Division of Environmental Remediation

2017-2021 Periodic Review Report

Patton's Busy Bee Landfill
Town of Alfred, Allegany County, New York
Site Number 902014

May 2022

New York State Department of Environmental Conservation
Region 9
270 Michigan Avenue
Buffalo, New York 14203

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1.0 INTRODUCTION AND BACKGROUND

1.1 General

The New York State Department of Environmental Conservation (NYSDEC) has prepared this "*Periodic Review Report*" to document the site management activities completed at the Patton's Busy Bee Landfill (Site No. 902014) between 2017 and 2021. These activities were completed in accordance with the 1996 Record of Decision (ROD) for the Site and the September 1997 Operation and Maintenance Manual with addenda dated April 1999, March 2000, February 2001, February 2002, February 2004 and February 2008. All activities were completed by NYSDEC personnel, NYSDEC Standby Spill Contractors, and NYSDEC Engineering Consultants.

The site management activities completed at the site consisted of the following major activities:

- Inspections of the landfill cap and monitoring wells;
- Collection of leachate samples for chemical analysis;
- Leachate removal with a vacuum truck from 3 on-site leachate tanks with disposal at the Wellsville Wastewater Treatment Plant in Wellsville, New York and the Steuben County Landfill in Bath, New York;
- Grading of the on-site roadways and placement of fabric and stone on the access road leading to leachate tank BB-T2;
- Mowing of the landfill cap, immediately adjacent property, and around site monitoring wells;
- Collection of groundwater samples for chemical analysis from the long-term groundwater monitoring well network;
- Collection of groundwater samples for chemical analysis from eleven (11) monitoring wells not sampled since 1995;
- Collection of residential drinking water supply samples for chemical analysis; and

- Collection of two seep samples for chemical analysis.

1.2 Roles and Responsibilities

The site management activities were completed between June 15, 2017 and November 18, 2021. Inspections of the landfill cap and monitoring wells, collection of leachate samples, and collection of groundwater samples in June 2017 and April 2019 were completed by NYSDEC personnel from the Division of Environmental Remediation (DER) in the Region 9 office. Mowing and road grading/maintenance activities were completed by the NYSDEC Division of Operations. Other site management activities were completed by the following Standby Spill Contractors or Engineering Consultant that were retained by the NYSDEC:

- LiRo Engineers, Inc. of Buffalo, New York was retained in 2017 to purge the site monitoring wells, collect groundwater samples, and transport them to TestAmerica Laboratories in Amherst, New York;

- NRC Environmental Services of Amherst, New York was retained between 2017 and 2019 to pump leachate from 3 on-site leachate tanks and transport it to the Wellsville Wastewater Treatment Plant for disposal;

- Finger Lakes EnviroTech (doing business as T&R Environmental) of Painted Post, New York was retained between 2020 and 2021 to pump leachate from 3 on-site leachate tanks and transport it to either the Wellsville Wastewater Treatment Plant or the Steuben County Landfill for disposal;

- Parsons Corporation of Syracuse, New York was retained by the NYSDEC's Division of Materials Management in 2019 as part of the Emerging Contaminant Initiative to sample monitoring wells at the adjacent Henry Landfill and nearby residential drinking water supplies;

- ALS Environmental of Rochester, New York was retained to complete analytical testing of residential drinking water supplies; and

- TestAmerica Laboratories of Amherst, New York was retained to complete analytical testing of leachate and groundwater samples.

Site management activities were documented by the NYSDEC, its Standby Spill Contractors, and its Engineering Consultant. Overall project management is completed by the NYSDEC.

1.3 Report Organization

Following this introductory section (Section 1.0), the remaining sections of this report are organized as follows:

- **Section 2.0, Site Description and Remedial History:** This section describes the salient features of the Patton's Busy Bee Landfill, and presents a brief summary of historic investigations and remediation activities completed at the site;

- **Section 3.0, Site Inspections**: This section describes the important findings of the site inspections completed at the site between 2017 and 2021;

- **Section 4.0, Leachate Management:** This section summarizes the activities completed at the site between 2017 and 2021 to manage leachate generated in the landfill and collected by the leachate collection system;

- **Section 5.0, Groundwater Monitoring:** This section discusses the analytical results from groundwater sampling completed between 2017 and 2020;

- **Section 6.0, Residential Drinking Water Supply Monitoring:** This section discusses the historic analytical results from residential drinking water supply sampling completed between 1997 and 2005, and discusses the analytical results from residential drinking water supply sampling completed by the NYSDEC Division of Materials Management in 2020;

- **Section 7.0, Seep Monitoring:** This section discusses the analytical results from seep sampling completed in 2019 and 2020;

- **Section 8.0, Monitoring Well Network:** This section discusses the existing the monitoring well network, and presents a new monitoring well network to be utilized during future long-term groundwater monitoring events;

- **Section 9.0, Recommendations and Conclusions:** This section presents

recommendations for the Patton's Busy Bee Landfill to be completed during the next PRR reporting period, and presents the conclusions of site management activities completed between 2017 and 2021; and

- **Section 10.0, References:** This section contains a list of references utilized or cited in this report.

2.0 SITE DESCRIPTION AND REMEDIAL HISTORY

2.1 Site Description and Features

The Patton's Busy Bee Landfill covers 8 acres on Clark Road, and is located one mile east of Alfred Station, New York. Until August 2019, the landfill was located on parts of three parcels: two in the Town of Alfred, Allegany County, and the third in the Town of Hartsville, Steuben County (Figures 1 and 2). The parcels in Alleghany County are 23.18 and 7.78 acres in size, while the parcel in Steuben County is 26.74 acres in size. The acreage covered by the landfill footprint on each parcel is unknown. An adjacent 5-acre landfill, known as the Henry Landfill, is located north of the Patton's Busy Bee Landfill on the Steuben County parcel.

Towner Living Trust was the owner of the two larger parcels until August 2019 when the Allegany parcel was conveyed to Scott L. Towner and the Steuben County parcel was subdivided into four parcels. Three of these parcels were conveyed to Scott L. Towner while the fourth was conveyed to Jason Soles. The smaller parcel in Allegany County was owned by James Hawes until September 2019 when it was conveyed to the James E. Hawes Living Trust.

The Patton's Busy Bee Landfill is bordered to the north by woodlands and the Henry Landfill; to the east by woodlands, residential properties, and Clark Road; to the south by woodlands and former agricultural land; and to the west by woodlands (Figure 2). Overhead power lines traverse the property, including the Patton's Busy Bee Landfill, in a northeast-southwest direction (Figure 4). Residences are located near the site to the east and south, with nineteen (19) residences located within ½ mile of the property.

The main feature of the site is the Patton's Busy Bee Landfill, which is located on top of a hill with a peak elevation of 2,239 feet amsl (Figures 3 and 4). Topography surrounding the landfill drops off steeply to the west and northwest, and more moderately to the east, northeast, and southwest. The topography slopes gently to the southeast and then rises again to the highest point of Hartsville Hill, which is located several thousand feet southeast of the site (Figure 1).

Surface runoff from the landfill is in a radial pattern, eventually discharging to Canacadea Creek to the west or Crosby Creek to the east. Both streams ultimately discharge to the Canisteo River. A small pond is located in a former borrow pit east of the Patton's Busy Bee Landfill (Figures 3 and 4).

2.2 Site History

The history of the Patton's Busy Bee Landfill can be summarized as follows:

1980: LaVerne Patton receives a NYSDEC permit to operate the Patton's Busy Bee Landfill as a sanitary landfill, accepting municipal and industrial waste. Waste is deposited into three unlined trenches, which are approximately 12 feet deep, up to 600 feet long, and up to 45 feet wide (Figure 3).

1980-86: The landfill reportedly receives municipal, non-hazardous industrial waste, and sewage sludge from wastewater treatment plants.

1981: SKF Industries later reports to having disposed 77 tons of a corrosive alkaline metal cleaning solution (a characteristic hazardous waste, code D002) at the Patton's Busy Bee Landfill. Disposal occurred between February and August 1981.

1986: The NYSDEC executes a Consent Order with LaVerne Patton on January 6, 1986 to close the Patton's Busy Bee Landfill.

1987: Mr. Patton begins constructing a remedial trench along the southern and eastern sides of the unlined trenches (Figure 3). A clay liner and a leachate collection system are installed in the remedial trench to intercept leachate from the unlined trenches and transfer it into two pairs of collection tanks located northeast and northwest of the landfill (Figure 3). The lined trench receives primarily construction and demolition debris, along with automobile shredder waste. Disposal activities continue above and beyond the limits of each of the trenches to form the present-day topography. During the Summer and Fall of 1987 the western half of the landfill is capped, and a vegetative cover is established.

JEB Consultants completes a Hydrogeologic Investigation Report for the Patton's Busy Bee Landfill and begins quarterly monitoring of groundwater and leachate.

The NYSDEC executes a second Consent Order with LaVerne Patton on November 12, 1987 to close the Patton's Busy Bee Landfill.

1988: The Patton's Busy Bee Landfill ceases to accept waste under terms of the 1987 NYSDEC Consent Order.

1989: The eastern half of the landfill is capped during the Summer and Fall of 1989.

1990: Final capping of the landfill is complete. It is reported that the cap consists of 2 to 4 feet of low permeability material. Five gas vents are installed through the cap into the waste material.

The Henry Landfill is an older, unpermitted disposal area located north of, and adjacent to, the Patton's Busy Bee Landfill. Not much is known of its disposal history. It is believed that landfilling operations began in the late 1960s and ceased in the late 1970s when Mr. Patton received a NYSDEC permit to operate the Patton's Busy Bee Landfill. The Henry Landfill is unlined and covered with six inches to two feet of soil material. The cover permeability has not been determined.

2.3 Remedial History

The remedial history of the Patton's Busy Bee Landfill can be summarized as follows:

1988: The Patton's Busy Bee Landfill is listed in the NYSDEC Registry of Inactive Hazardous Waste Disposal Sites in New York State (Registry) as a Class 2a site. A Class 2a site is a temporary classification indicating that additional information is needed to properly classify the site. The original description in the Registry did not include the Henry Landfill.

1990: The NYSDEC conducts a Preliminary Site Assessment (PSA) to evaluate conditions at the site and to obtain information to properly classify the site. The PSA identifies volatile organic compounds (VOCs) at high concentrations in monitoring wells downgradient of the landfill.

1991: Based upon the results of the 1990 PSA, the Patton's Busy Bee Landfill is reclassified to Class 2 in the Registry. A Class 2 site is one in which the disposal of hazardous waste has been confirmed and represents a significant threat to public health and/or the environment.

1991-93: The NYSDEC pursues Potentially Responsible Parties (PRPs), without success, to implement a Remedial Program at the site.

1993: The NYSDEC issues a Work Assignment to a State Superfund Standby Engineering

Consultant to complete a Remedial Investigation and Feasibility Study (RI/FS) at the site.

1994-95: A Remedial Investigation is completed at the site between April 1994 and June 1995. It became apparent during the early stages of the RI that the Henry Landfill had the potential to cause or contribute to a significant human health or environmental threat, and that separating the potential environmental impacts of the two landfills could be difficult. Consequently, the site description was expanded to include the Henry Landfill. The Remedial Investigation addressed both landfills.

An evaluation of the RI data did not identify the presence of hazardous waste at the Henry Landfill. Persistent leachate outbreaks occur, especially along the eastern margin of the Henry Landfill; however, hazardous waste constituents were not identified in the leachate seep samples. Additionally, groundwater contamination by hazardous waste constituents is so minimal that treatment would not be required. Although the Henry Landfill is not properly capped, the New York State Superfund Program cannot legally provide public funding to construct a proper cap because consequential amounts of hazardous waste were not identified. Consequently, the Henry Landfill was not addressed by the New York State Superfund Program.

1996: A Feasibility Study to evaluate remedial alternatives for the site is completed in June 1996. In October, the NYSDEC issues a Record of Decision (ROD) for the site that recommends remedial actions for the landfill and associated groundwater contamination. These actions include: (1) continued emptying of the leachate collection tanks for off-site disposal; (2) maintenance of the landfill cap; (3) appropriate measures to limit site access; (4) long-term annual targeted residential well monitoring; and (4) long-term groundwater monitoring.

1997: The NYSDEC reclassifies the Patton's Busy Bee Landfill to Class 4. This classification is assigned to sites that have been properly closed but that require continued site management. Site management activities begin at the Patton's Busy Bee Landfill and are completed by NYSDEC personnel using NYSDEC Standby Spill Contractors.

2.4 Site Geology and Hydrogeology

Overburden at the Patton's Busy Bee Landfill and surrounding area consists predominantly of gravelly, clayey silt that forms a thin veneer generally 1.0 to 10.0 feet thick. Bedrock beneath the site consists of nearly horizontal alternating layers of sandstone and shale. Five sandstone units have been identified under the Patton's Busy Bee Landfill and surrounding area. For the purposes of presentation and discussion, sandstone units are labeled Sandstone Unit A through Sandstone Unit E in order of increasing depth beneath the site.

Groundwater underlying the site flows primarily through the sandstone units and discharges as seeps or springs on the slopes surrounding the site. Some groundwater, however, flows vertically downward through fractures in the shales to the lower sandstone units.

A more detailed discussion on the geology and hydrogeology of the site is included in Appendix A.

3.0 SITE INSPECTIONS

3.1 Inspection Activities

Inspections of the Patton's Busy Bee Landfill were conducted on June 15, 2017; October 2, 2017; December 5, 2017; June 6, 2018; April 17 and 18, 2019; June 5, 2019; July 24, 2019; and November 13, 2020 to satisfy the requirements of the 1997 Operation and Maintenance Manual with addenda. Inspections were not completed in 2021 due to staff shortages. Inspection reports are provided in Appendix B.

3.2 June 2017 Inspection Findings

The Patton's Busy Bee Landfill was inspected on June 15, 2017. During this inspection, leachate samples were collected for analysis (see Section 4.0). No significant problems were discovered that would impact the integrity of the landfill cover system or leachate management. There were no observed areas of erosion of the cover system nor observed breakouts of leachate on the side slopes of the landfill. Due to rutting of the access road around the north side of the landfill, however, vehicles have been driving over the top of the landfill. It is suspected that the vehicles are being driven by Mr. Smith, who lives in a trailer west of the landfill. A report for this inspection is not available.

3.3 October 2017 Inspection Findings

The Patton's Busy Bee Landfill was inspected on October 2, 2017 during the long-term groundwater sampling event. During this inspection, all site monitoring wells were inspected except for well MW-106I, which could not be located. Most wells appeared to be in useable condition with the possible exception of wells W-7, W-8 and W-10S. At well W-7 the top of the PVC casing was broken off, while at wells W-8 and W-10S the protective casings had heaved slightly and were loose. It was not ascertained, however, if the integrity of the wells were impaired.

NYSDEC and LiRo personnel also inspected the vaults on the top of the landfill that connect to the leachate collection system. All covers were missing from the vaults and LiRo was tasked to evaluate methods for covering the vaults and to provide the NYSDEC with a cost estimate to complete the work. This estimate was never received.

NYSDEC personnel observed that leachate tank BB-T2 North was empty, suggesting that the overflow pipes between the two tanks became disconnected. This pipe had been repaired on two previous occasions, once in August 2006 and the second time in November 2013.

3.4 December 2017 Inspection Findings

An inspection of the Patton's Busy Bee Landfill was completed on December 5, 2017. No unusual conditions were observed other than the vehicle path across the landfill cap. Mr. Smith was contacted and informed not to drive over the landfill, and that he would be responsible for any damage to the cap. The remainder of the cap vegetation looked good. The gate is bent, making it difficult to open.

Leachate levels in the tanks were also completed during this inspection. Leachate was detected in all three tanks, indicating that the overflow pipe between tanks BB-T2 North and BB-T2 South was still connected. The absence of leachate in tank BB-T2 North in October 2017 was likely caused by dry weather conditions during the Summer and Fall months and the absence of leachate in the landfill.

3.5 June 2018 Inspection Findings

The Patton's Busy Bee Landfill was only inspected once in 2018. During the June 5, 2018 inspection, leachate samples were collected for analysis (see Section 4.0). The access road to the landfill was found to be in good condition, while the gate to the landfill was only in fair condition. The stone road base to leachate tank BB-T2 was found to be in excellent condition.

Mr. Smith continues to drive across the landfill cap. He was contacted again and informed not to drive over the cap. Any damage would be his responsibility to repair. The remainder of the cap vegetation looked good.

A new road base was observed off the landfill's access road not far from Clark Road. This road is oriented in a north-south direction. The purpose of this road is unknown.

Leachate level checks in the tanks were also completed during this inspection. Leachate tanks BB-T1 and BB-T2 were full.

3.6 April 2019 Inspection Findings

Inspections of the Patton's Busy Bee Landfill were completed on April 17 and 18, 2019. During these inspections, leachate (see Section 4.0) and groundwater (see Section 5.0) samples were collected for analysis. The access road to the landfill was found to be in good condition. The gate to the landfill was found open. An attempt was made to close it but was unsuccessful.

Deeper ruts were observed in the landfill cap, indicating that the cap is still be driven across to access the trailer. This has been an ongoing issue.

The cap vegetation was found dormant and long. The NYSDEC Division of Operations from Almond, New York mowed earlier in 2018 than usual. Approval was granted by NYSDEC Division of Environmental Remediation for them to do so.

Due to mud and water the access road on the west and south side of the landfill was not passable.

Debris was observed to be strewn about more than usual. Most of the products were tarps and paper. Mr. Smith claimed that it was from high winds.

The new road base observed during the June 2018 inspection is still present, but no new activity was observed.

Leachate level checks in the tanks were also completed during this inspection. All three leachate tanks were full.

3.7 June 2019 Inspection Findings

The Patton's Busy Bee Landfill was inspected on June 5, 2019 during a leachate pump out event (see Section 4.0). During this inspection, NYSDEC personnel walked the landfill to further examine the ruts that were observed during prior inspections. Ruts in the landfill cap do not appear as deep as observed during the previous inspection; driving over the landfill appears to have stopped. The grass on the landfill cap had grown to about knee high.

Lots of trash dumping was found near the trailer where Mr. Smith has been residing. A fair amount of trash was also found under the old barn structure. Trash included empty antifreeze bottles, old glassware, a 5-gallon bucket filled with a green fluid (bucket was labeled

Tolerance Floor Finish but the liquid could be antifreeze), and other debris.

NYSDEC personnel inspected the road improvements completed by the NYSDEC Division of Operations. The repaired road extends from the gate to the road that leads to the back tank. NYSDEC Division of Operations installed fabric below the gravel layer for stability. The gravel layer varied in thickness from two inches in some areas to half an inch in others.

NYSDEC personnel also advanced a hand auger into the landfill cap to determine the composition of the cap material. Cap material consisted of the following:

- 1" to 2" depth: grass layer and topsoil;
- 2" to 3½" depth: brown clay; and
- 3½" to 1' 7" depth: grey silty clay intermixed with gravel. There was lots of stone in this layer, likely making it very permeable.

3.8 July 2019 Inspection Findings

The Patton's Busy Bee Landfill was inspected on July 24, 2019 during a leachate pump out event (see Section 4.0). During this inspection, it was noted that the front gate was closed and secured with a lock. The access road was found to be in good condition with only minor areas where water had pooled along the roadside. The access road leading to the back tank was in moderate condition, with some vegetation growing through the road. The grass on the landfill was approximately 4' to 5' high.

NYSDEC personnel walked the access road that extends around the landfill. Three 30-gallon poly drums were observed. One drum with a mixer mounted on top and a portable generator were found wrapped under a tarp. Two of the drums contained an unknown fluid. A table saw was also found along the roadside with several drywall trowels.

A white Ford Fusion was parked along the side of the access road. The car did not have any plates but did have a registration and inspection sticker that were current.

3.9 November 2020 Inspection Findings

Inspections of the Patton's Busy Bee Landfill were limited in 2020 due to the COVID-19 pandemic so the landfill was only inspected on November 13, 2020. During the inspection, leachate samples were collected for analysis (see Section 4.0). The access road was in good

condition. A white SUV was parked at the front gate and the gate was locked. Two additional vehicles and an RV were parked at the "Y" where the access road splits and veers off to tank BB-T2. Another RV was parked on the southwest corner of the site.

During the inspection NYSDEC personnel measured one of the vaults located on the landfill cap. The circumference of the hole measured 2' 1", while the minimum concrete edge (lip of the vault) measured 6".

Leachate level checks in the tanks were also completed during this inspection. Leachate tanks BB-T1 South and BB-T2 were full. Tank BB-T1 North appeared to be half full. A petroleum odor was noted at both BB-T1 tanks.

4.0 LEACHATE MANAGEMENT

4.1 Leachate Collection System

Leachate generated at the Patton's Busy Bee Landfill is directed to three metal underground storage tanks located northeast and northwest of the landfill (Figure 4) via a collection system (perforated pipes) installed in the remedial trench (Figure 3). Two of these tanks (BB-T1 North and South on Figure 4) are located northeast of the landfill while one tank (BB-T2 North on Figure 4) is located northwest of the landfill. Until September 2011 two underground storage tanks were in service at the BB-T2 location. At that time the southernmost tank was bypassed due to a leak. This tank remains in place.

Leachate from the western half of the remedial trench reportedly drains northwest to tank BB-T2 (2,000-gallons) while leachate from the eastern half of the trench reportedly drains northeast to tanks BB-T1 North and South (15,000- and 18,000-gallons, respectively).

4.2 Leachate Tank Sampling

Leachate from one of the collection tanks is collected annually, usually in the Spring or early Summer, and analyzed for an array of contaminants as requested by the Wellsville Wastewater Treatment Plant (Table 1). Historically, the sample is collected alternately between tanks BB-T1 and BB-T2 (Tables C1 and C2 in Appendix C), although there have been some variations in this pattern. In 2017, 2018, and 2019 the leachate sample was collected from tank BB-T1. In 2020, leachate samples from tanks BB-T1 and BB-T2 were both analyzed for the full suite of contaminants requested by the Wellsville Wastewater Treatment Plant. The analytical results for these samples are summarized in Tables 2A and 2B, while information concerning sample collection and analysis is given in Table 1.

In 2017, 2018 and 2019, leachate samples were also collected from tank BB-T2 and analyzed for volatile organic compounds (VOCs). The 2017 sample was also analyzed for perfluorinated compounds (PFCs) and 1,4-dioxane. PFCs and 1,4-dioxane are emerging contaminants in New York State and NYSDEC project managers were requested to analyze samples at State Superfund Sites for these contaminants. The analytical results for these samples are summarized in Tables 2B (VOCs) and 3 (emerging contaminants), while information concerning sample collection and analysis is given in Table 1. A summary of the historic leachate

results is included in Appendix C. Lab reports for the reporting period are included in Appendix D.

Analytical results were evaluated against the water quality standards and guidance values contained in the NYSDEC publication entitled "*Technical and Operational Guidance Series (TOGS) 1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*", Division of Water, June 1998, with addenda. The surface water standards and guidance values for individual contaminants were taken directly from Table 1 of that document, while the groundwater effluent limitations were taken directly from Table 5.

Surface water and groundwater effluent limitation values are not available for the individual emerging contaminants and drinking water standards are only available for 1,4-dioxane, perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS). These standards have been used for comparison purposes.

Eight (8) leachate samples were collected from the Patton's Busy Bee Landfill between 2017 and 2021 and analyzed for volatile organic compounds (Tables 2A and 2B). In tank BB-T1, methylene chloride concentrations exceeded the NYSDEC groundwater effluent limitation and the NYSDEC surface water standard for this contaminant in 2018 and 2020 (Table 2A).

In tank BB-T2, concentrations of trichloroethene, cis-1,2-dichloroethene, and vinyl chloride exceeded the NYSDEC groundwater effluent limitations and the NYSDEC surface water standards or guidance values in 2017, 2018 and 2019 (Table 2B). Methylene chloride exceeded both standards in 2018. No volatile organic compounds were detected in tank BB-T2 in 2020 (Table 2B).

Five (5) leachate samples were collected from the Patton's Busy Bee Landfill between 2017 and 2021 and analyzed for semi-volatile organic compounds and PCBs (Tables 2A and 2B). No semi-volatile organic compounds or PCBs were detected in either tank.

Five (5) leachate samples were collected from the Patton's Busy Bee Landfill between 2017 and 2021 and analyzed for pesticides (Tables 2A and 2B). In tank BB-T1, concentrations of delta-BHC and gamma-BHC in 2017 exceeded the NYSDEC groundwater effluent limitations and the NYSDEC surface water standards or guidance values (Table 2A).

In tank BB-T2, concentrations of beta-BHC, dieldrin, heptachlor, and heptachlor epoxide in 2020 exceeded the NYSDEC groundwater effluent limitations and the NYSDEC surface water standards or guidance values (Table 2B).

Five (5) leachate samples were collected from the Patton's Busy Bee Landfill between 2017 and 2021 and analyzed for metals (Tables 2A and 2B). Seventeen (17) metals were detected in the leachate samples collected from tank BB-T1 with eight (8) detected at concentrations that exceeded the NYSDEC groundwater effluent limitations and/or the NYSDEC surface water standards or guidance values (Table 2A). These metals included barium, chromium, cobalt, iron, magnesium, manganese, nickel, and vanadium. Only chromium and nickel are USEPA priority pollutant metals. USEPA priority pollutant metals are toxic metals for which technology based effluent limitations and guidelines are required by Federal law. The chromium concentration in the sample collected in 2020 exceeded both standards. Nickel concentrations in 2017, 2018 and 2020 exceeded the NYSDEC surface water standards or guidance values, while the sample collected in 2020 also exceeded the NYSDEC groundwater effluent limitations (Table 2A).

Leachate from tank BB-T2 was only analyzed for metals in 2020 (Table 1). Thirteen (13) metals were detected in this sample with four (4) detected at concentrations that exceeded the NYSDEC groundwater effluent limitations and/or the NYSDEC surface water standards or guidance values (Table 2B). These metals included cobalt, iron, magnesium, and manganese. None of these metals are USEPA priority pollutant metals.

One (1) leachate sample was collected from tank BB-T2 in 2017 and analyzed for 1,4-dioxane and the perfluorinated compounds (Table 1). The emerging contaminant, 1,4-dioxane, was detected in this sample at a concentration that exceeded the NYSDOH drinking water standard for this contaminant (Table 3).

Eleven perfluorinated compounds were detected in leachate from tank BB-T2, with concentrations of PFOA and PFOS exceeding the NYSDOH drinking water standards (Table 3).

4.3 Leachate Removal and Off-Site Disposal

Between 2017 and 2021, approximately 599,254 gallons of leachate were removed from the three on-site leachate tanks by either NRC Environmental Services or T&R Environmental

and transported to either the Wellsville Wastewater Treatment Plant or the Steuben County Landfill for disposal (Table 4). In general, these tanks are pumped out 4 to 5 times per year (Table 4). Heavy rainfall during the Spring of 2017, however, limited tank access by the vacuum truck, so leachate was only removed twice during 2017.

Since June 1994 approximately 2,524,154 gallons of leachate have been removed from the tanks and treated off-site (Table 4). A plot of cumulative leachate removal since 1994 is shown as Figure 5.

Leachate pump out documentation for the reporting period is provided in Appendix E.

5.0 GROUNDWATER MONITORING

5.1 June 2017 Sampling Event

On June 15, 2017, NYSDEC personnel purged and sampled monitoring wells W-4S and W-4D. The locations of these wells are shown on Figure 6. These wells had not been sampled since the Remedial Investigation and were analyzed for TCL volatile organic compounds to determine the current concentrations of VOCs in these wells. In addition to VOCs, monitoring well W-4S was also analyzed for PFCs and 1,4-dioxane. The analytical results for VOCs are summarized in Table 5, while the analytical results for PFCs are summarized in Table 6. Information concerning sample collection and analysis is given in Table 1. A summary of the historic groundwater results from these wells is included in Appendix F. The groundwater purge and sample logs are provided in Appendix G, while the lab reports are included in Appendix H.

Analytical results were evaluated against the water quality standards and guidance values contained in the NYSDEC publication entitled "*Technical and Operational Guidance Series (TOGS) 1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*", Division of Water, June 1998, with addenda. The groundwater standards and guidance values for individual contaminants were taken directly from Table 1 of that document.

Groundwater standards are not available for the individual emerging contaminants and drinking water standards are only available for 1,4-dioxane, PFOA and PFOS. These standards have been used for comparison purposes.

The results of the groundwater samples collected in June 2017 reveal the presence of volatile organic compounds in both monitoring wells (Table 5). In both wells, concentrations of trichloroethene and 1,2-dichloroethene exceeded the NYSDEC groundwater standards for these contaminants (Table 5). The concentrations of both VOCs, however, were lower than detected during the Remedial Investigation (Appendix F).

Eight (8) perfluorinated compounds were detected in the groundwater sample collected from monitoring well W-4S (Table 6). None of the concentrations, however, exceeded the NYSDOH drinking water standards (Table 6). 1,4-dioxane was not detected.

5.2 October 2017 Sampling Event

Between October 2nd and 5th, 2017 the long-term groundwater monitoring wells were purged and sampled by LiRo Engineers, Inc. of Buffalo, New York. Prior to sampling, each well was purged by either a dedicated hand bailer or pump to remove stagnant water from the well. In total, twelve (12) groundwater samples were collected during this monitoring event. Four (4) of these samples were analyzed for TCL volatile organic compounds, while eight (8) samples were analyzed for TAL metals. Six (6) samples were also analyzed for perfluorinated compounds (PFCs). Monitoring well MW-104D was not sampled due to insufficient water volume.

The groundwater samples collected for metals analysis contained high turbidity (see the Well Purge Logs in Appendix G). Because this sediment contains naturally occurring metals, these metals can be desorbed from the sediment when the sample is preserved with nitric acid. As a result, the groundwater samples collected in October 2017 were filtered in the field, with both filtered and unfiltered samples analyzed for metals. A comparison of the filtered and unfiltered results is used to determine how much metal was contained on the sediment.

The locations of the wells sampled in October 2017 are shown on Figure 6. The analytical results for the VOCs and metals (filtered results) are summarized in Table 5, while the analytical results for PFCs are summarized in Table 6. Table 7 compares the results for the filtered and unfiltered metals results. Information concerning sample collection and analysis is given in Table 1. A summary of the historic groundwater results from these wells is included in Appendix F. The groundwater purge and sample logs are provided in Appendix G, while the lab reports are included in Appendix H.

The results of the groundwater samples collected in October 2017 reveal the presence of volatile organic compounds at low concentrations in all four (4) wells (Table 5). These detections included acetone (2 samples), chlorobenzene (1 sample), chloroform (1 sample), cis-1,2-dichloroethene (3 samples), and trichloroethene (3 samples). Only the concentration of cis-1,2-dichloroethene in well MW-104I exceeded the NYSDEC groundwater standards or guidance values (Table 5).

Sixteen (16) metals were detected in the filtered groundwater samples collected in October 2017 (Table 5). Of these metals, only three (3) were detected at concentrations that exceeded the NYSDEC groundwater standards or guidance values. These metals included iron

(1 sample), magnesium (1 sample), and manganese (1 sample). These three metals are naturally occurring and are not EPA priority pollutant metals (Table 5).

Nineteen (19) metals were detected in the unfiltered groundwater samples collected in October 2017 (Table 7). Of these metals, twelve (12) were detected at concentrations that exceeded the NYSDEC groundwater standards or guidance values, with eight (8) of these metals being EPA priority pollutant metals. The priority pollutant metals that exceeded the groundwater standards or guidance values included arsenic (4 samples), beryllium (1 sample), cadmium (2 samples), chromium (6 samples), copper (3 samples), lead (4 samples), nickel (2 samples), and zinc (1 sample). Other metals that exceeded the NYSDEC groundwater standards or guidance values included barium (1 sample), iron (8 samples), magnesium (1 sample), and manganese (8 samples).

Table 7 documents significant concentration differences between the filtered and unfiltered samples, indicating that metals are attached to the sediment at significant concentrations and are being desorbed from this sediment when the sample is preserved with nitric acid. Future groundwater sampling events need to focus on reducing the turbidity of the samples prior to placing the samples in the bottles.

Twelve (12) perfluorinated compounds (PFCs) were detected in the groundwater samples collected in October 2017 (Table 6). The NYSDOH drinking water standard for PFOA was exceeded in the sample collected from well MW-101D (Table 6).

5.3 April 2019 Sampling Event

On April 18, 2019, NYSDEC personnel purged and sampled eight (8) monitoring wells, six (6) of which had not been sampled since the Remedial Investigation. Wells W-4S and W-4D were also sampled. The locations of these wells are shown on Figure 6. Groundwater samples were analyzed for TCL volatile organic compounds to determine the current concentrations of VOCs in these wells. The analytical results for VOCs are summarized in Table 8. Information concerning sample collection and analysis is given in Table 1. A summary of the historic groundwater results from these wells is included in Appendix F. The groundwater purge and sample logs are provided in Appendix G, while the lab reports are included in Appendix H.

The results of the groundwater samples collected in April 2019 reveal the presence of volatile organic compounds in all wells except W-9 (Table 8). Well W-10S was the most contaminated, containing twelve (12) individual VOCs (Table 8). Concentrations of 1,1,2-trichloroethane (W-10S), cis-1,2-dichloroethene (W-4D and W-10S), trans-1,2-dichloroethene (W-10S), and trichloroethene (W-4S, W-4D, and W-10S) exceeded the NYSDEC groundwater standards or guidance values (Table 8).

5.4 March & April 2020 Sampling Event

As part of the NYSDEC's Emerging Contaminant Initiative, the NYSDEC's Division of Materials Management retained Parsons of Syracuse, New York in 2020 to sample monitoring wells at Henry Landfill. Between March 30th and April 2nd, 2020 Parsons purged and sampled eight (8) wells associated with the landfill. The locations of these wells are shown on Figure 6. In addition to the emerging contaminants (perfluorinated compounds and 1,4-dioxane), the groundwater samples were also analyzed for TCL volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), TAL metals, and several landfill leachate indicator compounds. The analytical results for VOCs and metals are summarized in Table 9. PAHs, which were not detected, and the landfill leachate indicator compounds are not included in this table. The analytical results for the perfluorinated compounds are summarized in Table 10. Information concerning sample collection and analysis is given in Table 1. A summary of the historic groundwater results from these wells is included in Appendix F. The groundwater purge and sample logs are provided in Appendix G, while the lab reports are included in Appendix H.

The results of the groundwater samples collected in March and April 2020 reveal the presence of volatile organic compounds at low concentrations in three (3) of the eight (8) wells sampled (Table 9). These detections included benzene (2 samples), chlorobenzene (3 samples), and cis-1,2-dichloroethene (1 sample). The concentrations of benzene and chlorobenzene in well MW-105I exceeded the NYSDEC groundwater standards or guidance values (Table 9).

Eighteen (18) metals were detected in the groundwater samples collected in March and April 2020 (Table 9). Of these metals, only four (4) were detected at concentrations that exceeded the NYSDEC groundwater standards or guidance values. These metals included iron (5 samples), magnesium (3 samples), manganese (4 samples), and sodium (2 samples). These four metals are naturally occurring and are not EPA priority pollutant metals (Table 9).

The emerging contaminant, 1,4-dioxane, was detected in five (5) of the groundwater samples collected in March and April 2020 (Table 10). The NYSDOH drinking water standard for this contaminant was exceeded in 2 samples (Table 10).

Thirteen (13) perfluorinated compounds (PFCs) were detected in the groundwater samples collected in March and April 2020 (Table 10). The NYSDOH drinking water standard for PFOS was exceeded in 3 samples, while the NYSDOH drinking water standard for PFOA was exceeded in 2 samples (Table 10).

6.0 RESIDENTIAL DRINKING WATER SUPPLY MONITORING

The October 1996 Record of Decision required a residential drinking water supply sampling program for three (3) years followed by an evaluation of the data collected. The NYSDEC ultimately collected water from select drinking water supplies for a total of nine (9) years. No contaminants associated with the Patton's Busy Bee Landfill were detected in any of the residential water supply samples collected during this monitoring program. As a result, the NYSDEC ended the residential water supply monitoring program following the 2005 sampling event.

As part of the NYSDEC's Emerging Contaminant Initiative, the NYSDEC's Division of Materials Management retained Parsons of Syracuse, New York in 2019 to sample residential drinking water supplies that were closest to the Patton's Busy Bee and Henry Landfills.

The following sections provide a summary of the residential water supply monitoring completed between 1997 and 2020.

6.1 1997 Sampling Event

On November 12, 1997, NYSDEC personnel sampled seven (7) of the eight (8) residential drinking water supplies. The last home was not sampled because no one was home at the time of the NYSDEC visit. An appointment was made at the convenience of the tenant living at this location to sample the drinking water supply on November 26, 1997. Unfortunately, the tenant failed to keep the appointment. As a result, this water supply was not sampled during the 1997 sampling round.

The results are tabulated in the 1997 Operation and Maintenance Report, which is available at DECinfo Locator at https://www.dec.ny.gov/data/DecDocs/902014/. No volatile organic compounds were detected in any of the samples. Metals were detected in all drinking water supplies at various concentrations. Many of the metals were naturally occurring.

6.2 1998 Sampling Event

The residential drinking water supplies were sampled by NYSDEC personnel on October 11, 1998, and December 29, 1998. The 1998 Operation and Maintenance Report is not available; however, the 2002 Operation and Maintenance Report contains historic data for each residential

drinking water supply from 1997 to 2002. This report, which is available at DECinfo Locator at https://www.dec.ny.gov/data/DecDocs/902014/, indicates that seven (7) samples were collected in 1998.

No volatile organic compounds were detected in any of the samples. Metals were detected in all drinking water supplies at various concentrations. Many of the metals were naturally occurring.

6.3 1999 Sampling Event

The residential drinking water supplies were sampled by NYSDEC personnel on October 5, 1999, and November 12, 1999. The 1999 Operation and Maintenance Report is not available; however, the 2002 Operation and Maintenance Report contains historic data for each residential drinking water supply from 1997 to 2002. This report, which is available at DECinfo Locator at https://www.dec.ny.gov/data/DecDocs/902014/, indicates that seven (7) samples were collected in 1999.

No volatile organic compounds were detected in any of the samples. Metals were detected in all drinking water supplies at various concentrations. Many of the metals were naturally occurring.

6.4 2000 Sampling Event

On October 18, 2000, NYSDEC personnel sampled four (4) of the eight (8) residential drinking water supplies in accordance with the new sampling schedule identified in the March 2000 addendum to the 1997 Operation and Maintenance Manual.

The results are tabulated in the 2000 Operation and Maintenance Report, which is available at DECinfo Locator at https://www.dec.ny.gov/data/DecDocs/902014/. The only volatile organic compound detected in the samples was methylene chloride, a common laboratory contaminant. Metals were detected in all drinking water supplies at various concentrations. Iron and manganese were detected in one (1) sample at concentrations that exceeded the NYSDOH drinking water standards. The concentrations of iron and manganese, however, do not represent a health concern. The standards for iron and manganese are based on aesthetic properties and are set to prevent problems such as poor taste, odor and fixture staining. These metals are naturally occurring.

6.5 2001 Sampling Event

On October 17, 2001, NYSDEC personnel sampled four (4) of the eight (8) residential drinking water supplies in accordance with the sampling schedule identified in the March 2000 addendum to the 1997 Operation and Maintenance Manual. The trailer home at sample location D2 was destroyed by fire in the Spring of 2001 and was not sampled. A sample was not collected from sample location D1 as the owner or a representative was not present to allow access for sample collection.

The results are tabulated in the 2001 Operation and Maintenance Report, which is available at DECinfo Locator at https://www.dec.ny.gov/data/DecDocs/902014/. No volatile organic compounds were detected in any of the samples. Metals were detected in all drinking water supplies at various concentrations. Iron and manganese were detected in samples D4 and D7 at concentrations that exceeded the NYSDOH drinking water standards. As previously stated, the standards for these metals are set for aesthetic reasons and do not represent a health concern.

6.6 2002 Sampling Event

On October 9, 2002, NYSDEC personnel sampled six (6) residential drinking water supplies including a new home constructed on Hartsville Hill Road. The trailer home that was destroyed by fire in 2001 was being re-constructed and will be included in future sampling events.

The results are tabulated in the 2002 Operation and Maintenance Report, which is available at DECinfo Locator at https://www.dec.ny.gov/data/DecDocs/902014/. No volatile organic compounds were detected in any of the samples. Metals were detected in all drinking water supplies at various concentrations.

6.7 2003 Sampling Event

On October 8, 2003, NYSDEC personnel sampled six (6) of the seven (7) residential drinking water supplies scheduled to be sampled. The home identified as D1A was not sampled as no one was present to grant access to the home to collect the sample. The new home constructed at sample location D2 was sampled.

The results are tabulated in the 2003 Operation and Maintenance Report, which is available at DECinfo Locator at https://www.dec.ny.gov/data/DecDocs/902014/. No volatile organic compounds were detected in any of the samples. Metals were detected in all drinking water supplies at various concentrations.

6.8 2004 Sampling Event

On October 20, 2004, NYSDEC personnel sampled five (5) of the six (6) residential drinking water supplies scheduled to be sampled. The home identified as D2 was not sampled as no one was present to grant access to the home to collect the sample. The home identified as D1A was sampled, but the results were not considered reliable. The well system at D1A was inoperable at the time of initial sample collection so sample bottles were left with the homeowner for sample collection when the system was back in operation. The homeowner collected the samples and mailed the bottles to the NYSDEC. The Department, however, cannot verify where the sample was collected and the actual date of sample collection. In addition, the sample was not maintained at 4^0C and there was no chain of custody for the sample.

The results are tabulated in the 2004 Operation and Maintenance Report, which is available at DECinfo Locator at https://www.dec.ny.gov/data/DecDocs/902014/. No volatile organic compounds were detected in any of the samples. Metals were detected in all drinking water supplies at various concentrations.

6.9 2005 Sampling Event

On October 26, 2005, NYSDEC personnel sampled six (6) of the seven (7) residential drinking water supplies scheduled to be sampled. The home identified as D4 was not sampled as no one was present to grant access to the home to collect the sample. The home identified as D1A was sampled, but the results were not considered reliable. The homeowner was not home at the time of the scheduled visit, but the homeowner left a water sample on the porch in a glass jar. NYSDEC personnel collected a sample from the jar, but the Department cannot verify where the sample was collected and the actual date of sample collection. In addition, the sample was not maintained at 4^0C and there was no chain of custody for the sample.

The results are tabulated in the 2005 Operation and Maintenance Report, which is available at DECinfo Locator at https://www.dec.ny.gov/data/DecDocs/902014/. The only volatile organic compound detected in the samples was carbon disulfide in the sample collected

from water supply D2. There is no drinking water standard for carbon disulfide, and it is not a contaminant of concern at the Patton's Busy Bee Landfill.

Metals were detected in all drinking water supplies at various concentrations. Lead was detected above the NYSDOH drinking water standard in the sample collected from D2. Lead, however, is not a contaminant of concern at the Patton's Busy Bee Landfill.

6.10 2019 & 2020 Sampling Event

Between July 15, 2019 and January 29, 2020, Parsons sampled seven (7) residential drinking water supplies. Four (4) of these properties were included in the original NYSDEC sampling program. Six (6) of the seven (7) samples were analyzed for volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), metals, perfluorinated compounds (PFCs), and 1,4-dioxane, while one (1) sample was only analyzed for PFCs and 1,4-dioxane.

The only volatile organic compound detected was acetone, a common laboratory contaminant. Acetone was detected in two (2) samples. Metals were detected in all drinking water supplies at various concentrations. Iron and manganese were detected in one (1) sample at concentrations that exceeded the NYSDOH drinking water standards. As previously stated, the standards for these metals are set for aesthetic reasons and do not represent a health concern.

PFCs and 1,4-dioxane were not detected in any of the samples.

7.0 SEEP MONITORING

7.1 April 2019 Sampling Event

During the April 18, 2019 inspection NYSDEC personnel observed a seep about 50 feet down the embankment northwest of tank BB-T2. The approximation location of this seep is shown on Figure 6. This seep was sampled and analyzed for TCL volatile organic compounds. The analytical results from this sample are summarized in Table 11. Information concerning sample collection and analysis is given in Table 1. The lab report is included in Appendix I.

Analytical results were evaluated against the water quality standards and guidance values contained in the NYSDEC publication entitled "*Technical and Operational Guidance Series (TOGS) 1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations*", Division of Water, June 1998, with addenda. The surface water standards and guidance values for individual contaminants were taken directly from Table 1 of that document.

No volatile organic compounds were detected in the seep sample collected in April 2019 (Table 11).

7.2 March 2020 Sampling Event

As part of the NYSDEC's Emerging Contaminant Initiative, the NYSDEC's Division of Materials Management retained Parsons of Syracuse, New York in 2020 to sample monitoring wells at Henry Landfill. During this sampling Parson's personnel observed a seep at the base of the landfill. The approximate location of this seep is shown on Figure 6, and corresponds with the seep identified during the Remedial Investigation.

In addition to the emerging contaminants (perfluorinated compounds and 1,4-dioxane), the seep sample was also analyzed for TCL volatile organic compounds, polycyclic aromatic hydrocarbons (PAHs), TAL metals, and several landfill leachate indicator compounds. The analytical results for VOCs and metals are summarized in Table 11. PAHs, which were not detected, and the landfill leachate indicator compounds are not included in this table. The analytical results for the perfluorinated compounds are summarized in Table 12. Information concerning sample collection and analysis is given in Table 1. The lab report is included in Appendix I.

Once again, the analytical results were evaluated against the water quality standards and guidance values contained in TOGS 1.1.1. Surface water standards are not available for the individual emerging contaminants and drinking water standards are only available for 1,4-dioxane, PFOA and PFOS. These standards have been used for comparison purposes.

The results of the seep sample collected in March 2020 reveal that chlorobenzene was the only volatile organic compound detected in the sample (Table 11). The concentration of chlorobenzene, however, exceeded the NYSDEC surface water standard for this contaminant (Table 11).

Seventeen (17) metals were detected in the seep sample collected in March 2020 (Table 11). Of these metals, six (6) were detected at concentrations that exceeded the NYSDEC surface water standards or guidance values. These metals included aluminum, arsenic, barium, cobalt iron, and manganese. Of these metals, arsenic is the only EPA priority pollutant metal. The remainder are naturally occurring.

The emerging contaminant, 1,4-dioxane, was detected in the seep sample at a concentration that exceeded the NYSDOH drinking water standard for this contaminant (Table 12).

Thirteen (13) perfluorinated compounds (PFCs) were detected in the seep sample collected in March 2020 (Table 12). The concentrations of PFOA and PFOS in this sample exceeded the NYSDOH drinking water standards (Table 12).

8.0 MONITORING WELL NETWORK

The 1997 Operation and Maintenance Manual specified that nine (9) site monitoring wells would be sampled under the long-term groundwater monitoring program. These wells included MW-102D, MW-103I, MW-103D, MW-107S, MW-107I, MW-108I, MW-108D, MW-109, and MW-113. These wells, shown on Figure 6, were selected due to their distribution around the landfill and the sandstone units that they monitor (D and E). Analytical results obtained from these wells would provide an early warning system for the residential drinking water supply wells, which are drilled into Sandstone Unit E or deeper.

In April 1999, the Operation and Maintenance Manual was modified to include four (4) additional monitoring wells in the long-term groundwater monitoring program. These wells included MW-101I, MW-101D, MW-104I, and MW-104D. These wells, shown on Figure 6, were added to provide additional data on groundwater quality north and west of the Patton's Busy Bee Landfill. In addition, existing 1-inch diameter wells MW-107S and MW-107I were decommissioned in November 1999 and replaced with 2-inch diameter monitoring wells. These wells are identified as MW-107SR and MW-107IR.

In 2008 long-term groundwater sampling was changed from annually to biennially (i.e., every two years).

Long-term groundwater monitoring results for Sandstone Unit D and E wells (Appendix F), along with residential drinking water supply sampling between 1997 and 2005, and again in 2019 and 2020 (Section 6.0), indicates that the Patton's groundwater contaminant plume has not expanded. This indicates that the removal of leachate from the Patton's Busy Bee collection system has been effective in preventing the migration of site related contaminants.

While the existing monitoring well network has been effective in providing an early warning system for the residential drinking water supply wells, it has been less effective in evaluating the impact of leachate removal on groundwater quality near the landfill as many of the wells have always been non-detect for chlorinated solvents. In fact, the historic groundwater results tabulated in Appendix F indicate that the long-term presence of chlorinated solvents were only detected in three (3) of the thirteen (13) long-term groundwater monitoring wells.

These wells include Sandstone Unit D wells MW-103I and MW-104I, and Sandstone Unit E well MW-103D. These wells should remain in the long-term groundwater monitoring program.

Monitoring well MW-101D, which is upgradient of the Patton's Busy Bee Landfill, shows persistent groundwater exceedances for benzene and chlorobenzene (Table D-1 of Appendix F). This well should also remain in the long-term groundwater monitoring program, as should monitoring well MW-113, which is upgradient of both the Henry and Patton's Busy Bee landfills. Well MW-113 will monitor upgradient groundwater conditions.

Monitoring well MW-101I is also upgradient of the Patton's Busy Bee Landfill and will remain in the long-term groundwater monitoring program as it is the only currently sampled well that monitors Sandstone Unit C. The remaining seven (7) wells will be dropped from the long-term groundwater monitoring program (i.e., MW-102D, MW-104D, MW-107SR, MW-107IR, MW-108I, MW-108D, and MW-109).

The historic groundwater results in Appendix F show the long-term presence of chlorinated solvents in well W-4S of Sandstone Unit A, and wells W-4D and W-10S of Sandstone Unit B. These wells will be added to the long-term groundwater monitoring program.

Lastly, monitoring well W-10D will be added to the long-term groundwater monitoring program to serve as the downgradient well for Sandstone Unit C.

The new list of long-term groundwater monitoring wells is given in Table 13 and shown on Figure 6. Well construction diagrams are given in Appendix J. Seven (7) of the ten (10) wells are located downgradient of the Patton's Busy Bee Landfill.

9.0 RECOMMENDATIONS AND CONCLUSIONS

9.1 Recommendations

The NYSDEC recommends that the following activities be completed at the Patton's Busy Bee Landfill during the next PRR reporting period:

- The removal of leachate on an as needed basis to ensure that the landfill is maintained in as dry a state as possible. The buildup of leachate during the period prior to the Remedial Investigation is suspected as the cause of the groundwater contamination associated with the Patton's Busy Bee Landfill;
- Continued collection of annual leachate samples from the leachate tanks as required by the wastewater treatment plants that accept the leachate for disposal;
- Sampling of the new monitoring well network will be completed biennially to evaluate the effectiveness of the landfill cap and leachate collection system. The next groundwater sampling event will occur in 2023. Sampling should take place in the Spring when water levels in the wells are highest;
- Continued semi-annual inspections of the landfill;
- Continued mowing of the landfill cap and surrounding area by the NYSDEC Division of Operations. This mowing will take place during the Fall of every year;
- Regrading and repair of the access road when needed by the NYSDEC Division of Operations to allow continued access to the leachate tanks;
- Inspection and repair of the leachate collection system when needed; and
- Installation of covers over the manways on top of the Patton's Busy Bee Landfill.

9.2 Conclusions

The site inspections, leachate removal activities, maintenance activities, and sampling activities completed between 2017 and 2021 have been performed in accordance with the 1997 Operation and Maintenance Manual (with addenda) developed for this site. An evaluation of the

groundwater and residential water supply sampling results indicates no evidence that contaminants from the Patton's Busy Bee Landfill have adversely impacted surrounding properties.

10.0 REFERENCES

NYSDEC, 1995, Identification and Listing of Hazardous Wastes, New York State Codes, Rules and Regulations Title 6, Part 371: New York State Department of Environmental Conservation Division of Hazardous Substances Regulation, Albany, New York, 90p.

NYSDEC, 1996, Record of Decision, Patton's Busy Bee Disposal Site, Town of Alfred, Allegany County and Town of Hartsville, Steuben County, Site #902014.

NYSDEC, 1997, Patton's Busy Bee Disposal Site, Town of Alfred, Allegany County, Town of Hartsville, Steuben County, Site #902014, Operation and Maintenance Manual.

NYSDEC, 1998, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations: New York State Department of Environmental Conservation, Division of Water Technical and Operational Guidance Series (1.1.1), Albany, New York.

URS Consultants, 1990, Engineering Investigation at Inactive Hazardous Waste Sites, Preliminary Site Assessment, Patton's Busy Bee Disposal Site, Site #902014, URS Corporation Buffalo New York.

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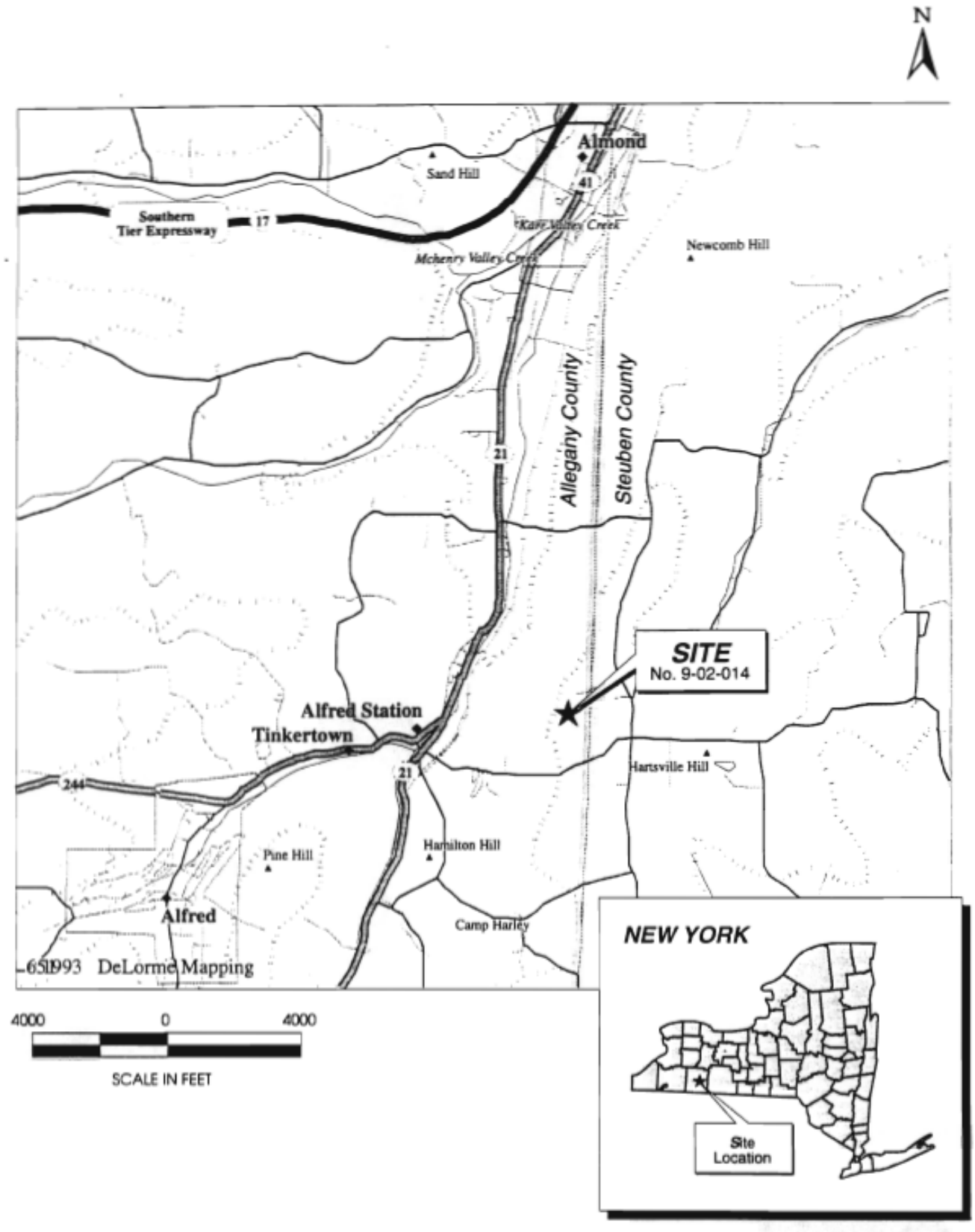
URS Consultants, 1996, Phase II Feasibility Study, Patton's Busy Bee Disposal Site, Site #902014, URS Corporation Buffalo New York.

FIGURES



	Busy Bee Landfill Remedial System Optimization Alfred Station, NY			Figure 1 Site Location				
	Project Mgr. BY	Designed By EGC	Created By EGC	Checked By BY	Scale As Shown	Date February 2016	Project No. 1490728	File No.. G:\Projects\State&Local\ GIS

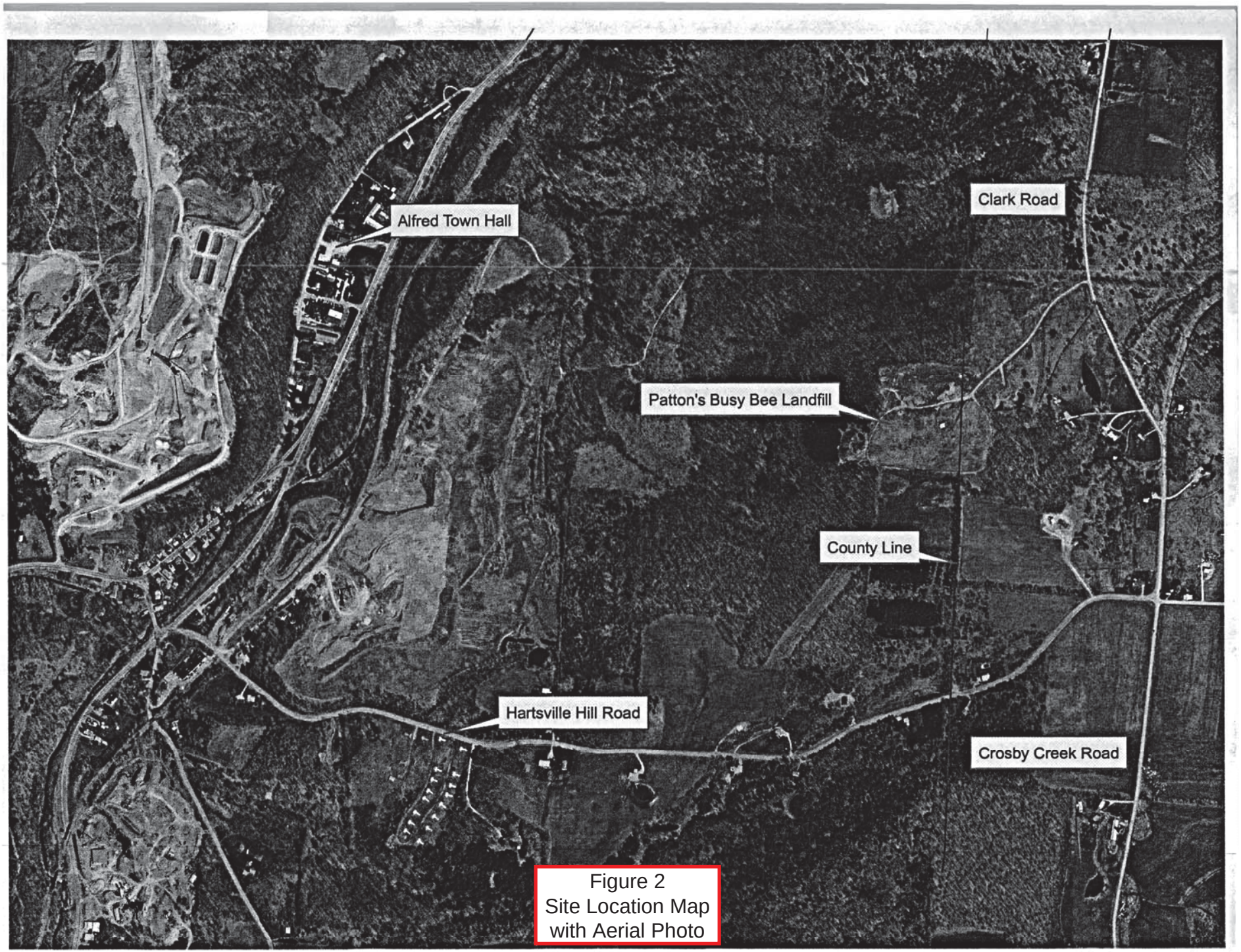
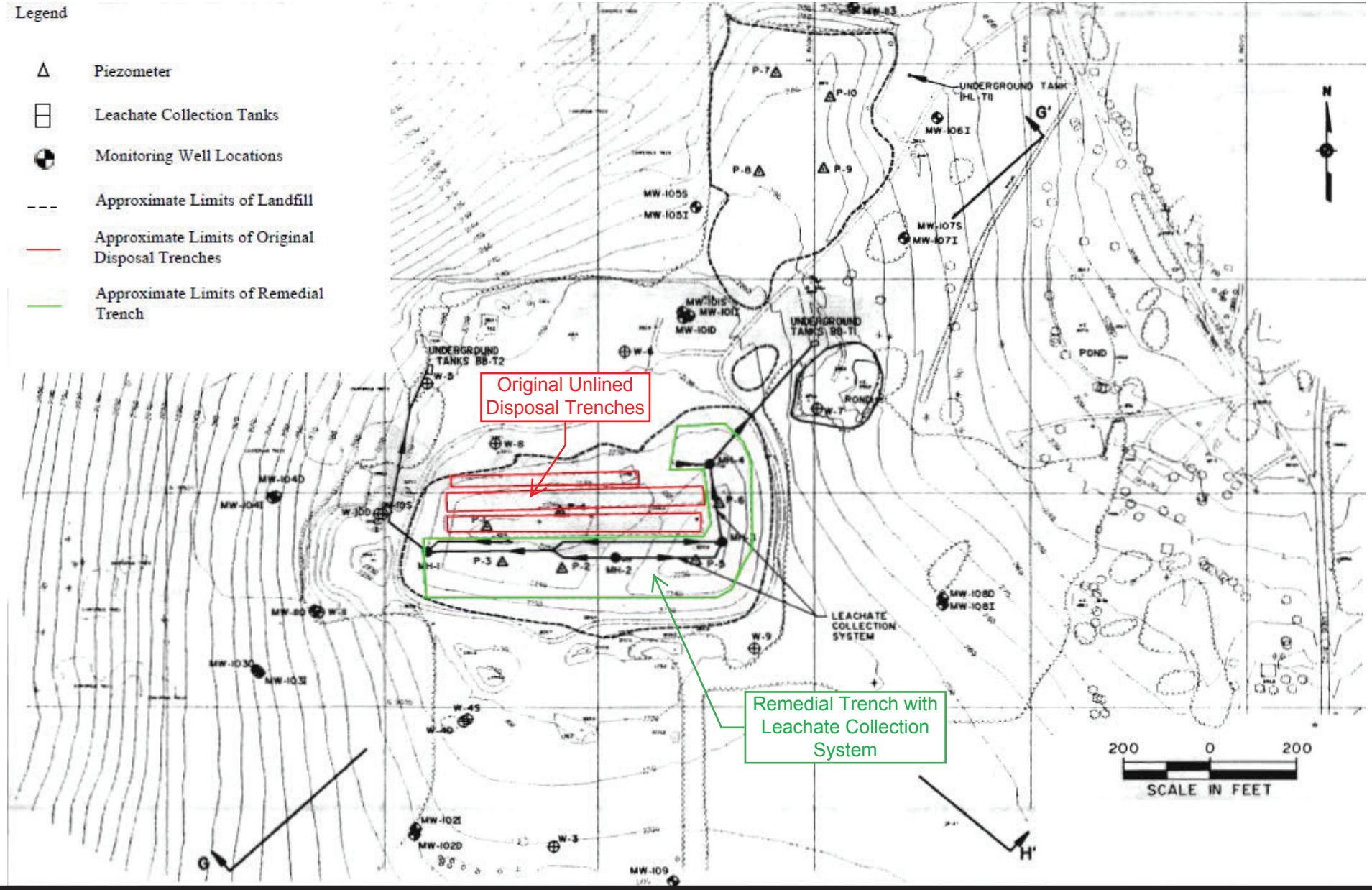


Figure 2
Site Location Map
with Aerial Photo



	Busy Bee Landfill Remedial System Optimization Alfred Station, NY			Figure 3 Detailed Site Map		File No.. G:\Projects\StateLocal\ GIS	
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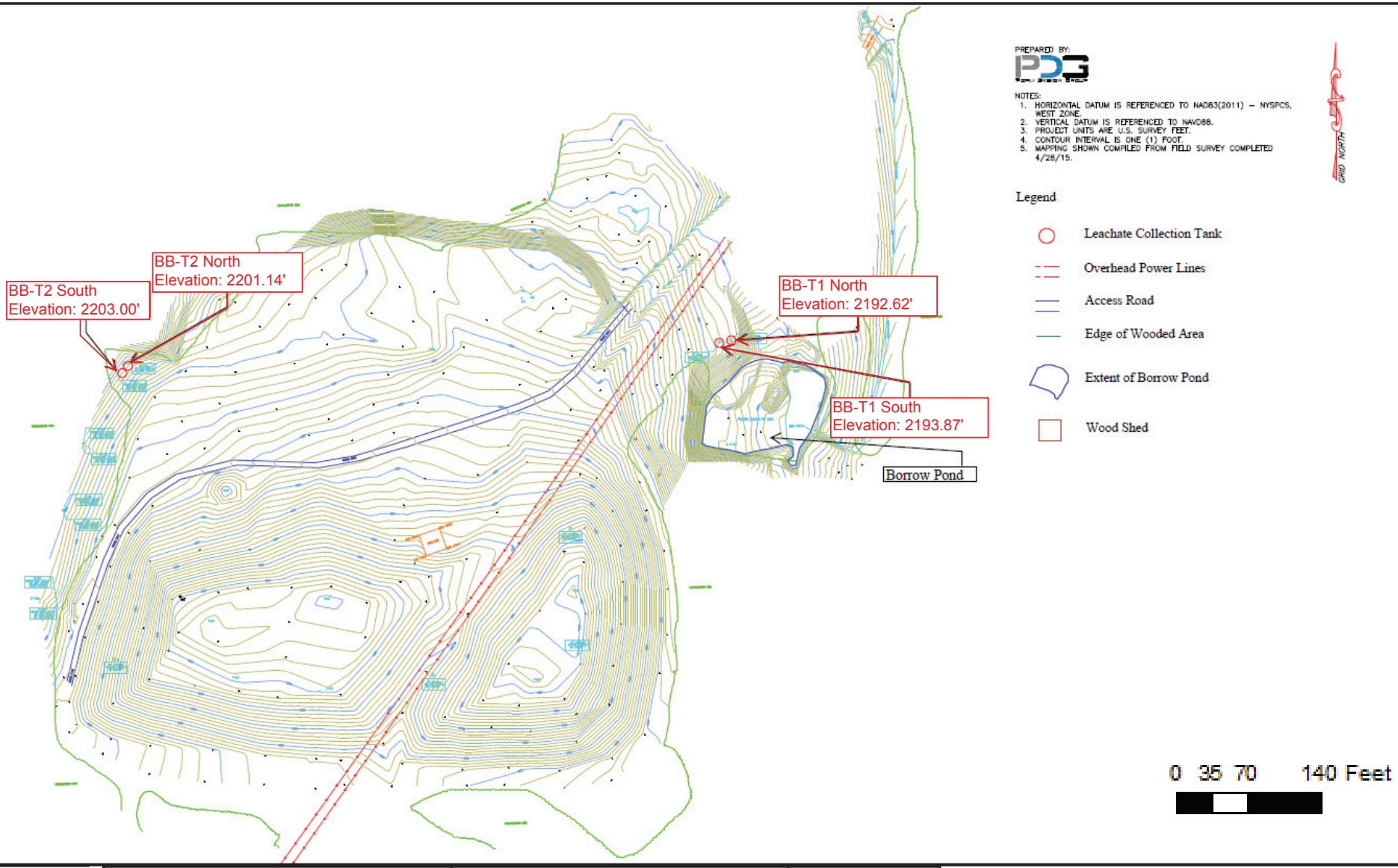
NEW YORK STATE OF OPPORTUNITY Department of Environmental Conservation



	Busy Bee Landfill Remedial System Optimization Alfred Station, NY			Figure 4 Topographic Map Showing Tanks and Overhead Power Lines			File No.. G:\Projects\State&Local\ GIS
	Project Mgr. BY	Designed By EGC	Created By EGC	Checked By BY	Scale As Shown	Date February 2016	Project No. 1490728

NEW YORK STATE OF OPPORTUNITY
Department of Environmental Conservation

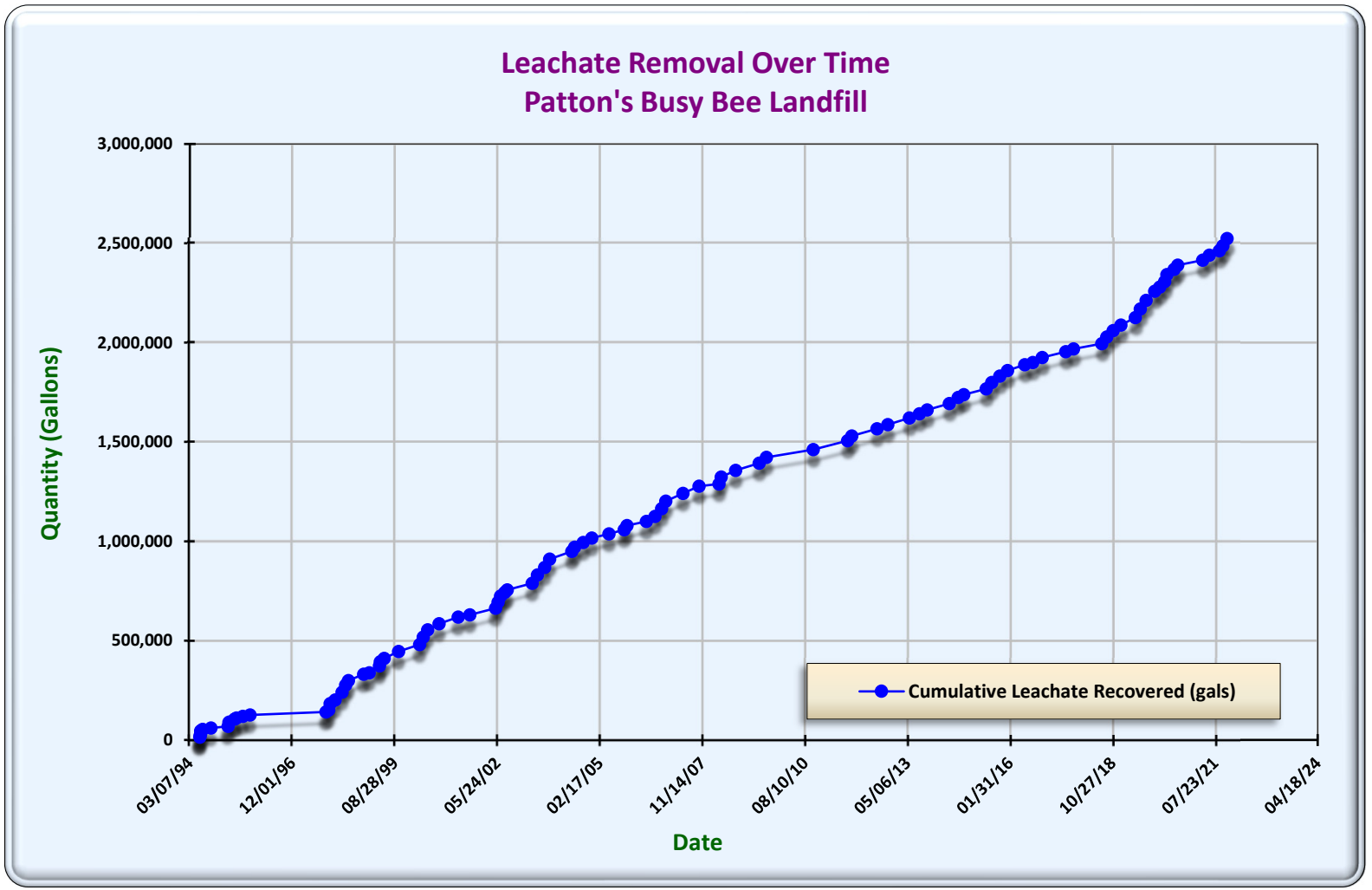


Figure 5. Cumulative plot of leachate removal for the Patton's Busy Bee Landfill.

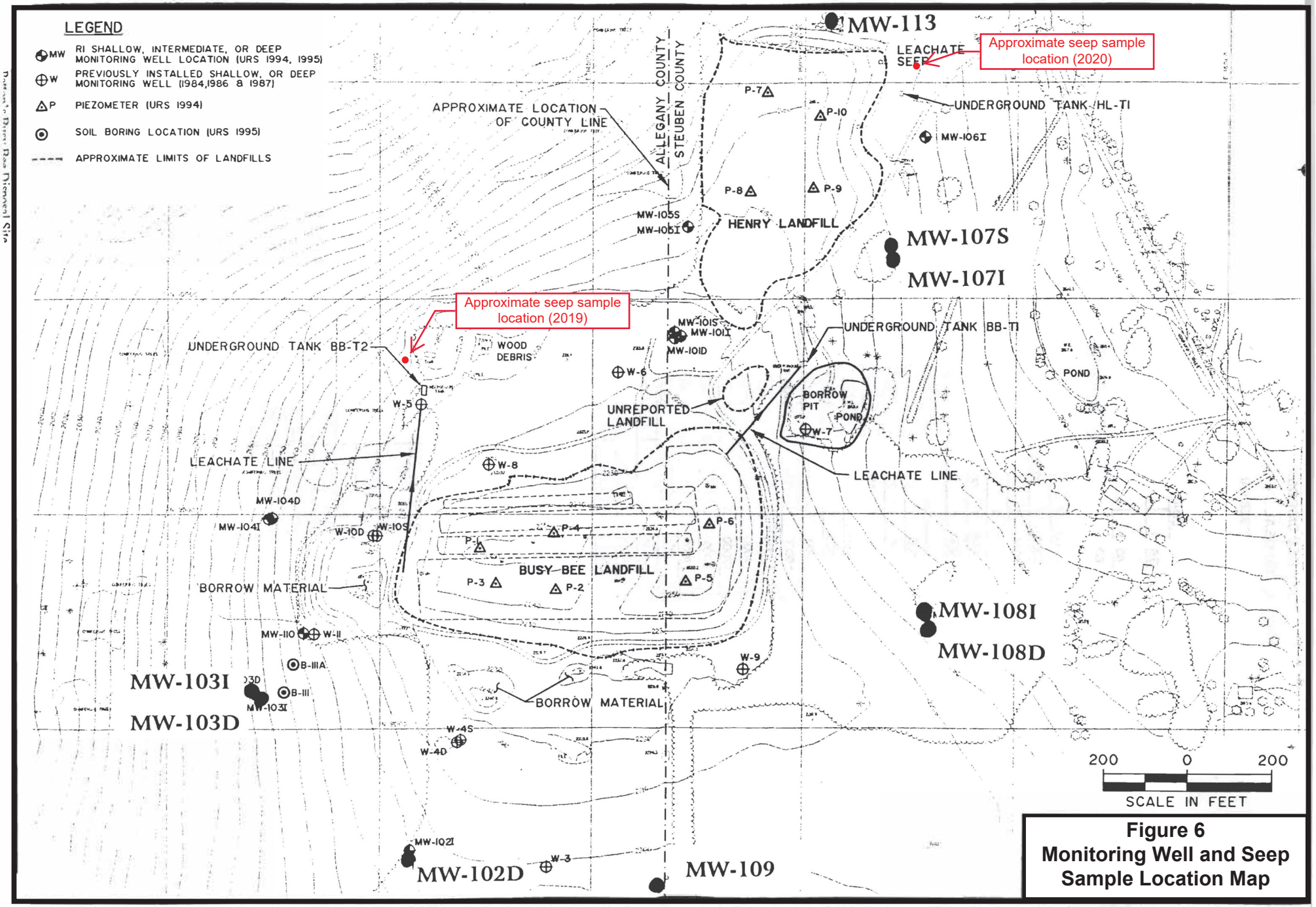


Figure 6
Monitoring Well and Seep Sample Location Map

TABLES

Table 1
Summary Key for Samples Collected During Site Management Activities Between 2017 and 2021
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample ID	Date Sampled	Time Sampled	Analytical Parameters	General Location of Tank or Well	Table Reference
Leachate Samples					
BB-T1	06/15/17	1300	VOCs, SVOCs, pesticides, PCBs, metals, ammonia, nitrogen, phosphorous, BOD, COD, TSS, pH	Northeast of Busy Bee Landfill	2A
"	06/06/18	1040	VOCs, SVOCs, pesticides, PCBs, metals, ammonia, nitrogen, phosphorous, BOD, COD, TSS, pH	" " " " "	"
"	04/18/19	1340	VOCs, SVOCs, pesticides, PCBs, metals, ammonia, nitrogen, phosphorous, BOD, COD, TSS, pH	" " " " "	"
"	11/13/20	1115	VOCs, SVOCs, pesticides, PCBs, metals, ammonia, nitrogen, phosphorous, BOD, COD, TSS, pH	" " " " "	"
BB-T2	06/15/17	1220	VOCs, PFCs, 1,4-Dioxane	Northwest of Busy Bee Landfill	2B, 3
"	06/06/18	1120	VOCs	" " " " "	2B
"	04/18/19	1050	VOCs	" " " " "	"
"	11/13/20	1015	VOCs, SVOCs, pesticides, PCBs, metals, ammonia, nitrogen, phosphorous, BOD, COD, TSS, pH	" " " " "	"
Groundwater Samples					
W-3	04/18/19	1230	VOCs	South of Busy Bee Landfill	8
W-4S	06/15/17	1330	VOCs, PFCs, 1,4-Dioxane	South of Busy Bee Landfill	5, 6
"	04/18/19	1300	VOCs	" " " " "	8
W-4D	06/15/17	1400	VOCs	South of Busy Bee Landfill	5
"	04/18/19	1250	VOCs	" " " " "	8
W-5	04/18/19	1120	VOCs	Near Tank BB-T2	8
W-6	04/18/19	1200	VOCs	North of Busy Bee Landfill	8
W-8	04/18/19	1140	VOCs	North of Busy Bee Landfill	8
W-9	04/18/19	1215	VOCs	Southeast of Busy Bee Landfill	8
W-10S	04/18/19	1100	VOCs	West of Busy Bee Landfill	8
MW-101S	03/31/20	1100	VOCs, PAHs, Metals, PFCs, 1,4-Dioxane, major anions, ammonia, bromide, COD, TDS, TOC	Between Henry and Busy Bee Landfill	9, 10
MW-101I	10/05/17	0930	Metals, major anions	Between Henry and Busy Bee Landfill	5, 7
"	03/31/20	1200	VOCs, PAHs, Metals, PFCs, 1,4-Dioxane, major anions, ammonia, bromide, COD, TDS, TOC	" " " " "	9, 10

Table 1
Summary Key for Samples Collected During Site Management Activities Between 2017 and 2021
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample ID	Date Sampled	Time Sampled	Analytical Parameters	General Location of Tank or Well	Table Reference
Groundwater Samples (continued)					
MW-101D	10/05/17	1015	VOCs, PFCs, major cations, major anions	Between Henry and Busy Bee Landfill	5, 6
"	04/01/20	0925	VOCs, PAHs, Metals, PFCs, 1,4-Dioxane, major anions, ammonia, bromide, COD, TDS, TOC	" " " " "	9, 10
MW-102D	10/04/17	1145	Metals, PFCs, major anions	South of Busy Bee Landfill	5, 6, 7
MW-103I	10/04/17	0920	VOCs, PFCs, major cations, major anions	Southwest of Busy Bee Landfill	5, 6
MW-103D	10/04/17	0905	VOCs, PFCs, major cations, major anions	Southwest of Busy Bee Landfill	5, 6
MW-104I	10/04/17	0955	VOCs, PFCs, major cations, major anions	West of Busy Bee Landfill	5, 6
MW-104D	NS	NA	Not sampled due to Insufficient water volume	West of Busy Bee Landfill	NA
MW-105I	04/01/20	1350	VOCs, PAHs, Metals, PFCs, 1,4-Dioxane, major anions, ammonia, bromide, COD, TDS, TOC	West of Henry Landfill	9, 10
MW-106I	04/01/20	1640	VOCs, PAHs, Metals, PFCs, 1,4-Dioxane, major anions, ammonia, bromide, COD, TDS, TOC	East of Henry Landfill	9, 10
MW-107SR	10/04/17	1510	Metals, major anions	NE of Busy Bee Landfill; SE of Henry Landfill	5, 7
"	03/30/20	1300	VOCs, PAHs, Metals, PFCs, 1,4-Dioxane, major anions, ammonia, bromide, COD, TDS, TOC	" " " " " "	9, 10
MW-107IR	10/05/17	1245	Metals, major anions	NE of Busy Bee Landfill; SE of Henry Landfill	5, 7
MW-107IR	04/01/20	1325	VOCs, PAHs, Metals, PFCs, 1,4-Dioxane, major anions, ammonia, bromide, COD, TDS, TOC	NE of Busy Bee Landfill; SE of Henry Landfill	9, 10
MW-108I	10/04/17	1355	Metals, major anions	Southeast of Busy Bee Landfill	5, 7
MW-108D	10/05/17	0905	Metals, major anions	Southeast of Busy Bee Landfill	5, 7
MW-109	10/04/17	1215	Metals, PFCs, major anions	South of Busy Bee Landfill	5, 6, 7
MW-113	10/05/17	1345	Metals, major anions	North of Henry Landfill	5, 7
"	04/02/20	1120	VOCs, PAHs, Metals, PFCs, 1,4-Dioxane, major anions, ammonia, bromide, COD, TDS, TOC	" " " "	9, 10
Seep Samples					
Seep-1	04/18/19	1315	VOCs	Down the slope NW of Tank BB-T2	11
SP-1	03/30/20	1340	VOCs, PAHs, Metals, PFCs, 1,4-Dioxane, major anions, ammonia, bromide, COD, TDS, TOC	East of Henry Landfill	11, 12

Table 1
Summary Key for Samples Collected During Site Management Activities Between 2017 and 2021
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes:

- **NA = Not applicable.**
- **NS = Not sampled.**
- **BOD = Biochemical Oxygen Demand.**
- **COD = Chemical Oxygen Demand.**
- **PAHs = Polycyclic aromatic hydrocarbons.**
- **PCBs = Polychlorinated Biphenyls.**
- **PFCs = Perfluorinated Hydrocarbons.**
- **TDS = Total dissolved solids.**
- **TSS = Total Suspended Solids.**
- **VOCs = Volatile Organic Compounds.**
- **Major Cations = Calcium, magnesium, potassium, and sodium.**
- **Major Anions = Chloride, sulfate, and alkalinity.**

Table 2A
Summary of Leachate Analytical Results for Tank BB-T1
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Date Sampled	Groundwater Effluent Limitations ●	Surface Water Standard ●	BB-T1 06/15/17	BB-T1 06/06/18	BB-T1 04/18/19	BBT1 11/13/20		
Volatile Organic Compounds (µg/L)								
Acetone	50.0	50 G	28.0					
Benzene	1.0	1.0	0.37 J					
Chlorobenzene	5.0	5.0						
Chloroethane	5.0	5.0						
1,4-Dichlorobenzene	3.0	5.0						
Dichlorodifluoromethane	5.0	5 G						
1,1-Dichloroethane	5.0	5.0						
1,2-Dichloroethane	0.6	0.6						
1,1-Dichloroethene	5.0	0.7 G						
cis-1,2-Dichloroethene	5.0	5.0						
trans-1,2-Dichloroethene	5.0	5.0						
1,1-Dichloropropene	5.0	5 G						
Ethylbenzene	5.0	5.0	0.62 J					
Isopropylbenzene	5.0	5 G	0.36 J					
4-Methyl-2-Pentanone	None	None						
Methyl tert-butyl ether (MTBE)	10.0	10.0	1.6					
Methylene Chloride	5.0	5.0		**18 J**		**25 J**		
Toluene	5.0	5.0	1.4					
1,1,1-Trichloroethane	5.0	5.0						
1,1,2-Trichloroethane	1.0	1.0						
Trichloroethene	5.0	5.0						
Vinyl Chloride	2.0	0.3 G						
Xylenes - Total	5.0	5.0	1.2 J					
Semivolatile Organic Compounds (µg/L)								
Acetophenone	None	None						
Anthracene	50.0	50 G						
Benzaldehyde	None	None						
Benzo(a)anthracene	0.002	0.002 G						
Benzo(a)pyrene	ND	0.002 G						

Table 2A
Summary of Leachate Analytical Results for Tank BB-T1
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Date Sampled	Groundwater Effluent Limitations ●	Surface Water Standard ●	BB-T1 06/15/17	BB-T1 06/06/18	BB-T1 04/18/19	BBT1 11/13/20		
Semivolatile Organic Compounds (continued)								
Benzo(b)fluoranthene	0.002	0.002 G						
Benzo(g,h,i)perylene	None	None						
Benzo(k)fluoranthene	0.002	0.002 G						
Bis(2-ethylhexyl)phthalate	5.0	5.0						
Butylbenzylphthalate	50.0	50 G						
Carbazole	None	None						
Chrysene	0.002	0.002 G						
Diethyl Phthalate	50.0	50 G						
Dimethyl Phthalate	50.0	50 G						
2,4-Dimethylphenol	2.0	50 G						
2,4-Dinitrotoluene	5.0	5 G						
Di-n-butylphthalate	50.0	50 G						
Di-n-octylphthalate	None	None						
Fluoranthene	50.0	50 G						
Indeno(1,2,3-cd)pyrene	0.002	0.002 G						
2-Methylnaphthalene	None	4.7						
2-Methylphenol	None	None						
4-Methylphenol	None	None						
Naphthalene	10.0	10 G						
N-Nitrosodiphenylamine	50.0	50 G						
Phenanthrene	50.0	50 G						
Pyrene	50.0	50 G						
Pesticides (µg/L)								
Aldrin	ND	0.002 G						
alpha-BHC	0.01	0.01						
beta-BHC	0.04	0.04						
delta-BHC	0.04	0.04	**0.12 J**					
gamma-BHC (Lindane)	0.05	0.05	**0.24 J**					
Chlordane	0.05	0.05						

Table 2A
Summary of Leachate Analytical Results for Tank BB-T1
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Date Sampled	Groundwater Effluent Limitations ●	Surface Water Standard ●	BB-T1 06/15/17	BB-T1 06/06/18	BB-T1 04/18/19	BBT1 11/13/20		
Pesticides (continued)								
4,4'-DDD	0.3	0.3		0.028 J				
4,4'-DDE	0.2	0.2						
Dieldrin	0.004	0.004						
Endosulfan I	None	0.009						
Endosulfan II	None	0.009						
Endrin	ND	0.2						
Endrin Aldehyde	5.0	5.0						
Endrin Ketone	5.0	5.0 G				0.074 J		
Heptachlor	0.04	0.04						
Heptachlor Epoxide	0.03	0.03						
Metals (µg/L)								
Aluminum	2,000	100.0	85.0 J	64.0 J	110.0 J	98.0 J		
Antimony ■	6.0	3.0						
Arsenic ■	50.0	50.0	8.5 J			15.0		
Barium	2,000	1,000	440.0	320.0	110.0	**1,100**		
Beryllium ■	3.0	3.0 G						
Cadmium ■	10.0	5.0				0.62 J		
Calcium	None	None	54,700	42,100	21,000	74,600		
Chromium ■	100.0	50.0	44.0	32.0	7.3	**170.0**		
Cobalt	None	5.0	4.1	3.5 J	0.66 J	**12.0**		
Copper ■	1,000	200.0	28.0	20.0	8.0 J	45.0		
Iron	600.0	300.0	**8,200**	**9,900 B**	**1,300**	**12,500**		
Lead ■	50.0	50.0	7.3 J	4.7 J		21.0		
Magnesium	35,000	35,000	30,900	22,400	7,700	**63,900**		
Manganese	600.0	300.0	**810.0**	**640.0 B**	270.0	**670.0**		
Mercury ■	1.4	0.7						
Nickel ■	200.0	100.0	**190.0**	**130.0**	31.0	**600.0**		
Potassium	None	None	34,700	26,300	6,900	97,500		
Selenium ■	20.0	10.0						

Table 2A
Summary of Leachate Analytical Results for Tank BB-T1
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Date Sampled	Groundwater Effluent Limitations ●	Surface Water Standard ●	BB-T1 06/15/17	BB-T1 06/06/18	BB-T1 04/18/19	BBT1 11/13/20		
Metals (continued)								
Silver ■	100.0	50.0						
Sodium	None	None	909,000	667,000	152,000	3,070,000		
Thallium ■	0.5	0.5 G						
Vanadium	None	14.0	4.5 J	3.9 J		**20.0**		
Zinc ■	5,000	2,000 G	14.0 B	11.0	12.0	32.0 B		

Notes:

● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
■ = Environmental Protection Agency priority pollutant metal.
B = Analyte was detected in the associated method blank (organics); Value is greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).
E = Estimated concentration due to the presence of interference.
G = Guidance value.
J = Compound reported at an estimated concentration below the reporting limit.
Blanks = Indicates that the compound was not detected.
None = No standard or guidance value available.
NS = Not sampled.
ug/L = Micrograms per liter or parts per billion.
Orange shaded results equal or exceed the NYSDEC groundwater effluent limitations but not the surface water standards or guidance values.
Purple shaded results equal or exceed the NYSDEC surface water standards or guidance values but not the groundwater effluent limitations.
Yellow shaded results equal or exceed the NYSDEC groundwater effluent limitations and the surface water standards or guidance values.

Table 2B
Summary of Leachate Analytical Rseults for Tank BB-T2
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Date Sampled	Groundwater Effluent Limitations ●	Surface Water Standard ●	BB-T2 06/15/17	BB-T2 06/06/18	BB-T2 04/18/19	BBT2 11/13/20		
Volatile Organic Compounds (µg/L)								
Acetone	50.0	50 G						
Benzene	1.0	1.0						
Chlorobenzene	5.0	5.0	0.48 J					
Chloroethane	5.0	5.0						
1,4-Dichlorobenzene	3.0	5.0	0.54 J					
Dichlorodifluoromethane	5.0	5 G						
1,1-Dichloroethane	5.0	5.0	3.8		0.51 J			
1,2-Dichloroethane	0.6	0.6						
1,1-Dichloroethene	5.0	0.7 G	0.33 J					
cis-1,2-Dichloroethene	5.0	5.0	**130.0**	**240.0**	**14.0**			
trans-1,2-Dichloroethene	5.0	5.0	3.2		0.33 J			
1,1-Dichloropropene	5.0	5 G						
Ethylbenzene	5.0	5.0	0.20 J					
Isopropylbenzene	5.0	5.0						
4-Methyl-2-Pentanone	None	None						
Methyl tert-butyl ether (MTBE)	10.0	10.0	0.47 J					
Methylene Chloride	5.0	5.0		**7.1 J**				
Toluene	5.0	5.0	0.19 J					
1,1,1-Trichloroethane	5.0	5.0						
1,1,2-Trichloroethane	1.0	1.0	0.28 J					
Trichloroethene	5.0	5.0	**6.6 B**	**27.0**	**10.0**			
Vinyl Chloride	2.0	0.3 G	**41.0**	**33.0**	**2.0**			
Xylenes - Total	5.0	5.0						
Semivolatile Organic Compounds (µg/L)								
Acetophenone	None	None	NS	NS	NS			
Anthracene	50.0	50 G	"	"	"			
Benzaldehyde	None	None	"	"	"			
Benzo(a)anthracene	0.002	0.002 G	"	"	"			
Benzo(a)pyrene	ND	0.002 G	"	"	"			

Table 2B
Summary of Leachate Analytical Rseults for Tank BB-T2
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Date Sampled	Groundwater Effluent Limitations ●	Surface Water Standard ●	BB-T2 06/15/17	BB-T2 06/06/18	BB-T2 04/18/19	BBT2 11/13/20		
Semivolatile Organic Compounds (continued)								
Benzo(b)fluoranthene	0.002	0.002 G	NS	NS	NS			
Benzo(g,h,i)perylene	None	None	"	"	"			
Benzo(k)fluoranthene	0.002	0.002 G	"	"	"			
Bis(2-ethylhexyl)phthalate	5.0	5.0	"	"	"			
Butylbenzylphthalate	50.0	50 G	"	"	"			
Carbazole	None	None	"	"	"			
Chrysene	0.002	0.002 G	"	"	"			
Diethyl Phthalate	50.0	50 G	"	"	"			
Dimethyl Phthalate	50.0	50 G	"	"	"			
2,4-Dimethylphenol	2.0	50 G	"	"	"			
2,4-Dinitrotoluene	5.0	5 G	"	"	"			
Di-n-butylphthalate	50.0	50 G	"	"	"			
Di-n-octylphthalate	None	None	"	"	"			
Fluoranthene	50.0	50 G	"	"	"			
Indeno(1,2,3-cd)pyrene	0.002	0.002 G	"	"	"			
2-Methylnaphthalene	None	4.7	"	"	"			
2-Methylphenol	None	None	"	"	"			
4-Methylphenol	None	None	"	"	"			
Naphthalene	10.0	10 G	"	"	"			
N-Nitrosodiphenylamine	50.0	50 G	"	"	"			
Phenanthrene	50.0	50 G	"	"	"			
Pyrene	50.0	50 G	"	"	"			
Pesticides (µg/L)								
Aldrin	ND	0.002 G	NS	NS	NS			
alpha-BHC	0.01	0.01	"	"	"			
beta-BHC	0.04	0.04	"	"	"	**0.050**		
delta-BHC	0.04	0.04	"	"	"			
gamma-BHC (Lindane)	0.05	0.05	"	"	"			
Chlordane	0.05	0.05	"	"	"			

Table 2B
Summary of Leachate Analytical Rseults for Tank BB-T2
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Date Sampled	Groundwater Effluent Limitations ●	Surface Water Standard ●	BB-T2 06/15/17	BB-T2 06/06/18	BB-T2 04/18/19	BBT2 11/13/20		
Pesticides (continued)								
4,4'-DDD	0.3	0.3	NS	NS	NS			
4,4'-DDE	0.2	0.2	"	"	"			
Dieldrin	0.004	0.004	"	"	"	**0.042 J**		
Endosulfan I	None	0.009	"	"	"			
Endosulfan II	None	0.009	"	"	"			
Endrin	ND	0.2	"	"	"			
Endrin Aldehyde	5.0	5.0	"	"	"	0.066		
Endrin Ketone	5.0	5.0 G	"	"	"			
Heptachlor	0.04	0.04	"	"	"	**0.059**		
Heptachlor Epoxide	0.03	0.03	"	"	"	**0.061**		
Metals (µg/L)								
Aluminum	2,000	100.0	NS	NS	NS			
Antimony ■	6.0	3.0	"	"	"			
Arsenic ■	50.0	50.0	"	"	"	9.2 J		
Barium	2,000	1,000	"	"	"	680.0		
Beryllium ■	3.0	3.0 G	"	"	"			
Cadmium ■	10.0	5.0	"	"	"	0.55 J		
Calcium	None	None	"	"	"	216,000		
Chromium ■	100.0	50.0	"	"	"	3.5 J		
Cobalt	None	5.0	"	"	"	**11.0**		
Copper ■	1,000	200.0	"	"	"			
Iron	600.0	300.0	"	"	"	**10,800**		
Lead ■	50.0	50.0	"	"	"			
Magnesium	35,000	35,000	"	"	"	**167,000**		
Manganese	600.0	300.0	"	"	"	**2,400**		
Mercury ■	1.4	0.7	"	"	"			
Nickel ■	200.0	100.0	"	"	"	42.0		
Potassium	None	None	"	"	"	156,000		
Selenium ■	20.0	10.0	"	"	"			

Table 2B
Summary of Leachate Analytical Rseults for Tank BB-T2
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Date Sampled	Groundwater Effluent Limitations ●	Surface Water Standard ●	BB-T2 06/15/17	BB-T2 06/06/18	BB-T2 04/18/19	BBT2 11/13/20		
Metals (continued)								
Silver ■	100.0	50.0	NS	NS	NS			
Sodium	None	None	"	"	"	1,040,000		
Thallium ■	0.5	0.5 G	"	"	"			
Vanadium	None	14.0	"	"	"			
Zinc ■	5,000	2,000 G	"	"	"	11.0 B		

Notes:

● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
■ = Environmental Protection Agency priority pollutant metal.
*** = Drinking water guidance value. Groundwater effluent and surface water standards or guidance values do not exist for these compounds.**
B = Analyte was detected in the associated method blank (organics); Value is greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).
E = Estimated concentration due to the presence of interference.
G = Guidance value.
J = Compound reported at an estimated concentration below the reporting limit.
N = Spike sample recovery is not within the quality control limits.
Blanks = Indicates that the compound was not detected.
None = No standard or guidance value available.
NS = Not sampled.
ug/L = Micrograms per liter or parts per billion.
Orange shaded results equal or exceed the NYSDEC groundwater effluent limitations but not the surface water standards or guidance values.
Purple shaded results equal or exceed the NYSDEC surface water standards or guidance values but not the groundwater effluent limitations.
Yellow shaded results equal or exceed the NYSDEC groundwater effluent limitations and the surface water standards or guidance values.

Table 3
Summary of Leachate Analytical Results for Emerging Contaminants
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Date Sampled	NYSDOH Drinking Water Standard ●	BB-T2 06/15/17			
Semi-Volatile Organic Compounds (ug/L)					
1,4-Dioxane	1.0	**42.0**			
Perfluorinated Hydrocarbons (ng/L)					
Perfluorobutanesulfonic acid (PFBS)					
Perfluorobutanoic acid (PFBA)		140 B			
Perfluorodecanesulfonic acid (PFDS)					
Perfluorodecanoic acid (PFDA)		1.5 J			
Perfluorododecanoic acid (PFDoA)					
Perfluoroheptanesulfonic Acid (PFHpS)		1.4 J			
Perfluoroheptanoic acid (PFHpA)		100.0			
Perfluorohexanesulfonic acid (PFHxS)		61.0			
Perfluorohexanoic acid (PFHxA)		270.0			
Perfluorononanoic acid (PFNA)		2.5			
Perfluorooctanesulfonic acid (PFOS)	10.0	**35.0**			
Perfluorooctanoic acid (PFOA)	10.0	**280.0**			
Perfluoropentanoic acid (PFPeA)		150.0			
Perfluorotetradecanoic acid (PFTeA)		0.41 JB			
Perfluorotridecanoic acid (PFTriA)					
Perfluoroundecanoic acid (PFUnA)					
Total PFOA/PFOS		315.0			
Total PFAS	500.0	**1,041.8**			

Notes:

● = NYSDOH drinking water standards. Groundwater and/or drinking water standards do not exit for the remaining contaminants.

B = Analyte detected in the associated blank, as well as in the sample (organics).

J = Compound reported at an estimated concentration below the reporting limit.

ng/L = Nanograms per liter or parts per trillion.

ug/L = Micrograms per liter or parts per billion.

Blanks = Concentration below laboratory detection limits.

Orange shaded results equal or exceed the NYSDOH drinking water standards.

Table 4
Summary of Leachate Removal Quantities
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Date(s)	Gallons Removed	Cumulative Gallons	Date(s)	Gallons Removed	Cumulative Gallons
06/13/94	14,000	14,000	06/16 thru 06/17/04	21,000	970,700
06/17/94	8,000	22,000	09/07 thru 09/08/04	23,500	994,200
06/21/94	8,500	30,500	11/30 thru 12/01/04	22,400	1,016,600
06/23/94	15,000	45,500	05/17/05	21,000	1,037,600
07/12/94	7,000	52,500	10/12 thru 10/13/05	21,000	1,058,600
09/29/94	8,000	60,500	11/09/05	21,000	1,079,600
03/17/95	8,500	69,000	05/17 thru 05/18/06	21,000	1,100,600
03/24/95	20,000	89,000	08/09/06	24,000	1,124,600
05/19/95	16,000	105,000	10/13/06	39,000	1,163,600
06/07/95	5,500	110,500	11/20 thru 11/22/06	39,000	1,202,600
08/07/95	7,800	118,300	05/09 thru 05/10/07	39,000	1,241,600
10/17/95	7,000	125,300	10/10 thru 10/12/07	35,000	1,276,600
10/27/97	15,200	140,500	04/23/08	12,000	1,288,600
11/21/97	10,000	150,500	05/14 thru 05/16/08	35,000	1,323,600
12/03 thru 12/05/97	32,300	182,800	10/02 thru 10/03/08	33,000	1,356,600
01/22/98	17,800	200,600	05/21 thru 05/22/09	36,000	1,392,600
03/31/98	40,000	240,600	07/29 thru 07/30/09	30,000	1,422,600
05/05/98	35,600	276,200	10/27 thru 10/30/10	39,000	1,461,600
06/02/98	23,100	299,300	09/07 thru 09/30/11	45,000	1,506,600
10/30/98	31,000	330,300	11/08 thru 11/10/11	23,200	1,529,800
12/23/98	7,700	338,000	07/11 thru 07/13/12	36,400	1,566,200
04/01/99	34,700	372,700	10/24 thru 10/25/12	21,000	1,587,200
04/08/99	21,500	394,200	05/22 thru 05/24/13	32,800	1,620,000
05/18/99	16,500	410,700	08/28 thru 08/30/13	21,000	1,641,000
10/04/99	34,500	445,200	11/13 thru 11/15/13	19,900	1,660,900
04/26/00	35,000	480,200	06/16 thru 06/18/14	33,000	1,693,900
05/31/00	37,500	517,700	09/10 thru 09/12/14	30,000	1,723,900
07/13/00	36,200	553,900	11/05 thru 11/07/14	14,000	1,737,900
11/02/00	31,000	584,900	06/10 thru 06/12/15	30,000	1,767,900
05/08/01	33,000	617,900	08/05 thru 08/07/15	31,000	1,798,900
08/30/01	11,000	628,900	10/21 thru 10/23/15	33,000	1,831,900
05/06 thru 05/07/02	34,800	663,700	01/06 thru 01/08/16	27,000	1,858,900
05/30 thru 05/31/02	30,000	693,700	06/22 thru 06/24/16	30,000	1,888,900
06/25 thru 06/26/02	31,200	724,900	09/07 thru 09/08/16	11,000	1,899,900
08/05/02	18,000	742,900	12/07 thru 12/09/16	25,000	1,924,900
08/30/02	12,800	755,700	07/26 thru 07/28/17	28,800	1,953,700
04/29 thru 04/30/03	33,000	788,700	10/11 thru 10/12/17	14,000	1,967,700
06/18 thru 06/20/03	42,000	830,700	07/12 thru 07/13/18	27,000	1,994,700
08/27 thru 08/29/03	37,100	867,800	08/29 thru 08/31/18	33,000	2,027,700
10/15 thru 10/16/03	42,000	909,800	10/31 thru 11/02/18	33,000	2,060,700
05/19 thru 05/21/04	39,900	949,700	01/16 thru 01/18/19	27,000	2,087,700

Table 4
Summary of Leachate Removal Quantities
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Date(s)	Gallons Removed	Cumulative Gallons	Date(s)	Gallons Removed	Cumulative Gallons
06/05 thru 06/07/19	39,000	2,126,700			2,524,154
07/24 thru 07/26/19	42,000	2,168,700			2,524,154
09/18 thru 09/20/19	44,500	2,213,200			2,524,154
12/11 thru 12/13/19	45,000	2,258,200			2,524,154
01/29 thru 01/31/20	20,810	2,279,010			2,524,154
03/18 & 03/19/20	28,962	2,307,972			2,524,154
04/08 thru 04/10/20	34,875	2,342,847			2,524,154
06/17 & 06/18/20	25,753	2,368,600			2,524,154
07/23 & 07/24/20	20,575	2,389,175			2,524,154
03/24 & 03/25/21	25,772	2,414,947			2,524,154
05/26 & 05/27/21	25,715	2,440,662			2,524,154
09/01 & 09/02/21	21,939	2,462,601			2,524,154
10/06 & 10/07/21	24,441	2,487,042			2,524,154
11/16 thru 11/18/21	37,112	2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
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		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
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		2,524,154			2,524,154
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		2,524,154			2,524,154
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		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154
		2,524,154			2,524,154

Table 5
Summary of Detected Compounds in Groundwater Samples Collected in 2017
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Date Sampled Well Screen Interval (feet bgs) Sandstone Unit	NYSDEC Groundwater Standard ●	W-4S 06/15/17 15.0 - 20.0 A	W-4D 06/15/17 47.3 - 57.3 B *	MW-101I 10/05/17 45.0 - 55.0 C	MW-101D 10/05/17 72.0 - 82.0 D	MW-102D 10/04/17 56.5 - 66.5 D	MW-103I 10/04/17 16.5 - 26.5 D	MW-103D 10/04/17 38.6 - 68.6 E	MW-104I 10/04/17 18.0 - 28.0 D
Volatile Organic Compounds (ug/L)									
1,1-Dichloroethane	5.0	0.31 J		NS		NS			
1,2-Dichloroethene (total)	5.0	**5.9**	**21.0**	"		"	3.7	2.9	**7.6**
Acetone	50 G			"	5.9 J	"	3.3 J		
Chlorobenzene	5.0			"	1.3	"			
Chloroform	7.0			"		"			0.70 J
cis-1,2-Dichloroethene	5.0	**5.9**	**21.0**	"		"	3.7	2.9	**7.6**
Trichloroethene	5.0	**6.9 B**	**13.0**	"		"	2.6	2.1	4.2
Metals (ug/L) +									
Aluminum	None	NS	NS		NS		NS	NS	NS
Barium	1,000	"	"	200.0	"	93.0	"	"	"
Cadmium ■	5.0	"	"		"		"	"	"
Calcium	None	"	"	88,400	"	46,800	"	"	"
Chromium ■	50.0	"	"		"		"	"	"
Cobalt	None	"	"	0.91 J	"		"	"	"
Copper ■	200.0	"	"	4.2 J	"		"	"	"
Iron	300.0	"	"		"		"	"	"
Lead ■	25.0	"	"		"		"	"	"
Magnesium	35,000 G	"	"	**38,800**	"	16,200	"	"	"
Manganese	300.0	"	"	**750.0**	"	29.0 B	"	"	"
Nickel	100.0	"	"	11.0	"		"	"	"
Potassium	None	"	"	6,100	"	2,500	"	"	"
Sodium	20,000	"	"	7,800	"	4,100	"	"	"
Vanadium	None	"	"		"		"	"	"
Zinc ■	2,000 G	"	"	18.0	"	5.6 JB	"	"	"

Table 5
Summary of Detected Compounds in Groundwater Samples Collected in 2017
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Date Sampled Well Screen Interval (feet bgs) Sandstone Unit	NYSDEC Groundwater Standard ●	MW-104D N/A 49.0 - 69.0 E	MW-107SR 10/04/17 18.5 - 28.5 D	MW-107IR 10/05/17 68.8 - 70.8 E	MW-108I 10/04/17 45.0 - 55.0 D	MW-108D 10/05/17 67.0 - 77.0 E	MW-109 10/04/17 91.0 - 101.0 E	MW-113 10/05/17 39.0 - 49.0 E	
Volatile Organic Compounds (ug/L)									
1,1-Dichloroethane	5.0	NS	NS	NS	NS	NS	NS	NS	
1,2-Dichloroethene (total)	5.0	"	"	"	"	"	"	"	
Acetone	50 G	"	"	"	"	"	"	"	
Chlorobenzene	5.0	"	"	"	"	"	"	"	
Chloroform	7.0	"	"	"	"	"	"	"	
cis-1,2-Dichloroethene	5.0	"	"	"	"	"	"	"	
Trichloroethene	5.0	"	"	"	"	"	"	"	
Metals (ug/L) +									
Aluminum	None	NS						1,000	
Barium	1,000	"	53.0	64.0	69.0	88.0	290.0	36.0	
Cadmium ■	5.0	"		0.60 J					
Calcium	None	"	52,400	58,700	49,800	26,500	30,200	45,500	
Chromium ■	50.0	"						6.4	
Cobalt	None	"							
Copper ■	200.0	"	2.9 J	3.1 J				7.6 J	
Iron	300.0	"						**1,300**	
Lead ■	25.0	"		9.7 J				11.0	
Magnesium	35,000 G	"	13,000	17,300	30,900	10,400	9,900	19,500	
Manganese	300.0	"	110.0 B		6.6 B	190.0	51.0 B	45.0	
Nickel	100.0	"	2.8 J	7.8 J		1.9 J	1.9 J	5.8 J	
Potassium	None	"	1,700	3,600	3,600	2,100	2,700	3,300	
Sodium	20,000	"	10,400	7,300	4,000	3,600	4,200	4,200	
Vanadium	None	"						1.8 J	
Zinc ■	2,000 G	"	6.8 JB	91.0	4.4 JB	9.3 J	4.7 JB	17.0	

Table 5
Summary of Detected Compounds in Groundwater Samples Collected in 2017
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes:

- **● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.**
- *** = Well is screened entirely in shale, but is most closely associated with indicated sandstone unit.**
- **■ = Environmental Protection Agency priority pollutant metal.**
- **+ = Results shown are for filtered samples. Groundwater was filtered in the field before being placed in the sample bottles.**
- **B = Analyte detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).**
- **G = Guidance value.**
- **J = Compound reported at an estimated concentration below the reporting limit.**
- **None = No standard or guidance value available.**
- **NS = Not sampled. Well MW-104D was not sampled due to Insufficient water volume.**
- **ug/L = Micrograms per liter or parts per billion.**
- **Blanks = Concentration below laboratory detection limits.**
- **Orange shaded results equal or exceed the NYSDEC groundwater standards or guidance values.**
- **Groundwater samples were only analyzed for volatile organic compounds and metals.**

Table 6
Summary of 2017 Groundwater Analytical Results for PFCs
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Date Sampled Well Screen Interval (feet bgs) Sandstone Unit	NYSDOH Drinking Water Standard ●	W-4S 06/15/17 15.0 - 20.0 A	MW-101D 10/05/17 72.0 - 82.0 D	MW-102D 10/04/17 56.5 - 66.5 D	MW-103I 10/04/17 16.5 - 26.5 D	MW-103D 10/04/17 38.6 - 68.6 E	MW-104I 10/04/17 18.0 - 28.0 D	MW-109 10/04/17 91.0 - 101.0 E
Perfluorinated Hydrocarbons (ng/L)								
Perfluorobutanesulfonic acid (PFBS)			2.9					
Perfluorobutanoic acid (PFBA)		6.8 B	27 B		0.92 JB	1.0 JB	1.2 JB	0.49 JB
Perfluorodecanesulfonic acid (PFDS)								
Perfluorodecanoic acid (PFDA)			0.45 J					
Perfluorododecanoic acid (PFDoA)								
Perfluoroheptanesulfonic Acid (PFHpS)								
Perfluoroheptanoic acid (PFHpA)		1.8 J	8.4					
Perfluorohexanesulfonic acid (PFHxS)		1.1 J	3.0				0.91 J	
Perfluorohexanoic acid (PFHxA)		2.5	15.0					
Perfluorononanoic acid (PFNA)								0.65 J
Perfluorooctanesulfonic acid (PFOS)	10.0	4.1	2.9				2.7	
Perfluorooctanoic acid (PFOA)	10.0	6.7	**18.0**		0.90 J	1.2 J	2.0	
Perfluoropentanoic acid (PFPeA)		3.7	6.8					
Perfluorotetradecanoic acid (PFTeA)		1.0 JB	0.50 JB					0.34 JB
Perfluorotridecanoic acid (PFTriA)								
Perfluoroundecanoic acid (PFUnA)					1.0 J			
Total PFOA/PFOS		10.80	20.90	0.00	0.90	1.20	4.70	0.00
Total PFAS	500.0	27.70	84.95	0.00	2.82	2.20	6.81	1.48

Notes:

● = NYSDOH drinking water standards. Groundwater and/or drinking water standards do not exit for the remaining contaminants.
B = Analyte detected in the associated blank, as well as in the sample (organics).
G = Guidance value.
J = Compound reported at an estimated concentration below the reporting limit.
ng/L = Nanograms per liter or parts per trillion.
Blanks = Concentration below laboratory detection limits.
Orange shaded results equal or exceed the NYSDOH drinking water standards.

Table 7
Comparison of Total and Dissolved Metals Results for Groundwater Samples Collected in 2017
Patton's Busy Bee Site, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	NYSDEC	MW-101I		MW-102D		MW-107SR	
Date Sampled	Groundwater	10/05/17		10/04/17		10/04/17	
Well Screen Interval (feet bgs)	Standard ●	45.0 - 55.0		56.5 - 66.5		18.5 - 28.5	
Sandstone Unit		C		D		D	
Analysis Type		Total	Dissolved *	Total	Dissolved *	Total	Dissolved *
Metals (ug/L)							
Aluminum	None	396,000		16,600		36,700	
Antimony ■	3.0						
Arsenic ■	25.0	**300.0**		**26.0**		7.2 J	
Barium	1,000	**2,900**	200.0	340.0	93.0	290.0	53.0
Beryllium ■	3.0 G	**25.0**		0.88 J		1.4 J	
Cadmium ■	5.0	3.2 J		3.7		1.2 J	
Calcium	None	153,000	88,400	59,000	46,800	57,100	52,400
Chromium ■	50.0	**1,100**		**88.0**		**120.0**	
Cobalt	None	490.0	0.91 J	12.0		12.0	
Copper ■	200.0	**800.0**	4.2 J	**220.0**		42.0	2.9 J
Iron	300.0	**917,000 B**		**30,400**		**31,500**	
Lead ■	25.0	**300.0**		15.0		23.0	
Magnesium	35,000 G	**168,000**	**38,800**	20,700	16,200	19,500	13,000
Manganese	300.0	**16,600 B**	**750.0**	**560.0 B**	29.0 B	**720.0 B**	110.0 B
Mercury ■	0.7	0.39					
Nickel ■	100.0	**1,200 B**	11.0	52.0		73.0	2.8 J
Potassium	None	107,000	6,100	9,600	2,500	14,800	1,700
Selenium ■	10.0						
Silver ■	50.0						
Sodium	20,000	7,100	7,800	4,700	4,100	11,900	10,400
Thallium ■	0.5 G						
Vanadium	None	680.0		27.0		55.0	
Zinc ■	2,000 G	**2,200**	18.0	100.0	5.6 JB	95.0	6.8 JB

Table 7
Comparison of Total and Dissolved Metals Results for Groundwater Samples Collected in 2017
Patton's Busy Bee Site, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	NYSDEC	MW-107IR		MW-108I		MW-108D	
Date Sampled	Groundwater	10/05/17		10/04/17		10/05/17	
Well Screen Interval (feet bgs)	Standard ●	68.8 - 70.8		45.0 - 55.0		67.0 - 77.0	
Sandstone Unit		E		D		E	
Analysis Type		Total	Dissolved *	Total	Dissolved *	Total	Dissolved *
Metals (ug/L)							
Aluminum	None	44,000		13,700		2,900	
Antimony ■	3.0						
Arsenic ■	25.0	**34.0**		9.1 J			
Barium	1,000	490.0	64.0	160.0	69.0	150.0	88.0
Beryllium ■	3.0 G	2.0		0.72 J			
Cadmium ■	5.0	**8.7**	0.60 J			**15.0**	
Calcium	None	67,800	58,700	57,900	49,800	26,000	26,500
Chromium ■	50.0	**69.0**		22.0		46.0	
Cobalt	None	47.0		5.8		2.0 J	
Copper ■	200.0	63.0	3.1 J	8.1 J		27.0	
Iron	300.0	**74,900 B**		**13,600 F1**		**8,600 B**	
Lead ■	25.0	**120.0**	9.7 J	9.8 J		4.7 J	
Magnesium	35,000 G	30,800	17,300	33,000	30,900	12,100	10,400
Manganese	300.0	**2,400 B**		**340.0 B F1**	6.6 B	**510.0 B**	190.0
Mercury ■	0.7						
Nickel ■	100.0	83.0 B	7.8 J	15.0		31.0 B	1.9 J
Potassium	None	15,600	3,600	9,200	3,600	4,500	2,100
Selenium ■	10.0						
Silver ■	50.0						
Sodium	20,000	7,600	7,300	4,300	4,000	4,900	3,600
Thallium ■	0.5 G						
Vanadium	None	61.0		21.0		5.0	
Zinc ■	2,000 G	360.0	91.0	31.0	4.4 JB	280.0	9.3 J

Table 7
Comparison of Total and Dissolved Metals Results for Groundwater Samples Collected in 2017
Patton's Busy Bee Site, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	NYSDEC	MW-109		MW-113			
Date Sampled	Groundwater	10/04/17		10/05/17			
Well Screen Interval (feet bgs)	Standard ●	91.0 - 101.0		39.0 - 49.0			
Sandstone Unit		E		E			
Analysis Type		Total	Dissolved *	Total	Dissolved *		
Metals (ug/L)							
Aluminum	None	19,100		17,000	1,000		
Antimony ■	3.0						
Arsenic ■	25.0	22.0		**42.0**			
Barium	1,000	530.0	290.0	130.0	36.0		
Beryllium ■	3.0 G	1.2 J		0.71 J			
Cadmium ■	5.0	4.4		2.0			
Calcium	None	68,700	30,200	52,700	45,500		
Chromium ■	50.0	**230.0**		**120.0**	6.4		
Cobalt	None	13.0		15.0			
Copper ■	200.0	**380.0**		93.0	7.6 J		
Iron	300.0	**118,000**		**31,700 B**	**1,300**		
Lead ■	25.0	**29.0**		**180.0**	11.0		
Magnesium	35,000 G	16,000	9,900	24,700	19,500		
Manganese	300.0	**1,900 B**	51.0 B	**910 B**	45.0		
Mercury ■	0.7						
Nickel ■	100.0	**130.0**	1.9 J	77.0 B	5.8 J		
Potassium	None	10,000	2,700	8,800	3,300		
Selenium ■	10.0						
Silver ■	50.0						
Sodium	20,000	4,700	4,200	4,900	4,200		
Thallium ■	0.5 G						
Vanadium	None	34.0		23.0	1.8 J		
Zinc ■	2,000 G	160.0	4.7 JB	75.0	17.0		

Table 7
Comparison of Total and Dissolved Metals Results for Groundwater Samples Collected in 2017
Patton's Busy Bee Site, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes:

- **● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, and NYSDEC Part 703: Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations, August 1999.**
- **■ = Environmental Protection Agency priority pollutant metal.**
- *** = Dissolved metals are the results of filtered samples. Groundwater was filtered in the field before being placed in the sample bottles.**
- **B = Value is greater than or equal to the instrument detection limit, but less than the contract required detection limit.**
- **F1 = MS and/or MSD recovery is outside accptance limits.**
- **G = Guidance value.**
- **J = Compound reported at an estimated concentration below the reporting limit.**
- **None = No standard or guidance value available.**
- **ug/L = Micrograms per liter or parts per billion.**
- **Blanks = Concentration below laboratory detection limits.**
- **Yellow shaded values exceed NYSDEC groundwater standards or guidance values.**

Table 8
Summary of Detected Compounds in Groundwater Samples Collected in 2019
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Date Sampled Well Screen Interval (feet bgs) Sandstone Unit	NYSDEC Groundwater Standard ●	W-3 04/18/19 5.0 - 25.0 B *	W-4S 04/18/19 15.0 - 20.0 A	W-4D 04/18/19 47.3 - 57.3 B *	W-5 04/18/19 20.5 - 25.5 B	W-6 04/18/19 28.0 - 33.0 B	W-8 04/18/19 23.5 - 28.5 A	W-9 04/18/19 17.7 - 22.7 A *	W-10S 04/18/19 14.6 - 19.6 B
Volatile Organic Compounds (ug/L)									
1,1-Dichloroethane	5.0								0.37 J
1,1-Dichloroethene	5.0								1.1
1,2-Dichloroethene (total)	5.0		0.92 J	**13.0**	0.74 J				**1,127**
1,2-Dichlorobenzene	3.0								0.79 J
1,3-Dichlorobenzene	3.0								0.61 J
1,4-Dichlorobenzene	3.0								0.52 J
1,1,2-Trichloroethane	1.0								**1.6**
1,2,4-Trichlorobenzene	5.0								1.0
Benzene	1.0			0.92 J					
cis-1,2-Dichloroethene	5.0		0.92 J	**13.0**	0.74 J				**1,100**
trans-1,2-Dichloroethene	5.0								**27.0**
Tetrachloroethene	5.0								1.5
Trichloroethene	5.0	0.49 J	**6.5**	**9.0**	0.29 J	0.26 J	0.42 J		**2,300**
Vinyl Chloride	2.0			0.74 J					0.35 J

Notes:

● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.
*** = Well is screened entirely in shale, but is most closely associated with indicated sandstone unit.**
B = Analyte detected in the associated blank, as well as in the sample (organics).
G = Guidance value.
J = Compound reported at an estimated concentration below the reporting limit.
None = No standard or guidance value available.
ug/L = Micrograms per liter or parts per billion.
Blanks = Concentration below laboratory detection limits.
Orange shaded results equal or exceed the NYSDEC groundwater standards or guidance values.
Groundwater samples were only analyzed for volatile organic compounds.

Table 9
Summary of Detected Compounds in Groundwater Samples Collected in 2020
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Date Sampled Well Screen Interval (feet bgs) Sandstone Unit	NYSDEC Groundwater Standard ●	MW-101S 03/31/20 19.0 - 29.0 B	MW-101I 03/31/20 45.0 - 55.0 C	MW-101D 04/01/20 72.0 - 82.0 D	MW-105I 04/01/20 46.0 - 56.0 D	MW-106I 04/01/20 49.5 - 59.5 E	MW-107SR 03/30/20 18.5 - 28.5 D	MW-107IR 04/01/20 68.8 - 70.8 E	MW-113 04/02/20 39.0 - 49.0 E
Volatile Organic Compounds (ug/L)									
1,1-Dichloroethane	5.0								
1,2-Dichloroethene (total)	5.0	0.98 J							
Acetone	50 G								
Benzene	1.0			0.64 J	**2.8**				
Chlorobenzene	5.0	2.1		2.6	**12.0**				
Chloroform	7.0								
cis-1,2-Dichloroethene	5.0	0.98 J							
Trichloroethene	5.0								
Metals (ug/L)									
Aluminum	None	72.0	7,600	2,100	200.0	740.0	200.0	2,800	200.0
Arsenic ■	25.0	17.0	7.1 J	13.0 J					
Barium	1,000	180.0	210.0	420.0	450.0	180.0	18.0	65.0	23.0
Beryllium ■	3.0		0.38 J						
Boron	1,000	32.0	35.0	250.0	130.0		25.0		17.0 J
Cadmium ■	5.0								
Calcium	None	62,200	91,700	82,100	98,800	46,200	15,500	39,100	50,300
Chromium ■	50.0	1.6 J	15.0	2.6 J	1.1 J			3.7 J	
Cobalt	None	4.5	4.7	8.5	2.0 J			1.1 J	
Copper ■	200.0		8.4 J	2.8 J				2.0 J	
Iron	300.0	**3,500**	**10,400**	**4,800**	290.0	**960.0**	74.0	**3,100**	100.0
Lead ■	25.0		3.8 J	4.2 J					
Magnesium	35,000 G	18,700	**42,400**	**56,800**	**59,500**	15,200	3,600	11,600	21,700
Manganese	300.0	**4,200**	**570.0**	**9,100**	**3,700**	170.0	240.0	35.0	7.1
Nickel	100.0	4.7 J	13.0	11.0	4.5 J			3.0 J	
Potassium	None	2,500	6,800	8,500	7,700	2,400	760.0	3,000	2,500
Sodium	20,000	5,100	6,300	**43,000**	**23,400**	3,600	9,900	5,200	3,900
Vanadium	None		10.0	2.6 J				3.7 J	
Zinc ■	2,000 G	2.1 J	23.0	10.0	7.6 J	2.8 J		8.3 J	2.0 J

Table 9
Summary of Detected Compounds in Groundwater Samples Collected in 2020
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes:

● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.

*** = Well is screened entirely in shale, but is most closely associated with indicated sandstone unit.**

■ = Environmental Protection Agency priority pollutant metal.

+ = Dissolved metals are the results of filtered samples. Groundwater was filtered in the field before being placed in the sample bottles.

B = Analyte detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).

G = Guidance value.

J = Compound reported at an estimated concentration below the reporting limit.

None = No standard or guidance value available.

ug/L = Micrograms per liter or parts per billion.

Blanks = Concentration below laboratory detection limits.

Orange shaded results equal or exceed the NYSDEC groundwater standards or guidance values.

Groundwater samples were only analyzed for volatile organic compounds, semi-volatile organic compounds and metals.

Table 10
Summary of 2020 Groundwater Analytical Results for Emerging Contaminants
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Date Sampled Well Screen Interval (feet bgs) Sandstone Unit	NYSDOH Drinking Water Standard ●	MW-101S 03/31/20 19.0 - 29.0 B	MW-101I 03/31/20 45.0 - 55.0 C	MW-101I 04/01/20 45.0 - 55.0 C	MW-101D 04/01/20 72.0 - 82.0 D
Semi-Volatile Organic Compounds (ug/L)					
1,4-Dioxane	1.0	0.12 J	0.11 J		**6.8**
Perfluorinated Hydrocarbons (ng/L)					
2-(N-methyl-perfluorooctane sulfonamido) acetic acid					
6:2 Fluorotelomer sulfonate					
8:2 Fluorotelomer sulfonate					
N-ethylperfluorooctane sulfonamidoacetic acid		3.6 J			16.0 J
Perfluorobutanesulfonic acid (PFBS)		1.0 J	0.55 J		2.9
Perfluorobutanoic Acid (PFBA)		4.7	3.0	2.0	11.0
Perfluorodecane Sulfonic Acid (PFDS)					
Perfluorodecanoic acid (PFDA)					
Perfluorododecanoic acid (PFDoA)					
Perfluoroheptane Sulfonate (PFHPS)					
Perfluoroheptanoic acid (PFHpA)		1.3 J			6.4
Perfluorohexanesulfonic acid (PFHxS)		1.9			3.6
Perfluorohexanoic acid (PFHxA)		1.6 J			11.0
Perfluorononanoic acid (PFNA)		0.58 J			0.41 J
Perfluorooctane Sulfonamide (PFOSA)					
Perfluorooctanesulfonic acid (PFOS)	10.0	**24.0**			**14.0**
Perfluorooctanoic acid (PFOA)	10.0	6.0	1.7 J		**24.0**
Perfluoropentanoic Acid (PFPeA)					3.1
Perfluorotetradecanoic acid (PFTeA)					
Perfluorotridecanoic Acid (PFTriA)					
Perfluoroundecanoic Acid (PFUnA)					
Total PFOA/PFOS		30.00	1.70	0.00	38.00
Total PFAS	500.0	44.68	5.25	2.00	92.41

Table 10
Summary of 2020 Groundwater Analytical Results for Emerging Contaminants
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number Date Sampled Well Screen Interval (feet bgs) Sandstone Unit	NYSDOH Drinking Water Standard ●	MW-105I 04/01/20 46.0 - 56.0 D	MW-106I 04/01/20 49.5 - 59.5 E	MW-107SR 03/30/20 18.5 - 28.5 D	MW-113 04/02/20 39.0 - 49.0 E
Semi-Volatile Organic Compounds (ug/L)					
1,4-Dioxane	1.0	**3.5**		0.49	
Perfluorinated Hydrocarbons (ng/L)					
2-(N-methyl-perfluorooctane sulfonamido) acetic acid		1.7 J			
6:2 Fluorotelomer sulfonate					
8:2 Fluorotelomer sulfonate					
N-ethylperfluorooctane sulfonamidoacetic acid		36.0			
Perfluorobutanesulfonic acid (PFBS)		7.3		0.76 J	
Perfluorobutanoic Acid (PFBA)		18.0		3.0	
Perfluorodecane Sulfonic Acid (PFDS)					
Perfluorodecanoic acid (PFDA)					
Perfluorododecanoic acid (PFDoA)					
Perfluoroheptane Sulfonate (PFHPS)		2.0			
Perfluoroheptanoic acid (PFHpA)		17.0			
Perfluorohexanesulfonic acid (PFHxS)		12.0		0.89 J	
Perfluorohexanoic acid (PFHxA)		26.0		1.5 J	
Perfluorononanoic acid (PFNA)		0.96 J			0.27 J
Perfluorooctane Sulfonamide (PFOSA)					
Perfluorooctanesulfonic acid (PFOS)	10.0	**82.0**		2.9	1.2 J
Perfluorooctanoic acid (PFOA)	10.0	**73.0**		1.9	1.0 J
Perfluoropentanoic Acid (PFPeA)		7.1			0.78 J
Perfluorotetradecanoic acid (PFTeA)					
Perfluorotridecanoic Acid (PFTriA)					
Perfluoroundecanoic Acid (PFUnA)					
Total PFOA/PFOS		155.00	0.00	4.80	2.20
Total PFAS	500.0	283.06	0.00	10.95	3.25

Table 10
Summary of 2020 Groundwater Analytical Results for Emerging Contaminants
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes:

- **● = NYSDOH drinking water standards. Groundwater and/or drinking water standards do not exit for the remaining contaminants.**
- **B = Analyte detected in the associated blank, as well as in the sample (organics).**
- **G = Guidance value.**
- **J = Compound reported at an estimated concentration below the reporting limit.**
- **ng/L = Nanograms per liter or parts per trillion.**
- **Blanks = Concentration below laboratory detection limits.**
- **Orange shaded results equal or exceed the NYSDOH drinking water standards.**

Table 11
Summary of Detected Compounds in Seep Samples Collected in 2019 and 2020
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Date Sampled	Surface Water Standard ●	SEEP-1 04/18/19	SP-1 03/31/20			
Volatile Organic Compounds (ug/L)						
1,1-Dichloroethane	5.0					
1,2-Dichloroethene (total)	5.0					
Acetone	50 G					
Benzene	1.0					
Chlorobenzene	5.0		**11.0**			
Chloroform	7.0					
cis-1,2-Dichloroethene	5.0					
Trichloroethene	5.0					
Metals (ug/L)						
Aluminum	100.0	NS	**260.0**			
Arsenic ■	50.0	"	**160.0**			
Barium	1,000	"	**1,400**			
Beryllium ■	3.0 G	"				
Boron	10,000	"	260.0			
Cadmium ■	5.0	"				
Calcium	None	"	84,900			
Chromium ■	50.0	"	1.2 J			
Cobalt	5.0	"	**5.5**			
Copper ■	200.0	"	5.1 J			
Iron	300.0	"	**388,000**			
Lead ■	50.0	"	5.1 J			
Magnesium	35,000	"	18,600			
Manganese	300.0	"	**1,700**			
Nickel	100.0	"	4.9 J			
Potassium	None	"	11,100			
Sodium	None	"	16,400			
Vanadium	14.0	"	4.4 J			
Zinc ■	2,000 G	"	25.0			

Table 11
Summary of Detected Compounds in Seep Samples Collected in 2019 and 2020
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes:

- **● = NYSDEC Ambient Water Quality Standards and Guidance Values, June 1998, with addenda through 2004.**
- **■ = Environmental Protection Agency priority pollutant metal.**
- **B = Analyte detected in the associated blank, as well as in the sample (organics); value is greater than or equal to the instrument detection limit, but less than the contract required detection limit (inorganics).**
- **G = Guidance value.**
- **J = Compound reported at an estimated concentration below the reporting limit.**
- **None = No standard or guidance value available.**
- **NS = Not sampled.**
- **ug/L = Micrograms per liter or parts per billion.**
- **Blanks = Concentration below laboratory detection limits.**
- **Orange shaded results equal or exceed the NYSDEC surface water standards or guidance values.**

Table 12
Summary of 2020 Seep Analytical Results for Emerging Contaminants
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Sample Number Date Sampled	NYSDOH Drinking Water Standard ●	SP-1 03/30/20		
Semi-Volatile Organic Compounds (ug/L)				
1,4-Dioxane	1.0	**2.0**		
Perfluorinated Hydrocarbons (ng/L)				
2-(N-methyl-perfluorooctane sulfonamido) acetic acid		3.7 J		
6:2 Fluorotelomer sulfonate				
8:2 Fluorotelomer sulfonate				
N-ethylperfluorooctane sulfonamidoacetic acid		120.0		
Perfluorobutanesulfonic acid (PFBS)		2.3		
Perfluorobutanoic Acid (PFBA)		16.0		
Perfluorodecane Sulfonic Acid (PFDS)				
Perfluorodecanoic acid (PFDA)		0.84 J		
Perfluorododecanoic acid (PFDoA)				
Perfluoroheptane Sulfonate (PFHPS)		1.6 J		
Perfluoroheptanoic acid (PFHpA)		12.0		
Perfluorohexanesulfonic acid (PFHxS)		8.8		
Perfluorohexanoic acid (PFHxA)		15.0		
Perfluorononanoic acid (PFNA)		1.9		
Perfluorooctane Sulfonamide (PFOSA)				
Perfluorooctanesulfonic acid (PFOS)	10.0	**87.0**		
Perfluorooctanoic acid (PFOA)	10.0	**74.0**		
Perfluoropentanoic Acid (PFPeA)		5.4 B		
Perfluorotetradecanoic acid (PFTeA)				
Perfluorotridecanoic Acid (PFTriA)				
Perfluoroundecanoic Acid (PFUnA)				
Total PFOA/PFOS		161.00		
Total PFAS	500.0	348.54		

Table 12
Summary of 2020 Seep Analytical Results for Emerging Contaminants
Patton's Busy Bee Landfill, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Notes:

- **● = NYSDOH drinking water standards. Groundwater and/or drinking water standards do not exit for the remaining contaminants.**

B = Analyte detected in the associated blank, as well as in the sample (organics).

G = Guidance value.

J = Compound reported at an estimated concentration below the reporting limit.

ng/L = Nanograms per liter or parts per trillion.

Blanks = Concentration below laboratory detection limits.

Orange shaded results equal or exceed the NYSDOH drinking water standards.

Table 13
Construction Summary of the New Long-Term Monitoring Well Network
Patton's Busy Bee Site, Site No. 902014
Alfred, New York

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

Well Number	Latitude	Longitude	Ground Surface Elevation (feet)	Top of Riser Elevation (feet)	Total Boring Depth (ft. BGS)	Sandpack Interval (ft. BGS)	Sandpack Interval (feet)	Well Screen Interval (ft. BGS)	Well Screen Interval (feet)	Monitored Sandstone Unit
Bedrock Wells - Sandstone Unit A										
W-4S	42.2707821	-77.7392896	2215.23	2216.86	22.0	14.0 to 22.0	2201.23 to 2193.23	15.0 to 20.0	2200.23 to 2195.23	A
Bedrock Wells - Sandstone Unit B										
W-4D	42.2707678	-77.7393083	2214.64	2216.38	60.3	40.8 to 60.3	2173.84 to 2154.34	47.3 to 57.3	2167.34 to 2157.34	B*
W-10S	42.2721331	-77.7399467	2206.27	2208.65	19.6	13.6 to 19.6	2192.67 to 2186.67	14.6 to 19.6	2191.67 to 2186.67	B
Bedrock Wells - Sandstone Unit C										
W-10D	42.2721363	-77.7399465	2205.43	2207.06	52.3	41.3 to 52.3	2164.13 to 2153.13	42.3 to 52.3	2163.13 to 2153.13	C
MW-101I	42.2733361	-77.7373186	2214.25	2216.44	55.0	? to 55.0	? to 2159.25	45.0 to 55.0	2169.25 to 2159.25	C
Bedrock Wells - Sandstone Unit D										
MW101D	42.27332046	-77.7373688	2214.49	2216.95	82.4	62.0 to 84.0	2152.49 to 2130.49	72.0 to 82.0	2142.49 to 2132.49	D
MW-103I	42.2710905	-77.7410717	2144.58	2146.11	28.0	? to 28.0	? to 2116.58	16.5 to 26.5	2128.08 to 2118.08	D
MW-104I	42.2722117	-77.7409488	2157.26	2159.07	28.0	? to 28.0	? to 2129.26	18.0 to 28.0	2139.26 to 2129.26	D
Bedrock Wells - Sandstone Unit E										
MW-103D	42.2711082	-77.7410930	2144.26	2145.89	68.6	? to 68.6	? to 2075.66	38.6 to 68.6	2105.66 to 2075.66	E
MW-113	42.2753104	-77.7359168	2149.23	2149.56	49.0	? to 49.0	? to 2100.23	39.0 to 49.0	2110.23 to 2100.23	E

Notes:

*** = Well is screened entirely in shale, but is most closely associated with the indicated sandstone unit.**

Ft. BGS = Feet below ground surface.

? = Information not given on the Monitoring Well Construction Log.

Latitude and longitude determined from an AutoCAD map by LiRo in 2018 after translating the RI coordinates (easting and northing) to latitude and longitude. The AutoCAD file was from EA and was surveyd during the site optimization study.