

**FOURTH FIVE-YEAR REVIEW REPORT FOR
HAVILAND COMPLEX SUPERFUND SITE
DUTCHESS COUNTY, NEW YORK**



Prepared by

**U.S. Environmental Protection Agency
Region 2
New York, New York**

A handwritten signature in black ink, appearing to read "John Prince".

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LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	Contaminant of Concern
DCDOH	Dutchess County Department of Health
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FYR	Five-Year Review
HPFW	Hyde Park Fire and Water District
ICs	Institutional Controls
MCL	Maximum Contaminant Level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
OU	Operable Unit
ppb	Parts per Billion
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objectives
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
TBC	To be considered
VOC	Volatile Organic Compound

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the fourth FYR for the Haviland Complex Superfund Site. The triggering action for this FYR is the signature date of the third FYR report, which was July 30, 2012. The FYR has been prepared due to the fact that hazardous substances, pollutants or contaminants remain on site above levels that allow for unlimited use and unrestricted exposure.

The Site remedial action consists of one Operable Unit which will be addressed in this FYR. The initial remedial action consisted of source control, which was completed in 1990. The remedy for groundwater contamination is natural attenuation.

The Haviland Complex Superfund Site FYR was led by Remedial Project Manager Kevin Willis of EPA. Participants included Rachel Griffiths, Hydrogeologist at EPA, Abbey States, Risk Assessor at EPA, and David Gardner, Project Manager at the New York State Department of Environmental Protection (NYSDEC).

Site Background

The site mainly consists of a plume of contaminated groundwater found in the vicinity of a 275-acre area which includes the Haviland Complex Apartments, the Hyde Park Middle School, the Smith School, the Haviland Shopping Center, and approximately 35 residences and small businesses located east of Route 9G in the Village of Hyde Park, New York (Figure 1). The Village of Hyde Park has an estimated population of 21,000 residents. Of these residents, most are served by a public water supply system. A small percentage of the population obtains their water from residential wells. Groundwater in the study area flows southeasterly and discharges into Fall Kill Creek.

The subsurface geology of the area shows glacial deposits overlaying eroded bedrock. The bedrock surface consists of southerly dipping trenches that control the groundwater flow before being influenced by Fall Kill Creek. Bedrock is exposed immediately north of the site and dips downwardly to the south. Outwash/till overlays the shallow bedrock which constitutes the aquifer which individual home water wells utilize in the area.

History of Contamination

The Dutchess County Department of Health (DCDOH) began receiving complaints concerning groundwater quality in the site area in October 1981. A sampling program and septic system survey of the Haviland Complex area was initiated by DCDOH in December 1981. The results indicated that the Haviland Laundromat and Dry Cleaner and the Haviland Car Wash septic systems were not functioning adequately. Consequently, the car wash installed a new septic tank and the laundromat installed a pre-treatment system and a new tile field as corrective measures.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Haviland Complex Superfund Site		
EPA ID: NYD980785661		
Region: 2	State: NY	City/County: Hyde Park, Dutchess County
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA <i>[If "Other Federal Agency", enter Agency name]:</i>		
Author name (Federal or State Project Manager): Kevin Willis		
Author affiliation: Remedial Project Manager		
Review period: 6/30/2012 to 5/20/2017		
Date of site inspection: 12/22/2016		
Type of review: Policy		
Review number: 4		
Triggering action date: 7/30/2012		
Due date (five years after triggering action date): 7/30/2017		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

Initial Response

In 1988, EPA retained the services of Ebasco, Inc. to conduct a Summary of Groundwater Investigations at the site, which was completed in March 1991. Analysis of groundwater at the site indicated groundwater was contaminated primarily by tetrachloroethylene (PCE). Chlorobenzene was observed at elevated levels but it was determined that it was not a site-related contaminant. The results of the baseline risk assessment indicated that, if used as a supply of household water, the groundwater at the site posed unacceptable risks to human health and the environment.

Response Actions

In December 1982, New York State Department of Health (NYSDOH) began sampling the Haviland area groundwater for contamination. The sampling data indicated that levels of PCE and dichloroethene (DCE) in the septic discharge from the laundromat exceeded 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 pre-approved disposal facility. All residents in the area were notified of the situation and were advised to use bottled water. Water treatment units were installed on wells servicing the Haviland Apartments and the laundromat in 1984 and 1985, respectively, to remove organic contaminants. In February 1989, the NYSDEC installed individual activated-carbon treatment systems on homes with well water which exceeded drinking water standards.

Based on the results of the RI/FS, a Record of Decision (ROD) was signed on September 30, 1987, identifying the following remedy:

- o Connect affected and potentially affected residents using groundwater within the Haviland study area to the Harbour Hills water distribution System.
- o Restore the aquifer to drinking water quality by extracting and treating contaminated ground water and discharging the effluent to surface water.
- o Implement source control measures consisting of pumping and cleaning out contaminated sediments from local septic disposal systems in order to minimize the potential of additional releases.
- o Implement a monitoring program to ensure the effectiveness of the extraction/treatment alternative and the protection of public health and the environment.

Subsequent to the ROD, there was difficulty in agreeing on the source of the alternate water supply. On several occasions, Town of Hyde Park officials requested that EPA re-evaluate the source of the drinking water supply to be utilized for the drinking water

system. In addition, since the signing of the ROD, levels of groundwater contamination had decreased significantly. Residential well sampling data also indicated that levels of contaminants entering impacted residential wells decreased. It was determined that additional sampling and modeling of the groundwater regime was warranted. Consequently, EPA and NYSDEC decided to reevaluate the need for an alternate supply of public water in the area and the need for a groundwater extraction and treatment system. Studies found that the extraction and treatment of groundwater and the provision of a public water system did not need to be implemented to ensure the protection of human health and the environment.

Subsequently, a Record of Decision Amendment was issued on August 1, 1997. The remedial action objectives were the following:

- protect human health by ensuring residents are not exposed to contaminated groundwater;
- reduce groundwater contamination levels to drinking water standards; and
- protect human health by ensuring residents are not exposed to contaminated residential well water.

The major components of the modification to the selected remedy include:

- Continued use of existing whole-house groundwater treatment systems on affected residences to prevent exposure to low level groundwater contamination.
- Maintenance of filters and semi-annual monitoring of homes affected by low level contamination present in the aquifer until three consecutive years of sampling indicate that the well water meets Federal and State drinking water standards.
- Elimination of the public water supply system portion of the 1987 selected remedy.
- Natural attenuation of contaminants in the aquifer to below Federal and State drinking water standards.
- Elimination of the groundwater extraction and treatment system portion of the 1987 selected remedy.
- Implementation of a groundwater monitoring program.

Status of Implementation

The septic tanks at the Haviland Complex and the Haviland Middle School were cleaned by EPA in 1991. This action was described in a 1991 Remedial Action Report.

In response to requests by local residents made during the public comment period before the 1997 ROD Amendment was signed, monitoring wells were installed by EPA in 1998 to observe any changes in the aquifer before the groundwater reached the potable wells. These wells have been sampled by EPA annually since their installation.

Although EPA eliminated the public water supply portion of the remedy, the DCDOH decided to connect homes in the area to a public water supply. In spring 1998, DCDOH acquired the public water portion of Hyde Park Fire and Water District (HPF). DCDOH determined that it would be appropriate to connect the Town of Poughkeepsie public water system to the HPF system. By December 1998, DCDOH decided that the Harbour Hills Water District would also benefit from connecting into the larger system. The Request for Bids (RFB) to design the water system construction was sent out immediately thereafter and the RFB for the construction was issued in July 2001. Construction of the system began September 2001 and was completed in August 2002.

NYSDEC was informed that the DCDOH 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. NYSDEC connected the site-affected homes to the public water system on August 30, 2002. Thereafter maintenance and semi-annual monitoring of homes affected by low level contamination was no longer needed.

IC Summary Table

Table 1: Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	No	No	Entire site	Use of groundwater in Dutchess County is actively protected by Dutchess County DOH	Dutchess County Sanitary Code: Article XVI, Sec. 16.4. Also, New York State Sanitary Code 10 NYCRR Part 5, Subpart 5-2

Systems Operations/Operation & Maintenance

The responsibility to perform maintenance and monitoring of the monitoring well network at the Haviland site was then transferred to NYSDEC in June 2012.

Potential site impacts from climate change have been assessed, and the performance of the remedy is currently not at risk due to the expected effects of climate change in the region and near the site.

III. PROGRESS SINCE THE LAST REVIEW

This is the fourth five-year review for this site. The last five-year review was completed in July 2012. The five-year review found the implemented remedy was protective of human health and the environment. No issues or recommendations were identified.

As noted above, the responsibility for overseeing the site remediation was transferred to NYSDEC in 2012. NYSDEC sampled the site in 2013, 2014 and 2015, but had not sampled in 2016 or 2017. In order to have recent data for this Five-Year Review, EPA sampled the site wells in March 2017. NYSDEC sampled the wells in May 2017 and will evaluate the frequency of future sampling events after reviewing the 2017 sampling data.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On November 14, 2016, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at 38 Superfund sites in New York and New Jersey, including the Haviland Complex Superfund site. The announcement can be found at the following web address: https://www.epa.gov/sites/production/files/2016-11/documents/five_year_reviews_fy2017_final.pdf.

In addition to this notification, EPA published a public notice of the performance of the third five-year review for the Haviland Complex Superfund site on EPA's Haviland Complex site webpage as well as on the Town of Hyde Park's website. The announcement indicated that EPA is conducting a fourth five-year review of the remedy for the Site to ensure that the implemented remedy remains protective of public health and the environment and is functioning as intended. Once the five-year review is completed, the results will be made available at the local Site repository, Town of Hyde Park Town Hall, 4383 Albany Post Road, Hyde Park, NY 12538.

Document Review

The relevant documents and reports which were reviewed in the process of completing this five-year review are included in Table 2.

Data Review

The groundwater monitoring network (Figure 1) includes monitoring wells screened in the overburden and shallow bedrock zones of the aquifer. The primary groundwater contaminants of concern (COCs) identified in the 1987 ROD included trichloroethylene (TCE), DCE, toluene, benzene, and vinyl chloride, as well as heavy metals (specifically cadmium, chromium, mercury, and lead). The ROD indicated that groundwater would be

restored to drinking water standards. Subsequent to the ROD, chlorobenzene was identified more frequently in wells. A 1997 ROD Amendment retained the original VOC COCs; however, the heavy metals were not retained as COCs because three sampling events performed from 1992 to 1994 did not indicate the presence of site related metals to be present above standards. In addition, as noted in the 1997 ROD amendment, site related metals contamination had not been observed in any of the potable wells in the study area. The contamination observed in the site monitoring wells has continually been diminishing and the TCE, DCE, toluene, benzene, vinyl chloride, chlorobenzene and the heavy metals have not been detected in any wells above Federal Maximum Contaminant Levels (MCLs) since 1991.

Over the past five years, PCE levels have been fluctuating slightly above or below its MCL in two wells, MW-99-02 and MW-86-24A. The two locations where PCE sporadically exceeds its MCL are delineated and monitoring points hydraulically downgradient do not show impacts, therefore, this contamination is determined to be isolated. In the most recent round of sampling conducted in March 2017, all COCs were below MCLs for all sampling locations. The highest detected concentration of PCE in this review period was 5.7 ug/L at MW-99-02 in May 2013, marginally exceeding the State and Federal MCL of 5 ug/L. Since the contaminant concentrations in the aquifer within the study area continue to diminish, it has been concluded that natural attenuation is occurring at the site. The general trend of PCE concentrations continues to be downward (Figure 2), and sampling will continue until all contaminants of concern are observed to remain below MCLs for multiple consecutive rounds of sampling.

Chlorobenzene has been below the EPA MCL of 100 ppb and above the NYSDEC MCL of 5 ppb, and remains above the State standard in MW-99-01 at 11 ppb.

Site Inspection

A site inspection was conducted on December 22, 2016. Kevin Willis, EPA Remedial Project Manager, walked the site and observed no problems related to the site actions.

Interviews

Mr. Willis discussed the site with Ann Fadgen, Facilities and Operations at the Hyde Park Central School District. Ms. Fadgen expressed no concern about the site.

Institutional Controls Verification and Effectiveness

There are no institutional controls that were selected as part of the remedial action and none are needed during the time period of groundwater remediation. The connection of all buildings above the contaminated plume to a public water supply provides an adequate protection against exposure. Local groundwater is no longer used as a potable water supply. In addition, there are extra layers of protection provided by local government. Any well drilling in the area 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."

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

The remedy is functioning as intended. The August 1, 1997 ROD Amendment called for natural attenuation of groundwater contamination to below State and Federal drinking water standards. The Site COCs are attenuating and concentrations have decreased in the wells sampled as part of the long-term groundwater monitoring program.

Concentrations of COCs identified in the 1987 ROD are generally non-detect, or at very low levels, and have not exceeded State or Federal MCLs during the review period, with the exception of low fluctuating PCE concentrations at MW-99-02 and MW-86-24A. Although PCE in these two wells has been observed above the MCL, the impacted area is delineated and no one is using this water as a source of drinking water. As noted above, chlorobenzene has been below the Federal MCL of 100 in all wells, but slightly above the state MCL of 5 ppb (as low as 7 ppb, but most recently 11 ppb) in one well. As indicated in the 1987 ROD surface water samples collected from the Fall Kill indicated that there was no significant impact by the groundwater contamination. Therefore, it appears that the remedy is functioning for ecological receptors.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

Although specific parameters may have changed since the time the risk assessment was completed, the process that was used remains valid and is not expected to affect the remedy. There have been no physical changes to the site that would adversely affect the protectiveness of the remedy. The exposure assumptions, toxicity data, cleanup levels, and remedial action objectives identified for the site remain valid. The MCLs for TCE and PCE remain unchanged at 5 ug/L despite EPA's updated IRIS toxicological profiles for the contaminants.

The risk assessment process has changed somewhat since the original risk assessment was performed in 1996. In order to account for changes in toxicity values and exposure assumptions since the baseline human health risk assessment was performed, the maximum detected concentrations of the COCs identified during the last five years of sampling were compared to their respective Regional Screening Levels (RSLs), New York State Department of Environmental Conservation Water Quality Regulations Parts 700-706, and National Primary Drinking Water Standard MCLs (Table 4). The MCL is the highest level of contaminant that is allowed in drinking water. MCLs are promulgated

standards that apply to public water systems and are intended to protect human health by limiting the levels of contaminants in drinking water. RSLs are a human health risk-based value that is equivalent to a cancer risk of 1×10^{-6} or a hazard index of 1 (Table 4). The results indicate that chlorobenzene and PCE have exceeded their respective screening criteria in groundwater during the five-year review period. However, in the two most recent rounds of sampling (March 2017 and May 2015), neither contaminant exceeded their respective Federal MCLs.

Soil vapor intrusion was evaluated as a potential future exposure pathway in the 2002 FYR. It was determined at that time and in subsequent FYRs that the risks associated with this exposure pathway were not of concern due to the low levels of volatile contaminants present in the site groundwater. In order to confirm the protectiveness of this decision, monitoring well results collected during the five-year review period were compared to EPA's vapor intrusion screening levels for groundwater (set at a cancer risk of 10^{-6} and HQ of 1). There were no screening level exceedances, therefore, it is unlikely that this pathway would be a concern in the future.

While a formal ecological risk assessment was not performed during the RI/FS, surface water samples collected from the Fall Kill during the RI do not indicate any significant impact from the plume from discharge of groundwater. Therefore, there were no significant exposure routes for ecological receptors.

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

There is no other information that calls into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
None

This report does not identify any issue or recommend any action at this site needed to protect public health and/or the environment.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)

Operable Unit:

Protectiveness Determination:
Protective

*Planned Addendum
Completion Date:*
[Click here to enter a date](#)

Protectiveness Statement:

The implemented remedy for the Haviland Complex Superfund Site is protective of human health and the environment.

Sitewide Protectiveness Statement

Protectiveness Determination:
Protective

*Planned Addendum
Completion Date:*
[Click here to enter a date](#)

Protectiveness Statement: The implemented remedy for the Haviland Complex Superfund Site is protective of human health and the environment.

VIII. NEXT REVIEW

The next five-year review for the Haviland Complex Superfund Site should be completed within five years of the date of this five-year review.

APPENDIX

Figure 1 - Site Map

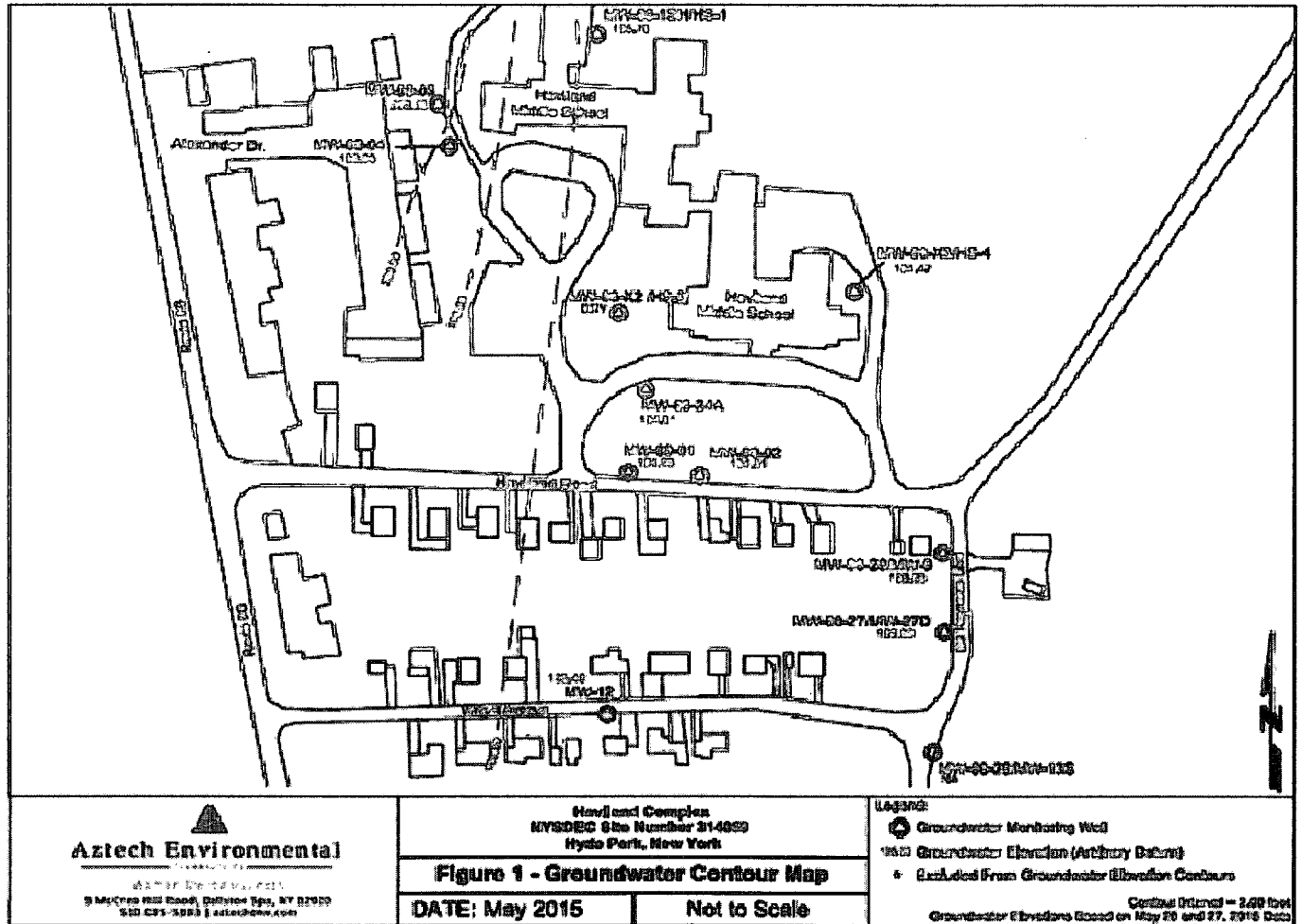


Figure 2

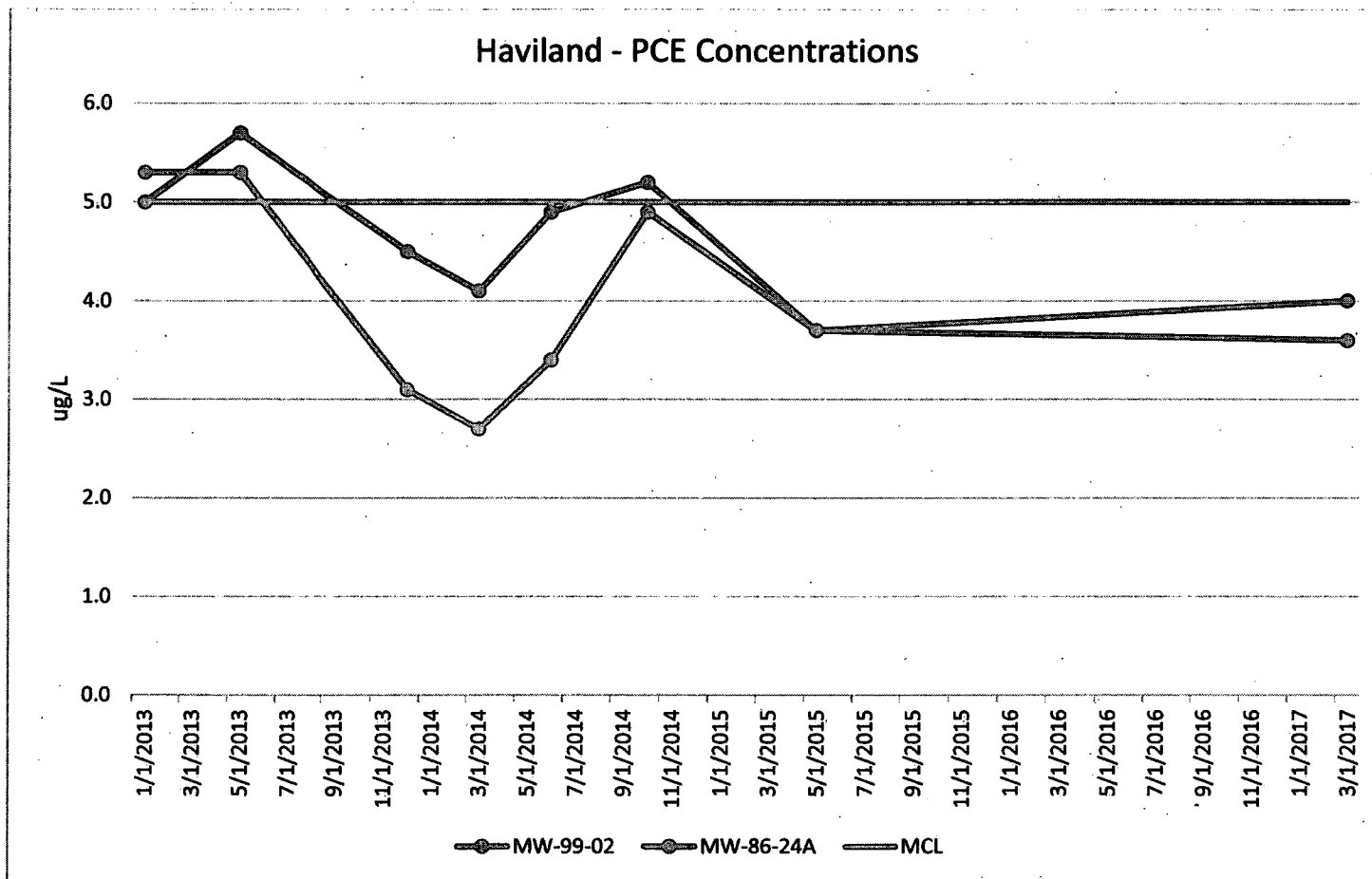


Table 2 - Chronology of Site Events

Event	Date
Volatile organic compounds detected at Haviland Complex	1982
Site placed on National Priorities List	1986
Record of Decision	1987
Remedial Design started	1988
Residential water treatment units installed	1989
Septic system cleaning	1991
Record of Decision Amendment	1997
Installation of additional monitoring wells	1998
County installs public water system	2002
NYSDEC connects Haviland Road residents to Public water system and removes carbon filters	2002
First five-year review	2002
Second five-year review	2007
Third five-year review	2012
Transfer responsibility for the site	2012
Fourth Five Year Review	2017

Table 3 - Documents, Data, and Information Reviewed in Completing the Five-Year Review	
Document Title, Author	Submittal Date
Remedial Investigation/Feasibility Study	1987
Record of Decision, EPA	1987
Record of Decision Amendment, EPA	1997
Groundwater data collected by EPA/DESA	2002 -2012; 2017
Groundwater data collected by NYSDEC	2013 -2015
EPA guidance for conducting five-year reviews and other EPA guidances and regulations to determine if any new Applicable or Relevant and Appropriate Requirements relating to the protectiveness of the remedy were developed since EPA issued the ROD.	

Table 4 – Site Contaminant Maximum Detections During Review Period

COC	Maximum Detected Concentration (ug/l)	EPA Regional Screening Level (ug/l) Cancer risk = 1×10^{-6} Non-cancer hazard = 1	National Primary Drinking Water Standard (ug/l)	NYSDEC Groundwater Quality Criteria (ug/l)	Location	Date
Cis-1,2-DCE	2.1	36 (nc)	70	5	99-02	2014
Chlorobenzene	17	78 (nc)	100	5	99-01	2013
PCE	5.7	11 (c)	5	5	86-24A	2013
TCE	1.9	0.49 (c)	5	5	86-24A	2014
Chloroform	4.5	0.22 (c)	--	7	86-24A	2013
1,2-Dichlorobenzene	3.7	300 (nc)	600	4.7	99-01	2013
1,3-Dichlorobenzene	3.4	--	--	5	99-01	2014
1,4-Dichlorobenzene	3.0	0.48 (c)	75	5	99-01	2013