.2	24 UJ	768.04	20 U	590.59	20 U	243.88	12 U	7580.3	43 UJ	4959.5	43 UJ	7280	48 UJ	6761 3	61 UJ	9828	74 UJ
96-12-8	1,2-Dibromo-3-chloropropane	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
106-93-4	1,2-Dibromoethane	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
95-50-1	1,2-Dichlorobenzene	12	326.4	24 UJ	101.28	20 U	77.88	20 U	32.16	12 U	999 6	43 UJ	654	43 UJ	960	48 UJ	891 6	61 UJ	1296	74 UJ
107-06-2	1,2-Dichloroethane	0.7	19.04	24 UJ	5.908	20 U	4 543	20 U	1.876	12 U	58.31	43 UJ	38.15	43 UJ	56	48 UJ	52.01	61 UJ	75 6	74 UJ
78-87-5	1,2-Dichloropropane	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
541-73-1	1,3-Dichlorobenzene	12	326.4	24 UJ	101.28	20 U	77.88	20 U	32.16	12 U	999.6	43 UJ	654	43 UJ	960	48 UJ	891 6	61 UJ	1296	74 UJ
106-46-7	1,4-Dichlorobenzene	12	326.4	24 UJ	101.28	20 U	77.88	20 U	32.16	12 U	999.6	43 UJ	654	43 UJ	960	48 UJ	891 6	61 UJ	1296	74 UJ
78-93-3	2-Butanone	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	440 J	NL	160 J	NL	48 UJ	NL	61 UJ	NL	570 J
591-78-6	2-Hexanone	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
108-10-1	4-Methyl-2-pentanone	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	1 J	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
67-64-1	Acetone	NL	NL	25 UJ	NL	20 U	NL	20 U	NL	20 U	NL	120 UJ	NL	71 UJ	NL	48 UJ	NL	72 UJ	NL	95 UJ
71-43-2	Benzene	0 6	16 32	24 UJ	5.064	20 U	3.894	20 U	1.608	12 U	49.98	43 UJ	32.7	43 UJ	48	48 UJ	44.58	61 UJ	64.8	74 UJ
75-27-4	Bromodichloromethane	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
75-25-2	Bromoform	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
74-83-9	Bromomethane	NL	NL	24 UJ	NL	20 UJ	NL	20 UJ	NL	12 UJ	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
75-15-0	Carbon Disulfide	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	38 J	NL	74 UJ
56-23-5	Carbon Tetrachloride	0 6	16.32	24 UJ	5.064	20 UJ	3.894	20 UJ	1.608	12 UJ	49.98	43 UJ	32.7	43 UJ	48	48 UJ	44.58	61 UJ	64 8	74 UJ
108-90-7	Chlorobenzene	3 5	95.2	24 UJ	29 54	20 U	22.715	20 U	9.38	12 U	291.55	43 UJ	190.75	43 UJ	280	48 UJ	260.05	61 UJ	378	74 UJ
75-00-3	Chloroethane	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
67-66-3	Chloroform	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
74-87-3	Chloromethane	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
156-59-2	cis-1,2-Dichloroethene	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
10061-01-5	cis-1,3-Dichloropropene	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
110-82-7	Cyclohexane	NL	NL	24 UJ	NL	20 UJ	NL	20 UJ	NL	12 UJ	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
124-48-1	Dibromochloromethane	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
75-71-8	Dichlorodifluoromethane	NL	NL	24 UJ	NL	20 UJ	NL	20 UJ	NL	12 UJ	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
100-41-4	Ethylbenzene	6.4	174.08	24 UJ	54 016	20 U	41.536	20 U	17 152	12 U	533.12	43 UJ	348 8	43 UJ	512	48 UJ	475.52	61 UJ	691 2	74 UJ
98-82-8	Isopropylbenzene	12	326.4	24 UJ	101.28	20 U	77.88	20 U	32.16	12 U	999.6	43 UJ	654	43 UJ	960	48 UJ	891.6	61 UJ	1296	74 UJ
79-20-9	Methyl Acetate	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
1634-04-4	Methyl Tert-Butyl Ether	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
75-09-2	Methylene Chloride	NL	NL	70 UJ	NL	24 UJ	NL	20 UJ	NL	13 UJ	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	65 UJ	NL	130 UJ
108-87-2	Metylcyclohexane	NL	NL	24 UJ	NL	20 UJ	NL	20 UJ	NL	12 UJ	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
100-42-5	Styrene	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
127-18-4	Tetrachloroethene	0.8	21.76	24 UJ	6.752	20 U	5.192	20 U	2 144	12 U	66 64	43 UJ	43 6	43 UJ	64	48 UJ	59 44	61 UJ	86 4	74 UJ
108-88-3	Toluene	45	1224	24 UJ	379.8	2 J	292.05	20 U	120.6	1 J	3748.5	43 UJ	2452.5	43 UJ	3600	48 UJ	3343.5	7 J	4860	74 UJ
156-60-5	trans-1,2-Dichloroethene	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
10061-02-6	trans-1,3-Dichloropropene	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
79-01-6	Trichloroethene	2	54.4	24 UJ	16.88	20 U	12.98	20 U	5.36	12 U	166.6	43 UJ	109	43 UJ	160	48 UJ	148.6	61 UJ	216	74 UJ
75-69-4	Trichlorofluoromethane	NL	NL	24 UJ	NL	20 U	NL	20 U	NL	12 U	NL	43 UJ	NL	43 UJ	NL	48 UJ	NL	61 UJ	NL	74 UJ
75-01-4	Vinyl Chloride	0.07	1.904	24 UJ	0.5908	20 U	0.4543	20 U	0.1876	12 U	5.831	43 UJ	3 815	43 UJ	5 6	48 UJ	5.201	61 UJ	7.56	74 UJ
1330-20-7	Xylenes (total)	27	734 4	24 UJ	227.88	20 U	175.23	20 U	72.36	12 U	2249.1	43 UJ	1471.5	43 UJ	2160	48 UJ	2006.1	61 UJ	2916	74 UJ
	Semi-Volatile Organics																			
92-52-4	1,1'-Biphenyl	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
95-95-4	2,4,5-Trichlorophenol	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ
88-06-2	2,4,6-Trichlorophenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
120-83-2	2,4-Dichlorophenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
105-67-9	2,4-Dimethylphenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
51-28-5	2,4-Dinitrophenol	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ
121-14-2	2,4-Dinitrotoluene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
606-20-2	2,6-Dinitrotoluene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-001-A		SDW-001-B		SDW-002-A		SDW-002-B		SDW-003-A		SDW-003-B		SDW-004-A		SDW-004-B		SDW-005-A	
		Sample Name																		
		Sample Date	4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/12/2001		4/13/2001	
Cas Rn	Chemical Name	Depth	0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6	
TOC	Total organic carbon	gOC/kg	27.2		8.44		6.49		2.68		83.3		54.5		80		74.3		108	
TOC	Total organic carbon	%OC	2.72%		0.84%		0.65%		0.27%		8.33%		5.45%		8.00%		7.43%		10.80%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
91-58-7	2-Chloronaphthalene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
95-57-8	2-Chlorophenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
91-57-6	2-Methylnaphthalene	30	816	2800 U	253.2	2400 UJ	194.7	5100 UJ	80.4	450 UJ	2499	5200 UJ	1635	5000 UJ	2400	14000 UJ	2229	1900 UJ	3240	7400 UJ
95-48-7	2-Methylphenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
88-74-4	2-Nitroaniline	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ
88-75-5	2-Nitrophenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
91-94-1	3,3'-Dichlorobenzidine	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
99-09-2	3-Nitroaniline	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ
534-52-1	4,6-Dinitro-2-methylphenol	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ
101-55-3	4-Bromophenyl-phenylether	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
59-50-7	4-Chloro-3-methylphenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
106-47-8	4-Chloroaniline	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
7005-72-3	4-Chlorophenyl-phenylether	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
106-44-5	4-Methylphenol	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
100-01-6	4-Nitroaniline	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ
100-02-7	4-Nitrophenol	NL	NL	7000 U	NL	6000 UJ	NL	13000 UJ	NL	1100 UJ	NL	13000 UJ	NL	12000 UJ	NL	34000 UJ	NL	4800 UJ	NL	19000 UJ
83-32-9	Acenaphthene	240	6528	2800 U	2025.6	2400 UJ	1557.6	5100 UJ	643.2	450 UJ	19992	5200 UJ	13080	5000 UJ	19200	14000 UJ	17832	1900 UJ	25920	7400 UJ
208-96-8	Acenaphthylene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
98-86-2	Acetophenone	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
120-12-7	Anthracene	107	2910.4	2800 U	903.08	2400 UJ	694.43	5100 UJ	286.76	450 UJ	8913.1	5200 UJ	5831.5	5000 UJ	8560	14000 UJ	7950.1	1900 UJ	11556	7400 UJ
1912-24-9	Atrazine	NL	NL	2800 UJ	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
100-52-7	Benzaldehyde	NL	NL	690 J	NL	0 R	NL	0 R	NL	0 R	NL	0 R	NL	0 R	NL	0 R	NL	270 J	NL	1100 J
56-55-3	Benzo(a)anthracene	12	326.4	2800 U	101.28	2400 UJ	77.88	5100 UJ	32.16	450 UJ	999.6	5200 UJ	654	5000 UJ	960	14000 UJ	891.6	1900 UJ	1296	7400 UJ
50-32-8	Benzo(a)pyrene	0.7	19.04	2800 U	5.908	2400 UJ	4.543	**600** J	1.876	**56** J	58.31	5200 UJ	38.15	5000 UJ	56	14000 UJ	52.01	1900 UJ	75.6	7400 UJ
205-99-2	Benzo(b)fluoranthene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
191-24-2	Benzo(g,h,i)perylene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
207-08-9	Benzo(k)fluoranthene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
111-91-1	bis(2-Chloroethoxy)methane	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
111-44-4	bis(2-Chloroethyl)ether	0.03	0.816	2800 U	0.2532	2400 UJ	0.1947	5100 UJ	0.0804	450 UJ	2.499	5200 UJ	1.635	5000 UJ	2.4	14000 UJ	2.229	1900 UJ	3.24	7400 UJ
117-81-7	bis(2-Ethylhexyl)phthalate	199.5	5426.4	2800 U	1683.78	2400 UJ	1294.755	5100 UJ	534.66	450 UJ	16618.35	5200 UJ	10872.75	5000 UJ	15960	14000 UJ	14822.85	1900 UJ	21546	7400 UJ
85-68-7	Butylbenzylphthalate	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
105-60-2	Caprolactam	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
86-74-8	Carbazole	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
218-01-9	Chrysene	NL	NL	2800 U	NL	2400 UJ	NL	560 J	NL	46 J	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
53-70-3	Dibenz(a,h)anthracene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
132-64-9	Dibenzofuran	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
84-66-2	Diethylphthalate	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
131-11-3	Dimethylphthalate	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
84-74-2	Di-n-butylphthalate	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
117-84-0	Di-n-octylphthalate	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
206-44-0	Fluoranthene	1340	36448	2800 U	11309.6	2400 UJ	8696.6	690 J	3591.2	71 J	111622	5200 UJ	73030	5000 UJ	107200	14000 UJ	99562	1900 UJ	144720	7400 UJ
86-73-7	Fluorene	38	1033.6	2800 U	320.72	2400 UJ	246.62	5100 UJ	101.84	450 UJ	3165.4	5200 UJ	2071	5000 UJ	3040	14000 UJ	2823.4	1900 UJ	4104	7400 UJ
118-74-1	Hexachlorobenzene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
87-68-3	Hexachlorobutadiene	0.3	8.16	2800 U	2.532	2400 UJ	1.947	5100 UJ	0.804	450 UJ	24.99	5200 UJ	16.35	5000 UJ	24	14000 UJ	22.29	1900 UJ	32.4	7400 UJ
77-47-4	Hexachlorocyclopentadiene	0.7	19.04	2800 U	5.908	2400 UJ	4.543	5100 UJ	1.876	450 UJ	58.31	5200 UJ	38.15	5000 UJ	56	14000 UJ	52.01	1900 UJ	75.6	7400 UJ
67-72-1	Hexachloroethane	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
193-39-5	Indeno(1,2,3-cd)pyrene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
78-59-1	Isophorone	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
91-20-3	Naphthalene	38	1033.6	2800 U	320.72	2400 UJ	246.62	5100 UJ	101.84	450 UJ	3165.4	5200 UJ	2071	5000 UJ	3040	14000 UJ	2823.4	1900 UJ	4104	7400 UJ
98-95-3	Nitrobenzene	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
621-64-7	N-Nitroso-di-n-propylamine	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
86-30-6	N-Nitrosodiphenylamine	NL	NL	2800 U	NL	2400 UJ	NL	5100 UJ	NL	450 UJ	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
87-86-5	Pentachlorophenol	40	1088	7000 U	337.6	6000 UJ	259.6	13000 UJ	107.2	1100 UJ	3332	13000 UJ	2180	12000 UJ	3200	34000 UJ	2972	4800 UJ	4320	19000 UJ
85-01-8	Phenanthrene	160	4352	2800 U	1350.4	2400 UJ	1038.4	5100 UJ	428.8	450 UJ	13328	5200 UJ	8720	5000 UJ	12800	14000 UJ	11888	1900 UJ	17280	7400 UJ
108-95-2	Phenol	0.6	16.32	2800 U	5.064	2400 UJ	3.894	5100 UJ	1.608	450 UJ	49.98	5200 UJ	32.7	5000 UJ	48	14000 UJ	44.58	1900 UJ	64.8	7400 UJ
129-00-0	Pyrene	NL	NL	2800 U	NL	2400 UJ	NL	670 J	NL	58 J	NL	5200 UJ	NL	5000 UJ	NL	14000 UJ	NL	1900 UJ	NL	7400 UJ
	Pestcide/PCB Organics																			
72-54-8	4,4'-DDD	0.01	0.272	5.6 U	0.0844	4.8 UJ	0.0649	5.1 UJ	0.0268	4.5 UJ	0.833	**38** J	0.545	**180** DJ	0.8	**21** J	0.743	**95** J	1.08	15 UJ
72-55-9	4,4'-DDE	0.01	0.272	5.6 U	0.0844	4.8 UJ	0.0649	5.1 UJ	0.0268	4.5 UJ	0.833	**20** J	0.545	**63** J	0.8	**17** J	0.743	**96** J	1.08	15 UJ

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-001-A			SDW-001-B			SDW-002-A			SDW-002-B			SDW-003-A			SDW-003-B			SDW-004-A			SDW-004-B			SDW-005-A		
		Sample Name																											
		Sample Date	4/12/2001			4/12/2001			4/12/2001			4/12/2001			4/12/2001			4/12/2001			4/12/2001			4/12/2001			4/13/2001		
Cas Rn	Chemical Name	Depth	0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6		
TOC	Total organic carbon	gOC/kg	27.2			8.44			6.49			2.68			83.3			54.5			80			74.3			108		
TOC	Total organic carbon	%OC	2.72%			0.84%			0.65%			0.27%			8.33%			5.45%			8.00%			7.43%			10.80%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
50-29-3	4,4'-DDT	0.01	0.272	5.6	U	0.0844	4.8	UJ	0.0649	5.1	UJ	0.0268	4.5	UJ	0.833	10	UJ	0.545	9.9	UJ	0.8	14	UJ	0.743	19	UJ	1.08	15	UJ
309-00-2	Aldrin	0.1	2.72	2.9	U	0.844	2.5	UJ	0.649	2.6	UJ	0.268	2.3	UJ	8.33	5.3	UJ	5.45	5.1	UJ	8	7.1	UJ	7.43	9.8	UJ	10.8	7.7	UJ
319-84-6	alpha-BHC	0.03	0.816	2.9	U	0.2532	2.5	UJ	0.1947	2.6	UJ	0.0804	2.3	UJ	2.499	5.3	UJ	1.635	5.1	UJ	2.4	7.1	UJ	2.229	9.8	UJ	3.24	7.7	UJ
5103-71-9	alpha-Chlordane	0.001	0.0272	2.9	U	0.00844	2.5	UJ	0.00649	2.6	UJ	0.00268	2.3	UJ	0.0833	5.3	UJ	0.0545	5.1	UJ	0.08	**7.2**		0.0743	9.8	UJ	0.108	7.7	UJ
12674-11-2	Aroclor-1016	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ
11104-28-2	Aroclor-1221	0.0008	0.02176	110	U	0.006752	97	UJ	0.005192	100	UJ	0.002144	92	UJ	0.06664	210	UJ	0.0436	200	UJ	0.064	280	UJ	0.05944	390	UJ	0.0864	300	UJ
11141-16-5	Aroclor-1232	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ
53469-21-9	Aroclor-1242	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ
12672-29-6	Aroclor-1248	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ
11097-69-1	Aroclor-1254	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ
11096-82-5	Aroclor-1260	0.0008	0.02176	56	U	0.006752	48	UJ	0.005192	51	UJ	0.002144	45	UJ	0.06664	100	UJ	0.0436	99	UJ	0.064	140	UJ	0.05944	190	UJ	0.0864	150	UJ
319-85-7	beta-BHC	0.03	0.816	2.9	U	0.2532	2.5	UJ	0.1947	2.6	UJ	0.0804	2.3	UJ	2.499	5.3	UJ	1.635	5.1	UJ	2.4	7.1	UJ	2.229	9.8	UJ	3.24	7.7	UJ
319-86-8	delta-BHC	0.03	0.816	2.9	U	0.2532	2.5	UJ	0.1947	2.6	UJ	0.0804	2.3	UJ	2.499	5.3	UJ	1.635	5.1	UJ	2.4	7.1	UJ	2.229	9.6	UJ	3.24	7.7	UJ
60-57-1	Dieldrin	0.1	2.72	5.6	U	0.844	4.8	UJ	0.649	5.1	UJ	0.268	4.5	UJ	8.33	10	UJ	5.45	0	R	8	14	UJ	7.43	19	UJ	10.8	15	UJ
959-98-8	Endosulfan I	0.004	0.1088	2.9	U	0.03376	2.5	UJ	0.02596	2.6	UJ	0.01072	2.3	UJ	0.3332	5.3	UJ	0.218	5.1	UJ	0.32	7.1	UJ	0.2972	9.8	UJ	0.432	7.7	UJ
33213-65-9	Endosulfan II	0.004	0.1088	5.6	U	0.03376	4.8	UJ	0.02596	5.1	UJ	0.01072	4.5	UJ	0.3332	10	UJ	0.218	9.9	UJ	0.32	14	UJ	0.2972	19	UJ	0.432	15	UJ
1031-07-8	Endosulfan sulfate	NL	NL	5.6	U	NL	4.8	UJ	NL	5.1	UJ	NL	4.5	UJ	NL	10	UJ	NL	9.9	UJ	NL	14	UJ	NL	19	UJ	NL	15	UJ
72-20-8	Endrin	0.73	19.856	5.6	U	6.1612	4.8	UJ	4.7377	5.1	UJ	1.9564	4.5	UJ	60.809	10	UJ	39.765	9.9	UJ	58.4	14	UJ	54.239	19	UJ	78.84	15	UJ
7421-93-4	Endrin aldehyde	NL	NL	5.6	U	NL	4.8	UJ	NL	5.1	UJ	NL	4.5	UJ	NL	10	UJ	NL	9.9	UJ	NL	14	UJ	NL	19	UJ	NL	15	UJ
53494-70-5	Endrin ketone	NL	NL	5.6	U	NL	4.8	UJ	NL	5.1	UJ	NL	4.5	UJ	NL	10	UJ	NL	9.9	UJ	NL	14	UJ	NL	19	UJ	NL	15	UJ
58-89-9	gamma-BHC (Lindane)	0.03	0.816	2.9	U	0.2532	2.5	UJ	0.1947	2.6	UJ	0.0804	2.3	UJ	2.499	5.3	UJ	1.635	5.1	UJ	2.4	7.1	UJ	2.229	9.8	UJ	3.24	7.7	UJ
5103-74-2	gamma-Chlordane	0.001	0.0272	2.9	U	0.00844	2.5	UJ	0.00649	2.6	UJ	0.00268	2.3	UJ	0.0833	5.3	UJ	0.0545	5.1	UJ	0.08	7.1	UJ	0.0743	9.8	UJ	0.108	7.7	UJ
76-44-8	Heptachlor	0.0008	0.02176	2.9	U	0.006752	2.5	UJ	0.005192	2.6	UJ	0.002144	2.3	UJ	0.06664	5.3	UJ	0.0436	5.1	UJ	0.064	7.1	UJ	0.05944	9.8	UJ	0.0864	7.7	UJ
1024-57-3	Heptachlor epoxide	0.0008	0.02176	2.9	U	0.006752	2.5	UJ	0.005192	2.6	UJ	0.002144	2.3	UJ	0.06664	5.3	UJ	0.0436	5.1	UJ	0.064	7.1	UJ	0.05944	9.8	UJ	0.0864	7.7	UJ
72-43-5	Methoxychlor	0.6	16.32	29	U	5.064	25	UJ	3.894	26	UJ	1.608	23	UJ	49.98	53	UJ	32.7	51	UJ	48	71	UJ	44.58	98	UJ	64.8	77	UJ
8001-35-2	Toxaphene	0.01	0.272	290	U	0.0844	250	UJ	0.0649	260	UJ	0.0268	230	UJ	0.833	530	UJ	0.545	510	UJ	0.8	710	UJ	0.743	980	UJ	1.08	770	UJ

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-005-B			SDW-006-A			SDW-006-B			SDW-007-A			SDW-007-B			SDW-008-A			SDW-008-B			SDW-009-A			SDW-009-B		
		Sample Name																											
		Sample Date	4/13/2001			4/13/2001			4/13/2001			4/16/2001			4/16/2001			4/16/2001			4/16/2001			4/17/2001			4/17/2001		
Cas Rn	Chemical Name	Depth	18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24		
TOC	Total organic carbon	gOC/kg	51.4			16.4			28.9			59.5			102			123			129			87.2			50.9		
TOC	Total organic carbon	%OC	5.14%			1.64%			2.89%			5.95%			10.20%			12.30%			12.90%			8.72%			5.09%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
	Volatile Organic Compounds																												
71-55-6	1,1,1-Trichloroethane	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
79-34-5	1,1,2,2-Tetrachloroethane	0.3	15.42	51	UJ	4.92	17	U	8.67	27	U	17.85	40	UJ	30.6	43	UJ	36	54	UJ	36	45	UJ	26.16	38	UJ	15.27	39	UJ
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	NL	51	UJ	NL	17	UJ	NL	27	UJ	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
79-00-5	1,1,2-Trichloroethane	0.6	30.84	51	UJ	9.84	17	U	17.34	27	U	35.7	40	UJ	61.2	43	UJ	72	54	UJ	72	45	UJ	52.32	38	UJ	30.54	39	UJ
75-34-3	1,1-Dichloroethane	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
75-35-4	1,1-Dichloroethene	0.02	1.028	51	UJ	0.328	17	U	0.578	27	U	1.19	40	UJ	2.04	43	UJ	2.4	54	UJ	2.4	45	UJ	1.744	38	UJ	1.018	39	UJ
120-82-1	1,2,4-Trichlorobenzene	91	4677.4	51	UJ	1492.4	17	U	2629.9	27	U	5414.5	40	UJ	9282	43	UJ	10920	54	UJ	10920	45	UJ	7935.2	38	UJ	4631.9	39	UJ
96-12-8	1,2-Dibromo-3-chloropropane	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
106-93-4	1,2-Dibromoethane	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
95-50-1	1,2-Dichlorobenzene	12	616.8	51	UJ	196.8	17	U	346.8	27	U	714	40	UJ	1224	43	UJ	1440	54	UJ	1440	45	UJ	1046.4	38	UJ	610.8	39	UJ
107-06-2	1,2-Dichloroethane	0.7	35.98	51	UJ	11.48	17	U	20.23	27	U	41.65	40	UJ	71.4	43	UJ	84	54	UJ	84	45	UJ	61.04	38	UJ	35.63	39	UJ
78-87-5	1,2-Dichloropropane	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
541-73-1	1,3-Dichlorobenzene	12	616.8	51	UJ	196.8	17	U	346.8	27	U	714	40	UJ	1224	43	UJ	1440	54	UJ	1440	45	UJ	1046.4	38	UJ	610.8	39	UJ
106-46-7	1,4-Dichlorobenzene	12	616.8	51	UJ	196.8	17	U	346.8	27	U	714	40	UJ	1224	43	UJ	1440	54	UJ	1440	45	UJ	1046.4	38	UJ	610.8	39	UJ
78-93-3	2-Butanone	NL	NL	290	J	NL	17	U	NL	27	UJ	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	100	J	NL	38	UJ	NL	39	UJ
591-78-6	2-Hexanone	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
108-10-1	4-Methyl-2-pentanone	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
67-64-1	Acetone	NL	NL	100	UJ	NL	23	U	NL	27	U	NL	78	UJ	NL	50	UJ	NL	170	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
71-43-2	Benzene	0.6	30.84	51	UJ	9.84	17	U	17.34	27	U	35.7	40	UJ	61.2	43	UJ	72	54	UJ	72	45	UJ	52.32	38	UJ	30.54	39	UJ
75-27-4	Bromodichloromethane	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
75-25-2	Bromoform	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
74-83-9	Bromomethane	NL	NL	51	UJ	NL	17	UJ	NL	27	UJ	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
75-15-0	Carbon Disulfide	NL	NL	51	UJ	NL	15	J	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
56-23-5	Carbon Tetrachloride	0.6	30.84	51	UJ	9.84	17	UJ	17.34	27	U	35.7	40	UJ	61.2	43	UJ	72	54	UJ	72	45	UJ	52.32	38	UJ	30.54	39	UJ
108-90-7	Chlorobenzene	3.5	179.9	51	UJ	57.4	17	U	101.15	27	U	208.25	40	UJ	357	43	UJ	420	54	UJ	420	45	UJ	305.2	38	UJ	178.15	39	UJ
75-00-3	Chloroethane	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
67-66-3	Chloroform	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
74-87-3	Chloromethane	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
156-59-2	cis-1,2-Dichloroethene	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
10061-01-5	cis-1,3-Dichloropropene	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
110-82-7	Cyclohexane	NL	NL	51	UJ	NL	17	UJ	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
124-48-1	Dibromochloromethane	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
75-71-8	Dichlorodifluoromethane	NL	NL	51	UJ	NL	17	UJ	NL	27	UJ	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
100-41-4	Ethylbenzene	6.4	328.96	51	UJ	104.96	17	U	184.96	27	U	380.8	40	UJ	652.8	43	UJ	768	54	UJ	768	45	UJ	558.08	38	UJ	325.76	39	UJ
98-82-8	Isopropylbenzene	12	616.8	51	UJ	196.8	17	U	346.8	27	U	714	40	UJ	1224	43	UJ	1440	54	UJ	1440	45	UJ	1046.4	38	UJ	610.8	39	UJ
79-20-9	Methyl Acetate	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
1634-04-4	Methyl Tert-Butyl Ether	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
75-09-2	Methylene Chloride	NL	NL	89	UJ	NL	19	UJ	NL	52	UJ	NL	48	UJ	NL	52	UJ	NL	75	UJ	NL	45	UJ	NL	41	UJ	NL	57	UJ
108-87-2	Metylcyclohexane	NL	NL	51	UJ	NL	17	UJ	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
100-42-5	Styrene	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
127-18-4	Tetrachloroethene	0.8	41.12	51	UJ	13.12	17	U	23.12	27	U	47.6	4	J	81.6	43	UJ	96	54	UJ	96	45	UJ	69.76	38	UJ	40.72	39	UJ
108-88-3	Toluene	45	2313	51	UJ	738	2	J	1300.5	3	J	2677.5	40	UJ	4590	43	UJ	5400	54	UJ	5400	45	UJ	3924	38	UJ	2290.5	39	UJ
156-60-5	trans-1,2-Dichloroethene	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
10061-02-6	trans-1,3-Dichloropropene	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
79-01-6	Trichloroethene	2	102.8	51	UJ	32.8	17	U	57.8	27	U	119	40	UJ	204	43	UJ	240	54	UJ	240	45	UJ	174.4	38	UJ	101.8	39	UJ
75-69-4	Trichlorofluoromethane	NL	NL	51	UJ	NL	17	U	NL	27	U	NL	40	UJ	NL	43	UJ	NL	54	UJ	NL	45	UJ	NL	38	UJ	NL	39	UJ
75-01-4	Vinyl Chloride	0.07	3.598	51	UJ	1.148	17	U	2.023	27	U	4.165	40	UJ	7.14	43	UJ	8.4	54	UJ	8.4	45	UJ	6.104	38	UJ	3.563	39	UJ
1330-20-7	Xylenes (total)	27	1387.8	51	UJ	442.8	17	U	780.3	27	U	1606.5	40	UJ	2754	43	UJ	3240	54	UJ	3240	45	UJ	2354.4	38	UJ	1374.3	39	UJ
	Semi-Volatile Organics																												
92-52-4	1,1'-Biphenyl	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
95-95-4	2,4,5-Trichlorophenol	NL	NL	11000	UJ	NL	1400	UJ	NL	2100	UJ	NL	11000	UJ	NL	2400	UJ	NL	15000	UJ	NL	13000	UJ	NL	11000	UJ	NL	2200	UJ
88-06-2	2,4,6-Trichlorophenol	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
120-83-2	2,4-Dichlorophenol	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
105-67-9	2,4-Dimethylphenol	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
51-28-5	2,4-Dinitrophenol	NL	NL	11000	UJ	NL	1400	UJ	NL	2100	UJ	NL	11000	UJ	NL	2400	UJ	NL	15000	UJ	NL	13000	UJ	NL	11000	UJ	NL	2200	UJ
121-14-2	2,4-Dinitrotoluene	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
606-20-2	2,6-Dinitrotoluene	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ

TABLE 8

Sample-Specific Sediment Screening Criteria and Sediment Data

Smithtown Groundwater Contamination Site

Smithtown, New York

		Sample Code	SDW-005-B			SDW-006-A			SDW-006-B			SDW-007-A			SDW-007-B			SDW-008-A			SDW-008-B			SDW-009-A			SDW-009-B		
		Sample Name																											
		Sample Date	4/13/2001			4/13/2001			4/13/2001			4/16/2001			4/16/2001			4/16/2001			4/16/2001			4/17/2001			4/17/2001		
Cas Rn	Chemical Name	Depth	18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24		
TOC	Total organic carbon	gOC/kg	51.4			16 4			28.9			59 5			102			123			129			87.2			50 9		
TOC	Total organic carbon	%OC	5.14%			1.64%			2.89%			5 95%			10.20%			12.30%			12.90%			8.72%			5 09%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
91-58-7	2-Chloronaphthalene	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
95-57-8	2-Chlorophenol	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
91-57-6	2-Methylnaphthalene	30	1542	4500	UJ	492	560	UJ	867	850	UJ	1785	4200	UJ	3060	960	UJ	3600	5900	UJ	3600	5200	UJ	2616	4400	UJ	1527	860	UJ
95-48-7	2-Methylphenol	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
88-74-4	2-Nitroaniline	NL	NL	11000	UJ	NL	1400	UJ	NL	2100	UJ	NL	11000	UJ	NL	2400	UJ	NL	15000	UJ	NL	13000	UJ	NL	11000	UJ	NL	2200	UJ
88-75-5	2-Nitrophenol	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
91-94-1	3,3'-Dichlorobenzidine	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
99-09-2	3-Nitroaniline	NL	NL	11000	UJ	NL	1400	UJ	NL	2100	UJ	NL	11000	UJ	NL	2400	UJ	NL	15000	UJ	NL	13000	UJ	NL	11000	UJ	NL	2200	UJ
534-52-1	4,6-Dinitro-2-methylphenol	NL	NL	11000	UJ	NL	1400	UJ	NL	2100	UJ	NL	11000	UJ	NL	2400	UJ	NL	15000	UJ	NL	13000	UJ	NL	11000	UJ	NL	2200	UJ
101-55-3	4-Bromophenyl-phenylether	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
59-50-7	4-Chloro-3-methylphenol	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
106-47-8	4-Chloroaniline	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
7005-72-3	4-Chlorophenyl-phenylether	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
106-44-5	4-Methylphenol	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
100-01-6	4-Nitroaniline	NL	NL	11000	UJ	NL	1400	UJ	NL	2100	UJ	NL	11000	UJ	NL	2400	UJ	NL	15000	UJ	NL	13000	UJ	NL	11000	UJ	NL	2200	UJ
100-02-7	4-Nitrophenol	NL	NL	11000	UJ	NL	1400	UJ	NL	2100	UJ	NL	11000	UJ	NL	2400	UJ	NL	15000	UJ	NL	13000	UJ	NL	11000	UJ	NL	2200	UJ
83-32-9	Acenaphthene	240	12336	4500	UJ	3936	560	UJ	6936	850	UJ	14280	4200	UJ	24480	960	UJ	28800	5900	UJ	28800	5200	UJ	20928	4400	UJ	12216	860	UJ
208-96-8	Acenaphthylene	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
98-86-2	Acetophenone	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
120-12-7	Anthracene	107	5499 8	4500	UJ	1754.8	560	UJ	3092.3	850	UJ	6366 5	4200	UJ	10914	960	UJ	12840	5900	UJ	12840	5200	UJ	9330 4	4400	UJ	5446.3	860	UJ
1912-24-9	Atrazine	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
100-52-7	Benzaldehyde	NL	NL	0	R	NL	0	R	NL	0	R	NL	730	J	NL	0	R	NL	0	R	NL	0	R	NL	4400	UJ	NL	89	J
56-55-3	Benzo(a)anthracene	12	616 8	4500	UJ	196 8	560	UJ	346.8	230	J	714	4200	UJ	1224	100	J	1440	5900	UJ	1440	5200	UJ	1046.4	4400	UJ	610.8	860	UJ
50-32-8	Benzo(a)pyrene	0.7	35.98	4500	UJ	11.48	560	UJ	20.23	**210**	J	41.65	4200	UJ	71 4	**100**	J	84	5900	UJ	84	5200	UJ	61.04	4400	UJ	35.63	860	UJ
205-99-2	Benzo(b)fluoranthene	NL	NL	4500	UJ	NL	560	UJ	NL	200	J	NL	4200	UJ	NL	140	J	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	90	J
191-24-2	Benzo(g,h,i)perylene	NL	NL	4500	UJ	NL	560	UJ	NL	100	J	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
207-08-9	Benzo(k)fluoranthene	NL	NL	4500	UJ	NL	560	UJ	NL	230	J	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	95	J
111-91-1	bis(2-Chloroethoxy)methane	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
111-44-4	bis(2-Chloroethyl)ether	0.03	1 542	4500	UJ	0.492	560	UJ	0.867	850	UJ	1.785	4200	UJ	3.06	960	UJ	3.6	5900	UJ	3.6	5200	UJ	2.616	4400	UJ	1.527	860	UJ
117-81-7	bis(2-Ethylhexyl)phthalate	199.5	10254.3	4500	UJ	3271 8	560	UJ	5765.55	850	UJ	11870 25	4200	UJ	20349	960	UJ	23940	5900	UJ	23940	5200	UJ	17396.4	4400	UJ	10154.55	860	UJ
85-68-7	Butylbenzylphthalate	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
105-60-2	Caprolactam	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
86-74-8	Carbazole	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
218-01-9	Chrysene	NL	NL	4500	UJ	NL	560	UJ	NL	290	J	NL	4200	UJ	NL	140	J	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
53-70-3	Dibenz(a,h)anthracene	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
132-64-9	Dibenzofuran	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
84-66-2	Diethylphthalate	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
131-11-3	Dimethylphthalate	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
84-74-2	Di-n-butylphthalate	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
117-84-0	Di-n-octylphthalate	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
206-44-0	Fluoranthene	1340	68876	4500	UJ	21976	560	UJ	38726	610	J	79730	4200	UJ	136680	220	J	160800	5900	UJ	160800	5200	UJ	116848	4400	UJ	68206	150	J
86-73-7	Fluorene	38	1953 2	4500	UJ	623 2	560	UJ	1098 2	850	UJ	2261	4200	UJ	3876	960	UJ	4560	5900	UJ	4560	5200	UJ	3313.6	4400	UJ	1934 2	860	UJ
118-74-1	Hexachlorobenzene	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
87-68-3	Hexachlorobutadiene	0 3	15 42	4500	UJ	4.92	560	UJ	8.67	850	UJ	17.65	4200	UJ	30.6	960	UJ	36	5900	UJ	36	5200	UJ	26.16	4400	UJ	15 27	860	UJ
77-47-4	Hexachlorocyclopentadiene	0.7	35 98	4500	UJ	11.48	560	UJ	20.23	850	UJ	41.65	4200	UJ	71.4	960	UJ	84	5900	UJ	84	5200	UJ	61.04	4400	UJ	35 63	860	UJ
67-72-1	Hexachloroethane	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
193-39-5	Indeno(1,2,3-cd)pyrene	NL	NL	4500	UJ	NL	560	UJ	NL	120	J	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
78-59-1	Isophorone	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
91-20-3	Naphthalene	38	1953.2	4500	UJ	623.2	560	UJ	1098.2	850	UJ	2261	4200	UJ	3876	960	UJ	4560	5900	UJ	4560	5200	UJ	3313.6	4400	UJ	1934 2	860	UJ
98-95-3	Nitrobenzene	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
621-64-7	N-Nitroso-di-n-propylamine	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
86-30-6	N-Nitrosodiphenylamine	NL	NL	4500	UJ	NL	560	UJ	NL	850	UJ	NL	4200	UJ	NL	960	UJ	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	860	UJ
87-86-5	Pentachlorophenol	40	2056	11000	UJ	656	1400	UJ	1156	2100	UJ	2380	11000	UJ	4080	2400	UJ	4800	15000	UJ	4800	13000	UJ	3488	11000	UJ	2036	2200	UJ
85-01-8	Phenanthrene	160	8224	4500	UJ	2624	560	UJ	4624	350	J	9520	4200	UJ	16320	120	J	19200	5900	UJ	19200	5200	UJ	13952	4400	UJ	8144	860	UJ
108-95-2	Phenol	0.6	30.84	4500	UJ	9 84	560	UJ	17.34	850	UJ	35 7	4200	UJ	61.2	960	UJ	72	5900	UJ	72	5200	UJ	52.32	4400	UJ	30.54	860	UJ
129-00-0	Pyrene	NL	NL	4500	UJ	NL	560	UJ	NL	460	J	NL	4200	UJ	NL	200	J	NL	5900	UJ	NL	5200	UJ	NL	4400	UJ	NL	130	J
	Pestcide/PCB Organics																												
72-54-8	4,4'-DDD	0 01	0 514	**160**	**DJ**	0 164	5.5	UJ	0.289	8 6	UJ	0 595	**150**	**DJ**	1.02	9.6	UJ	1 2	12	UJ	1.2	**96**	**J**	0.872	8 8	UJ	0.509	8.7	UJ
72-55-9	4,4'-DDE	0 01	0 514	**83**	**J**	0.164	5.5	UJ	0 289	8 6	UJ	0 595	**76**	**J**	1 02	9 6	UJ	1 2	**16**	**J**	1.2	**66**	**J**	0 872	8 8	UJ	0.509	8 7	UJ

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-005-B			SDW-006-A			SDW-006-B			SDW-007-A			SDW-007-B			SDW-008-A			SDW-008-B			SDW-009-A			SDW-009-B		
		Sample Name																											
		Sample Date	4/13/2001			4/13/2001			4/13/2001			4/16/2001			4/16/2001			4/16/2001			4/16/2001			4/17/2001			4/17/2001		
Cas Rn	Chemical Name	Depth	18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24		
TOC	Total organic carbon	gOC/kg	51.4			16.4			28.9			59.5			102			123			129			87.2			50.9		
TOC	Total organic carbon	%OC	5.14%			1.64%			2.89%			5.95%			10.20%			12.30%			12.90%			8.72%			5.09%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
50-29-3	4,4'-DDT	0.01	0.514	9.2	UJ	0.164	5.5	UJ	0.289	8.6	UJ	0.595	8.4	UJ	1.02	9.6	UJ	1.2	12	UJ	1.2	16		0.872	8.8	UJ	0.509	8.7	UJ
309-00-2	Aldrin	0.1	5.14	4.7	UJ	1.64	2.9	UJ	2.89	4.4	UJ	5.95	4.3	UJ	10.2	4.9	UJ	12	6	UJ	12	5.4	UJ	8.72	4.5	UJ	5.09	4.5	UJ
319-84-6	alpha-BHC	0.03	1.542	4.7	UJ	0.492	2.9	UJ	0.867	4.4	UJ	1.785	4.3	UJ	3.06	4.9	UJ	3.6	6	UJ	3.6	5.4	UJ	2.616	4.5	UJ	1.527	4.5	UJ
5103-71-9	alpha-Chlordane	0.001	0.0514	4.7	UJ	0.0164	2.9	UJ	0.0289	4.4	UJ	0.0595	4.3	UJ	0.102	4.9	UJ	0.12	6	UJ	0.12	5.4	UJ	0.0872	4.5	UJ	0.0509	4.5	UJ
12674-11-2	Aroclor-1016	0.0008	0.04112	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
11104-28-2	Aroclor-1221	0.0008	0.04112	190	UJ	0.01312	110	UJ	0.02312	180	UJ	0.0476	170	UJ	0.0816	190	UJ	0.096	240	UJ	0.096	210	UJ	0.06976	180	UJ	0.04072	180	UJ
11141-16-5	Aroclor-1232	0.0008	0.04112	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
53469-21-9	Aroclor-1242	0.0008	0.04112	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
12672-29-6	Aroclor-1248	0.0008	0.04112	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
11097-69-1	Aroclor-1254	0.0008	0.04112	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
11096-82-5	Aroclor-1260	0.0008	0.04112	92	UJ	0.01312	55	UJ	0.02312	86	UJ	0.0476	84	UJ	0.0816	95	UJ	0.096	120	UJ	0.096	100	UJ	0.06976	88	UJ	0.04072	87	UJ
319-85-7	beta-BHC	0.03	1.542	4.7	UJ	0.492	2.9	UJ	0.867	4.4	UJ	1.785	4.3	UJ	3.06	4.9	UJ	3.6	6	UJ	3.6	5.4	UJ	2.616	4.5	UJ	1.527	4.5	UJ
319-86-8	delta-BHC	0.03	1.542	4.7	UJ	0.492	2.9	UJ	0.867	4.4	UJ	1.785	4.3	UJ	3.06	4.9	UJ	3.6	6	UJ	3.6	5.4	UJ	2.616	4.5	UJ	1.527	4.5	UJ
60-57-1	Dieldrin	0.1	5.14	**19**	**J**	1.64	5.5	UJ	2.89	8.6	UJ	5.95	**17**	**J**	10.2	9.6	UJ	12	12	UJ	12	**12**	**J**	8.72	8.8	UJ	5.09	8.7	UJ
959-98-8	Endosulfan I	0.004	0.2056	4.7	UJ	0.0656	2.9	UJ	0.1156	4.4	UJ	0.238	4.3	UJ	0.408	4.9	UJ	0.48	6	UJ	0.48	5.4	UJ	0.3488	4.5	UJ	0.2036	4.5	UJ
33213-65-9	Endosulfan II	0.004	0.2056	9.2	UJ	0.0656	5.5	UJ	0.1156	8.6	UJ	0.238	8.4	UJ	0.408	9.6	UJ	0.48	12	UJ	0.48	10	UJ	0.3488	8.8	UJ	0.2036	8.7	UJ
1031-07-8	Endosulfan sulfate	NL	NL	9.2	UJ	NL	5.5	UJ	NL	8.6	UJ	NL	8.4	UJ	NL	9.6	UJ	NL	12	UJ	NL	10	UJ	NL	8.8	UJ	NL	8.7	UJ
72-20-8	Endrin	0.73	37.522	9.2	UJ	11.972	5.5	UJ	21.097	8.6	UJ	43.435	8.4	UJ	74.46	9.6	UJ	87.6	12	UJ	87.6	10	UJ	63.656	8.8	UJ	37.157	8.7	UJ
7421-93-4	Endrin aldehyde	NL	NL	9.2	UJ	NL	5.5	UJ	NL	8.6	UJ	NL	8.4	UJ	NL	9.6	UJ	NL	12	UJ	NL	10	UJ	NL	8.8	UJ	NL	8.7	UJ
53494-70-5	Endrin ketone	NL	NL	9.2	UJ	NL	5.5	UJ	NL	8.6	UJ	NL	8.4	UJ	NL	9.6	UJ	NL	12	UJ	NL	10	UJ	NL	8.8	UJ	NL	8.7	UJ
58-89-9	gamma-BHC (Lindane)	0.03	1.542	4.7	UJ	0.492	2.9	UJ	0.867	4.4	UJ	1.785	4.3	UJ	3.06	4.9	UJ	3.6	**6**	**J**	3.6	5.4	UJ	2.616	4.5	UJ	1.527	4.5	UJ
5103-74-2	gamma-Chlordane	0.001	0.0514	4.7	UJ	0.0164	2.9	UJ	0.0289	4.4	UJ	0.0595	4.3	UJ	0.102	4.9	UJ	0.12	6	UJ	0.12	5.4	UJ	0.0872	4.5	UJ	0.0509	4.5	UJ
76-44-8	Heptachlor	0.0008	0.04112	4.7	UJ	0.01312	2.9	UJ	0.02312	4.4	UJ	0.0476	4.3	UJ	0.0816	4.9	UJ	0.096	6	UJ	0.096	5.4	UJ	0.06976	4.5	UJ	0.04072	4.5	UJ
1024-57-3	Heptachlor epoxide	0.0008	0.04112	4.7	UJ	0.01312	2.9	UJ	0.02312	4.4	UJ	0.0476	4.3	UJ	0.0816	4.9	UJ	0.096	6	UJ	0.096	5.4	UJ	0.06976	4.5	UJ	0.04072	4.5	UJ
72-43-5	Methoxychlor	0.6	30.84	47	UJ	9.84	29	UJ	17.34	44	UJ	35.7	43	UJ	61.2	49	UJ	72	60	UJ	72	54	UJ	52.32	45	UJ	30.54	45	UJ
8001-35-2	Toxaphene	0.01	0.514	470	UJ	0.164	290	UJ	0.289	440	UJ	0.595	430	UJ	1.02	490	UJ	1.2	600	UJ	1.2	540	UJ	0.872	450	UJ	0.509	450	UJ

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-010-A			SDW-010-B			SDW-011-A			SDW-011-B			SDW-012-A			SDW-012-B			SDW-013-A			SDW-013-B			SDW-014-A			SDW-014-B		
		Sample Name																														
		Sample Date	4/17/2001			4/17/2001			4/18/2001			4/18/2001			4/18/2001			4/18/2001			4/19/2001			4/19/2001			4/19/2001			4/19/2001		
Cas Rn	Chemical Name	Depth	0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24			0 to 6			18 to 24		
TOC	Total organic carbon	gOC/kg	152			163			118			154			40.7			47.9			152			118			201			205		
TOC	Total organic carbon	%OC	15.20%			16.30%			11.80%			15.40%			4.07%			4.79%			15.20%			11.80%			20.10%			20.50%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
	Volatile Organic Compounds																															
71-55-6	1,1,1-Trichloroethane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
79-34-5	1,1,2,2-Tetrachloroethane	0.3	36	78	UJ	36	78	UJ	35.4	78	UJ	36	68	UJ	12.21	19	UJ	14.37	23	UJ	36	85	UJ	35.4	81	UJ	36	130	UJ	36	120	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
79-00-5	1,1,2-Trichloroethane	0.6	72	78	UJ	72	78	UJ	70.8	78	UJ	72	68	UJ	24.42	19	UJ	28.74	23	UJ	72	85	UJ	70.8	81	UJ	72	130	UJ	72	120	U
75-34-3	1,1-Dichloroethane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
75-35-4	1,1-Dichloroethene	0.02	2.4	78	UJ	2.4	78	UJ	2.36	78	UJ	2.4	68	UJ	0.814	19	UJ	0.958	23	UJ	2.4	85	UJ	2.36	81	UJ	2.4	130	UJ	2.4	120	U
120-82-1	1,2,4-Trichlorobenzene	91	10920	78	UJ	10920	78	UJ	10738	78	UJ	10920	68	UJ	3703.7	19	UJ	4358.9	23	UJ	10920	85	UJ	10738	81	UJ	10920	130	UJ	10920	120	U
96-12-8	1,2-Dibromo-3-chloropropane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
106-93-4	1,2-Dibromoethane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
95-50-1	1,2-Dichlorobenzene	12	1440	78	UJ	1440	78	UJ	1416	78	UJ	1440	68	UJ	488.4	19	UJ	574.8	23	UJ	1440	85	UJ	1416	81	UJ	1440	130	UJ	1440	120	U
107-06-2	1,2-Dichloroethane	0.7	84	78	UJ	84	78	UJ	82.6	78	UJ	84	68	UJ	28.49	19	UJ	33.53	23	UJ	84	85	UJ	82.6	81	UJ	84	130	UJ	84	120	U
78-87-5	1,2-Dichloropropane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
541-73-1	1,3-Dichlorobenzene	12	1440	78	UJ	1440	78	UJ	1416	78	UJ	1440	68	UJ	488.4	19	UJ	574.8	23	UJ	1440	85	UJ	1416	81	UJ	1440	130	UJ	1440	120	U
106-46-7	1,4-Dichlorobenzene	12	1440	78	UJ	1440	78	UJ	1416	78	UJ	1440	68	UJ	488.4	19	UJ	574.8	23	UJ	1440	85	UJ	1416	81	UJ	1440	130	UJ	1440	120	U
78-93-3	2-Butanone	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
591-78-6	2-Hexanone	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
108-10-1	4-Methyl-2-pentanone	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
67-64-1	Acetone	NL	NL	78	UJ	NL	78	UJ	NL	200	UJ	NL	110	UJ	NL	38	UJ	NL	79	UJ	NL	160	J	NL	170	J	NL	270	J	NL	330	J
71-43-2	Benzene	0.6	72	78	UJ	72	78	UJ	70.8	78	UJ	72	68	UJ	24.42	19	UJ	28.74	23	UJ	72	85	UJ	70.8	81	UJ	72	130	UJ	72	120	U
75-27-4	Bromodichloromethane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
75-25-2	Bromoform	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
74-83-9	Bromomethane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
75-15-0	Carbon Disulfide	NL	NL	78	UJ	NL	78	UJ	NL	33	J	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	80	J	NL	63	J
56-23-5	Carbon Tetrachloride	0.6	72	78	UJ	72	78	UJ	70.8	78	UJ	72	68	UJ	24.42	19	UJ	28.74	23	UJ	72	85	UJ	70.8	81	UJ	72	130	UJ	72	120	U
108-90-7	Chlorobenzene	3.5	420	78	UJ	420	78	UJ	413	78	UJ	420	68	UJ	142.45	19	UJ	167.65	23	UJ	420	85	UJ	413	81	UJ	420	130	UJ	420	120	U
75-00-3	Chloroethane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
67-66-3	Chloroform	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
74-87-3	Chloromethane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
156-59-2	cis-1,2-Dichloroethene	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
10061-01-5	cis-1,3-Dichloropropene	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
110-82-7	Cyclohexane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
124-48-1	Dibromochloromethane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
75-71-8	Dichlorodifluoromethane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
100-41-4	Ethylbenzene	6.4	768	78	UJ	768	78	UJ	755.2	78	UJ	768	68	UJ	260.48	19	UJ	306.56	23	UJ	768	85	UJ	755.2	81	UJ	768	130	UJ	768	120	U
98-82-8	Isopropylbenzene	12	1440	78	UJ	1440	78	UJ	1416	78	UJ	1440	68	UJ	486.4	19	UJ	574.8	23	UJ	1440	85	UJ	1416	81	UJ	1440	130	UJ	1440	120	U
79-20-9	Methyl Acetate	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
1634-04-4	Methyl Tert-Butyl Ether	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
75-09-2	Methylene Chloride	NL	NL	94	UJ	NL	94	UJ	NL	150	UJ	NL	170	UJ	NL	30	UJ	NL	32	UJ	NL	160	UJ	NL	140	UJ	NL	260	J	NL	220	J
108-87-2	Metylcyclohexane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
100-42-5	Styrene	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
127-18-4	Tetrachloroethene	0.8	96	78	UJ	96	78	UJ	94.4	4	J	96	25	J	32.56	19	UJ	38.32	23	UJ	96	85	UJ	94.4	81	UJ	96	130	UJ	96	120	U
108-88-3	Toluene	45	5400	78	UJ	5400	78	UJ	5310	2	J	5400	16	J	1831.5	19	UJ	2155.5	23	UJ	5400	85	UJ	5310	81	UJ	5400	3	UJ	5400	120	U
156-60-5	trans-1,2-Dichloroethene	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
10061-02-6	trans-1,3-Dichloropropene	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
79-01-6	Trichloroethene	2	240	78	UJ	240	78	UJ	236	78	UJ	240	18	J	81.4	19	UJ	95.8	23	UJ	240	85	UJ	236	81	UJ	240	130	UJ	240	120	U
75-69-4	Trichlorofluoromethane	NL	NL	78	UJ	NL	78	UJ	NL	78	UJ	NL	68	UJ	NL	19	UJ	NL	23	UJ	NL	85	UJ	NL	81	UJ	NL	130	UJ	NL	120	U
75-01-4	Vinyl Chloride	0.07	8.4	78	UJ	8.4	78	UJ	8.26	78	UJ	8.4	68	UJ	2.849	19	UJ	3.353	23	UJ	8.4	85	UJ	8.26	81	UJ	8.4	130	UJ	8.4	120	U
1330-20-7	Xylenes (total)	27	3240	78	UJ	3240	78	UJ	3186	78	UJ	3240	68	UJ	1098.9	19	UJ	1293.3	23	UJ	3240	85	UJ	3186	81	UJ	3240	130	UJ	3240	120	U
	Semi-Volatile Organics																															
92-52-4	1,1'-Biphenyl	NL	NL	7100	UJ	NL	1600	UJ	NL	1600	UJ	NL	1600	UJ	NL	5000	UJ	NL	3100	UJ	NL	17000	UJ	NL	16000	UJ	NL	11000	UJ	NL	13000	U
108-60-1	2,2'-oxybis(1-Chloropropane)	NL	NL	7100	UJ	NL	1600	UJ	NL	1600	UJ	NL	1600	UJ	NL	5000	UJ	NL	3100	UJ	NL	17000	UJ	NL	16000	UJ	NL	11000	UJ	NL	13000	U
95-95-4	2,4,5-Trichlorophenol	NL	NL	18000	UJ	NL	4100	UJ	NL	4100	UJ	NL	3900	UJ	NL	13000	UJ	NL	7900	UJ	NL	43000	UJ	NL	41000	UJ	NL	27000	UJ	NL	32000	U
88-06-2	2,4,6-Trichlorophenol	NL	NL	7100	UJ	NL	1600	UJ	NL	1600	UJ	NL	1600	UJ	NL	5000	UJ	NL	3100	UJ	NL	17000	UJ	NL	16000	UJ	NL	11000	UJ	NL	13000	U
120-83-2	2,4-Dichlorophenol	NL	NL	7100	UJ	NL	1600	UJ	NL	1600	UJ	NL	1600	UJ	NL	5000	UJ	NL	3100	UJ	NL	17000	UJ	NL	16000	UJ	NL	11000	UJ	NL	13000	U
105-67-9	2,4-Dimethylphenol	NL	NL	7100	UJ	NL	1600	UJ	NL	1600	UJ	NL	1600	UJ	NL	5000	UJ	NL	3100	UJ	NL	17000	UJ	NL	16000	UJ	NL	11000	UJ	NL	13000	U
51-28-5	2,4-Dinitrophenol	NL	NL	18000	UJ	NL	4100	UJ	NL	4100	UJ	NL	3900	UJ	NL	13000	UJ	NL	7900	UJ	NL	43000	UJ	NL	41000	UJ	NL	27000	UJ	NL	32000	U
121-14-2	2,4-Dinitrotoluene	NL	NL	7100	UJ	NL	1600	UJ	NL	1600	UJ	NL	1600	UJ	NL	5000	UJ	NL	3100	UJ	NL	17000	UJ	NL	16000	UJ	NL	11000	UJ	NL	13000	U
606-20-2	2,6-Dinitrotoluene	NL	NL	7100	UJ	NL	1600	UJ	NL	1600	UJ	NL	1600	UJ	NL	5000	UJ	NL	3100	UJ	NL	17000	UJ	NL	16000	UJ	NL	11000	UJ	NL	13000	U

TABLE 8

Sample-Specific Sediment Screening Criteria and Sediment Data

Smithtown Groundwater Contamination Site

Smithtown, New York

		Sample Code	SDW-010-A		SDW-010-B		SDW-011-A		SDW-011-B		SDW-012-A	
		Sample Name										
		Sample Date	4/17/2001		4/17/2001		4/18/2001		4/18/2001		4/18/2001	
Cas Rn	Chemical Name	Depth	0 to 6		18 to 24		0 to 6		18 to 24		0 to 6	
TOC	Total organic carbon	gOC/kg	152		163		118		154		40.7	
TOC	Total organic carbon	%OC	15.20%		16.30%		11.80%		15.40%		4.07%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
91-58-7	2-Chloronaphthalene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
95-57-8	2-Chlorophenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
91-57-6	2-Methylnaphthalene	30	3600	7100 UJ	3600	1600 UJ	3540	1600 UJ	3600	1600 UJ	1221	5000 UJ
95-48-7	2-Methylphenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
88-74-4	2-Nitroaniline	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ
88-75-5	2-Nitrophenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
91-94-1	3,3'-Dichlorobenzidine	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
99-09-2	3-Nitroaniline	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ
534-52-1	4,6-Dinitro-2-methylphenol	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ
101-55-3	4-Bromophenyl-phenylether	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
59-50-7	4-Chloro-3-methylphenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
106-47-8	4-Chloroaniline	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
7005-72-3	4-Chlorophenyl-phenylether	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
106-44-5	4-Methylphenol	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
100-01-6	4-Nitroaniline	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ
100-02-7	4-Nitrophenol	NL	NL	18000 UJ	NL	4100 UJ	NL	4100 UJ	NL	3900 UJ	NL	13000 UJ
83-32-9	Acenaphthene	240	28800	7100 UJ	28800	1600 UJ	28320	1600 UJ	28800	1600 UJ	9768	5000 UJ
208-96-8	Acenaphthylene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
98-86-2	Acetophenone	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
120-12-7	Anthracene	107	12840	7100 UJ	12840	1600 UJ	12626	1600 UJ	12840	220 J	4354.9	5000 UJ
1912-24-9	Atrazine	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
100-52-7	Benzaldehyde	NL	NL	7100 UJ	NL	960 J	NL	380 J	NL	250 J	NL	5000 UJ
56-55-3	Benzo(a)anthracene	12	1440	7100 UJ	1440	1600 UJ	1416	220 J	1440	380 J	488.4	5000 UJ
50-32-8	Benzo(a)pyrene	0.7	84	7100 UJ	84	**170 J**	82.6	**180 J**	84	**240 J**	28.49	5000 UJ
205-99-2	Benzo(b)fluoranthene	NL	NL	7100 UJ	NL	280 J	NL	220 J	NL	390 J	NL	5000 UJ
191-24-2	Benzo(g,h,i)perylene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
207-08-9	Benzo(k)fluoranthene	NL	NL	7100 UJ	NL	190 J	NL	310 J	NL	380 J	NL	5000 UJ
111-91-1	bis(2-Chloroethoxy)methane	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
111-44-4	bis(2-Chloroethyl)ether	0.03	3.6	7100 UJ	3.6	1600 UJ	3.54	1600 UJ	3.6	1600 UJ	1.221	5000 UJ
117-81-7	bis(2-Ethylhexyl)phthalate	199.5	23940	7100 UJ	23940	1600 UJ	23541	1600 UJ	23940	1600 UJ	8119.65	5000 UJ
85-68-7	Butylbenzylphthalate	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
105-60-2	Caprolactam	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
86-74-8	Carbazole	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
218-01-9	Chrysene	NL	NL	7100 UJ	NL	200 J	NL	290 J	NL	390 J	NL	5000 UJ
53-70-3	Dibenz(a,h)anthracene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
132-64-9	Dibenzofuran	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
84-66-2	Diethylphthalate	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
131-11-3	Dimethylphthalate	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
84-74-2	Di-n-butylphthalate	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
117-84-0	Di-n-octylphthalate	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
206-44-0	Fluoranthene	1340	160800	7100 UJ	160800	330 J	158120	600 J	160800	1800 J	54538	5000 UJ
86-73-7	Fluorene	38	4560	7100 UJ	4560	1600 UJ	4484	1600 UJ	4560	1600 UJ	1546.6	5000 UJ
118-74-1	Hexachlorobenzene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
87-68-3	Hexachlorobutadiene	0.3	36	7100 UJ	36	1600 UJ	35.4	1600 UJ	36	1600 UJ	12.21	5000 UJ
77-47-4	Hexachlorocyclopentadiene	0.7	84	7100 UJ	84	1600 UJ	82.6	1600 UJ	84	1600 UJ	28.49	5000 UJ
67-72-1	Hexachloroethane	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
193-39-5	Indeno(1,2,3-cd)pyrene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
78-59-1	Isophorone	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
91-20-3	Naphthalene	38	4560	7100 UJ	4560	1600 UJ	4484	1600 UJ	4560	1600 UJ	1546.6	5000 UJ
98-95-3	Nitrobenzene	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
621-64-7	N-Nitroso-di-n-propylamine	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
86-30-6	N-Nitrosodiphenylamine	NL	NL	7100 UJ	NL	1600 UJ	NL	1600 UJ	NL	1600 UJ	NL	5000 UJ
87-86-5	Pentachlorophenol	40	4800	18000 UJ	4800	4100 UJ	4720	4100 UJ	4800	3900 UJ	1628	13000 UJ
85-01-8	Phenanthrene	160	19200	7100 UJ	19200	1600 UJ	18880	1600 UJ	19200	1600 UJ	6512	5000 UJ
108-95-2	Phenol	0.6	72	7100 UJ	72	1600 UJ	70.8	1600 UJ	72	1600 UJ	24.42	5000 UJ
129-00-0	Pyrene	NL	NL	7100 UJ	NL	290 J	NL	530 J	NL	1400 J	NL	5000 UJ
	Pestcide/PCB Organics											
72-54-8	4,4'-DDD	0.01	1.2	14 UJ	1.2	16 UJ	1.18	16 UJ	1.2	**92 J**	0.407	**18 J**
72-55-9	4,4'-DDE	0.01	1.2	**17 J**	1.2	**23 J**	1.18	16 UJ	1.2	**120 J**	0.407	**13 J**

		SDW-012-B		SDW-013-A		SDW-013-B		SDW-014-A		SDW-014-B	
	Sample Date	4/18/2001		4/19/2001		4/19/2001		4/19/2001		4/19/2001	
Cas Rn	Chemical Name / Depth	18 to 24		0 to 6		18 to 24		0 to 6		18 to 24	
TOC	Total organic carbon (gOC/kg)	47.9		152		118		201		205	
TOC	Total organic carbon (%OC)	4.79%		15.20%		11.80%		20.10%		20.50%	
		Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
91-58-7	2-Chloronaphthalene	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
95-57-8	2-Chlorophenol	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
91-57-6	2-Methylnaphthalene	1437	3100 UJ	3600	17000 UJ	3540	16000 UJ	3600	11000 UJ	3600	13000 U
95-48-7	2-Methylphenol	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
88-74-4	2-Nitroaniline	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 U
88-75-5	2-Nitrophenol	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
91-94-1	3,3'-Dichlorobenzidine	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
99-09-2	3-Nitroaniline	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 U
534-52-1	4,6-Dinitro-2-methylphenol	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 U
101-55-3	4-Bromophenyl-phenylether	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
59-50-7	4-Chloro-3-methylphenol	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
106-47-8	4-Chloroaniline	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
7005-72-3	4-Chlorophenyl-phenylether	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
106-44-5	4-Methylphenol	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
100-01-6	4-Nitroaniline	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 U
100-02-7	4-Nitrophenol	NL	7900 UJ	NL	43000 UJ	NL	41000 UJ	NL	27000 UJ	NL	32000 U
83-32-9	Acenaphthene	11496	3100 UJ	28800	17000 UJ	28320	16000 UJ	28800	11000 UJ	28800	13000 U
208-96-8	Acenaphthylene	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
98-86-2	Acetophenone	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
120-12-7	Anthracene	5125.3	3100 UJ	12840	17000 UJ	12626	16000 UJ	12840	11000 UJ	12840	13000 U
1912-24-9	Atrazine	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
100-52-7	Benzaldehyde	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
56-55-3	Benzo(a)anthracene	574.8	3100 UJ	1440	17000 UJ	1416	16000 UJ	1440	11000 UJ	1440	13000 U
50-32-8	Benzo(a)pyrene	33.53	3100 UJ	84	17000 UJ	82.6	16000 UJ	84	11000 UJ	84	13000 U
205-99-2	Benzo(b)fluoranthene	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
191-24-2	Benzo(g,h,i)perylene	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
207-08-9	Benzo(k)fluoranthene	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
111-91-1	bis(2-Chloroethoxy)methane	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
111-44-4	bis(2-Chloroethyl)ether	1.437	3100 UJ	3.6	17000 UJ	3.54	16000 UJ	3.6	11000 UJ	3.6	13000 U
117-81-7	bis(2-Ethylhexyl)phthalate	9556.05	3100 UJ	23940	17000 UJ	23541	16000 UJ	23940	11000 UJ	23940	13000 U
85-68-7	Butylbenzylphthalate	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
105-60-2	Caprolactam	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
86-74-8	Carbazole	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
218-01-9	Chrysene	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
53-70-3	Dibenz(a,h)anthracene	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
132-64-9	Dibenzofuran	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
84-66-2	Diethylphthalate	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
131-11-3	Dimethylphthalate	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
84-74-2	Di-n-butylphthalate	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
117-84-0	Di-n-octylphthalate	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
206-44-0	Fluoranthene	64166	3100 UJ	160800	17000 UJ	158120	16000 UJ	160800	11000 UJ	160800	13000 U
86-73-7	Fluorene	1820.2	3100 UJ	4560	17000 UJ	4484	16000 UJ	4560	11000 UJ	4560	13000 U
118-74-1	Hexachlorobenzene	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
87-68-3	Hexachlorobutadiene	14.37	3100 UJ	36	17000 UJ	35.4	16000 UJ	36	11000 UJ	36	13000 U
77-47-4	Hexachlorocyclopentadiene	33.53	3100 UJ	84	17000 UJ	82.6	16000 UJ	84	11000 UJ	84	13000 U
67-72-1	Hexachloroethane	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
193-39-5	Indeno(1,2,3-cd)pyrene	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
78-59-1	Isophorone	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
91-20-3	Naphthalene	1820.2	3100 UJ	4560	17000 UJ	4484	16000 UJ	4560	11000 UJ	4560	13000 U
98-95-3	Nitrobenzene	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
621-64-7	N-Nitroso-di-n-propylamine	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
86-30-6	N-Nitrosodiphenylamine	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
87-86-5	Pentachlorophenol	1916	7900 UJ	4800	43000 UJ	4720	41000 UJ	4800	27000 UJ	4800	32000 U
85-01-8	Phenanthrene	7664	3100 UJ	19200	17000 UJ	18880	16000 UJ	19200	11000 UJ	19200	13000 U
108-95-2	Phenol	28.74	3100 UJ	72	17000 UJ	70.8	16000 UJ	72	11000 UJ	72	13000 U
129-00-0	Pyrene	NL	3100 UJ	NL	17000 UJ	NL	16000 UJ	NL	11000 UJ	NL	13000 U
	Pestcide/PCB Organics										
72-54-8	4,4'-DDD	0.479	6.3 UJ	1.2	**25 J**	1.18	**24 J**	1.2	22 UJ	1.2	25 U
72-55-9	4,4'-DDE	0.479	6.3 UJ	1.2	17 UJ	1.18	**18**	1.2	22 UJ	1.2	25 U

TABLE 8

Sample-Specific Sediment Screening Criteria and Sediment Data

Smithtown Groundwater Contamination Site

Smithtown, New York

		Sample Code	SDW-010-A		SDW-010-B		SDW-011-A		SDW-011-B		SDW-012-A		SDW-012-B		SDW-013-A		SDW-013-B		SDW-014-A		SDW-014-B	
		Sample Name																				
		Sample Date	4/17/2001		4/17/2001		4/18/2001		4/18/2001		4/18/2001		4/18/2001		4/19/2001		4/19/2001		4/19/2001		4/19/2001	
Cas Rn	Chemical Name	Depth	0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24		0 to 6		18 to 24	
TOC	Total organic carbon	gOC/kg	152		163		118		154		40.7		47.9		152		118		201		205	
TOC	Total organic carbon	%OC	15.20%		16.30%		11.60%		15.40%		4.07%		4.79%		15.20%		11.80%		20.10%		20.50%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
50-29-3	4,4'-DDT	0.01	1.2	14 UJ	1.2	16 UJ	1.18	16 UJ	1.2	16 UJ	0.407	5 UJ	0.479	6.3 UJ	1.2	17 UJ	1.18	17 UJ	1.2	22 UJ	1.2	25 U
309-00-2	Aldrin	0.1	12	7.3 UJ	12	8.4 UJ	11.8	8.4 UJ	12	8 UJ	4.07	2.6 UJ	4.79	3.3 UJ	12	8.8 UJ	11.8	8.5 UJ	12	11 UJ	12	13 U
319-84-6	alpha-BHC	0.03	3.6	7.3 UJ	3.6	8.4 UJ	3.54	8.4 UJ	3.6	8 UJ	1.221	2.6 UJ	1.437	3.3 UJ	3.6	8.8 UJ	3.54	8.5 UJ	3.6	11 UJ	3.6	13 U
5103-71-9	alpha-Chlordane	0.001	0.12	7.3 UJ	0.12	8.4 UJ	0.118	8.4 UJ	0.12	8 UJ	0.0407	2.6 UJ	0.0479	3.3 UJ	0.12	8.8 UJ	0.118	8.5 UJ	0.12	11 UJ	0.12	13 U
12674-11-2	Aroclor-1016	0.0008	0.096	140 UJ	0.096	160 UJ	0.0944	160 UJ	0.096	160 UJ	0.03256	50 UJ	0.03832	63 UJ	0.096	170 UJ	0.0944	170 UJ	0.096	220 UJ	0.096	250 U
11104-28-2	Aroclor-1221	0.0008	0.096	290 UJ	0.096	330 UJ	0.0944	330 UJ	0.096	320 UJ	0.03256	100 UJ	0.03832	130 UJ	0.096	350 UJ	0.0944	340 UJ	0.096	440 UJ	0.096	510 U
11141-16-5	Aroclor-1232	0.0008	0.096	140 UJ	0.096	160 UJ	0.0944	160 UJ	0.096	160 UJ	0.03256	50 UJ	0.03832	63 UJ	0.096	170 UJ	0.0944	170 UJ	0.096	220 UJ	0.096	250 U
53469-21-9	Aroclor-1242	0.0008	0.096	140 UJ	0.096	160 UJ	0.0944	160 UJ	0.096	160 UJ	0.03256	50 UJ	0.03832	63 UJ	0.096	170 UJ	0.0944	170 UJ	0.096	220 UJ	0.096	250 U
12672-29-6	Aroclor-1248	0.0008	0.096	140 UJ	0.096	160 UJ	0.0944	160 UJ	0.096	160 UJ	0.03256	50 UJ	0.03832	63 UJ	0.096	170 UJ	0.0944	170 UJ	0.096	220 UJ	0.096	250 U
11097-69-1	Aroclor-1254	0.0008	0.096	140 UJ	0.096	160 UJ	0.0944	160 UJ	0.096	160 UJ	0.03256	50 UJ	0.03832	63 UJ	0.096	170 UJ	0.0944	170 UJ	0.096	220 UJ	0.096	250 U
11096-82-5	Aroclor-1260	0.0008	0.096	140 UJ	0.096	160 UJ	0.0944	160 UJ	0.096	160 UJ	0.03256	50 UJ	0.03832	63 UJ	0.096	170 UJ	0.0944	170 UJ	0.096	220 UJ	0.096	250 U
319-85-7	beta-BHC	0.03	3.6	7.3 UJ	3.6	8.4 UJ	3.54	8.4 UJ	3.6	8 UJ	1.221	2.6 UJ	1.437	3.3 UJ	3.6	8.8 UJ	3.54	8.5 UJ	3.6	11 UJ	3.6	13 U
319-86-8	delta-BHC	0.03	3.6	7.3 UJ	3.6	8.4 UJ	3.54	8.4 UJ	3.6	8 UJ	1.221	2.6 UJ	1.437	3.3 UJ	3.6	8.8 UJ	3.54	8.5 UJ	3.6	11 UJ	3.6	13 U
60-57-1	Dieldrin	0.1	12	14 UJ	12	16 UJ	11.8	16 UJ	12	16 UJ	4.07	5 UJ	4.79	6.3 UJ	12	17 UJ	11.8	17 UJ	12	22 UJ	12	25 U
959-98-8	Endosulfan I	0.004	0.48	7.3 UJ	0.48	8.4 UJ	0.472	8.4 UJ	0.48	8 UJ	0.1628	2.6 UJ	0.1916	3.3 UJ	0.48	8.8 UJ	0.472	8.5 UJ	0.48	11 UJ	0.48	13 U
33213-65-9	Endosulfan II	0.004	0.48	14 UJ	0.48	16 UJ	0.472	16 UJ	0.48	16 UJ	0.1628	5 UJ	0.1916	6.3 UJ	0.48	17 UJ	0.472	17 UJ	0.48	22 UJ	0.48	25 U
1031-07-8	Endosulfan sulfate	NL	NL	14 UJ	NL	16 UJ	NL	16 UJ	NL	16 UJ	NL	5 UJ	NL	6.3 UJ	NL	17 UJ	NL	17 UJ	NL	22 UJ	NL	25 U
72-20-8	Endrin	0.73	87.6	14 UJ	87.6	16 UJ	86.14	16 UJ	87.6	16 UJ	29.711	5 UJ	34.967	6.3 UJ	87.6	17 UJ	86.14	17 UJ	87.6	22 UJ	87.6	25 U
7421-93-4	Endrin aldehyde	NL	NL	14 UJ	NL	16 UJ	NL	16 UJ	NL	16 UJ	NL	5 UJ	NL	6.3 UJ	NL	17 UJ	NL	17 UJ	NL	22 UJ	NL	25 U
53494-70-5	Endrin ketone	NL	NL	14 UJ	NL	16 UJ	NL	16 UJ	NL	16 UJ	NL	5 UJ	NL	6.3 UJ	NL	17 UJ	NL	17 UJ	NL	22 UJ	NL	25 U
58-89-9	gamma-BHC (Lindane)	0.03	3.6	7.3 UJ	3.6	8.4 UJ	3.54	8.4 UJ	3.6	8 UJ	1.221	2.6 UJ	1.437	3.3 UJ	3.6	8.8 UJ	3.54	8.5 UJ	3.6	11 UJ	3.6	13 U
5103-74-2	gamma-Chlordane	0.001	0.12	7.3 UJ	0.12	8.4 UJ	0.118	8.4 UJ	0.12	8 UJ	0.0407	2.6 UJ	0.0479	3.3 UJ	0.12	8.8 UJ	0.118	8.5 UJ	0.12	11 UJ	0.12	13 U
76-44-8	Heptachlor	0.0008	0.096	7.3 UJ	0.096	8.4 UJ	0.0944	8.4 UJ	0.096	8 UJ	0.03256	2.6 UJ	0.03832	3.3 UJ	0.096	8.8 UJ	0.0944	8.5 UJ	0.096	11 UJ	0.096	13 U
1024-57-3	Heptachlor epoxide	0.0008	0.096	7.3 UJ	0.096	8.4 UJ	0.0944	8.4 UJ	0.096	8 UJ	0.03256	2.6 UJ	0.03832	3.3 UJ	0.096	8.8 UJ	0.0944	8.5 UJ	0.096	11 UJ	0.096	13 U
72-43-5	Methoxychlor	0.6	72	73 UJ	72	84 UJ	70.8	84 UJ	72	80 UJ	24.42	26 UJ	28.74	33 UJ	72	88 UJ	70.8	85 UJ	72	110 UJ	72	130 U
8001-35-2	Toxaphene	0.01	1.2	730 UJ	1.2	840 UJ	1.18	840 UJ	1.2	800 UJ	0.407	260 UJ	0.479	330 UJ	1.2	880 UJ	1.18	850 UJ	1.2	1100 UJ	1.2	1300 U

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-015-A		SDW-015-B		SDW-003-B-DUP		SDW-011-B-DUP		SSS-001		SSS-002		SSS-003		SSS-004		SSS-005		SSS-006	
		Sample Name					SDW-020-B		SDW-021-B													
		Sample Date	4/19/2001		4/19/2001		4/12/2001		4/18/2001		4/10/2001		4/9/2001		4/9/2001		4/9/2001		4/11/2001		4/11/2001	
Cas Rn	Chemical Name	Depth	0 to 6		18 to 24		18 to 24		18 to 24													
TOC	Total organic carbon	gOC/kg	140		168		54		110		0.544		0.283		0.34		1.25		61.1		1.34	
TOC	Total organic carbon	%OC	14.00%		16.80%		5.40%		11.00%		0.05%		0.03%		0.03%		0.13%		6.11%		0.13%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
	Volatile Organic Compounds																					
71-55-6	1,1,1-Trichloroethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 UJ	NL	10 UJ	NL	11 UJ	NL	12 UJ	NL	23 UJ	NL	11 U
79-34-5	1,1,2,2-Tetrachloroethane	0.3	36	70 UJ	36	90 UJ	16.2	50 UJ	33	75 UJ	0.1632	12 U	0.0849	10 U	0.102	11 U	0.375	12 U	18.33	23 UJ	0.402	11 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
79-00-5	1,1,2-Trichloroethane	0.6	72	70 UJ	72	90 UJ	32.4	50 UJ	66	75 UJ	0.3264	12 UJ	0.1698	10 UJ	0.204	11 UJ	0.75	12 UJ	36.66	23 UJ	0.804	11 U
75-34-3	1,1-Dichloroethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
75-35-4	1,1-Dichloroethene	0.02	2.4	70 UJ	2.4	90 UJ	1.08	50 UJ	2.2	75 UJ	0.01088	12 U	0.00566	10 U	0.0068	11 U	0.025	12 U	1.222	23 UJ	0.0268	11 U
120-82-1	1,2,4-Trichlorobenzene	91	10920	70 UJ	10920	90 UJ	4914	50 UJ	10010	75 UJ	49.504	12 U	25.753	10 U	30.94	11 U	113.75	12 U	5560.1	23 UJ	121.94	11 U
96-12-8	1,2-Dibromo-3-chloropropane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 UJ	NL	10 UJ	NL	11 UJ	NL	12 UJ	NL	23 UJ	NL	11 U
106-93-4	1,2-Dibromoethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	35 U	NL	21 U	NL	21 U	NL	38 U	NL	23 UJ	NL	35 U
95-50-1	1,2-Dichlorobenzene	12	1440	70 UJ	1440	90 UJ	648	50 UJ	1320	75 UJ	6.528	**11 J**	3.396	10 U	4.08	11 U	15	12 U	733.2	23 UJ	16.08	11 U
107-06-2	1,2-Dichloroethane	0.7	84	70 UJ	84	90 UJ	37.8	50 UJ	77	75 UJ	0.3808	12 U	0.1981	10 U	0.238	11 U	0.875	12 U	42.77	23 UJ	0.938	11 U
78-87-5	1,2-Dichloropropane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	20 UJ	NL	19 UJ	NL	21 UJ	NL	22 UJ	NL	65 UJ	NL	52 U
541-73-1	1,3-Dichlorobenzene	12	1440	70 UJ	1440	90 UJ	648	50 UJ	1320	75 UJ	6.528	12 U	3.396	10 U	4.08	11 U	15	12 U	733.2	23 UJ	16.08	11 U
106-46-7	1,4-Dichlorobenzene	12	1440	70 UJ	1440	90 UJ	648	50 UJ	1320	75 UJ	6.528	12 U	3.396	10 U	4.08	11 U	15	12 U	733.2	23 UJ	16.08	11 U
78-93-3	2-Butanone	NL	NL	70 UJ	NL	90 UJ	NL	170 J	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
591-78-6	2-Hexanone	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
108-10-1	4-Methyl-2-pentanone	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
67-64-1	Acetone	NL	NL	140 J	NL	110 J	NL	100 UJ	NL	150 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
71-43-2	Benzene	0.6	72	70 UJ	72	90 UJ	32.4	50 UJ	66	75 UJ	0.3264	12 U	0.1698	10 U	0.204	11 U	0.75	12 U	36.66	23 UJ	0.804	11 U
75-27-4	Bromodichloromethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 UJ	NL	10 UJ	NL	11 UJ	NL	12 UJ	NL	23 UJ	NL	11 U
75-25-2	Bromoform	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 UJ	NL	10 UJ	NL	11 UJ	NL	12 UJ	NL	23 UJ	NL	11 U
74-83-9	Bromomethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
75-15-0	Carbon Disulfide	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
56-23-5	Carbon Tetrachloride	0.6	72	70 UJ	72	90 UJ	32.4	50 UJ	66	75 UJ	0.3264	12 U	0.1698	10 U	0.204	11 U	0.75	12 U	36.66	23 UJ	0.804	11 U
108-90-7	Chlorobenzene	3.5	420	70 UJ	420	90 UJ	189	50 UJ	385	75 UJ	1.904	12 UJ	0.9905	10 UJ	1.19	11 UJ	4.375	12 UJ	213.85	23 UJ	4.69	11 U
75-00-3	Chloroethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
67-66-3	Chloroform	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
74-87-3	Chloromethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
156-59-2	cis-1,2-Dichloroethene	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11 U
10061-01-5	cis-1,3-Dichloropropene	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
110-82-7	Cyclohexane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
124-48-1	Dibromochloromethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
75-71-8	Dichlorodifluoromethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
100-41-4	Ethylbenzene	6.4	768	70 UJ	768	90 UJ	345.6	50 UJ	704	75 UJ	3.4816	12 U	1.8112	10 U	2.176	11 U	8	12 U	391.04	23 UJ	8.576	11
98-82-8	Isopropylbenzene	12	1440	70 UJ	1440	90 UJ	648	50 UJ	1320	75 UJ	6.528	12 U	3.396	10 U	4.08	11 U	15	12 U	733.2	23 UJ	16.08	11
79-20-9	Methyl Acetate	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
1634-04-4	Methyl Tert-Butyl Ether	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
75-09-2	Methylene Chloride	NL	NL	130 UJ	NL	190 J	NL	50 UJ	NL	160 J	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
108-87-2	Metylcyclohexane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
100-42-5	Styrene	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
127-18-4	Tetrachloroethene	0.8	96	70 UJ	96	90 UJ	43.2	50 UJ	88	26 J	0.4352	12 U	0.2264	10 U	0.272	11 U	1	12 U	48.88	23 UJ	1.072	11
108-88-3	Toluene	45	5400	2 J	5400	90 UJ	2430	50 UJ	4950	5 J	24.48	12 U	12.735	10 U	15.3	11 U	56.25	12 U	2749.5	23 UJ	60.3	11
156-60-5	trans-1,2-Dichloroethene	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
10061-02-6	trans-1,3-Dichloropropene	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
79-01-6	Trichloroethene	2	240	70 UJ	240	90 UJ	108	50 UJ	220	20 J	1.088	12 U	0.566	10 U	0.68	11 U	2.5	12 U	122.2	23 UJ	2.68	11
75-69-4	Trichlorofluoromethane	NL	NL	70 UJ	NL	90 UJ	NL	50 UJ	NL	75 UJ	NL	12 U	NL	10 U	NL	11 U	NL	12 U	NL	23 UJ	NL	11
75-01-4	Vinyl Chloride	0.07	8.4	70 UJ	8.4	90 UJ	3.78	50 UJ	7.7	75 UJ	0.03808	12 U	0.01981	10 U	0.0238	11 U	0.0875	12 U	4.277	23 UJ	0.0938	11
1330-20-7	*Xylenes (total)*	27	3240	70 UJ	3240	90 UJ	1458	50 UJ	2970	75 UJ	14.688	12 U	7.641	10 U	9.18	11 U	33.75	12 U	1649.7	23 UJ	36.18	11
	Semi-Volatile Organics																					
92-52-4	1,1'-Biphenyl	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	120 J	NL	6600 UJ	NL	470
108-60-1	*2,2'-oxybis(1-Chloropropane)*	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
95-95-4	2,4,5-Trichlorophenol	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
88-06-2	2,4,6-Trichlorophenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
120-83-2	2,4-Dichlorophenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
105-67-9	2,4-Dimethylphenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
51-28-5	2,4-Dinitrophenol	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200
121-14-2	2,4-Dinitrotoluene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200
606-20-2	2,6-Dinitrotoluene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

Cas Rn	Chemical Name	Sample Code	SDW-015-A		SDW-015-B		SDW-003-B-DUP		SDW-011-B-DUP		SSS-001		SSS-002		SSS-003		SSS-004		SSS-005		SSS-006	
		Sample Name					SDW-020-B		SDW-021-B													
		Sample Date	4/19/2001		4/19/2001		4/12/2001		4/18/2001		4/10/2001		4/9/2001		4/9/2001		4/9/2001		4/11/2001		4/11/2001	
		Depth	0 to 6		18 to 24		18 to 24		18 to 24													
TOC	Total organic carbon	gOC/kg	140		168		54		110		0.544		0.283		0.34		1.25		61.1		1.34	
TOC	Total organic carbon	%OC	14.00%		16.80%		5.40%		11.00%		0.05%		0.03%		0.03%		0.13%		6.11%		0.13%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
91-58-7	2-Chloronaphthalene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
95-57-8	2-Chlorophenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
91-57-6	2-Methylnaphthalene	30	3600	7800 UJ	3600	9100 UJ	1620	6900 UJ	3300	1700 UJ	16.32	430 UJ	8.49	400 UJ	10.2	420 UJ	37.5	420 UJ	1833	6600 UJ	40.2	470
95-48-7	2-Methylphenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
88-74-4	2-Nitroaniline	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
88-75-5	2-Nitrophenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
91-94-1	3,3'-Dichlorobenzidine	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
99-09-2	3-Nitroaniline	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
534-52-1	4,6-Dinitro-2-methylphenol	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
101-55-3	4-Bromophenyl-phenylether	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
59-50-7	4-Chloro-3-methylphenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
106-47-8	4-Chloroaniline	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
7005-72-3	4-Chlorophenyl-phenylether	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
106-44-5	4-Methylphenol	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
100-01-6	4-Nitroaniline	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
100-02-7	4-Nitrophenol	NL	NL	20000 UJ	NL	23000 UJ	NL	17000 UJ	NL	4400 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200
83-32-9	Acenaphthene	240	28800	7800 UJ	28800	9100 UJ	12960	6900 UJ	26400	1700 UJ	130.56	430 UJ	67.92	400 UJ	81.6	420 UJ	300	420 UJ	14664	6600 UJ	321.6	470
208-96-8	Acenaphthylene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
98-86-2	Acetophenone	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
120-12-7	Anthracene	107	12840	7800 UJ	12840	9100 UJ	5778	6900 UJ	11770	1700 UJ	58.208	1100 UJ	30.281	1000 UJ	36.38	1100 UJ	133.75	1100 UJ	6537.7	16000 UJ	143.38	1200
1912-24-9	Atrazine	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
100-52-7	Benzaldehyde	NL	NL	7800 UJ	NL	9100 UJ	NL	0 R	NL	280 J	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
56-55-3	Benzo(a)anthracene	12	1440	7800 UJ	1440	9100 UJ	648	6900 UJ	1320	240 J	6.528	430 UJ	3.396	400 UJ	4.08	420 UJ	15	420 UJ	733.2	6600 UJ	16.08	470
50-32-8	Benzo(a)pyrene	0.7	84	7800 UJ	84	9100 UJ	37.8	6900 UJ	77	1700 UJ	0.3808	430 UJ	0.1981	400 UJ	0.238	420 UJ	0.875	420 UJ	42.77	6600 UJ	0.938	470
205-99-2	Benzo(b)fluoranthene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	350 J	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
191-24-2	Benzo(g,h,i)perylene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200
207-08-9	Benzo(k)fluoranthene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	48 J	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
111-91-1	bis(2-Chloroethoxy)methane	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
111-44-4	bis(2-Chloroethyl)ether	0.03	3.6	7800 UJ	3.6	9100 UJ	1.62	6900 UJ	3.3	1700 UJ	0.01632	430 UJ	0.00849	400 UJ	0.0102	420 UJ	0.0375	420 UJ	1.833	6600 UJ	0.0402	470
117-81-7	bis(2-Ethylhexyl)phthalate	199.5	23940	7800 UJ	23940	9100 UJ	10773	6900 UJ	21945	1700 UJ	108.528	430 UJ	56.4585	400 UJ	67.83	420 UJ	249.375	420 UJ	12189.45	6600 UJ	267.33	470
85-68-7	Butylbenzylphthalate	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
105-60-2	Caprolactam	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
86-74-8	Carbazole	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
218-01-9	Chrysene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	290 J	NL	69 J	NL	400 UJ	NL	420 UJ	NL	79 J	NL	6600 UJ	NL	470
53-70-3	Dibenz(a,h)anthracene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	51 J	NL	400 UJ	NL	420 UJ	NL	70 J	NL	6600 UJ	NL	470
132-64-9	Dibenzofuran	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
84-66-2	Diethylphthalate	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
131-11-3	Dimethylphthalate	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200
84-74-2	Di-n-butylphthalate	NL	NL	7600 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	53 J	NL	6600 UJ	NL	470
117-84-0	Di-n-octylphthalate	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	66 J	NL	6600 UJ	NL	470
206-44-0	Fluoranthene	1340	160800	7800 UJ	160800	9100 UJ	72360	6900 UJ	147400	990 J	728.96	430 UJ	379.22	400 UJ	455.6	420 UJ	1675	420 UJ	81874	6600 UJ	1795.6	470
86-73-7	Fluorene	38	4560	7800 UJ	4560	9100 UJ	2052	6900 UJ	4180	1700 UJ	20.672	430 UJ	10.754	400 UJ	12.92	420 UJ	47.5	420 UJ	2321.8	6600 UJ	50.92	470
118-74-1	Hexachlorobenzene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	52 J	NL	6600 UJ	NL	470
87-68-3	Hexachlorobutadiene	0.3	36	7800 UJ	36	9100 UJ	16.2	6900 UJ	33	1700 UJ	0.1632	430 UJ	0.0849	400 UJ	0.102	420 UJ	0.375	420 UJ	16.33	6600 UJ	0.402	470
77-47-4	Hexachlorocyclopentadiene	0.7	84	7800 UJ	84	9100 UJ	37.8	6900 UJ	77	1700 UJ	0.3808	430 UJ	0.1981	400 UJ	0.238	420 UJ	0.875	420 UJ	42.77	6600 UJ	0.938	470
67-72-1	Hexachloroethane	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200
193-39-5	Indeno(1,2,3-cd)pyrene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	44 J	NL	6600 UJ	NL	470
78-59-1	Isophorone	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
91-20-3	Naphthalene	38	4560	7800 UJ	4560	9100 UJ	2052	6900 UJ	4180	1700 UJ	20.672	430 UJ	10.754	400 UJ	12.92	420 UJ	47.5	420 UJ	2321.8	6600 UJ	50.92	470
98-95-3	Nitrobenzene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
621-64-7	N-Nitroso-di-n-propylamine	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	1100 UJ	NL	1000 UJ	NL	1100 UJ	NL	1100 UJ	NL	16000 UJ	NL	1200
86-30-6	N-Nitrosodiphenylamine	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	1700 UJ	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	47 J	NL	6600 UJ	NL	470
87-86-5	Pentachlorophenol	40	4800	20000 UJ	4800	23000 UJ	2160	17000 UJ	4400	4400 UJ	21.76	430 UJ	11.32	400 UJ	13.6	420 UJ	50	420 UJ	2444	6600 UJ	53.6	470
85-01-8	Phenanthrene	160	19200	7800 UJ	19200	9100 UJ	8640	6900 UJ	17600	1700 UJ	87.04	430 UJ	45.28	400 UJ	54.4	420 UJ	200	420 UJ	9776	6600 UJ	214.4	470
108-95-2	Phenol	0.6	72	7800 UJ	72	9100 UJ	32.4	6900 UJ	66	1700 UJ	0.3264	430 UJ	0.1698	400 UJ	0.204	420 UJ	0.75	420 UJ	36.66	6600 UJ	0.804	470
129-00-0	Pyrene	NL	NL	7800 UJ	NL	9100 UJ	NL	6900 UJ	NL	810 J	NL	430 UJ	NL	400 UJ	NL	420 UJ	NL	420 UJ	NL	6600 UJ	NL	470
	Pestcide/PCB Organics																					
72-54-8	4,4'-DDD	0.01	1.2	**17** J	1.2	**24** J	0.54	**300**	1.1	**29** J	0.00544	2.2 UJ	0.00283	2 UJ	0.0034	2.2 UJ	0.0125	2.2 UJ	0.611	3.4 UJ	0.0134	2.4
72-55-9	4,4'-DDE	0.01	1.2	**23** J	1.2	**24** J	0.54	**100** J	1.1	**32** J	0.00544	2.2 UJ	0.00283	2 UJ	0.0034	2.2 UJ	0.0125	2.2 UJ	0.611	3.4 UJ	0.0134	2.4

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SDW-015-A			SDW-015-B			SDW-003-B-DUP			SDW-011-B-DUP		
		Sample Name							SDW-020-B			SDW-021-B		
		Sample Date	4/19/2001			4/19/2001			4/12/2001			4/18/2001		
Cas Rn	Chemical Name	Depth	0 to 6			18 to 24			18 to 24			18 to 24		
TOC	Total organic carbon	gOC/kg	140			168			54			110		
TOC	*Total organic carbon*	%OC	14.00%			16.80%			5.40%			11.00%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
50-29-3	4,4'-DDT	0.01	1.2	16	UJ	1.2	18	UJ	0.54	14	UJ	1.1	17	UJ
309-00-2	Aldrin	0.1	12	8	UJ	12	9.3	UJ	5.4	7.1	UJ	11	9	UJ
319-84-6	alpha-BHC	0.03	3.6	8	UJ	3.6	9.3	UJ	1.62	7.1	UJ	3.3	9	UJ
5103-71-9	alpha-Chlordane	0.001	0.12	8	UJ	0.12	9.3	UJ	0.054	7.1	UJ	0.11	9	UJ
12674-11-2	Aroclor-1016	0.0008	0.096	160	UJ	0.096	180	UJ	0.0432	140	UJ	0.088	170	UJ
11104-28-2	Aroclor-1221	0.0008	0.096	320	UJ	0.096	370	UJ	0.0432	280	UJ	0.088	350	UJ
11141-16-5	Aroclor-1232	0.0008	0.096	160	UJ	0.096	180	UJ	0.0432	140	UJ	0.088	170	UJ
53469-21-9	Aroclor-1242	0.0008	0.096	160	UJ	0.096	180	UJ	0.0432	140	UJ	0.088	170	UJ
12672-29-6	Aroclor-1248	0.0008	0.096	160	UJ	0.096	180	UJ	0.0432	140	UJ	0.088	170	UJ
11097-69-1	Aroclor-1254	0.0008	0.096	160	UJ	0.096	180	UJ	0.0432	140	UJ	0.088	170	UJ
11096-82-5	Aroclor-1260	0.0008	0.096	160	UJ	0.096	180	UJ	0.0432	140	UJ	0.088	170	UJ
319-85-7	beta-BHC	0.03	3.6	8	UJ	3.6	9.3	UJ	1.62	7.1	UJ	3.3	9	UJ
319-86-8	delta-BHC	0.03	3.6	8	UJ	3.6	9.3	UJ	1.62	7.1	UJ	3.3	9	UJ
60-57-1	Dieldrin	0.1	12	16	UJ	12	18	UJ	5.4	0	R	11	17	UJ
959-98-8	Endosulfan I	0.004	0.48	8	UJ	0.48	9.3	UJ	0.216	7.1	UJ	0.44	9	UJ
33213-65-9	Endosulfan II	0.004	0.48	16	UJ	0.48	18	UJ	0.216	14	UJ	0.44	17	UJ
1031-07-8	Endosulfan sulfate	NL	NL	16	UJ	NL	18	UJ	NL	14	UJ	NL	17	UJ
72-20-8	Endrin	0.73	87.6	16	UJ	87.6	18	UJ	39.42	14	UJ	80.3	17	UJ
7421-93-4	Endrin aldehyde	NL	NL	16	UJ	NL	18	UJ	NL	14	UJ	NL	17	UJ
53494-70-5	Endrin ketone	NL	NL	16	UJ	NL	18	UJ	NL	14	UJ	NL	17	UJ
58-89-9	gamma-BHC (Lindane)	0.03	3.6	8	UJ	3.6	9.3	UJ	1.62	7.1	UJ	3.3	9	UJ
5103-74-2	gamma-Chlordane	0.001	0.12	8	UJ	0.12	9.3	UJ	0.054	7.1	UJ	0.11	9	UJ
76-44-8	Heptachlor	0.0008	0.096	8	UJ	0.096	9.3	UJ	0.0432	7.1	UJ	0.088	9	UJ
1024-57-3	Heptachlor epoxide	0.0008	0.096	8	UJ	0.096	9.3	UJ	0.0432	7.1	UJ	0.088	9	UJ
72-43-5	Methoxychlor	0.6	72	80	UJ	72	93	UJ	32.4	71	UJ	66	89	UJ
8001-35-2	Toxaphene	0.01	1.2	800	UJ	1.2	930	UJ	0.54	710	UJ	1.1	890	UJ

		SSS-001			SSS-002			SSS-003			SSS-004			SSS-005			SSS-006		
		4/10/2001			4/9/2001			4/9/2001			4/9/2001			4/11/2001			4/11/2001		
TOC	Total organic carbon	0.544			0.283			0.34			1.25			61.1			1.34		
TOC	*Total organic carbon*	0.05%			0.03%			0.03%			0.13%			6.11%			0.13%		
Cas Rn	Chemical Name	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
50-29-3	4,4'-DDT	0.00544	2.2	UJ	0.00283	2	UJ	0.0034	2.2	UJ	0.0125	2.2	UJ	0.611	3.4	UJ	0.0134	2.4	U
309-00-2	Aldrin	0.0544	2.2	UJ	0.0283	2	UJ	0.034	2.2	UJ	0.125	2.2	UJ	6.11	3.4	UJ	0.134	2.4	U
319-84-6	alpha-BHC	0.01632	2.2	UJ	0.00849	2	UJ	0.0102	2.2	UJ	0.0375	2.2	UJ	1.833	3.4	UJ	0.0402	2.4	U
5103-71-9	alpha-Chlordane	0.000544	2.2	UJ	0.000283	2	UJ	0.00034	2.2	UJ	0.00125	2.2	UJ	0.0611	3.4	UJ	0.00134	2.4	U
12674-11-2	Aroclor-1016	0.0004352	2.2	UJ	0.0002264	2	UJ	0.000272	2.2	UJ	0.001	2.2	UJ	0.04888	3.4	UJ	0.001072	2.4	U
11104-28-2	Aroclor-1221	0.0004352	2.2	UJ	0.0002264	2	UJ	0.000272	2.2	UJ	0.001	2.2	UJ	0.04888	3.4	UJ	0.001072	2.4	U
11141-16-5	Aroclor-1232	0.0004352	4.3	UJ	0.0002264	4	UJ	0.000272	4.2	UJ	0.001	4.2	UJ	0.04888	6.6	UJ	0.001072	4.7	U
53469-21-9	Aroclor-1242	0.0004352	4.3	UJ	0.0002264	4	UJ	0.000272	4.2	UJ	0.001	4.2	UJ	0.04888	**7.3**	J	0.001072	4.7	U
12672-29-6	Aroclor-1248	0.0004352	4.3	UJ	0.0002264	4	UJ	0.000272	4.2	UJ	0.001	4.2	UJ	0.04888	6.6	UJ	0.001072	4.7	U
11097-69-1	Aroclor-1254	0.0004352	4.3	UJ	0.0002264	4	UJ	0.000272	4.2	UJ	0.001	4.2	UJ	0.04888	6.6	UJ	0.001072	4.7	U
11096-82-5	Aroclor-1260	0.0004352	4.3	UJ	0.0002264	4	UJ	0.000272	4.2	UJ	0.001	4.2	UJ	0.04888	6.6	UJ	0.001072	4.7	U
319-85-7	beta-BHC	0.01632	4.3	UJ	0.00849	4	UJ	0.0102	4.2	UJ	0.0375	4.2	UJ	1.833	6.6	UJ	0.0402	4.7	U
319-86-8	delta-BHC	0.01632	4.3	UJ	0.00849	4	UJ	0.0102	4.2	UJ	0.0375	4.2	UJ	1.833	**12**	J	0.0402	4.7	U
60-57-1	Dieldrin	0.0544	22	UJ	0.0283	20	UJ	0.034	22	UJ	0.125	22	UJ	6.11	34	UJ	0.134	24	
959-98-8	Endosulfan I	0.002176	4.3	UJ	0.001132	4	UJ	0.00136	4.2	UJ	0.005	4.2	UJ	0.2444	6.6	UJ	0.00536	4.7	
33213-65-9	Endosulfan II	0.002176	4.3	UJ	0.001132	4	UJ	0.00136	4.2	UJ	0.005	4.2	UJ	0.2444	6.6	UJ	0.00536	4.7	
1031-07-8	Endosulfan sulfate	NL	2.2	UJ	NL	2	UJ	NL	2.2	UJ	NL	2.2	UJ	NL	7.6	J	NL	2.4	
72-20-8	Endrin	0.39712	2.2	UJ	0.20659	2	UJ	0.2482	2.2	UJ	0.9125	2.2	UJ	44.603	5.8	J	0.9782	2.4	
7421-93-4	Endrin aldehyde	NL	220	UJ	NL	200	UJ	NL	220	UJ	NL	220	UJ	NL	340	UJ	NL	240	
53494-70-5	Endrin ketone	NL	43	UJ	NL	40	UJ	NL	42	UJ	NL	42	UJ	NL	66	UJ	NL	47	
58-89-9	gamma-BHC (Lindane)	0.01632	68	UJ	0.00849	80	UJ	0.0102	85	UJ	0.0375	86	UJ	1.833	130	UJ	0.0402	95	
5103-74-2	gamma-Chlordane	0.000544	43	UJ	0.000283	40	UJ	0.00034	42	UJ	0.00125	42	UJ	0.0611	66	UJ	0.00134	47	
76-44-8	Heptachlor	0.0004352	43	UJ	0.0002264	40	UJ	0.000272	42	UJ	0.001	42	UJ	0.04888	66	UJ	0.001072	47	
1024-57-3	Heptachlor epoxide	0.0004352	43	UJ	0.0002264	40	UJ	0.000272	42	UJ	0.001	42	UJ	0.04888	66	UJ	0.001072	47	
72-43-5	Methoxychlor	0.3264	43	UJ	0.1698	40	UJ	0.204	42	UJ	0.75	42	UJ	36.66	66	UJ	0.804	47	
8001-35-2	Toxaphene	0.00544	43	UJ	0.00283	40	UJ	0.0034	42	UJ	0.0125	42	UJ	0.611	66	UJ	0.0134	47	

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SSS-007			SSS-008			SSS-009			SSS-010			SSS-011			SSS-012			SSS-001-DUP		
		Sample Name																			SSS-020		
		Sample Date	4/12/2001			4/23/2001			4/23/2001			4/24/2001			4/26/2001			4/24/2001			4/10/2001		
Cas Rn	Chemical Name	Depth																					
TOC	Total organic carbon	gOC/kg	3.36			4.32			17.9			1.58			29			6.56			0.467		
TOC	Total organic carbon	%OC	0.34%			0.43%			1.79%			0.16%			2.90%			0.66%			0.05%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
	Volatile Organic Compounds																						
71-55-6	1,1,1-Trichloroethane	NL	NL	13	UJ	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	UJ
79-34-5	1,1,2,2-Tetrachloroethane	0.3	1.008	13	U	1.296	13	U	5.37	12	U	0.474	13	U	8.7	35	UJ	1.968	12	U	0.1401	13	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
79-00-5	1,1,2-Trichloroethane	0.6	2.016	13	UJ	2.592	13	U	10.74	12	U	0.948	13	U	17.4	35	UJ	3.936	12	U	0.2802	13	UJ
75-34-3	1,1-Dichloroethane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
75-35-4	1,1-Dichloroethene	0.02	0.0672	13	U	0.0864	13	U	0.358	12	U	0.0316	**2**	**J**	0.58	**14**	**J**	0.1312	12	UJ	0.00934	13	U
120-82-1	1,2,4-Trichlorobenzene	91	305.76	13	U	393.12	13	U	1628.9	12	U	143.78	13	U	2639	35	UJ	596.96	12	U	42.497	13	U
96-12-8	1,2-Dibromo-3-chloropropane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	UJ
106-93-4	1,2-Dibromoethane	NL	NL	17	UJ	NL	13	UJ	NL	12	UJ	NL	13	UJ	NL	10	J	NL	12	UJ	NL	29	U
95-50-1	1,2-Dichlorobenzene	12	40.32	13	U	51.84	13	U	214.8	12	U	18.96	13	U	348	35	UJ	78.72	12	U	5.604	**10**	**J**
107-06-2	1,2-Dichloroethane	0.7	2.352	13	U	3.024	13	U	12.53	12	U	1.106	13	U	20.3	35	UJ	4.592	12	U	0.3269	13	U
78-87-5	1,2-Dichloropropane	NL	NL	52	UJ	NL	13	U	NL	12	U	NL	14	U	NL	35	UJ	NL	12	U	NL	28	UJ
541-73-1	1,3-Dichlorobenzene	12	40.32	13	U	51.84	13	U	214.8	12	U	18.96	13	U	348	35	UJ	78.72	12	U	5.604	13	U
106-46-7	1,4-Dichlorobenzene	12	40.32	13	U	51.84	13	U	214.8	12	U	18.96	13	U	348	35	UJ	78.72	12	U	5.604	13	U
78-93-3	2-Butanone	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
591-78-6	2-Hexanone	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
108-10-1	4-Methyl-2-pentanone	NL	NL	13	UJ	NL	13	UJ	NL	12	UJ	NL	13	UJ	NL	35	UJ	NL	12	UJ	NL	13	U
67-64-1	Acetone	NL	NL	13	U	NL	1	J	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
71-43-2	Benzene	0.6	2.016	13	U	2.592	2	J	10.74	12	U	0.948	13	U	17.4	35	UJ	3.936	12	U	0.2802	13	U
75-27-4	Bromodichloromethane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	UJ
75-25-2	Bromoform	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	UJ
74-83-9	Bromomethane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
75-15-0	Carbon Disulfide	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
56-23-5	Carbon Tetrachloride	0.6	2.016	13	U	2.592	13	U	10.74	12	U	0.948	13	U	17.4	35	UJ	3.936	12	U	0.2802	13	U
108-90-7	Chlorobenzene	3.5	11.76	13	U	15.12	13	U	62.65	12	U	5.53	13	U	101.5	35	UJ	22.96	12	U	1.6345	13	UJ
75-00-3	Chloroethane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
67-66-3	Chloroform	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
74-87-3	Chloromethane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
156-59-2	cis-1,2-Dichloroethene	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
10061-01-5	cis-1,3-Dichloropropene	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
110-82-7	Cyclohexane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
124-48-1	Dibromochloromethane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
75-71-8	Dichlorodifluoromethane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
100-41-4	Ethylbenzene	6.4	21.504	13	U	27.648	13	U	114.56	12	U	10.112	13	U	185.6	35	UJ	41.984	12	U	2.9888	13	U
98-82-8	Isopropylbenzene	12	40.32	13	U	51.84	13	U	214.8	12	U	18.96	13	U	348	35	UJ	78.72	12	J	5.604	13	U
79-20-9	Methyl Acetate	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
1634-04-4	Methyl Tert-Butyl Ether	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
75-09-2	Methylene Chloride	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
108-87-2	Metylcyclohexane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
100-42-5	Styrene	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
127-18-4	Tetrachloroethene	0.8	2.688	13	U	3.456	13	U	14.32	12	U	1.264	13	U	23.2	35	UJ	5.248	12	U	0.3736	13	U
108-88-3	Toluene	45	151.2	13	U	194.4	13	U	805.5	12	U	71.1	13	U	1305	35	UJ	295.2	12	U	21.015	13	U
156-60-5	trans-1,2-Dichloroethene	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
10061-02-6	trans-1,3-Dichloropropene	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
79-01-6	Trichloroethene	2	6.72	13	U	8.64	13	U	35.8	12	U	3.16	13	U	58	35	UJ	13.12	12	U	0.934	13	U
75-69-4	Trichlorofluoromethane	NL	NL	13	U	NL	13	U	NL	12	U	NL	13	U	NL	35	UJ	NL	12	U	NL	13	U
75-01-4	Vinyl Chloride	0.07	0.2352	13	U	0.3024	13	U	1.253	12	U	0.1106	13	U	2.03	35	UJ	0.4592	12	U	0.03269	13	U
1330-20-7	Xylenes (total)	27	90.72	13	U	116.64	13	U	483.3	12	U	42.66	13	U	783	35	UJ	177.12	12	U	12.609	13	U
	Semi-Volatile Organics																						
92-52-4	1,1'-Biphenyl	NL	NL	440	UJ	NL	410	UJ	NL	400	UJ	NL	380	UJ	NL	1800	UJ	NL	420	UJ	NL	440	UJ
108-60-1	2,2'-oxybis(1-Chloropropane)	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
95-95-4	2,4,5-Trichlorophenol	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
88-06-2	2,4,6-Trichlorophenol	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
120-83-2	2,4-Dichlorophenol	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
105-67-9	2,4-Dimethylphenol	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ
51-28-5	2,4-Dinitrophenol	NL	NL	1100	U	NL	1000	U	NL	1000	U	NL	950	U	NL	4600	UJ	NL	1000	U	NL	1100	UJ
121-14-2	2,4-Dinitrotoluene	NL	NL	1100	U	NL	1000	U	NL	1000	U	NL	950	U	NL	4600	UJ	NL	1000	U	NL	1100	UJ
606-20-2	2,6-Dinitrotoluene	NL	NL	440	U	NL	410	U	NL	400	U	NL	380	U	NL	1800	UJ	NL	420	U	NL	440	UJ

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

Cas Rn	Chemical Name	Sample Code	SSS-007		SSS-008		SSS-009		SSS-010		SSS-011		SSS-012		SSS-001-DUP	
		Sample Name													SSS-020	
		Sample Date	4/12/2001		4/23/2001		4/23/2001		4/24/2001		4/26/2001		4/24/2001		4/10/2001	
		Depth														
TOC	Total organic carbon	gOC/kg	3.36		4.32		17.9		1.58		29		6.56		0.467	
TOC	Total organic carbon	%OC	0.34%		0.43%		1.79%		0.16%		2.90%		0.66%		0.05%	
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)	Screening Criteria (ug/kg)	Result (ug/kg)
91-58-7	2-Chloronaphthalene	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	110 J	NL	84 J	NL	440 UJ
95-57-8	2-Chlorophenol	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
91-57-6	2-Methylnaphthalene	30	100.8	440 U	129.6	410 U	537	400 U	47.4	380 U	870	1800 UJ	196.8	420 U	14.01	440 UJ
95-48-7	2-Methylphenol	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
88-74-4	2-Nitroaniline	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
88-75-5	2-Nitrophenol	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
91-94-1	3,3'-Dichlorobenzidine	NL	NL	440 U	NL	53 J	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
99-09-2	3-Nitroaniline	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
534-52-1	4,6-Dinitro-2-methylphenol	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
101-55-3	4-Bromophenyl-phenylether	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
59-50-7	4-Chloro-3-methylphenol	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
106-47-8	4-Chloroaniline	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
7005-72-3	4-Chlorophenyl-phenylether	NL	NL	440 U	NL	130 J	NL	400 U	NL	380 U	NL	120 J	NL	420 U	NL	440 UJ
106-44-5	4-Methylphenol	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	180 J	NL	21 J	NL	440 UJ
100-01-6	4-Nitroaniline	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
100-02-7	4-Nitrophenol	NL	NL	1100 U	NL	1000 U	NL	1000 U	NL	950 U	NL	4600 UJ	NL	1000 U	NL	1100 UJ
83-32-9	Acenaphthene	240	806.4	440 U	1036.8	410 U	4296	400 U	379.2	380 U	6960	0 R	1574.4	420 U	112.08	440 UJ
208-96-8	Acenaphthylene	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
98-86-2	Acetophenone	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
120-12-7	Anthracene	107	359.52	1100 U	462.24	1000 U	1915.3	1000 U	169.06	950 U	3103	4600 UJ	701.92	1000 U	49.969	1100 UJ
1912-24-9	Atrazine	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
100-52-7	Benzaldehyde	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
56-55-3	Benzo(a)anthracene	12	40.32	440 U	51.84	410 U	214.8	400 U	18.96	380 U	348	1800 UJ	78.72	420 U	5.604	440 UJ
50-32-8	Benzo(a)pyrene	0.7	2.352	440 U	3.024	410 U	12.53	400 U	1.106	380 U	20.3	1800 UJ	4.592	420 U	0.3269	440 UJ
205-99-2	Benzo(b)fluoranthene	NL	NL	440 UJ	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
191-24-2	Benzo(g,h,i)perylene	NL	NL	1100 U	NL	1000 U	NL	1000 U	NL	950 U	NL	4600 UJ	NL	1000 U	NL	1100 UJ
207-08-9	Benzo(k)fluoranthene	NL	NL	440 U	NL	1200	NL	400 U	NL	380 U	NL	340 J	NL	31 J	NL	440 UJ
111-91-1	bis(2-Chloroethoxy)methane	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	160 J	NL	420 U	NL	440 UJ
111-44-4	bis(2-Chloroethyl)ether	0.03	0.1008	440 U	0.1296	410 UJ	0.537	400 UJ	0.0474	380 UJ	0.87	1800 UJ	0.1968	420 UJ	0.01401	440 UJ
117-81-7	bis(2-Ethylhexyl)phthalate	199.5	670.32	440 U	861.84	240 J	3571.05	400 U	315.21	380 U	5785.5	220 J	1308.72	420 U	93.1665	440 UJ
85-68-7	Butylbenzylphthalate	NL	NL	440 U	NL	110 J	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
105-60-2	Caprolactam	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
86-74-8	Carbazole	NL	NL	440 U	NL	50 J	NL	400 U	NL	38 J	NL	1800 UJ	NL	37 J	NL	440 UJ
218-01-9	Chrysene	NL	NL	440 U	NL	1900	NL	400 U	NL	380 U	NL	370	NL	65 J	NL	440 UJ
53-70-3	Dibenz(a,h)anthracene	NL	NL	440 U	NL	1700	NL	400 U	NL	380 U	NL	350 J	NL	65 J	NL	440 UJ
132-64-9	Dibenzofuran	NL	NL	440 U	NL	410 UJ	NL	400 UJ	NL	380 UJ	NL	1800 UJ	NL	420 UJ	NL	440 UJ
84-66-2	Diethylphthalate	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
131-11-3	Dimethylphthalate	NL	NL	1100 U	NL	1000 U	NL	1000 U	NL	950 U	NL	4600 UJ	NL	1000 U	NL	1100 UJ
84-74-2	Di-n-butylphthalate	NL	NL	440 U	NL	810	NL	400 U	NL	380 U	NL	210 J	NL	33 J	NL	440 UJ
117-84-0	Di-n-octylphthalate	NL	NL	440 U	NL	860	NL	400 U	NL	380 U	NL	190 J	NL	47 J	NL	440 UJ
206-44-0	Fluoranthene	1340	4502.4	1600	5788.8	74 J	23986	400 U	2117.2	380 U	38860	1800 UJ	8790.4	51 J	625.78	440 UJ
86-73-7	Fluorene	38	127.68	440 U	164.16	410 U	680.2	400 U	60.04	380 U	1102	1800 UJ	249.28	420 U	17.746	440 UJ
118-74-1	Hexachlorobenzene	NL	NL	440 U	NL	600	NL	400 U	NL	380 U	NL	130 J	NL	60 J	NL	440 UJ
87-68-3	Hexachlorobutadiene	0.3	1.008	440 U	1.296	410 U	5.37	400 U	0.474	380 U	8.7	1800 UJ	1.968	420 U	0.1401	440 UJ
77-47-4	Hexachlorocyclopentadiene	0.7	2.352	440 U	3.024	410 U	12.53	400 U	1.106	380 U	20.3	1800 UJ	4.592	420 U	0.3269	440 UJ
67-72-1	Hexachloroethane	NL	NL	1100 U	NL	1000 U	NL	1000 U	NL	950 U	NL	4600 UJ	NL	1000 U	NL	1100 UJ
193-39-5	Indeno(1,2,3-cd)pyrene	NL	NL	440 U	NL	750	NL	400 U	NL	380 U	NL	130 J	NL	420 U	NL	440 UJ
78-59-1	Isophorone	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	1800 UJ	NL	420 U	NL	440 UJ
91-20-3	Naphthalene	38	127.68	440 U	164.16	410 U	680.2	400 U	60.04	380 U	1102	1800 UJ	249.28	420 U	17.746	440 UJ
98-95-3	Nitrobenzene	NL	NL	440 U	NL	410 U	NL	400 U	NL	380 U	NL	200 J	NL	420 U	NL	440 UJ
621-64-7	N-Nitroso-di-n-propylamine	NL	NL	1100 U	NL	1000 U	NL	1000 U	NL	950 U	NL	4600 UJ	NL	1000 U	NL	1100 UJ
86-30-6	N-Nitrosodiphenylamine	NL	NL	440 U	NL	740	NL	400 U	NL	380 U	NL	150 J	NL	32 J	NL	440 UJ
87-86-5	Pentachlorophenol	40	134.4	440 U	172.8	480	716	400 U	63.2	380 U	1160	100 J	262.4	420 U	18.68	440 UJ
85-01-8	Phenanthrene	160	537.6	440 U	691.2	200 J	2864	400 U	252.8	380 U	4640	1800 UJ	1049.6	420 U	74.72	440 UJ
108-95-2	Phenol	0.6	2.016	440 U	2.592	100 J	10.74	400 U	0.946	380 U	17.4	1800 UJ	3.936	420 U	0.2802	440 UJ
129-00-0	Pyrene	NL	NL	440 U	NL	600	NL	400 U	NL	380 U	NL	100 J	NL	26	NL	440 UJ
	Pestcide/PCB Organics															
72-54-8	4,4'-DDD	0.01	0.0336	2.3 U	0.0432	2.1 UJ	0.179	2.1 UJ	0.0158	1.9 UJ	0.29	4.7 UJ	0.0656	2.1 UJ	0.00467	2.3 UJ
72-55-9	4,4'-DDE	0.01	0.0336	2.3 U	0.0432	2.1 UJ	0.179	2.1 UJ	0.0158	1.9 UJ	0.29	4.7 UJ	0.0656	2.1 UJ	0.00467	2.3 UJ

TABLE 8
Sample-Specific Sediment Screening Criteria and Sediment Data
Smithtown Groundwater Contamination Site
Smithtown, New York

		Sample Code	SSS-007			SSS-008			SSS-009			SSS-010			SSS-011			SSS-012			SSS-001-DUP		
		Sample Name																			SSS-020		
		Sample Date	4/12/2001			4/23/2001			4/23/2001			4/24/2001			4/26/2001			4/24/2001			4/10/2001		
Cas Rn	Chemical Name	Depth																					
TOC	Total organic carbon	gOC/kg	3.36			4.32			17.9			1.58			29			6.56			0.467		
TOC	Total organic carbon	%OC	0.34%			0.43%			1.79%			0.16%			2.90%			0.66%			0.05%		
		Screening Criteria (ug/gOC)	Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)		Screening Criteria (ug/kg)	Result (ug/kg)	
50-29-3	4,4'-DDT	0.01	0.0336	2.3	U	0.0432	2.1	UJ	0.179	2.1	UJ	0.0158	1.9	UJ	0.29	4.7	UJ	0.0656	2.1	UJ	0.00467	2.3	UJ
309-00-2	Aldrin	0.1	0.336	2.3	U	0.432	2.1	UJ	1.79	2.1	UJ	0.158	1.9	UJ	2.9	4.7	UJ	0.656	2.1	UJ	0.0467	2.3	UJ
319-84-6	alpha-BHC	0.03	0.1008	2.3	U	0.1296	2.5	UJ	0.537	2.1	UJ	0.0474	1.9	UJ	0.87	**8.4**	**J**	0.1968	2.1	UJ	0.01401	2.3	UJ
5103-71-9	alpha-Chlordane	0.001	0.00336	2.3	U	0.00432	2.1	UJ	0.0179	2.1	UJ	0.00158	1.9	UJ	0.029	4.7	UJ	0.00656	2.1	UJ	0.000467	2.3	UJ
12674-11-2	Aroclor-1016	0.0008	0.002688	2.3	U	0.003456	2.1	UJ	0.01432	2.1	UJ	0.001264	1.9	UJ	0.0232	4.7	UJ	0.005248	2.1	UJ	0.0003736	2.3	UJ
11104-28-2	Aroclor-1221	0.0008	0.002688	2.3	U	0.003456	2.1	UJ	0.01432	2.1	UJ	0.001264	1.9	UJ	0.0232	4.7	UJ	0.005248	2.1	UJ	0.0003736	2.3	UJ
11141-16-5	Aroclor-1232	0.0008	0.002688	4.4	U	0.003456	4.2	UJ	0.01432	4	UJ	0.001264	3.8	UJ	0.0232	9.1	UJ	0.005248	4.1	UJ	0.0003736	4.5	UJ
53469-21-9	Aroclor-1242	0.0008	0.002688	4.4	U	0.003456	**1.2**	**J**	0.01432	4	UJ	0.001264	3.8	UJ	0.0232	9.1	UJ	0.005248	4.1	UJ	0.0003736	4.5	UJ
12672-29-6	Aroclor-1248	0.0008	0.002688	4.4	U	0.003456	4.1	UJ	0.01432	4	UJ	0.001264	3.8	UJ	0.0232	9.1	UJ	0.005248	4.1	UJ	0.0003736	4.5	UJ
11097-69-1	Aroclor-1254	0.0008	0.002688	4.4	U	0.003456	4.1	UJ	0.01432	4	UJ	0.001264	3.8	UJ	0.0232	9.1	UJ	0.005248	4.1	UJ	0.0003736	4.5	UJ
11096-82-5	Aroclor-1260	0.0008	0.002688	4.4	U	0.003456	**1.3**	**J**	0.01432	4	UJ	0.001264	3.8	UJ	0.0232	9.1	UJ	0.005248	4.1	UJ	0.0003736	4.5	UJ
319-85-7	beta-BHC	0.03	0.1008	4.4	U	0.1296	4.1	UJ	0.537	4	UJ	0.0474	3.8	UJ	0.87	9.1	UJ	0.1968	4.1	UJ	0.01401	4.5	UJ
319-86-8	delta-BHC	0.03	0.1008	4.4	U	0.1296	**3.2**	**J**	0.537	4	UJ	0.0474	3.8	UJ	0.87	9.1	UJ	0.1968	4.1	UJ	0.01401	4.5	UJ
60-57-1	Dieldrin	0.1	0.336	23	U	0.432	21	UJ	1.79	21	UJ	0.158	19	UJ	2.9	47	UJ	0.656	21	UJ	0.0467	23	UJ
959-98-8	Endosulfan I	0.004	0.01344	4.4	U	0.01728	4.1	UJ	0.0716	4	UJ	0.00632	3.8	UJ	0.116	9.1	UJ	0.02624	4.1	UJ	0.001868	4.5	UJ
33213-65-9	Endosulfan II	0.004	0.01344	4.4	U	0.01728	4.1	UJ	0.0716	4	UJ	0.00632	3.8	UJ	0.116	9.1	UJ	0.02624	4.1	UJ	0.001868	4.5	UJ
1031-07-8	Endosulfan sulfate	NL	NL	2.3	U	NL	5.1	NJ	NL	2.1	UJ	NL	1.9	UJ	NL	4.7	UJ	NL	2.1	UJ	NL	2.3	UJ
72-20-8	Endrin	0.73	2.4528	2.3	U	3.1536	**6.5**	**J**	13.067	2.1	UJ	1.1534	1.9	UJ	21.17	5	NJ	4.7888	2.1	UJ	0.34091	2.3	UJ
7421-93-4	Endrin aldehyde	NL	NL	230	U	NL	210	UJ	NL	210	UJ	NL	190	UJ	NL	470	UJ	NL	210	UJ	NL	230	UJ
53494-70-5	Endrin ketone	NL	NL	44	U	NL	41	UJ	NL	40	UJ	NL	38	UJ	NL	91	UJ	NL	41	UJ	NL	45	UJ
58-89-9	gamma-BHC (Lindane)	0.03	0.1008	89	U	0.1296	84	UJ	0.537	81	UJ	0.0474	77	UJ	0.87	180	UJ	0.1968	84	UJ	0.01401	91	UJ
5103-74-2	gamma-Chlordane	0.001	0.00336	44	U	0.00432	41	UJ	0.0179	40	UJ	0.00158	38	UJ	0.029	91	UJ	0.00656	41	UJ	0.000467	45	UJ
76-44-8	Heptachlor	0.0008	0.002688	44	U	0.003456	41	UJ	0.01432	40	UJ	0.001264	38	UJ	0.0232	91	UJ	0.005248	41	UJ	0.0003736	45	UJ
1024-57-3	Heptachlor epoxide	0.0008	0.002688	44	U	0.003456	41	UJ	0.01432	40	UJ	0.001264	38	UJ	0.0232	91	UJ	0.005248	41	UJ	0.0003736	45	UJ
72-43-5	Methoxychlor	0.6	2.016	44	U	2.592	41	UJ	10.74	40	UJ	0.948	38	UJ	17.4	91	UJ	3.936	41	UJ	0.2802	45	UJ
8001-35-2	Toxaphene	0.01	0.0336	44	U	0.0432	41	UJ	0.179	40	UJ	0.0158	38	UJ	0.29	91	UJ	0.0656	41	UJ	0.00467	45	UJ

TABLE 9
Septic System Wastewater and Sludge Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical	Action Level	Cleanup Objective
Wastewater		
Volatile Organic Compounds	1,000 ppb total VOCs	Note 1
Metals	100 times discharge standard	Note 1
Sludge (ug/Kg)		
Acetone	**	**
Benzene	120	60
Bromobenzene	1,600	800
Bromochloromethane	400	200
Bromodichloromethane	600	300
Bromoform	1,000	500
n-Butylbenzene	6,800	3,400
sec-Butylbenzene	10,000	5,000
tert-Butylbenzene	6,800	3,400
Carbon tetrachloride	1,200	600
Chlorobenzene	3,400	1,700
Chloroethane	400	200
Chloroform	600	300
Chlorotoluene	3,600	1,800
Dibromochloromethane	600	300
1,2-Dibromo-3-chloropropane	1,000	500
1,2-dibromoethane	600	300
Dibromomethane	400	200
o-(1,2)-Dichlorobenzene	15,000	8,000
m-(1,3)-Dichlorobenzene	3,200	1,600
p-(1,4)-Dichlorobenzene	15,000	8,000

TABLE 9
Septic System Wastewater and Sludge Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical	Action Level	Cleanup Objective
Dichlorodifluoromethane	600	300
1,1-Dichloroethane	400	200
1,2-Dichloroethane	200	100
1,2-Dichloroethene	800	400
cis-1,2-Dichloroethene	600	300
trans-1,2-Dichloroethene	600	300
1,2-Dichloropropane	600	300
1,3-Dichloropropane	600	300
2,2-Dichloropropane	600	300
1,1-Dichloropropene	600	300
cis-1,3-Dichloropropene	600	300
trans-1,3-Dichloropropene	600	300
p-Diethylbenzene	7,600	3,800
Ethylbenzene	11,000	5,500
p-Ethyltoluene	3,600	1,800
Hexachlorobutadiene	15,000	10,000
Isopropylbenzene	5,200	2,600
p-Isopropyltoluene	7,800	3,900
Methylene chloride	200	100
MTBE	1,200	600
Methylethylketone	600	300
Methylisobutylketone	2,000	1,000
Naphthalene	15,000	10,000
n-Propylbenzene	5,000	2,500
Styrene	2,000	1,000
1,1,1,2-Tetrachloroethane	600	300

TABLE 9
Septic System Wastewater and Sludge Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical	Action Level	Cleanup Objective
1,1,2,2-Tetrachloroethane	1,200	600
Tetrachloroethene	2,800	1,400
1,2,4,5-Tetramethylbenzene	15,000	10,000
Toluene	3,000	1,500
1,2,3-Trichlorobenzene	6,800	3,400
1,2,4-Trichlorobenzene	6,800	3,400
1,1,1-Trichloroethane	1,600	800
1,1,2-Trichloroethane	600	300
Trichloroethene	1,400	700
Trichlorofluoromethane	1,600	800
1,2,3-Trichloropropane	800	400
1,2,4-Trimethylbenzene	4,800	2,400
1,3,5-Trimethylbenzene	5,200	2,600
Vinyl chloride	400	200
Xylene(s)	2,400	1,200
Acenaphthene	75,000	50,000
Anthracene	75,000	50,000
Benzo(a)anthracene	6,000*	3,000*
Benzo(b)fluoranthene	2,200*	1,100*
Benzo(k)fluoranthene	2,200*	1,100*
Benzo(g,h,i)perylene	75,000	50,000
Benzo(a)pyrene	22,000*	11,000*
Chrysene	800	400
Dibenzo(a,h)anthracene	75,000*	50,000*
Fluoranthene	75,000	50,000
Fluorene	75,000	50,000

TABLE 9
Septic System Wastewater and Sludge Screening Criteria
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemical	Action Level	Cleanup Objective
Indeno(1,2,3-cd)pyrene	6,400	3,200
Phenanthrene	75,000	50,000
Pyrene	75,000	50,000
Sludge Inorganic Analytes (mg/Kg) Note 2		
Arsenic	25	7.5
Beryllium	8	1.6
Cadmium	10	1.0
Chromium	100	10
Copper	500	25
Lead	400	100
Mercury	2	0.1
Nickel	1,000	13
Silver	100	5

Source: Suffolk County Department of Health Services, Standard Operating Procedure for the Administration of Article 12 of the Suffolk County Sanitary Code. SOP No. 9-95. January 7, 1999.
Note 1: Liquid endpoint samples must be collected when groundwater is encountered during a cleanup operation. If the concentration of VOCs, or metals, in the sample meets, or exceeds 100 times the discharge standard for a specific parameter, or the total VOC concentration meets, or exceeds 1,000 ppb, a groundwater sample must be collected immediately downgradient of the point of contamination to determine if there has been an impact on the groundwater.
Note 2: Certain metals, such as aluminum, iron, and manganese, appear naturally in Long Island soils and are not considered to be significant under most conditions. Other metals will be evaluated on a case by case basis.
*: If direct human exposure from ingestion or inhalation is a concern, the human health guidance values published by EPA should be used to formulae a cleanup goal, if that value is <u>lower</u> than the "Cleanup Objective" listed.
**: Due to its relatively short half life in nature, if acetone is the only contaminant of concern in a sample, the primary response should be to determine and eliminate the source of the acetone discharge. The requirement to perform a remediation will be determined on a case by case basis.

TABLE 10
Compound and Analyte Results in Sanitary System Wastewater Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	WW-1	WW-2	WW-3	WW-5	WW-6	WW-7	WW-8	WW-9	WW-10	WW-11
Volatile Organic Compounds (ug/L) **Screening Criteria - 1,000 ug/L total VOCs**										
Chloromethane	20	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	10	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	5 J	ND	ND	ND	ND	3 J	ND	ND	3 J	2 J
Acetone	43	35	130	140	7 J	44	340	82	23	130
Methylene chloride	2 J	ND	ND	ND	ND	ND	5 J	ND	ND	ND
2-Butanone	14	9 J	15	5 J	3 J	9 J	11	ND	4 J	3 J
Chloroform	26	ND	ND	3 J	ND	ND	24	ND	ND	ND
Toluene	320	32	7 J	5 J	30	180	85	ND	58	120
Tetrachloroethene	5	ND	ND	12	ND	ND	47	ND	5 J	52
Vinyl chloride	ND	ND	ND	4 J	ND	ND	ND	ND	ND	ND
Cis-1,2-dichloroethene	ND	ND	ND	140	ND	ND	29	170	ND	ND
Trichloroethene	ND	ND	ND	9 J	ND	ND	190	12	ND	ND
Methyl-Tert-Butyl-Ether	ND	ND	ND	ND	61	ND	ND	ND	75	ND
Cyclohexane	ND	ND	ND	ND	3 J	ND	ND	ND	3 J	ND
Methylcyclohexane	ND	ND	ND	ND	3 J	ND	ND	ND	4 J	ND
ethylbenzene	ND	ND	ND	ND	5 J	ND	ND	ND	ND	11

TABLE 10
Compound and Analyte Results in Sanitary System Wastewater Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	WW-1	WW-2	WW-3	WW-5	WW-6	WW-7	WW-8	WW-9	WW-10	WW-11
m,p-xylene	ND	ND	ND	ND	25	ND	ND	ND	10	41
o-xylene	ND	ND	ND	ND	11	ND	ND	ND	7	11
1,4-Dichlorobenzene	ND	ND	ND	ND	ND	5 J	ND	ND	ND	ND
Total VOCs	445	76	152	318	148	241	731	264	192	370
Semi-Volatile Organic Compounds										
Benzaldehyde	21	9J	ND	4.8	ND	62	ND	4J	ND	ND
Phenol	18J	27	6.5	11	22	51	37	8.3	79	20J
4-Methylphenol	220	ND	69	29	94	580	200	12	340	220
Diethylphthalate	5J	12J	5.9	50	ND	17J	6.7	13	ND	5.4
Di-n-butylphthalate	ND	ND	4	4J	ND	ND	4.6	ND	ND	2J
Fluoranthene	ND	ND	1J	ND	ND	ND	ND	ND	ND	ND
Butylbenzylphthalate	ND	ND	4J	14	ND	ND	2J	ND	ND	ND
Bis(2-ethylhexyl)phthalate	66	26	12	28	9J	ND	20	7.8	12J	8.4
Di-n-octylphthalate	ND	ND	ND	4J	ND	ND	ND	ND	ND	ND
Pesticides/PCBs - None Detected										
Inorganic Analytes (ug/L)										
Aluminum	220J	410J	242J	684J	378J	4450J	604J	376J	213J	194BJ
Antimony	ND	ND	ND	ND	ND	ND	8.9B	ND	ND	ND
Barium	6.7B	6.5B	4.9B	6.5B	7.4B	82.3B	16.7B	11.7B	25B	10.1B

TABLE 10
Compound and Analyte Results in Sanitary System Wastewater Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	WW-1	WW-2	WW-3	WW-5	WW-6	WW-7	WW-8	WW-9	WW-10	WW-11
Beryllium	ND	ND	ND	ND	ND	0.2B	0.37B	ND	ND	ND
Cadmium	ND	ND	ND	ND	ND	0.47B	0.74B	ND	0.66B	0.37B
Calcium	23,100	18,800	19,800	20,700	19,800	57,500	22300	18000	28800	20800
Chromium	1.7B	3.6B	1.1B	3.9B	3.3B	42J	7.1B	0.73B	1.5B	2.4B
Cobalt	ND	ND	ND	ND	ND	1.6B	6.2B	ND	ND	ND
Copper	183	92.7	33.9	44.9	88.5	157	44.6	56.6	90.9	50.8
Iron	433J	2200J	400J	355J	628J	6770J	700J	443J	476J	354J
Lead	ND	3	ND	ND	11.8	17	2.9B	ND	ND	6
Magnesium	5520	4770B	4670B	5130	5800	8330	7230	4930B	7090	4840B
Manganese	25.5EJ	18.6EJ	18.3EJ	13.6BE	19.2EJ	136EJ	30.5EJ	26.4EJ	42.9EJ	19.6EJ
Mercury	ND	0.15BJ	0.31J	ND	ND	0.56	0.13BJ	ND	ND	ND
Nickel	ND	4.3B	ND	2B	1.5B	11.7B	6.9B	ND	ND	1.7B
Potassium	13800EJ	8,510EJ	7,250EJ	9,880EJ	19100EJ	20300EJ	12100EJ	5990EJ	37300EJ	18300EJ
Silver	ND	ND	1.1B	ND	ND	1.2B	7.2B	ND	ND	ND
Sodium	68000EJ	26500EJ	49600EJ	63700EJ	29800EJ	53000EJ	63200EJ	14600EJ	65600EJ	42900EJ
Vanadium	ND	ND	ND	ND	ND	ND	7.5B	0.95B	0.75B	ND
Zinc	57.6	75.8	24J	34.9	93.4	1250	42.9	20.2	90.8	66
Cyanide	R	R	R	R	R	R	R	R	R	R

Abbreviations: ug/L = micrograms per liter; VOC = volatile organic compounds; ND = non-detect; J = estimated value; E = Estimated value because of

interference; R = rejected data
Locations:
WW-1 - 256 Lake Avenue (Gene's French Cleaners)
WW-2 - 483 Lake Avenue (Avenue Cleaners)
WW-3 - 561 Lake Avenue (St. James Cleaners)
WW-4 - No wastewater present, so no sample was collected at 617-621 Lake Avenue (Sal's Auto Body)
WW-5 - 556 North Country Road (Polo French Cleaners)
WW-6 - Edgewood Avenue (Smithtown School District Administration Building)
WW-7 - 400 North Country Road (Four Seasons Cesspool)
WW-8 - 430-11 North Country Road (North Country Cleaners)
WW-9 - 437 North Country Road (The Cleaners)
WW-10 - 525 North Country Road (St. James Exxon Center)
WW-11 - 545 North Country Road (Penney's St. James Garage)

TABLE 11
Compound and Analyte Results in Sanitary System Sludge Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	Screening Criteria	SL-1	SL-3	SL-4	SL-5	SL-6	SL-7	SL-8	SL-10	SL-11
Volatile Organic Compounds (ug/Kg)										
Acetone	**	470	160	14	280	34	2,800	2,600	43	62
2-Butanone	NS	110J	18	3 J	98	3 J	1,200	320	11 J	16 J
Toluene	3,000	1,500	7 J	5 J	730	11 J	**28,000**	**30,000**	220	110
Tetrachloroethene	2,800	29 J	ND	440	15 J	ND	48 J	1,100	ND	41
Carbon disulfide	NS	ND	5 J	ND	750	ND	ND	ND	13 J	17 J
Methyl acetate	NS	ND	4 J	ND	ND	ND	160,000	ND	ND	5 J
Trichloroethene	1,400	ND	ND	3 J	ND	ND	ND	440	ND	ND
Cis-1,2-dichloroethene	600	ND	ND	ND	200	ND	ND	490	ND	15 J
1,4-Dichlorobenzene	15,000	ND	ND	ND	3,400	ND	2,100	1,600	ND	ND
Methyl-Tert-Butyl-Ether	1,200	ND	ND	ND	ND	15	ND	ND	29	ND
Ethylbenzene	11,000	ND	ND	ND	ND	5 J	160 J	110 J	110	10 J
m,p-xylene	2,400*	ND	ND	ND	ND	25	230	290	470	42
o-xylene	2,400*	ND	ND	ND	ND	11 J	91 J	290	190	ND
1,1,1-Trichloroethane	1,600	ND	ND	ND	ND	ND	72 J	ND	ND	ND
Chloroform	600	ND	ND	ND	ND	ND	110 J	250 J	ND	ND
Methylcyclohexane	NS	ND	ND	ND	ND	ND	ND	160 J	15	5 J
Chlorobenzene	3,400	ND	ND	ND	ND	ND	ND	63 J	ND	ND

TABLE 11
Compound and Analyte Results in Sanitary System Sludge Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	Screening Criteria	SL-1	SL-3	SL-4	SL-5	SL-6	SL-7	SL-8	SL-10	SL-11
Isopropylbenzene	5,200	ND	ND	ND	ND	ND	ND	500	8 J	ND
Cyclohexane	NS	ND	ND	ND	ND	ND	ND	ND	8 J	ND
Semi-Volatile Organic Compounds (ug/Kg)										
Benzaldehyde	NS	2,800J	ND	ND	ND	ND	ND	ND	ND	ND
4-Methylphenol	NS	ND	ND	ND	ND	ND	45,000	ND	ND	7,000J
4-Chloroaniline	NS	ND	ND	ND	ND	ND	62,000J	ND	ND	ND
Diethylphthalate	NS	ND	280J	220J	ND	260J	18,000J	ND	ND	ND
Di-n-butylphthalate	NS	ND	240J	270J	ND	300J	9,100J	ND	ND	ND
Butylbenzylphthalate	NS	ND	ND	ND	ND	ND	25,000J	ND	ND	ND
Bis(2-ethylhexyl)phthalate	NS	45,000	ND	ND	ND	ND	ND	ND	ND	ND
Pesticides/PCBs (ug/Kg)										
Dieldrin	NS	ND	ND	8.6J	ND	ND	ND	ND	ND	ND
4,4'DDE	NS	ND	ND	130	ND	ND	ND	ND	ND	ND
4,4'DDD	NS	ND	ND	430	ND	ND	ND	ND	ND	ND
4,4'DDT	NS	ND	ND	430	ND	ND	ND	ND	ND	ND
alpha-Chlordane	NS	ND	ND	3.7	ND	ND	ND	ND	ND	ND
Inorganic Analytes (mg/Kg)										
Aluminum	NS	3040J	694	1730	3480	697	1500J	346J	2400	244J
Antimony	NS	1.4BJ	ND	ND	ND	ND	4BJ	ND	ND	ND

TABLE 11
Compound and Analyte Results in Sanitary System Sludge Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	Screening Criteria	SL-1	SL-3	SL-4	SL-5	SL-6	SL-7	SL-8	SL-10	SL-11
Arsenic	25	ND	ND	ND	1.9B	ND	ND	ND	ND	ND
Barium	NS	24BJ	4.1B	15.9B	22.7B	1.7B	219J	168BJ	9.4B	2.8B
Beryllium	8	0.08BJ	0.05B	0.09B	0.06B	0.04B	ND	ND	0.11B	ND
Cadmium	10	0.38BJ	ND	0.11B	1.3B	ND	1.6BJ	0.88BJ	0.12B	0.09B
Calcium	NS	1950BJ	297BJ	6740J	21000J	108BJ	1010BJ	1090BJ	897BJ	181BJ
Chromium	100	9.6J	2.8	6.9	6.1	1.6B	13.9J	5.5BJ	3.3	1.3B
Cobalt	NS	1.5BJ	0.36B	1.1B	1B	0.51B	ND	ND	0.9B	ND
Copper	500	442EJ	12.7EJ	8.9EJ	95EJ	7.9EJ	**659EJ**	411EJ	16.1EJ	8.6EJ
Iron	NS	8540J	1910	3700	3260	2500	1600J	379J	2940	584
Lead	400	21J	2.5	12.2J	11.7J	1.7	61.6J	30.5J	7.6J	2.8J
Magnesium	NS	711BJ	243BJ	3720J	12500J	203BJ	285BJ	226BJ	601BJ	74.8BJ
Manganese	NS	28NJ	5.6NJ	45.4NJ	24NJ	29.1NJ	11.9NJ	3.8BNJ	25NJ	3.4BNJ
Mercury	2	0.14BJ	**4.1**	ND	0.24	ND	**2.1J**	0.94J	ND	ND
Nickel	1,000	5BJ	0.99B	3B	3.7B	1.2B	6.4BJ	3.8BJ	2.2B	0.6B
Potassium	NS	292BJ	129B	155B	200B	126B	278BJ	299BJ	192B	130B
Selenium	NS	ND	ND	ND	ND	ND	6.6J	ND	ND	ND
Silver	100	0.61BJ	1.7B	0.21B	0.41B	0.14B	4.5BJ	8.1BJ	ND	ND
Sodium	NS	685BJ	323B	236B	403B	257B	1130BJ	1810BJ	314B	355B
Vanadium	NS	11.9BJ	3.5B	4.9B	5.4B	2.2B	4.2BJ	1.5BJ	4.8B	1.1B

TABLE 11
Compound and Analyte Results in Sanitary System Sludge Samples
Smithtown Groundwater Contamination Site
Smithtown, New York

Compound/Analyte	Screening Criteria	SL-1	SL-3	SL-4	SL-5	SL-6	SL-7	SL-8	SL-10	SL-11
Zinc	NS	208J	17.1	32	51.4	9.3	310J	74.7J	20.4	16.9J

Abbreviations: NS = no standard; ug/Kg = micrograms per kilogram; mg/Kg = milligrams per kilogram; ND = non-detect; J = estimated value; B = result between instrument detection limit and contract required detection limit; E = data estimated due to interference

Locations:
SL-1 - 256 Lake Avenue (Gene's French Cleaners)
SL-2 - No sample collected at 483 Lake Avenue (Avenue Cleaners)
SL-3 - 561 Lake Avenue (St. James Cleaners)
SL-4 - No wastewater present, so no sample was collected at 617-621 Lake Avenue (Sal's Auto Body)
SL-5 - 556 North Country Road (Polo French Cleaners)
SL-6 - Edgewood Avenue (Smiththown School District Administration Building)
SL-7 - 400 North Country Road (Four Seasons Cesspool)
SL-8 - 430-11 North Country Road (North Country Cleaners)
SL-9 - No sample collected at 437 North Country Road (The Cleaners)
SL-10 - 525 North Country Road (St. James Exxon Center)
SL-11 - 545 North Country Road (Penney's St. James Garage)

Table 12
Summary of COPCs Selected for Evaluation
Smithtown Groundwater Contamination Site
Smithtown, New York

Chemicals of Potential Concern	2.1 - Groundwater/ Residential Well Water	2.2 - Sediment - River	2.3 - Sediment - Harbor / Wetland	2.4 - Surface Water - River	2.5 - Surface Water - Harbor / Wetland
VOCs					
Acetone	YES	NO	NO	NO	NO
Chloroform	YES	NO	--	--	NO
cis-1,2-Dichloroethene	YES	--	--	NO	NO
Methyl Tert-Butyl Ether	YES	--	--	--	NO
Tetrachloroethene	YES	--	NO	--	YES
Trichloroethene	YES	--	--	YES	NO
SVOCs					
Benzo(a)anthracene	--	YES	NO	YES	NO
Benzo(a)pyrene	--	YES	YES	YES	NO
Benzo(b)fluoranthene	--	NO	NO	YES	NO
Benzo(k)fluoranthene	--	NO	NO	YES	NO
bis(2-Ethylhexyl)phthalate	YES	NO	--	NO	YES
Dibenz(a,h)anthracene	--	YES	--	--	NO
Indeno(1,2,3-cd)pyrene	--	NO	--	YES	NO
Phenanthrene	NO	NO	NO	YES	NO
INORGs					
Aluminum	YES	NO	YES	NO	NO
Antimony	--	--	YES	--	NO
Arsenic	YES	YES	YES	YES	NO
Chromium	YES	NO	YES	NO	NO
Iron	YES	YES	YES	YES	NO
Manganese	YES	NO	YES	NO	YES
Nickel	YES	NO	NO	NO	NO
Thallium	NO	--	--	--	YES
Vanadium	YES	NO	NO	NO	NO

COPC - Chemical of Potential Concern. See Tables B-2.1 through B-2.5 for details regarding all detected chemicals and basis for selection as COPC.
YES - Chemical was detected in this medium and selected as a chemical of potential concern.
NO - Chemical was detected in this medium but not selected as a chemical of potential concern.
-- - Chemical was not detected in this medium.

TABLE 13
Selection of Exposure Pathways
Smithtown Groundwater Contamination Site
Smithtown, New York

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current / Future	Groundwater	Groundwater	Tap Water	Resident	Adult	Dermal	Quant	Groundwater presently used through private wells.
						Ingestion	Quant	Groundwater presently used through private wells.
					Child (0-6 yr)	Dermal	Quant	Groundwater presently used through private wells.
						Ingestion	Quant	Groundwater presently used through private wells.
		Air	Water Vapors in Bathroom	Resident	Adult	Inhalation	Quant	Groundwater presently used through private wells.
					Child (0-6 yr)	Inhalation	Quant	Groundwater presently used through private wells.
			Indoor Air from Vapor Intrusion	Resident	Adult	Inhalation	None	Contaminated groundwater is not located near the surface of the water table, so vapor intrusion is not expected to occur.
					Child (0-6 yr)	Inhalation	None	Contaminated groundwater is not located near the surface of the water table, so vapor intrusion is not expected to occur.
	Sediment [1]	Sediment [1]	Nissequogue River/ Stony Brook Harbor	Recreational	Adult	Dermal	Quant	Waders may have exposed skin surfaces come into contact with sediment.
						Ingestion	Quant	Waders may incidentally ingest sediment.
					Child (0-6 yr)	Dermal	Quant	Waders may have exposed skin surfaces come into contact with sediment.
						Ingestion	Quant	Waders may incidentally ingest sediment.
	Surface Water [1]	Surface Water [1]	Nissequogue River/ Stony Brook Harbor	Recreational	Adult	Dermal	Quant	Waders may have exposed skin surfaces come into contact with surface water.
						Ingestion	Quant	Waders may incidentally ingest surface water.
					Child (0-6 yr)	Dermal	Quant	Waders may have exposed skin surfaces come into contact with surface water.
						Ingestion	Quant	Waders may incidentally ingest surface water.
	Fish	Fish Tissue	Nissequogue River/ Stony Brook Harbor	Recreational	Adult	Ingestion	None	Chemicals not expected to bioaccumulate in fish.
					Adolescent (12-18 yrs)	Ingestion	None	Chemicals not expected to bioaccumulate in fish.
					Child (0-6 yr)	Ingestion	None	Chemicals not expected to bioaccumulate in fish.

NOTES

1 Surface water and sediment exposure scenarios are for waders.

Quant = Quantitative analysis. Risk values will be estimated.

None = No analysis. Exposure pathway is incomplete or negligible.

TABLE 14
Noncancer Toxicity Data - Oral/Dermal
Smithtown Groundwater Contamination Site

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (1)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD: Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (2) (MM/DD/YYYY)
VOCs										
Acetone	Chronic	9.0E-01	mg/kg/day	–	9.0E-01	mg/kg/day	Kidney	1000	IRIS	9/3/2003
Chloroform	Chronic	1.0E-02	mg/kg/day	–	1.0E-02	mg/kg-day	Liver	1000	IRIS	9/3/2003
cis-1,2-Dichloroethene	Chronic	1.0E-02	mg/kg/day	–	1.0E-02	mg/kg/day	Blood	3000	NCEA	11/10/2003
Methyl Tert-Butyl Ether	NA	NA	NA	–	NA	NA	NA	NA	NCEA	11/10/2003
Tetrachloroethene	Chronic	1.0E-02	mg/kg/day	–	1.0E-02	mg/kg/day	Liver	1000	IRIS	9/3/2003
Trichloroethene	Chronic	3.0E-04	mg/kg/day	–	3.0E-04	mg/kg/day	Liver/Kidney/Fetus	3000	NCEA	12/10/2001
SVOCs										
* Benzo(a)anthracene	Chronic	3.0E-02	mg/kg/day	–	3.0E-02	mg/kg/day	Kidney	3000	NCEA	11/10/2003
Benzo(a)pyrene	NA	NA	NA	–	NA	NA	NA	NA	NCEA	11/10/2003
* Benzo(b)fluoranthene	Chronic	3.0E-02	mg/kg/day	–	3.0E-02	mg/kg/day	Kidney	3000	NCEA	11/10/2003
* Benzo(k)fluoranthene	Chronic	3.0E-02	mg/kg/day	–	3.0E-02	mg/kg/day	Kidney	3000	NCEA	11/10/2003
bis(2-Ethylhexyl)phthalate	Chronic	2.0E-02	mg/kg/day	–	2.0E-02	mg/kg/day	Liver	1000	IRIS	9/3/2003
* Dibenz(a,h)anthracene	Chronic	3.0E-02	mg/kg/day	–	3.0E-02	mg/kg/day	Kidney	3000	NCEA	11/10/2003
** Indeno(1,2,3-cd)pyrene	Chronic	5.0E-02	mg/kg/day	–	5.0E-02	mg/kg-day	Whole Body	1000	NCEA	11/10/2003
* Phenanthrene	Chronic	3.0E-02	mg/kg/day	–	3.0E-02	mg/kg/day	Kidnet	3000	NCEA	11/10/2003
INORGS										
Aluminum	Chronic	1.0E+00	mg/kg/day	–	1.0E+00	mg/kg-day	GI Tract/CNS/Neuro	100	NCEA	11/10/2003
Antimony	Chronic	4.0E-04	mg/kg/day	15.0%	6.0E-05	mg/kg-day	Whole Body/Blood	1000	IRIS	9/3/2003
Arsenic	Chronic	3.0E-04	mg/kg/day	–	3.0E-04	mg/kg-day	Skin	3	IRIS	9/3/2003
*** Chromium	Chronic	3.0E-03	mg/kg/day	2.5%	7.5E-05	mg/kg-day	GI Tract	900	IRIS	9/3/2003
Iron	Chronic	3.0E-01	mg/kg/day	–	3.0E-01	mg/kg-day	GI Tract/ Liver	1	NCEA	11/10/2003
**** Manganese	Chronic	2.0E-02	mg/kg/day	4.0%	8.0E-04	mg/kg-day	CNS	3	IRIS	9/3/2003
Nickel	Chronic	2.0E-02	mg/kg/day	4.0%	8.0E-04	mg/kg-day	Whole Body	300	IRIS	9/3/2003
***** Thallium	Chronic	9.0E-05	mg/kg/day	–	9.0E-05	mg/kg-day	Blood	3000	NCEA	11/10/2003
Vanadium	Chronic	1.0E-03	mg/kg/day	2.6%	2.6E-05	mg/kg-day	Kidney	300	NCEA	11/10/2003

NCEA - National Center for Environmental Assessment
IRIS = Integrated Risk Information System; September 2003
HEAST = Health Effects Assessment Summary Tables; July 1997
RfD = Reference dose
Region 3 = EPA Region 3 RBC Table; April 2002
(1) The dermal RfD was assumed to equal the oral RfD, unless an adjustment factor was found in Exhibit 4.1 of EPA 2001b.
(2) IRIS values were confirmed against the EPA's online database, September, 2003.

* Pyrene's RfD of 3.0x10-2 mg/kg/day was used as a surrogate
** Bisphenol A's RfD of 5x10-2 mg/kg/day was used as a surrogate.
*** The RfD for hexavalent chromium has been applied to total chromium.
**** The RfD of 2x10-2 mg/kg/day applies to nondietary exposures, and was calculated from the IRIS RfD of 1.4 x 10^{-1} mg/kg/day as recommended in IRIS.
Dietary exposure (5 mg/day) was subtracted and a modifying factor of 3 was applied.
***** Thallium acetate's RfD of 9x10-5 was used as a surrogate.

TABLE 15
Noncancer Toxicity Data - Inhalation
Smithtown Groundwater Contamination Site

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD (1)		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfC Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (2) (MM/DD/YYYY)
VOCs									
Acetone	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Chloroform	Chronic	3.0E-04	mg/m3	8.6E-05	mg/kg/day	Liver/Kidney	1000	NCEA	5/1/2002
cis-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Methyl Tert-Butyl Ether	Chronic	3.0E+00	mg/m3	8.6E-01	mg/kg/day	Liver/Kidney	100	IRIS	9/3/2003
Tetrachloroethene	Chronic	2.0E-01	mg/m^3	5.7E-02	mg/kg/day	Kidney	100	NCEA	12/10/2002
Trichloroethene	Chronic	4.0E-02	mg/m^3	1.1E-02	mg/kg/day	CNS	1000	NCEA	12/10/2001
SVOCs									
Benzo(a)anthracene	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Benzo(b)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Benzo(k)fluoranthene	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
bis(2-Ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Dibenz(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Indeno(1,2,3-cd)pyrene	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
INORGs									
Aluminum	Chronic	5.0E-03	mg/m3	1.4E-03	mg/kg/day	CNS/Neuro	300	NCEA	11/10/2003
Antimony	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Arsenic	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Chromium	Chronic	1.0E-04	mg/m3	2.9E-05	mg/kg-day	Lungs	300	IRIS	9/3/2003
Iron	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Manganese	Chronic	5.0E-05	mg/m3	1.4E-05	mg/kg-day	CNS	1000	IRIS	9/3/2003
Nickel	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Thallium	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003
Vanadium	NA	NA	NA	NA	NA	NA	NA	NCEA	11/10/2003

NCEA - National Center for Environmental Assessment
IRIS = Integrated Risk Information System, September 2003
HEAST = Health Effects Assessment Summary Tables, July 1997
RfC = Reference concentration
RfD = Reference dose

(1) Inhalation RfDs were calculated from inhalation RfCs assuming a 70 kg individual has an inhalation rate of 20 m3/day.
(2) IRIS values were confirmed against the EPA's online database, September 2003.

Table 16
Cancer Toxicity Data - Oral/Dermal
Smithtown Groundwater Contamination Site

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (1)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (2) (MM/DD/YYYY)
VOCs								
Acetone	NA	NA	--	NA	NA	NA	NA	NA
* Chloroform	NA	NA	--	NA	NA	B2	IRIS	9/3/2003
cis-1,2-Dichloroethene	NA	NA	--	NA	NA	D	IRIS	9/3/2003
Methyl Tert-Butyl Ether	NA	NA		NA	NA	NA	NA	NA
Tetrachloroethene	5.4E-01	$(mg/kg/day)^{-1}$	--	5.4E-01	$(mg/kg/day)^{-1}$	B2-C	CAL-EPA	9/4/2003
Trichloroethene	4.0E-01	$(mg/kg/day)^{-1}$	--	4.0E-01	$(mg/kg/day)^{-1}$	B2-C	NCEA	12/10/2001
SVOCs								
Benzo(a)anthracene	7.3E-01	(mg/kg/day)-1	--	7.3E-01	(mg/kg/day)-1	B2	NCEA/ EPA1993	5/1/2001
Benzo(a)pyrene	7.3E+00	(mg/kg/day)-1	--	7.3E+00	(mg/kg/day)-1	B2	IRIS	9/3/2003
Benzo(b)fluoranthene	7.3E-01	(mg/kg/day)-1	--	7.3E-01	(mg/kg/day)-1	B2	NCEA/ EPA1993	5/1/2001
Benzo(k)fluoranthene	7.3E-02	(mg/kg/day)-1	--	7.3E-02	(mg/kg/day)-1	B2	IRIS	9/3/2003
bis(2-Ethylhexyl)phthalate	1.4E-02	(mg/kg/day)-1	--	1.4E-02	(mg/kg/day)-1	B2	NA	NA
Dibenz(a,h)anthracene	7.3E+00	(mg/kg/day)-1	--	7.3E+00	(mg/kg/day)-1	B2	NCEA/ EPA1993	5/1/2001
Indeno(1,2,3-cd)pyrene	7.3E-01	(mg/kg/day)-1	--	7.3E-01	(mg/kg/day)-1	B2	NCEA/ EPA1993	5/1/2001
Phenanthrene	NA	NA	--	NA	NA	D	IRIS	9/3/2003
INORGs								
Aluminum	NA	NA	--	NA	NA	D	NCEA	11/10/2003
Antimony	NA	NA	--	NA	NA	B1	NCEA	11/10/2003
Arsenic	1.5E+00	(mg/kg/day)-1	--	1.5E+00	(mg/kg/day)-1	A	IRIS	9/3/2003
** Chromium	NA	NA	--	NA	NA	D	IRIS	9/3/2003
Iron	NA	NA	--	NA	NA	D	NCEA	1/22/2003
Manganese	NA	NA	--	NA	NA	D	IRIS	9/3/2003
Nickel	NA	NA	--	NA	NA	NA	NA	NA
Thallium	NA	NA	--	NA	NA	D	IRIS	9/3/2003
Vanadium	NA	NA	--	NA	NA	NA	NA	NA

NCEA - National Center for Environmental Assessment

IRIS = Integrated Risk Information System

HEAST = Health Effects Assessment Summary Tables; July 1997

CSF = Cancer slope factor

CAL-EPA = California EPA, http://www.oehha.ca.gov/risk/chemicaldb/

EPA 1993 = Provisional Guidance for Quantitative Risk Assessment of PAHs

(1) The dermal Cancer Slope Factor was assumed to equal the oral Cancer Slope Factor.
No adjustment factor was applied.

(2) IRIS values were confirmed against the EPA's online database, September 2003
NCEA values were provided by EPA (May 2002).

* For chloroform, IRIS states that a dose of 1e-2 mg/kg/day, equal to the noncancer RfD, can be considered protective against cancer risk.

** Chromium VI is an A carcinogen by the inhalation route, but a D carcinogen by the oral route.

*** According to NCEA, the carcinogenicity of antimony cannot be determined based on available information. Antimony trioxide may be classified as a B1 carcinigen based on occupational inhalation, while other forms ae classified as D carcingoens.

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 and inadequate or no evidence in humans.

C - Possible human carcinogen

D - Not classifiable as human carcinogen

E - Evidence of noncarcinogenicity

Table 17
Cancer Toxicity Data - Inhalation
Smithtown Groundwater Contamination Site

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor (1)		Weight of Evidence/ Cancer Guideline Description	Unit Risk: Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (2) (MM/DD/YYYY)
VOCs							
Acetone	NA	NA	NA	NA	NA	NA	NA
Chloroform	2.3E-05	$(ug/m^3)^{-1}$	8.1E-02	$(mg/kg/day)^{-1}$	B2	IRIS	9/3/2003
cis-1,2-Dichloroethene	NA	NA	NA	NA	D	IRIS	9/3/2003
Methyl Tert-Butyl Ether	NA	NA	NA	NA	NA	NA	NA
Tetrachloroethene	5.9E-06	$(ug/m^3)^{-1}$	2.1E-02	$(mg/kg/day)^{-1}$	B2-C	CAL-EPA	9/4/2003
Trichloroethene	1.0E-04	$(ug/m^3)^{-1}$	3.5E-01	$(mg/kg/day)^{-1}$	B2-C	NCEA	12/10/2001
SVOCs							
Benzo(a)anthracene	NA	NA	3.1E-01	$(mg/kg/day)^{-1}$	B2	NCEA/ EPA1993	11/6/2003
Benzo(a)pyrene	8.8E-04	$(ug/m^3)^{-1}$	3.1E+00	$(mg/kg/day)^{-1}$	B2	NCEA	11/10/2003
Benzo(b)fluoranthene	NA	NA	3.1E-01	$(mg/kg/day)^{-1}$	B2	NCEA/ EPA1993	11/10/2003
Benzo(k)fluoranthene	NA	NA	3.1E-02	$(mg/kg/day)^{-1}$	B2	NCEA/ EPA1993	11/10/2003
bis(2-Ethylhexyl)phthalate	NA	NA	NA	NA	NA	NCEA	11/10/2003
Dibenz(a,h)anthracene	NA	NA	3.1E+00	$(mg/kg/day)^{-1}$	B2	NCEA/ EPA1993	11/10/2003
Indeno(1,2,3-cd)pyrene	NA	NA	3.1E-01	$(mg/kg/day)^{-1}$	B2	NCEA/ EPA1993	11/10/2003
Phenanthrene	NA	NA	NA	NA	D	IRIS	9/3/2003
INORGs							
Aluminum	NA	NA	NA	NA	D	NCEA	11/10/2003
Antimony	NA	NA	NA	NA	B1	NCEA	11/10/2003
Arsenic	4.3E-03	$(ug/m^3)^{-1}$	1.5E+01	$(mg/kg/day)^{-1}$	A	IRIS	9/3/2003
* Chromium	1.2E-02	$(ug/m^3)^{-1}$	4.2E+01	$(mg/kg/day)^{-1}$	A	IRIS	9/3/2003
Iron	NA	NA	NA	NA	D	NCEA	1/22/2003
Manganese	NA	NA	NA	NA	D	IRIS	9/3/2003
Nickel	2.4E-04	$(ug/m^3)^{-1}$	8.4E-01	$(mg/kg/day)^{-1}$	A	IRIS	9/3/2003
Thallium	NA	NA	NA	NA	D	IRIS	9/3/2003
Vanadium	NA	NA	NA	NA	NA	NA	NA

NCEA - National Center for Environmental Assessment
IRIS = Integrated Risk Information System, September 2003
HEAST = Health Effects Assessment Summary Tables, 1997
CAL-EPA = California EPA, http://www.oehha.ca.gov/risk/chemicaldb/
EPA 1993 = Provisional Guidance for Quantitative Risk Assessment of PAHs
(1) Inhalation CSFs were calculated from unit risks assuming a 70 kg individual has an inhalation rate of 20 m^3/day.
(2) IRIS values were confirmed against the EPA's online database, September 2003.

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 and inadequate or no evidence in humans.
C - Possible human carcinogen
D - Not classifiable as human carcinogen
E - Evidence of noncarcinogenicity

* Chromium VI is an A carcinogen by the inhalation route, but a D carcinogen by the oral route. The CSF for hexavalent chromium has been applied to total chromium.
** According to NCEA, the carcinogenicity of antimony cannot be determined based on available information. Antimony trioxide may be classified as a B1 carcinigen based on occupational inhalation, while other forms ae classified as D carcingoens.

TABLE 18

SUMMARY OF RISKS AND HAZARDS

REASONABLE MAXIMUM EXPOSURE

Smithtown Groundwater Contamination - Smithtown, New York

Receptor	Exposure Media	Cancer Risk	Cancer Risk Notes	Noncancer Hazard Index (HI)	Noncancer HI Notes
Current/Future					
Resident - Adult	GW	2E-04	Arsenic (risk= 8.9E-05) accounts for 51% of total risk. Tetrachloroethene (risk=5.7E-05) accounts for 33% of total risk. Trichloroethene (risk=2.4E-05) accounts for 14% of the total risk.	4	HIs for liver (mostly from chloroform), and GI tract (mostly from chromium) exceeded 1.
Resident - Child (0 to 6 yrs)	GW	2E-04	Trichloroethene (risk=7.1E-05) accounts for 38% of total risk. Tetrachloroethene (risk=5.6E-05) accounts for 30% of the total risk. Arsenic (risk= 5.2E-05) accounts for 28% of total risk.	20	HIs for liver (mostly from chloroform), GI tract (from chromium and iron), and skin (from arsenic) exceeded 1.
Total Resident - Combined Child/Adult Exposure	GW	4E-04	Arsenic accounts for 40% of the total risk. Tetrachloroethene accounts for 32% of the total risk. Trichloroethene accounts for 26% of the total risk.	NA	HI value for adult and child receptors should not be combined.
River - Adult	Sed/SW	2E-04	Benzo(a)pyrene in surface water (risk = 1.7E-04) accounts for 76% of total risk. Benzo(b)flouranthene in surface water (1.7E-05) accounts for 8% and indeno(1,2,3-cd)pyrene in surface water (1.2E-05) accounts for 5% of total risk.	0.04	HI value is below 1.
River - Child (0-6 yrs)	Sed/SW	1E-04	Benzo(a)pyrene in surface water (risk = 7.0E-05) accounts for 72% of total risk. Benzo(b)flouranthene in surface water (7.0E-06) accounts for 7% and indeno(1,2,3-cd)pyrene in surface water (5.0E-06) accounts for 5% of total risk. Benzo(a)anthracene in surface water (4.8E-06) accounts for 5% of total risk.	0.2	HI value is below 1.
Harbor and Wetland - Adult	Sed/SW	7E-06	Benzo(a)pyrene in sediment (risk = 3.9E-06) accounts for 52% of total risk. Arsenic in sediment (2.9E-06) = 38%.	0.08	HI value is below 1.
Harbor and Wetland - Child (0 to 6 yrs)	Sed/SW	7E-06	Arsenic in sediment (3.7E-06) = 52% and benzo(a)pyrene in sediment (risk = 3.1E-06) accounts for 43% of total risk.	0.6	HI value is below 1.

GW = Ground Water

Sed/SW = Sediment/Surface Water

Cancer risks: An excess lifetime cancer risk of 1E-06 indicates that an individual experiencing the reasonable maximum exposure has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. EPA's generally acceptable risk range for site-related exposures is 1E-06 to 1E-04 (one in one million to one in ten thousand).

Noncancer hazards: EPA Risk Assessment Guidance for Superfund (EPA 1989) states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse noncancer effects.

TABLE 19

SUMMARY OF RISKS AND HAZARDS

CENTRAL TENDENCY

Smithtown Groundwater Contamination - Smithtown, New York

Receptor	Exposure Media	Cancer Risk	Cancer Risk Note	Noncancer Hazard Index (HI)	Noncancer HI Note
Current/Future					
Resident - Adult	GW	4E-05	Arsenic (risk = 2.3e-5) accounts for 54% of cancer risk. Tetrachloroethene (risk = 1.3 e-5) accounts for 30% of cancer risk. Trichloroethene (risk = 6.3e-6) accounts for 15% of cancer risk.	2	HI for no individual organ exceeded 1.
Resident - Child (0 to 6 yrs)	GW	6E-05	Trichloroethene (risk = 2.3 e-5) accounts for 38% of cancer risk. Arsenic (risk = 2.1e-5) accounts for 34% of cancer risk.Tetrachloroethene (risk = 1.5e-5) accounts for 25% of cancer risk.	6	His for liver (mostly from chloroform) and GI tract (from chromium and iron) exceeded 1.
Total Resident - Combined Child/Adult Exposure	GW	1E-04	This value is derived from the sum of adult and child risk. Arsenic, trichloroethene and tetrachloroethene account for the majority of cancer risk.	NA	HI value for adult and child receptors should not be combined.
River - Adult	Sed/SW	3E-05	Benzo(a)pyrene in surface water (risk = 2.6e-5) accounts for 76% of total risk. Benzo(b)flouranthene in surface water (2.6e-6) = 8% and indeno(1,2,3-cd)pyrene in surface water (1.8e-6) = 5% of total risk. Benzo(a)anthracene in surface water (1.7e-6) also accounts for 5% of total risk.	0.02	HI value is below 1.
River - Child (0 to 6 yrs)	Sed/SW	5E-05	Benzo(a)pyrene in surface water (risk = 3.5e-5) accounts for 73% of total risk. Benzo(b)flouranthene in surface water (3.5e-6) accounts for 7% and indeno(1,2,3-cd)pyrene in surface water (1.2e-6) accounts for 5% of total risk.Benzo(a)anthracene in surface water (2.4e-6) also accounts for 5% of total risk	0.09	HI value is below 1.
Harbor and Wetland - Adult	Sed/SW	9E-07	Cancer risk is below 1E-6.	0.02	HI value is below 1.
Harbor and Wetland - Child (0 to 6 yrs)	Sed/SW	2E-06	Benzo(a)pyrene in sediment (risk =1.1e-6) accounts for 47% of the total risk. And Arsenic in sediment (risk=1.1e-6) also accounts for 46% of the total risk.	0.2	HI value is below 1.

GW = Ground Water

Sed/SW = Sediment/Surface Water

Cancer risks: An excess lifetime cancer risk of 1E-06 indicates that an individual experiencing the reasonable maximum exposure has a 1 in 1,000,000 chance of developing cancer as a result of site-related exposure. EPA's generally acceptable risk range for site-related exposures is 1E-06 to 1E-04 (one in one million to one in ten thousand).

Noncancer hazards: EPA Risk Assessment Guidance for Superfund (EPA 1989) states that, generally, a hazard index (HI) greater than 1 indicates the potential for adverse noncancer effects.

Table 20
Cost Estimate Summary for Alternative 2
Smithtown Groundwater Contamination Site
Smithtown, New York

Item No.	Item Description	Alternative 2
CAPITAL COSTS		
1	Work Plans/HASP/CQCP	$ 35,300
2	Mobilization/Demobilization	$ 36,000
3	Construction Management	$ 203,343
4	Alternative Water Supply	$ 2,033,427
5	Pump and Treat Systems	---
	SUBTOTAL CONSTRUCTION COSTS	$ 2,308,070
	General contractor Fee (10% construction)	$ 230,807
	Design Engineering (20% construction)	$ 230,807
	Resident Engineering/Inspection (10% construction)	$ 461,614
	Contingency (20%)	$ 461,614
	TOTAL CAPITAL COSTS	$ **1,384,842**
ANNUAL O&M COSTS		
5	Project Planning and Organizing	$ 2,400
6	Field Sampling Labor	$ 17,820
7	Sampling Equipment, Shipping, Consumable Supplies	$ 7,700
8	Sample Analysis and Data Validation	$ 8,400
9	Data Evaluation and Reporting	$ 10,500
10	Groundwater Treatment Plant O&M	---
	TOTAL ANNUAL O&M COST	$ **46,820**
CARBON REPLACEMENT		
11	Carbon Change Out at Year 5	---
FIVE YEAR REVIEW		
12	Five Year Review Report	$ **8,400**
PRESENT WORTH OF COSTS		
13	Total Capital Costs	$ 3,462,104
14	Annual O&M Costs (30/10 year duration)	$ 580,989
15	Carbon Replacement at Year 5	---
16	Five Year Review Costs (30/10 year duration)	$ 18,126
	TOTAL PRESENT WORTH	$ **4,061,219**

APPENDIX III

ADMINISTRATIVE RECORD INDEX

SMITHTOWN GROUNDWATER CONTAMINATION SITE
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

3.0 REMEDIAL INVESTIGATION

3.4 Remedial Investigation Reports

P. 300001 - 300310 Report: Final Remedial Investigation Report, Smithtown Groundwater Contamination Site, Smithtown, New York, Volume I, prepared by CDM Federal Programs Corporation, prepared for U. S. EPA Region 2, January 13, 2004.

P. 300311 - 301220 Report: Final Remedial Investigation Report, Smithtown Groundwater Contamination Site, Smithtown, New York, Volume II, prepared by CDM Federal Programs Corporation, prepared for U. S. EPA Region 2, January 16, 2004.

P. 301221 - 301478 Report: Final Screening Level Ecological Risk Assessment, Smithtown Groundwater Contamination Site, Remedial Investigation/Feasibility Study, Smithtown, New York, prepared by CDM Federal Programs Corporation, prepared for U. S. EPA Region 2, January 14, 2004.

P. 301479 - 301683 Report: Final Human Health Risk Assessment, Smithtown Groundwater Contamination Site, Remedial Investigation/Feasibility Study, Smithtown, New York, prepared by CDM Federal Programs Corporation, prepared for U. S. EPA Region 2, February 9, 2004.

4.0 FEASIBILITY STUDY

4.3 Feasibility Study Reports

P. 400001 - 400289 Report: Final Feasibility Study Report, Smithtown Groundwater Contamination Site, Smithtown, New York, Volume II, prepared by CDM Federal Programs Corporation, prepared for U. S. EPA Region 2, March 25, 2004.

APPENDIX IV

STATE LETTER OF CONCURRENCE

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

Erin M. Crotty
Commissioner

SEP 30 2004

Mr. George Pavlou, P.E.
Director
Emergency and Remedial Response Division
USEPA Region II
290 Broadway, 19th Floor
New York, NY 10007-1866

Re: Superfund Record of Decision
Smithtown Groundwater Contamination Site
Suffolk County, NY Site No. 152175

Dear Mr. Pavlou:

The New York State Department of Environmental Conservation, in conjunction with the New York State Department of Health, has reviewed the Proposed Record of Decision for the Smithtown Groundwater Contamination Site and finds it acceptable.

If you have any questions, please contact Dr. Chittibabu Vasudevan, of my staff, at (518) 402-9625.

Sincerely,

Dale A. Desnoyers
Director
Division of Environmental Remediation

cc: K. Lynch, USEPA
G. Litwin / R. Fedigan, NYSDOH
S. Robbins, SCDHS
W. Parish, Region 1, Stoney Brook

ec: D. Desnoyers
S. Ervolina
C. Vasudevan
J. Yavonditte
R. Mitchell, NYSDOH
J. Strang

letter:hw152175.2004-09.DEC _ROD_concurrence.wpd

APPENDIX V

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY

Smithtown Groundwater Contamination Site

INTRODUCTION

A responsiveness summary is required by regulations promulgated under the Superfund statute. It provides a summary of citizen's comments and concerns received during the public comment period, as well as the responses of the United States Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC) to those comments and concerns. All comments summarized in this document have been considered in EPA's final decision involving selection of a remedy for the Smithtown Groundwater Contamination Site.

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

As lead agency for the Site, EPA prepared a Community Relations Plan, dated January 19, 2000. The Community Relations Plan included a community profile and contact list, and has also been used by EPA for its community outreach efforts at the Site. Site reports have been made available for public review at information repositories at the EPA Docket Room in Region II, New York, and the Smithtown Library in Smithtown, New York.

The Proposed Plan was prepared by EPA, with consultation by NYSDEC, and finalized in June 2004. A notice of the Proposed Plan and public comment period was placed in the Smithtown Messenger and The Smithtown News on June 17, 2004, consistent with the requirements of National Oil and Hazardous Substance Pollution Contingency Plan (NCP) §300.430(f)(3)(i)(A), and a copy of the Proposed Plan was mailed to all persons on the Site mailing list. The Proposed Plan was made available for review at the information repositories for the Site. The public comment period was scheduled from June 16, 2004 to July 17, 2004. EPA hosted a public meeting on June 29, 2004 to discuss the Proposed Plan. At this meeting, representatives from EPA and NYSDEC answered questions about contamination at the Site and the remedial alternatives.

OVERVIEW

The selected remedy includes an alternate water supply to approximately 270 homes currently and potentially affected by the groundwater contamination; long-term monitoring to ensure aquifer restoration through natural processes such as dispersion, dilution and volatilization; institutional controls such as groundwater use restrictions (through well drilling permit restrictions) will be utilized to prevent future use of contaminated groundwater; and Site reviews to be conducted no less often than once every five years using data obtained through the annual and groundwater sampling program.

The majority of the comments from the public have supported the preferred alternative. Attached to this Responsiveness Summary are the following Appendices:

Appendix A – Proposed Plan
Appendix B – Public Notice
Appendix C – June 29, 2004 Public Meeting Attendance Sheet
Appendix D – Letters Submitted During the Public Comment Period
Appendix E – Public Meeting Transcript

SUMMARY OF COMMENTS AND EPA'S RESPONSES

Specific comments have been organized as follows:

- General Site Issues
- Site Characteristics and Aquifer Characteristics
- Public Safety and Risk Assessment Issues
- Remedy Selection Issues
- Remedy Implementation Issues

A summary of comments and concerns regarding the Site investigation and remedy selection process and EPA's responses are provided below. Most of the comments and concerns identified below were received during the public meeting held on June 29, 2004.

General Site issues

Comment # 1: Please identify the area with the highest contamination.

Response # 1: Two residential areas appear to have higher levels of VOCs compared with the sporadic nature of contamination observed throughout the Site. Area-1 is near Harbor Hill Road and Stony Brook Harbor on the east side of the Site. The maximum perchloroethylene (PCE) concentration detected was 140 micrograms per liter (ug/L). Area-2 is near the Harbor Hill Road, Waterford Stables and the Nature Conservancy property on the west side of the Site. The maximum PCE concentration detected was 63 ug/L.

Comment # 2:

At the corner of Harbor Road and Cordwood Path, there is a flowing artesian well (PVC pipe sticking out of the ground with water flowing out of it) which is occasionally used by the public. What was the level of contamination found in this well and what is EPA's plan to close this well?

Response # 2:

A PCE concentration of 7 ppb was detected at this artesian well. EPA contacted both the Suffolk County Department of Health Services (SCDHS) and a representative of the association that owns the property upon which the artesian well is located. Suffolk County had written a letter to the association requesting them to shut down this well. However, due to the technical difficulty in shutting down an artesian well, the owner has put up a sign warning the public from collecting this water. As part of the remedial action, EPA will assess the viability of piping the well water (about 25 feet) directly to Stony Brook Harbor to prevent public access and exposure to the well water.

Comment # 3: Was Gyrodyne Industrial Area ever considered a potential source of contamination for the Smithtown Groundwater Site?

Response # 3: Gyrodyne Industrial Area is located northeast of the Site and groundwater modeling and flow pathway analysis indicate that Gyrodyne is not a potential source for the Smithtown Groundwater Contamination Site because groundwater flow beneath Gyrodyne follows a different pathway.

Comment # 4: Were any of the organisms in Stony Brook Harbor sampled for chemical analysis? Are there any future plans for sampling the organisms for analysis?

Response # 4: Only surface water and sediment samples were collected from Stony Brook Harbor for chemical analysis. Surface water and sediment sample results indicate that groundwater containing very low levels of chlorinated VOC contamination is discharging along the Nissequogue River and Stony Brook Harbor. VOCs do not appear to be concentrating in surface water and sediments as the discharge areas along the river and harbor are subjected to twice daily tidal fluctuations, which serve to mix and disperse groundwater discharges. EPA has no future plans for collecting organism samples for chemical analysis.

Comment # 5: What future actions will EPA undertake in the event that groundwater sampling within the next 5-10 years reveals unanticipated groundwater problems beyond the boundary selected for public water hook-ups?

Response # 5: EPA will be conducting annual monitoring. If groundwater monitoring of the area indicates that groundwater conditions have changed unexpectedly, the Agency will reevaluate the remedy to address any changes in groundwater conditions.

Comment # 6: The residential area around Three Sisters Road, just northeast of the proposed boundary for public water hook-ups has been a source of some concern during the early days of the Site. Was the area around Three Sisters Road overlooked for inclusion in the proposed remediation?

Response # 6: During the Remedial Investigation (RI), EPA focused on the areas that were known to be contaminated and/or that were likely to be in the flow paths of the potential sources (Figure 1-4 in the RI shows groundwater model backtracks). Since groundwater sampling of homes near Three Sisters Road indicated no groundwater contamination, the RI sampling did not include homes near Three Sisters Road but instead focused in downgradient areas where contamination was identified.

Public Safety and Risk Assessment Issues

Comment # 7: Are all homes at the Site being monitored? What are the health risks associated with the groundwater contamination at the Site?

Response # 7: Residential well water samples have been collected from approximately 300 homes in the study area but not all of these private wells were found to be located in the area of contamination. During the RI, EPA offered to collect samples from all of the homes using private wells for potable water within the area of contamination as well as those within a radius of two lots outlying the contaminated area. If contamination was detected in the outlying homes the sample area was expanded. From 1999 through 2003, EPA collected four rounds of private well samples from approximately 180 homes located within the areas of contamination. As a result of this effort, EPA identified 39 private homes with PCE levels greater then 5 ug/L (Federal and New York State drinking water standard for PCE) and connected them to the public water supply or installed water treatment systems at individual properties where public water mains were not available. Also, a number of residents have connected to the public water supply at their own expense. Once all of the homes are connected to the water supply, continued monitoring of the homes is not planned.

People drinking water with PCE contamination over the long term would have a potential for developing cancer. As indicated in the public health assessment report cited in response to Comment # 12, long-term exposure such as people drinking water with PCE levels ranging between 82 ug/L to 200 ug/L for up to 30 years is estimated to have a moderate risk of developing cancer. People drinking water with PCE levels ranging between 5 ug/L to 82 ug/L for up to 30 years have a low risk of developing cancer. The chlorinated contaminants detected in some of the private drinking water supplies may also produce a variety of noncarcinogenic adverse effects, primarily to the liver, kidneys and nervous system.

Comment # 8: What is the health risk associated with children playing at a neighbor's house and getting incidental exposure to the groundwater contamination?

Response # 8: The Human Health Risk Assessment (HHRA) report prepared by EPA identifies the potential exposure pathways by which the population may be exposed to site-related contamination, the toxicity of chemicals that are present and the potential for cancer and noncancer effects to occur from exposure to these chemicals. Based on the HHRA report, there is a potential for unacceptable health risk from the groundwater contamination, if these exposures were to occur for long periods of time. However, a child visiting a neighbor's house and drinking a glass of water or using the pool for swimming would result in a relatively insignificant exposure.

Comment # 9: Is there any health risk from vapors emanating out of the well that is neither used nor completely sealed off but is located next to the house?

Response # 9: The potential for exposure to vapors in this situation is minimal. Even if the water in the well were contaminated at the levels seen at the Smithtown site, it is unlikely that contaminant vapors would accumulate in the air near an outdoor well. However, as part of the Remedial Action (RA), all wells will be decommissioned and sealed.

Comment # 10: How would one go about having their well water tested?

Response # 10: Suffolk County Department of Health Services may be contacted at 631-853-2250/2251 if homeowners want to have their water tested for a nominal fee.

Comment # 11: How are the public water supplies, such as the Suffolk County Water Authority (SCWA) protected from groundwater contamination?

Response # 11: Public water supplies are routinely monitored. The SCDHS and the SCWA perform annual and quarterly monitoring, respectively. However, if trace levels of contamination are identified in a sample, the SCWA voluntarily performs weekly monitoring. If sampling indicates a concentration closer to the maximum permissible level, such as five micrograms per liter (parts per billion) of PCE (or most other organic solvents), SCWA will either shut down the well or install a treatment unit to remove that contamination. EPA believes that none of the groundwater contamination detected at the Smithtown Site threatens any public supply wells.

Comment 12: Should the public be concerned with the risk to people who have already consumed the water and bathed in it for the last ten years?

Response # 12: EPA's risk assessment process focuses on two scenarios: current and future health effects for both adults and children assuming no remedial actions are taken and all the Site contaminants and concentrations remain the same. Unfortunately, the risk assessment process does not evaluate past exposures due to uncertainties associated with historical exposures. Some of the uncertainties associated with historical exposure include the route, start time, duration and level of exposure.

When the Smithtown Groundwater Contamination Site was proposed to the National Priorities List, the Agency for Toxic Substances Disease and Registry (ATSDR) prepared a public health assessment report which evaluated past concentrations and exposures based on the data available. The public health assessment, which was finalized in 2002 and is available at the public document repository for this site, stated the following:

"For an undetermined period of time, possibly for up to approximately 30 years, some private water supply wells in the Smithtown community have been contaminated with chlorinated volatile organic compounds (VOCs). The highest levels of cis-1,2-dichloroethene (6 μg/L), 1,2-dichloropropane (14 μg/L), PCE (200 μg/L) and TCA (38 μg/L) measured in private wells exceed NYS public drinking water standards and/or public health assessment comparison values."

"Based on the results of animal studies, studies in humans and limited sampling of private residential water supply wells, people drinking water over a period of up to 30 years containing PCE at levels from 82 μg/L up to 200 μg/L are estimated to have a moderate increased risk of developing cancer. People drinking water with PCE levels from 5 μg/L to 82 μg/L for 30 years have a low risk of developing cancer. For people drinking treated water with an occasional breakthrough concentration of PCE in excess of the drinking water standard (such as the 11 μg/L concentration observed in one home), the risk is estimated to be very low... Toxicological data are inadequate to assess the carcinogenic potential of cis-1,2-dichloroethene and 1,1,1-trichloroethane (ATSDR, 1995, 1996)."

"The chlorinated contaminants detected in some of the private drinking water supplies in the Smithtown community also produce a variety of noncarcinogenic effects, primarily to the liver, kidneys and nervous system. Although the risks of noncarcinogenic effects from past exposures to the highest levels of these chlorinated VOCs in private drinking water supply wells are not completely understood, the existing data suggest that they would be low for PCE levels from 175 μg/L to 200 μg/L, minimal for PCE concentrations up to 175 μg/L and minimal for cis-1,2-dichloroethene (6 μg/L)...and TCA (38 μg/L). Following treatment, the risk for PCE would be minimal."

Remedy Selection Issues

Comment # 13: What was EPA's rationale for selecting Alternative 2?

Response # 13: Site sampling data indicate a generally decreasing trend in the concentrations of PCE from 1998 to 2003. Based on hydrogeological modeling presented in Appendix A of the Feasibility Study (FS) under Alternative 2, the contaminant mass is projected to decrease over time as contaminated groundwater migrates and discharges to surface water bodies. The model predicts that 70% of the contaminant mass would be removed in seven years from the groundwater flushing action mainly attributed to dispersion, dilution and volatilization.

Therefore, based on the model predictions, without groundwater pumping and treating, it is expected that the contaminant concentrations would drop to below the groundwater quality standards within the next 30 years.

Similarly, the groundwater modeling predicts that with Alternative 3's active pumping and treatment system, 75% of the contaminant mass would be removed from the pumping and flushing actions in five years (see FS, Appendix A, Figure 9). Based on the low contaminant concentrations detected and the modeling results, it is expected that the contaminant concentrations would drop to below the drinking water standards in 10 years.

Since Alternative 2 would eliminate current and future exposure to groundwater contamination by providing an effective and permanent remedy of an alternate water supply, EPA believes that the additional cost of approximately $ 3.1 million in Alternative 3 for groundwater extraction and treatment would not be justified for the benefit achieved.

Remedy Implementation Issues

Comment # 14: Who is going to pay for the surcharge fees? What is EPA's plan, which relies on the existing pipeline water main infrastructure laid by SCWA, to equitably spread the costs among all the homeowners at the Site?

Response # 14: There are three types of costs associated with the alternate water supply connection for each house at the Site:

- The cost of installing a household service line to connect an existing house (located in the affected area) to the public water main on the street;
- SCWA tapping fees for hook-up
- SCWA surcharge for reimbursing the cost of existing water mains laid by SCWA.

As part of the remedial action, EPA will pay for installing the household service lines to the public water main and also the tapping fees. However, each homeowner will be responsible for the SCWA surcharge to pay for their share of the water main infrastructure in the community.

Since each homeowner will be responsible to pay the surcharge cost prior to EPA's hook-up to the water main, EPA feels that the cost of laying the water main infrastructure in the community will be equitably distributed among all homeowners.

Comment # 15: When will this remedy be implemented?

Response # 15: The remedy will be implemented in about 2 years subject to the availability of Federal funds.

Comment # 16: Can wells be used for watering lawns or must they be abandoned?

Response # 16: As part of the RA, individual private wells will be decommissioned and sealed. EPA feels it is necessary to seal off contaminated private wells to ensure that the water is not intentionally or inadvertently used as potable or nonpotable water by residents.

Comment # 17: Will EPA set up a priority system for selecting homes for water main connection in order to select those homes with wells that have a greater potential to be contaminated versus wells that are not?

Response # 17: EPA will prepare a Remedial Design document, which will provide all the remedy implementation schedule and details. Contaminant levels will be considered to the extent possible in scheduling waterline connections.

Comment # 18: EPA is proposing to connect approximately 270 homes to the water mains. However, the affected area includes subdivisions that are not fully developed and are vacant lots. If anyone is building a house in any of these vacant lots, what is EPA's policy for providing a hook-up to a newly constructed house in the affected area?

Response # 18: EPA will connect any existing home that is located in the designated hook-up area to the public water supply. If someone builds a house in a subdivision located within the affected area after the Record of Decision is issued, the homeowner would be required to pay for the cost of hooking up to the water main as a normal cost for building the house.

Comment # 19: What is EPA's policy on providing reimbursements to homeowners who have previously connected to the public water supply at their own expense?

Response # 19: EPA does not have the authority to reimburse any homeowner who may have already connected to the public water supply.

Comment # 20: What should a homeowner do if due to an emergency situation, private well water becomes unavailable (e.g., if a pump fails) prior to EPA's hookup to the public water supply? On those occasions, can a homeowner call EPA for an emergency hook-up to the water main?

Response 20: The homeowner should contact the EPA in those situations and inquire about the connection schedule for the home in question. EPA will inform the homeowner as to what accommodations may be provided as expeditiously as possible. Homeowners should contact Syed Quadri, the Remedial Project Manager for the Smithtown Site, at 212-637-4233.

Appendix A
Proposed Plan

Smithtown Groundwater Contamination Site

St.James, Suffolk County, New York

June 2004

EPA
Region 2

MARK YOUR CALENDAR

June 17 through July 16, 2004: Public comment period on the Proposed Plan.

June 29, 2004 at 7:00 PM: Public meeting at the Smithtown Freshman Campus
660 Meadow Road
Smithtown, NY 11787

COMMUNITY ROLE IN SELECTION PROCESS

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 Smithtown Groundwater Contamination Site's Remedial Investigation and Feasibility Study (RI/FS) and other investigative reports along with this Proposed Plan have been made available to the public for a public comment period which begins on June 17, 2004 and concludes on July 16, 2004.

A public meeting will be held during the public comment period at the Smithtown Freshman Campus, 660 Meadow Road, Smithtown, NY 11787 on June 29, 2004 at 7:00 PM to present the conclusions of the RI/FS, to discuss the preferred remedy, and to receive public comments on the preferred remedy.

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 which formalizes the selection of the remedy.

PURPOSE OF PROPOSED PLAN

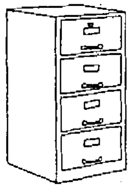
This Proposed Plan describes the remedial alternatives considered for the Smithtown Groundwater Contamination Site (Site), and identifies the preferred remedial alternative with the rationale for this preference. The Proposed Plan was developed by the U.S. Environmental Protection Agency (EPA) in consultation with the New York State Department of Environmental Conservation (NYSDEC). The preferred remedial alternative proposed in this plan would protect human health and the environment from risks associated with the contaminated groundwater at the Site.

This Proposed Plan is being provided as a supplement to the Remedial Investigation and Feasibility Study (RI/FS) reports to inform the public of EPA and NYSDEC's preferred remedy and to solicit public comments pertaining to all the remedial alternatives evaluated, including the preferred alternative. Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Section 300.430(f) of the National Oil & Hazardous Substance Pollution Contingency Plan (NCP) require EPA to solicit public comments on proposed plans. The alternatives summarized here are more fully described in the FS report contained in the Administrative Record file for the Site.

EPA's preferred remedy is to provide connections to the public water supply system to homes currently relying on private wells (within the Villages of Nissequogue and Head of the Harbor) that may be affected by Site-Related groundwater contamination. The remedy would eliminate the potential for exposure to contaminated groundwater from the use of private wells. As part of this proposed remedy, homes determined to be currently and potentially affected by the contamination would be connected to the public water supply. Existing residential wells would be abandoned. Long-term monitoring would include groundwater monitoring at the Site and surface water sampling at the Nissequogue River and Stony Brook Harbor.

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 FS report because EPA and NYSDEC may select a remedy other than the preferred remedy.

The administrative record file, which contains the information upon which the selection of the response action will be based, is available at the following locations:



Smithtown Library
1 North Country Road
Smithtown, NY 11781
(631) 265-2072
Contact: Reference Desk

Hours: Monday-Thursday 10 AM - 9 PM
Friday 10 AM - 6 PM
Saturday 9 AM - 5 PM

USEPA-Region II
Superfund Records Center
290 Broadway, 18th Floor
New York, NY 10007-1866
(212) 637-4308

Hours: Monday-Friday, 9:00 AM - 5:00 PM

Written comments on this Proposed Plan should be addressed to:

Syed M. Quadri
Project Manager
New York Remediation Branch
Emergency and Remedial Response Division
United States Environmental Protection Agency
290 Broadway, 20th Floor
New York, NY 10007-1866

Telefax: (212) 637-4284
Internet: quadri.syed@epa.gov

SCOPE AND ROLE OF ACTION

Site remedial activities are sometimes segregated into different phases, or operable units, so that remediation of different environmental media or areas of a site proceed separately in an expeditious manner. However, for this Site, EPA has decided to address all remedial activities within the scope of one operable unit.

The primary objective of the comprehensive remedial action described in this Proposed Plan is to protect human health and the environment from risks associated with contaminated groundwater. The remedial activities primarily involve connection of private residences to a public water supply and restoration of the drinking water aquifer.

SITE BACKGROUND

Site Description

The Smithtown Groundwater Contamination Site (see Figure 1) includes an area of contaminated groundwater within the Villages of Nissequogue and Head of the Harbor, and the Hamlet of St. James, Smithtown, Suffolk County, New York. The Site is situated in an approximately four-square mile predominantly residential area bounded by Stony Brook Harbor to the north; the Nissequogue River to the west; Edgewood Avenue and North County Road to the south; and Hitherbrook Road to the east. Many homes use private wells for potable drinking water and septic systems for sanitary wastewater disposal. Some business/retail development is located in St. James, primarily along Lake Avenue and North Country Road (Route 25A).The topography of the Site is complex, with an altitude range of 400 feet above mean sea level (amsl) to sea level at the edges of the Nissequogue River and Stony Brook Harbor. The Site is located on the crest and north- and south-facing flanks of the Harbor Hill moraine. A deep post-glacial fluvial incision of the moraine formed Stony Brook Harbor, the Nissequogue River estuary, and the dissected hills and steep, narrow valleys on the moraine itself.

Site History

In October 1997, EPA received a written request from the New York Department of Environmental Conservation (NYSDEC) requesting assistance in funding alternate water supplies for residences affected by contaminated groundwater. Attached to the NYSDEC's request for assistance was a private well sampling survey, prepared by the Suffolk County Department of Health Services (SCDHS), which presented drinking water results from 35 private wells in the area. Analytical data from the survey indicated that several wells were contaminated with volatile organic compounds (VOCs), primarily tetrachloroethylene (PCE). The areal extent of groundwater contamination in residential wells across the Site suggests that multiple hydraulically upgradient sources were likely responsible for the discharge of chlorinated solvents to the subsurface.

SCDHS sampled the septic systems from 11 suspected source facilities from November 1997 through April 1998 (Table 1-2 of the RI Report). Each facility utilizes a private sanitary sewage disposal system consisting of septic tanks, cesspools/leaching pits, and/or other subsurface features. Sample results showed detections of a number of VOCs, suggesting that several of the suspected source facilities were discharging hazardous wastes to the subsurface through their septic systems. Concentrations of PCE in liquid samples taken from these sanitary disposal systems ranged from nondetectable concentrations to 65,000,000 micrograms per liter (ug/L). PCE in sludge samples taken from these sanitary disposal systems ranged from nondetectable concentrations to 160,000 micrograms per kilogram (ug/kg). At the direction of SCDHS, the septic systems were cleaned out. SCDHS issued letters to each property owner that the clean outs were adequate and that no further action was necessary.

In late 1998, EPA initiated a removal action at the Smithtown Site to address immediate risks to human health and the environment. As part of the removal action, EPA connected 39 private wells with PCE levels above 5ug/L to the public water supply or installed water treatment systems at individual properties where public water mains were not available.

A Hazard Ranking System (HRS) Report was prepared for the Smithtown Groundwater Contamination Site in August 1998. On January 19, 1999, the Site was placed on the National Priorities List (NPL).

In early 1999, EPA initiated the field activities to perform a Remedial Investigation and Feasibility Study (RI/FS) investigation. The RI involved gathering groundwater, surface water, sediment and hydrogeological data needed to determine the nature and extent of drinking water contamination at the Site and the FS evaluated appropriate alternatives to address the contamination. Due to the large areal extent of contamination at the Smithtown Site, the RI/FS was performed in two phases. The goal of the initial phase of the RI was to define the extent of contamination and determine if any additional immediate response actions, such as providing alternate water supplies to additional homes, was needed. The goal of the second phase of the RI/FS was to identify the sources that may have contributed to the groundwater contamination and also to evaluate several alternatives to address the contamination.

The results of the first phase of the RI led to EPA's providing water to four additional homes.

Regional Hydrogeology

Six major hydrogeologic units have been identified beneath the area: consolidated bedrock; the Lloyd aquifer; the Raritan confining unit; the Magothy aquifer; the Smithtown Clay; and the Upper Glacial aquifer. The Lloyd aquifer occurs over the entire length of Long Island, and is confined by the overlying Raritan confining unit. The Magothy and Upper Glacial aquifers overlying the Raritan confining unit are found across most of Long Island and can be confined, semi-confined, and unconfined aquifers, depending on the presence of clay layers, such as the Smithtown Clay. The Smithtown Clay (glacial deposit) is an extensive clay unit and has been identified in several wells in the buried valley beneath Smithtown (Lubke 1964; Krulikas and Koszalka 1983). The Smithtown Clay layer underlies almost all of the Smithtown Site. The Smithtown Clay is over 50 feet thick over a relatively large part of northern Suffolk County and the upper surface of the Smithtown Clay lies above sea level and reaches a maximum elevation of 70 feet mean sea level (msl).

Combined, the Magothy and Upper Glacial aquifers are the most productive and most heavily used for water supply in the vicinity of the Site. The vertical extent of the contaminated groundwater is within the unconfined Magothy/Upper Glacial aquifer unit. The unit is approximately 500 feet thick. The groundwater flow direction is complex in the Site vicinity. The groundwater generally flows in a north/northwest direction, toward Long Island Sound. However, two surface water bodies, the Nissequogue River and Stony Brook Harbor, act as discharge points and influence the groundwater flow to the west and east, respectively. Numerous groundwater seeps can be found along the shores of both the Nissequogue River and Stony Brook Harbor at low tide, indicative of groundwater discharging from the Upper Glacial aquifer to surface water.

The residential private wells at the Site are screened in the Upper Glacial aquifer, which ranges from 200 to 400 feet in thickness and consists of interbedded sand and gravel, sand, sandy clay, and silt. The water table ranges from less than five feet below ground surface (bgs) adjacent to both the Nissequogue River and Stony Brook Harbor to over 200 feet bgs (approximately 15 feet amsl) in the south central part of the Village of Nissequogue. Some wells screened in the Upper Glacial aquifer below the Smithtown Clay unit are artesian, with heads ranging from five to ten feet above grade.

All of the groundwater on Long Island is derived from precipitation and storm runoff. The volume of water that percolates down to the water table and recharges the groundwater is the residual of the total precipitation not returned to the atmosphere by evapo-transpiration or lost to the sea by surface runoff. Large residential lots and the generally sandy nature of surface and subsurface soils result in a high rate of infiltration. Road and storm runoff are directed to open bottom catch basins, allowing runoff to percolate to the Upper Glacial aquifer.

REMEDIAL INVESTIGATION SUMMARY

The remedial investigation was performed in the residential areas in the Villages of Head of the Harbor and Nissequogue and also at the potential source areas along Lake Avenue and North Country Road in the Hamlet of St James. Initial groundwater screening using vertical profile wells was performed at 12 locations in the residential area (April to June 2001) and 11 locations at potential source areas (Spring 2003). Based on the groundwater screening results, 19 monitoring wells were installed in the residential areas and one monitoring well was installed in a potential source area. Three rounds of monitoring well sampling were performed: five monitoring wells in the first round; 19 monitoring wells in the second round; and 20 monitoring wells in the third round. In addition, four rounds of homeowner private well samples were collected from 1999 through 2003 for a total of 294 samples. In addition, 11 surface water and 12 sediment samples were collected from Stony Brook Harbor and the Nissequogue River. Nine wetland surface water samples and 30 wetland sediment samples were collected from wetlands adjacent to the western shore of Stony Brook Harbor and behind Harbor Hill Road in Head of the Harbor. A total of 13 storm drain sediment samples were also collected (April 2001) from storm basins and catch basins on private and public roads in the village of Nissequogue. Ten wastewater and nine waste sludge samples were collected from underground features at 10 of the 11 potential source area facilities. One of the potential sources involving a septic system was not sampled as the system did not contain any sanitary waste at the time of sampling.

The significant findings of the RI are as follows:

Analytical data collected during the RI, combined with historical data, indicate that groundwater in the Smithtown area has contamination of a sporadic nature and is in isolated pockets which most likely represent small slugs of contamination that were discharged into the aquifer in the past.

Analytical data from the three rounds of monitoring well sampling (total of 44 samples) indicated that the groundwater is contaminated with PCE, cis-1,2-dichloroethene (cis-1,2 DCE), 1,1-dichloroethene (1,1 DCE), 1,1,1-TCA, and trichloroethene (TCE) above Federal and/or State Drinking Water Standards of 5 micrograms per liter (ug/L). The maximum detected concentrations were: PCE at 38 ug/L; cis-1,2 DCE at 120 ug/L; 1,1 DCE at 31 ug/L; 1,1,1 TCA at 150 ug/L; and TCE at 6.1 ug/L.

Four rounds of groundwater samples (a total of 294 samples) were collected from selected residential wells from 1999 to 2003. Based on this residential well sampling, VOCs exceeded the Federal and/or State Drinking Water Standard of 5 ug/L for all these contaminants in one or more samples as follows: PCE in 19 samples (maximum concentration of 140 ug/L); Cis-1,2 DCE in 15 samples (maximum concentration of 140 ug/L); TCE in five samples (maximum concentration of 12 ug/L).

Based on the RI results, two groundwater contamination areas in the residential area have elevated levels of VOCs. Area One, near Harbor Hill Road and Stony Brook Harbor on the east side of the Site. In this area, the water table varies from approximately 5 feet to 150 feet below ground and the thickness of contaminated groundwater is approximately 100 feet. The maximum PCE concentration detected in Area One is 140 ug/L.

Area Two, near the Waterford Stables and the Nature Conservancy property on the west side of the Site. The water table is approximately 150 feet below ground and the thickness of contaminated groundwater is approximately 125 feet. The maximum PCE concentration detected in Area Two is 63 ug/L.

Surface water and sediment sample results indicate that groundwater with low levels of VOC contamination is discharging along the Nissequogue River and Stony Brook Harbor. VOCs do not appear to be concentrating in sediments. The discharge areas along the river and harbor are subjected to twice daily tidal fluctuations, which serve to mix and disperse groundwater discharges.

The 2003 sampling of the potential source area facilities indicate that their waste handling practices have improved since septic systems were cleaned out in the late 1990s. These facilities are not currently contributing contamination to the groundwater. In addition, the RI investigation was not able to pinpoint any of the suspected source area facilities as the source of groundwater contamination.

Twelve indoor air samples were collected from homes within the Site to verify whether groundwater contamination is impacting indoor air quality. Based on the data collected, there is no evidence of vapor migration from the groundwater through the subsurface beneath the foundations to the interior of the homes where the samples were collected.

SUMMARY OF SITE RISKS

Based upon the results of the RI at the Site, EPA conducted a human health risk assessment (HHRA) and a screening level ecological risk assessment (SLERA) to estimate the potential risks associated with current and future exposure to Site contaminants. The human health risk assessment quantitatively evaluated the carcinogenic risk and non-carcinogenic hazards for exposures to contaminants in various media at the Smithtown Site, assuming no remedial actions were taken. The SLERA evaluated the potential for ecological risks from exposure to Site surface water and sediment if no remedial actions were taken. The box entitled "What Is Risk and How Is It Calculated?" describes the four-step process used to calculate potential carcinogenic risks and noncarcinogenic human health effects for the Site. The box entitled "Ecological Risk Assessments" explains the four-step process used in SLERA for assessing ecological risks for a reasonable maximum exposure scenario.

Human Health Risk Assessment

A HHRA focuses on current and potential future health effects for both adults and children, in a residential setting. Contaminants in various media at the Site were quantitatively evaluated for potential health threats to the following receptors: Current and future residential users of groundwater (through ingestion and inhalation of volatile contaminants); current and future recreational users of the Nissequogue River (through ingestion and dermal contact with contaminated sediments); and current and future recreational users of the Stony Brook Harbor and wetland area (through ingestion and dermal contact with contaminated sediments). The Site-related contaminants of concern are PCE and TCE.

The results of the human health risk assessment indicated that the current and future use of groundwater at the Site showed that the concentrations of contaminants present in the groundwater are associated with an excess lifetime cancer risk of 4 x 10^{-4} for residents, which exceeds EPA's acceptable levels of risk. This risk is primarily attributed to PCE and TCE. The Hazard Index values for adult and child residents also exceed EPA's benchmark of 1, with HI values of 4 for adults and 20 for children. In addition, the maximum concentrations of 140 ug/L for PCE and 12 ug/L for TCE also exceed the federal and/or state drinking water standard of 5 ug/L.

These risks and hazard levels indicate that there is significant potential risk to children and adults from direct exposure to contaminated groundwater. These risk estimates are based on current reasonable maximum exposure scenarios and were developed by taking into account various conservative assumptions about the frequency and duration of an individual's exposure to groundwater, as well as the toxicity of PCE and TCE.

EPA's evaluation of the sediment and surface water at the Nissequogue River and Stony Brook Harbor and the wetland area showed that the cancer risks primarily attributed to PCE and TCE are at the upper bound of EPA's acceptable risk range and that the Hazard Index values are less than the benchmark of 1.

Ecological Risks

Surface water and sediment sample results indicate that groundwater containing very low levels of chlorinated VOC contamination is discharging along the Nissequogue River and Stony Brook Harbor. VOCs do not appear to be concentrating in surface water and sediments. The discharge areas along the river and harbor are subjected to twice daily tidal fluctuations, which serve to mix and disperse groundwater discharges.

Results of the SLERA indicate there are potential risks for the ecological receptors from exposures to metals found in surface water and sediment. However, metals are not Site-related contaminants because the upgradient metal concentrations are consistent with onsite concentrations as discussed in Section 4 of the RI and Section 1.7.2. of the FS.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are specific goals to

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 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 (COC) 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 identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil. Factors relating to the exposure assessment include, but are not limited to, the concentrations that people might be exposed to 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 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 effects, 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 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 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 explained in the Exposure Assessment. Current Superfund guidelines for acceptable exposures are an individual lifetime 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 non-cancer 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 non-cancer HI is that a "threshold level" (measured as an HI of less than 1) exists below which non-cancer health effects are not expected to occur.

protect human health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs) and Site-specific risk-based levels.

The following remedial action objectives were established for the Site:

1. Prevent or minimize potential current and future human exposures including ingestion and dermal contact with VOC-contaminated groundwater that exceeds federal and state drinking water standards.

2. Restore groundwater to levels which meet federal and state drinking water standards within a reasonable time frame.

Summary of Remedial Alternatives

CERCLA requires that each selected remedy be protective of human health and the environment, be cost-effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

Because of the sporadic nature and isolated pockets of the contamination observed in the residential wells, a contiguous groundwater plume was not identified. Based on the RI residential sampling results, there are two areas of contamination exceeding groundwater standards.

The remedial approach for the contaminated groundwater originating from the Site is designed to achieve the overall protection of human health and the environment. The remedial alternatives developed to address the groundwater contamination at the Site are presented in detail below.

The construction time for each alternative reflects only the time required to construct or implement the remedy and not the time required to design the remedy or procure contracts for design and construction.

SUMMARY OF GROUNDWATER REMEDIATION ALTERNATIVES

ALTERNATIVE 1: NO FURTHER ACTION

Capital Cost:	$0
Annual Monitoring Cost:	$0
Construction Time:	N/A
30-Year Present Worth Monitoring Cost (7% discount factor):	$0

The Superfund program requires that the "No-Action" Alternative be considered as a baseline level against which other remedial technologies and alternatives can be compared.

The No Further Action Alternative does not include any remedial measures to address the groundwater contamination at the Site. Site sampling data indicate a generally decreasing trend in the concentrations of PCE and cis,1,2-DCE from 1998 to 2003. Based on hydrogeological modelling presented in Appendix A of the FS, the contaminant mass is projected to decrease over time, as contaminated groundwater migrates and discharges to surface water bodies. The model predicts that 70% of the contaminant mass would be removed in seven years from the groundwater flushing action mainly attributed to dispersion, dilution and volatilization. Therefore, based on the low contaminant concentrations detected and the model predictions, it is expected that the contaminant concentrations would drop to below the groundwater quality standards within the next 30 years.

ECOLOGICAL RISK ASSESSMENTS

A four-step process is utilized for assessing Site-related ecological risks for a reasonable maximum exposure scenario: *Problem Formulation* — a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study. *Exposure Assessment* — a quantitative evaluation of contaminant release, migration, and fate; characterization of exposure pathways and receptors; and measurement or estimation of exposure point concentrations. *Ecological Effects Assessment* — literature reviews, field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors. *Risk Characterization* — measurement or estimation of both current and future adverse effects.

ALTERNATIVE 2: Alternate Water Supplies/Long-Term Monitoring/Institutional Controls

Capital Cost:	$ 3,462,104
Annual O&M Cost:	$ 46,820
Construction Time:	2-3 years
Present worth cost (monitoring period of 30 years at a discount factor of 7%):	$ 4,061,219

Alternative 2 consists of the following components: alternate water supplies; groundwater and surface water monitoring; institutional controls and periodic Site reviews.

The main action component of Alternative 2 would be to provide an alternate water supply to homes currently and potentially affected by the contamination. Approximately 270 residences within the affected areas would be connected to either the Suffolk County Water Authority or St. James Water District. Alternative 2 would provide the connection from the house to the water mains near the house. After the hookup to the water mains, the private wells would be properly abandoned according to New York State requirements. At the present time, EPA estimates that approximately 270 residences would need to be connected to the water mains. A survey would be conducted during the design phase to provide a more accurate count of residences requiring the alternate water supply.

Alternative 2 also includes long-term annual groundwater monitoring until restoration of the aquifer through the groundwater flushing action mainly attributed to dispersion, dilution and volatilization.

Alternative 2 would also rely on existing institutional controls for groundwater use restrictions in the form of County well drilling permits in the affected areas imposed by Suffolk County. These measures are meant to reduce potential future exposure to contaminants by legally restricting use of potentially contaminated groundwater. Suffolk County currently has permit requirements (Suffolk County Sanitary Code, Article 4, Section 406, Subpart D) for drilling private water supply wells. The County denies a well permit if there are existing public water supplies in the area. It is assumed that Suffolk County would continue to enforce this requirement.

A review of Site conditions would be conducted no less often than once every five years using data obtained through the annual groundwater sampling program. The Site reviews would include an evaluation of the extent of contamination and an assessment of contaminant migration and attenuation over time. The long-term groundwater monitoring program would be modified, if necessary, based on the monitoring results.

ALTERNATIVE 3: Alternate Water Supplies/ Groundwater Extraction and Treatment with On-Site Reinjection/Long-Term Monitoring/ Institutional Controls

Capital cost:	$ 5,708,114
O&M costs (per year):	$ 166,909
Construction Time:	2-3 years
Present worth cost (operating for 10 years at a discount factor of 7%):	$ 7,170,861

Alternative 3 is the same as Alternative 2 with the addition of groundwater extraction and treatment. In this alternative, pump and treat systems would be installed within the two contaminated areas. The pump and treat systems would create a hydraulic barrier to limit the migration of contaminated groundwater and also accelerate the cleanup of contaminated groundwater within the two areas.

A system of extraction wells would be constructed within and along the perimeter of each of the areas of concern (Area One and Two) in order to obtain hydraulic control, thereby preventing contaminated groundwater in these areas from migrating. The contaminated groundwater would be extracted and treated via liquid-phase carbon adsorption. Traditional pumping wells would be used for groundwater extraction. For costing purpose, one centralized facility is proposed for Area Two but three separate water treatment facilities are proposed for Area One because of space limitations, pipe routing restrictions, and distance between the extraction wells. Each facility would be sized to match the extraction rate for that area. The treated groundwater would be re-injected into the groundwater through injection wells.

The concentrations for PCE and cis-1,2 DCE, the two major contaminants with the highest detected concentrations, have been decreasing during the past several years as depicted in Table 2-1 of the FS. The preliminary groundwater modeling predicts 75% of the contaminant mass would be removed from the pumping and flushing actions in five years (see FS, Appendix A, Figure 9). Based on the low contaminant concentrations detected and the modeling results, it is expected that the contaminant concentrations would drop to below the drinking water standards in 10 years.

A review of Site conditions would be conducted no less often than once every five years using data obtained through annual groundwater sampling program. The Site reviews would include an evaluation of the extent of contamination and effectiveness of treatment. This alternative would still rely on long-term monitoring to demonstrate restoration of the contaminated groundwater outside the two areas through groundwater flushing action mainly attributed to dispersion, dilution and volatilization. Long-term groundwater and surface water monitoring would be performed as described under Alternative 2 to monitor changes in contaminant concentrations and distribution over time. Institutional controls would be implemented as described under Alternative 2 to prevent exposure to contaminated groundwater. Site conditions would be reviewed no less often than once every five years.

EVALUATION 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, and volume through treatment; short-term effectiveness; implementability; cost; and NYSDEC 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 applicable or relevant and appropriate requirements (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 regulations 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, 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 and operation and maintenance (O&M) costs, and net present worth costs.

State acceptance indicates whether, based on its review of the RI/FS and Proposed Plan, the State concurs with, opposes, or has no comment on the preferred remedy.

Community acceptance would 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.

COMPARATIVE ANALYSIS OF GROUNDWATER REMEDIAL ALTERNATIVES

Overall Protection of Human Health and the Environment

Alternative 1 would not provide protection of human health, since contamination would remain in groundwater for some time in the future, and exposure to contaminated drinking water would not be restricted. Currently there are risks to human health because the groundwater at the Site is used as a source of drinking water. Alternatives 2 and 3 are equally protective of human health by eliminating current and future exposure to contaminated drinking water. Alternative 2 would provide a potable water source for the area; however, it would not provide any active treatment to achieve drinking water standards but rely on natural processes to reduce contaminant mass. Alternative 3 would rely on a potable source for the Site and it would also provide active treatment to the two areas of concern to reduce the toxicity, mobility, and volume of the contaminants. Alternative 3 also relies on natural processes (dispersion, dilution and volatilization) and flushing action of the contaminated groundwater outside the two identified areas of concern.

Alternatives 1 and 2 would rely primarily on the natural mechanisms of dispersion, dilution and volatilization to reduce the groundwater contamination throughout the Site. Alternative 2 would monitor the conditions of groundwater and additional remedies could be implemented if necessary.

Compliance with ARARs

EPA and NYSDOH have promulgated health-based protective Maximum Contaminant Levels (MCLs) (40 CFR Part 141), which are enforceable standards for various drinking water contaminants (chemical-specific ARARs). Since the groundwater at the Site is presently being utilized as a potable water source, achieving MCLs in the groundwater is an applicable standard. The aquifer is classified as Class GA (6NYCRR 701.18), meaning that it is designated as a potable water supply.

All action alternatives would restore the aquifer to meet Federal and/or State drinking water standards. Alternative 3 would accelerate the cleanup time through active pumping in the two areas of concern while Alternatives 1 and 2 would rely on natural mechanisms to reduce the contaminant concentrations throughout the Site. Long-term groundwater monitoring is a component of Alternatives 2 and 3 to assess the degree of compliance achieved over time.

Alternative 1 (No Further Action) does not provide for any direct remediation of the groundwater or protection of the drinking water supply and would, therefore, not achieve chemical-specific ARARs.

Under Alternative 3, spent granular activated carbon from the pump and treatment system would need to be managed in compliance with Resource Conservation and Recovery Act (RCRA) treatment/disposal requirements.

Long-Term Effectiveness and Permanence

Alternative 1 would not provide reliable protection of human health over time, since there would be no mechanism to prevent current and future exposure to contaminated drinking water. Alternatives 2 and 3 would be effective and permanent since an alternate water supply would be reliable in preventing exposure to contaminants when combined with institutional controls and long-term monitoring. Alternative 3 would be more effective in restoring the aquifer to drinking water standards in a shorter time frame than Alternative 1 and 2.

Reduction of Toxicity, Mobility, or Volume through Treatment

Alternatives 1 and 2 would not reduce the concentrations of VOCs through treatment as these alternatives would provide no active treatment of contaminated groundwater. The toxicity would eventually be reduced for Alternatives 1 and 2 due to natural processes mainly attributed to dispersion, dilution and volatilization. Alternative 3 would reduce the mobility, volume and toxicity of the contaminants by active treatment in the two areas of concern.

Short-Term Effectiveness

Alternative 1, No Further Action, does not include any physical construction measures in any areas of contamination and, therefore, would not present any potential adverse impacts to on-property workers or the community as a result of its implementation. For Alternatives 2 and 3, minimum potential adverse impacts would be expected from construction activities. Air monitoring, engineering controls, and appropriate worker personal protection equipment (PPE) would be used to protect the community and workers from any potential adverse impacts for Alternatives 2 and 3.

Under Alternative 3, noise from the treatment units could present some limited adverse impacts to on-property workers and nearby residents. Noise suppression controls would be used to minimize the impacts.

Implementability

Alternative 1 would be easiest both technically and administratively to implement, since it would not entail the performance of any activities. Alternative 2 would be the second easiest to implement as the equipment and supplies are readily available. Alternative 3 would be most difficult to implement due to the problem of placing the extraction and discharge piping and the associated treatment systems in the available space. Alternative 3 would also be difficult to implement due to the problem of locating treatment plants in residential areas and community acceptance.

Cost

The present-worth costs are calculated using a discount factor of seven percent and a 30-year time interval for monitoring in Alternatives 2 and 3 and a 10-year time interval for operating the pump and treatment systems in Alternative 3. The estimated capital, operation, and maintenance and monitoring (O&M) and present-worth costs for each of the alternatives are presented below:

Alt.	Capital Cost	Annual O&M Cost	Present-Worth Cost
Alt-1	$0	$0	$0
Alt-2	$3,462,104	$46,820	$4,061,219
Alt-3	$5,708,114	$166,909	$7,170,861

As can be seen by the cost estimates, Alternative 1 would be the least costly alternative to implement. Alternative 3 would be the most costly alternative to implement. The high cost of implementing this alternative is due to the additional groundwater extraction and treatment system.

State Acceptance

NYSDEC concurs with the preferred alternative.

Community Acceptance

Community acceptance of the preferred alternative will be assessed in the ROD following review of the public comments received on the RI/FS reports and the Proposed Plan.

PREFERRED ALTERNATIVE

Based upon the results of the RI/FS and after careful evaluation of the various alternatives, EPA and NYSDEC recommend Alternative 2, Alternate Water Supplies/Long-Term Monitoring/Institutional Controls, as the preferred alternative.

Currently, there are risks to human health because the groundwater at the Site is used as a source of drinking water. Alternative 2 would be protective of human health by eliminating current and future exposure to contaminated groundwater and providing potable water source for the area. Alternative 2 would not provide any active treatment but would rely on natural processes to reduce contaminant mass. Site sampling data collected from 1998 to 2003 indicate a generally decreasing trend in the PCE and cis,1,2-DCE concentrations in groundwater. It is expected in Alternative 2 that the contaminated groundwater would decrease below groundwater standards in a reasonable time frame. The monitoring provision under Alternative 2 would allow for groundwater monitoring over the long term. Alternative 2 would provide an effective, permanent and reliable source of potable water to the affected communities.

Similar to Alternative 2, Alternative 3 is equally protective of human health by providing a permanent alternate water supply. However, Alternative 3 includes the additional cost of approximately $ 3.1 million for groundwater extraction and treatment in the two areas of concern. EPA and NYSDEC are not proposing to implement Alternative 3, because the additional cost of $ 3.1 million would only shorten the aquifer restoration time frame. Since Alternative 2 would eliminate current and future exposure to groundwater contamination by providing an effective and permanent remedy of alternate water supply, the additional cost of approximately $ 3.1 million in Alternative 3 for groundwater extraction and treatment would not be justified for the benefit achieved. Therefore, Alternative 2 is reliable, cost effective and more preferable than Alternative 3.

The preferred alternative would provide the best balance of trade-offs among alternatives with respect to the evaluation criteria. EPA and NYSDEC believe that the Preferred Alternative would be protective of human health and the environment, would comply with ARARs, would be cost-effective, and would utilize permanent solutions to the maximum extent practicable.

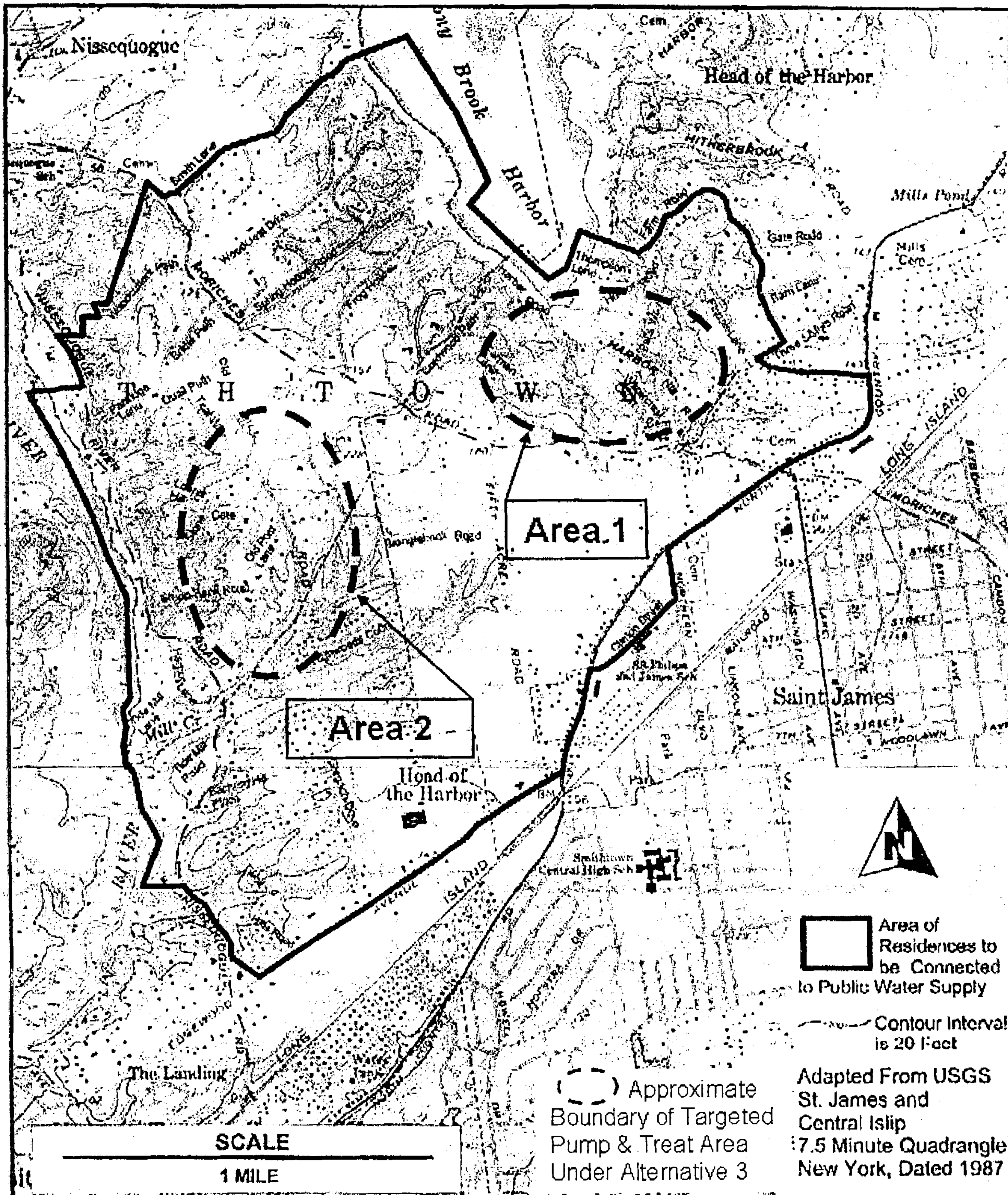


Figure 1
Proposed Plan Study Area and Residences to be Connected to Public Water Supply
Smithtown Groundwater Contamination Site
Smithtown, New York

Appendix B
Public Notice

NEWS

U.S. Environmental Protection Agency Region 2
New Jersey, New York, Puerto Rico and the U.S. Virgin Islands
290 Broadway - New York, New York 10007-1866
www.epa.gov/region2

James S. Haklar, (212) 637-3677

EPA PROPOSES PLAN FOR CONTAMINATED GROUND WATER AT SMITHTOWN SUPERFUND SITE

FOR RELEASE: Thursday, June 17, 2004

(#04086) NEW YORK, N.Y. – The U.S. Environmental Protection Agency (EPA) is seeking community input on its plan to connect private wells that are at risk of contamination from the Smithtown Ground Water Contamination Superfund site to municipal water. Some wells that draw from the area's ground water have become contaminated with tetrachloroethylene (PCE) from the site.

"We have either connected homes with contaminated wells to a safe source of drinking water or provided individual treatment systems for homes without access to municipal water," said EPA Regional Administrator Jane M. Kenny. "Our goal now is to extend those health protections to all homes with threatened wells. I encourage the public to review and comment on the proposed plan."

EPA is monitoring ground water at the site and will continue to monitor to ensure that contamination levels decrease over time. New well construction in the vicinity of the contamination plume will be prohibited. The plan will cost approximately $4 million.

The site was listed on the National Priorities List of the nation's most hazardous waste sites in January 1999. EPA conducted an investigation of the nature, extent and source of contamination in the ground water. The Agency, through one of its contractors, connected 30 residences to municipal water and installed nine water treatment systems in homes that could not access the municipal supply. EPA has investigated residential areas in the villages of Head of the Harbor and Nissequogue and along Lake Avenue and North Country Road in the hamlet of St. James, but has not found the original source of the contamination. The current contamination in the ground water will disperse and dilute over time. EPA will monitor the ground water at the site to ensure that contamination levels continue to decrease over time.

EPA will explain the proposed plan and all of the alternatives at a public meeting at 7:00 p.m. on June 29th at the Smithtown Freshman Campus, 660 Meadow Road, Smithtown, New York. The public comment period began on June 17th and will end on July 16th, 2004.

Copies of site-related documents and the proposed cleanup plan are available for public review at the Smithtown Library, 1 North Country Road, (631) 265-2072, and at EPA's New York office. The Project Manager, Mr. Syed Quadri, will accept written or verbal comments at the meeting, or via mail at: U.S. Environmental Protection Agency, 290 Broadway, 20th floor, New York, N.Y. 10007-1866; telephone: 212-637-4233, or email: quadri.syed@epa.gov.

###

Appendix C
June 29, 2004 Public Meeting Attendance Sheet

entered [illegible]

EPA
Region II

SMITHTOWN GROUNDWATER CONTAMINATION SUPERFUND SITE
PUBLIC INFORMATION MEETING

Tuesday, June 29, 2004 @ 7:00PM

ATTENDEES
(Please Print Clearly)

NAME	STREET	CITY	ZIP	PHONE	REPRESENTING	Are you currently on the list?
Owen Doxtey	PO BOX 7 SPRING HOLLOW RD	NISSEQUOGUE	11780	631-584-7106	Self	Yes.
Katy Murphy	36 Farm Rd	St James	11780	631-584-5274	Self + ECB / Vill Hd of Harbor	yes
Rob Alvey	44 Fenimore Ave	Garden City NY		516.326.1720	EPA	
R. L. Swanson	46 Harbor Hill Rd	St. James				
Robert & Maureen Kirk	3 Valley Path	St. James NY	11780	631 584 3354		

EPA
Region II

SMITHTOWN GROUNDWATER CONTAMINATION SUPERFUND SITE
PUBLIC INFORMATION MEETING

Tuesday, June 29, 2004 @ 7:00PM

ATTENDEES
(Please Print Clearly)

NAME	STREET	CITY	ZIP	PHONE	REPRESENTING	Are you currently on the list?
ROBERT P. CLEMENTE	1 WOODHILL PATH	ST JAMES NY	11780	862-8626		
Alexandros Rebell	PO Box 2096	St James Harbor Hill Rd				
RICHARD SMITH	697 SHORT BEACH RD,	ST. JAMES, N.Y.,	11780			
Andrea Camera	6 The Hunt	St James, NY	11780			yes
Teri Zillmann	3 The Hunt	St James, NY	11780			NO
Darla Shine	4 The Hunt	St James, NY	11780			NO
Patti & Paul Athos	300 Old Mill	Nissequogue	11780			yes

EPA Region II

SMITHTOWN GROUNDWATER CONTAMINATION SUPERFUND SITE
PUBLIC INFORMATION MEETING

Tuesday, June 29, 2004 @ 7:00PM

ATTENDEES
(Please Print Clearly)

NAME	STREET	CITY	ZIP	PHONE	REPRESENTING	Are you currently on the MAILING list?
I. Yavonditte	625 Broadway,	Albany	12233	518-402-9622	DEC	—
JOHN STRANG	625 BROADWAY,	ALBANY NY	12233	518 402 9622	NYSDEC	Y
C J Foy	Suffolk County Water Authority					
BECKY MITCHELL	547 River St	Troy NY	12180	518 402 7870	NYSDOH	
GEORGE PFITZOR	2 CARDINAL LANE,	NISSEQUOGUE	11780	631-265-2870	NISSEQUOGUE VILLAGE	Y
Rose Samson	10 Hitherbrook Rd.	St James	11780	584-5561	self	Yes
Karen Cohen	8 the Hunt	St James	11780		Self	Yes

EPA
Region II

SMITHTOWN GROUNDWATER CONTAMINATION SUPERFUND SITE
PUBLIC INFORMATION MEETING

Tuesday, June 29, 2004 @ 7:00PM

ATTENDEES
(Please Print Clearly)

NAME	STREET	CITY	ZIP	PHONE	REPRESENTING	Are you currently on the list?
G C Samson	40 Hillsbrook Rd	St James NY	11780		Self	
George Ludder		St James Water District				
David Scott	302 Old Mill Rd.	St. James			Self	
Louis Rall	144 Harbor Rd	St. James NY	11780		Self	
Richard Erler	22 Flamingo Dr.	Smithtown NY	11787		Self	No

Appendix D
Letters Submitted During the Public Comment Period

Jeffrey Malkan
<jeffrey_malkan@msn.com>

06/23/04 01:45 PM

To: Syed Quadri/R2/USEPA/US@EPA
cc:
Subject: Comment - Smithtown Groundwater Contamination Site

Comment - Smithtown Groundwater Contamination Site, June 22, 2004

We have a question -- and a comment -- about the EPA's proposed remediation plan under alternatives 2 and 3. The proposed plan states that the 270 homes not already connected to public water in the Smithtown Groundwater Contamination Site would be connected by EPA as the "main action component" to protect public health.

Several years ago, residents in the affected area of Head of the Harbor were urged by the local government to connect to the Suffolk County Water Authority (SCWA) system when this problem first became known. Most residents in the Village have already connected at their own expense, which was the responsible thing to do. Many, if not most, of the residents in the area have taken loans to pay for the cost of connection as well as to pay their share of the infrastructure which, we understand, was financed and installed by SCWA. Our present account with SCWA, for example, states that we owe $3,500 that we are paying in installments, to which regular interest charges are added.

The proposal does not make clear how residents of the affected area who have already paid for their connections to the SCWA system -- or made contractual commitments to pay -- will be benefited by the plan.

Our question is whether EPA's plan, which relies on the existing pipelines laid by SCWA, includes funds to pay for the infrastructure or otherwise spread the costs evenly among all the homeowners in the contamination site.

Our comment is that it would be extremely inequitable to give the 270 "hold outs" a free connection to the SCWA system. Just because these 270 households have not yet paid their share does not mean that they should get a free ride from the infrastructure provided by their neighbors. The plan should make clear how EPA intends to deal with the issue of equity between neighbors in its expenditure of federal funds to remediate a groundwater pollution problem that is shared by the whole community.

Jerome and Dolores Malkan
12 Valleywood Ct. W.
(Village of Head of the Harbor)
Saint James, NY 11780

"Colin Clarke, M.D." <colin@nuclearimaging.com>

06/23/04 08:38 AM

To: Syed Quadri/R2/USEPA/US@EPA
cc:
Subject: Smithtown Site, Remediation Boundary

Dear Mr. Quadri:

I live at 21 Three Sisters Road, just northeast of the proposed remediation area. My well, upon which I rely on for drinking water, was the source of some concern during the early days of the Site. I am wondering whether my well has been overlooked for inclusion in the proposed remediation. Please advise.

Thank you for your help.

Colin Clarke

Appendix E
Public Meeting Transcript

In The Matter Of:

SMITHTOWN GROUNDWATER CONTAMINATION

Hearing

June 29, 2004

FINK & CARNEY REPORTING AND VIDEO SERVICES

39 WEST 37TH STREET

NEW YORK, NY USA 10018

(212) 869-1500 or (800) 692-3465

Original File DS062904.ASC, 87 Pages

Min-U-Script® File ID: 4254336217

Word Index included with this Min-U-Script®

Page 1

PUBLIC INFORMATION MEETING

Smithtown Groundwater Contamination
Superfund Site
Smithtown, New York

Smithtown Freshman Campus

Tuesday, June 29, 2004
7:00 p.m.

Page 2

APPEARANCES:

Environmental Protection Agency
290 Broadway, 26th Floor
New York, New York 10007
BY: CECILIA R. ECHOLS, Community Involvement Coordination

Kevin Lynch, Chief, Western New York Section
Syed Quadri, Remedial Project Manager

Suffolk County Department of Health Services
220 Rabro Drive East
Hauppauge, New York 11788-4253

BY: SY F. ROBBINS, Hydrogeologist

ALSO PRESENT:

Joe Yavonditte, Environmental Engineer 3, NYS DEC
Frank Tsang, FS Leader, CDM
Susan Schofield, Project Manager, CDM
John Strang, Environmental Engineer, NYS Dept. of Environmental Conservation

Michael Sivak, EPA Risk Assessor

Page 3

MS. ECHOLS: Hello, good evening, we're ready to begin our presentation this evening.

I'm Cecilia Echols, the community involvement coordinator for the Smithtown Groundwater Superfund site.

On our agenda today we have with us Kevin Lynch. He will give an overview of the Superfund process and he is from the chief western New York section and then we have Syed Quadri, he's the remedial project manager for the site.

He will discuss the results of the remedial investigation and feasibility study as well as EPA's preferred alternatives.

After his presentation, we'll open up for questions and then we'll close.

We also have with us this evening several people who have also had a lot of input in this project. We have

Page 4

Joe Yavonditte; he is the environmental engineer for the New York State DEC. Would you stand up.

We also have John Strang; he is also an environmental engineer with the New York State Department of Environmental Conservation.

We have Sy Robbins, the hydrogeologist for the Suffolk County Department of Health Services.

Frank Tsang, he oversaw the feasibility studies; he's the feasibility study reader for our contractors CDM and Susan Schofield, she's the project manager for CDM.

We also have with us Michael Sivak with EPA; he is our risk assessor.

The purpose of tonight's meeting is to give the community an opportunity to hear from EPA, our preferred remedy to clean up the source of contamination at the site which is groundwater contamination.

We have a public comment period

Page 5

that began on June 17th and ends on July
17th. It's a 30 day comment period.
We're in the public comment period right
now so that's why we're having a public
comment meeting and we will address any
of your questions tonight and it will be
recorded by the stenographer so if you
have any questions, please speak loudly,
state your name so it can be recorded
correctly.
There are some ground rules.
First I want to let you know that there
are bathrooms for women on this side and
then the men on this side.
Please hold your questions until
the end of Syed's presentation.
There is a handout of copies of
the slide presentation. If you have any
questions when the slides are shown,
please write them on the little lines
that are on the side so you can remember
your questions and ask as the time come
up and we can discuss them later on
after Syed's presentation.

Page 6

There is also an informational
depository that has all of the documents
pertaining to the site at the Smithtown
location on North Country Road.
Once all of the comments have
been considered, Syed will prepare a
responsiveness summary and then
hopefully the regional administrator
will assign a record of decision that
will state exactly how EPA plans on
cleaning up the groundwater in your
community and I'll pass this on to
Kevin.
MR. LYNCH: Thank you. Before I
start, my name is Kevin Lynch, I am the
section chief for the Superfund for the
U.S. EPA for New York city and what I am
going to do tonight is give you a quick
history of the law we operate under
tonight and also the process we take in
making a decision we take to clean up a
site and our regulations that we need to
follow.
In 1979, the EPA had no way to

Page 7

address any environmental problems that
have already existed out in the
communities. We had ways to prevent
things, but nothing to address problems
that were already there.
Probably the best known problem
how we discovered this was Love Canal up
in Niagara Falls. People found they
were living on an abandoned hazardous
wasteland and at that time the Federal
government had no way to address this.
How it was addressed was by an
emergency declaration by the president
similar to what he can do in a hurricane
or tornado or something like that, so in
response to that, Congress passed in
1980 a comprehensive environmental
response compliance liability action —
Comprehensive Environmental Response
Liability Act.
What it did is it gave us the
ability to act on a site like this and
also it gave us the ability to pay for
it. It gave us the authority to take

Page 8

two types of actions; one is a short
term action which you would do in an
acute situation, it's called a removal
action.
A typical action, removal
actions, if you find an abandoned
warehouse in a community that's full of
drums, that's a fire hazard, we can come
in and clean out those drums.
One of the things we do is when
we do find there is a contamination in
people who have wells that have been
contaminated, we can go in and supply
water supply which we did here.
The other way we can address
things — and the most permanent
solution one — is the remedial action.
In order to take this action, we
will take a step back. It also gave us
two ways to pay for this. One is we can
have an enforcement action which is
where we find a potentially responsible
party which can be anyone who is either
the manufacturer who created the

hazardous substance or the owner or operator of the site where it is or someone who transported the substance to that area; they're liable for the clean ups. We can go make arrangements with them and order them to go clean up the site.

The other way to address it is the way it's called the Superfund law. Originally there was a 1.9 billion dollar fund created in order to address these sites.

One thing we found out was these sites cost a lot more than we thought it would be to clean them up and also there are a lot more sites out there than anyone thought, so now we spend more money on — we do more work through enforcement actions than we do through remedial action, but if we don't find a responsible party and use the fund, we have a way of prioritizing sites so we do use this money wisely.

What that is is the site has to

go under what's called the National Priorities List and how that happens is we will go out and gather the information that exists on the site — usually the site's given to us, it's referred. The state usually has some information on it and we will look at the information that's there; information such as what is the hazardous substance out there, where is it, what is the population near it, are there any pathways there for that population to come into contact with it.

If a lot of this information doesn't exist, we will go out and do a smaller investigation to get this to give us enough information to plug it into our mathematical model we have that basically if it becomes above a certain number, it scores and can be eligible for the Financial Priorities List and if not, it's not on the National Priorities List and we cannot use the Federal money to clean it up and usually it goes back

to the state and they address it under their authorities.

This site, obviously, is not on the National Priorities List. Actually, just the information that there is contamination in the drinking water is usually enough to get a site on the list.

Once we get the site on the list, we have to do a remedial investigation and feasibility study. The feasibility is we study the nature and extent of the contaminant; we want to find out what is there and what problems it can potentially cause.

As part of this study, we do a risk assessment. What we look for then is where the contaminant is and where it's going and what are the possible pathways where people can come into contact with this and what harm can it cause.

If we find the risk is unacceptable, we then perform a

feasibility study which is a study where we look at different remedial alternatives, solutions, to the site and we look at them and use our criteria we have in the regulations and that criteria is an overall protection of human health; that is the most important criteria we have. We cannot select a remedy that is not protective of human health in the environment.

The second most important one we have is compliance with applicable and relevant requirements. What that is is if it is a law or regulation that is directly applicable, obviously we have to follow that; this makes us go a step further and say there are regulations and requirements out there that by the letter of the law might not be directly applicable to the situation, but basically if it makes sense, we should follow it, then we have to follow it.

We have to look at long term effectiveness and permanence. As I

Page 13

said, what we are looking for is a permanent solution here. We look at the production of toxicity mobility and volume through treatment. What we want to do in each site is if we can destroy the material out there or if we can immobilize it or reduce it, that's how we would prefer to do it for something instead of contain it.

We look at short term effectiveness. What we want to make sure is the actions we take out there don't cause problems that could cause a bigger problem than the one out there.

For instance, if you have a hazardous substance in a populated area, you don't want to dig it up when people are around and expose them.

Implementability is another criteria. It has to be something that works, that we know we can go out and do.

There are a lot of research projects out there where people can say

Page 14

we have this technology that we think can solve your problem. Well, if we just think it, we don't know it, it may be something we don't choose.

Cost comes into it and we look at the alternatives and compare the costs.

The last two criteria are the state acceptance and the community acceptance. The community acceptance is what we're looking for today. What we do is put together this proposed plan, we come out for community input and determine if the community is accepting of the remedy that we are proposing today.

What we do is take those nine criteria, look at the balance of them and what we have done here is selected — we have proposed the remedy. What we have done is proposed the one we think is the best remedy for the site here. We will take your input, go back, give our recommendations to the regional

Page 15

administrator who is the decision maker and we will then memorialize this decision in a record of decision. We will then go out and design and implement the remedy.

Syed Quadri is the project manager for the site. What he is going to do is give a summary of the final remedial investigation and run through the feasibility study and present the plan that we believe is the best solution to the problem.

MR. QUADRI: Thank you, Kevin. Thank you everybody for coming here and giving us the opportunity to present to you the proposed plan.

Let me start at the beginning. A little bit of a background here for the groundwater contamination site.

Back in 1997, October, New York State DEC requested EPA assistance for providing alternate water supply to some of the homes that had PCE in their wells.

Page 16

Suffolk County — in fact, that request was a survey that was done by Suffolk County where they sampled some private wells and identified about 23 homes that had PCE in detectable concentrations.

Also, the Suffolk County Department of Health Services also identified about 11 suspected source facilities which are located up gradient to where the groundwater contamination was found and I will go over the locations in the map a little more later on.

EPA started a collection of samples. We collected 330 samples right after that discovery of contamination and we confirmed that there is groundwater contamination in this area.

EPA also started a bottle program where any home that identified having detectable concentrations above the standard, they were provided with bottled water and just to go back a

Page 17

little bit, the contamination detected was mainly perc. Perc, as you know, is a cleaning fluid. Perchloroethene is used in dry cleaning facilities and some other cleaning operations, maybe service stations and gas stations also.

Coming back to this background, in 1998, July, EPA started a program what we called a removal program where we take care of the problem immediately if it has any impact on the human health and instead of waiting for the investigation to continue, EPA immediately starts a program called the removal program and we start providing alternate water supplies to any home that had a concentration above the standard for any contamination, particularly perc in this case.

Today EPA has provided 30 homes with alternate water supply and about nine homes EPA has given water treatment systems.

Also, after that because it was

Page 18

proposed as a Superfund site and in January 1999, in the Federal jurisdiction, it was announced that the Smithtown groundwater site is a Superfund site and that's when we started the R.I.

Just to give you an idea of the site, the eastern boundaries — western is the Nissequogue River, Head of the Harbor area, the Stony Brook harbor area here — it's mostly residential, as you know, it's about a four square mile area and it is Saint James, an area of Saint James, it has some businesses as you all know.

Now, these — this place had some facilities, what we call suspected source facilities that had used PCE in their cesspools. Also, this was provided by the Suffolk County Department of Health and these facilities had used PCE I guess in the past and they were dumping perc in their cesspools and dry wells.

Page 19

After that, Suffolk County had already instructed these facilities to clean up their cesspools which were cleaned up and you though, in fact, they're clean now, we will go over some sampling programs where we collected confirmatory samples to insure these sites of these cesspools are now clean. I'll go over the map in a little bit more detail.

This location — I don't know if you can see very clearly, but the maps — some of the areas where we collected the samples, we collected monitoring wells, we collected surface water samples here in the Head of the Harbor, Stony Brook area.

I will show you exactly how many samples we collected. These are some of the locations where we installed what we call screening wells. What screening wells are, basically, in order to install permanent monitoring wells, we need to find the optimum location of

Page 20

putting in the monitoring wells so what we do is go with the drill break and we sample the groundwater ten feet, we go all the way the depth of the groundwater, sometimes as deep as 250 feet and we sample every ten feet, so we get a profile, so that's why we call it a vertical profile well, VPW and in order to find the best location to install the monitoring well, we installed about 13 vertical profile wells in the residential area.

Also, to go back a little bit, when this contamination was detected, we focused in this area first because that's where the public is, you know, is living and that's where the effect of the human health would be felt, so we concentrated in investigating the groundwater in that area and the second phase we concentrated in finding where the source is.

Going back to that slide is our investigation. As Kevin said at the

Page 21

beginning, we did an RI investigation which involved a collection of a number of samples in wells throughout the area in the residential area and also the potential suspected source areas.

The other part of the investigation was to find out if there are any sources, which I'll tell you exactly what samples we collected and what we found; that was our next phase two, to identify the sources if there are any; also, assess the risk to human health and environment based on what we find in the investigation.

Once we find the risks, the next step is to divvy up response scenarios, how to deal with that kind of risk if it's a risk to the human health in the environment; also, to seek the public input, which is what we're doing here to seek your input and comments so we can address them as we go along.

Another map which identifies some of the locations which we have

Page 22

already gone through, based on the vertical profile wells or screening wells I discussed earlier, we installed about 19 monitoring wells in this area, in the residential area. These are permanent monitoring wells that are in place already where we can go back and sample and see how the contamination is doing over there.

We also, as I said, sampled in the source — potential source area what we did was — before we even collected samples in this area, what we did was we did computer modeling and we did backtrack analyses. The groundwater is flowing this way and what we did was we said if the groundwater is flowing that way, there must be a place where the contamination is coming from, so we backtracked the groundwater to see where the contamination is coming from and based on that what data we got, we installed the vertical profile wells, but we also knew from the suspected

Page 23

source facilities where they were.

They were helpful to us in installing these wells and these basic profile wells are downgrading to where the cesspools are, so if there is any contamination in the groundwater that's coming out of the cesspools, we would be able to identify with these screening wells; that's the purpose of that.

I forgot to mention one thing. The groundwater is flowing this way. It is in a northwest direction, but because of the surface water bordering on each side, the groundwater tends to move in this direction, so although it's supposed to go in that way, but because of the water body here, it moves in that direction.

Another close up view of some of the surface water and sediment samples that we, we wanted to see if any of the groundwater is getting discharged because, as I said before, the groundwater is moving in the direction

Page 24

of the water body, so we want to see if there is any contamination coming out into the harbor, so we collected about seven samples, seven sediment samples in the Stony Brook harbor area and also a number of samples from the Nissequogue River and in addition to that, there's a wetland here, Harbor Hill Road.

This is Harbor Hill Road and right next to that is about one or two acre wetlands where we collected about nine surface water samples and about 30 sediment samples. There are 15 locations, but 30 samples and we wanted to delineate to see if there is any contamination there that is being accumulated.

In addition to that, you can see some of the cul de sacs here. There are some locations that we sampled. We sampled the storm drains in some of these cul de sacs and the rational for that was to see if there's any contamination that may be coming from

Page 25

the storm drains that we know of, so we wanted to sample all of the storm drains in the area which is possible based on their location and where the contamination was found, but many of them were not — did not have any water at that time so whatever samples we could collect, we did and I'll tell you the results of that in a little bit later.

Another picture of, basically, the Nissequogue River where the locations are, the surface water sediment samples that we collected. This is a tally of exactly how many samples we collected; four rounds of residential well samples, total of 294 samples, two rounds of screen survey, first round being in the residential area and the second in the source area and these are the number of samples that we collected from the screening.

Based on these screening samples and the residential well samples, the

Page 26

monitoring wells were installed and, to date, we are about installing 20 monitoring wells, 19 in the residential area and one permanent monitoring well in the potential source area.

Surface samples five for Nissequogue River, wetlands, nine surface water, 30 sediment. In addition to that, we sampled — I may have mentioned that at the beginning — we sampled about 11 suspected source facilities, the dry wells, the cesspools, that once had perc in their cesspools which was cleaned by Suffolk County Health Department. We went there just to see if there is any contamination that may be there and we confirmed that by collecting the, you know, the sampling of those cesspools.

In addition to that we collected about 14 samples, about 12 homes, two duplicates. "Duplicate" is basically a sample where we take — certain samples have to be collected on a duplicate

Page 27

basis, but the rational was to see if there is any groundwater contamination coming up through the sub surface soil and to the indoor homes where people are living to see if it is also a threat to the indoor air.

That is the purpose of the indoor air samples that we collected which we call a soil vapor intrusion to see if there is any intrusion into the house of the soil vapor.

Just a picture to show you a screening tube that we use, a geoprobe, particularly in the Lake Avenue suspected source area because this is easy to maneuver because of the shopping mall and strip area there.

It is difficult to carry a big drill rig which is mainly used in the residential areas. You may have seen some of these in your neighborhood at the time we were collecting the samples.

Another example is a flush mount monitoring well in a strip mall. This

Page 28

is a beautiful picture of Stony Brook Harbor, low tide where the surface groundwater is discharging and this is the location or some of the locations where we collected the surface water where it seeps to see what kind of contamination is coming out.

Another picture of the Nissequogue River where we collected some samples.

This is the area of the wetlands where the Stony Brook Harbor basically flows back into the wetlands.

Well, based on the samplings that we collected that you have seen, we collected a number of samples, what was the conclusion, that's basically what was discussed.

The groundwater flow is very complex. We already talked about that; it's generally north/northwest, but it gets pulled to the east side because of the harbor and the river.

We did not find — the main

Page 29

conclusion is we did not find any contiguous plume that we can map. There is sporadic discreet disconnected slugs of contamination in different areas, there are detections that were found, but nothing that can be mapped and we cannot say this is how wide it is, this is how, you know, how long it is, so nothing can be mapped, but there are some detectable concentrations involved that is found.

The highest concentration of perc found in any of the samples, whether the monitoring well or residential well, was 140 parts per billion and there is a very critical conclusion; we were not able to pinpoint any source of contamination.

Going back to the picture here, this being the suspected source areas and this is where the contamination is, this is where the groundwater is moving, we were not able to say — we cannot verify that there was sampling that

Page 30

these facilities which one used PCE in their cesspools were responsible for the contamination in the Smithtown groundwater site because the samples that we collected did not have any perc in them and if this was any contamination that, you know, then we should have found out and have been able to detect in the samples.

There was only one sample of VPW-5 that had 15 parts per billion of perc. Some of the results of the surface water based on the sampling that we did, there was very low levels of VOCs in groundwater discharge to surface water found.

Same thing with sediments; we didn't find any concentrations that we can see that are accumulating in the sediments, nothing that we have to be concerned about because it's basically tidal fluctuations and it's basically getting disbursed.

Same thing with septic systems.

Page 31

Suffolk County sampled it and we sampled it again for confirmation that it is not contaminated currently, so it is not a source.

Basically this is a slide that talks about the human health risk assessment based on the data that we collect, you know, a human health risk, and for that we have to prepare this document.

This is called the Human Health Risk Assessment Report. Its purpose is to see if there is a risk and if we don't take any action, you know, we have to analyze that; what's going to happen.

It's a four step process. The first process — in fact, there are experts sitting in here who have assisted in the preparation of this document that can explain it better than I can do, but let me take a shot anyway.

It's a four step process. The first step is the hazard identification that says what we are dealing with and

Page 32

where it is, what contaminants and where are they; are we dealing with perc, PCE or any other contaminant and where are they located; in the groundwater, sediment surface, water, air, that kind of thing.

Exposure assessment is the assessment where you assess the exposure and then there is toxicity assessment; basically, what kind of adverse effects these hazards and exposures will have to the human health and once we get the outputs of the exposure assessments, we do the risk calculation.

Basically it's a probability statistical analysis where you divide the probability of someone developing adverse effects from those chemicals and hazards.

What is the conclusion of this report? Very brief: There is a risk. There is, you know, an acceptable potential risk to human health from the contaminated groundwater; that was the

Page 33

conclusion of this Human Health Risk Assessment Report.

So what do we do? We have, you know, we have contaminated groundwater which is there. We have the public that is relying on this, so what do we do?

We do a feasibility study where we evaluate the different scenarios in how to deal with that kind of a problem and we, basically, we do this study. We have to choose certain alternatives and these are the three alternatives we chose.

In fact, the first one is no further action; basically we walk away and do no further action basically say "it's done."

Number two is provide an alternate water supply to water mains, provide long term monitoring to the groundwater and also to institutional controls.

What that means is we have to abandon the wells that the public is

Page 34

using; in other words, if any home in this area is connected to public water, they will be required to abandon their wells and not use it again.

The third is another one that we evaluated which is providing the exact same thing in alternative two with an added function of doing pumping and treating; in other words, to do all of that that we do in number two, but we also do pumping and treating; in other words, you pump out the contaminated groundwater and treat it and inject it back as groundwater.

What are the costs we're looking at for all of this work? No cost for alternative one. Two is $4 million and number 3 is about $7 million; that's the cost. It includes some of the maintenance costs for each of the alternatives and the capital cost also.

EPA selected, in fact, a preferred remedy that we proposed in the proposed plan and that's alternative two

Page 35

which is $4 million. It connects about 217 residents in the study area and I'll explain to you how did we define the study area. How did we select the number 270 homes?

Another function is abandonment of the private wells, long term monitoring, institutional controls to prohibit the future installation of private wells and also not to use the old wells.

This is the criteria that was used in opposing the alternative that we selected. Kevin went through these nine criteria; number one being the overall protection of human health and environment being number one and you know all of the other ones listed right here and last but not least, the community acceptance which is what we want to get the public input, so you have a say in the decision making process.

This explains the rational for

Page 36

the best remedy as to why we are proposing this remedy. Based on the criteria, this is the best — it provides the best balance of EPA's criteria, this remedy alternative two. Also, the groundwater, what degrees in the concentration of degrees below the groundwater standards in a reasonable time; that was done by monitoring and I will explain that in the next step what modeling was done.

This is — you may have seen this figure already in the proposed plan that was sent out to you, this identifies the study area. This is Smith Lane, Nissequogue River here, Edgewood area, North Country Road and here is Farm Road. This is the boundary that surrounds it.

How did we select this boundary? Basically what we did is computer modeling to evaluate and predict which way the groundwater is moving. Based on all of the data that we collected — we

Page 37

have a lot of data that you can see, we have a lot of samples that were collected, so we inputted all of the data, the analytical data, the chemistry, the hydrology, the elevation levels and predicted with computer modeling to see where the groundwater is going to move in the next five, ten, 15, 20, 25 years and based on this computer modeling, we selected this area because we have no reason to believe that the groundwater contamination is going to reach any house that is beyond this boundary.

How can we assure that? We'll be doing long term monitoring in this area and any of the other areas just to insure that the groundwater is going to behave in the way that the groundwater model predicted it to behave. That will be done and the groundwater modeling will be done to verify that the model's prediction is, in fact, taking place, so that was a rational for the number of

Page 38

homes that we selected in the study area.

That brings us to the question and answer session. If anybody has any questions which I'm sure you will, I ask Cecilia to continue.

MS. ECHOLS: We are going to open up for questions. If you can state your name so the stenographer can record that correctly and then we can best answer your question.

Who is the first person?

MR. WINDSOR: My name is Owen Windsor. I live at number 7 Spring Hollow Road, Nissequogue. I have three questions.

One, who is going to pay for all of this? Two, when is it going to happen? Three, what are we going to do without wells? Can we use them to water the lawn or must we abandon them completely and forget about them? Where are we going with this?

MR. QUADRI: Basically EPA is

Page 39

going to pay. If you are in the study area that we just identified, EPA is going to pay for the connection from your house to the main to the front of the street. EPA is going to pay for putting in the lines and the plumbing and all of that.

MR. WINDSOR: Originally when they put the mains in, they said if you wanted to hookup, you have to pay for the right to hookup plus the cost of the pipe from your house to the main.

MR. QUADRI: The cost of connecting your house to the main, the front of your house, that is EPA paying for that cost.

MR. WINDSOR: Does that include the hookup charge?

MR. QUADRI: There is a hookup charge that Suffolk County charges for hooking up to the main. EPA will pay for that.

There are two costs in here, I want to be clear on that. There is a

Page 40

cost that Suffolk County is charging as a surcharge which is paying for the infrastructure of putting in the mains on your street. EPA cannot pay that.

MR. WINDSOR: So you would have to pay something which awhile back was something like $4,000.

MR. QUADRI: It depends on where you are, where your house is.

MR. WINDSOR: What you're really saying is from the house to the main, the surcharge you would have to absorb yourself?

MR. QUADRI: Right.

MR. WINDSOR: What about the well?

MR. QUADRI: The well has to be abandoned; in fact, you can not use the well. We want to completely abandon the well and take out the pump. You don't want to ever use the well again; that is part of the permanent remedy. We don't want anybody using the wells for any purposes.

Page 41

MR. WINDSOR: I have been following these meetings quite closely, at one time it was discussed that they said they wanted you to unhook the well from the house so it didn't mix with the water from the main.

Now, assuming you unhook the well from the house, could you then use the water for irrigation and stuff like that?

MR. QUADRI: I don't understand the question.

MR. LYNCH: The question is can they still use the wells to water the lawn?

MR. QUADRI: No. Actually, you can't. We don't want to use it for any purpose, the water. We want you to completely abandon the well.

MR. WINDSOR: When might this all happen?

MR. QUADRI: This will take time. You are talking about a big area. It's not going to happen quickly. It's

Page 42

a process that will take two to three years we think now.

MR. LYNCH: What the process is that at the end of the public comment period, we will amass all of the comments, respond to them, give the comments our response and the recommendations of the regional administrator who will then make the decision and to implement that decision, we will then hire a contractor or use the core of engineers to do the design.

In this case the design is relatively simple, just a simple plumbing connection and then we will make the arrangements with the Suffolk County Health Department, so we would assume right now that in order to achieve this, it will be at least six months before — six to nine months before we actually will contact anyone with the details of exactly when and how the hookups will be done, the individual hookups.

Page 43

MR. WINDSOR: Might you also set up a priority system where the wells that are in jeopardy — wells that are pumping bad water would be treated first and then the other ones follow at a later date? Would that happen?

MR. LYNCH: That's a very sensible idea. That is something I say with the design that's what you do in the design phase is say what steps do we go about and that's a very logical way to go about it and I would imagine we would start it that way.

MR. WINDSOR: Fine, you answered my questions.

MR. ROBBINS: The reason we want people to abandon their wells is even if we are just using it for irrigation, there's still a chance for exposure and since there won't be continuous monitoring of the well water, we wouldn't really know what people are being exposed to, so the safest thing since we don't really know everything

Page 44

about what's going on is just to abandon the well because people might be tempted to use it to fill swimming pools.

Even irrigating the lawn, the spray, you could be exposed and as it turns out, running a well to get irrigation water is more expensive than paying Suffolk County Water Authority for the water that you buy.

The wells, especially where this site is, takes a lot of power to pump up that water. If you look at your electric bill, you're paying for your water in your electric bill, so in the long run, it's actually cheaper to buy the water from the Water Authority and use that for irrigation.

MR. WINDSOR: It would seem to me that the right thing to do before we make up our minds which way to go is come up with some figure what each owner is going to have to pay.

I'm just throwing a figure out of $5,000. I don't know what it is now

Page 45

anymore.
MR. ROBBINS: That the Water Authority should provide you and that cost is usually amortized over 15, 20 years; it's included in your water bill, but, you know, you're not going to be paying a lump sum.
MR. WINDSOR: You're not?
MR. ROBBINS: Not for the water main extension. The lump sum is normally for the hookup fee and that EPA is going to pay for so it just means when you get your water bill, you'll have an amount for the number of gallons used plus the surcharge which pays over the cost of the water extension over the course of 25, 30 years, so it's not a really large cost.
All of those figures will be made available before anybody has to decide.
MR. SMITH: My name is Richard Smith, 697 Short Beach Road, Village of Nissequogue. I also serve as the Mayor

Page 46

of Nissequogue. Thank you for putting on this presentation tonight.
A couple of quick points.
Your presentation indicated — and I think this is an actual number — 270 homes that you've identified that will be hooked up through the service that you're provided. A lot of these homes are in subdivisions that are not fully built out.
My point is there are a number of vacant lots still within this grid that you have identified that need to be hooked up. What's your policy on those? You mentioned a two to three year window; perhaps we have somebody coming in with a building permit 18 months from now and they want to put up a house, when does this offer terminate?
MR. LYNCH: The offer for the houses are for them there now. It is not an offer for someone in the future of someone wanting to hookup, that would be a normal cost of building your house.

Page 47

MR. SMITH: When is it exactly? We have a lot of building permits; as you can imagine, this is going to be one of the first questions people will ask.
MR. LYNCH: It will be as of the date we sign the record of decision.
MR. ROBBINS: Suffolk County Health Department regulations would require any house that is built now where there is a water main accessible in the street to hookup to the water main. We wouldn't allow a house to be using the private well.
MR. SMITH: If you have any suggestions to check with Suffolk County Health Services, any suggestions or language that we can put in our village code, we will certainly do that.
MR. ROBBINS: All you need to reference is the Suffolk County Water Code and that is a rule we have all throughout the county that we don't encourage people to put in private wells because we can't assure the quality long

Page 48

term, so if it is a water main in the street and somebody comes in for a building permit, they will be required to hookup to that water main.
MR. SMITH: Even outside of the designated area?
MR. ROBBINS: That is a county wide policy.
MR. SMITH: Last question, I think I know the answer, but it will be asked from a number of residents.
Within the grid area over the past several years, it's certainly going to the expense of hookup, what is EPA's policy on reimbursing these folks who have gone through the expense of making that connection?
MR. LYNCH: We cannot reimburse for existing infrastructure.
MR. SMITH: Would you leave your phone numbers please?
MR. LYNCH: I will leave you my card. We have been getting calls.
MR. SCOTT: My name is Peter

Page 49

Scott. I have a couple of things that sort of disturbed me and, first of all, what is being done to identify the homes today who have not hooked up to the public water and may have contaminants in the drinking water and how frequently are these folks being monitored?

You say you indicated you did a sampling of over 200 wells over four different wells, that would be 50 wells which doesn't seem like an awful lot to me.

MR. QUADRI: To answer your first question, we believe that none of the public is affected because of the fact that they are being monitored and we have constant re-monitoring and a number of homes have already hooked up on their own and if any home — this is the last two or three years this is going on — any home has exceedences of MCL, EPA will provide them with a hookup or give them a treatment system if that house does not have a water main.

Page 50

We believe that nobody is currently —

MR. SCOTT: How are you determining what homes do, in fact, do, in fact, have issues with this? He's saying there are carcinogenic structures in our water. Are all homes being monitored?

MR. QUADRI: We sampled the homes that were in the area of contamination. We know where the contamination was based on the previous history. We know where the groundwater is moving, so we selected the homes that we thought were most probably affected by the movement of groundwater and, you know, we have an open door policy if anybody thinks that their samples may be contaminated, but there's a reason for them to sample.

We have taken, in fact, we have included them in the program and have sampled their homes based on requests.

Suffolk County Water Authority

Page 51

also samples homes with a little bit of a charge, but with our program, we have sampled many homes like that based on request.

MR. SCOTT: How would one go about having a sampling?

MR. QUADRI: We will come to your home and sample it.

MR. LYNCH: Is the question how do you get included in this program?

MR. SCOTT: Exactly.

MR. LYNCH: Let me try to explain it a little bit.

How we started this is we had information from the Health Department which first identified this problem.

When we went out and sampled those holes and the homes around them in an attempt to see how widespread this was and then we continued to go out until we did not find homes that were contaminated, that we would have at least one ring outside this area of contamination where the homes weren't

Page 52

contaminated and that's how we decided and I believed we tried to contact everyone within that area in an attempt to sample that.

MR. QUADRI: Right. In fact, we were having problems with people not getting back to us. We were doing a telephone call to make an appointment because we can't go to their house, we have to make an appointment to go to the house, collect a sample, we were having problems with people not getting back to us, so we had to call four or five times sometimes.

We put fliers in mailboxes when we couldn't get in contact.

MR. SCOTT: My concern is not just my home, but my children playing at someone else's home. Are their pool waters contaminated and their water contaminated and it's sort of an issue where I don't seem to get an area that, yes, all the water in Nissequogue is safe or not.

Page 53

MR. LYNCH: We believe that we have identified any home in that study area that does now have contamination, but the one reason we are hoping we would hookup anyone in this area what we modeled and said this is where the groundwater is moving, so if there was a particle of contamination where we know it exists in the sampling points where would that be in 25 years as it moves in the groundwater.

To the extent where that would move in 25 years is the area we are proposing we would hookup and basically that's because we cannot assure that these will not move in an area that we have not sampled now. We did the modeling to come up with a reasonable area where we believe that — actually, a very conservative area that the furthest it can travel based on what we know about it today and we will be continuously monitoring not the homes, but into the aquifer itself with

Page 54

monitoring wells to make sure that the model calculated things correctly.

MR. SIVAK: I'm Michael Sivak and I'm the one who looked at — I went through the process that Sy and Kevin explained what kind of health problems we would see and you raised a question what happens if your children are playing at someone's house and whatever reason that home slipped through the cracks or wasn't hooked up immediately or something like that, there might have been some incidental exposure because your kids were playing elsewhere.

That is a good question and to allay your concerns, when we look at how people are exposed, we are very conservative on how people would be exposed, how long they would be exposed, how many days per year people would be drinking the groundwater as a drinking water, how much they're going to drink every day and these are sort of health protective assumptions, but we factor

Page 55

into these models that you look at and the results of these models are exactly what Syed explained.

We have a potential for some unacceptable health risks if these exposures were to occur for very long periods of time, so if your child was playing at someone's house and they had a glass of water or were swimming in the pool, I don't want to say they are incidental types of exposures, but compared to what we're looking at, they are very small components of that and even if that was to happen — and I don't think it does because of all the things we discussed — if that was to happen, please don't be concerned about that,
that is very relatively insignificant compared to everything else we looked at.

Does that make sense?

MR. SCOTT: Thank you.

MR. WINDSOR: I would like to

Page 56

ask another question. The onset of wells that we already have — right now that's all the water we have — that are not hooked up, we have to use these wells. Most of the wells — there are some measurable pump wells; in other words, the pump down at the bottom of the well — and if you have ever tried to get one of these pumps up, usually the pipe breaks and it goes to the bottom and you have to put in a new well, let's say you walk past that, we have to take about two years before we get hooked up, what do we do if tomorrow or next week we have a storm and it shorts out the pump and when we go to try to pull it up to fix it, it breaks off, what do we do? Do we call you and tell you we have an emergency, we need water? Is that what we do?

MR. LYNCH: Actually, yes.

MR. WINDSOR: It wouldn't make sense to fix the well and have to owe it out.

Page 57

MR. LYNCH: We will be coming up with a design about how we will go about what street we will do and when we will do it and something like that. We definitely want to know approximate.

It's similar to what we've been doing with our annual sampling. If we find a house above the standards, we would hookup that individual house and work with you on something like that.

MR. WINDSOR: Thank you.

MR. LYNCH: That's a good question.

MS. ECHOLS: Once the design is finished we do come out to the community to check it.

MS. RANDALL: My name is Alexandra Randall and I live at 54 Harbor Hill Road, the corner of Harbor Hill and there is a marsh on our property that you are familiar with and, first of all, thank you to everybody, I have been hooked up presently and I had a question.

Page 58

The well that was abandoned is directly next to my house which is an 1830's house, it's 18 feet low; it's a very shallow well.

Is there any danger to us just the fact that the well is still there?

MR. QUADRI: You said it's abandoned the well?

MS. RANDALL: Yes, but I don't know what that means.

MR. QUADRI: When you say "abandoned the well," it has to be poured on concrete and it's completely sealed up.

MS. RANDALL: It wasn't and it's right next to the house and that's what bothers me.

MR. ROBBINS: If your concern is that it's vapors from the groundwater coming up from the well and into the house, there really is no concern about that.

The concentrations seen in the groundwater are quite low and there's

Page 59

very hill tendency for that to vaporize.

MS. RANDALL: What are they typically?

MR. ROBBINS: What kind of concentrations?

MS. RANDALL: Exactly.

MR. ROBBINS: Generally less than 10.

MS. RANDALL: I think it was 14 or 17.

MR. ROBBINS: Unless it's in the hundreds of thousands, the chances of volatilizing — plus, is there a cap on the top of the well?

MS. RANDALL: Yes, there is.

MR. ROBBINS: So there is no way of getting exposed to those vapors, but if you are concerned, we should pour in concrete to fill in the well.

MS. RANDALL: I had another question. Let's see, what exactly are the health risks and where is the highest contamination found?

MR. QUADRI: What are the health

Page 60

risks? You want to answer that?

MR. SIVAK: I can answer that as well.

We're primarily concerned with tetrachloroethene, PCE, and you've also seen it presented, the topic, basically that's a volatile organic chemical and there are a couple of ways you can be exposed to it that we were primarily concerned with our risk assessment.

The most likely way anyone would get is by drinking it. Another way you can be exposed to it is when you were using the groundwater, that is you're inhaling these groundwaters while you're showering; those are the things we're primarily looking at, those types of exposures.

We talked about it being a carcinogenic chemical and there is evidence that it is associated with cancer. The types of cancers that we expect to see from this type of problem are primarily liver cancers. There are some other types of non cancer health effects such as central nervous system effects, possibly some liver problems as well and also some kidney problems; those are primarily the factors that we're going to be looking at.

MS. RANDALL: Thank you. Where was the highest concentration contamination found?

MR. QUADRI: In fact, I can show you in a map.

We identified right around that area the highest most detectable concentration. I don't want to say "highest" because that sounds like big concentrations, but I want to say detectable concentrations were found in this area which, you know, is right here, Harbor Hill Road and also Old Millennium Road, right there, that area.

You may have seen in the proposed plan a pump and treat remedy. We selected those areas because if we have to pump it, we would do it over

there, but the condition here is not suitable for that, but, you know, if we have to pump, those are the two areas where we will pump and treat.

MS. RANDALL: Whereabouts would it have been?

MR. LYNCH: I would like to comment when we use the term "high concentrations," these numbers are still very, very low. It doesn't take much solvent to screw up a water supply and it's not as if there's not tons of stuff out there and even the highest level we found is a low level, but it's just a risk level.

It doesn't take much to screw up the water supply and the levels that we accept are very, very low levels.

MS. RANDALL: How does Suffolk County keep it from screwing up, as you say?

MR. ROBBINS: Public water supplies are monitored very carefully. We take annual samples of all the wells.

The Water Supply is required to do quarterly sampling. If even a trace shows up in a well, Suffolk County Water Supply starts monitoring the weekly samples. If it gets close to the five micrograms liter part per billion which is the drinking water standard for most organic solvents, they'll either shut the well down or bring in a unit to remove that contamination.

None of this contamination in the Smithtown groundwater area threatens any public supply loss, so we are confident of that.

MS. ECHOLS: We have a question in the back. Sir, would you like to come up.

MR. SWAN: 346 Harbor Hill Road and I happen to be also a trustee.

At the corner of Harbor Road there is a well that is used by the public continuously. Was that well contaminated and if it was, what were your plans to either cap it?

MR. QUADRI: That's a good question. That sample was collected and, to my knowledge, I think the concentration detected was 2 ppb in that well recently so we contacted Suffolk County requesting them to put in a sign there.

It's on a private property and I'm not sure if the sign is there already.

MR. SWAN: It's not.

MR. QUADRI: But Suffolk County has written a letter to the owner of that property.

MR. ROBBINS: The last time the Health Department checked that spring, Larry, it was over standard, I think seven and we wrote a letter advising him to shut it down, not to just post it, but we advised him to close it off because it's a liability.

MR. SWAN: What would the sign say?

MR. ROBBINS: I didn't get into

the issue of posting a sign. I said our preference is to close the springs down. I know people like to go and get water, but in this case it really is contaminated and we probably should not be using it at all.

MR. SWAN: If it's private, is the Village, the Head of the Harbor liable for people drinking out of that?

MR. ROBBINS: I wouldn't think so, but you better ask an attorney.

MS. ECHOLS: Ma'am, would you please step up.

MS. MURPHY: May name is Katie Murphy, I live on Farm Road and I'm on the Environmental Conservation Board and I have two questions; one is Jeterdine property looked as a potential source?

MR. QUADRI: That is way up north there. That is a completely different pathway, we have no reason to believe that Jeterdine is in any way connected to this contamination.

MR. ROBBINS: The groundwater

models indicated it could not be a source.

MS. MURPHY: The other question is were any of the organisms in Stony Brook Harbor sampled or was it just the sediment?

MR. QUADRI: I think there were some organisms, but there were surface water samples collected.

MS. MURPHY: Any plans for that?

MR. QUADRI: No.

MS. MURPHY: Thank you.

MS. ECHOLS: Sir, would you step up, please.

SPEAKER: As I understand it, we cannot determine the source, we have no real source, we're dealing with sort of a random or noise problem rather than a deterministic model; is that right?

MR. LYNCH: That's a good way of putting it, yes.

SPEAKER: My question, therefore, relates to that.

Since we don't really know the

source, you're going to monitor, right, that's good, right, and I think EPA has their heart in the right place right now, right, but you well know things are non static in a place called Washington, D.C. so when a problem manifests itself in five or ten years from now and your well says you have a problem, there won't be a real EPA, right, so my question is right, are you making a probability study, all right, in terms of the present modeling as to whether you should extend the boundaries, right, to take care of this maybe absurdity, but it's a probability, is anything being done that way?

MR. QUADRI: Well, it's —

SPEAKER: Is my question too confusing? All I'm arguing is you say you're going to monitor in the future, that's good, right, and you would take care of the problem, right; is that right, but you may not exist in the future, right, the physical problem will

be in existence, right, who is going to take care of the problem?

MR. LYNCH: If it's a premise, the source, we don't believe there is a source that exists now that is contributing to the problem, the source was probably something that was done in the past. It could probably have possibly have been something from dry cleaning establishments, it could have been 30 years ago that got into the groundwater and has now moved down into that area.

It could be a number of different things; we can just theorize. It could be things like a number of small individual releases as someone innocently taking some cleaning solvents and either to keep their drains clean and put it into the cesspool.

As I said, it doesn't take much of a solvent to bring water above standards and we didn't find a plume of contamination. We went out there to

Page 69

look and see if we can identify
something we have to address and can
address in that groundwater to clean it
up and we really didn't find much;
that's actually good news.
It's frustrating for us because
we went out there and looked hard for
this and as much as we shouldn't want to
find a big problem out there, we will
look for that problem so we can solve
it, but there is — right now we really
can't think of anything else we will do
to go out there to find more of this
contamination.
And the question will we be
around in ten years? I certainly hope
so. The laws will probably be around,
but the law right now will require us
here to go back every five years — at
least every five years and determine if
this remedy is still protective of human
health and environment and until they
change that law, somebody has to go out
and do it.

Page 70

MS. COKE: Bobbi Coke, Saint
James.
The area outside of this grid,
is there any applications for that or is
that not to be converted to public
water?
MR. LYNCH: We don't believe
that area is in the area with
contamination, so we are not planning to
address it.
MS. COKE: We use our water for
cooking, drinking, our pool and our
showers, we should not be concerned?
We're on Valley Path just outside of
that area.
MR. QUADRI: The computer
modeling was done, as I said in the
beginning, I don't know if you were here
or not, that predicted the migration of
contamination in this area and all of
the data that was collected was put into
commuter modeling that can predict
exactly where the groundwater is going
to go in the next 5, 10, 15, 25, 30

Page 71

years and based on that prediction of
the computer model, they don't think the
groundwater is going to go in that
direction.
However, this will be monitored
here of the boundary to confirm that.
MS. COKE: I just want to
reiterate what this gentleman was
saying, this problem was detected how
many years ago?
MR. QUADRI: 1997, 1998.
MS. COKE: So we don't really
know what's going to happen in the
future. Why don't we just take care of
the whole village area now? Why are we
going to wait?
MR. LYNCH: The law doesn't
allow us to go in and take action where
there is not an assessable risk right
now.
MS. COKE: It just doesn't seem
protective of the people.
MR. ROBBINS: To respond to your
question, the people north of the area

Page 72

the Health Department has taken samples
of that area and we have not found any
contamination.
If you are concerned about your
well, you can call us and we will do a
sample for you, but between what we have
seen in the past, you can be confident
where you live you're not going to see
contamination related to this site.
MR. LYNCH: We can't say
anywhere any water will not become
contaminated in the future, whether it's
near this site or anywhere else in the
future; that's why Suffolk County has
this new regulation if you have a new
building, you cannot put a well in.
I have a well myself in New
Jersey, I get my water sampled every
three to four years. I have that
concern myself and I think that's a
concern everyone who has a well should
have and I think you should stay
vigilant, but the program we work for
just does not allow us to go out and

Page 73

take care of problems that don't currently exist.

MS. COKE: But it may exist in the future.

MR. QUADRI: I want to add one more thing to your question.

Mike pointed out this study area does not mean this area is all contaminated. There is enough cushion built into there based on the projection of the contamination in the next 20, 30 years. This doesn't mean it's all contaminated. This is just for future projection based on modeling and we have to stop someplace and this should be rational to stop someplace.

Based on modeling this is the rational, we don't expect it to go beyond that.

MS. COKE: I know that, but as a mother, my rational is five years from now, if it pushes beyond that boundary, I'm going to come back to you people and I'm going to want to know why you waited

Page 74

five years.

MR. LYNCH: We will be monitoring before that boundary in that area and if it is moving in that direction, we will come back and take another action.

MS. COKE: How often do you monitor these areas that are just adjacent because we live one street away from the contaminated area so to speak.

MR. QUADRI: After the remedy is memorialized in the record of decision, what we call that, the remedy, there will be a long term monitoring plan that will be prepared and we will evaluate exactly how often we should be going in and sampling and how often and how many homes in that area.

That should be coming up, but at least every year there should be a program that samples should be collected.

MS. COKE: I am not aware of anybody having their water samples

Page 75

collected on my street or anything.

MR. LYNCH: When you said the "contaminated area," are you referring to the area, the shaded area?

MS. COKE: We live right beyond Farm Road. We're on the street next to Farm Road, but part of the area in there and I was just curious about that because I don't know of anybody who's had their well sampled.

MR. ROBBINS: I'm pretty sure we've gotten samples from wells all through that area.

MS. COKE: No one came to my house.

MR. LYNCH: If anybody has questions about where their individual house is compared to where we found contamination, please come up afterwards and we can show you where we found it.

MS. ECHOLS: Sir, in the back, please.

SPEAKER: The question I have was it's been five or six years since

Page 76

these chemicals have been detected, very likely they were there 10 or 15 years before that and you've talked about the risks or potential risks of getting liver cancers and so forth.

What is the risk of people having consumed the water, bathed in it for the last, say, ten years of acquiring these diseases? Should any of us be concerned?

I was sort of getting the impression of instantaneous risks as opposed to long term.

MR. LYNCH: We were talking about long term.

MR. SIVAK: I have to apologize. I think I missed the first part of your question, but I think your question is what about past exposures prior to this being identified as the site and the exposure being discontinued by putting people on public systems or some kind of treatment system.

Unfortunately, when we do these

Page 77

estimates of risk, when we start this risk assessment process to try to figure out what are the health effects we expect to see, we are trying to answer two main questions and one is what are the risks right now the way the site exists now based on all the information we have and the second question is what's going to happen in the future if we don't take any action at all and these concentrations and contaminants still exist and people still are exposed.

What are the risks under those two situations? Unfortunately, we don't have the knowledge to go back and try to figure out what happened to people who have been exposed in the past because we don't know when the contamination first appeared, what concentrations people were exposed to in the past. There's no way we can ever, ever tell you or estimate what those possible risks may be and that's very — that doesn't

Page 78

answer your question at all.

There's another agency called the Agency for Toxic Substances and Disease registered and their role, they are a part of the Center for Disease Control and their role is to answer the kinds of questions that you have just asked.

When the Smithtown groundwater contamination site was proposed to the National Priorities List, the ATSDR put together a public health assessment and that sort of looks at the past exposures and concentrations and they are able to go back in and look at these types of things.

They have the authority under the law to go back and do those types of things. Unfortunately, we don't have that authority to answer hose kinds of questions, so that's not really an answer to your question, but that's the best I can do.

The estimates that we have

Page 79

provided in the risk assessment and the proposed plan, there are a bunch of numbers in this and I can explain what those mean. Those are based on exposures now and in the future to the concentrations that we're seeing out there right now.

MR. WINDSOR: Before we all leave here, can we just sum up what we are all led to believe is true; that is, number one, you're going to hook the houses up, the cost for the hooking to the main, we are going to have to absorb in a higher water bill rather than making a lump payment; is that correct?

MR. LYNCH: Correct.

MR. WINDSOR: That's the way it's going to be?

MR. LYNCH: Correct. We will pay for the action of the plumbing from the residence to that main and the cost of the hookup to that main, but the surcharge to pay has to be paid to Suffolk County Water Authority for

Page 80

putting that in in the first place.

We will not be paying and how we understand the bills are worked is they will amortize that over time and charge you over time and there is a surcharge on your water bill.

MR. WINDSOR: EPA will also pay for the abandonment of the wells?

MR. LYNCH: Yes. EPA will also pay for those.

MS. RANDALL: Mr. Quadri, what prompted you to go with alternative two? Obviously, you looked at all of the aspects as you explained to us, but what made you decide not to pump and clean and what will happen with these solvents with perc that's in the water now?

MR. QUADRI: Basically, maybe I'll show you a figure that this was not included in the presentation, but I have it as an aside in case people have questions and that's exactly what you were asking.

This figure shows that if you do

Page 81

no pumping, this is the concentration versus the years.

In 30 years whether you do pumping or not, it's going down to the standard where we want the groundwater to go. If you look closely at this map, you will see that in five years, you get rid of the 75 percent — if you do pumping, okay, if you do pumping which is 3,000 gallons per minute, the blue line, okay, that's where the removal of the mass is, okay.

If you do pumping at 1,500, you get to the green line and then the purple line, that's the gallon per minute that you're pumping, so if you don't pump anything versus you pump at different speeds, you will see that, in fact, with pumping, in seven years, you get rid of the mass, the contamination.

Without pumping, with no pumping, you remove 70 percent of the mass in seven years, so 75 percent versus 70 percent, five years and seven

Page 82

years, you know, so there's not much cost benefit that you can see with this calculation, right.

MR. SMITH: Rich Smith again. Mr. Quadri, that's a very powerful graph and all, but that's premised on the fact that nothing new is entering the system.

Are you able to identify by the various compounds what the relevant age of these are, the two main contaminants and what will you do to insure that this is not entering the system again?

This is fine, over 30 years this flushes itself out, but, again, if this is an ongoing or sporadic problem, this is meaningless, so what are you going to do to enforce the phantom that you can't identify that we don't have this ongoing problem?

MR. LYNCH: Right now we will rely on the laws and regulations of the state and the vigilance of the DEC and Health Department to enforce those laws.

Page 83

Also, nothing — we have not identified the source. This could have been a source from the past, as we said. Actually things have changed a lot in the last 30 years in how people do operate their businesses; for instance, the people in the dry cleaning business used to be able to go out and take the old solvent and dump it down the back drain and that doesn't happen anymore because of the vigilance of the people in the state and community.

The fact that there is a Superfund site doesn't change anything. There is always a risk that somebody might do something illegal, but the Superfund program is not set up where we can do anything really beyond the existing laws to prevent this from happening.

MR. SMITH: Do you hazard a guess on the age of the solvents that you found? When did they come into common use in the industry?

Page 84

MR. QUADRI: It's been around for a number of years. In the '50s it came in contact. They're not that commonly used today. You used to be able to walk into any department store and pick this stuff off the shelf.

If you had a job to do at home in the '50s, you could go into any hardware store and buy any of these solvents and use them and they are not available today.

MR. SMITH: One last question on that.

Is there any way that you can detect new solvents or new supply of solvents from coming into the system?

MR. LYNCH: If we find something in a modern well that hasn't been there before, if the concentration would go up in a well where something does exist, we would like to see it migrating.

Do we have an area where we knew things were at a higher level than a lower one and the ground was moving to

Page 85

that direction and it comes to that same level we would assume it was just moving the groundwater, but if there is an increase in that, we would assume it's something else.

MS. ECHOLS: Any more questions?

MS. RANDALL: One last comment more than a question.

It would seem — maybe I don't know whose responsibility it is, but people do need to be educated, especially in certain fields.

Are there laws — does the Suffolk County Water, for instance, send out a list to everybody that hooks up that says, by the way, don't dump these types of things?

MR. ROBBINS: I think the Water Authority does try to provide that sort of education to their builders, but there are programs to our local dry cleaners now to try to educate them on how to handle the solvents and hopefully things are improving and we know dry

Page 86

cleaning is problematic, that's why we're able to come up with a list of suspects.

MS. ECHOLS: Any further questions?

I would like to thank everyone for coming out tonight and for EPA's presentation.

I would like everybody to know that EPA does have an 800 community involvement hot line number and that's 800-346-5009.

If anyone is interested, they can always call in and someone can transfer you to me, Cecilia Echols.

Our public comment period ends on July 17th. You can send in written comments to the Agency. Thank you.

(Whereupon, the meeting was adjourned at 8:45 p.m.)

Page 87

CERTIFICATE

STATE OF NEW YORK)
) ss.
COUNTY OF NEW YORK)

I, DAWN SPANO, a Registered Professional Shorthand (Stenotype) Reporter and Notary Public of the State of New York, do hereby certify that the foregoing Proceedings, taken at the time and place aforesaid, is a true and correct transcription of my shorthand notes.

I further certify that I am neither counsel for nor related to any party to said action, nor in any wise interested in the result or outcome thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this 1st day of July, 2004.

DAWN SPANO, R.P.R.

Lawyer's Notes

C

D

Lawyer's Notes