FOURTH FIVE-YEAR REVIEW REPORT FOR RICHARDSON HILL ROAD SUPERFUND SITE AND FIFTH FIVE-YEAR REVIEW REPORT FOR SIDNEY LANDFILL SUPERFUND SITE DELAWARE COUNTY, NEW YORK

Prepared by

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

Evangelista, Pat Digitally signed by Evangelista, Pat
Date: 2022.04.14 17:31:20 -04'00'

Pat Evangelista, Director
Superfund & Emergency Management Division

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LIST OF ABBREVIATIONS & ACRONYMS

1,1-DCA	1,1-Dichloroethane
1,1,1- TCA	1,1,1- Trichloroethane
AOC	Administrative Order on Consent
ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
cis-1,2-DCE	cis-1,2-Dichloroethane
CY	Cubic yard
EPA	United States Environmental Protection Agency
ESA	Eastern Stained Area
ESD	Explanation of Significant Differences
FYR	Five-Year Review
HHRA	Human Health Risk Assessment
HI	Hazard Index
HRC	Hydrogen Release Compound
ICs	Institutional Controls
L/day	Liters per day
MCLs	Maximum Contaminate Level
MG/KG	milligram per kilogram
MNA	Monitored Natural Attenuation
MW	monitoring well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NYCRR	New York Codes, Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
O&M	Operation and Maintenance
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
PCBs	Polychlorinated Biphenyls
PCE	Tetrachloroethylene
PFAS	Per- and Polyfluorinated Alkyl Substances
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
RHRL	Richardson Hill Road Landfill
RI/FS	Remedial Investigation/ Feasibility Study
ROD	Record of Decision
RSE	Remediation system evaluation
RSL	Regional Screening Level
RW	Recovery well
SL	Sidney Landfill

TBC	To-be-considered
TCE	Trichloroethylene
TSCA	Toxic Substances Control Act
μg/L	Micrograms per Liter
UAO	Unilateral Administrative Order
UU/UE	Unlimited use/Unrestricted exposure
VC	Vinyl Chloride
VOCs	Volatile Organic Compounds

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy 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 the Richardson Hill Road Landfill (RHRL) Superfund site and the Sidney Landfill Superfund site FYRs concurrently because they are located in close proximity to each other and are hydrogeologically interrelated.

This is the fourth FYR for the RHRL Superfund site and the fifth FYR for the Sidney Landfill site. The triggering action for this statutory review is the completion date of the previous RHRL/Sidney Landfill FYR, which was July 20, 2017. This FYR has been prepared because hazardous substances, pollutants or contaminants remain at both sites above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The sites are being addressed as single operable units (OUs).

The FYRs are being conducted 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.

The RHRL and Sidney Landfill sites FYR was led by Pamela Tames, the EPA Remedial Project Manager. Participants included John Mason, EPA hydrogeologist, Marian Olsen, EPA human health risk assessor, Abby DeBofsky, EPA ecological risk assessor, and Larisa Romanowski, EPA Community Involvement Coordinator (CIC). The potentially responsible parties (PRPs) were notified of the initiation of the FYRs. The FYR began on July 28, 2021.

Site Background

The RHRL and Sidney Landfill sites are located in a hilly, rural area, approximately 2 miles south of the village of Sidney Center in Delaware County, New York. The 9-acre RHRL site is located on the western side of Richardson Hill Road and on the western side of Herrick Hollow Creek, a north/south stream valley. The 74-acre Sidney Landfill is located north of the RHRL on the eastern side of Richardson Hill Road. The area surrounding the sites consists of a mixture of disturbed land, shrub land, wetland and upland forest. See Appendix A, Figure 1.

The RHRL site consists of two sections designated as the “North Area” and the “South Area.” The South Area is composed of an 8-acre landfill (which contained a former waste oil disposal pit), South Pond, and a portion of Herrick Hollow Creek. The North Area is situated about 1,000 feet northeast of the landfill and includes two disposal trenches and a man-made surface water body called North Pond. Both sections of the RHRL site are located on the boundary between the Susquehanna (north) and Delaware River (south) drainage divides.

The Sidney Landfill consists of several discrete disposal areas that accepted hazardous wastes and are referred to as the North Disposal Area (10.8 acres), the Southeast Disposal Area (6.4 acres), the Southwest Disposal Area (1.9 acres), the Alleged Liquid Waste Disposal Area (0.07 acres), the White Goods Disposal Area (0.2 acres), and the Can and Bottle Dump Area (0.44 acres).
Land use is mixed in the vicinity of both landfills and is zoned residential-agricultural. Approximately 40 property owners reside (part-time or permanently) within a one-mile radius of the two sites. All residences within the immediate vicinity of the sites obtain their water from private wells or springs.

The RHRL operated from 1964 to 1969 and the Sidney Landfill operated from 1967 to 1972. Both landfills, which were owned and operated by the late Devere Rosa, Jr., accepted municipal waste from the Town of Sidney and commercial wastes from Bendix Corporation. The New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH) files indicate that both landfills were poorly operated, with improper compaction of waste, poor daily covering, no supervision, and uncontrolled access. When operations at both landfills ceased, the Town of Sidney began sending its waste to a landfill in Chenango County.

Appendix B, attached, summarizes the documents utilized to prepare this FYR report.

Appendix C, attached, summarizes the sites' topography and geology/hydrogeology.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: **Richardson Hill Road Landfill Superfund Site**		
EPA ID: **NYD980507735**		
Region: 2	**State:** NY	**City/County:** Towns of Sidney and Masonville/Delaware County
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA ***[If "Other Federal Agency", enter Agency name]***:		
Author name (Federal or State Project Manager): Pamela Tames		
Author affiliation: EPA		
Review period: 7/21/2017 - 4/11/2022		
Date of site inspection: 10/21/2021		

Type of review: Statutory	
Review number: 4	
Triggering action date: 7/20/2017	
Due date *(five years after triggering action date)*: 7/20/2022	

SITE IDENTIFICATION		
Site Name: **Sidney Landfill Superfund Site**		
EPA ID: **NYD980507677**		
Region: 2	**State:** NY	**City/County:** Sidney Center/ Delaware County
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA ***[If "Other Federal Agency", enter Agency name]*:**		
Author name (Federal or State Project Manager): Pamela Tames		
Author affiliation: EPA		
Review period: 7/21/2017 – 4/11/2022		
Date of site inspection: 10/21/2021		
Type of review: Statutory		
Review number: 5		
Triggering action date: 7/20/2017		
Due date *(five years after triggering action date)*: 7/20/2022		

II. RESPONSE ACTION SUMMARY

<u>Basis for Taking Action</u>

Richardson Hill Road Landfill Site

Because of continuing violations at the RHRL, NYSDOH sought to close it. In 1968, the operator signed an order issued against him by NYSDOH to close the landfill; however, waste disposal did not cease until 1969. In 1985, NYSDOH performed water supply sampling at several residences near and downgradient of the site. Based upon the results of an EPA-performed site investigation that revealed the presence of polychlorinated biphenyls (PCBs) and volatile organic compounds (VOCs) in sediment and water samples collected from the waste oil pit and downgradient of the pit, the site was listed on the National Priorities List (NPL) in 1987.

After listing the site on the NPL, EPA entered into an Administrative Order on Consent (AOC), Index Number II CERCLA-70205, with the generator PRPs, Amphenol Corporation and Honeywell International, Inc. (formerly known as AlliedSignal, Inc.),[1] requiring them to perform a remedial investigation and feasibility study (RI/FS) to determine the nature and extent of the contamination at and emanating from the site and to identify and evaluate remedial alternatives. The PRPs performed the RI/FS from 1988-1997. The results revealed the presence of PCBs and VOCs in site soil, sediment, and overburden and shallow bedrock aquifers.

The Human Health Risk Assessment (HHRA) evaluated contact with groundwater, surface and subsurface soil, sediment, surface water, and air as potential sources of exposure. All of the carcinogenic risks calculated were within the acceptable cancer risk range of 1×10^{-6} to 1×10^{-4} (one in 1,000,000 to 1 in 10,000). However, for noncarcinogenic hazards, the results of the baseline risk assessment indicated that the ingestion of drinking water in the current-use scenario and in the future-use scenario resulted in hazard index (HI) greater than the goal of protection (HI = 1.0), primarily from exposure to VOCs. The potential child trespasser showed a noncancer HI of greater than one for dermal contact with on-site soil, ingestion of South Pond sediment, dermal contact with South Pond sediment, and dermal contact with South Pond surface water. In addition, ingestion of and dermal contact with subsurface soils by utility/maintenance workers also showed Hl values greater than one. PCBs were the predominant contributor to all of these high HI values.

An ecological risk assessment was conducted and concluded that the presence of PCBs and inorganic compounds in soil, sediment, and surface water, at concentrations which present a potential risk, were likely to have some adverse effect on wildlife utilizing the site and its vicinity. If the site was un-remediated, contaminants might continue to be released (*e.g.,* via leachate, surface runoff, groundwater discharge) into the environment. Effects of contaminants could be more pronounced over time as a result of increasing concentrations in the media of concern and bioaccumulation through the food chain.

Sidney Landfill Site

NYSDEC performed a Phase II investigation of the Sidney Landfill site from 1985 to 1987. In 1985 and 1986, NYSDOH collected groundwater samples from residential wells located near the site and identified the presence of site-related contaminants. These efforts lead to the listing of the site on the NPL in 1989. EPA subsequently sent out 53 information request letters and followed up with 15 letters notifying the PRPs of their liability and requesting that they initiate an RI/FS. Because no good faith offers were received, the investigation was financed by the Superfund. EPA conducted an RI/FS from 1991 to 1995. Bedrock groundwater samples collected during the RI indicated the presence of VOCs. Three private water supplies sampled during the RI also contained

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1 Collectively, both parties are formerly known as Bendix Corporation.

contaminants found in site groundwater; two were found to be above drinking water standards. Surface soils at the site were found to contain elevated concentrations of pesticides, PCBs, and inorganic compounds. Leachate samples identified the presence of VOCs and PCBs.

Based upon the results of the RI, a baseline HHRA was conducted to estimate the risks associated with current and future site conditions. The HHRA evaluated exposure to chemicals of potential concern in spring water and by contact with groundwater, surface and subsurface soil, and sediment and surface water from North Pond. The cancer risks from consumption of spring water and future consumption of groundwater under both scenarios exceeded the EPA's acceptable risk range of 10^{-4} (one in ten thousand) to 10^{-6} (one in a million). Trichloroethylene (TCE) in spring water was the predominant contributor to the total estimated cancer risk. For the consumption of groundwater under a future-use scenario, contributors included ingestion of arsenic, beryllium, and vinyl chloride (VC) and dermal contact with PCBs.

For noncarcinogenic hazards, the results of the HHRA indicated that the ingestion of drinking water in the current-use scenario and in the future-use scenario resulted in an HI greater than 1. The main chemicals present in spring water that contributed to the HI from exposure to spring water were VOCs, such as TCE, and manganese. Under the current scenario at that time, exposures of adolescent trespassers to surface soil through ingestion and/or dermal contact and dermal contact with on-site leachate exceeded one. The main contributors to the noncancer HI were PCBs. Under the future use scenario for residential consumption of groundwater, the noncancer HI for the adult and child exceeded one. The main contributors were PCBs, arsenic, and manganese. In addition, ingestion of and dermal contact with subsurface soils by utility/maintenance workers also showed an HI greater than one from exposure to PCBs in part of the Southeast Disposal Area.

An ecological risk assessment concluded that the presence of PCBs and inorganic compounds in soil, sediment, and surface water, at concentrations which present a potential risk, were likely to have some adverse effect on wildlife utilizing the site and its vicinity. This assessment also concluded that if the site was left un-remediated, contaminants might continue to be released (*e.g.,* via leachate, surface runoff, groundwater discharge) into the environment; effects of contaminants could be more pronounced over time as a result of increasing concentrations in the media of concern and bioaccumulation through the food chain.

Response Actions

Richardson Hill Road Landfill Site

In 1993, in response to a fish kill in South Pond attributable to the seep of contaminants from the oil disposal pit, EPA issued an AOC, Index Number II CERCLA-93-0214 to PRPs. The work performed included the excavation of approximately 2,200 cubic yards (cy) of contaminated sediments from South Pond (temporarily stored on-site in lined storage cells until the completion of the remedy implementation), the installation of seep interceptor collection basins upgradient of South Pond, and a sediment trap weir system at the outlet of South Pond to prevent the downstream migration of contaminated sediments.

EPA also issued a Unilateral Administrative Order (UAO), Index Number II CERCLA-93-0217, in 1993 to the generator PRPs. Pursuant to the UAO, the Respondents installed whole-house water treatment systems on two private water supplies that showed site-related contamination above drinking water standards.

Based upon the results of the RI/FS, a Record of Decision (ROD) was signed in 1997.

Remedial action objectives (RAOs) are specific goals to protect human health and the environment. The RAOs were as follows:

- Reduce/eliminate contaminant leaching to groundwater;
- Control surface water runoff and erosion;
- Mitigate the off-site migration of contaminated groundwater;
- Restore groundwater quality to levels which meet state and federal drinking-water standards;
- Prevent human contact with contaminated soils, sediments, and groundwater; and
- Minimize exposure of fish and wildlife to contaminants in surface water, sediments, and soils.

The remedy selected in the ROD, included the following elements:

- Excavating contaminated waste material and soil exceeding NYSDEC’s Soil Cleanup Objectives in the North and South Areas (other than the landfill). Clean fill would be used as backfill in the excavated areas;
- Based upon pre-design sampling of soil in the area to be capped (primarily, in the vicinity of the former waste oil disposal pit), soil with PCB concentrations which equal or exceed 500 milligrams per kilogram (mg/kg) would be excavated and sent off-site for treatment/disposal at a Toxic Substances Control Act (TSCA)-compliant facility;
- Excavating and/or dredging sediments exceeding 1 mg/kg PCB from South Pond and excavating and/or dredging sediments exceeding 1 mg/kg PCB in downstream areas for approximately 2,400 feet (ft). A monitoring plan for those areas further downstream would be developed during the design phase. All excavated/dredged sediments would be dewatered, as necessary. Any wetlands impacted by remedial activities would be fully restored;
- Installation of an outlet control/sediment trap downgradient of South Pond to minimize migration of contaminated sediment further downstream from the Main Beaver Pond;
- All excavated/dredged waste materials, soils, and sediments would be subjected to Resource Conservation and Recovery Act (RCRA) hazardous waste characteristic testing. Those waste materials, soils, and sediments that do not pass the RCRA characteristic testing would be sent off-site for treatment/disposal at a RCRA-compliant facility. Those waste materials, soils, and sediments that pass the RCRA characteristic testing and have PCB concentrations which equal or exceed 500 mg/kg would be sent of-site for treatment/disposal at a TSCA-compliant facility. Those waste materials, soils, and sediments that pass the RCRA characteristic testing and have PCB concentrations less than 50 mg/kg would be consolidated on the on-site landfill; those with PCB concentrations between 50-500 mg/kg would be placed in a TSCA-compliant landfill constructed adjacent to the existing landfill;

- Following the consolidation of the excavated/dredged waste materials, soil, and sediments with PCB concentrations less than 50 mg/kg onto the existing landfill, a New York State 6 NYCRR Part 360 or equivalent closure cap would be constructed;
- Construction of a fence around the landfill;
- Construction of a shallow leachate collection trench, keyed into the top of the bedrock, on the downgradient edge of the cap that will be installed on the existing landfill, and installation of vertical overburden and bedrock extraction wells in the North Area;
- Extraction of contaminated groundwater from the overburden and shallow bedrock in the South Area utilizing the downgradient interceptor trench and in the North Area utilizing extraction wells, and treatment of the extracted contaminated groundwater by air-stripping and activated carbon (or other appropriate treatment), followed by discharge to surface water.
- Taking steps to secure institutional controls (ICs) (the placement of restrictions on the installation and use of groundwater wells at the site and restrictions on the future use of the site in order to protect the integrity of the new TSCA landfill and the cap installed on the existing landfill); and
- Long-term monitoring of groundwater, surface water, fish and sediments to ensure the effectiveness of the selected remedy.

In addition, the whole-house water treatment systems that were installed at the two private residential wells would continue to be maintained by the Respondents.

Sidney Landfill Site

Based upon the results of the RI/FS, a ROD for the site was signed in 1995.

The RAOs were as follows:

- Minimize infiltration and the resulting contaminant leaching to groundwater;
- Control surface water runoff and erosion;
- Mitigate the off-site migration of contaminated groundwater;
- Control generation and prevent migration of subsurface landfill gas; and,
- Prevent contact with contaminants in the groundwater.

The remedy selected in the ROD called for the following:

- Excavating and relocating waste from the Can and Bottle Dump Area to the adjacent North Disposal Area;
- Constructing four independent closure caps which are consistent with the requirements of New York State 6 NYCRR Part 360 over the North Disposal Area, the White Goods Disposal and Alleged Liquid Disposal Areas (capped together), the Southeast Disposal Area, and the Southwest Disposal Area, and the construction of four individual chain-link fenced areas;
- Extracting contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S (located just east of the North Disposal Area, where floating product was detected), followed by air-stripping or other appropriate treatment, and discharge to surface water;

- Taking steps to secure ICs (the placement of restrictions on the installation and use of groundwater wells at the site and restrictions on the future use of the site in order to protect the integrity of the caps); and,
- Long-term monitoring of groundwater, surface water, and sediments.

The ROD also stated that after the construction of the caps and the extraction and treatment of the contaminated groundwater in the vicinity of monitoring well MW-2S for five years, the results of semiannual bedrock groundwater monitoring would be evaluated using trend analysis and possibly modeling of the bedrock aquifer to determine whether it appeared that the groundwater quality in the bedrock aquifer would be restored to acceptable levels through natural attenuation cost-effectively and within a reasonable time frame. Should the trend analysis and/or modeling show that groundwater quality in the bedrock aquifer would likely not be restored within a reasonable time frame by natural attenuation alone, then site-wide bedrock groundwater extraction and treatment would be implemented.

Status of Implementation

Richardson Hill Road Landfill Site

Upon lodging of the Consent Decree related to the performance of the remedial design and remedial action (RD/RA) for the remedy called for in the ROD by the U.S. District Court in 1999, the PRPs commenced the RD. The groundwater treatment plant portion of the RD was approved in 2002. The RD for the remainder of the site was approved in 2003.

During the RD, in consideration of the possibility that the PCB-contaminated sediments in the downstream areas of Herrick Hollow Creek would still need to be removed in the future after years of monitoring, the option of removing these sediments concurrent with the removal of the contaminated sediments in Herrick Hollow Creek immediately downstream of South Pond was evaluated. Based upon this evaluation, it was determined that if this approach was taken, not only would the potential benefits of the remedy be realized sooner, but cost savings associated with only one mobilization of equipment and the elimination of the long-term monitoring related to all of the contaminated sediments once they are removed, would also be realized. In addition, the Settling Defendants were willing to undertake the additional sediment removal work at that time. As a result, EPA and NYSDEC decided to remove the contaminated sediments in the downstream areas concurrently with the contaminated sediments in Herrick Hollow Creek (immediately downstream of South Pond). This decision was documented in a September 2008 Explanation of Significant Differences (ESD).

The excavation and backfilling/restoration of various areas with contaminated soil outside of the landfill footprint (approximately 7,350 cy of soil) was completed in 2004. All of the PCB-contaminated sediments from South Pond, beaver ponds, and Herrick Hollow Creek down to Segment 9 (approximately 28,520 cy) were dry excavated in 2004. All of the excavated soil and sediment outside of the landfill footprint was consolidated on the landfill prior to capping. Also, the sediment trap weir system placed in the Herrick Hollow Creek in 1994 and 1999 was removed in 2004, since all contaminated sediments upstream of the sediment trap weir system were removed. Within the former waste oil pit, approximately 882 tons of soil with PCB contamination equal to or greater than 500 mg/kg were excavated and disposed/treated at an off-site TSCA facility in 2004. Materials with PCB concentrations between 50-500 mg/kg were placed in the TSCA-cell in the northwestern part of the landfill. A redesigned multilayered New York State 6 NYCRR Part 360 cap was installed over the landfill in 2006. Gas vents were also installed and tied to geocomposite drainage net. Fencing was installed around the site to discourage unauthorized access.

Construction of the groundwater treatment plant and the installation of four North Area recovery wells were completed in 2003. Construction of the groundwater interceptor trench located downgradient of the landfill commenced in 2004; however, the connection to the groundwater water treatment plant was not completed until fall 2006. The groundwater interceptor trench was installed to collect and treat groundwater flowing from the landfill, while also minimizing off-site migration of potentially contaminated groundwater. A recovery well (RW-05) was installed near the south east of the trench in 2009.

The ROD called for groundwater extraction via a collection trench located immediately upgradient of South Pond and recovery extraction wells in the North Area, followed by treatment. In 2004, groundwater contamination located to the east of South Pond monitoring well cluster MW-12S, MW-12D, and MW-12DD (see Figure 2), which was originally installed as part of the Sidney Landfill site RI, was determined to be more likely attributable to the RHRL site.[2] Because of its location, the groundwater management system called for in the original RD could not address the contamination in this area.

The PRPs performed the installation of additional monitoring wells as part of a supplemental hydrogeologic investigation which culminated in a report (*Supplemental Hydrogeologic Investigation Report,* O'Brien & Gere, September 2008). The study concluded that although the extraction trench shows some influence in this area, the trench alone would not result in contaminant levels in this area reaching groundwater standards in a reasonable time frame. To address this contamination, it was concluded that a new extraction well needed to be installed southeast of the trench. To protect the nearby wetland from dewatering, the groundwater is extracted at a low rate and on an intermittent basis. This finding was documented in the 2008 ESD as well.

Sidney Landfill Site

On July 9, 1996, EPA issued a UAO, EPA Index No. II-CERCLA-96-0204 to the PRPs to conduct the RD/RA. The RD was initiated in 1997.

<u>Landfill Caps</u>

The landfill caps were constructed in 1999. During the construction period, 1,200 cy of waste was excavated from the Can and Bottle Dump Area and consolidated onto the North Disposal Area and New York State 6 NYCRR Part 360 caps were installed over the North Disposal Area, Southeast Disposal Area, Southwest Disposal Area, Alleged Liquid Waste Disposal Area, and White Goods

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[2] This finding was documented in a 2004 ESD for Sidney Landfill site discussed below.

Disposal Area.[3] The caps consisted of a 12-inch gas venting layer, a textured 60-mil high density polyethylene geomembrane liner, a 24-inch barrier protection layer, and a six-inch topsoil layer. Each cap was enclosed by a chain-link fence.

Groundwater

The ROD specified that VOCs in the groundwater were to be reduced to cleanup standards by extraction and treatment of groundwater from a "hotspot" near monitoring well MW-2S and by natural attenuation in downgradient areas. As part of a 1998 pre-design investigation, a blasted-bedrock trench was pilot-tested for the purpose of developing design criteria for a trench to be used for groundwater extraction in the "hotspot" area. The blasting created hydraulic interconnectivity between shallow and deep bedrock zones that resulted in dewatering the aquifer zone near monitoring well MW-2S. Consequently, groundwater extraction adjacent to monitoring well MW-2S was no longer possible. In addition, while groundwater contamination in wells downgradient of the former "hotspot" area was still present, aquifer testing results indicated that a hydraulic connection exists between the contaminated downgradient Sidney Landfill site monitoring wells and recovery wells located in the "North Area" portion of the adjacent RHRL site and the RHRL site extraction system is capturing the contaminants from the Sidney Landfill site. Therefore, it was concluded that the downgradient groundwater contamination at the Sidney Landfill site would be addressed utilizing the RHRL site's recovery wells. These findings and conclusions were documented in a 2004 ESD.

Summary of Institutional Controls

Table 1, below, summarizes the status of the ICs for both sites.

Table 1: **Summary of Implemented Institutional Controls**

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	Yes	Yes	Adjacent property owners to RHRL and the Sidney Landfill	Restrict installation of groundwater wells and groundwater use.	Environment Easements and Declaration of Restrictive Covenants in the Delaware County Clerk's Office on 1/22/02.

3 The ROD called for four individual caps because the Alleged Liquid Waste Disposal Area and White Goods Disposal Area were going to be combined under one cap. However, during the design phase a determination was made that the best location for an access road would go between the two disposal areas. Therefore, these two areas were capped and fenced independently.

Soils	Yes	Yes	Sidney Landfill caps and RHRL cap and TSCA cell	Restriction on the future use of the site in order to protect the integrity of the caps	Notice to Successors in Title recorded in the Delaware County Clerk's Office on 9/20/07
Vapor Intrusion	Yes	Yes	Adjacent property owners to RHRL and Sidney Landfill	Restrictions on new construction without vapor barriers/mitigation	6/1/17 letters sent to Town of Masonville Town Supervisor and Town of Sidney Code Enforcement Officer/Building Inspector

Subslab soil gas and indoor air evaluations were conducted at four of the seven nearby residences in 2008. The results indicated that no further action for the existing residences was needed. Based on a recommendation from the 2012 RHRL and 2014 SL FYRs, EPA determined that informational ICs were necessary for properties adjacent to both sites to ensure new construction required appropriate vapor barriers and/or mitigation systems. This decision was formalized in a December 28, 2016 ESD.

<u>Systems Operations/Operation & Maintenance</u>

Richardson Hill Road Landfill Site

A 2008 Operation and Maintenance (O&M) Manual for the site includes, among other tasks, the following:

- Inspection and maintenance of the landfill cap, storm water drainage channels around the landfill, and security fencing;
- Regular and routine operation, maintenance, and monitoring activities at the groundwater treatment plant and recovery systems for both Richardson Hill Road and Sidney Landfills; and
- Regular and routine environmental chemistry monitoring including collection and analysis of weekly and quarterly treatment plant effluent and quarterly groundwater samples.

Long-term groundwater monitoring includes samples from 27 monitoring wells that are analyzed for VOCs on a quarterly basis, 12 monitoring wells where samples are analyzed for natural attenuation parameters annually, six monitoring wells where samples are analyzed for PCBs quarterly, and 10 monitoring wells where samples are analyzed for PCBs annually. Two residential wells are sampled annually for VOCs. Three surface water/sediment locations in South Pond are also analyzed annually for PCBs.

In 2018, pump setpoint elevations in the trench were adjusted to further decrease groundwater elevations and promote an inward gradient. In 2019, new pumps with larger capacities were installed within the trench sumps.

An evaluation of extraction well performance in the North Area (recovery wells RW-1, RW-2, RW-3, and RW-4) indicated that the wells continue to generate sufficient drawdown to meet the performance objective of having at least one foot of drawdown in North Area monitoring wells compared to non-pumping conditions.

Sidney Landfill Site

A 1999 O&M Manual for the site includes, among other tasks, the following:

- Each of the five landfill areas is inspected quarterly for debris, litter and/or waste.
- The landfill caps are inspected quarterly for vegetation loss due to erosion or poor grass growth.
- The landfill caps are inspected quarterly for settlement, ponding, and animal borrows;
- The access roads are inspected quarterly for rutting, tree blockage, and settlement;
- The site access gate and the five landfill area security fences are inspected quarterly for operational locks and vandalism;
- The culverts, drainage ditches, and level spreaders are inspected quarterly for sediment buildup or erosion; and,
- The groundwater monitoring wells are inspected quarterly for operational locks, damage, and vandalism.

Twenty monitoring wells are sampled and analyzed quarterly for VOCs, three monitoring wells are sampled for PCBs, and six monitoring wells are sampled for routine New York State 6 NYCRR Part 360 parameters. Vapor emanating from the thirteen gas vents are measured in the field on a quarterly basis.

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

The protectiveness determinations from the last FYR, as well as a discussion of that FYR's recommendations and the current status of the recommendations, are summarized in Tables 2 and 3, respectively, below.

Table 2: **Protectiveness Determinations/Statements From 2017 Five-Year Review**

Site	Protectiveness Determination	Protectiveness Statement
RHRL	Short-term Protective	The implemented actions at the RHRL site protect human health and the environment in the short term because the wastes have been consolidated and capped and the groundwater is not impacting residences downgradient of

		the site. In order for the RHRL site to be protective in the long term, additional capture assessment of the groundwater remedy for the eastern portion of the site needs to be performed.
Sidney Landfill	Short-term Protective	The implemented actions at the Sidney Landfill site protect human health and the environment in the short term because the wastes have been consolidated and capped and the groundwater is not impacting residences downgradient of the site. In order for the Sidney Landfill site to be protective in the long term, installation of additional monitoring wells and a supplemental water-level data collection effort need to be implemented in order to provide the data to assess plume capture.

Table 3: **Status of Recommendations From 2017 Five-Year Review**

Site	**Issue**	**Recommendations**	Current Status	Current Implementation Status Description	**Completion Date (if applicable)**
RHRL	Inadequate data to perform a capture zone analysis	A Supplemental water-level data collection effort is needed to determine the groundwater flow pathways. The installation of additional monitoring wells downgradient and east of the trench is necessary to complete this action. Following an analysis of the new data, the installation of an additional recovery well may be necessary.	Considered But Not Implemented	Instead of implementing this recommendation, the PRP suggested performing trench pump replacements and pump setpoint elevation adjustments to further promote trench capture. The installation of additional wells will be considered as part of forthcoming trench optimization to ensure contaminated groundwater is not migrating away from the trench.	Click here to enter a date
Sidney Landfill	The RHRL site North Area extraction wells may not be providing complete capture of the contaminated groundwater	A Supplemental water-level data collection effort is needed to determine the groundwater flow pathways and the completeness of the capture of the	Considered But Not Implemented	Seep sampling continued during this review period, but additional wells were not installed. Data reviewed over the current five-year period has shown that, although	Click here to enter a date

	migrating from the Sidney Landfill site.	groundwater contamination emanating from the Sidney Landfill. The installation of additional monitoring wells is necessary to complete this action.		concentrations are low and capture is being maintained in the majority of the plume, monitoring wells are still necessary in this area to better understand groundwater flow and fully delineate the nature and extent of contamination.	

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On August 6, 2021, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies a Superfund sites in New York, New Jersey, Puerto Rico and the U.S. Virgin Islands, including the RHRL and the Sidney Landfill Superfund sites. The announcement can be found at the following web address: https://www.epa.gov/superfund/R2-fiveyearreviews.

In addition to this notification, the EPA Community Involvement Coordinator (CIC) for the site, Larisa Romanowski, posted a public notice on the EPA site webpages (www.epa.gov/superfund/richardson-hill and www.epa.gov/superfund/sidney-landfill) and provided the notice to the towns of Sidney and Masonville by email on January 6, 2022, with a request that the notice be posted in municipal offices and on the town webpages. This notice indicated that a FYR would be conducted at the RHRL and Sidney Landfill Superfund sites to ensure that the cleanups at the sites continue to be protective of human health and the environment. Once the FYR is completed, the results will be made available at the Sidney Memorial Public Library, 8 River Street Sidney, New York 13838. In addition, the final report will be posted on the following websites: www.epa.gov/superfund/richardson-hill and www.epa.gov/superfund/sidney-landfill.

Data Review

Richardson Hill Road Landfill Site

Groundwater, sediment, fish tissue, and surface water data have been reviewed for the preparation of this report and are discussed below. See Appendix A, Figure 2, for locations of monitoring wells and Figure 3 for South Pond and Herrick Hollow Creek fish sample locations.

Groundwater

Table 4 (Appendix D) summarizes the RHRL site-wide groundwater sampling results for TCE, cis-1,2-dichloroethylene (cis-1,2-DCE), and VC from 2017 to 2021. See Appendix D, Table 5, for a summary of PCB concentrations in groundwater found to exceed the standard during the review period. During the review period, there were concentrations of TCE, cis-1,2-DCE, VC, 1,1,1-trichloroethane (1,1,1-TCA), 1,1-dichloroethane (1,1-DCA), chloroform, methylene chloride, and bromomethane in site wells above NYSDEC GA standards. TCE, cis-1,2-DCE, and VC are the most common and abundant VOCs observed sitewide. Effluent data from the groundwater treatment system have been collected since the North Area recovery wells began operation in 2003. The effluent data have met the site-specific discharge limits set by NYSDEC.

Interceptor Trench Monitoring Wells

VOCs have been observed in monitoring wells located along Richardson Hill Road between the interceptor trench and South Pond since the start of trench's operation. For the review period, VOC concentrations were variable in each monitoring well, with concentrations showing gradual declines or no discernable trends.

Average TCE concentrations across the review period ranged from a minimum of 1 microgram per liter (µg/L) in monitoring well RH-08S to a maximum of 102 µg/L in monitoring well TMW-3. Monitoring wells RH-06D/S and RH-5D showed relatively high average TCE concentrations of 57 to 91 µg/L compared to other wells near the trench. The maximum contaminant level (MCL) allowed for TCE in drinking water is 5 µg/L. Average cis-1,2-DCE concentrations ranged from a minimum of 0.5 µg/L in monitoring well RH-07S to a maximum of 307 µg/L in monitoring well RH-06S. Monitoring wells RH-05D and TMW-3 showed relatively high average cis-1,2-DCE concentrations of 284 µg/L and 266 µg/L, respectively. The MCL for cis-1,2-DCE in drinking water is 5 µg/L. VC was also reported in several wells, with the highest average concentrations observed in monitoring well RH-05D at 43 µg/L, monitoring well RH-06S at 36 µg/L, and monitoring well TMW-4 at 29 µg/L. The MCL allowed for VC in drinking water is 2 µg/L. The NYSDEC Class GA groundwater standard for TCE, cis-1,2-DCE and VC is 5 µg/L, 5 µg/L and 2 µg/L, respectively. It should be noted that while many of the VOC concentrations observed for this review period continue to be above their standards, concentrations have decreased as compared to the previous review period. Compared to the previous review period, average concentrations of TCE decreased in 10 out of the 14 trench-area wells, while average cis-1,2-DCE concentrations decreased in 12 of the 14 wells. In monitoring well TMW-03, average concentrations of TCE, cis-1,2-DCE, and VC for the previous review period were 142 µg/L, 278 µg/L, and 18 µg/L, respectively. The average concentrations at this location for the current review period were 102 µg/L TCE, 266 µg/L cis-1,2-DCE, and 27 µg/L VC. Despite average VOC concentrations generally decreasing over time, inward gradients have not been consistently maintained along the trench and full capture is not provided, particularly in areas surrounding piezometer pairs SCC-01/TMW-03, SCC-04/TMW-06 and TMW-07/TMW-08. The lack of complete capture would, likely, account for the persistence of VOCs observed in monitoring wells adjacent to and downgradient of the trench.

Sixteen monitoring wells across the site were sampled and the samples analyzed for PCBs during the review period. Only wells in the vicinity of the trench showed exceedances of the NYSDEC Class GA standard for total PCBs of 0.09 µg/L. Specifically, monitoring wells RH-06S, TMW-03, TMW-04, and to a lesser extent, monitoring wells RH-05D, RH-06D, and RH-08S, showed detections of total PCBs at levels above the NYSDEC GA standard. The maximum concentration recorded during the review period was 20.2 µg/L at monitoring well RH-06S (May 2018). Samples from this well contained elevated PCB concentrations above 1 µg/L in six of seventeen sampling events throughout the review period. Samples from monitoring well TMW-4 had the greatest number of exceedances, with concentrations above 0.09 µg/L eight times in seventeen sampling events. Three of the four quarterly sampling events in 2020 recorded elevated concentrations of PCBs, and groundwater flow away from the trench was observed during 35% of the weekly measurements at this location in 2020. These results indicate the possibility that contaminated groundwater downgradient of the trench is beyond the influence of the trench and will ultimately discharge to South Pond. This may be contributing to observed PCB concentrations in the sediment along the western edge of the South Pond.

Downgradient Monitoring Wells along Herrick Hollow Creek

As part of a supplemental hydrogeologic investigation of the RHRL site conducted in 2008, a series of monitoring wells were installed just south of the interceptor trench and centered about Herrick Hollow Creek to monitor downgradient groundwater in the shallow bedrock.

Groundwater quality results indicate that the highest VOC concentrations are present in the wells closest to the southern end of the trench, particularly in the well closest to the Creek, monitoring well RH-02, where the average TCE concentration for this review period is 33 µg/L and that of cis-1,2-DCE is 188 µg/L. VOCs were also reported in the wells on either side of monitoring well RH-02, but at lower concentrations, 1.8 µg/L of TCE and 8.1 µg/L of cis-1,2-DCE in monitoring well RH-01, and 10 µg/L of TCE and 25 µg/L of cis-1,2-DCE in monitoring well RH-03.

In the well transect located approximately 1,200 feet downgradient from the first transect (southward), VOC concentrations have been consistently reported as "not detected," except for monitoring well RH-10I, where the average TCE concentration for the review period is 1.9 µg/L and that of cis-1,2-DCE is 0.9 µg/L. In monitoring well RH-12D, located approximately 4,200 feet downgradient of the first transect, the average TCE concentration for the period is 1.7 µg/L and that of cis-1,2-DCE is 1.9 µg/L. Concentrations of these contaminants declined over the course of the review period.

VOC concentrations in these "downgradient" monitoring well transects were generally stable in each well over the review period, with concentrations fluctuating about an average value and showing slight downward trends or no discernable trends. VOC concentrations that were observed above standards were limited to wells in the first transect area nearest the trench. Approximately 1,200 feet further downgradient, VOCs were not detected or were detected at levels below standards.

The VOC concentrations observed in "downgradient" monitoring wells for the review period also represent decreased concentrations compared to the previous review period. For example, for monitoring well RH-02, average concentrations of TCE and cis-1,2-DCE for the previous review period were 37 µg/L and 215 µg/L respectively; but have slightly decreased to 33 µg/L and 188 µg/L, respectively for the present review period.

Emerging Contaminants

As a part of a state-led sampling program, six monitoring wells were sampled for per- and poly-fluoroalkyl substances and 1,4-dioxane in November 2018. The sampled wells included RH-02, RH-05D, RH-06S, RH-07S, RH-08D, and MW-12DD. Monitoring wells RH-05D through RH-08D are located adjacent to the trench. Monitoring well RH-02 is located southeast of the trench, adjacent to Herrick Hollow Creek, and MW-12DD is on the eastern side of South Pond.

In 2020, New York State adopted new drinking water standards which set Maximum Contaminant Levels (MCLs) of 10 nanograms per liter (ng/L) for perfluorooctanoic acid (PFOA), 10 ng/L for perfluorooctanesulfonic acid (PFOS), and 1 µg/L for 1,4-dioxane. Concentrations of PFOA/PFOS were reported below their MCLs in all of the sampled monitoring wells. 1,4-dioxane was present slightly above its MCL in RH-02 and RH-05D, with a maximum observed concentration of 3.16 µg/L (RH-02, estimated).

Residential Wells

Two residential drinking water wells located approximately a mile downgradient of the Richardson Hill Road Landfill and South Pond, adjacent to Herricks Creek are sampled on an annual basis. Sampling results for the wells can be found in Appendix D, Table 6 (designated as “H-well” and “D-well”). Another residence located downgradient of Sidney Landfill has a treatment system installed on it drinking water well. Based on the data, there is no exposure to site contaminants in the private drinking wells above the state and federal drinking water standards, as most samples analyzed during the review period were non-detect with no samples above 1 µg/L.

At the request of NYSDEC and NYSDOH, a private water supply survey was performed in 2020 to identify/confirm current groundwater users in the vicinity of the sites. Canvassing letters were sent to 36 land owners within 0.5 miles of the sites. Responses were received from 14 landowners. One property has no drinking water well on it and one other property’s drinking water well has a treatment unit which is monitored annually. No additional concern for impacts to private wells from the sites resulted from the survey.

Sediment and Surface Water Samples

Surface water/sediment samples are collected annually at three locations along the western slope of South Pond. PCBs have not been detected in the surface water above the detection limit of 0.05 µg/L during annual measurements throughout the review period. The results from sediment sampling show PCB contamination below the cleanup level of 1 mg/kg (see Appendix D, Table 7). During the review period, each sediment sampling location reported higher maximum and median concentrations of Aroclor 1248 than were observed during the previous review period when the highest PCB concentration was 0.2 mg/kg. The most elevated concentration observed was 0.44 mg/kg, recorded at SED-2 in August 2020. It is possible that the restored sediments were affected by PCB-contaminated groundwater situated between the groundwater trench and South Pond that was present prior to the initiation of trench operations. However, groundwater data also suggest that affected groundwater may be migrating away from the trench and toward the pond at several locations.

Fish Samples

Fish, surface water, and sediment samples were collected and analyzed for PCBs in South Pond and at five locations along Herrick Hollow Creek in 2012 by NYSDEC, in 2016 by EPA, and at South Pond and three locations along Herrick Hollow Creek in 2020 by NYSDEC. The fish tissue sampling results are shown in Appendix D, Table 8, and the locations in Figure 3 (Appendix A). At each location, creek chub were collected; in addition, pumpkin seed were collected from location HC-1 and brook trout were collected from location HC-6. Surface water and sediment samples were not collected during NYSDEC's 2020 fish sampling event.

Fish tissue data collected following the sediment remediation in 2008 show significant decreases in concentrations, with an overall continued decrease in tissue concentration in 2012. Sample data from 2016 show higher concentrations, in both the creek chub and pumpkin seed from the South Pond (in comparison to 2012) and slightly higher concentrations of PCBs in fish tissue from sample location HC-3, while data from locations HC-2, HC-4, and HC-5 remain relatively consistent. At the furthest downstream location, HC-6, creek chub concentrations decreased from 2012 to 2016, while brook trout concentrations increased.

While not statistically significant, sample data from 2020 show lower concentrations (0.33 mg/kg average) of PCBs in creek chub in South Pond (in comparison to 2016 where the average concentration was 1.38 mg/kg). The 2020 concentrations in South Pond are similar to concentrations detected in 2012 (0.41 mg/kg average for both). PCB concentrations in pumpkinseed at South Pond had not been measured since 2008; concentrations in 2020 are much lower than what was detected in 2008 (5.42 mg/kg in 2008 versus 0.12 mg/kg in 2020). Creek chub PCB concentrations were marginally lower in sample locations HC-2 (0.21 mg/kg versus 0.23 mg/kg), HC-5 (0.14 mg/kg versus 0.20 mg/kg), and HC-6 (0.11 mg/kg versus 0.15 mg/kg) in 2020 relative to 2016. The single brook trout collected in sample location HC-6 had a lower measured PCB concentration than the samples collected in 2016, with the concentration being similar to what was detected in brook trout samples collected in 2012.

Sidney Landfill Site

Quarterly groundwater sampling was initiated in November 2001. Appendix D, Table 9, summarizes the Sidney Landfill site-wide groundwater sampling results for TCE, cis-1,2-DCE, and VC for the review period (refer to Appendix A, Figure 4, for locations of the monitoring wells). Appendix D, Table 10, summarizes PCB concentrations in groundwater found to exceed the standard for this review period. The following summarizes these sample results:

Disposal Area Monitoring Wells

During the review period, VOC concentrations in individual wells exhibited gradually decreasing trends or no trends, with concentrations fluctuating about an average value. The VOC levels observed are less than those found during the RI, and concentrations at the most contaminated wells have decreased slightly compared to the previous review period. Overall, the results are relatively similar to the last review period and are indicative of a stable plume.

For monitoring wells in the former "hotspot" area (MW-2S, MW-2D, MW-14S, MW-15SR, MW-15D, and MW-16S), groundwater quality data show TCE ranging from not detected to 125 μg/L, and cis-1,2-DCE ranging from not detected to 9.4 μg/L. The lowest average TCE concentrations in this area were found in monitoring well MW-2D at 1.8 μg/L and the highest were found in monitoring well MW-15SR at 40 μg/L, where the average TCE concentration during the previous review period was 62 μg/L. VOC concentrations in the former "hotspot" area continue to be equal to or less than concentrations found at the remainder of the site.

Throughout the review period, the greatest concentrations of VOCs at the Sidney Landfill were observed in monitoring wells located between the western boundary of the North Disposal Area and Richardson Hill Road. In monitoring well MW-6S, the average concentrations of TCE, cis-1,2-DCE, and VC, were 72 μg/L, 75 μg/L and 17 μg/L, respectively. Similarly, in monitoring well MW-6D, average concentrations of 226 μg/L, 225 μg/L, and 5.2 μg/L were found for TCE, cis-1,2-DCE and VC, respectively. The maximum concentrations of TCE (313 μg/L) and cis-1,2-DCE (323 μg/L) were reported in monitoring well MW-6D in November 2018, whereas the maximum concentration of 31 μg/L of VC was reported in monitoring well MW-6S in August 2020. Wells located between the monitoring well MW-6 cluster and the North Area recovery wells showed significantly lower VOC concentrations.

Quarterly groundwater PCB sampling is limited to monitoring wells MW-2S, MW-6S, and MW-16S and concentrations that exceed standards ranged from 0.4 μg/L to 0.98 μg/L, 1 μg/L to 9 μg/L, and 0.45 to 0.96 μg/L, respectively. Sample results from monitoring well MW-6S, which had the highest PCB concentrations during the review period, displayed an unsteady gradual decline in total PCBs between 2017 and 2021.

Thirteen gas vents are analyzed quarterly for methane gas. Landfill gas monitoring results during the review period occasionally approached or met the lower explosive limit for methane and warrants further evaluation.

In 2010, NYSDEC sampled a seep along the unnamed tributary north of North Pond, located west of the site and over 200 feet north of the monitoring well MW-7 cluster. The results showed cis-1,2-DCE concentrations of approximately 15 μg/L, which is above the groundwater standard. This suggests that part of the plume may be migrating to the north. Quarterly seep sampling was conducted during the review period through early 2020 at seep locations SEEP-3, SEEP-4, and SEEP-5. Samples from these locations contained TCE and cis-1,2-DCE during multiple sampling events throughout the review period, although concentrations declined significantly at seep location SEEP-3, where concentrations were historically observed to be the most elevated. During the review period, the maximum respective concentrations of TCE and cis-1,2-DCE were 2.3 μg/L and 9.3 μg/L at seep location SEEP-5 in November 2020. Seep location SEEP-5 is located approximately 150 feet north of the monitoring well MW-7 cluster. While groundwater data indicate that contamination associated with Sidney Landfill is being addressed by the North Area recovery wells, seep and groundwater elevation data suggest that contaminated groundwater may be escaping the extraction network and migrating to the north. The installation of additional groundwater monitoring wells is necessary to determine whether there is full capture of the plume by the recovery wells.

In 2012, an optimization evaluation of the RHRL and Sidney Landfill sites (Tetra Tech GEO) observed that the Sidney Landfill is situated on a flow divide where contaminated groundwater can migrate in diverging directions away from the landfill, which may explain some of the contamination not captured by the extraction system.

Site Inspection

The inspection of the sites was conducted on October 21, 2021. In attendance were Ms. Tames, Mr. Mason, and Ms. DeBofsky from EPA, Joshua Haugh, NYSDEC project manager, Sara Wright and Amanda Tuttle of Wood plc, the PRPs' consultant, John Carnevale of Ramboll, the PRPs' consultant and Matt Davison of Jacobs, the operator of the treatment plant. The purpose of the inspection was to assess the protectiveness of the remedy.

The inspection consisted of walking the site grounds and inspecting the caps, gas vents, and monitoring and recovery wells. Landfill cap fencing, wells, vents and grass cover on caps were observed to be well maintained. The treatment plant was also inspected and observed to be well maintained.

V. TECHNICAL ASSESSMENT

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

Richardson Hill Road Landfill Site

The ROD, as modified by the 2008 and 2016 ESDs, called for, among other things, the excavation of contaminated soils and sediment, consolidation of the removed material on-site and/or disposal off-site, installation of a landfill cap, construction of an on-site TSCA disposal cell, construction of a groundwater extraction/treatment system, excavation of PCB/VOC contaminated sediments in South Pond and Herrick Hollow Creek, and ICs to restrict groundwater use, protect the integrity of the caps, and prevent exposure to vapor intrusion. All construction activities have been completed. The excavation and containment of the contaminated soils and sediments have mitigated the human health and ecological risks posed by these materials.

Sediment and surface water samples are collected annually at three locations along the west flank of South Pond. The most recent results from surface water sampling show PCBs below the detection limit (0.38 μg/L). Results from sediment sampling show levels of PCBs to be below the cleanup criteria of 1 mg/kg, although low-level PCB contamination was found in the sediment, and slightly higher median and maximum observed PCB concentrations were observed during the review period when compared to the previous review period. Based upon sediment and groundwater data, it appears that PCB-contaminated groundwater might be migrating past the trench and upwelling/discharging at the surface, which could affect PCB concentrations in pond-adjacent sediments. It is also likely that the restored sediments have been affected by PCB-contaminated groundwater that was already in place between the trench and South Pond subsequent to the initiation of trench operations. Groundwater in this area discharges to the Pond at a very low velocity due to depressed hydraulic gradients caused by trench operations. Sampling results show major improvement over pre-remedial conditions and that water quality is not declining. Whole effluent toxicity (WET) tests are performed quarterly per the requirements of the NYSDEC Effluent Limitations and Monitoring Requirements permit in effect from November 2017 through October 2022. The WET analytical results suggest no toxicity to ecological receptors from groundwater discharged to the Pond. Trench optimization activities are recommended to prevent the migration of contaminated groundwater past the trench.

The hydraulic heads measured in piezometers within and adjacent to the interceptor trench show that the trench generally exerts hydraulic control by depressing the water table levels in the formation outside the trench at most monitoring locations. However, inward gradients are not consistently maintained along the trench and full capture is not provided, particularly in areas next to piezometer pairs SCC-01/TMW-03, SCC-04/TMW-06 and TMW-07/TMW-08. The lack of complete capture likely accounts for the persistence of VOCs observed in monitoring wells adjacent to and downgradient of the trench. Water quality data for the review period show that TCE and cis-1,2-DCE are frequently found in monitoring wells adjacent to South Pond and downgradient of the southern end of the trench at levels above groundwater quality standards, although average VOC concentrations in the area have generally decreased when compared to the previous review period. Instead of implementing this recommendation from the last FYR of installing additional wells, the PRP suggested performing trench pump replacements and pump setpoint elevation adjustments to further promote trench capture. The installation of additional wells will be considered as part of forthcoming trench optimization to ensure contaminated groundwater is not migrating away from the trench.

Extraction well RW-05 was designed to address VOC groundwater contamination observed at monitoring wells RH-03 and RH-04 near the south end of the trench. Based on hydraulic and water-quality data, it appears that the well is providing capture of contaminated groundwater in this area. However, because contamination has been observed in monitoring wells further south of monitoring wells RH-03 and RH-04, it is possible that contamination is migrating around the southern end of the extraction system. Concentrations of VOCs in monitoring well RH-12, located approximately 4,200 feet south of extraction well RW-05, are gradually declining and generally lower than the NYSDEC Class GA standard. The operational assessment of the treatment facility indicates that the intake rates were well within design capacity of 100 gallons per minute. The processing assembly has successfully treated site-related contaminants to NYSDEC discharge limits.

An IC in the form of a Notice to Successors-in-Title accompanies the deed and alerts prospective buyers of the site property of the fact that there are restrictions on the future use of the property and explains those restrictions. This notice in combination with other site control measures, such as signage and fencing, provides adequate site use restrictions and results in an exposure pathway that is not complete. Environmental Restriction Easements and Declaration of Restrictive Covenants that run with the land were entered into between the property owners adjacent to the site and the PRPs. These easements provide for restrictions on groundwater consumption at the two properties where treatment systems were installed in 1993 pursuant to the RHRL site Administrative Order on Consent to address groundwater contamination related to the RHRL site.

The residence located on the western side of the Richardson Hill Road was determined to be structurally unsound and was demolished by the owner in 2008. The water treatment system at the other residence on the eastern side of Richardson Hill Road still exists and is regularly monitored.

Sidney Landfill Site

The ROD, as modified by the 2004 ESD, called for excavation and relocation of waste from the Can and Bottle Dump Area, construction of four separate engineered caps and enclosure with chain linked fences, extraction of contaminated groundwater from the bedrock aquifer in the vicinity of monitoring well MW-2S utilizing the RHRL North Area recovery well battery, followed by appropriate treatment and discharge to surface water, and natural attenuation of VOCs in groundwater in downgradient areas, ICs to restrict groundwater use, protect the integrity of the caps, and prevent exposure to vapor intrusion, and long-term monitoring to evaluate the quality of groundwater, surface water, and sediments. All construction activities have been completed. The excavation, relocation, and containment of the contaminated soils and materials have mitigated the human health and ecological risks posed by these materials. Landfill gas is vented via 13 passive gas vents across the landfill caps, and monitored quarterly. Landfill gas measurements have occasionally approached or reached the LEL. It is recommended that landfill gas data are evaluated more thoroughly, gas composition is analyzed, and that any necessary corrective action is taken in order to prevent gas accumulation at potentially problematic concentrations.

While the North Area recovery wells are functioning as designed for the RHRL site, the extraction wells may not provide complete capture of the contaminated groundwater migrating from the western portion of the Sidney Landfill. As was noted above, the Optimization Evaluation of the RHRL and Sidney Landfill sites observed that the Sidney Landfill is situated on a flow divide where contaminated groundwater can migrate in diverging directions away from the landfill. Site piezometric data occasionally indicate that the hydraulic gradient in the northern part of the North Area recovery system (near RW-01) is directed away from Sidney Landfill and the hydraulic gradient at the southern end is directed away from the southernmost well (RW-4) to the south. Furthermore, NYSDEC identified VOC-contaminated seeps at the bottom of the hill to the north near monitoring well MW-7, suggesting that a portion of the plume may be migrating to the north. Seep sampling results through 2020 showed several low-level detections of VOCs throughout the review period, although concentrations declined at the seep with the most historically elevated levels of contamination. Persistent low-level VOC contamination in the groundwater beyond the capture area indicates incomplete capture and that a more detailed characterization of the aquifer is needed to define nature and extent in this area. Specifically, supplemental water-level data collection is needed to more definitively determine the groundwater flow pathways and the completeness of the capture of the groundwater contamination. Although monitoring efforts of the last five-year period have been helpful in understanding the trends in this area, additional monitoring wells are needed to fully understand the nature of extent of contamination and the effectiveness of the the recovery wells.

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

Richardson Hill Road Landfill Site

There have been no changes in the physical conditions of the site over the past five years that would change the protectiveness of the remedy. Soil and groundwater use at the site are not expected to change during the next five years, the period of time considered in this review. The risk assessment considered the mixed land use in the vicinity of the site that is zoned residential-agricultural and this land use is not expected to change in the next five years. Direct contact exposures at the site were interrupted through the installation of the cap. The capping of the landfill interrupts potential ingestion and direct contact, including for ecological receptors, with contaminated soil. The fence around the site limits potential direct contact by trespassers. Subslab soil gas and indoor air evaluations were conducted at four of the seven nearby residences in 2008. Based upon the results, it was concluded that no further action was needed. An IC was established to restrict potential future building in the area unless there is an evaluation of the vapor intrusion pathway and appropriate mitigation, if necessary, is implemented. Thus, the RAOs used at the time of the ROD are still valid.

Data obtained during the review period indicate groundwater contamination may be migrating downgradient of the interceptor trench and southern extraction treatment system; however, ICs in the form of easements have been implemented to inhibit groundwater consumption and the one remaining residence in the immediate vicinity of the site (on the eastern side of Richardson Hill Road) has a water treatment system that is regularly monitored.

Sidney Landfill Site

The landfill caps portion of the remedy has significantly reduced the risk to potential receptors (ecological as well as adolescent trespassers and on-site utility workers) from direct contact with the contaminated soils and has reduced the sources of groundwater contamination. Soil and groundwater use at the site have not changed during the past five years and are not expected to change during the next five years. The land use considerations and potential exposure pathways considered in the HHRA are not expected to change over the next five years. The receptors and exposure pathways considered in the HHRA remain valid. The remedial actions to address the soil contamination with a cap provide a barrier to exposure to site contaminants through direct contact. Inspection reports indicate that the fences are often vandalized (cut), coinciding with hunting season. As a result, the fences require repair on a regular basis. Monitoring and repair of the fences will continue. Groundwater use has not changed during the past five years and is not expected to change during the next five years. At the time of the ROD, MCLs established under the Safe Drinking Water Act were selected as the groundwater Applicable or Relevant and Appropriate Requirements. The MCLs at that time are consistent with the current MCLs and remain protective.

EPA continues to monitor the seeps located at the bottom of the Sydney Landfill. The latest monitoring data indicates that the maximum concentration of cis-1,2-dichloroethylene was 9.3 μg/L (micrograms/liter). Review of the Regional Screening Level (RSL) for residential ingestion and dermal contact with this chemicals indicates that the maximum concentration detected is below the screening level of 36 μg/L for a future child resident exposed 350 days/year for a six-year period consuming 0.78 liters per day (L/day) that is associated with a noncancer Hazard Quotient of 1. The maximum concentration is also below the MCL of 70 μg/L.

TCE was also detected at the seep area at a concentration of 2.3 µg/L. The TCE concentration is below the MCL of 5 µg/L and also below a concentration of 4.9 µg/L associated with a cancer risk of 1 x 10-5 (one in 100,000) and is also below the concentration associated with an HQ = 1 of 2.8 µg/L for a future adult/child resident. The exposure assumptions include an adult/child exposed 350 days/year for 20 years as an adult and 6 years as a child exposed through ingestion, inhalation and dermal contact with the water. The exposure assumptions for consumption of water include 0.78 L/day for the young child and 2.5 L/day for the adult at this location. The use of the RSL may overestimate cancer risks and non-cancer hazards that are based on concentrations associated with daily consumption of groundwater at higher ingestion rates and for longer time frames than anticipated from incidental exposures to the seeps that are anticipated to occur on a less frequent basis.

In addition, the Environmental Easements and the Notice to Successors in Title restrict drilling groundwater wells. Previous FYRs summarized evaluations of the vapor intrusion pathway. In 2008, sampling was conducted at two residences located adjacent to the site and the concentrations were found to be below the Vapor Intrusion Screening Levels that identify chemicals that are considered to be sufficiently volatile and toxic to warrant an investigation of the soil gas intrusion pathway when they are present as subsurface contaminants. Based on this evaluation further sampling was not recommended. An IC was established to restrict potential future building in the area unless there is an evaluation of the vapor intrusion pathway and appropriate mitigation, if necessary, is implemented.

As sediments contaminated with PCBs greater than 1 mg/kg were excavated and dredged from South Pond and Herricks Hollow Creek, and concentrations remain low, the potential for toxic effects has been mitigated. EPA's cleanup activities have resulted in the interruption of the exposure pathways for ecological receptors, as evidenced by steady or declining average concentrations of PCBs in fish tissue, and thus the RAOs used at the time of the ROD are still valid. Low levels in the seep water at Sidney Landfill is not expected to negatively impact ecological receptors.

Common Conclusions

Changes in Standards and To-Be-Considered. There have been no changes to the groundwater drinking water standards and TBCs for chemicals at either site.

Changes in Toxicity Values. There have been no changes in toxicity values for contaminants at both sites since the last FYR. Currently, the Integrated Risk Information System is updating the toxicity value for PCBs for noncancer, inorganic arsenic, and manganese. Any changes in the toxicity values will be addressed in the next FYR.

Changes in Risk Assessment Methodologies. In 2014, the standard default exposure assumptions used in risk assessments were updated. However, these changes do not alter the original risk assessment conclusions and the protectiveness of the remedies at both sites.

Changes in Exposure Pathways. There are no changes in the exposure pathways from the original risk assessments.

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

Based on the evaluation of the potential human and ecological exposures at the two sites, there is no new information that could call into question the protectiveness of the remedies.

VI. ISSUES/RECOMMENDATIONS

Tables 4 and 5, below, present the recommendations and follow-up actions for this FYR for the RHRL and Sidney Landfill sites, respectively.

Table 4: Issues and Recommendations

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
N/A
Issues and Recommendations Identified in the Five-Year Review:

SITE: Richardson Hill Road Landfill	**Issue Category: Remedy Performance**			
	Issue: VOCs continue to be observed in monitoring wells adjacent to and downgradient of the trench likely due to inward gradients not consistently maintained along the trench indicating full capture is not provided.			
	Recommendation: Continued trench optimization activities are recommended in order to more effectively prevent the migration of contaminated groundwater away from the trench.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	6/30/2024

Table 5: Issues and Recommendations

Issues/Recommendations	
OU(s) without Issues/Recommendations Identified in the Five-Year Review:	
N/A	
Issues and Recommendations Identified in the Five-Year Review:	
SITE:	**Issue Category: Remedy Performance**

<table>
<tr><td rowspan="2">Sidney Landfill</td><td colspan="4">Issue: Persistent low-level VOC contamination in the groundwater beyond the capture area indicates that the RHRL site North Area extraction wells may not be providing complete capture of the contaminated groundwater.</td></tr>
<tr><td colspan="4">Recommendation: Data reviewed over the current five-year period has shown that, although concentrations are low and capture is being maintained in the majority of the plume, monitoring wells are still necessary in this area to better understand groundwater flow and fully delineate the nature and extent of contamination.</td></tr>
<tr><th>Affect Current Protectiveness</th><th>Affect Future Protectiveness</th><th>Party Responsible</th><th>Oversight Party</th><th>Milestone Date</th></tr>
<tr><td>No</td><td>Yes</td><td>PRP</td><td>EPA</td><td>6/30/2024</td></tr>
</table>

OTHER FINDINGS

In addition, the following recommendation was identified during the FYR and may improve management of O&M, but does not affect current and/or future protectiveness:

> Landfill gas is vented via 13 passive gas vents across the landfill caps, and monitored quarterly. Landfill gas measurements have occasionally approached or reached the LEL. It is recommended that landfill gas data are evaluated more thoroughly, gas composition is analyzed, and that any necessary corrective action is taken in order to prevent gas accumulation at potentially problematic concentrations in the future.

VII. PROTECTIVENESS STATEMENT

Tables 6 and 7, below, present the OU and sitewide protectiveness statements for the RHRL and Sidney Landfill sites, respectively.

Table 6: Protectiveness Statements

<table>
<tr><th colspan="3">Protectiveness Statement(s)</th></tr>
<tr><td>Operable Unit:
Richardson Hill Road Landfill</td><td>Protectiveness Determination:
Short-term Protective</td><td>Planned Addendum Completion Date:
Click here to enter a date</td></tr>
<tr><td colspan="3">Protectiveness Statement: The implemented actions at the RHRL site protect human health and the environment in the short term because the wastes have been consolidated and capped and the groundwater is not impacting residences downgradient of the site. In order for the RHRL site to be protective in the long term, additional capture assessment and optimization of the groundwater remedy for the eastern portion of the site needs to be performed.</td></tr>
<tr><th colspan="3">Sitewide Protectiveness Statement</th></tr>
<tr><td colspan="2">Protectiveness Determination:
Short-term Protective</td><td>Planned Addendum Completion Date:
Click here to enter a date</td></tr>
</table>

Protectiveness Statement: The implemented actions at the **RHRL** site protect human health and the environment in the short term because the wastes have been consolidated and capped and the groundwater is not impacting residences downgradient of the site. In order for the RHRL site to be protective in the long term, additional capture assessment and optimization of the groundwater remedy for the eastern portion of the site needs to be performed.

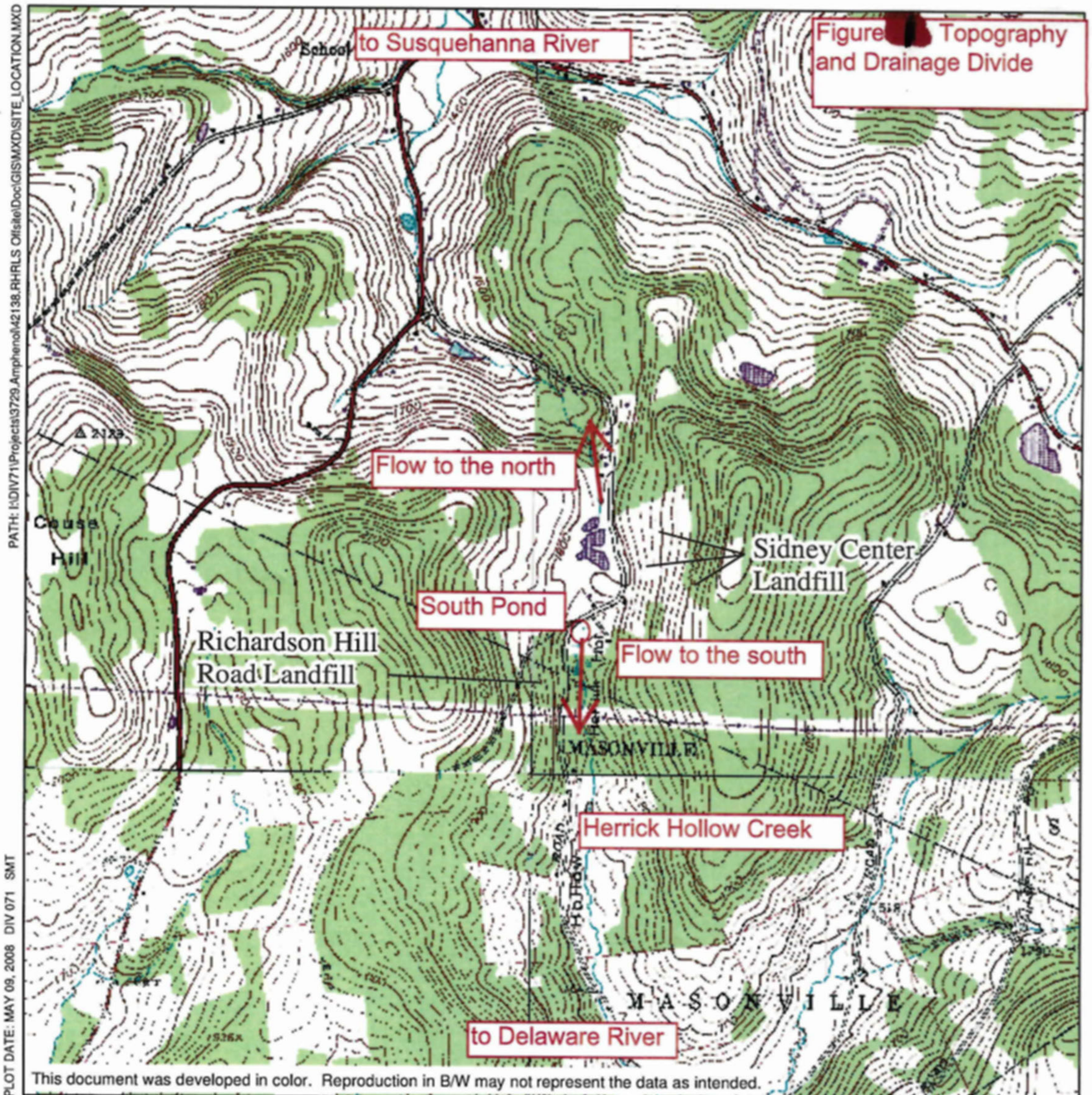
Table 7: Protectiveness Statements

Protectiveness Statement(s)		
Operable Unit: Sidney Landfill	*Protectiveness Determination:* Short-term Protective	*Planned Addendum Completion Date:* Click here to enter a date
Protectiveness Statement: The implemented actions at the **Sidney Landfill** site protect human health and the environment in the short term because the wastes have been consolidated and capped and the groundwater is not impacting residences downgradient of the site. In order for the Sidney Landfill site to be protective in the long term, installation of additional monitoring wells and a supplemental water-level data collection effort need to be implemented in order to provide the data to assess plume capture.		
Sitewide Protectiveness Statement		
Protectiveness Determination: Short-term Protective		*Planned Addendum Completion Date:* Click here to enter a date
Protectiveness Statement: The implemented actions at the **Sidney Landfill** site protect human health and the environment in the short term because the wastes have been consolidated and capped and the groundwater is not impacting residences downgradient of the site. In order for the Sidney Landfill site to be protective in the long term, installation of additional monitoring wells and a supplemental water-level data collection effort need to be implemented in order to provide the data to assess plume capture.		

VIII. NEXT REVIEW

The next FYR report for the RHRL and Sidney Landfill Superfund sites is required five years from the completion date of this review.

APPENDIX A – FIGURES



ADAPTED FROM: TROUT CREEK, WALTON WEST, UNADILLA, AND FRANKLIN USGS QUADRANGLES

QUADRANGLE LOCATION

RICHARDSON HILL ROAD LANDFILL SITE
SIDNEY, NEW YORK

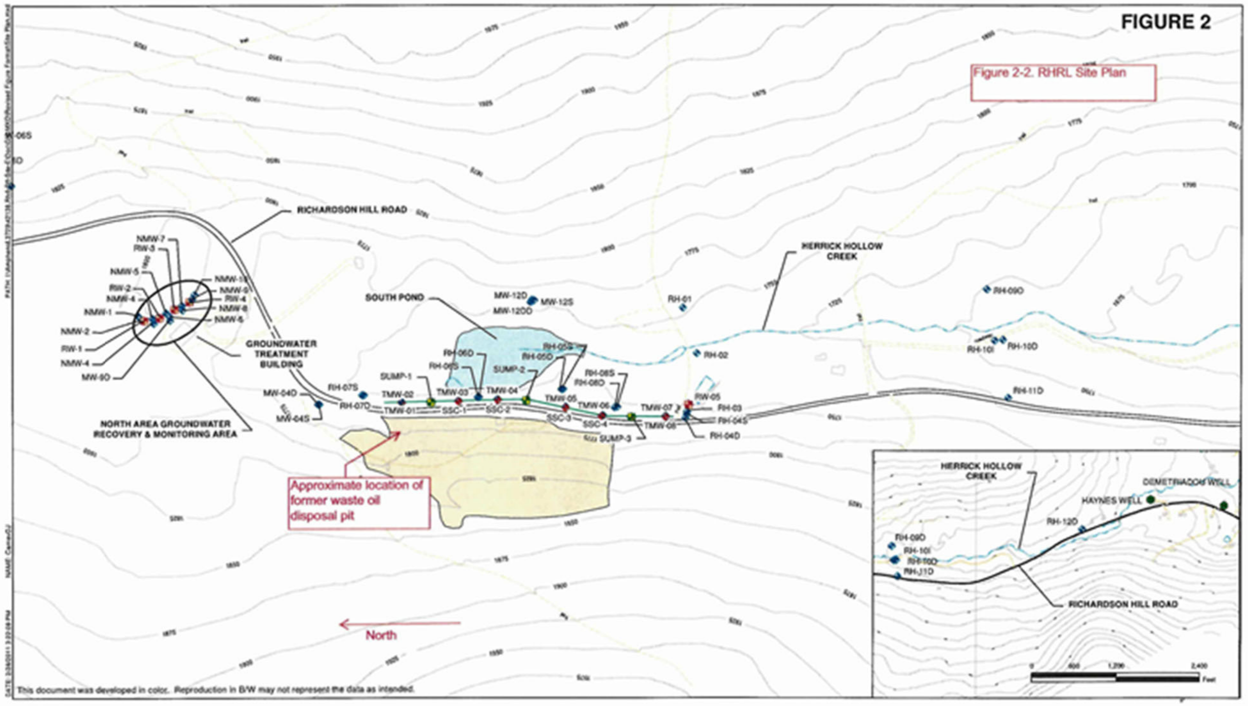
SITE LOCATION

0 1,000 2,000 4,000 6,000 8,000
Feet

O'BRIEN & GERE

FILE NO. 3729/42138
AUGUST 2008

1:24,000



LEGEND
DUAL-ZONE TRENCH MONITORING WELL
HOMEOWNER WELL
MONITORING WELL
RECOVERY WELL
SUMP
GROUNDWATER RECOVERY TRENCH
CAPPED LANDFILL

RICHARDSON HILL ROAD LANDFILL SITE
SIDNEY CENTER, NEW YORK

SITE PLAN

O'BRIEN & GERE

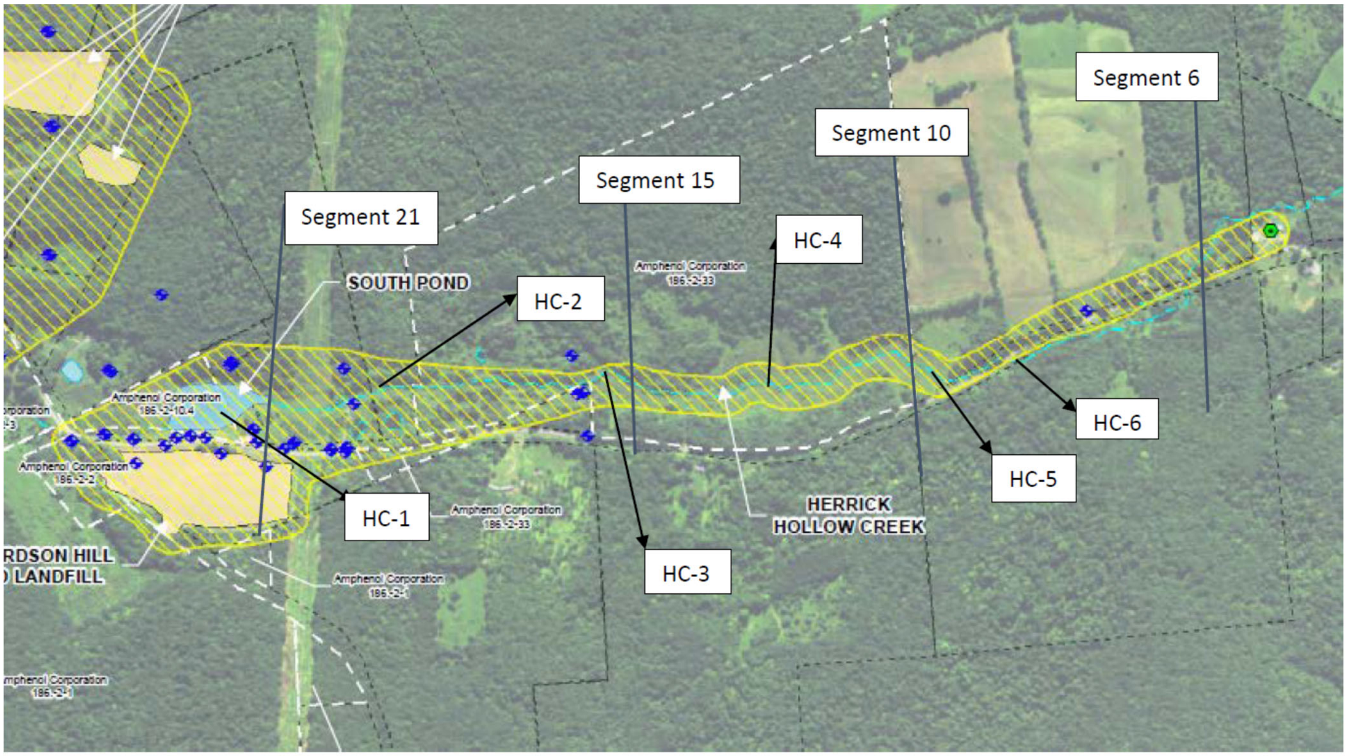


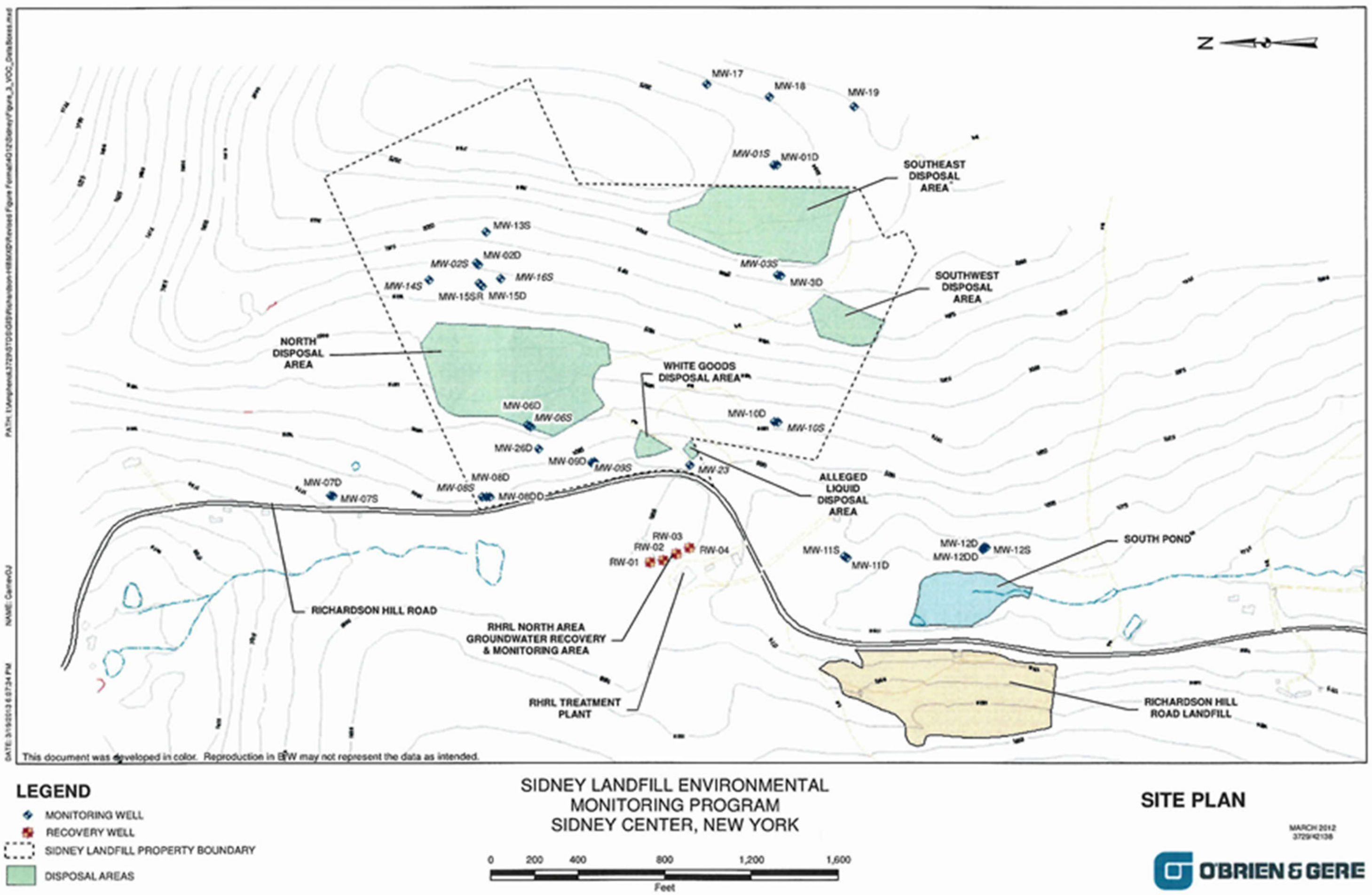
FIGURE 3 – Fish Sampling and Sediment Segment Locations – South Pond and Herrick Hollow Creek

HC-1 to HC-6 – Fish Sampling Locations

Segment 6 to Segment 21 – Sediment Segment Locations

All locations shown are approximate

FIGURE 4



SIDNEY LANDFILL ENVIRONMENTAL
MONITORING PROGRAM
SIDNEY CENTER, NEW YORK

SITE PLAN

MARCH 2012
3729/42138

O'BRIEN & GERE

APPENDIX B--REFERENCE LIST

Documents, Data, and Information Reviewed in Completing the Five-Year-Review	
Document Title, Author	**Submittal Date**
Record of Decision, Sidney Landfill, EPA	1995
Record of Decision, RHRL, EPA	1997
Explanation of Significant Differences, Sidney Landfill, EPA	2004
Explanation of Significant Differences, RHRL, EPA	2008
Optimization Review, Sidney and RHRLs, ORD, EPA	2012
Explanation of Significant Differences, RHRL, EPA	2017
RHRL Site 2017 Annual Operations & Maintenance Summary Report, OBG	2017
Sidney Landfill Site Inspection & Monitoring Program 2017 Annual Report, OBG	2017
RHRL Site 2018 Annual Operations & Maintenance Summary Report, OBG	2018
Sidney Landfill Site Inspection & Monitoring Program 2018 Annual Report, OBG	2018
RHRL Site 2019 Annual Operations & Maintenance Summary Report, OBG	2019
Sidney Landfill Site Inspection & Monitoring Program 2019 Annual Report, OBG	2019
RHRL Site Emerging Contaminant Report , OBG	2019
RHRL Site 2020 Annual Operations & Maintenance Summary Report, OBG	2020
Sidney Landfill Site Inspection & Monitoring Program 2020 Annual Report, OBG	2020
2020 Fish, Sediment and Surface Water Sampling Report for RHRL, NYDEC	2020
RHRL Site 1st Quarter 2021 Operations & Monitoring Report, MACTEC	2021
Sidney Landfill Site 1st Quarter 2021 Operations & Monitoring Report, MACTEC	2021
RHRL Site 2nd Quarter 2021 Operations & Maintenance Summary Report, MACTEC	2021
Sidney Landfill Site 2nd Quarter 2021 Operations & Monitoring Report, MACTEC	2021
Whole Effluent Toxicity (WET) Testing Report for March 2021 Testing	2021
RHRL Site 3rd Quarter 2021 Operations & Maintenance Summary Report, MACTEC	2021
Sidney Landfill Site 3rd Quarter 2021 Operations & Monitoring Report, MACTEC	2021
EPA guidance for conducting FYRs and other guidance and regulations to determine if any new Applicable or Relevant and Appropriate Requirements relating to the protectiveness of the remedy have been developed since EPA issued the ROD.	

APPENDIX C-- SITES' GEOLOGY/HYDROGEOLOGY

Richardson Hill Road Landfill Site

The surficial geology of the region is dominated by Pleistocene-age glacial and recent alluvial sediments. The subsurface geology of the site is characterized by unconsolidated glacial deposits overlying bedrock. The unconsolidated deposits consist of soil mixed with municipal refuse in the landfill underlain by a dense reddish brown to gray glacial till. Bedrock beneath the till consists of interbedded layers of shale, siltstone, and sandstone. The depth to bedrock varies from 18 feet to 39 feet and depth to bedrock is less in the center of the valley along Richardson Hill Road. Bedrock elevations at the site decrease from west to east toward South Pond.

Groundwater exists at the site in the overburden, shallow bedrock (18 to 70 ft.), and the deeper bedrock (greater than 70 ft.). The overburden and shallow bedrock flow regimes appear to be hydraulically connected and isolated from the deeper bedrock groundwater flow system. Groundwater in the overburden and shallow bedrock flows toward the center of the valley, east toward South Pond and generally follows the site topography. Groundwater in the North Area flow to the north toward the North Pond.

Sidney Landfill

The geology of the bedrock beneath the site is predominately non-marine, massive, gray sandstones interbedded with siltstone and varying-colored shales. The bedrock at the site consists of alternating sequences of sandstone and siltstone/shale which have a shallow dip of approximately 2 to 3 degrees to the east. The dominant fracture orientation within the exposed bedrock strikes approximately northeast to southwest. A secondary fracture set strikes approximately east to west.

The unconsolidated deposits of the site, glacial till, are generally unsaturated across the site. Saturation of the glacial till deposits only occurs at the base of Richardson Hill, along the valley floor. Typically, a downward vertical hydraulic gradient exists between the unconsolidated deposits and the underlying bedrock. The majority of the groundwater flow at the site is within the fractured bedrock underlying the unsaturated unconsolidated deposits. The groundwater flow within the bedrock occurs primarily along bedding planes and fractures, with minimal flow within the primary porosity of the bedrock.

APPENDIX D – TABLES

Table 4: TCE, cis-1,2-DEC, and VC Concentrations Detected in Groundwater from 2017-2021 at Richardson Hill Road Landfill Site (unfiltered)																			
Cis-1,2-DEC (µg/L)																			
Wells		2017				2018				2019				2020				2021			
		Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov
Well Cluster east of South Pond	MW-12S	<0.5	<0.5	1.5	<0.5	<0.5	<0.5	<0.5	2.1	<0.5	<0.5	1	6.7	<0.5	<0.5	0.6	7.6	<0.5	<1	<1	
	MW-12D	14	13	13	12	13	14	1.2	3.2	<0.5	<0.5	3.9	7.8	5.2	4	3.5	4.5	64	36.1	35.5	
	MW-12DD	55	49	56	58	56	58	3	1.3	<0.5	<0.5	6.3	4	6.7	6.7	5.6	7.0	7.4	1.2j	24.2	
Transect 1	RH-01	6.8	7.7	13	22	15	11	8.2	3.2	<0.5	<0.5	8.5	11	9.9	5.1	7.8	9.5	7.5	4.8	4.1	
	RH-02	190	170	230	230	180	170	190	180	<0.5	<0.5	230	190	180	130	220	220	190	191	106	
	RH-03	75	40	38	63	40	46	44	26	<1	<1	8.6	3.1	2	2.4	6.2	5.0	6	52.5	<1	
	RH-04S	1.7	1.3	2.2	2	2	1.8	<0.5	<0.5u	<0.5	<0.5	2.1	0.8	0.7	0.6	1.2	1.1	1	1.3	0.54	
	RH-04D	13	31	13	29	19	9.8	3.3	21	<0.5	<0.5	3.7	10	4.5	2	3.1	9.1	12	9.2	3.9	
Transect 2	RH-09D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
	RH-10i	1.5	1.4	2.3	6.2	2.2	1.7	1.7	1.5	<0.5	<0.5	1.5	3.6	1.4	0.9	1.0	0.9	1	1.8	<0.95j	
	RH-10D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
	RH-11D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
Transect 3	RH-12D	3.9	2.8	2	6.2	4.8	3.4	3	2.2	<0.5	<0.5		0.6	0.7	0.5j	0.5	0.7	0.4	<1	0.58j	
Wells Along Interceptor Trench	RH-05S	7.2	5.4	8	12	8	10	7.2	7.3	<0.5	<0.5	6.3	5.6	4.5	3	7.1	7.9	3.8	4.8	3.1	
	RH-05D	320	390	210	260	230	310	280	370	<0.5	<0.5	400	220	250	240	310	260	230	239		
	RH-06S	370	320	410	450	330	330	300	370	<5	<5	360	290	280	240	290	260	200	203	190	
	RH-06D	63	140	84	110	70	69	68	130	<2.5	<2.5	8.1	8	14	4.8	26	9.4	6.2	7	4.3	
	RH-07S	0.49j	<0.5	0.5	0.9	0.5	<0.5	0.2j	0.5u	<0.5	<0.5	0.3j	0.4j	0.3j	<0.5	0.2j	0.4j	<0.5	<1	0.62j	
	RH-07D	2.2	1.6	1.2	3.2	1.5	2.0	1.2	1.6	<0.5	<0.5	0.5	0.7	1.8	0.7	0.6	1.1	0.5	1.5	1.8	
	RH-08S	16	5.1	29	35	21	16	17	5.2	<0.5	<0.5	16	12	4.8	4.7	12	20	9.1	6.9	3.3	
	RH-08D	96	83	130	140	110	100	96	94	<2.5	<2.5	83	89	81	53	93	74	74	85.7	32	
	TMW-2	30	7.3	32	47	49	78	18	17	<1	<1	25	13	11	13	12	19	28	8.2		
	TMW-3	310	350	190	250	260	570j	260	630	<12	<12	290	230	210	330	73	120	74	124		
	TMW-4	18	23	11	21	6.8	65j	12	79	<2.5	<2.5	28	0.46	0.3j	9.1	2.7j	3.4	34	63.7		
	TMW-5	6.5	6.7	7.2	10	<0.5	5.4	4.3	3.6	<0.5	<0.5	3.1	3.8	3	2.6	3.2	5.6	2.4	3		
	TMW-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		
	TMW-7	98	68	62	38	60	83	39	29	<1	<1	36	18	37	11	8.7	39	13	36.5		
	RW-05																	64	81.5	78.5	

Table 4: TCE, cis-1,2-DEC, and VC Concentrations Detected in Groundwater from 2017-2021 at Richardson Hill Road Landfill Site (unfiltered)																			
Vinyl Chloride (µg/L)																			
Wells		2017				2018				2019				2020				2021			
		Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov
Well Cluster east of South Pond	MW-12S	<0.5	<0.5j	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
	MW-12D	<0.5	<0.5j	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
	MW-12DD	0.58	<1j	<1	<1	0.90j	0.70j	<1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
Transect 1	RH-01	<0.5	0.66	<0.5	<0.5	0.5j	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	1	<0.5	0.7	0.6	<0.5	<1	0.88j	
	RH-02	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<1	<1	
	RH-03	<2.5	<2.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<0.5	<0.5	<0.5	<0.5	<0.5	4.9	<1	
	RH-04S	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
	RH-04D	1.3	2.7j	1.2	2.9	2.7	<0.5	<0.5	1.7	<0.5	0.70j	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	1.1	<1	
Transect 2	RH-09D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
	RH-10i	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
	RH-10D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
	RH-11D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
Transect 3	RH-12D	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
Wells Along Interceptor Trench	RH-05S	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
	RH-05D	34	53j	35	42	38	45	52	58	<5	54j	60	34	40	32	58	31	35	39.3j		
	RH-06S	32	36j	52	81	43	31	48	50	<5	28j	45	39	31	19	68	57	33	26.9	16.5	
	RH-06D	<1	<2.5	<2.5	<2.5	<2.5	<2.5	<1	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<1	<1	<2.5	<2.5	<1	<1	
	RH-07S	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
	RH-07D	<0.5	<0.5j	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	
	RH-08S	3.6	<0.5	7.7	9.2	5.6	3.9	4.8	0.7	<0.5	0.6j	3.9	3.1	0.8	0.8	3.3	4.4	2.3	1.6	<1	
	RH-08D	12	3.7	17	19	16	10	11	7.7	<2.5	5	8.8	8	5.7	2.2j	8.2j	7.3	5	6.3j	14.2	
	TMW-2	<2.5	<0.5j	<2.5	<2.5	<2.5	<2.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<2.5			
	TMW-3	18	97	13	23	11	<5	29	150	<12	66j	17	18	11	24	4.7j	5.7	5.4			
	TMW-4	12	8.3	5.4	<0.5	12	<0.5	16	42	<2.5	9.5	37	52	1	4.9	51	93	53			
	TMW-5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
	TMW-6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5			
	TMW-7	4.9	5.3	1.2	<1	1.4	<1	3.7	3.8	<1	1.3	1.5	1.8	2.9	<1	<1	2.4	<1			
	RW-05																	5.5	7.2	7.9	

Table 5: PCBs (Aroclor 1242) Exceedances in Groundwater near RHRL Interceptor Trench, µg/L (unfiltered)																	
	2017				2018				2019				2020			2021	
Well No.	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	May	Aug	Nov	Feb	Sep
RH-05D						0.111		0.13j	0.08								
RH-06S	0.770					20.2*		1.31	1.24*		2.28*		1.28j **		18.1*		0.54
RH-06D								0.12							0.12 **		
RH-08S															0.231		
RH-08D				0.098	0.105j							0.16					
TMW-03													0.48 **		0.277 **	0.13	
TMW-04					0.116			0.14j			0.11	0.17	0.11 **	0.106 **	0.153 **	0.14	

*Aroclor -1248
**Aroclor 1260
Blank cell indicates no sample available, or sample obtained and analyzed as non-detect
J Estimated concentration
The NYSDEC Class GA Groundwater Standard for PCBs is 0.09 µg/L
The following wells were also sampled but were below the groundwater standard and/or non-detect: RH-45, RH-04D, RH-05S, RH-07S, RH-07D, TMW-02, TMW-05, TMW-06, TMW-07 and RW-05

Table 6: Private Well Data (Wells located south of RH-12D)						
Well	Chemical (µg/L)	Sample Date				
		Sept 2017	Sept 2018	Aug 2019	Aug/Sep 2020	Aug/Sep 2021
H-Well	TCE	0.6			0.6	
	cDCE	0.9			0.3j	
D-Well	TCE	<0.5	<0.5	<0.5	<0.5	
	cDCE	<0.5	<0.5	<0.5	<0.5	

J: Estimated concentration
Groundwater Class GA standard is 5 µg/L

Table 7: PCB (Aroclor 1248) in Sediment on South Pond, µg/kg					
Sample Location	Sampling Date				
	Sept 2017	Aug 2018	Aug 2019	Aug 2020	Sept 2021
Sed-01	51j	99j	35j	57	271
Sed-02	110	77j	36j	220	147
Sed-03	41j	<	100	440	59.9

< Below detection limit
J: Estimated concentration

Table 8: Fish Tissue Data at the Richardson Hill Road Landfill Site

Sample Location	Species	PRPs (June 2008) # of fish in Sample	PRPs (June 2008) Total PCBs (mg/kg)	NYSDEC (October 2012) # of fish in Sample	NYSDEC (October 2012) Total PCBs (mg/kg)	EPA (October 2016) # of fish in Sample	EPA (October 2016) Total PCBs (mg/kg)	NYSDEC (August 2020) # of fish in Sample	NYSDEC (August 2020) Total PCBs (mg/kg)
South Pond HC-1	Creek Chub	3	2.800	1	0.716	1	1.723	1	0.371
	Creek Chub	6	2.000	1	0.327	1	3.095	1	0.288
	Creek Chub			1	0.213	1	1.007	1	0.155
	Creek Chub			1	0.616	1	0.385	1	0.269
	Creek Chub			1	0.198	1	0.681	1	0.579
	Pumkinseed							1	0.201
	Pumkinseed							1	0.093
	Pumkinseed							1	0.168
	Pumkinseed							1	0.107
	Pumkinseed	7	5.420					1	0.0512
Herrick Hollow Creek HC-2	Creek Chub	1	8.200	1	0.235	1	0.406J	1	0.1563
	Creek Chub	1	8.000	1	0.207	1	0.15J	1	0.521
	Creek Chub	2	0.820	1	0.147	1	0.114J	1	0.0827
	Creek Chub	4	0.720	1	0.187	1	0.299J	1	0.2121
	Creek Chub			1	0.345	1	0.203J	1	0.0991
Herrick Hollow Creek HC-3	Creek Chub	3	0.490	1	0.124	1	0.0518J		
	Creek Chub	5	0.550	1	0.110	1	0.247		
	Creek Chub			1	0.182	1	0.261		
	Creek Chub			1	0.110	1	0.365		
	Creek Chub			1	0.129				
Herrick Hollow Creek HC-4	Creek Chub	5	0.460	1	0.138	1	0.162		
	Creek Chub	5	0.400	1	0.164	1	0.141		
	Creek Chub			1	0.064	1	0.066J		
	Creek Chub			1	0.092	1	0.0613J		
	Creek Chub			1	0.190	1	0.151J		
Herrick Hollow Creek HC-5	Creek Chub	4	0.400	1	0.140	1	0.165J	1	0.1184
	Creek Chub	5	0.420	1	0.156	1	0.070J	1	0.1446
	Creek Chub	4	0.800	1	0.108	1	0.319	1	0.1944
	Creek Chub	1	2.210	1	0.384	1	0.240J	1	0.0898
	Creek Chub			1	0.172			1	0.1412
Herrick Hollow Creek HC-6	Creek Chub	3	0.730	1	0.335	1	0.075	1	0.1406
	Creek Chub			1	0.086	1	0.084	1	0.1112
	Creek Chub			1	0.317	1	0.308	1	0.0809
	Creek Chub			1	0.324	1	0.149	1	0.1435
	Creek Chub			1	0.342			1	0.0731
	Brook Trout	1	1.420	1	0.612	1	0.830	1	0.463
	Brook Trout	1	1.420	1	0.473	1	0.590		
	Brook Trout	1	3.600	1	0.515	1	0.580		
	Brook Trout			1	0.485				
	Brook Trout			1	0.381				

Table 9: TCE, cis-1,2-DEC, and VC Concentrations Detected in Groundwater from 2017-2021 at Sidney Landfill Site (unfiltered)

TCE (µg/L)

Wells		2017				2018				2019				2020				2021			
		Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov
Hot Spot Area	MW-2S	3.7	4.3		2.4	1.8	2.8	1.7	4.9	3.2	6		4.4	2	4.2			3.5	3.2		
	MW-2D	1.4	2.6	2	1.5	1.7	2.6	1.8	2.9	0.9	0.3	1.5	2.4	1	2.2	1.2	1.3	2.3	2	<1	
	MW-14S	5.7	3.5	4.4	4.3	3.7	5.5	5.3	3	3.5	3.4	4.3	2.8	5.4	1.6	4.0	5.7	2.6	2.5	<1	
	MW-15SR	37	9.1	80.4	125	88.5	6.9	19.5	9.1	88.3	10.7	35.9	11.6	24.7	11.3	76.4	67.2	12.8	7.8	<1	
	MW-15D	6.4	3.7	10.3	4.9	6.6	4.1	3.9	3.5	6.2	3.1	10	2.5	3.1	2	9.2	9.2	2.3	2.4	<1	
	MW-16S	15	3.6	11.4	14.4	10.7	5.7	7	3.8	20.5	5.7	16.6	4.4	7.5	2.5	17.8	11.8	3.2	3.4	<1	
Road Area	MW-6S	110	64.1	149	71.8	81.2	56.2	73.7	54.8	144	45.7	96.8	43.3	97.3	43.3	107	32.7	37	33.2	19.8	
	MW-6D	170	188	261	277	274	243	249	313	301	275	226	262	180	205	219	99.6	143	201	263	
	MW-8S	11	9	9.8	9.4	7.7j	9.1	8.8	9.6	10.6	7.9	9.2	7.9	9.7	9.2	6.6	7.5	7.5	9.2	3.7	
	MW-8D	10	9.9	9.8	10.7	8.3	8.9	10.1	9.5	9.8	8.4	9.4	9	8.9	8.3	7.7	9.1	7.7	8	3.9	
	MW-9S	14	12	15.1	14.2	11.8	11.5	11	12.2	10.8	8.4	12.1	10.4	11.6	10.3	13.8	12.5	8.5	8.7	10.3	
	MW-23	5.9	3	7.1	8.2	4.6	3.4	5.2	3.5	4.8	2.6	5.5	3.8	4.1	2.5	6.0	5.8	3.7	2.5	<1	
	MW-26D	1.3	0.99j	1.4	1.4	1.2	1.0	1.2	1.2	1	1	1.1	0.96	0.77	0.95j	1.0	0.86	0.64j	0.65j	<1	
SE Corner	MW-1D	25	17	21.6	19.5	18.1	20.7	3.3	17.9	17.9	18.3		16.6	21.5	24.8	23	5.9	12.2	18	<1	
	MW-3S	34	21	12.9	19.7	1.7	22.2	5.1	8.3	14.2	7.9	14	5	17	9.6	7.4	28.3	4.4	7.2	<1	
	MW-17	3.4	2.6	1.5	3.6	3.2	3.1	1.9	3	3.5	3.3	0.98	1.6	2.8	2.4	1.4	0.97j	1.7	2.4	<1	
	MW-18	2.3	2.1	2.1	2.1	2.2	2.7	2.6	2.5	2.1	2.3	2.1	2.1	1.7	2.5	2.4	1.5	2	2.3	<1	
	MW-19	5	3.8	5.8	6.8	4.1	3.9	5.4	3.7	4.1	3.7	5.4	3	3.4	3.5	6.5	6.4	3.2	3.1	<1	

Blank Cell-- No sample data available

J Estimated concentration

< Below detection limit

Table 9: TCE, cis-1,2-DEC, and VC Concentrations Detected in Groundwater from 2017-2021 at Sidney Landfill Site (unfiltered)

Cis-1,2, DEC (µg/L)

Wells		2017				2018				2019				2020				2021			
		Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov
Hot Spot Area	MW-2S	1.6	<1		0.62	1.7	2.9	<1	1.8	1.9	1.2		0.84	0.7	1.8			0.91j	1.8		
	MW-2D	<1	1	<1	<1	<1	1.1	<1	0.71	<1	0.88	<1	<1	<1	<1	<1	<1	<1	<1	1.4	
	MW-14S	1.3	0.62	0.53	0.74	1.1	1.3	0.62	0.6	<1	0.61	0.74	<1	0.75j	<1	0.73j	0.83j	<1	0.86j	1.5	
	MW-15SR	2.3	1.0	8.9	9.4	7.5	1.5	1.6	1.1	9.1	1.2	5.1	0.73	2.1	0.95j	8	6.5	1.1	1.1	8.7	
	MW-15D	1.3	1.1	1.8	0.88	1.3	1.7	0.69	0.78	1.8	0.88	2.2	<1	0.9j	0.55j	1.8	1.4	<1	0.72	2	
	MW-16S	<1	<1	0.61	<1	0.72	<1	<1	0.51	1.2	<1	0.92	<1	<1	<1	1.1	0.52j	<1	<1	1.1	
Road Area	MW-6S	7.3	7.5	138	91.3	73.3	74.7	66.5	51.9	79.5	60.6	81.5	57.6	54.1	52.7	103	51	62.4	81.8	93.7	
	MW-6D	160	200	269	244	295	299	253	323	277	256	221	233	179	191	203	83	175	212	275	
	MW-8S	29	31.3	31.2	24.6	22.7	32.7	25	25.5	25.4	20.6	26.6	21.2	25.1	23.1	23	23.9	24.3	25.9	27.4	
	MW-8D	21	22.8	21.4	21.6	18.4	21.2	19.4	22.9	18.6	16.2	19.5	15.8	16.9	16.3	16.2	16.8	18	18	17.1	
	MW-9S	2.1	2.2	2.3	2.2	2.2	2.0	1.6	1.9	1.7	1.2	2.1	1.3	1.9	1.6	2.2	2.1	1.4	1.5	2	
	MW-23	<1	<1	0.66	0.97	<1	<1	0.53	<1	<1	<1	<1	<1	<1	<1	0.58j	0.60j	<1	<1	<1	
	MW-26D	4.5	3.2	4.9	4.4	4.9	4.3	4.1	4.7	3.5	3.3	3.3	2.7	3.1	2.8	2.4	2.5	2.9	2.3	2.2	
SE Corner	MW-1D	31	18.8	26.2	23.1	17.4	20.9	33.8	22.7	18.9	18.4		15.5	23.8	26	23.5	25.5	13.9	19.4	4.7	
	MW-3S	14	9.2	7.1	9.5	<1	11.1	2.7	3.7	6.9	3.9	8.3	1.7	6.5	3.6	6.6	13.8	1.9	3.1	4.3	
	MW-17	3.8	2.8	2.8	4.9	3.3	3.1	2.2	2.6	4.6	2.9	1.1	1.4	2.9	1.9	1.6	0.98j	1.6	2.3	2.1	
	MW-18	4.0	4.0	3.5	2.9	4.0	5.6	4.1	4.2	3	4.1	3.3	3.2	3.1	4.5	3.5	1.7	3.6	4	3.1	
	MW-19	6.3	5.1	7.2	7.4	4.8	5.6	6.8	5.2	5	4.2	6.7	3.6	3.8	4.1	8.6	8.9	4.2	4	3.6	

Table 9: TCE, cis-1,2-DEC, and VC Concentrations Detected in Groundwater from 2017-2021 at Sidney Landfill Site (unfiltered)																					
Vinyl Chloride (µg/L)																					
Wells		2017				2018				2019				2020				2021			
		Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov
Hot Spot Area	MW-2S	<1	<1		<1	<1	<1	<1	<1	<1	<1		<1	<1	<1			<1	<1		
	MW-2D	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	MW-14S	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	MW-15SR	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	MW-15D	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	MW-16S	1.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	1.1	<1	<1	<1	<1	
Road Area	MW-6S	18	15.8	29.4	24.7	17.2	14.5	16.7	14.4	21.9	13.1	27.3	13.9	12.4	9.8	30.9	13.3	16.9	13.4	<1	
	MW-6D	3.7	4.3	5.4	6.0	6.9	5.6	6.1	8.4	6.5	6	5.3	6	4.6	4.5	4.0	1.2	4.6	6.8	<1	
	MW-8S	4.9	5.5	3.5	3.6	3.6	5.2	3.6	4.1	3.9	3.6	3.6	2.9	3.2	3.7	4.2	3.3	3.6	3.3	<1	
	MW-8D	5.1	6	3.9	4.3	4.2	4.5	4.2	5.2	4.6	4.2	4.2	3.1	3.6	3.6	3.3	3	4.2	3.2	<1	
	MW-9S	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	MW-23	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	MW-26D	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
SE Corner	MW-1D	<1	<1	<1	<1	<1	<1	0.83	<1	<1	0.86j		<1	<1	<1	<1	1.2	<1	0.92j	<1	
	MW-3S	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	MW-17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	MW-18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
	MW-19	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	

Table 10: PCB Exceedances in Groundwater Sidney Landfill, µg/L (unfiltered)																					
		2017				2018				2019				2020				2021			
Well No.	Aroclor	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov	Feb	May	Aug	Nov
MW-02S	1232						0.51				0.98	NS	0.96								
	1242														0.43				0.87		
	1248	0.82j			0.4	0.41		0.82													
MW-06S	1016																				
	1232	9			3.9	8.8	2.9	4.8			4.6	3.6	2.3								
	1242		3.7	2.5										1	0.43	1.5	2.3		2.7		
	1248																				
MW-16S	1232						0.46					0.56	0.96								
	1242																		0.48		
	1248	0.72	0.81		0.4	0.66	0.46	0.85													

MW-2S not sampled in August 2021

Groundwater standards are 0.09 µg/L