

**THIRD FIVE-YEAR REVIEW REPORT FOR
MONTGOMERY TOWNSHIP HOUSING DEVELOPMENT AND ROCKY HILL MUNICIPAL
WELL SUPERFUND SITES
Somerset County, New Jersey**



Prepared by

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

Evangelista, Pat

Digitally signed by Evangelista,
Pat
Date: 2020.07.29 14:01:11 -04'00'

**Pat Evangelista, Director
Superfund and Emergency Management Division**

See Signature Block

Date

Table of Contents

LIST OF ABBREVIATIONS & ACRONYMS	2
I. INTRODUCTION	3
FIVE-YEAR REVIEW SUMMARY FORM	4
II. RESPONSE ACTION SUMMARY	5
Basis for Taking Action	5
Response Actions	5
Status of Implementation.....	6
Systems Operations/Operation & Maintenance	7
III. PROGRESS SINCE THE LAST REVIEW	8
IV. FIVE-YEAR REVIEW PROCESS	9
Community Notification, Involvement & Site Interviews	9
Data Review	9
Site Inspection	11
V. TECHNICAL ASSESSMENT	12
QUESTION A: Is the remedy functioning as intended by the decision documents?	12
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?	12
QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?	13
VI. ISSUES/RECOMMENDATIONS	13
VII. PROTECTIVENESS STATEMENT	13
VIII. NEXT REVIEW	14
APPENDIX A – Tables	15
APPENDIX B – Figures	17

LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CEA	Classification Exemption Area
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
1,1-DCA	1,1-dichloroethane
DPE	Dual Phase Extraction
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FS	Feasibility Study
FYR	Five-Year Review
HI	Hazard Index
MCL	Maximum Contaminant Level
MW	Monitoring Wells
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NJDEP	New Jersey Department of Environmental Protection
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PRP	Potentially Responsible Parties
RAO	Remedial Action Objectives
RD	Remedial Design
RI	Remedial Investigation
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
SVOCs	Semi-volatile organic compounds
TAL	Target Analyte List
TBC	To be considered
TCL	Target Compound List
UU/EE	Unlimited use and unrestricted exposure
VOCs	Volatile Organic Compounds
ug/l	Micrograms/liter

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 pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the third FYR for the Montgomery Township Housing Development (MTHD) and Rocky Hill Municipal Well (RHMW) Superfund Sites (Sites). The triggering action for this policy review is the September 14, 2016 completion date of the previous FYR for the Site. This FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

MTHD has two operable units (OUs) and RHMW has one OU. MTHD OU1 addressed potential exposure to groundwater contaminants and provided alternative water supply to impacted residences. MTHD OU1 is completed. MTHD OU2 and RHMW OU1 address groundwater contamination in the underlying aquifer beneath both sites. Contaminated groundwater in the aquifer beneath the MTHD and RHMW Sites is addressed by a single remedy, designated as MTHD OU2 and RHMW OU1, and these OUs are the subject of this FYR.

The Sites' third FYR team included Michelle Granger, EPA (remedial project manager); David Edgerton, EPA (hydrogeologist); Urszula Filipowicz, EPA (human health risk assessor); Michael Clementson, EPA (ecological risk assessor); and Pat Seppi, EPA (community involvement coordinator). The potentially responsible parties (PRPs) and the local government officials were notified of the initiation of the 5YR. The review began on 7/24/2019.

Site Background

The RHMW/MTHD Superfund Sites (See Figure 1 – Site Location Map) are located adjacent to one another in the Borough of Rocky Hill and in Montgomery Township, respectively, west of the Millstone River in the southern part of Somerset County, New Jersey. The RHMW site is located on approximately two acres of land situated east of New Jersey State Route 206 and directly south of Route 518. The MTHD site includes 71 one-acre residential lots located in Montgomery Township and six additional residences nearby. The area surrounding the Sites consists of wooded areas and residential and commercial development.

RHMW wells numbered 1 and 2 were constructed in 1936. These two wells provided a source of potable water to the Borough of Rocky Hill. Well number 1 was abandoned and sealed between 1976 and 1978. Due to the elevated levels of TCE in groundwater, well number 2 was closed in November 1979. Levels of TCE in the well water eventually declined, and the well was

subsequently reopened. Levels of TCE, however, increased, and the well was closed for a second time in January 1982. After the installation of two air stripping units by the Borough for well number 2, the well reopened as a potable source of water in July 1983, and has been operating ever since.

Groundwater at both sites is contaminated with volatile organic compounds (VOCs) and TCE in particular. Although the RHMW and MTHD Sites were listed separately on the National Priority List (NPL) in 1983, they are being addressed jointly due to similarity of contaminants and their close proximity to each other.

For more details related to the Site background, physical characteristics, geology/hydrogeology, and land/resource please see the documents found in the Site repositories or at <https://www.epa.gov/superfund/montgomery-township> or <https://www.epa.gov/superfund/rocky-hill-well> (see section on webpage titled Site Documents and Data).

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Montgomery Township Housing Development Rocky Hill Municipal Well		
EPA ID: MTHD NJD980654164 RHMW NJD980654156		
Region: 2	State: NJ	City/County: Somerset County
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Michelle Granger		
Author affiliation: United States Environmental Protection Agency		
Review period: 2/1/2016 – 6/25/2019		
Date of site inspection: 12/19/2019		
Type of review: Policy		
Review number: 3		

Triggering action date: 9/14/2016
Due date (five years after triggering action date): 9/14/2021

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

Since the site characterization determined that soils and surface waters are not currently being impacted by site related contamination, exposure to soils and surface waters was not included in the health assessment of the MTHD/RHMW sites. Thus, the risk assessment only considered exposure to contaminated groundwater through potable uses.

The 1988 ROD noted that data collected in the RI indicated that many of the compounds used in estimating the risk were sporadically detected and not site related (specifically inorganics and chlordane), thereby negating these compounds. The risk assessment concluded that the site-related contaminants of concern are TCE and Tetrachloroethene (PCE).

The health assessments for the MTHD/RHMW sites indicated that exposure to contaminated site groundwater via potable uses would result in lifetime cancer risk and noncancer hazard estimates that exceeded EPA's threshold criteria.

Response Actions

In 1984, NJDEP entered into a Cooperative Agreement with EPA under which it performed the remedial investigation and feasibility study (RI/FS) for the RHMW and MTHD Sites.

In 1985, NJDEP began conducting the RI/FS for the Sites. The RI included groundwater, surface water and stream sediment, septic tank, soil, and air sampling. In January 1986, the NJDEP Division of Water Resources placed a restriction on future well drilling for water supply in the area. In April 1988, NJDEP issued an RI report which identified the nature and extent of the groundwater contamination and concluded that the source of groundwater contamination to the RHMW and MTHD Sites was at or in the vicinity of the Princeton Gamma-Tech, Inc. (PGT) facility located on Route 518 in Montgomery Township. In the 1970's, PGT used a septic system to dispose of sanitary and lab sink waste. Septic tank samples at this property identified the presence of TCE at levels as high as 5,000 ppb. The tank was tested by NJDEP and removed from the property following a spill in 1980. The RI/FS reported results for 28 soil samples taken at the PGT property, none of which showed TCE contamination.

Concentrations of TCE found in the major source area of groundwater contamination in the PGT property well (PGTMW-1) had decreased from 5,000 ppb in the 1980s to 1,800 ppb of TCE by 1992. The maximum concentration of TCE in the well continued to decline over the next six years to 320 ppb. The above information indicates that the past septic tank discharge was the source of the contamination found in the shallow groundwater. The sediment and surface water samples collected from Beden Brook and the Millstone River did not contain any of the site contamination.

Remedy Selection

MTHD - OUI Remedy Selection

Following completion of the RI/FS, a Record of Decision (ROD) was issued by EPA in September 1987 that called for an alternate water supply to be provided for residents of the MTHD by installing waterline extensions and connections and sealing of abandoned private wells. The remedy for MTHD OU1 is complete. This OU is not part of this FYR.

MTHD OU2 and RHMW OUI Remedy Selection

EPA issued two RODs, in June 1988 for both the MTHD and RHMW Sites. The Remedial Action Objective (RAO) specified in the RODs is to reduce groundwater contaminants to levels that are protective of human health. The objective of the selected remediation alternative is to reduce the entire groundwater concentration of TCE to one (1) ppb. PCE and 1,1 -dichloroethene (1,1 DCE) also have a remedial objective of reducing such concentrations to below 1 ppb and 2 ppb, respectively. The remedies called for:

- the extraction of contaminated groundwater from the primary source areas, (where TCE is approximately greater than 100 ppb) within the contaminant plume, followed by on-site treatment and reinjection of the treated water back into the underlying aquifer;
- connection of any remaining affected residences to the public water supply;
- sealing of private water supplies within the contaminant plume; and
- implementation of a groundwater sampling program to monitor the effectiveness of the cleanup.

The less contaminated ground water in the secondary plume limits (where TCE concentrations are less than 100 ppb) will be permitted to attenuate through natural means. The former Fifth Dimension (FFD) was determined to be the source of the secondary plume. VOC concentrations and natural attenuation parameters will be monitored in the secondary plume on a regular basis as part of the long-term groundwater sampling program.

Status of Implementation

MTHD OU2 and RHMW OUI

Following completion of remedial design activities in August 2003, the USACE awarded a contract for the construction and operation of two groundwater treatment systems to Cape Environmental.

Construction activities for the remedy began on March 15, 2004. Construction activities included the installation of eight recovery wells and the construction of two treatment plants.

One of the targeted remediation zones is the primary source area located on the property at 1377 Route 206. Ground Water Treatment Facility #1 (GWTF #1) and its three pairs of recovery wells were constructed at this location. The targeted remediation zone for this area of the plume extends vertically from 50 feet to 200 feet below ground surface and is enclosed horizontally by the 100 ppb TCE isoconcentration contour. The objective of the capture zone was to achieve capture of the targeted remediation zone. Two of the three pairs of wells generated adequate amounts of water that produced a flow rate of 56 gallons per minute into the treatment plant. The third pair, recovery well 3S and recovery well 3D, were not productive and were converted into monitoring wells in 2005.

A second smaller primary source area is located to the south underlying the Princeton Gamma Tech property near the intersection of Routes 206 and 514. Two recovery wells were installed on this property. These two wells were constructed to extract groundwater within the primary source area underlying this property that extends vertically between 25 to 100 feet below ground surface within the weathered bedrock and shallow bedrock aquifer. These two recovery wells pump a total six gallons per minute of extracted groundwater into a portable trailer-mounted treatment unit known as GWTF #2. This treatment unit, similar to GWTF #1, uses GAC to treat extracted groundwater and discharges treated water to a surface water body via a storm sewer.

Construction activities of the recovery wells, a number of additional monitoring wells, and GWTF #1 and #2 were completed on January 11, 2005. The ROD specified treatment by air stripping and reinjection of the treated water back into the underlying aquifer. The surface water discharge via connection to the existing storm water sewers was chosen as the preferred option for effluent disposal. The change in the treatment and discharge components to the remedy have been documented in an Explanation of Significant Differences (ESD) issued by EPA in August 2005. NJDEP was consulted and approved the surface discharge of treated water. The two treatment plants have been running continuously since January 2005. GWTF #1 is currently pumping contaminated water from the aquifer at a flow rate of 55.4 gallons per minute (gpm). GWTF #2, located on the Princeton Gamma Tech property, is currently pumping at a flow rate of 9.5 gpm.

Systems Operations/Operation & Maintenance

A Final Operations and Maintenance Manual was approved in January 2006.

GWTF #1 and GWTF #2 currently operate at a combined flow of 65 gallons per minute (gpm) extracting groundwater from the two primary source areas. Approximately 400 million gallons of contaminated groundwater have been pumped from the primary source areas and have been treated and discharged to date.

During this review period, groundwater monitoring in the primary and secondary source plume areas has been conducted on an annual basis. The groundwater samples were analyzed for target compound list (TCL) volatile organic compounds (VOCs). Natural attenuation parameters (methane/ethene/ethane, total organic carbon, chloride, ferrous iron, total alkalinity, sulfate, and nitrate/nitrite) are monitored in the secondary plume every five years as part of the long-term groundwater sampling program.

Based on groundwater concentrations of site-related chemicals that exceeded conservative screening values presented in the draft 2002 guidance, "Evaluating the Vapor Intrusion into Indoor Air" (USPEA), a vapor intrusion investigation was initiated in 2006. Four rounds of sub-slab and /or indoor VOC analyses were conducted for the sites to date (see Section VI Technical Assessment, Question B for details on the vapor intrusion investigation conducted). To ensure protectiveness, ongoing sampling and monitoring of both sub-slab and indoor VOCs is being conducted periodically for the commercial stores located within the shopping center.

Site inspections are conducted by the USACE and their contractor regularly to ensure that the fence is in good repair and to look for signs of trespass. Any deficiencies which may be noted, such as plant growth requiring clearing and grubbing or removal of debris and minor fence repair, are addressed quickly by the USACE.

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.

Institutional Control Verification

On June 6, 2014, a Classification Exception Area (CEA) was established by NJDEP within the area of groundwater contamination to regulate the installation of additional wells within the contaminated groundwater plume. The CEA remains in place.

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the current status of those recommendations.

Protectiveness Determinations/Statements from the 2016 FYR

OU #	Protectiveness Determination	Protectiveness Statement
02 -MTHD 01-RHMW	Protective	The remedy for the MTHD OU2 and RHMW OU1 Sites is protective of human health and the environment.

There were no issues and recommendations in the last FYR.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On October 1, 2019, the EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at Superfund sites in New York, New Jersey, Puerto Rico, and the U.S. Virgin Islands, including the MTHD and RHMW sites. The announcement can be found at the following web address: <https://www.epa.gov/aboutepa/fiscal-year-2020-five-year-reviews>.

In addition to this notification, a public notice was made available on 3/13/2020, stating that EPA is conducting a FYR for the site. This public notice can be found on the following webpage:

<https://twp.montgomery.nj.us/wp-content/uploads/2020/03/MRH2020-FIVE-YEAR-REVIEW-NOTICE-MRH-1.pdf>.

The results of the review, as described in this report, will be available at

<https://www.epa.gov/superfund/montgomery-township>

and

<https://www.epa.gov/superfund/rocky-hill-well>

as well as the Site repositories which are located at the Mary Jacobs Library, 64 Washington Street, Rocky Hill, New Jersey and the EPA Region 2 offices, 290 Broadway- 18th floor, New York, New York 10007-1866.

Data Review

This FYR focuses on analyzing groundwater data collected from this review period (2016-2019). The groundwater samples were analyzed for volatile organic compounds (VOCs) in the primary and secondary source areas. Natural attenuation parameters are monitored every five years. During this review period natural attenuation monitoring was conducted in 2019.

GWTF #1 and GWTF #2 (Primary Plume Areas)

Eight monitoring wells within the GWTF#1 area capture zone (See Figure 2) and ten monitoring within the GWTF#2 area capture zone were sampled during the FYR period.

Overall since 2010, groundwater sampling results in the primary plume continue to indicate a general decline in levels of TCE for GWTF #1 with few exceptions. In monitoring well MW-17, TCE and PCE concentrations fluctuated during the review period, but in general the concentrations were stable or decreased (See Table 1). The monitoring well is located immediately downgradient from the Montgomery Shopping Center complex building but is

within the capture zone of GWTF #1. During the most recent sampling event in May 2019, the maximum TCE detection in groundwater was 20 ppb at MW-30D and the maximum PCE detection was in groundwater 55 ppb at MW-04D. Groundwater sampling results within the capture zone for GWTF #2 indicate general decreasing trends in TCE and PCE as well (See Table 1). The PGT-MW-01 TCE concentrations declined below 100 ppb during the reporting period. PGT-MW-01 and MW-20S were the only wells that had a TCE concentrations above 20 ppb; at a concentration of 29 ppb and 75 ppb respectively. EPA will continue to regularly monitor the concentrations of TCE and PCE in the area. This is a decrease in concentration from the previous reporting period, if the concentrations increase, further evaluation may be warranted.

During this reporting period, groundwater sampling results for 1,1-DCE and vinyl chloride were generally non-detect with the exception of MW-15D. In May 2018 and May 2019, 1,1-DCE was detected at 0.91 and 2.1 ppb, respectively. The cis-1,2-DCE detections fluctuated above 10 ppb during the reporting period for PGT-MW-01 (69 ppb in March 2016, 48 ppb in June 2016, 54 ppb in June 2017, 44 ppb in May 2018, and 25 ppb in May 2019). The concentrations of cis-1,2-DCE, and other daughter products of PCE and TCE dechlorination are not showing increases in correlation with decreased PCE and TCE concentrations at the wells, indicating that the level of the daughter product concentrations are not the result of anaerobic reductive dechlorination (ARD).

GWTF #1 and #2 operations have either reduced or eliminated the primary TCE plumes. TCE was not detected above 100 ppb in any of the monitoring wells around GWTF #1. TCE was detected above 100 ppb in only one monitoring well (250 µg/L at PGT-MW-01) located adjacent to extraction well RW-4 at GWTF #2. Groundwater from PGT-MW-01 is captured by GWTF #2. The primary TCE plume at GWTF #2 has been reduced to a small disk centered on RW-4. See Figure 3 for further detail of the TCE plume. In the primary plume area, TCE and PCE will be treated to the selected site cleanup standard of 1 ppb.

In January 2018, NJDEP adopted a groundwater quality standard (NJ GWQS) for 1,4-dioxane of 0.4 ug/L. To ensure protectiveness, sampling for 1,4-dioxane was initiated at the site on a monthly basis starting April 2016 until June 2017. Thereafter, the sampling frequency was switched to an annual basis. Data collected from GWTF #1 and #2 effluent indicate that 1,4-dioxane has been undetected during the most recent June 2017, May 2018 and May 2019 sampling rounds. Prior to this sampling, the monthly sampling showed low level detections ranging from 0.21 to 0.62 ug/L of 1,4-dioxane.

Secondary Plume Areas

Secondary plume data indicates PCE concentrations generally remained at or below the NJGWQS throughout the five-year period. One exception was the PCE concentrations at MW-23D; they ranged from 2.5 ppb in June 2016 to 5.9 ppb in May 2019, which is within the historical PCE concentration range for that well. TCE concentrations in the secondary plume are either stable or decreasing since the previous FYR reporting period. FFD data indicates decreasing trends in TCE and PCE.

The concentrations of cis-1,2-DCE, and other daughter products of PCE and TCE dechlorination are not showing increases in correlation with decreased PCE and TCE concentrations at the wells, indicating that the level of the daughter product concentrations are not the result of ARD.

The secondary TCE plume has been reduced in the vicinity of both GWTFs compared to the 2002 extent of the secondary TCE plume. Attenuation of the plume is occurring (see Figure 3), and is likely occurring due to dispersion, dilution, and/or sorption.

Rocky Hill Municipal Well No. 2 is within the secondary plume. A review of RHMW number 2 influent data collected during this review period (2016 - 2019) indicates decreasing levels of TCE and stable low levels of PCE in the groundwater. The air stripping units that were installed in 1983 are still in operation.

Vapor Intrusion

To date, four rounds of vapor intrusion (VI) sampling have been collected from the Site. Most recently, in March 2018, concurrent indoor air and sub-slab sampling was collected from 5 locations within the Montgomery Township Shopping Plaza. The preceding round of VI data, collected in 2014, was discussed in Question B of the previous five-year review document.

To ensure protectiveness, detected concentrations of volatile constituents in indoor air and sub-slab samples were compared to their corresponding risk-based vapor intrusion screening levels (VISL). The VISLs are chemical- and media-specific screening values developed by the Agency in accordance with the framework for evaluation and assessing VI investigations as specified in EPA's 2015 final vapor intrusion guidance document entitled, "*OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*".

Out of the five locations sampled, detectable concentrations of PCE found in the sub-slab ranged from 1.5 ug/m³ to 210 ug/m³, while the indoor air concentrations ranged from non-detect (0.21U ug/m³) to 77 ug/m³. Out of the 5 locations, only one showed detectable concentrations of TCE at 5.1 and 6.1 ug/m³ in the sub-slab and indoor air, respectively. A review of the paired results suggest that a confounding indoor air source is likely responsible for the detections of TCE found in indoor air at this location. To ensure that the vapor intrusion pathway remains incomplete, periodic monitoring should continue.

Site Inspection

The inspection of the Site was conducted on 12/19/2019. In attendance were Michelle Granger, EPA, David Edgerton, EPA, and Tom Roche, USACE. The purpose of the inspection was to assess the protectiveness of the remedy.

V. TECHNICAL ASSESSMENT

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

Question A Summary:

The remedies for the Montgomery Township Housing Development and Rocky Hill Municipal Well sites are functioning as intended by the decision documents.

The MTHD OU2 and RHMW OU1 groundwater remedy includes extraction of the contaminated groundwater through pumping from the two most contaminated areas of the aquifer, followed by on-site treatment with liquid-phase GAC adsorption. After treatment to meet New Jersey Pollutant Discharge Equivalency System (NJPDES) requirements, the water is discharged to surface water. A groundwater sampling program to monitor the effectiveness of the cleanup was also implemented and includes an evaluation of plume attenuation outside the extraction and treatment system footprint. In addition, subslab and indoor air sampling of properties overlying the contaminated plume will continue to be performed on a periodic basis.

Groundwater sampling indicates that the pump and treat systems continue to contain and remove contamination in the two primary source areas. Outside of the capture zones, the Secondary Plume has been reduced in the vicinity of both GWTFs compared to the 2002 extent of the Secondary TCE Plume. See Figure 3.

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?

Question B Summary:

There have been no physical changes to the Sites that would adversely affect the protectiveness of the remedy. Land use assumptions, exposure assumptions and pathways, and clean up levels considered in the decision document followed risk assessment guidance used by EPA and remain valid. Although specific parameters may have changed since the time the risk assessment was completed, the process that was used remains valid.

Consistent with previous assessments, this FYR focused on two primary exposure pathways: direct ingestion of contaminated groundwater (as a potable water source) and the possibility of vapor intrusion into buildings constructed over the plume. No potential receptors are currently using the contaminated groundwater for potable purposes, ensuring direct exposure to site groundwater by current receptors has been interrupted. Further, a CEA has been established which places restrictions on future well drilling in the affected area which ensures that future use of site groundwater stays an incomplete exposure pathway.

Groundwater cleanup criteria selected at the time of the decision documents were the more stringent of the available State and Federal Maximum Contaminant Levels. The 1988 RODs stated that the objective of the remediation alternatives was to reduce the entire groundwater

concentrations of TCE to 1 ppb. The document also noted that the remediation objective (i.e., the cleanup goals) for PCE and 1,1-DCE were 1 ppb and 2 ppb, respectively. These cleanup goals remain unchanged. The cleanup goals and remedial action objectives identified in the RODs documents remain valid.

The potential for subsurface vapor intrusion (VI) into air within buildings that overlay a VOC groundwater plume is the other exposure pathway of interest evaluated as part of this FYR document. Since 2006 several rounds of VI data have been collected from residential and commercial structures within and near the sites. Results of these efforts were discussed in the previous FYRs. As part of this FYR, an additional sampling round was conducted in March of 2018. During this event, concurrent indoor air and sub-slab samples were collected from five locations of interest situated within a nearby strip mall (i.e., shopping center).

Results of paired sub-slab and indoor air samples collected at each location show detections of TCE and PCE fall within or below EPA's target cancer risk range and do not exceed the noncancer hazard threshold of 1.

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

No new information has called into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations	
OU(s) without Issues/Recommendations Identified in the Five-Year Review:	
OU2 MHTD	
OU1 RHMW	

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
<i>Operable Unit:</i>	<i>Protectiveness Determination:</i>
OU2 MHTD	Protective
OU1 RHMW	
<i>Protectiveness Statement:</i>	
The remedies at the MTHD and the RHMW Superfund sites are protective of human health and the environment.	

Sitewide Protectiveness Statement

Protectiveness

Determination:

Protective

Protectiveness Statement:

The remedies at the MTHD and RHMW Sites are protective of human health and the environment.

VIII. NEXT REVIEW

The next FYR report for the MHTD and RHMW Superfund Sites is required five years from the completion date of this review.

APPENDIX A – Tables

TABLE 1 – Groundwater Contaminant Trends**TCE - Maximum Concentrations Detected**

Location	ROD Cleanup Standard	2016	2017	2018	2019
Groundwater Treatment Facility #1 (MW-17)	1.0	20.0	1.7	2.8	1.8
Groundwater Treatment Facility #2 (PGT MW-01)	1.0	120.0 J	190.0	250 K	29
Secondary Plume (MW-29I)	1.0	47.0	45.0	46.0	10.0
Former Fifth Dimension (FD-01D)	1.0	7.5	6.8	6.7	5.5

All concentrations are in parts per billion (ppb).

TCE Trichloroethene

U Not detected at listed detection limit

K The identification of the analyte is acceptable; the reported value may be biased high

PCE - Maximum Concentrations Detected

Location	ROD Cleanup Standard	2016	2017	2018	2019
Groundwater Treatment Facility #1 (MW-17)	1.0	55.0	250.0	13.0	12.0
Groundwater Treatment Facility #2 (PGT MW-05)	1.0	6.2	1.8	1.1	0.8
Secondary Plume (MW-23D)	1.0	2.5	3.8	3.9	5.9
Former Fifth Dimension (FD-01)	1.0	0.22 J	0.5 U	0.5 U	0.5 U

All concentrations are in parts per billion (ppb).

PCE Tetrachloroethene (Perchloroethylene)

U Not detected at listed detection limit

J approximate concentration of compound

APPENDIX B – FIGURES

FIGURE 1 – Site Location Map

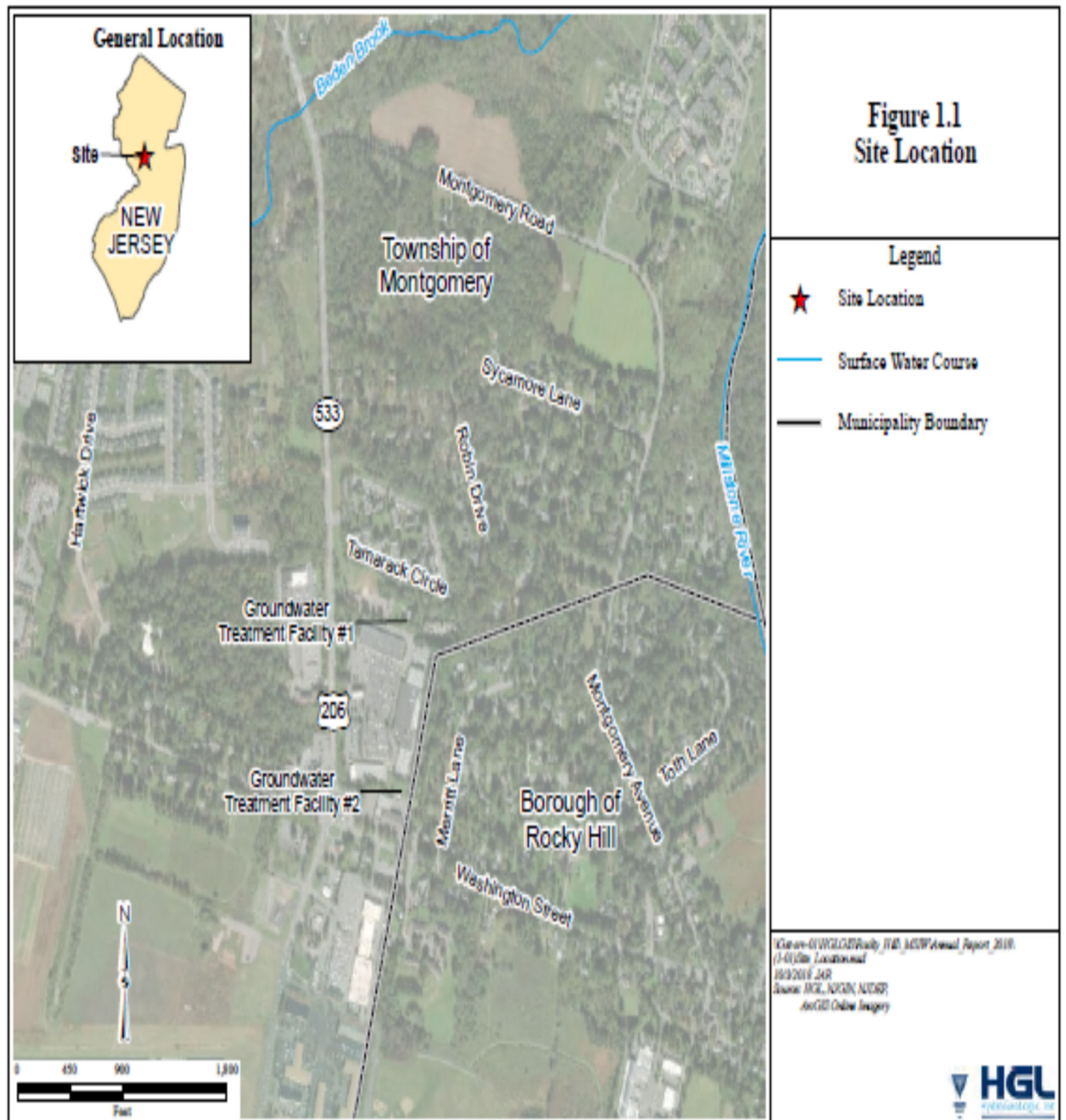


FIGURE 2 – Monitoring Well Location Map

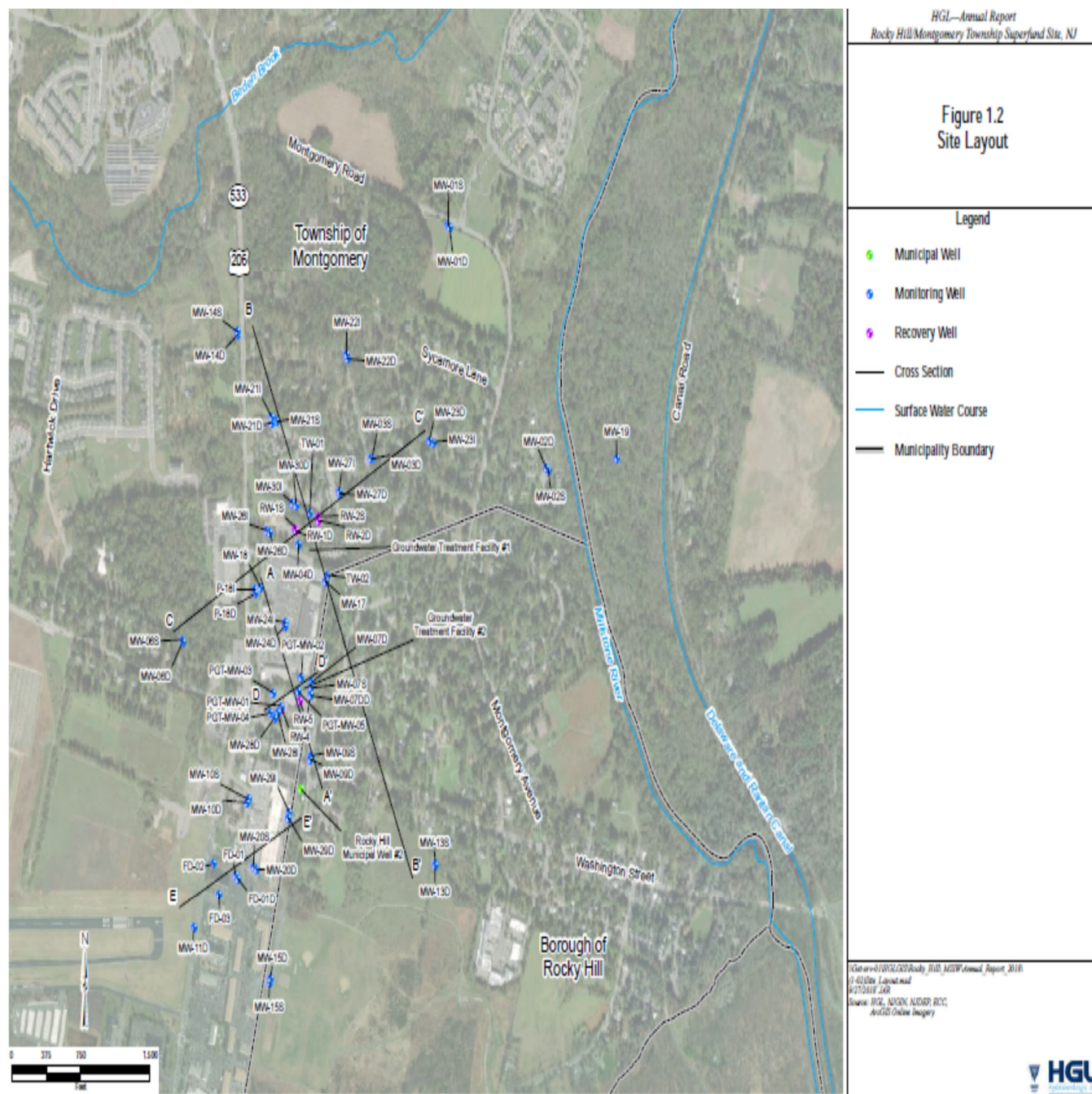


FIGURE 3 – Site Overview

