Five-Year Review Report

for

SMS Instruments Superfund Site

Deer Park

Suffolk County, New York

May 2006

PREPARED BY:

U.S. Environmental Protection Agency
Region II
New York, New York

Five-Year Review Report
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List of Acronyms

ARCS	ARCS Contract
bgs	below ground surface
CDM	CDM Federal, Inc.
COC	Contaminant(s) of Concern
EPA	United States Environmental Protection Agency
ERT	Environmental Response Team
gpm	Gallons Per Minute
LTRA	Long-Term Response Action
MCL	Maximum Contaminant Levels
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
OU	Operable Unit
PCOR	Preliminary Site Close-Out Report
ppb	Parts Per Billion
ppm	Parts Per Million
PRP	Potentially Responsible Party
RA	Remedial Action
RACS	RACS Contract
RAO	Remedial Action Objective
RD	Remedial Design
REAC	REAC Contract
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
RSE	Remediation System Evaluation
SCDHS	Suffolk County Department of Health Services
SPDES	State Pollutant Discharge Elimination System
SVE	Soil Vapor Extraction System
UST	Underground Storage Tank
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

This is the third five-year review for the SMS Instruments Superfund Site. This site is located in Deer Park, Suffolk County, New York. The implemented remedy protects human health and the environment.

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: SMS Instruments

EPA ID *(from WasteLAN)*: NYD001533165

Region: 2	**State: NY**	**City/County: Deer Park, Suffolk County**

SITE STATUS

NPL status: ■ Final ☐ Deleted ☐ Other (specify) _____

Remediation status (choose all that apply): ☐ Under Construction ■ Operating ☐ Complete

Multiple OUs?* ■ YES ☐ NO	**Construction completion date:** 01/22/1996

Has site been put into reuse? ☐ YES ■ NO

REVIEW STATUS

Lead agency: ■ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author name: Mark Dannenberg

Author title: Remedial Project Manager	**Author affiliation: USEPA**

Review period: 05/2001 to 04/2006

Date(s) of site inspection: 07/10/2005 and 01/25/2006

Type of review:

■ Post-SARA ☐ Pre-SARA ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
X Regional Discretion

Review number: ☐ 1 (first) ☐ 2 (second) ■ 3 (third) ☐ Other (specify) _____

Triggering action:
☐ Actual RA Onsite Construction at OU #____ ☐ Actual RA Start at OU#____
☐ Construction Completion
■ Previous Five-Year Review Report
☐ Other (specify)

Triggering action date *(from WasteLAN)*: 05/31/2001

Due date *(five years after triggering action date)*: 05/31/2006

Does the report include recommendation(s) and follow-up action(s)? ☐ yes ■ no
Is the remedy protective of the environment? ■ yes ☐ no ☐ not yet determined

* ["OU" refers to operable unit.]

Five-Year Review Summary Form (continued)

Issues, Recommendations, and Follow Up Actions

Remedial responsibility for this site has been transferred to the State of New York. The State is operating an air sparging unit to remediate residual contamination at a clearly defined depth (plus or minus 4 feet from the water table) in a former source area. Operation of the groundwater treatment system has been temporarily suspended. Operation of the air sparging unit has significantly reduced residual contamination in the soil, and, thereby reduced the migration of contamination to the groundwater. This conclusion is supported through a review of groundwater monitoring data. The State will continue to monitor the groundwater as part of the ongoing remedial action of the site. The State of New York anticipates performing soil sampling to confirm the removal of contaminants in the soil by operation of the air sparging system.

This report did not identify any issue or make any recommendation for the protection of public health and/or the environment which was not included or anticipated by the decision documents.

Protectiveness Statement

The remedy for the SMS Instruments site protects human health and the environment. There are no exposure pathways that could result in unacceptable risks and none expected as long as the engineered controls currently in place continue to be properly operated, monitored and maintained.

SMS Instruments Site
Deer Park, New York
Third Five-Year Review

I. Introduction

This five-year review was conducted in accordance with the Comprehensive Five-Year Review Guidance, OSWER Directive 9355.7-03B-P (June 2001). The purpose of a five-year review is to assure that implemented remedies protect public health and the environment and function as intended by the decision documents. This document will become part of the site file.

The U.S. Environmental Protection Agency (EPA), Region II, conducted this five-year review of the remedies implemented at the SMS Instruments Superfund Site (the site) in Deer Park, New York. This review was conducted by the Remedial Project Manager (RPM) for the site. This is the third five-year review for the site. Upon completion of the remedial actions, contaminant levels will be reduced to levels that are protective of human health and the environment. The triggering action for this review is the issuance of the second five-year review for the site which was issued on May31,2001.

The site has been addressed in two phases or operable units (OUs). The first operable unit (OU-l), which addressed both the sources of the groundwater contamination and the groundwater treatment, has been addressed through remedial activities described within this Report. The second operable unit (OU-2), involved investigative activities to determine the presence of any potential upgradient sources of groundwater contamination. OU-2 resulted in a "No-Action" ROD signed on September 27, 1993. This five-year review evaluates only the first operable unit.

II. Site Chronology

See Table 1 for site chronology.

III. Background

Physical Characteristics

The SMS Instruments, Inc. site is a 1.5-acre facility located at 120 Marcus Boulevard in Deer park, new York. The facility was in operation from 1967 to 1990. The site is in a light industrial and residential area and consists of a 34,000 square-foot building on a 1.5-acre lot. About 90% of the lot is covered by either the building or asphalt pavement. Until recently, the facility was leased by Fernanda Manufacturing, Inc., manufacturers of wooden kitchen utensils. The facility is currently unoccupied.

SMS Instruments began operations at the site in 1967. Primary operations consisted of the overhauling of military aircraft components. Overhauling operations consisted of cleaning, painting, degreasing, refurbishing, metal machining, and testing of the components.

The site is located on the outwash plain of Long Island. The site elevation is approximately 75 feet above mean sea level. Topography is generally flat with the exception of a steep basin embankment leading to a large basin 50 feet from the eastern property line. The basin is within a major recharge zone for both the Upper Glacial and Magothy aquifers, which supply water to the entire island. The uppermost aquifer, the Upper Glacial, underlies the site. The depth to the water table is approximately 20 feet below grade. The saturated portion of the Upper Glacial Aquifer, with a thickness of 100 feet, begins at the water table and extends down to 120 feet below grade. The Upper Glacial aquifer is underlain by the Magothy aquifer which is approximately 900 feet thick in the vicinity of the site. The groundwater flow direction is southerly for the Upper Glacial aquifers. Land use within the immediate vicinity of the site is light industrial, but predominant land use in the surrounding area is commercial and residential. Approximately 17,000 residences are within 1 mile of the site. Several schools are to the south.

Land and Resource Use

The vicinity of the Site is predominantly an industrial and commercial area. It is anticipated that the area will remain an industrial and commercial area into the future, and the site property will be zoned accordingly.

The groundwater pump and treat facility was operated from 1994 to 2005 to remediate groundwater contamination and to contain migration of the groundwater contaminant plume. In September 2005, operation of the groundwater pump and treat facility was temporarily suspended to maximize the efficiency of the air sparging unit, which continues to operate.

There are more than 50 industrial facilities and 17,000 residences within a one mile radius of the site. The Magothy aquifer is the only source of drinking water for an estimated 124,000 residents in the vicinity of the site.

The primary potential receptors of groundwater contamination are water supply wells. The closest downgradient supply well is located approximately 1 mile south of the site along Brook Avenue. This supply well is completed within the Magothy aquifer at over 300 feet below grade. The closest downgradient surface water body is Guggenheim Lake, which is located approximately 1.5 miles south of the site. The headwaters of Sampawams Creek, which feeds into Guggenheim Lake lie 1 mile southeast of the site. Belmont Lake State Park is less than 2 miles south-southwest.

History of Contamination

From 1971 to 1983, SMS Instruments, Inc. overhauled military aircraft components. Industrial wastes generated from degreasing and other refurbishing operations were discharged to a leaching pool on site. Other sources of contamination included a 6,000-gallon underground storage tank (UST) used for jet fuel storage and corroded and leaking drums stored outdoors in an unprotected area.

Initial Response

In 1983, the leaching pool was pumped out, filled with sand, and the inlet lines were sealed. The UST used for the storage of jet fuel was removed from the site on February 17,1988, during the Remedial Investigation. Removal of the third source, the approximately 50 waste drums stored, at that time, in a shed on the northeast corner of the property, was performed by EPA as a removal action in November 1995.

EPA proposed to add the site to the National Priorities List on October 15, 1984 (53 FR 23988) and added it to the final list on June 10, 1986 (54 FR 13296).

Basis for Taking Action

The first Remedial Investigation and Feasibility Study (RI/FS) for the site was initiated in April 1987, and completed in June 1989. On September 29,1989, a Record of Decision (ROD) was signed for OU-1, which addressed the contaminated soils and groundwater at the site. The OU-1 ROD also required that an RI/FS be performed (as Operable Unit 2 (OU-2)) to determine the presence/existence of offsite, upgradient sources of contamination. No upgradient sources of contamination were found and a "No Action" ROD for OU-2 was signed on September 27, 1993.

Through the site investigations, EPA determined that the contaminants of concern present in soils, and in the groundwater were volatile organic compounds (VOCs). The site-related VOC groundwater contaminant plume was determined to have a cross-width of less than 70 feet and to extent vertically into the shallow portion (upper 40 saturated feet) of the Upper Glacial aquifer. In addition, EPA determined from the risk assessment that the contaminants in the groundwater in the shallow portion of the Upper Glacial aquifer at the site, if not addressed, pose an unacceptable cancer risk and noncancer hazard. Groundwater contamination was also identified in the groundwater upgradient of the site which was attributed to upgradient sources other than those at the SMS Instruments site. Specific sources of upgradient contamination were not located, and the contamination from other sources is not a component of the remedial action at the site.

IV. Remedial Actions

Remedy Selection

As indicated above, the OU-1 ROD, which addressed the contaminated soils and groundwater at the site, was signed on September 29, 1989. Furthermore, OU-2 investigations identified no upgradient sources and a “No Action” ROD for OU-2 was signed on September 27, 1993. As such, discussions of remedial activities in this report apply to OU-1. Remedial Action Objectives (RAOs) were developed based on the data collected during the remedial investigation to aid in the development and screening of remedial alternatives considered in the ROD. The ROD selected two media-specific remedial actions, one for soil and one for groundwater.

The following are the RAOs selected in the OU-1 ROD:

- Remove the site-related sources of contamination into the groundwater to expedite compliance with Federal and State groundwater standards.

- Prevent potential future ingestion of site-related contaminated groundwater.

- Restore the quality of the groundwater contaminated from the site-related activities to levels consistent with the Federal and State drinking water and groundwater quality standards.

- Mitigate migration from the site of the site-related contaminated groundwater.

The following are the media specific remedial action components of the OU-1 ROD:

- Soil remediation, namely, in-situ soil vapor extraction, of the contaminated soil in the southeastern portion of the property in the area of high VOC contamination.

- Extraction of the site-related groundwater contaminant plume present in the upper 50 feet of the saturated Upper Glacial aquifer (70 feet below grade).

- Treatment, via air stripping, of contaminated groundwater to drinking water standards.

- Reinjection of the treated groundwater into the Upper Glacial aquifer.

- Disposal of treatment residuals as appropriate.

Remedy Implementation

The owner of the property negotiated a settlement with EPA in 1988 and the EPA conducted all work associated with OU-1 and OU-2 activities. EPA, working with its contractor(s), performed the Remedial Design and Remedial Action (RD/RA) for the site.

The Remedial Design of the remedy selected in the OU-1 ROD was performed by CDM Federal, Inc. (CDM) on behalf of EPA. Activities were performed in two phases: the first phase addressed the soil remediation and the second phase addressed groundwater remediation.

OU-1 Source Control/Soil Remediation: In-Situ Soil Vapor Extraction System

Based on data from the RI and knowledge of the locations of the two primary source areas, namely , the underground leaching pool and former UST, CDM prepared a remedial design for a Soil Vapor Extraction System (SVE) to remediate these source areas. CDM initiated the construction of the SVE system in October 1991; the construction was completed in April 1992 and operation of the SVE system began shortly thereafter. Soil contamination in the soil vadose zone, within each of the two source areas, was remediated of VOCs (predominantly benzenes, toluene, ethylbenzene and xylenes (BTEX)) down to the water table depth approximately 20 feet bgs. Operation of the SVE system continued until November 1993, when it was determined (and and confirmed by soil sampling) that all soil cleanup levels had been achieved. During the soil remedial action activities, CDM collected groundwater samples to monitor the contaminant levels at the site. In addition, CDM's subcontractor continuously monitored the influent and effluent air streams to, and from, the SVE system to ensure treatment was being performed in accordance with the performance requirements of the site-specific Monitoring Plan.

These activities were initiated in May 1991, and completed in March 1994. The final inspection was conducted in March 1994, and it was determined that the remedial activities were completed in accordance with the Scope of Work and the OU-1 ROD. Demobilization of soil remediation equipment occurred in March 1994. A *Remedial Action Report*, documenting the completion of the remedial action, was approved by EPA on September 22, 1994.

OU-1 - Groundwater Remediation

CDM Federal, Inc. initiated the RD for the OU-1 groundwater treatment system in 1992. CDM was awarded the contract to perform the construction of the groundwater treatment system. CDM initiated on-site construction activities in August 1993 and completed construction of the groundwater treatment system in June 1994. The system began full operation in September 1994. The groundwater remedy consists of pumping contaminated groundwater out of the aquifer, treating it through air stripping and carbon adsorption, and reinjecting it into the aquifer. The Remedial Action Report documenting the completion of the construction of the groundwater remediation system was signed on March 31,1995.. The average flowrate through the treatment plant was approximately 90 gpm, pumped from two extraction wells. The system was in almost continuous operation from September 1994 through September 2005, treating a total of approximately 500 million gallons of contaminated groundwater. It should be noted that, due to frequent clogging of the injection wells, permission was granted (from the Town of Babylon) to discontinue use of the injection wells and discharge the treated groundwater directly into the recharge basin located adjacent to the site. The degree of treatment for this discharge is the same as that for reinjection back into the aquifer.

On June 28, 1994, EPA and CDM conducted a pre-final inspection, during which punch list items were identified. The punch list items were completed by CDM in early September 1994. On January 31, 1996, the EPA issued a Preliminary Close-Out Report. On March 31,1995, EPA approved an Interim *Remedial Action Report* signifying that the system was operational and functional. CDM continued to operate the groundwater treatment plant since the plant's initial start-up in September1994 until July 2005, at which time New York State Department of Environmental Conservation (NYSDEC) took over the responsibilities for site remediation activities. NYSDEC’s contractor, Earth'Tech, Inc., operated the groundwater treatment system from July 2005 to September 2005. In September 2005, the groundwater treatment system was temporarily shut-off to maximize efficient operation of the air sparging system, which continues to treat the area containing residual VOC contamination.

System Operation and Maintenance

Operation and maintenance (O&M) activities were necessary for the source control remedy and the groundwater remedy. The source control remedy was completed in 1994 which is prior to the period covered by this Five-Year Review.

CDM implemented the long-term response action (LTRA) activities for the groundwater treatment facility, in accordance with the Operation and Maintenance Manual prepared by CDM and approved by EPA. Annual O&M costs for OU-l are shown in Table 2 and include the operation and maintenance of the air stripping facility by CDM personnel, sampling and monitoring efforts, utilities, repairs and CDM oversight costs.

In 2003, EPA Region 2 worked with EPA headquarters and EPA headquarters' contractor (GeoTrans, Inc.) to conduct a remediation system evaluation (RSE) of the site which assessed the site and the groundwater treatment system. The RSE team made recommendations for improvements in the remedy effectiveness and achieving reductions in O&M costs. Specifically, the RSE contractor recommended the following improvements to reduce O&M cost:

- Reduce the frequency of changing-out the granular activated carbon given that VOCs are at low concentrations after exiting the air stripper;
- Eliminating analysis of Semi-Volatile Organic compounds during routine groundwater monitoring activities; and
- Reducing the amount of hours spent by both the treatment plant operator and the oversight project manager, both employed by CDM.

With the intent to decrease the time frame required to remediate the groundwater, the RSE contractor also recommended conducting additional remedial activities in the vicinity of the southeast corner of the building, near monitoring well MW-6, where moderate levels of VOCs have consistently been detected in the groundwater. EPA Region 2 requested ERT-West to perform geoprobe activities in this general vicinity. The geoprobe activities were conducted during the week of August 3rd, 2004. Residual contamination was clearly delineated within an area less than 3,000 square feet in size and within a very specific depth range (about 20 to 24 feet bgs). After careful evaluation of numerous remedial alternatives (air sparging, SVE, biosparging, status quo), the EPA selected to employ an sparging system to treat the area containing the residual contamination, and thereby, reduce the length of time that the groundwater treatment system would need to be operated. EPA contracted with EarthTech, Inc. to build a transportable air sparing system, install the system on-site, and operate the system. EarthTech, Inc. began operation of the system on May 24, 2005.

On July 18,2005, the EPA transferred remedial and financial responsibilities for the site to the State of New York. This was done pursuant to CERCLA, which requires states to take over operation and maintenance of treatment systems after the ten-year LTRA is concluded. NYSDEC took over all site-related responsibilities on July 18,2005; the date that the Site Transfer Agreement was signed.

Institutional Controls

Institutional controls are not required by the remedy decision documents. The remedy is protective of human health and the environment. Potential impacts of contaminated soil on groundwater are being addressed through removal of the contaminated source. Furthermore, groundwater pump and treat actions address the contaminants in groundwater. The community is on public water that meets appropriate state and federal standards. Currently, the site is adequately addressed by existing access and institutional controls under local and New York State authority. The following controls are recognized as providing additional protection.

The site property is located in the middle of a multi-block area of active light industrial properties. This part of Deer Park, New York is zoned for light industry; there are no residential uses of property in the immediate area. Therefore, the site property is likely to continue to be zoned for light industrial uses in the future, and there are no future residential uses of the site property that can be reasonably contemplated.

New York State law restricts to a large degree the future use of groundwater at this site. New York Environmental Conservation Law Section 15-527 provides that on Long Island (which includes Suffolk County), "No person or public corporation shall hereafter install or operate any new or additional wells... to withdraw water from underground sources... in excess of forty-five gallons a minute without a permit pursuant to this title." Furthermore, the New York Sanitary Code (Title 10 of Rules and Regulations Section 5-2.4) states that "No person shall construct or abandon any water well unless a permit has first been secured from the permit issuing official." Based on these statutory controls and the existing public water supply, it is unlikely that potable uses of the site groundwater would be permitted in the future.

V. Progress Since the Last Five-Year Review

This is the third Five-Year Review for the site. The second Five-Year Review did not include any recommendations and expected that the remedial actions objectives would have been achieved by now. However, remedial activities have continued as the remedial action objectives have not been achieved as of yet.

VI. Five-Year Review Process

Administrative Components

The five-year review team consisted of Mark Dannenberg, EPA Remedial Project Manager, Robert Alvey, EPA Hydrogeologist, and Chloe Metz, EPA Risk Assessor. This is an EPA-lead site. EPA's contractor for OU-1 LTRA is CDM Federal, Inc.

Community Involvement

The EPA Community Relations Coordinator for the site, Cecilia Echols, had a notice published in a local newspaper, *The South Bay News*, on May 24,2006, notifying the community of the initiation of the five-year review process. The notice indicated that EPA would be conducting a five-year review of the remedies for the site to ensure that the implemented remedies remain protective of public health and the environment and are functioning as designed. The notice also indicated that once the five-year review is completed, the results will be made available in the site repository. The notice included the Remedial Project Manager's address and telephone for questions related to the five-year review process for the site. A similar notice, notifying the public at the review has been completed, will be published when the review is finished.

Document Review

This five-year review consisted of a review of relevant documents including O&M records and monitoring data (see Section XI - Bibliography).

Data Review

VOCs

The groundwater pump and treat facility has been monitored to determine its performance and

whether the treated groundwater met the requirements for reinjection of groundwater into the aquifer and/or discharge into the recharge basin adjacent to the site. Influent and effluent groundwater samples from the groundwater treatment facility have been collected and analyzed for VOCs two to four times a year since its startup in September 1994 until it was temporarily shut down in September 2005. The performance monitoring data indicate that the influent exceeds the groundwater discharge criteria for site VOCs of concern while the treated effluent is below the groundwater discharge criteria for all VOCs. These results indicate that the air stripper has effectively treated the groundwater pumped from the extraction wells to applicable criteria. To date, approximately 500 million gallons of groundwater have been treated at the facility.

Groundwater monitoring wells are also monitored to determine whether the groundwater contamination plume is being captured and to determine the progress of groundwater restoration and compliance with the groundwater quality criteria. Currently, there are 20 monitoring wells that are used for groundwater monitoring. Of the 20 monitoring wells, 16 wells are shallow (set near the water table) and 4 are set deeper. The shallow wells are screened in the shallow portion of the Upper Glacial aquifer (approximately 20 to 40 feet deep). The deeper wells are also in the Upper Glacial aquifer and are screened between 70 and 100 feet deep. Contamination is generally limited to less than 70 feet bgs. The four deeper monitoring wells (MW-6D, MW-13D, MD-16M, and MW-16D) have no contamination above cleanup standards. Initially, groundwater samples were collected from each monitoring well on a triennial or quarterly basis, and were analyzed for VOCs, SVOCs, and inorganic analytes. Beginning in 2002, well sampling has been performed on a bi-annual basis, and, after 2004, groundwater samples were no longer analyzed for SVOCs (because SVOCs are not site-related and have not been detected at appreciable concentrations).

Based on the groundwater sampling results while the groundwater treatment system was still operating, including data from the June 2005 groundwater sampling activities, it can be concluded that the concentrations of VOCs have decreased substantially from the shallow wells. In 1994, when the groundwater treatment system began operating, total VOCs concentrations detected in the most contaminated monitoring well (MW-6S) exceeded 5,000 ppb. Monitoring well MW-6S is most closely situated to the contaminant sources (e.g., the leachate pool and former UST). Data from groundwater sampling activities between June 2001 and June 2005 reflect total VOCs concentrations consistently below 100 ppb and more typically below 30 ppb at MW-6S. Furthermore, data from groundwater sampling activities conducted February 2006 reflect total VOC concentrations below 10 ppb at MW-6S. The OU-1 ROD required treating the portion of the Upper Glacial aquifer where site-related contamination was detected. The decrease in VOC concentrations detected in the monitoring wells can be attributed to the removal of contaminants from soils at the site and to the ongoing groundwater remediation. The air spearing system began operation in May 2005 and is currently operating. Based on the decrease in VOC concentrations in groundwater, operation of the groundwater remediation (pump and treat) system was temporarily discontinued in September 2005. NYSDEC's contractor EarthTech, Inc., performed groundwater monitoring activities in February 2006. A review of these data suggests that the air sparging system has successfully removed the bulk of residual contamination in soils and has reduced concentrations of VOCs in groundwater to levels below cleanup standards.

NYSDEC plans to conduct soil sampling near monitoring well MW-6S and in the vicinity of the influence of the air sparging system, where moderate levels of residual VOC contamination was

found during soil sampling activities in 2003, to determine the effectiveness of the air sparging system and confirm the remediation of the residual contamination.

Site Inspection

Site inspections were performed on July 5, 2005 and January 25, 2006. The following parties were in attendance:

Mark Dannenberg, EPA - 7/5/05 and 1/25/06
Rob Alvey, EPA - 7/5/05 and 1/25/06
Chloe Metz, EPA - 1/25/06
Paul Hagerman, CDM - 7/5/05
Ken Roberts, CDM - 7/5/06
Carl Hoffman, NYSDEC - 1/25/06
Payson Long, NYSDEC - 1/25/06
Helen Mongillo, EarthTech - 1/25/06
Paul Kareth - EarthTech - 1/25/06
James Kearnes - EarthTech - 1/25/06
Tom Williams - EarthTech - 1/25/06

During the site inspections, problems or deviations from the on-going operation and maintenance activities being implemented at the site were not observed.

VII. Technical Assessment

Question A: In the remedy functioning as intended by the decision documents?

Yes. The primary objectives of the RODS are to remove the continuing sources of contamination into the groundwater, prevent potential future ingestion of site-related contaminated groundwater, restore the quality of the groundwater and to mitigate the off-site migration of the site-related contaminated groundwater. By treating contaminated soil, the sources of contamination into the groundwater were significantly reduced. EPA's review of site documents and the results of the site inspection indicate that the groundwater treatment plant has functioned as intended by the OU-1 ROD. The air stripper was designed to reduce contaminants of concern (COCs) from levels above their maximum detected concentrations to less than 5 ppb, which is below applicable groundwater drinking water standards. During its operation from September 1994 to September 2005, the air stripper, which has a 99 percent design efficiency, performed as designed as verified by review of the sampling data collected through June 2005 from the plant influent and effluent. Additionally, groundwater contamination has been effectively removed as determined by annual sampling and hydraulic monitoring of the groundwater monitoring wells. Finally, operation of the air sparging unit since May 24,2005 has further reduced contaminants (VOCs) in the source area from contaminating groundwater.

Question B: Are the (a) exposure assumptions, (b) toxicity data, (c) cleanup levels and (d) remedial action objectives used at the time of the remedy selection still valid?

(a) There have been no changes in the physical conditions of the site that would affect the

protectiveness of the remedy. The land use considerations and potential exposure pathways considered in the baseline human health risk assessment are still valid. The land use for the site is expected to remain industrial over the next five years, the period of time considered in this review. The adjacent properties are also industrial in nature. Most of the site is paved and is expected to remain so in the future. Any contaminated soil that may have been available for direct contact (i.e., ingestion or dermal contact) by potential on-site workers or visitors has been removed or treated with the SVE system to the cleanup goals established for total VOCs. Data collected after use of the SVE system was discontinued confirm that the cleanup goals have been met. Exposure to contaminated groundwater has been prevented since the surrounding residents obtain their water from a public water supply. An exposure pathway that was not considered in the original assessment is vapor intrusion into indoor air. This pathway is discussed below in Question C.

The evaluation of groundwater in the original risk assessment focused on direct ingestion (as a potable water source) of contaminated groundwater. The evaluation of the direct contact pathway showed that if nearby residents were to drink water from the contaminated aquifer, there would be the potential for adverse health effects and an increased cancer risk. However, all residents in the vicinity are on public water supplies, thereby eliminating this exposure pathway.

(b) The selection of contaminants of potential concern and the exposure assumptions used to estimate the potential risks and hazards at the site followed acceptable Agency guidance at the time the assessment was conducted. Using current guidance may result in some differences in the calculation of cancer risk and noncancer hazard since changes in risk assessment methodology and to some of the toxicity data used in the original assessment have occurred, with the general trend resulting in toxicity values becoming more stringent. Such changes might result in a net effect of increasing the estimated potential risks and hazards, which would also support the decision that a remedy was needed for the site. Changes in risk assessment methodology and toxicity values would not likely result in the selection of a different remedy, since the chosen remedy has effectively reduced contamination and removed the direct exposure pathways to contamination.

(c) The groundwater remediation goals selected in the ROD were New York State Groundwater Quality Standards (NYSGWQS); which are legally enforceable standards (i.e., ARARs) designed to protect health by establishing maximum allowable concentrations of contaminants in drinking water. Most of the chemical-specific ARARs used for groundwater in the 1989 ROD are still valid. However, the National Primary Drinking Water Regulation (MCL) for lead at 15µg/L has become more stringent than the New York state value of 25 µg/L since the signing of the ROD. Recent monitoring well data (February 2006) from the site show that lead exceeds one or both of these values in a number of wells. The highest concentrations of lead were 135,21.7, and 20.5 µg/L in wells MW-2, MW-6D, and MW-6S respectively. Lead has historically been found at the site, but, since VOCs were the primary contaminants of concern at the site, it and other metals have not been sampled for in the monitoring wells for several years.

These most recent show that other metals still exist in groundwater at the site. In addition to lead, cadmium exceeded the NYSGWQS and the MCL of 5 µg/L in several wells. It was of detected at concentrations of 72.8,23.4, and 17.4 µg/L in MW-13D, MW-16D, and MW-16S respectively. Historical data reflect that MW-6 has been the monitoring well most contaminated with site-

related constituents; the other wells are not located close to the former source areas and may reflect contamination from other sources in this industrial area.

Thallium also exceeded the MCL of 2 µg/L. Although this compound is not known to be site-related, it should be noted that the standard analytical methods for thallium are not sensitive enough to detect this compound at low levels. As a result, it is often misreported in sampling results. In February 2006 SMS data, all the results are qualified with a "B" indicating the compound was also detected in the trip blank.

The remedial goals for VOCs remain protective. The NYSGWQS for dicholorobenzenes is now 3 µg/L, which is more stringent than the values of 4.7,5, and 4.7 used for para-, meta-, and ortho-dichlorobenzene respectively. However, dichlorobenzenes have not been present during recent sampling events, so the change in this ARAR would not affect the protectiveness of the remedy. Recent data from February 2006 show that there were only minor excursions above state and federal groundwater standards. Concentrations of bis(2-ethylhexy1) phthalate exceeded the standard four times, and chlorobenzene and 1,1-dichloroethane each exceeded the standard once. Overall, however, groundwater results show compliance with remedial objectives and continued monitoring during operation of the air sparging unit should show further declines in concentrations.

As stated earlier, the cleanup goals for total VOCs chosen for the soil are still valid.

(d) The remedial action objectives identified in the 1989 and 1993 Records of Decision, as stated on page 4 of this report, are still valid.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

The ability of subsurface vapors to migrate indoors is a pathway of concern for any site where VOCs are in the groundwater at relatively shallow depths. Currently, there is large warehouse-like building on the SMS site. Adjacent to the site are similar structures. The possibility for vapor intrusion was evaluated based on the health-protective assumption that structures could be located above the maximum detected chemical concentrations in the concentrations in the groundwater. The maximum concentrations were compared with the health-based screening criteria provided in Table 2C of the "Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air pathways from Groundwater and Soils (EPA, 2002)." This guidance provides concentrations of chemicals in groundwater and soil gas associated with indoor air concentrations at a cancer risk ranging from on in a million (10-6) to one in ten thousand (10-4) and a noncancer hazard quotient of 1.0 Only groundwater data from monitoring wells screened in the upper portion of the Upper Glacial aquifer were evaluated, since this is the most relevant depth horizon for assessing vapor intrusion.

Data from 2004 and 2005 show that concentrations of tetrachloroethylene (PCE) and trichloroethylene (TCE) from MW-16S and MW-13 exceed their 10-6 vapor intrusion screening values of 1.1 µg/L and 0.053 µg/L respectively. While the concentrations of PCE (4.4 and 6.1 µg/L) only slightly exceed the screening level of 1.1 µg/L and are still within an acceptable risk range, the concentration of TCE are just below the 10-4 screening value of 5.3 µg/L. In 2004,

MW-16S had TCE at 3.1 µg/L; and in 2005, MW-13 had TCE at 3.5 µg/L indicating that vapor intrusion may be an issue for buildings located near these wells. PCE and TCE have not been detected in MW-6S in recent years, however. This well has historically been the well most contaminated with site-related compounds. Furthermore, PCE and TCE have not been detected in most of the wells in recent years. There is a significant possibility that the PCE or TCE concentrations in monitoring wells MW-13 and MW-16S are from other sources in the area. Data have shown that the groundwater pump and treat system has adequately captured and contained the plume on-site. As such, it is considered unlikely that the concentrations detected in these wells (which are downgradient of the site) represent site-related contaminants migrating off-site.

The most recent data from February 2006 show no PCE or TCE. However, the laboratory reporting limit was 5 µg/L for all VOCs. While this is appropriate to show compliance with drinking water standards, it is not sufficient for showing that vapor intrusion is not an issue since the screening values for some compounds are considerably lower than their MCLs.

Soil samples taken at depth in 2004 indicate that levels of VOCs in the area just above the water table remain elevated. However, it is expected that operation of the air sparging system has reduced any residual contamination to levels that would not allow for soil vapor intrusion into the on-site building.

Technical Assessment Summary

According to the data reviewed and the site inspections, the soil remedy is completed and the groundwater remedy is functioning as intended in the ROD. There have been no changes in the physical conditions of the site that would affect the protectiveness of the remedies. The cleanup levels cited in the OU-1 ROD were mostly met in the most recent round of groundwater monitoring. Additional monitoring is required to confirm that these cleanup levels have been achieved. The RAOs are still valid and are currently being met for OU-1. The groundwater contamination plume has been contained and treated prior to reinjection back into the aquifer or discharge into the adjacent recharge basin. The groundwater monitoring wells are functional, and the groundwater monitoring data from these wells indicate that, the site-related VOC groundwater contamination on levels are considerably less than the levels present in 1994.

Currently, there is no human or environmental exposure to, or ingestion of, contaminated groundwater and soil, and no exposures are expected during the next five years. Potential impacts of contaminated soil on groundwater were addressed under OU 1 through the following remedial activities: operation of the SVE system to remove VOCs from the source areas, and groundwater remediation through pumping and treatment to reduce the levels of contamination to appropriate Federal and State standards. Additionally, an air sparging system continues to operate to further reduce VOC concentrations in the source areas. The community is serviced by public water that meets appropriate standards. Site remedial action at OU-1 is ongoing and is expected to fully protect human health and the environment when it is completed.

VIII. Issues, Recommendation and Follow-Up Actions

Remedial responsibility for this site has been transferred to the State of New York. The State is operating an air sparging unit to remediate residual contamination at a clearly defined depth (plus or minus 4 feet from the water table) in a former source area. Operation of the groundwater treatment system has been temporarily suspended. Operation of the air sparging unit has significantly reduced residual contamination in the soil, and, thereby reduced the migration of contamination to the groundwater. This conclusion is supported through a review of groundwater monitoring data. The State will continue to monitor the groundwater as part of the ongoing remedial action of the site. The State of New York anticipates performing soil sampling to confirm the removal of contaminants in the soil by operation of the air sparging system.

This report did not identify any issue or make any recommendation for the protection of public health and/or the environment which was not included or anticipated by the decision documents.

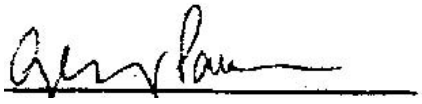
IX. Protectiveness Statement

The remedy for the SMS Instruments site protects human health and the environment. There are no exposure pathways that could results in unacceptable risks and none expected as long as the engineered controls currently in place continue to be operated, monitored and maintained.

X. Next Review

The next five-year review for the SMS Instrument Superfund Site is required by May 2011, five years from the date of this review.

Approved by: Date:



7/12/06

George Pavlou, Director
Emergency and Remedial Response division
U.S. Environmental Protection Agency

XI. Bibliography for SMS Instruments Superfund Site

Record of Decision, U.S. Environmental Protection Agency, September 29, 1989.

Record of Decision, U.S. Environmental Protection Agency, September 27, 1993.

Remedia1 Action Report Contaminated Soil Remediation, U.S. Environmental Protection Agency, September 22, 1994.

Remedia1 Action Report Contaminated Groundwater Remediation, U.S. Environmental Protection Agency, March 31, 1995

Preliminary Site Close-Out Report, U.S. Environmental Protection Agency, January 31,1996.

O&M Manual for the groundwater treatment system, CDM Federal, Inc.

Five-Year Review Report, USEPA, January 22, 1996.

Five-Year Review Report, USEPA, May 31, 2001.

Comprehensive Five-Year Review Guidance, U.S. Environmental Protection Agency, EPA 540-R-01-007, June 2001.

Monitoring Reports, CDM Federal, Inc. (from 1994 through 2005)

Remediation System Evaluation (RSE) Report, GeoTrans, Inc., February 2005.

Site Investigation Report, Lockheed Martin Technology Services, August 18,2005.

Monitoring Data, EarthTech, Inc., April, 2006.

Table 1: Chronology of Site Events

Event	Date
Removal activities - pump out and backfill industrial wastewater cesspool	1983
Removal activities - removal of drums in drum storage area	Nov. 1995
Removal activities - underground storage tank(s)	Feb. 1988
Proposal for Inclusion on the National Priorities List	10/15/84
Final Listing on EPA National Priorities List	6/10/86
Remedial Investigation/Feasibility Study (RI/FS) started - Source Areas	April 1987
Remedial Investigation/Feasibility Study (RI/FS) completed - Source Areas	June 1989
ROD selecting source control remedy and groundwater remedy signed - OU-1	9/29/89
Remedial design (RD) approved for source control remedy (SVE System)	June 1991
RI/FS initiated for OU-2 (Investigate for upgradient Source(s))	4/26/90
" No Action" ROD signed for OU-2	9/27/93
Superfund State Contract signed	7/23/91
Start of contaminated soil remediation - OU-1 (SVE System)	April 1992
Completion of contaminated soil remediation and demobilization of SVE System - OU-1	March 1994
Remedial Action Report approved for contaminated soil remediation - OU-1	9/22/94
Start of construction of groundwater remedy - OU-1	Nov. 1993
Completion of construction of groundwater remedy - OU-1	June 1994
Preliminary Close-Out Report approved	1/31/96
Remedial Action Report approved for groundwater remedy - OU-1	3/31/93
1st Five-Year Review Report	1/22/96
2nd Five-Year Review Report	5/31/2001
Remedial Systems Evaluation Report	12/9/2003
Additiona1 Site Investigations - geoprobe work to locate residual contamination	August 3-7,2004
Installation and Start-up of the Air Sparging System	5/24/2005
Site Transfer Agreement	7/18/2005

Table 2: Annual System Operations/O& M Costs for LTRA, OU-1

Dates		Total Annual Cost
To	From	
1/2001	12/2001	$275,000
1/2002	12/2002	$275,000
1/2003	12/2003	$250,000
1/2004	12/2004	$225,000
1/2005	12/2005	$115,000
1/2006	12/2006	$30,000*

* projected cost per annum, which accounts for costs associated with operation of the air sparging system and the discontinued operation of the groundwater remediation system.

Table 3: Other Comments on Operation, Maintenance and Monitoring

Comment	Suggestion
The most recent data show that in several wells, metals still exist in groundwater at the site.	EPA suggests that continued sampling of metals be conducted by NYSDEC to see if concentrations in the affected wells exceed MCLs.
Thallium also exceeded the MCL of 2 µg/L. Although this compound is not known to be site-related, it should be noted that the standard analytical methods for thallium are not sensitive enough to detect this compound at low levels. As a result, it is often misreported in sampling results.	If a more sensitive method were used to analyze for thallium, a man accurate result could be achieved and concentrations may turn out to be negligible.
The most recent data from February 2006 show no PCE or TCE. However, the laboratory reporting limit was 5 µg/L for all VOCs. While this is appropriate to show compliance with drinking water standards, it is not sufficient for showing that vapor intrusion is not an issue since the screening values for some compounds are considerably lower than their MCLs.	EPA suggests that more sensitive methods be used to test for PCE and TCE in the future.
Soil samples taken at depth in 2004 indicate that levels of VOCs in the area just above the water table remain elevated. However, it is expected that operation of the air sparging system has reduced any residual contamination to levels that would not allow for soil vapor intrusion into the on-site building.	EPA suggests that soil sampling be conducted to confirm that the remedial goals for soil established by the ROD have been met. If VOCs remain in the soil at that time in excess of the remedial goals, then the State should consider collecting soil gas samples or performing subslab sampling to determine whether vapor intrusion is an issue.

Figure 1: SITE LOCATION MAP - SMS Instruments Superfund Site, Deer Park, New York

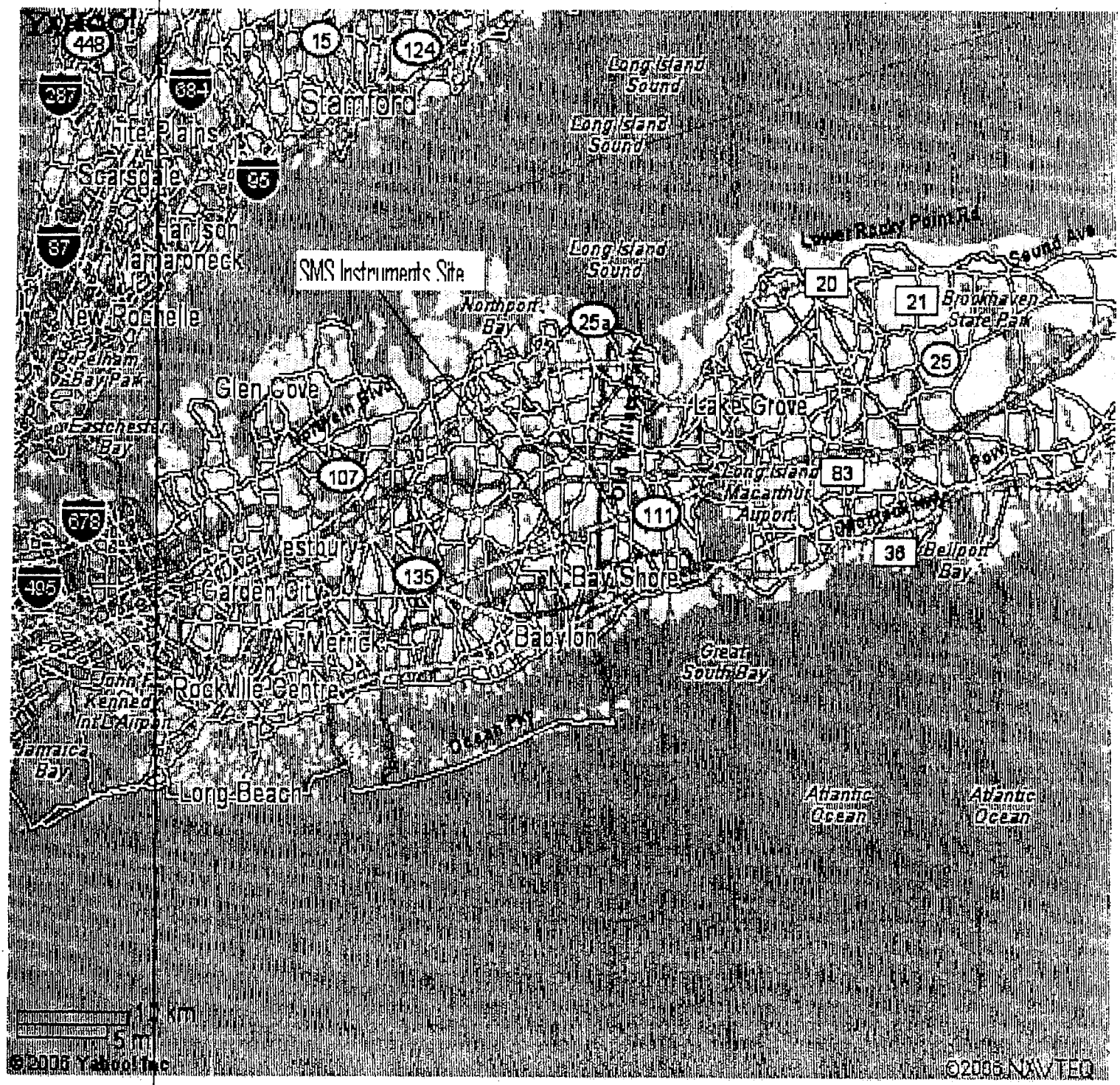


Figure 2: SITE MAP (including location of monitoring and extraction wells and treatment system)