NEW YORK STATE

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

PERIODIC REVIEW REPORT

FOR

Haviland Complex and Haviland Road

Route 9-G and Haviland Road

Reporting Period 7/20/2012 to 8/01/2015

NYSDEC Site Number: 314059

USEPA ID Number: NYD980785661

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NYS DEC Division of Environmental Remediation

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EXECUTIVE SUMMARY

The long term monitoring of ground water on and in the vicinity of the site continued during the certifying period to demonstrate that attainment of the Remedial Action Objectives for the site, specifically the restoration of the aquifer to drinking water quality, have been achieved and confirmed through statistical analysis of laboratory results.

There were no identified areas of non-compliance regarding major elements of Site Management during the certifying period.

Review of analytic results from quarterly groundwater sampling events reinforces that implementation of Monitored Natural Attenuation at the site remains to be protective of public health and the environment. Site Management and long term ground water monitoring may be terminated as analytic results statistically demonstrate that drinking water standards have been attained in groundwater. An observation well survey should be completed in anticipation of the decommissioning of wells as a component for delisting the site. If subsequent Periodic Review Reports are required they shall be submitted on a one in three year basis as the remedy at this point is only comprised of long term groundwater monitoring and reporting.

1.0 INTRODUCTION

The purpose of this Periodic Review Report (PRR) is to summarize and evaluate the remedy implemented at the site, relative to the requirements of the Record of Decision (ROD) dated September 30, 1987 and the Record of Decision Amendment dated August 1, 1997. The information provided in this report covers the period from July 20, 2012 through August 1, 2015; however, portions of this report incorporate pertinent historical background information and monitoring data, as well as more recent cost information as appropriate.

The objectives of the PRR for the site include:

- Presenting relevant background information.
- Presenting the remedial goals established for the site, as identified in the 1997 ROD Amendment.
- Presenting a description of the site remedy and any associated remedial components.
- Presenting site Operation and Maintenance (O&M) and monitoring/sampling activities that occurred during the current reporting period.
- Evaluating the overall performance, effectiveness and protectiveness of the selected remedy.
- Presenting recommendations regarding any significant changes to the remedial system, monitoring requirements, and any revisions to the frequency of submittal or content of subsequent PRRs.

2.0 SITE OVERVIEW

2.1 Site Location

The site is located in Hyde Park, Dutchess County, New York and is identified as Section 6164, Block 2 and Lots -562583, -559599, -558605 and -581598 on the Dutchess County Tax Map. The site is approximately 7 acres in area and is bounded by the Haviland Middle School property to the east and north, Haviland Road to the south, and Violet Ave./Route 9-G to the west. A Site Area Map is provided as **Figure 2-1** and a Site Perimeter Map is provided as **Figure 2-2**.

- The site is currently classified as a Class 4 site pursuant to the requirements identified in 6 NYCCR §375.
- The owner(s) of the site parcel(s) as of November 25, 2016 are:
    - John J. Lease Realty, Newburgh, New York 12550

2.2 Site Description

The site area currently consists of numerous businesses located in a shopping center and an apartment complex. As of February 2013, the shopping center housed approximately 11 commercial businesses/offices including: a pet store, a pizzeria, a liquor store, a fuel oil company office, a hair salon, a Chinese food restaurant, a dollar store, a cupcake shop, a pharmacy and an assemblyman's office. The apartment complex has approximately 60 units in seven buildings that house approximately 135 residents.

Adjacent to the north and east of the site is the Haviland Junior High School property. To the south of the school property is a residential neighborhood with approximately 30 single-family residences between the site and the Fall Kill.

Historically, the investigation of the site began in October 1981 when the Dutchess County Health Department (DCHD) received complaints concerning the quality of drinking water coming from shallow wells located in the area of the site. A sampling program and septic system survey of the Haviland Apartment Complex and Shopping Center area was initiated by the DCHD in December 1981. The Haviland Laundromat and Dry Cleaner

septic system (in operation since the late 1960's and located at the center of the shopping center) was found to be failing from data obtained in February 1982. The Haviland Car Wash (immediately north of the shopping center) septic system was found to be failing to the surface during DCDH testing in March 1982. Subsequently, the car wash installed a new septic tank and the laundromat installed a pre-treatment system and a new sand filter and tile field pad to handle its wastewater (December 1982).

In December 1982, in response to complaints, the New York State Department of Health (NYSDOH) began sampling the Haviland area groundwater. The sampling data indicated that levels of tetrachloroethylene (PCE) and dichloroethene (DCE) in the septic discharge from the shopping center laundromat/dry cleaning facility exceeded New York State Department of Environmental Conservation (NYSDEC) discharge standards. As a result, in 1983, the laundromat was ordered to disconnect the dry cleaning operation from the septic system and to dispose of all spent dry cleaning fluids at a permitted disposal facility. All residents in the area were advised to use bottled water. Water treatment units were installed on the wells servicing the Haviland Complex Apartments and the Haviland laundromat in 1984 and 1985, respectively, to remove chlorinated organic contaminants. In February 1989, NYSDEC installed point-of-entry water treatment systems on homes with well water which exceeded State or Federal Maximum Contaminant Levels (MCLs), i.e., safe drinking water standards.

The Haviland Complex and Haviland Road site was proposed for inclusion on the National Priorities List (NPL) in October 1984, and placed on the NPL in 1985. NYSDEC was designated as the lead agency for the Remedial Investigation and Feasibility Study (RI/FS). The Remedial Investigation was initiated August 1986 with a hydrogeologic investigation and completed by acceptance of the July 1987 RI/FS Report. The RI included the sampling of a number of ground water observation wells and local residential shallow point wells. Twelve (12) PVC piezometers were installed in December 1986 by DEC's subcontractors, followed by 20 stainless steel and one (1) PVC monitoring wells in December 1986 through January 1987.

Based on the results of DEC's RI/FS, an EPA Region 2 Record of Decision (ROD) was signed on September 30, 1987, identifying the following remedial actions:

- Clean the contaminated septic systems identified as the source of contamination;
- Extend public water from the nearby Harbourd Hills Water District (HHWD) to ensure a potable supply of water to the residents on private wells (EPA would enter into an agreement with the Town of Hyde Park to upgrade this system to meet New York State drinking water standards; and
- Extract and treat contaminated groundwater.

EPA initiated a supplemental Remedial Investigation of the site area in 1988 that continued through May 1990. EPA proposed a separate remediation plan in a 1991 Remedial Action Report. A sampling survey of the septic systems in the study area had identified four septic tanks at the Haviland Complex and the Hyde Park Middle School/Haviland Junior High School which were contaminated. The cleaning of the septic systems, which represented the source control portion of the selected remedy, was completed by EPA as an Interim Remedial Measure on November 4, 1990. The septic tanks were cleaned out and the sludge was sent off-site for treatment and disposal.

Due to difficulties in implementing the public water supply portion of the remedy, DEC implemented an alternate water supply program in February 1989 and connected Point of Entry Treatment Systems (POETS) on seven (7) households in the area. NYSDEC was informed that the Dutchess County DOH would be constructing a public water system into the site area in August 2001 and that all of the homeowners who had NYSDEC-maintained, activated-carbon treatment systems had requested that they be connected into the new public water system. Consequently, NYSDEC decided that it would be cost effective to provide the connection to the system and remove the carbon units. The public water supply extension work began September 2001 and was completed by August 30, 2002. NYSDEC connected the site-affected homes to the public water system on August 30, 2002.

As reported in the 1997 ROD Amendment, EPA had conducted several widespread groundwater investigations of the study area since the issuance of the 1987 ROD to reestablish a baseline of groundwater quality data. Monitoring data showed that the levels of contamination in the aquifer have exhibited a dramatic decrease to levels near or below

State and Federal drinking water standards. EPA and New York State believed that the levels of contamination observed in the aquifer no longer warranted the implementation of the public water supply and groundwater extraction portions of the 1987 ROD. Therefore, EPA decided to amend the 1987 ROD and rely on the POETS/activated carbon filters, until it was confirmed that the levels of contaminants in the groundwater permanently declined to levels below drinking water standards. A long term monitoring program was implemented which included the sampling of existing RI wells and a new set of ground water observation wells, installed by EPA circa 1998.

The long term monitoring of ground water on and about the site continued through May 2015 on a quarterly basis with the intent of considering the site for reclassification / delisting from the Registry in 2015.

2.3 Remedial Goals and Site Closure Criteria

The primary Remedial Action Objective (RAO) is to:

- Reduce contaminant levels in the groundwater to Federal and State drinking water standards.

In order to determine attainment of the RAO, a long term ground water monitoring program was completed. Additionally, to remain protective of human health, the aquifer continued to be monitored to ensure that no other homes become impacted by residual, site-related contamination via soil vapor migration pathways.

Seven (7) quarters of ground water data (January 2013 – May 2015) have been reviewed and compared to drinking water standards through a statistical method. Evidence exists to provide a level of confidence that the ground water in the area of the site has attained drinking water standards. It is recommended that the site be proposed for delisting from the Registry.

2.4 Remedial System

The remedial system in place consists of a ground water monitoring well network that is employed to assess the ground water quality both on- and off-site. Ground water sampling events were conducted on a quarterly basis through the certifying period, except for the

absence of the 3rd quarter 2013 event due to a Standby Remedial Contractor scheduling error and the 4th quarter 2014 event due to snow accumulation prohibiting access to the observation wells. There are currently no active engineering controls in place.

2.5 Current Remedy Status

Quarterly ground water sampling events were conducted in January, May and December 2013; March, June and October 2014; and May 2015. During the groundwater sampling events groundwater monitoring wells were gauged for depth to water and monitoring well field inspection logs were completed. The laboratory results and the data usability summary reports (DUSR) of the groundwater sampling events were summarized in the respective Site Status Reports. Field inspection logs have also been included in the Site Status Reports as attachments.

In summary, laboratory analysis of ground water samples indicate that the average water quality in and about the area of the site has attained drinking water quality standards (GA). Over the course of the seven (7) sampling events during the current certifying period concentrations of PCE were detected over the drinking water standard (the PCE standard is 5 µg/l) at only one of the 10 sampled monitoring wells, MW-99-02 (5.7 ug/L). Chlorobenzene (MCL 100 ug/L, NYS DEC Division of Water Technical and Operational Guidance Series (1.1.1) standard 5 ug/L) was identified at a single monitoring well (MW-99-01) with a decreasing trend over the period with concentrations ranging from 7 – 17 ug/L.

The current status of the complete monitoring well network for the site is unknown (see **Figure 2-3** and **Figure 2-4** for historic well locations), but generally consists of three specific time periods of observation well construction; see **Table 2-1** for a list of known observation wells. Included in the Recommendations section of this report is identification of the need for a complete well survey to take place in anticipation of the decommissioning of observation wells prior to site delisting.

The construction of the initial round of ground water monitoring wells began in September 1986. As a component of the August 1986 – July 1987 Remedial Investigation, the DER installed twelve (12) piezometer wells and a network of ground water wells for sampling

and analysis in 1986/1987 (MW-86-XX nomenclature). The typical construction of the piezometer wells was 2" PVC, of the sampling wells was 2" Stainless Steel (SS); and of the two (2) bedrock wells was 4" SS.

The second round of ground water monitoring well construction took place in September 1988 when the Haviland School District employed engineering services to construct and sample five (5) additional ground water monitoring wells on the middle high school property. These wells are identified as HS-1 through HS-5 on **Table 2-1**.

In 1988 - May 1990, EPA conducted a follow-up Remedial Investigation which resulted in the expansion of the long term ground water monitoring network with four (4) additional ground water observation wells in 1999 (MW-99-01 through MW-99-04). The typical construction of the EPA wells is 2" or 4" stainless steel (flush mounted). EPA also re-installed the RI monitoring well MW86-24 and re-identified it as "MW-86-24A."

Long term ground water monitoring currently includes the sampling of ten (10) observation wells that were identified during a site transfer walk with EPA and through review of EPA's existing sampling plan. The list of wells sampled during the current certifying period can be found in **Table 2-2**.

On January 21-22, 2013 a select number of wells in the monitoring well network was inspected by DER's Remedial Contractor for physical integrity in order to assess the ability to sample the wells and to identify any need for minor well repairs or well rehabilitation. This set of wells has been included in the current sampling plan in order to prepare a reclassification/delist package.

A file review (DEC Warehouse files) has identified a greater number of ground water observation wells than previously identified in the Site Transfer Agreement with EPA (July 20, 2012). There exists the potential for upwards of forty-two (42) wells to have been constructed over the life of the site during investigation and remediation efforts. It is recommended that a well survey be completed to determine which wells may have been decommissioned by EPA and which wells exist, but that are outside the scope of the current sampling and analysis scheme. All site-related observation wells will be properly decommissioned before the site is delisted.

3.0 INSTITUTIONAL CONTROL/ENGINEERING CONTROL (IC/EC) CERTIFICATION PLAN COMPLIANCE

The 1997 ROD Amendment did not require the placement of institutional controls. EPA believed the actions identified in the ROD amendment were adequate to address the current groundwater use as well as the reasonably anticipated future groundwater use in the area of the site. As described in Section 2.2, the Dutchess County DOH extended a county-wide public water system into the site area where all residents have been connected to the public water supply. Furthermore, additional well drilling requirements and restrictions have been enacted by local government. Any well drilling in the area of the site is governed by the Dutchess County Sanitary Code: Article XVI, Sec. 16.4. Also, New York State Sanitary Code 10 NYCRR Part 5, Subpart 5-2 states that "No person shall construct or abandon any water well unless a permit has first been secured from the permit issuing official."

Since ground water in the site area has attained drinking water standards and local groundwater is no longer used as a potable water supply, Institutional Controls and Engineering Controls (IC/ECs) are not required, nor necessary for the protection of human health and the environment.

3.1 Institutional Controls

Institutional Controls (IC) are non-engineered instruments, such as administrative and legal controls, that help to minimize the potential for human exposure to contamination and/or protect the integrity of a remedy or remedial action. ICs are typically designed to work by limiting land or resource use or by providing information that helps modify or guide human behavior at a site. Some common examples of ICs include zoning restrictions, building or excavation permits, well drilling prohibitions, easements, and covenants.

As described above, no Institutional Controls are necessary at this time.

3.2 Engineering Controls

By definition, an EC is any physical barrier or method employed to actively or passively contain, stabilize or monitor contamination, restrict the movement of contamination to ensure long-term effectiveness of a remedial program or eliminate potential exposure pathways to contamination.

As described above, no Engineering Controls are necessary at this time.

3.3 IC/EC Plan Evaluation

This section is not applicable as no IC/ECs are required for this site.

3.4 Change of Use Compliance

Potentially responsible parties must comply with the provisions for the transfer of site management responsibilities, for any development of the site and for any other change in use, including any notification required by NYSDEC's DER-10 6.1(d) and 6 NYCRR 375-1.11(d) and 375-1.9(f). Documentation indicating that the proper notifications would be made to the NYSDEC in a Property Owner Survey included as **Appendix A**.

4.0 MONITORING PLAN COMPLIANCE

4.1 Monitoring Plan Requirements

A summary of the monitoring scheme for the site, including: sample locations; frequencies; media (i.e. soil, groundwater, vapor, etc.); and analysis performed, is provided below on **Table 4-1**. Long term ground water monitoring was performed over the certifying period to assess the effects of natural attenuation and to monitor contaminant plume location and concentration.

TABLE 4-1: MONITORING REQUIREMENTS SUMMARY

Groundwater Sample Location ID	***Historic ID***	***Frequency***				***Analytical Parameters***
		Monthly	***Semi-Monthly***	***Quarterly***	***Semi-Annually***	***Contaminant***
MW-99-01	MW-99-01			X		VOCs via EPA Method 8260C
MW-99-02	MW-99-02					
MW-99-03	MW-99-03					
MW-99-04	MW-99-04					
MW-86-1SH	HS-1					
MW-86-24A	MW-86-24A					
MW-86-27	MW-27D					
MW-86-28	MW-9					
MW-86-X3	HS-4					
MW-12	MW-12					

Soil vapor intrusion was evaluated as a potential future exposure pathway by the US EPA in their 2002 Five Year Review. It was determined at that time that the risks associated with this exposure pathway were not of concern. In order to confirm the protectiveness of this decision, the maximum detected concentrations of the contaminants of concern in the groundwater were compared to the vapor intrusion screening criteria as part of the 2007 Five Year Review. The maximum detected concentrations of the volatile chemicals detected during the 2004/2006 groundwater sampling event did not exceed the vapor intrusion screening criteria (Cancer Risk = 1 x 10^{-6} or HI = 1). While there were isolated detections of chlorobenzene above the MCL, the concentrations were below levels of concern with respect to vapor intrusion. In addition, it should be noted that in EPA's 2010

round of groundwater sampling, all site related contaminant levels were at or below MCLs. Based on these results formulated from analyzing the collected samples, EPA concluded that no further action is necessary to address vapor intrusion.

4.2 Monitoring Plan Compliance

Although a site-specific Monitoring Plan contained in a Site Management Plan does not exist, a Call Out contract with Aztech Technologies, Inc. (Aztech) for remedial services (original 1/28/2013, revision 5/28/2013, revision 1/28/2014) outlines specific sampling requirements for the site. The US EPA Region 2 "Standard Operating Procedures for Field Activities" (December 2006) is identified as the reference document for field sampling activities. In addition to standard monitoring well samples, MS/MSD, Rinsate and Trip Blanks are required for QA/QC measures.

Test America Laboratories (TAL) was selected via a Call Out as the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP)-certified analytical laboratory to perform sample analysis. All environmental samples were submitted to TAL, the Standby Laboratory for analytical services, for analysis via EPA Method 8260 with a 10-day turnaround time and Category B deliverables. Data validation is required to be performed as well as the preparation of a 3rd party Data Usability Summary Report (DUSR). Data validation was performed for all sampling events and lab reports by Aztech.

Sampling was performed on a quarterly basis to gather independent sampling data representative of the ground water quality in the site area. Ground water sampling events were conducted in January, May and December 2013; March, June and October 2014; and May 2015. Two deficiencies in the monitoring schedule are noted below. The 3rd quarter 2013 event was missed due to a Remedial Contractor scheduling error and was not rescheduled per the DER PM. The 4th quarter 2014 event was postponed until May 2015 due to the banking of plowed snow by the school district prohibiting access to the monitoring wells.

4.3 Achievement of Remedial Action Objectives

The initial sampling of environmental media was conducted from 1983 through 1987. Included as **Table 4-2** below, groundwater contaminant concentrations were found in monitoring and potable water supply wells in the area of the Haviland Complex site (EPA's Health Assessment for Haviland Complex NPL Site, August 22, 1988).

TABLE 4-2: Groundwater Analytical Results (1983 - 1987)	
Parameter	Range in ppb
Tetrachloroethylene (PCE)	1.0 - 630
Trichloroethylene	1.0 - 69
Trans-1,2-Dichloroethylene	3.0 - 710
Vinyl Chloride	1.0 - 66
Dichlorobenzene	1.0 - 59
Chlorobenzene	2.0 - 190

The groundwater at the Haviland Complex had been contaminated as a result of discharge from septic systems, most probably related to former dry cleaning facility operations, the apartment complex, and a car wash. The primary contaminants discharged to the septic systems were dichlorobenzene and tetrachloroethylene (PCE, perchloroethylene, perchloroethene). In review of the literature, dichlorobenzene had been used as a septic system cleaner – sold under the trade name of "Chloroben." PCE is a common dry cleaning solvent. Soil samples taken around the septic systems have shown contaminants of concern at approximately 10 to 20 feet below ground surface (bgs), strongly suggesting the septic systems were the source of the pollution.

Considering the contaminant reductions resulting from the implementation of Interim Remedial Measures (septic system cleanout, disconnection of dry cleaning facility drains), a 1997 ROD Amendment identified Monitored Natural Attenuation coupled with Long Term Monitoring as the selected remedy. This remedy has been effective at reducing the concentrations of contaminants of concern in ground water as a definite and significant trend of decreasing contaminant concentrations has been observed on all sampled wells over time. Remaining concentrations above drinking water standards exist in only two wells sampled. PCE was detected in a single well (MW-99-02) for a single

occurrence (May 2013) at a value slightly above the drinking water standard of 5 µg/l (**Figure 4-1**). Chlorobenzene has been trending down in well MW-99-01 with concentrations decreasing to a range of 7 – 17 ug/L during this certifying period (**Figure 4-2**).

4.4 Monitoring Network Effectiveness Evaluation

The monitoring well network in place is adequate to identify contaminants in shallow groundwater both on and off site.

Discharge from the source septic systems potentially leached into an unconfined, gravel and sand aquifer which served as the main source of drinking water for all the residents at the Haviland Apartment Complex and in the area. The groundwater table was approximately 20 feet from the surface, had a unit thickness of approximately 60 feet, flows in a south-southeasterly direction, and discharges into Fall Kill and local wetlands east of Haviland Road. The underlying bedrock is only slightly fractured vertically and of limited production use. Any well completed in the bedrock aquifer would tend to withdraw a significant volume of its water from the unconfined aquifer above. The unconfined aquifer acts as recharge for the bedrock aquifer. Historic groundwater sampling confirmed that contaminants were moving through the unconfined aquifer eventually entering the Fall Kill.

During the site transfer from EPA to NYSDEC a site walk and well survey was conducted to locate easily identifiable wells in the site area. See **Table 2-2** for a list of inspected wells. Twelve (12) wells were visually inspected, eleven of which were gauged in January 2013 for total well depth and depth to water prior to the first sampling event, post-EPA site transfer. Depth to ground water ranged from 0.08’ bgs to 16.23’ bgs. Wells are located primarily in the shallow ground water table (screened less than 20’ bgs) with one well (MW-86-27, formerly identified as “MW-27D”) screened 50 – 60’ bgs to represent an intermediate depth ground water. Monitoring well MW-86-X2 (a.k.a. HS-3) was found to be dry and monitoring well MW-86-29 (a.k.a. MW86-13, and MW-13S) was unable to be gauged or sampled due to an obstruction in the well.

4.5 Site Inspection Reports Summary

A site walk and well survey (total well depth, depth to water, well condition) was conducted by the DER PM on 12/19/2012 in anticipation of the start of the 2013/2014 sampling scheme. All twelve wells included in the 2013-2015 Call Out sampling plan were located. The wells actively sampled by EPA were in generally good condition (MW-99-XX series). Most MW-86-XX series wells either had locks broken, cover bolts missing, no cover at all, or well caps missing. The stick up well MW-86-X2 ("MW-86-2X" in field notes, "HS-3" in the Haviland School District study) was found dry. The stick up for MW-86-29, ("MW-86-6X" in field notes), located on the east side of the intersection of Wright Ave. and Bill Reynolds Blvd. appeared to have been impacted and damaged by a vehicle impact and was unable to be gauged.

4.6 Monitoring Network Condition Summary

The monitoring plan initially consisted of twelve (12) ground water observation wells. Monitoring well MW-86-X2 (a.k.a. HS-3) was found to be dry and monitoring well MW-86-29 (a.k.a. MW86-13, and MW-13S) was unable to be gauged or sampled due to an obstruction in the well. Both MW-86-X2 and MW-86-29 were subsequently removed from the list of wells to be sampled. Additional deficiencies in well caps, locks, etc. were identified during the December 2012 well survey. Repairs were made on January 21-22, 2013 as requested by the DER PM as further described in Section 5.2 of this report.

Since the repairs, all wells were found accessible and in good condition during subsequent sampling events. Well condition survey logs were generated for each of the sampling events during the current certifying period and have been included in the sampling events letter reports.

5.0 OPERATION AND MAINTENANCE (O&M) PLAN COMPLIANCE

The EPA-selected remedy, Monitored Natural Attenuation with Long Term Groundwater Monitoring, did not require the implementation of Engineering Controls to remain functional and protective of public health and the environment. Although a site-specific Operation & Maintenance Plan contained in a Site Management Plan does not exist the groundwater observation monitoring well network and its upkeep and repair are included in monitoring requirements for the site contained in the Remedial Contractor Call Out agreement with Aztech Technologies, Inc. as approved on January 4, 2013 and revised on May 28, 2013 and again on January 28, 2014.

5.1 O&M Plan Requirements

The Operation and Maintenance (O&M) requirements for the site consists of the maintenance of the groundwater monitoring well network in accordance with the requirements of the Remedial Contractor Call Out agreement and are described in Sections 4.5 and 4.6 of this report. No additional O&M requirements exist.

5.2 Non-Routine Maintenance Compliance

There were no non-routine O&M activities performed, nor necessary, during the certifying period.

5.3 Evaluation of O&M Activities

O&M Plan Compliance

As noted in Section 4.5 above, deficiencies in well caps, locks, etc. were identified during the December 2012 well survey. Arrangements were made on January 8, 2013 with the Remedial Contractor (Aztech) to make surficial well repairs and replace all locks (Master 0344 common key locks) on all wells to be sampled during the January 2013 event. All repairs were made on January 21-22, 2013 as requested by the DER PM and confirmed via phone conference with Aztech PM on January 24, 2013.

As noted in Section 4.2 one sampling event (3rd quarter 2013) was missed due to scheduling error and an additional sampling event (4th quarter 2014) was postponed due to the accumulation of snow placed over the sampling locations. The 4th quarter 2014 sampling event was rescheduled for May 2015, after the melting of the accumulated snow

Evaluation of Analytical Results

Evaluation of analytical results of the monitoring/sampling completed during the current reporting period have been compared to the remedial objective for the site – restoration of the aquifer to drinking water quality (GA). A summary of analytical data (chlorinated volatile organics/contaminants of concern) has been tabulated and presented as **Appendix B**. Data validation logs, groundwater sampling logs, and analytical laboratory may be found in each sampling event's specific letter report (not included).

Historic and current data have been graphed on a per-well basis for ease of review and are presented in **Figures 5-1 through 5-3**.

Statistical analysis of groundwater analytical data was performed through methods contained in *Methods for Evaluating The Attainment Of Cleanup Standards Volume 2: Ground Water* (EPA 230-R-92-014, July 1992). The procedure presented in this guidance has been approved to determine whether a site has attained the appropriate cleanup standard after a remedial action has been completed and ground water about the site has reached steady state with the surrounding environment.

Analysis of the data was completed by associating selected wells (those with a geographical relationship) into groups. Groundwater samples were collected from the selected wells in a group during a sampling event. Analytical results from all wells in the same group were then combined into one summary statistic for each individual contaminant of concern for that time period/sampling event. All summary statistics were then compared to drinking water standards. It would then be concluded that the ground water represented by each group attained the cleanup standards if the summary statistic attained the cleanup standard.

When multiple wells are tested as a group, samples must be collected in each well at the same time (during the same sampling event) and thus the same number of samples

will be collected in all wells within a group. At each sample time, the measurements from each well are combined into a summary statistic. To combine the measurements from all tested wells at each sample time into one summary statistic, a PM may average the measurements from all wells within a group.

Whenever the measured concentration for a given water sample is reported by the laboratory, use this concentration in the analysis even though it is below the detection limit. When the concentration is reported as less than a specified detection limit, use the value at the detection limit as the measured concentration in the analysis. When the laboratory reports that the chemical concentration is “below the detection limit” with no specified detection limit, contact the analytical laboratory to determine the minimum detectable value, and use this value in the analysis. If a particular observation (outlier) is suspected to be in error, the error should be identified and corrected, and the corrected value used in the analysis.

6.0 GREEN REMEDIATION/CLIMATE CHANGE RESILIENCE

Consistent with NYSDEC's DER-31 Green Remediation Policy, this section provides a brief summary and qualitative assessment of the overall environmental impacts or "environmental footprint" of the site for the current reporting period.

In accordance with the NYSDEC's Executive Order No. 24 (EO-24), consideration has been given to reducing the consumption of energy and materials, and thereby reducing the production of "greenhouse" gases, in the operation and maintenance of the site. Implementation of DER-31 and EO-24 have not compromised the selected remedy's protectiveness of public health and the environment, nor has it hindered achievement of the remedial goals established for the site.

As each discrete step of any site O&M activity consumes resources and energy, consideration has been given to reducing/eliminating those activities which may not be critical to the protectiveness of the selected remedy. In order to account for seasonal variability in groundwater flow and contaminant migration, a frequency of quarterly groundwater sampling events was selected for the certifying period. In the event that additional groundwater sampling events are necessary, a reduced frequency may be appropriate.

A critical infrastructure vulnerability assessment was not completed during this certifying period. Such an assessment could generally be utilized to evaluate the potential consequences climactic changes may have on a site, as well as any ongoing site management activities. The observation well network maintenance activities described in Section 4.2 were implemented to protect the aquifer from direct discharge and to promote proper sampling of the local water quality. These actions have the added effect of increasing the resiliency of the monitoring well network to withstand the impact of more frequent severe storms/weather events, flooding and other impacts linked to climactic changes.

6.1 Green Remediation Assessment

In accordance with the NYSDEC's DER-31 Green Remediation policy, the following section provides a qualitative assessment of the overall environmental impacts or "environmental footprint" associated with the remedy. To ensure proper implementation and documentation of the DER-31 policy guidance, as well as to identify and quantify any associated gains and benefits of the plan, "Form A - Green Remediation Metrics for Site Management" is provided as **Appendix C**.

Electric Usage

Implementation of the selected remedy does not directly use electricity as part of site management.

Fossil Fuel Usage

Implementation of the selected remedy does not directly use fossil fuels as part of site management; however, fossil fuels are indirectly used during the completion of maintenance and monitoring activities associated with the groundwater monitoring well network. Indirect fossil fuel use results from completion of the following Site related activities:

- Transportation to and from the Site for monitoring, sampling and well rehabilitation.
- Operation of a portable generator to power a submersible pump for groundwater monitoring well sampling activities.
- Off-site transportation and shipment of samples collected for laboratory analysis.
- Disposal of waste generated at the Site.

Water Usage

Implementation of the selected remedy does not directly require the use water at this site. However, a de minimis quantity of water is used during sampling events for equipment decontamination.

Air Emissions

Implementation of the selected remedy does not directly emit contaminants to the air, nor impact air quality other than through the combustion of fossil fuels in vehicles and use in generators, as described above.

Consumption of Materials and Generation of Waste

Monitoring, maintenance and reporting activities associated with groundwater sampling events result in material consumption and the generation of waste. A summary of the current material consumption and waste generation activities for the site are summarized below:

- Personal protective equipment associated with groundwater sampling, such as nitrile gloves, etc.
- Consumables associated with groundwater sampling such as polyethylene tubing, paper towels, trash bags, etc.
- Packaging material and ice used to pack and preserve samples to be submitted for laboratory analysis.
- Paper and office supplies associated with site logs, monitoring logs and report preparation.
- Repair and replacement of equipment associated with the monitoring well network.

6.2 Climate Change Vulnerability Assessment

Increases in both the severity and frequency of storms/weather events, an increase in sea level elevations along with accompanying flooding impacts, shifting precipitation patterns and wide temperature fluctuations, resulting from global climactic change and instability, have the potential to significantly impact the performance, effectiveness and protectiveness of a given site/remedy. The intent of this vulnerability assessment is to provide information to allow the site/remedy to better prepare for the impacts of the

increasing frequency and intensity of severe storms/weather events and associated flooding brought on by global climactic changes and instabilities, in order to ultimately enhance the remedy's resilience to such events.

This section provides a summary of any vulnerability assessments conducted for the site, and briefly summarizes the vulnerability of the site and/or remedy to severe storms/weather events and associated flooding.

This assessment included consideration of the following:

- Flood Plain: No component of the site is located in a flood plain, low-lying or low-groundwater recharge area.
- Site Drainage and Storm Water Management: The site is well drained with minimal potential for flooding or damage to the monitoring well network during severe rain events.
- Erosion: There is no evidence of erosion at the site or areas of the site which may be susceptible to erosion during periods of severe rain events and which may damage the monitoring well network.
- High Wind: Most observation wells are flush-mounted at ground level and are not susceptible to damage from the wind itself or falling objects, such as trees or utility structures during periods of high wind.
- Electricity: Portable generators are used during sampling events as such a local power loss and/or dips/surges in voltage during severe weather events would have no impact on the monitoring well network or sampling operations.

6.3 Considerations for Optimization of Physical Systems

Environmental and energy conservation measures and other methods to reduce energy consumption, resource usage, waste generation, and water usage have been considered and are described below.

During the certifying period quarterly groundwater sampling events were conducted which required the purging of water from the observation wells prior to sampling. Passive diffusion bags (PDB) would significantly reduce or negate the need for purging observation wells and would reduce or negate the need for associated equipment and energy/fuel consumption.

A PDB sampler is a low-density polyethylene bag filled with deionized water, which acts as a semipermeable membrane and is suspended in a well to passively collect groundwater samples. PDB samplers rely on the free movement of groundwater from the aquifer or waterbearing zone through the well screen. VOCs in groundwater will diffuse across the bag material until constituent concentrations within the bag reach equilibrium with concentrations in the surrounding groundwater. Advantages of PDB samplers is that they are inexpensive and have the potential to eliminate or substantially reduce the amount of purge water associated with sampling. The samplers are easy to deploy and recover. Because PDB samplers are disposable, there is no down-hole equipment to be decontaminated between wells.

A reduction in sampling event frequency (semi-annual, annual, 5-quarters) would directly reduce associated transportation needs for staff and the shipping of samples in addition to the reduction of waste generation associated with PPE and decontamination procedures.

7.0 COST EVALUATION

The total cost of the O&M of the remedy from July 20, 2012 through August 1, 2015 was approximately $51,777.77. This total includes costs for quarterly ground water sampling events, laboratory analytics, site reports and data usability review and reports. A break-down of these costs is provided below on Table 7-1.

TABLE 7-1: REPORTING PERIOD COST SUMMARY		
COST ITEM	***COST INCURRED (Jul. 20, 2012 – Aug. 1, 2015)***	***PERCENT OF TOTAL***
ENGINEERING SUPPORT		
N/A	*$0.00*	$0.00
SUBCONTRACTORS		
Aztech Technologies, Inc.	$46,737.94	90.3%
Test America Laboratories	$5,039.83	9.7%
SUB-TOTAL	*$51,777.77*	100%
UTILITIES		
N/A	$0.00	$0.00
TOTAL COSTS	**$51,777.77**	100%
AVERAGE COST/MONTH	**$1,670.25**	

- Engineering support costs are not required at this site at this time. As summarized on Table 7-1, engineering costs were $0.00.
- Subcontractor costs include [routine observation well maintenance, sampling event sampling and reporting, analytical laboratory services and data usability review. As summarized on Table 7-1, subcontractor costs were $51,777.77.
- Utility services are not required at this site. As summarized on **Table 7-1**, utility costs were $0.00.

Based on the total cost of $51,777.77 incurred during this reporting period, the average monthly cost of the remedy is approximately $1,670.25 per month

8.0 SITE CLOSEOUT ASSESSMENT

Based on the various evaluations discussed in the preceding sections the remedial actions performed at the site have significantly attained the remedial goals established in the 1997 Record of Decision Amendment.

A reclassification meeting was held on February 18, 2016 to discuss the potential to delist the site from the Registry. The NYSDOH raised a concern regarding the lack of documented confirmatory sediment/soil sampling post-IRM implementation (septic system cleanouts) and has recommended groundwater sampling with analysis for inorganics (metals) be performed.

9.0 REMEDY EVALUATION/CONCLUSIONS AND RECOMMENDATIONS

The September 28, 1987 ROD identified the following as the selected remedy to address the principal environmental threats posed at the site, volatile organic compounds and inorganic constituents (metals), in ground water:

- **Alternate Water Supply** - Connect affected and potentially affected residents using ground water within the Haviland study area to the Harbourd Hills water distribution system.
    - Residents will no longer be using water drawn from the contaminant plume as a potable or domestic water source.
- **Aquifier Restoration** - Restore the aquifer to drinking water quality by extracting and treating contaminated ground water and discharging the effluent to surface water.
    - To meet all Federal and State ARARs, including New York Class GA Ground Water Standards
- **Source Control** - Implement source control measures consisting of pumping and cleaning out contaminated sediments from local septic disposal systems.
- **Monitoring Program** - Prevent a recurrence of such a problem through a septic tank monitoring and cleanup program.

The following presents the selected modification to the original remedial action for the Haviland Complex site through the August 1, 1997 ROD Amendment:

- **POETS** - Continue the use of existing whole-house groundwater treatment systems on affected residences.
    - Maintenance of filters and semi-annual monitoring
- **Alternate Water Supply** – This component has been eliminated.

- **Aquifier Restoration** - Restore the aquifer to drinking water quality by Natural Attenuation to below Federal and State drinking water standards – the extraction and treatment system component has been eliminated.
- **Ground Water Monitoring** - Implementation of a groundwater monitoring program.
- **Source Control** - Implement source control measures consisting of pumping and cleaning out contaminated sediments from local septic disposal systems – completed on November 4, 1990.

As confirmed by NYSDOH, the remedial components contained in the 1997 ROD Amendment are natural attenuation of residual contamination in the aquifer to below Federal and State drinking water standards and continued use of point-of-entry carbon filter systems at homes with affected wells. By August 30, 2002 public water was brought into the affected area and all affected homes were connected by the NYSDEC, satisfying the carbon filter system requirement of the 1997 ROD Amendment.

9.1 Remedy Evaluation

The selected remedy for the site (i.e., Natural Attenuation and associated groundwater monitoring) has been effective at reducing contaminant concentrations in the general groundwater and has been determined to continue to be protective of human health and the environment during the reporting period. The remedy has been effective in achieving the above identified RAOs.

9.2 Conclusions

Based on the evaluation of the performance, effectiveness and protectiveness of the remedy during the current reporting period, and as detailed in the preceding sections, the following conclusions have been established:

- Monitoring Plan Compliance: As noted in Section 4.2 one sampling event (3rd quarter 2013) was missed due to scheduling error and an additional sampling event (4th quarter 2014) was postponed due to the accumulation of snow placed over the sampling locations. No other deviations from the Monitoring Plan were identified during this certifying period.

- O&M Plan Compliance: Rehabilitation to the Monitoring Well Network was performed in a timely fashion once identified. No deviations from the O&M Plan were identified during this certifying period.

- Monitoring Point Network: As noted in Section 4.5, deficiencies in well caps, locks, etc. were identified during the December 2012 well survey. All repairs were made on January 21-22, 2013. No other deviations from the O&M Plan were identified during this certifying period.

- Site Closeout: Quarterly ground water sampling events were conducted between January 2013 and April 2015 in order to demonstrate attainment of drinking water standards as required by the 1997 ROD. Samples were identified for VOCs via EPA Method 8260.

9.3 Recommendations

Based on evaluation of the O&M of the remedy during the current reporting period, and as detailed in the preceding sections, the following recommendation(s) have been established to increase the overall performance, effectiveness and protectiveness of the remedy:

- Site Closeout: Groundwater sampling should be performed with an analysis for inorganic contaminants (metals) in preparation for drafting of an amended Reclassification / Delist Package.

APPENDICES

APPENDIX A

Property Owner Survey

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Remediation
625 Broadway, 11th Floor, Albany, NY 12233-720
P: (518)402-9543 | F: (518)402-9547
www.dec.ny.gov

11/25/2016

John J. Lease
John J. Lease Realty
5020 Route 9W
Newburgh, NY 12550-7900

Re: Property Owner Survey: Site Management Periodic Review
Parcel: 6164-02-581598
Site Name: Haviland Complex and Haviland Road
Site No.: 314059
Site Address: Route 9-G & Haviland Road
Hyde Park, NY 12538

Dear Property Owner:

This letter and attached survey have been mailed to you because you are the listed property owner (or their contact) on which a State Superfund site exists that is currently in the Site Management (SM) phase of remediation. This letter is meant to serve as an informative reminder to you and any tenants, occupants or users of the property that sites in active Site Management must undergo a periodic progress review to ensure that the selected remedy continues to be protective. This process and resulting report, referred to as the Periodic Review Report (PRR), documents the implementation of site specific SM requirements. Section 6.3(b) of DER-10 Technical Guidance for Site Investigation and Remediation (see "IV. Reference Documents" in the attached) provides guidance regarding the information that is included in a typical PRR. Additionally, the site referenced may be comprised of multiple tax parcels with different owners. This letter only pertains to the portion of the site that exists on property which is under your direct ownership. To assist the NYSDEC in its periodic review, please respond, sign and date the attached survey (Enclosure 1 "Institutional and Engineering Controls - Property Owner Survey") by December 25, 2015.

Site Management is defined in regulation at 6 NYCRR 375-1.2(at), and in Chapter 6 of DER-10 (see also "III. Helpful Definitions" in the attached). SM may be governed by multiple individual documents (e.g., an Operation, Maintenance, and Monitoring Plan; a Soil Management Plan; etc.) or under the umbrella of one comprehensive Site Management Plan.

A Site Management Plan (SMP) may contain one or all of the following elements, as applicable to the site: a plan to maintain institutional and/or engineering controls ("IC/EC Plan"); a plan for monitoring the performance and effectiveness of the selected remedy ("Monitoring Plan"); and/or a plan for the operation and maintenance of the selected remedy ("O&M Plan"). Additionally, the technical requirements for SM are stated in the decision document (e.g., Record of Decision) and, in some cases, the legal agreement directing the remediation of the site (e.g., order on consent, voluntary agreement, etc.).

When you respond to this survey, please include the enclosed form (Enclosure 1) which documents that, to the best of your knowledge, all Site Management requirements that pertain to the site on your property are being met. The Institutional Controls (ICs) and Engineering Controls (ECs) certification portion of the form should be completed, signed and returned to the NYSDEC. If you cannot verify that all SM requirements are being met, please provide adequate information in response so that actions may be taken to restore the level of protection intended. Instructions for completing the attached forms are included as Enclosure 2 "Survey Instructions."

The survey form should be submitted in either paper or electronic format. Any supporting documents or information (e.g., collected data, reports, copy of current deed) should be submitted in electronic format only. These documents and electronic submissions should be sent to:

David Gardner, Project Manager.
New York State Department of Environmental Conservation
Division of Environmental Remediation, BURE
625 Broadway
Albany, NY 12233-7017

Phone number: 518-402-9818. E-mail: david.gardner@dec.ny.gov

Finally, as the state and condition of your property may be influenced by tenants or others users, please share the information contained in this letter and survey so that all controls put in place will provide the greatest level of protection of public health and the environment.

Thank you for your cooperation and assistance.

Sincerely,

David Gardner, Project Manager
NYSDEC

Enclosures

ec: David Gardner, Project Manager
Susan Edwards, Section Chief

Enclosure 1
Institutional and Engineering Controls - Property Owner Survey

Site Details **Box 1**

Site No. 314059

Site Name Haviland Complex and Haviland Road

Site Address: Route 9-G & Haviland Road Zip Code: 12538
City/Town: Hyde Park
County: Dutchess
Site Acreage: 7.0

Reporting Period: January 01, 1997 to November 25, 2015

	YES	NO
1. Is the information above correct?	☐	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☐
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☐
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☐
If you answered YES to questions 2, 3 or 4, include documentation with this form.		
5. Is the site currently undergoing development?	☐	☐

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Residential, Restricted-Residential, Commercial, and Industrial	☐	☐
7. Are all Institutional Controls (ICs) in place and functioning as designed?	☐	☐

_____ _____
Signature of Property Owner Date

SITE NO. 314059 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control

Not Applicable/No IC's

Box 4

Description of Engineering Controls

None Required

Not Applicable/No EC's

Box 5

Periodic Review Report (PRR) Survey Statements

For each Institutional or Engineering control listed in Boxes 3 and/or 4, by checking "YES" below I believe all o the following statements to be true:

(a) the Institutional Control(s) and/or Engineering Control(s) employed at this site remain unchanged since the date that the Control was put in-place, or was last approved by the Department;

(b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

(c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control; and

(d) if a Site Management Plan (SMP) exists, nothing has occurred that would constitute a violation or failure to comply with the SMP for this Control.

YES ☐ NO ☐

_____ _____

Signature of Property Owner Date

Enclosure 2
Survey Instructions

I. Verification of Site Details (Box 1 and Box 2):
Answer the YES/NO questions in the Verification of Site Details Section. The Property Owner may include handwritten changes and/or other supporting documentation, as necessary.

II. Certification of Institutional / Engineering Controls (Boxes 3, 4, and 5)
Review the listed IC/ECs, confirming that all existing controls are listed, and that all existing controls are still applicable. If there is a control that is no longer applicable the Property Owner should petition the Department separately to request approval to remove the control.

In Box 5, complete the certification for all components, as applicable, by checking the corresponding YES/NO checkbox.

If you cannot respond "YES" for each Control listed in Box 3 & Box 4, sign and date the form in Box 5. Attach supporting documentation that explains why a "YES" response could not be rendered. Note that this survey form should be submitted even if an IC or EC cannot be certified at this time.

III. Helpful Definitions
"Change of use" means the erection of any structure on a site, the paving of a site for use as a roadway or parking lot, the creation of a park or other recreational facility on a site, any activity that is likely to disrupt or expose contamination or increase direct human or environmental exposure, or any other conduct that will or may tend to prevent or significantly interfere with a proposed, ongoing, or completed remedial program.

"Site management" means the activities undertaken as the last phase of the remedial program at a site which continue after a certificate of completion is issued. Site management is conducted in accordance with a site management plan, which identifies and implements the institutional and engineering controls required for a site, as well as any necessary monitoring and/or operation and maintenance of the remedy.

IV. Reference Documents

DER-10	http://www.dec.ny.gov/docs/remediation_hudson_pdf/der10.pdf
Part 375-2.2(a)	http://www.dec.ny.gov/regs/4373.html#15089

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Division of Environmental Remediation
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www.dec.ny.gov

11/25/2016

John J. Lease
John J. Lease Realty
5020 Route 9W
Newburgh, NY 12550-7900

Re: Property Owner Survey: Site Management Periodic Review
Parcel: 6164-02-562583
Site Name: Haviland Complex and Haviland Road
Site No.: 314059
Site Address: Route 9-G & Haviland Road
Hyde Park, NY 12538

Dear Property Owner:

This letter and attached survey have been mailed to you because you are the listed property owner (or their contact) on which a State Superfund site exists that is currently in the Site Management (SM) phase of remediation. This letter is meant to serve as an informative reminder to you and any tenants, occupants or users of the property that sites in active Site Management must undergo a periodic progress review to ensure that the selected remedy continues to be protective. This process and resulting report, referred to as the Periodic Review Report (PRR), documents the implementation of site specific SM requirements. Section 6.3(b) of DER-10 Technical Guidance for Site Investigation and Remediation (see "IV. Reference Documents" in the attached) provides guidance regarding the information that is included in a typical PRR. Additionally, the site referenced may be comprised of multiple tax parcels with different owners. This letter only pertains to the portion of the site that exists on property which is under your direct ownership. To assist the NYSDEC in its periodic review, please respond, sign and date the attached survey (Enclosure 1 "Institutional and Engineering Controls - Property Owner Survey") by December 25, 2015.

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A Site Management Plan (SMP) may contain one or all of the following elements, as applicable to the site: a plan to maintain institutional and/or engineering controls ("IC/EC Plan"); a plan for monitoring the performance and effectiveness of the selected remedy ("Monitoring Plan"); and/or a plan for the operation and maintenance of the selected remedy ("O&M Plan"). Additionally, the technical requirements for SM are stated in the decision document (e.g., Record of Decision) and, in some cases, the legal agreement directing the remediation of the site (e.g., order on consent, voluntary agreement, etc.).

When you respond to this survey, please include the enclosed form (Enclosure 1) which documents that, to the best of your knowledge, all Site Management requirements that pertain to the site on your property are being met. The Institutional Controls (ICs) and Engineering Controls (ECs) certification portion of the form should be completed, signed and returned to the NYSDEC. If you cannot verify that all SM requirements are being met, please provide adequate information in response so that actions may be taken to restore the level of protection intended. Instructions for completing the attached forms are included as Enclosure 2 "Survey Instructions."

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David Gardner, Project Manager.
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Albany, NY 12233-7017

Phone number: 518-402-9818. E-mail: david.gardner@dec.ny.gov

Finally, as the state and condition of your property may be influenced by tenants or others users, please share the information contained in this letter and survey so that all controls put in place will provide the greatest level of protection of public health and the environment.

Thank you for your cooperation and assistance.

Sincerely,

David Gardner, Project Manager
NYSDEC

Enclosures

ec: David Gardner, Project Manager
Susan Edwards, Section Chief

Enclosure 1
Institutional and Engineering Controls - Property Owner Survey

Site Details **Box 1**

Site No. 314059

Site Name Haviland Complex and Haviland Road

Site Address: Route 9-G & Haviland Road Zip Code: 12538
City/Town: Hyde Park
County: Dutchess
Site Acreage: 7.0

Reporting Period: January 01, 1997 to November 25, 2015

	YES	NO
1. Is the information above correct?	☐	☐
If NO, include handwritten above or on a separate sheet.		
2. Has some or all of the site property been sold, subdivided, merged, or undergone a tax map amendment during this Reporting Period?	☐	☐
3. Has there been any change of use at the site during this Reporting Period (see 6NYCRR 375-1.11(d))?	☐	☐
4. Have any federal, state, and/or local permits (e.g., building, discharge) been issued for or at the property during this Reporting Period?	☐	☐
If you answered YES to questions 2, 3 or 4, include documentation with this form.		
5. Is the site currently undergoing development?	☐	☐

Box 2

	YES	NO
6. Is the current site use consistent with the use(s) listed below? Residential, Restricted-Residential, Commercial, and Industrial	☐	☐
7. Are all Institutional Controls (ICs) in place and functioning as designed?	☐	☐

_____ _____
Signature of Property Owner Date

SITE NO. 314059 **Box 3**

Description of Institutional Controls

Parcel	Owner	Institutional Control

Not Applicable/No IC's

Box 4

Description of Engineering Controls

None Required

Not Applicable/No EC's

Box 5

Periodic Review Report (PRR) Survey Statements

For each Institutional or Engineering control listed in Boxes 3 and/or 4, by checking "YES" below I believe all o the following statements to be true:

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(b) nothing has occurred that would impair the ability of such Control, to protect public health and the environment;

(c) access to the site will continue to be provided to the Department, to evaluate the remedy, including access to evaluate the continued maintenance of this Control; and

(d) if a Site Management Plan (SMP) exists, nothing has occurred that would constitute a violation or failure to comply with the SMP for this Control.

YES ☐ NO ☐

_____ _____

Signature of Property Owner Date

Enclosure 2
Survey Instructions

I. Verification of Site Details (Box 1 and Box 2):
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"Change of use" means the erection of any structure on a site, the paving of a site for use as a roadway or parking lot, the creation of a park or other recreational facility on a site, any activity that is likely to disrupt or expose contamination or increase direct human or environmental exposure, or any other conduct that will or may tend to prevent or significantly interfere with a proposed, ongoing, or completed remedial program.

"Site management" means the activities undertaken as the last phase of the remedial program at a site which continue after a certificate of completion is issued. Site management is conducted in accordance with a site management plan, which identifies and implements the institutional and engineering controls required for a site, as well as any necessary monitoring and/or operation and maintenance of the remedy.

IV. Reference Documents

DER-10	http://www.dec.ny.gov/docs/remediation_hudson_pdf/der10.pdf
Part 375-2.2(a)	http://www.dec.ny.gov/regs/4373.html#15089

APPENDIX B

Summary of Analytical Data

APPENDIX B. HAVILAND COMPLEX - GROUNDWATER MONITORING DATA (2013 - 2015)

		MW-99-01					MW-99-02					MW-99-03					MW-99-04					MW-86-1SH (HS-1)				
		PCE	TCE	DCE	VC	CBz	PCE	TCE	DCE	VC	CBz	PCE	TCE	DCE	VC	CBz	PCE	TCE	DCE	VC	CBz	PCE	TCE	DCE	VC	CBz
1Q13	1/21/2013	1.8	0.49			14	5.0	0.84	1.8		3.7															
2Q13	6/25/2013	1.8				17	5.7	0.74	2		4.5															
4Q13	12/23/2013	1.7				7	4.5	0.65	1.7		1.1															
1Q14	3/24/2014	2				12	4.1	0.5			3.3															
2Q14	6/30/2014	1.4				15	4.9	0.72	1.5		2.1															
4Q14	10/13/2014	1.4				16	5.2	0.90	2.1		3.8															
1Q15	5/26/2015	1.4				12	3.7	0.57	1.1																	

		MW-86-24A					MW-86-27 (MW86-27D)					MW-86-28 (MW86-9)					MW-86-X3 (HS-4)					MW-12				
		PCE	TCE	DCE	VC	CBz	PCE	TCE	DCE	VC	CBz	PCE	TCE	DCE	VC	CBz	PCE	TCE	DCE	VC	CBz	PCE	TCE	DCE	VC	CBz
1Q13	1/21/2013	5.3	1.8						0.95													0.66				
2Q13	6/25/2013	5.3	1.6																			0.43				
4Q13	12/23/2013	3.1	1.3	0.85																		0.44				
1Q14	3/24/2014	2.7	0.79																			0.42				
2Q14	6/30/2014	3.4	1.1																							
4Q14	10/13/2014	4.9	1.9	0.89					0.85																	
1Q15	5/26/2015	3.7	1.3						0.85																	

PCE	Perchloroethene
TCE	Trichloroethene
DCE	cis-Dichloroethene
VC	Vinyl Chloride
CBz	Chlorobenzene

*Blank field in the tables above indicate the contaminant was not detected during that sampling event

APPENDIX C

Form A - Green Remediation Metrics for Site Management

Summary of Green Remediation Metrics for Site Management

Site Name: HAVILAND COMPLEX Site Code: 314059
Address: RT 9G + HAVILAND RD. City: HYDE PARK
State: NY Zip Code: 12538 County: DUTCHESS

Initial Report Period (Start Date of period covered by the Initial Report submittal)
Start Date: 01/01/1997

Current Reporting Period
Reporting Period From: 01/01/1997 To: 11/25/15

Contact Information
Preparer's Name: D. GARDNER Phone No.:
Preparer's Affiliation: NYSDEC

I. Energy Usage: Quantify the amount of energy used directly on-site and the portion of that derived from renewable energy sources.

	Current Reporting Period	Total to Date
Fuel Type 1 (e.g. natural gas (cf))		
Fuel Type 2 (e.g. fuel oil, propane (gals))		
Electricity (kWh)	N/A	N/A
Of that Electric usage, provide quantity:		
Derived from renewable sources (e.g. solar, wind)		
Other energy sources (e.g. geothermal, solar thermal (Btu))		

Provide a description of all energy usage reduction programs for the site in the space provided on Page 3.

II. Solid Waste Generation: Quantify the management of solid waste generated on-site.

	Current Reporting Period (tons)	Total to Date (tons)
Total waste generated on-site		
OM&M generated waste		
Of that total amount, provide quantity:		
Transported off-site to landfills	N/A	N/A
Transported off-site to other disposal facilities		
Transported off-site for recycling/reuse		
Reused on-site		

Provide a description of any implemented waste reduction programs for the site in the space provided on Page 3.

III. Transportation/Shipping: Quantify the distances travelled for delivery of supplies, shipping of laboratory samples, and the removal of waste.

	Current Reporting Period (miles)	Total to Date (miles)
Standby Engineer/Contractor	1050	1050
Laboratory Courier/Delivery Service	—	—
Waste Removal/Hauling	—	—

Provide a description of all mileage reduction programs for the site in the space provided on Page 3. Include specifically any local vendor/services utilized that are within 50 miles of the site.

IV. Water Usage: Quantify the volume of water used on-site from various sources.

	Current Reporting Period (gallons)	Total to Date (gallons)
Total quantity of water used on-site		
Of that total amount, provide quantity:		
Public potable water supply usage	N/A	N/A
Surface water usage		
On-site groundwater usage		
Collected or diverted storm water usage		

Provide a description of any implemented water consumption reduction programs for the site in the space provided on Page 3.

V. Land Use and Ecosystems: Quantify the amount of land and/or ecosystems disturbed and the area of land and/or ecosystems restored to a pre-development condition (i.e. Green Infrastructure).

	Current Reporting Period (acres)	Total to Date (acres)
Land disturbed	0	0
Land restored	0	0

Provide a description of any implemented land restoration/green infrastructure programs for the site in the space provided on Page 3.

Description of green remediation programs reported above (Attach additional sheets if needed)
Energy Usage: FUEL FOR PORTABLE GENERATOR ONLY.
Waste Generation: PPE FROM GW SAMPLING ACTIVITIES ONLY, NITRILE GLOVES, PAPER TOWELS, TUBING, ETC. TUBING = 600' TEFLON PER EVENT 3/8" OD.
Transportation/Shipping:
Water usage: DECONTAMINATION WATER DURING SAMPLING EVENTS ONLY, ICE FOR SAMPLES.
Land Use and Ecosystems:
Other:

CERTIFICATION BY CONTRACTOR
I, _____ (**Name**) do hereby certify that I am _____ (**Title**) of the Company/Corporation herein referenced and contractor for the work described in the foregoing application for payment. According to my knowledge and belief, all items and amounts shown on the face of this application for payment are correct, all work has been performed and/or materials supplied, the foregoing is a true and correct statement of the contract account up to and including that last day of the period covered by this application. _____ **Date** _____ **Contractor**

FIGURES

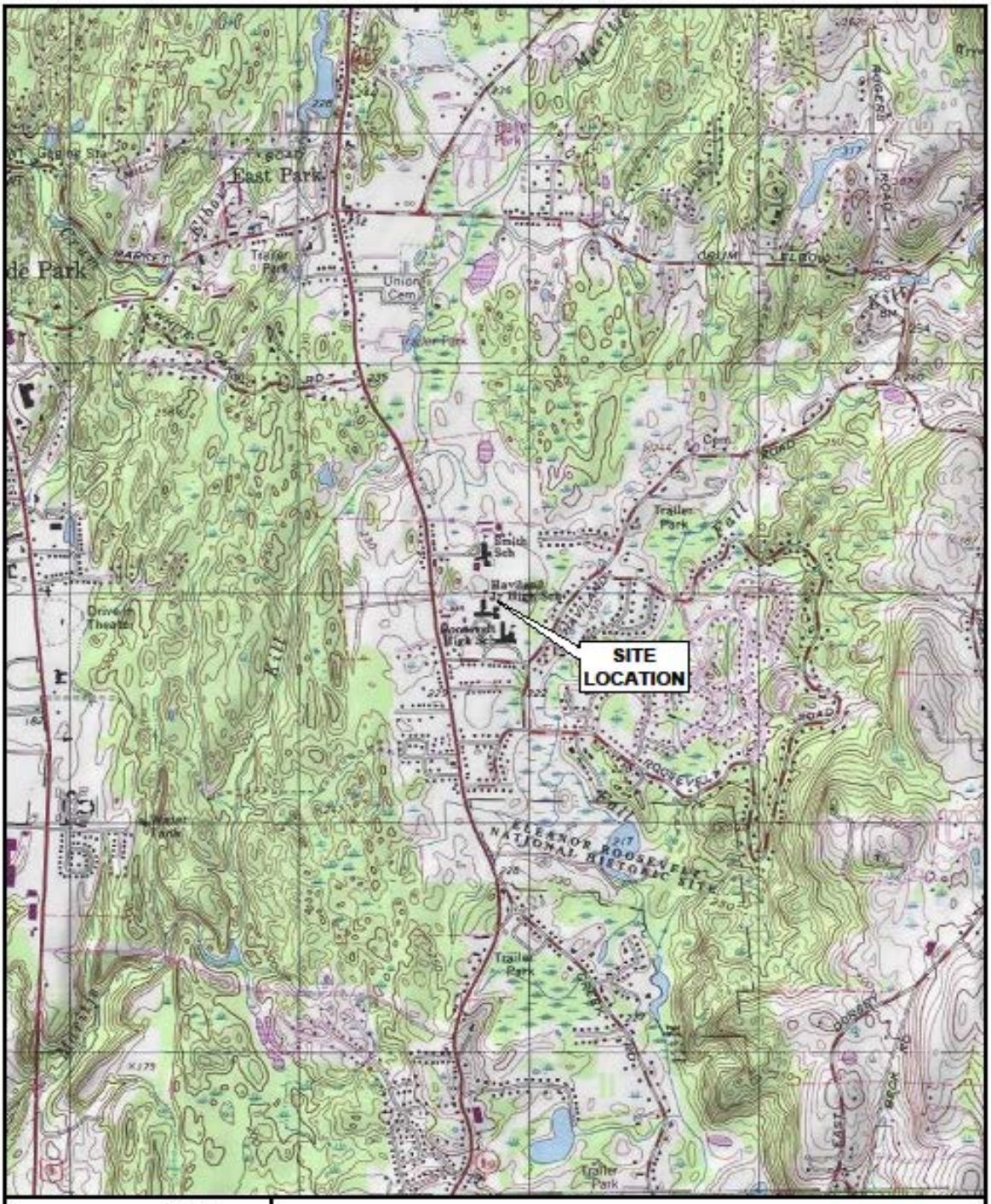


Figure 2-1
Site Location Map
Haviland Complex and Haviland Road
Town of Haviland, Dutchess County
Site No. 314059

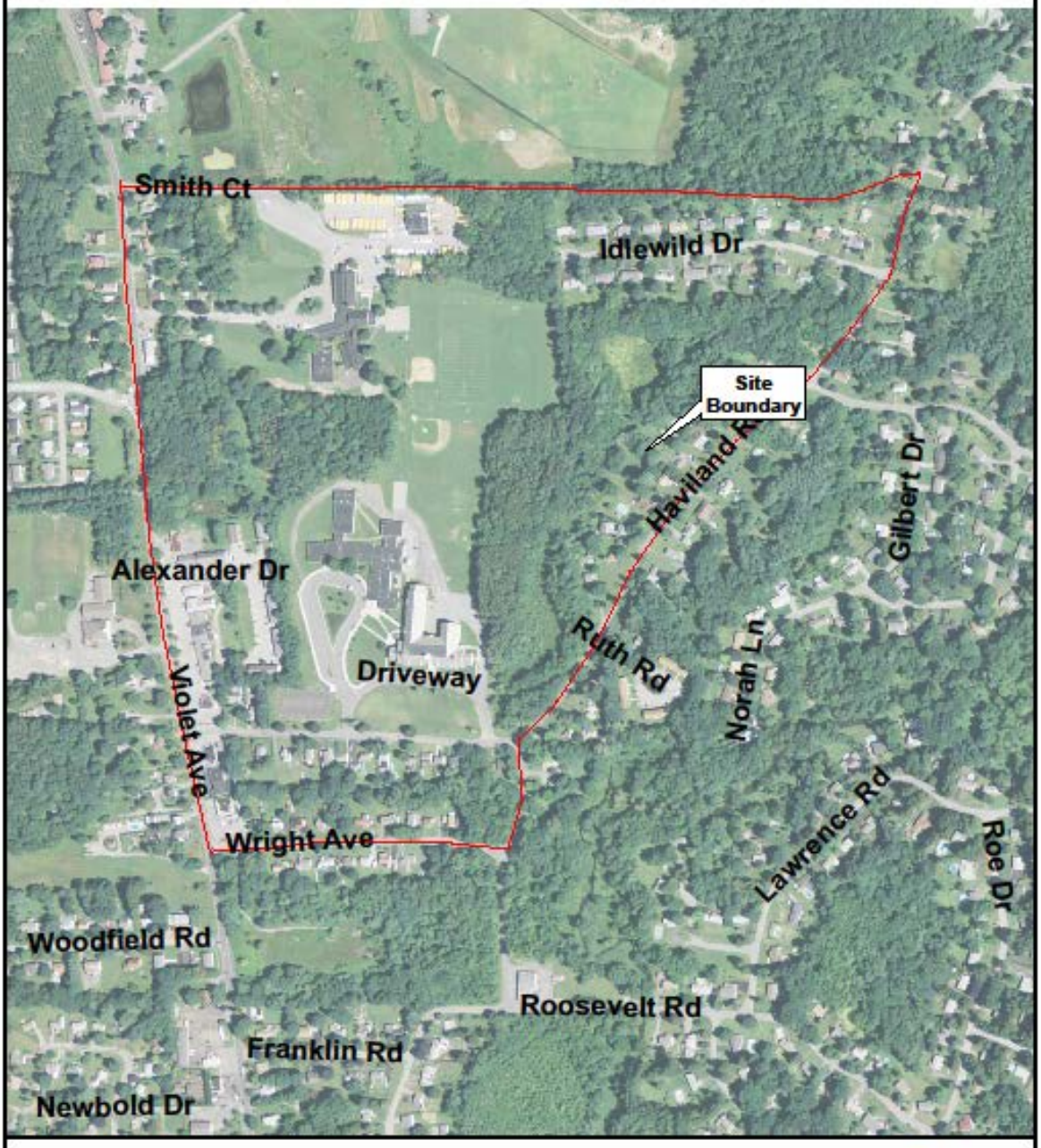


Figure 2-2

Site Map

Haviland Complex and Haviland Road
Town of Haviland, Dutchess County
Site No. 314059

FIGURE 2-3: MONITORING WELLS (APRIL 1997)

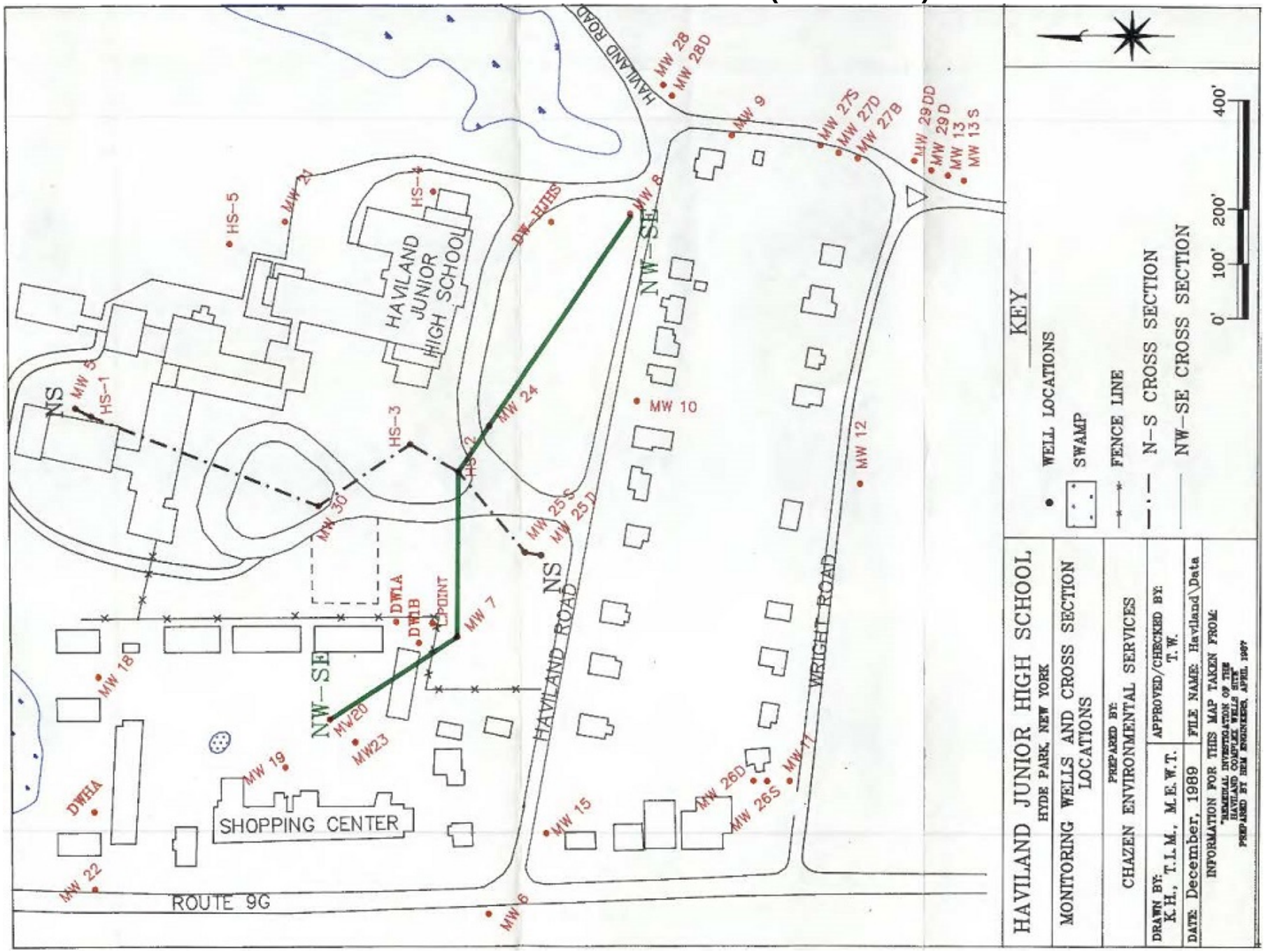


FIGURE 2-4: MONITORING WELLS (EPA MARCH 1999)

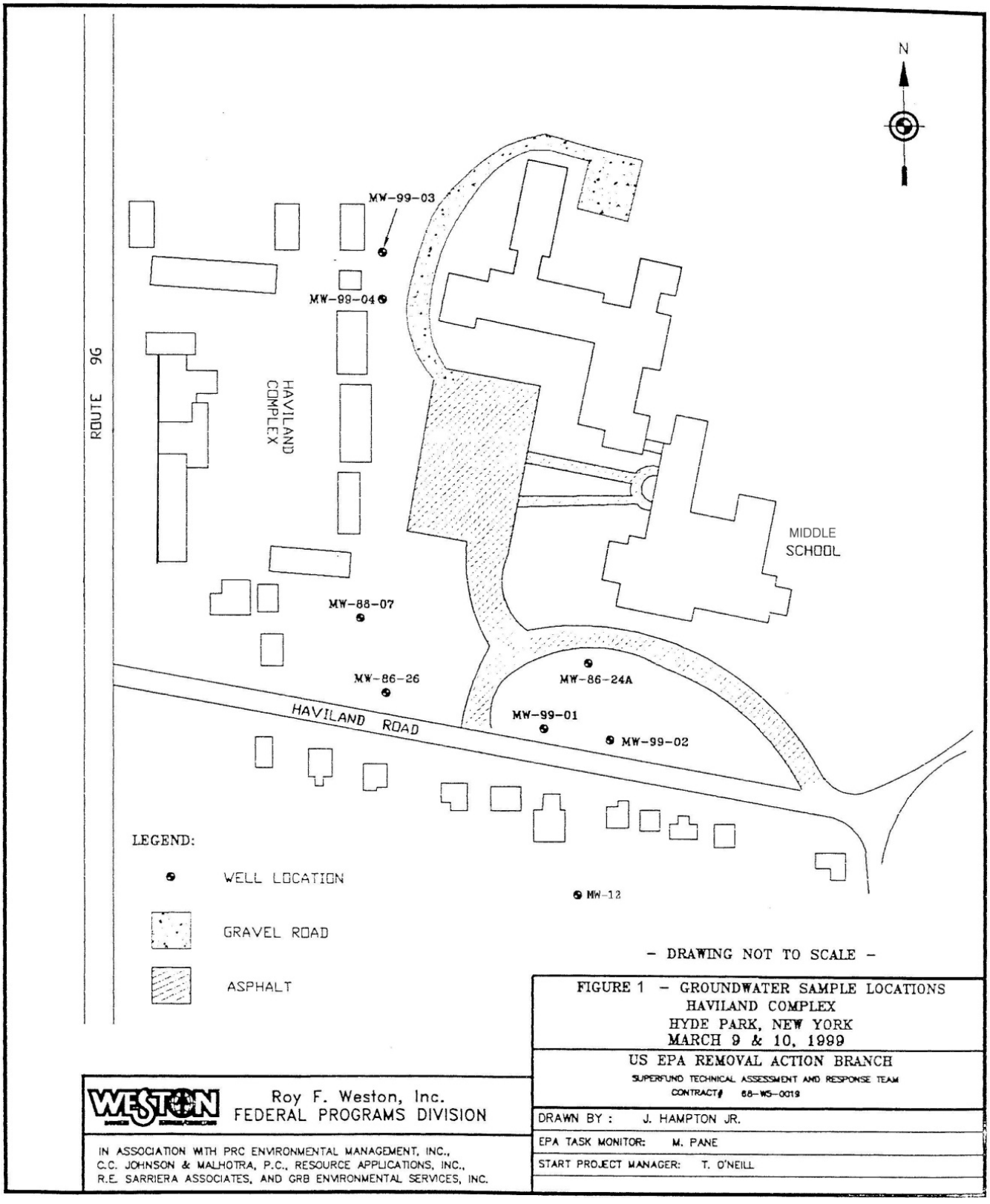


Figure 4-1: PCE Trends in Groundwater

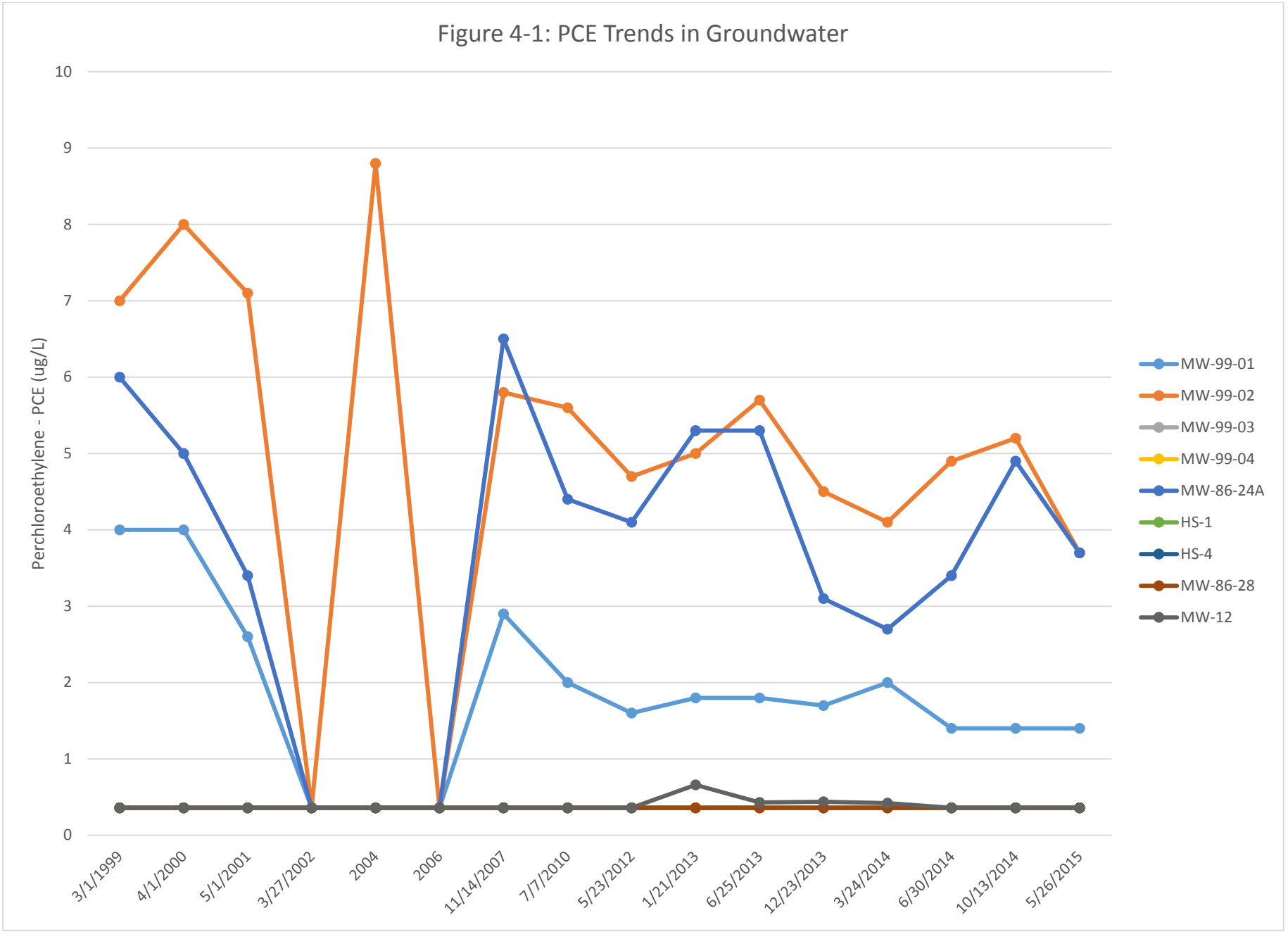


Figure 4-2: Chlorobenzene Trends in Groundwater

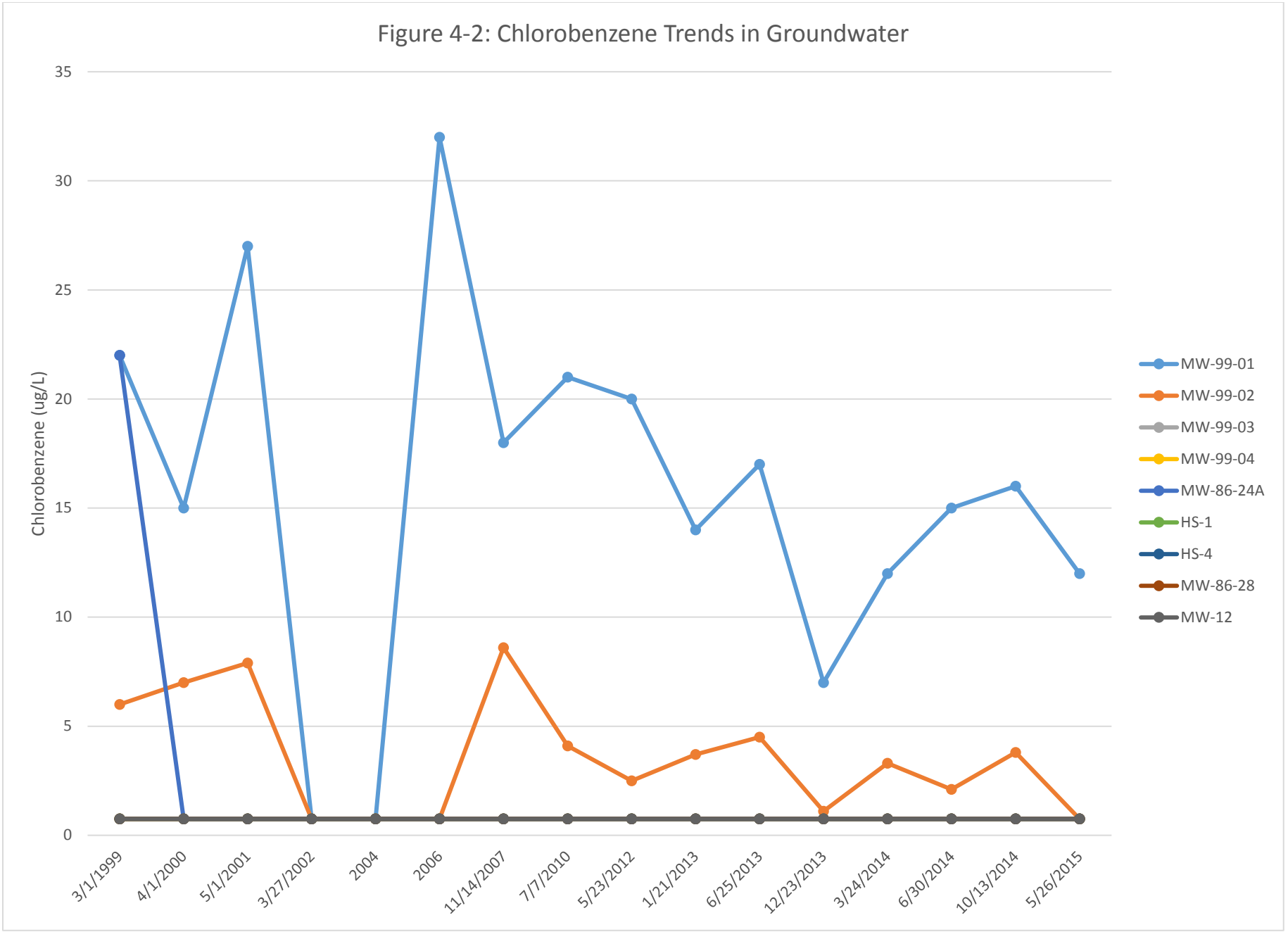
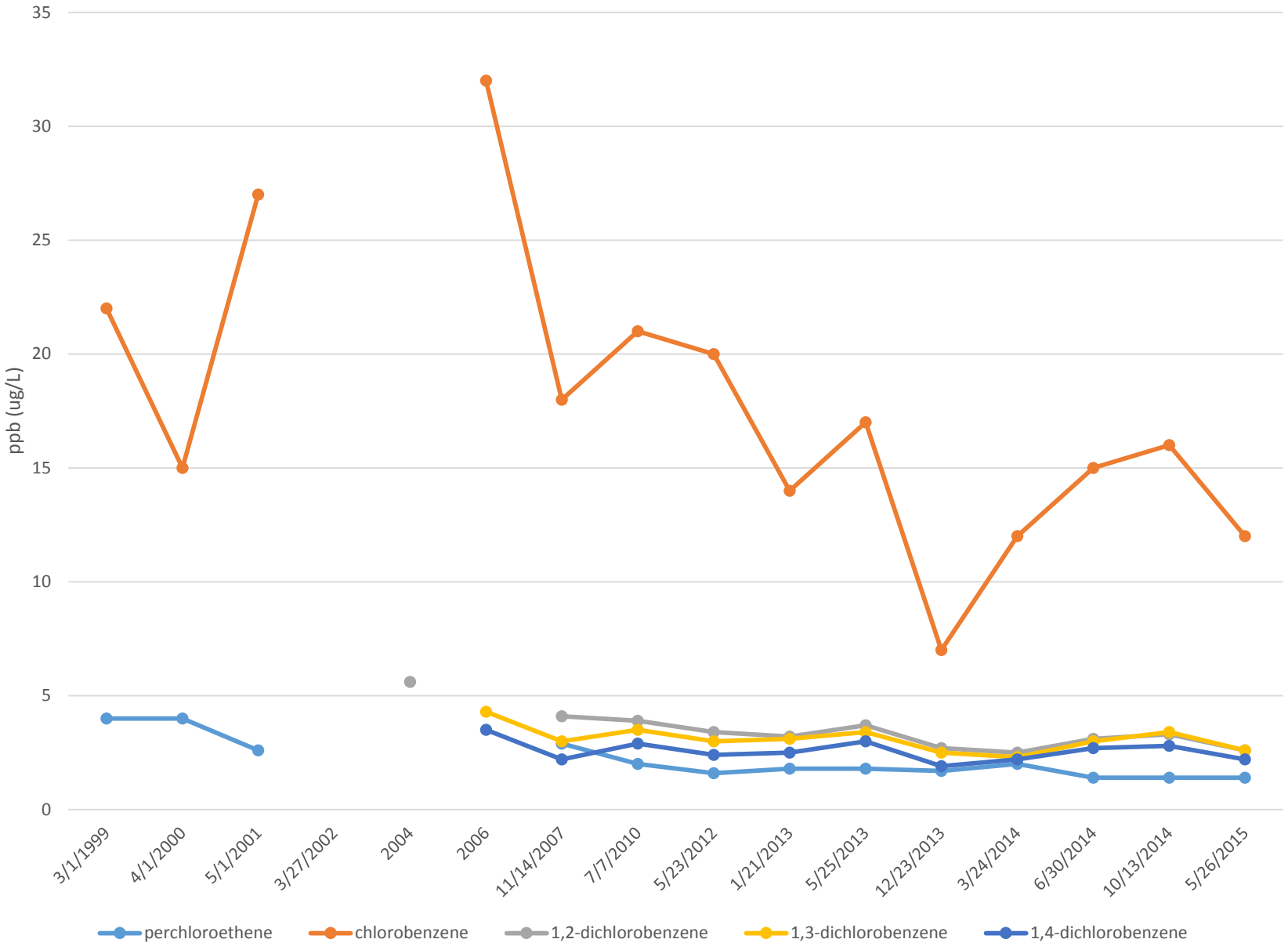


Figure 5-1: MW-99-01 Groundwater Trends



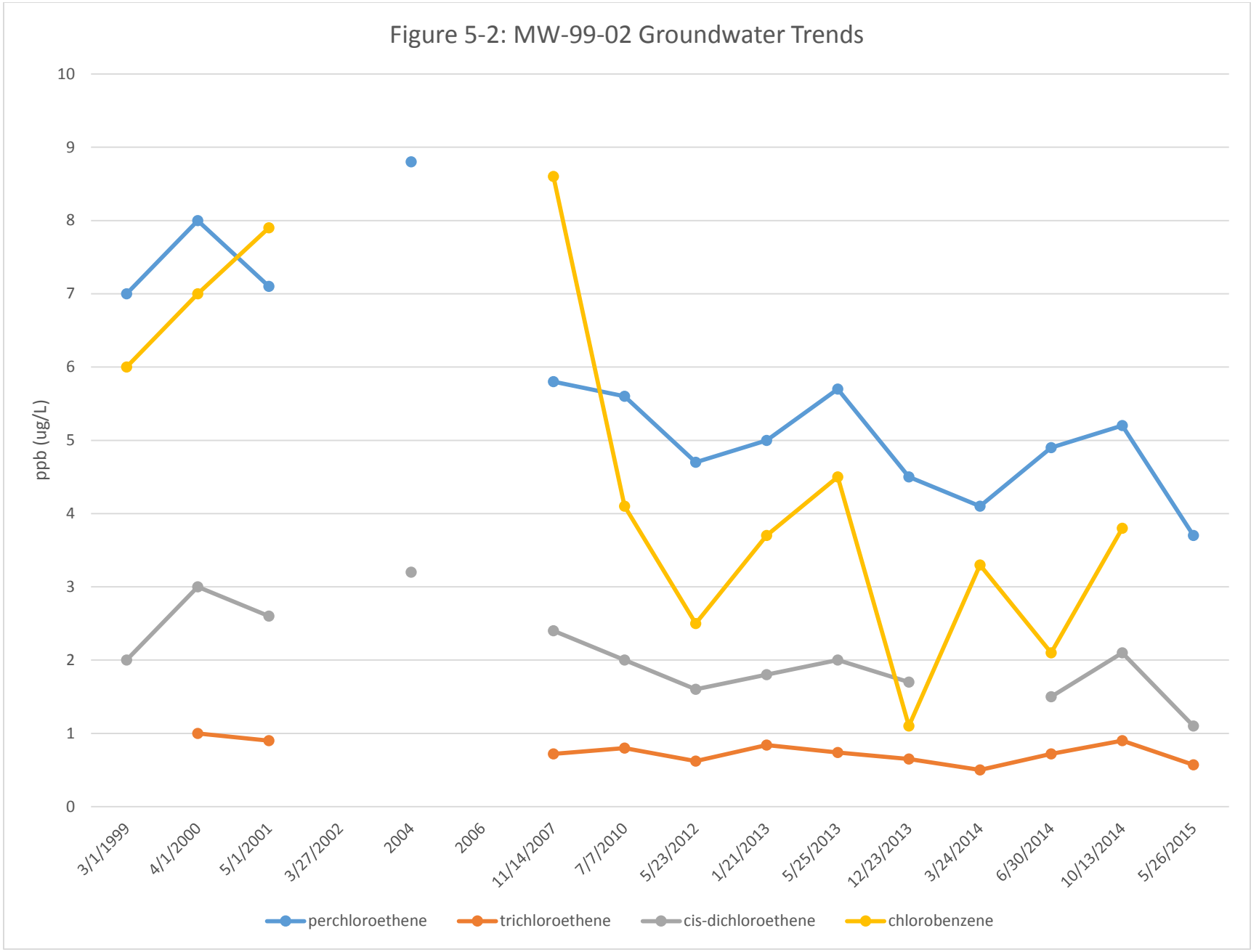
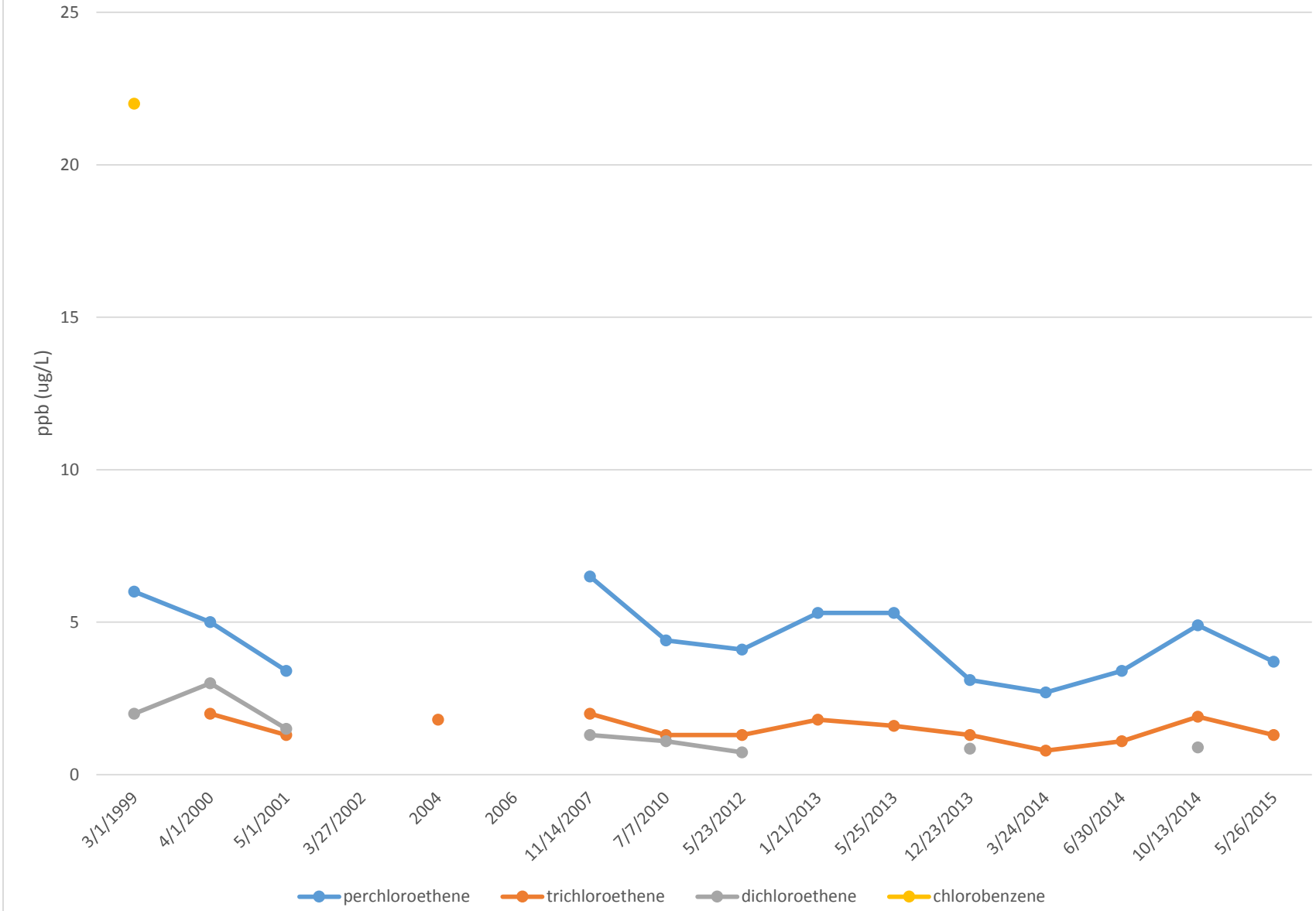


Figure 5-2: MW-99-02 Groundwater Trends
ppb (ug/L)
10
9
8
7
6
5
4
3
2
1
0
3/1/1999
4/1/2000
5/1/2001
3/27/2002
2004
2006
11/14/2007
7/7/2010
5/23/2012
1/21/2013
5/25/2013
12/23/2013
3/24/2014
6/30/2014
10/13/2014
5/26/2015
perchloroethene
trichloroethene
cis-dichloroethene
chlorobenzene

Figure 5-3: MW-86-24A Groundwater Trends



TABLES

TABLE 2-1: HAVILAND MONITORING WELL INVENTORY

DEC SM 2013 Well ID	EPA LTM 1999 Wells	RI/FS 86/87 Wells	School District 1989 Wells	Date		Depth	Screen	Type	H2O Lvl	Notes:
MW-86-1SH			HS-1	9/12/1988	3.2' STICK	16'	6-16'	2" PVC	11.87'	
			HS-2	9/12/1988	3.0' STICK	16'	6-16'	2" PVC	12.81'	
MW-86-X2			HS-3	9/13/1988	3.0' STICK	12'	4-12'	2" PVC	DRY	Hyde Park School District study
MW-86-X3			HS-4	9/13/1988	3.0' STICK	20'	10-20'	2" PVC	17.02'	
			HS-5	9/15/1988	3.0' STICK	16'	6-16'	2" PVC	7.7'	
		~~MW86-1~~	-	~~9/9/1986~~	-	~~8'~~	-	-	-	~~Refusal on concrete blocks in field~~
		MW86-2	MW-2	9/3/1986	2.0' STICK	15.5'	5.5 - 15.5'	2" PVC	10.4 - 12.6'	Spoon refusal at 17.3'
		~~MW86-4~~	-	~~9/4/1986~~	-	~~10.9'~~	-	-	~~DRY~~	~~Dry hole. No well installed.~~
		MW86-5	MW-5	9/8/1986	1.9' STICK	16.5'	6.5 - 16.5'	2" PVC	8.2 - 10.1'	Spoon refusal at 19.2'
		MW86-6	MW-6	9/24/1986	1.9' STICK	15'	10 - 15'	1.25" PVC	11.2 - 13'	Auger refusal at 57.0'
		MW86-7	MW-7	9/5/1986	2.4' STICK	12.4'	7.4 - 12.4'	2" PVC	9.7 - 11.4'	Auger refusal at 12.7'
		MW86-8	MW-8	9/5/1986	2.1' STICK	15'	5 - 15'	2" PVC	5.2 - 6.5'	Spoon refusal at 34.1'
MW-86-28		MW86-9	MW-9	9/9/1986	2.7' STICK	13'	3 - 13'	2" PVC	2.9 - 4.1'	Rollar bit refusal at 34.9'
		MW86-10	MW-10	9/23/1986	2.2' STICK	14'	4 - 14'	2" PVC	5.1 - 6.4'	Spoon refusal at 18.1'
		~~MW86-11~~	-	~~9/16/1986~~	-	~~102'~~	-	-	-	~~Fish tail bit refusal at 102'~~
		MW86-11A	MW-11	9/22/1986	2.3' STICK	14'	4 - 14'	2" PVC	7.2 - 9.8'	
MW-12		MW86-12	MW-12	9/12/1986	2.2' STICK	18'	8 - 18'	2" PVC	11.3 - 12.8'	Spoon refusal at 48.4'
MW-86-29		MW86-13	MW-13S	9/10/1986	2.8' STICK	13'	3 - 13'	2" PVC	1.2 - 2.4'	Boring terminated at 50.0'
		MW86-14	MW-14	12/15/1986	FLUSH	16.5'	6.5 - 16.5'	2" PVC	8.5 - 8.8'	Auger refusal at 16.7', East of Fall Kill
		MW86-15	MW-15	9/26/1986	2.2' STICK	20'	10 - 20'	2" PVC	11.5 - 13.1'	Spoon refusal at 60.4'
		MW86-16	MW-16	12/18/1986	1.9' STICK	19'	9 - 19'	2" SS	11.1 - 14.6'	Auger refusal at 19.5'
		~~MW86-17~~	-	~~1/20/1987~~	-	~~12'~~	-	-	-	~~Auger refusal at 12.0'~~
		MW86-18	MW-18	1/22/1987	3.0' STICK	17'	7 - 17'	2" SS	8.5 - 11.3'	Auger refusal at 23.0'
		MW86-19	MW-19	1/21/1987	2.3' STICK	17.3'	7.3 - 17.3'	2" SS	9.8 - 10.6'	Auger refusal at 17.5'
		MW86-20	MW-20S	1/21/1987	2.2' STICK	14.9'	4.9 - 14.9'	2" SS	8.5 - 9.8'	Spoon refusal at 15.6'
		MW86-21	MW-21	12/19/1986	1.8' STICK	19'	9 - 19'	2" SS	13.0 - 13.9'	Spoon refusal at 20.4'
		MW86-22	MW-22	1/20/1987	2.1' STICK	14.5'	9.5 - 14.5'	2" SS	8.9 - 14.3'	Auger refusal at 15.1'
		MW86-23	MW-23	1/20/1987	2.0' STICK	19.8'	9.8 - 19.8'	2" SS	12.7 - 13.0'	Boring terminated at 22.0'
		MW86-24	MW-24	1/21/1987	2.3' STICK	14.8'	4.8 - 14.8'	2" SS	5.7 - 10.9'	Boring terminated at 17.0'
MW-86-24A				Mar-99	FLUSH	15.68'		4" SS	9.64'	EPA rehab'd MW86-24
		MW86-25	MW-25S	12/2/1986	2.4' STICK	14.8'	4.8 - 14.8'	2" SS	7.0 - 7.9'	Boring terminated at 14.8'
		MW86-25B	MW-25D	12/3/1986	1.6' STICK	50.2'	26.3 - 50.2'	4" SS	7.1 - 7.6'	No screen, set in rock.
		MW86-26	MW-26S	12/3/1987	2.3' STICK	15.1'	5.1 - 15.1'	2" SS	6.8 - 7.2'	Boring terminated at 15.1'
		MW86-26D	MW-26D	1/8/1987	1.8' STICK	80.9'	70.9 - 80.9'	2" SS	6.9 - 7.4'	Boring terminated at 82.0'
		MW86-27S	MW-27S	12/5/1986	0.9' STICK	11.7'	1.7 - 11.7'	2" SS	1.8 - 2.7'	Boring terminated at 11.7'
MW-86-27		MW86-27D	MW-27D	12/29/1986	2.3' STICK	60'	50 - 60'	2" SS	2.1 - 2.7'	Auger refusal at 66.0''
		MW86-27B	MW-27B	1/13/1987	1.7' STICK	91.2'	69.2 - 91.2'	4" SS	2.1 - 2.7'	Boring terminated at 91.2'
		MW86-28	MW-28S	12/15/1986	2.2' STICK	13.8'	3.8 - 13.8'	2" SS	4.5 - 5.3'	Boring terminated at 14.7'
		MW86-28D	MW-28D	12/11/1986	1.7' STICK	28'	18 - 28'	2" SS	4.0 - 5.2'	Boring terminated at 45.8'
		MW86-29S	MW-13S	12/5/1986	1.4' STICK	11.9'	1.9 - 11.9'	2" SS	0.7 - 1.3'	Boring terminated at 11.9'
		MW86-29I	MW-29D	12/10/1986	2.3' STICK	50'	40 - 50'	2" SS	0.5 - 1.1'	Boring terminated at 52.0'
		MW86-29D	MW-29DD	12/16/1986	1.8' STICK	91.8'	81.8 - 91.8'	2" SS	0.4 - 0.9'	Boring terminated at 97.0'
		MW86-30		12/23/1986	2.0' STICK	6.8'	1.8 - 6.8'	2" PVC	DRY	Boring terminated at 6.8'
MW-99-01	MW-99-01		MW-99-01	Mar-99	FLUSH					
MW-99-02	MW-99-02		MW-99-02	Mar-99	FLUSH					
MW-99-03	MW-99-03		MW-99-03	Mar-99	FLUSH					
MW-99-04	MW-99-04		MW-99-04	Mar-99	FLUSH					

TABLE 2-2: 2013-2015 SAMPLING PLAN WELLS

DEC SM 2013 Well ID	EPA LTM 1999 Wells	RI/FS 86/87 Wells	School District 1989 Wells	Date		Depth	Screen	Type	H2O Lvl	Notes:
MW-86-1SH			HS-1	9/12/1988	3.2' STICK	16'	6-16'	2" PVC	11.87'	Hyde Park School District study
MW-86-X3			HS-4	9/13/1988	3.0' STICK	20'	10-20'	2" PVC	17.02'	
MW-86-28		MW86-9	MW-9	9/9/1986	2.7' STICK	13'	3 - 13'	2" PVC	2.9 - 4.1'	Rollar bit refusal at 34.9'
MW-12		MW86-12	MW-12	9/12/1986	2.2' STICK	18'	8 - 18'	2" PVC	11.3 - 12.8'	Spoon refusal at 48.4'
MW-86-24A				Mar-99	FLUSH	15.68'	unknown	4" SS	9.64'	EPA rehab'd MW86-24
MW-86-27		MW86-27D	MW-27D	12/29/1986	2.3' STICK	60'	50 - 60'	2" SS	2.1 - 2.7'	Auger refusal at 66.0''
MW-99-01	MW-99-01		MW-99-01	Mar-99	FLUSH	14.5'	unknown	4" SS	4'	
MW-99-02	MW-99-02		MW-99-02	Mar-99	FLUSH	18.25'	unknown	4" SS	4.13'	
MW-99-03	MW-99-03		MW-99-03	Mar-99	FLUSH	34.5'	unknown	4" SS	1"	
MW-99-04	MW-99-04		MW-99-04	Mar-99	FLUSH	39.25'	unknown	4" SS	8.96'	