FIFTH FIVE-YEAR REVIEW REPORT FOR
BATAVIA LANDFILL SUPERFUND SITE
GENESEE COUNTY, NEW YORK

Prepared by

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

Apr 20, 2020

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Date

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Table of Contents

LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FYR	Five-Year Review
ICs	Institutional Controls
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
POTW	Publicly owned treatment works
PRP	Potentially Responsible Party
RAO	Remedial Action Objectives
ROD	Record of Decision
RPM	Remedial Project Manager

I. INTRODUCTION

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

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

This is the fifth FYR for the Batavia Landfill Superfund site. The triggering action for this statutory review is the previous FYR, dated September 30, 2015. The FYR has been prepared due to the fact that hazardous substances, pollutants or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The site consists of two operable units (OUs). Operable unit one (OU1) addresses contaminated soil and waste material at the landfill, as well as contaminated sediment and groundwater. Operable unit two (OU2) addresses the public water supply in the general vicinity of the site. This FYR evaluates the remedy implemented at OU1. OU2 is not addressed in this FYR.

The Batavia Landfill Superfund Site FYR was led by Michael Walters, EPA Remedial Project Manager (RPM). Participants included John Mason (EPA Hydrogeologist), Lora Smith (EPA Human Health Risk Assessor), Michael Clemetson (EPA Ecological Risk Assessor), Michael Basile (EPA Community Relations Involvement Coordinator), and Chloe Metz (EPA FYR Coordinator).

Site Background

The Batavia Landfill Superfund site ("site" or "landfill") is in the Town of Batavia, Genesee County, approximately three miles west-northwest of the City of Batavia, New York (see Figure 1). The site is approximately 35 acres in area and is bounded to the north and portions of the east by the Galloway Swamp, to the east by the Town of Batavia's former Sanitary Landfill (now closed), to the south by Harloff Road (the New York State Thruway, or Interstate Route 90, is approximately 200 feet south of the landfill), and to the west by vacant property. The Town of Batavia owns the site and the adjoining sanitary landfill to the east. The site is situated in a predominantly rural section of the Town of Batavia with approximately 20 residences situated within close proximity.

The site property was previously owned by private citizens and primarily used for agricultural purposes from 1828 to 1960. During the 1950s, portions of the property were mined to provide construction material for the nearby New York State Thruway. The Town of Batavia and other parties utilized the site as a dumping ground for industrial and commercial wastes from 1968 until 1980, the year the operation was permanently closed by the New York State Department of Environmental Conservation (NYSDEC) because of poor housekeeping practices. Subsequent remedial investigative studies conducted by NYSDEC in 1982 confirmed soil and groundwater contamination at the site.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Batavia Landfill Superfund Site		
EPA ID: NYD980507693		
Region: 2	**State:** NY	**City/County:** Town of Batavia/Genesee County
SITE STATUS		
NPL Status: Deleted		
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA ***[If "Other Federal Agency", enter Agency name]*:**		
Author name (Federal or State Project Manager): Michael A Walters		
Author affiliation: EPA		
Review period: 9/30/2015 - 12/6/2019		
Date of site inspection: 10/2/2019		
Type of review: Statutory		
Review number: 5		
Triggering action date: 9/30/2015		
Due date *(five years after triggering action date)*: 9/30/2020		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

A residential well sampling/analyses survey conducted in 1991 by the New York State Department of Health on homes along Pratt Road, within close proximity to the landfill, revealed the presence of 1,1,1-trichloroethane (TCA) at 6 parts per billion (ppb) and chloroform at 2 ppb in the potable water supply. These levels were at that time below the federal maximum contaminant level (MCL) for TCA (200 ppb) and the proposed MCL for chloroform (100ppb), a trihalomethane.[1]

On August 9, 1984, EPA entered into an Administrative Order on Consent (AOC) with NL Industries, a potentially responsible party (PRP), for the performance of a remedial investigation/feasibility study (RI/FS) at the site. Sampling and chemical analyses performed during the RI revealed total chromium (181 ppb), arsenic

[1] As of December 15, 2015, the drinking water federal MCL standard for chloroform, a trihalomethane, is 80 ppb. Collectively, trihalomethanes are the following compounds: chloroform, bromodichloromethane, dibromochloromethane and bromoform. There is no longer a singular referenced federal drinking water MCL for chloroform.

(167 ppb), antimony (120 ppb), barium (2,220 ppb), lead (433 ppb), TCA (110 ppb), toluene (1,900 ppb), and methylene chloride (181 ppb) in the groundwater. State standards and/or federal MCLs were exceeded for arsenic, antimony, chromium, iron, lead, manganese, benzene and vinyl chloride.

The contamination in the soils was very irregular with most of the higher concentrations located in the southern half of the site. The higher concentrations of contaminants found in the soil and sediment included total chromium (320 parts per million (ppm)), arsenic (83.8 ppm), lead (359 ppm), TCA (380 ppm), methylene chloride (1.1 ppm), and toluene (2 ppm) in the soil and sediment.

Based upon an interim baseline risk assessment performed in March 1992, EPA concluded that the contaminated groundwater at the site, in the absence of a protective remedy, posed an unacceptable potential health risk to the residents in the immediate vicinity of the landfill, who at that time relied on the local groundwater for domestic and consumptive purposes. A subsequent baseline human health risk assessment study completed in April 1994 and an ecological risk assessment completed in 1998, as part of the remedial design, concluded that pre-remedial site conditions posed a significant risk to area residents and the surrounding ecological receptors.

Results of the human health risk assessment revealed that significant carcinogenic and non-carcinogenic risks would exist in the future should contaminants detected in the groundwater at the site reach nearby down-gradient private drinking water wells. The total carcinogenic risk associated with the ingestion of groundwater was 1.2×10^{-3}, attributed primarily to arsenic and vinyl chloride.

Significant non-carcinogenic risks were also identified as Hazard Index (HI) values exceeded 1, indicating the potential for non-carcinogenic effects. Contaminants in the groundwater cumulatively contributing to the non-carcinogenic HI include vinyl chloride (7.2 ppb), arsenic (167 ppb), chlorobenzene (6.0 ppb), and chloromethane (7.5 ppb).

Carcinogenic risks (2×10^{-4}) at the site were also associated with the ingestion of sediment from polyaromatic hydrocarbons (PAHs) and chrysene. The highest concentrations of chrysene and other PAHs were detected along the mid-western side of the landfill. Additionally, sediment lead concentrations, with a maximum concentration of 1,220 ppm, exceeded EPA's screening level for residential soils of 400 ppm.

Response Actions

Pursuant to a July 31, 1990 AOC, six PRPs for the site conducted a removal action and 632 drums and visibly contaminated surface soil was removed from the northern region of the landfill, identified as drum area R.

Remedial actions at the site have been implemented under two separate operable units (OUs). On March 31, 1993, EPA signed a Record of Decision (ROD) for OU2. The remedial action objective (RAO) for the interim OU2 remedy was to ensure a safe water supply to residents affected or potentially affected by the hazardous substances released from the site to the potable water supply.

The ROD selected an interim remedy addressing the public water supply in the general vicinity of the site. The selected remedy called for:

- Providing a public water supply to residents in the northwest portion of the Towns of Batavia along Kelsey and Pratt Roads, north and south of the NYS Thruway, along Kelsey Road to the Galloway Road/Kelsey Road intersection.
- The replacement or retrofitting of the residential groundwater well piping systems with new piping and appurtenances needed for accessing each home to the municipal waterline.

On June 6, 1995, EPA signed an OU1 ROD establishing the following RAOs for the remediation of the site:

- Prevent direct contact with landfill contents;
- Controlling surface water runoff and erosion;
- Collecting and treating any landfill leachate;
- Controlling landfill gas;
- Preventing the infiltration of contaminants into groundwater; and
- Remediating contaminated wetland areas, as appropriate.

The OU1 remedy required implementation of the following remedial action components:

- Excavation of contaminated soil from drum area R and the approximately seven-acre magnesium fines area in the northern area of the landfill and consolidating these materials under the landfill cap in the southern area of the landfill;
- Subsequent grading of the northern area of the landfill, filling it with clean topsoil, and seeding it for a vegetative cover;
- Excavation of drums from the southern area of the landfill containing hazardous substances, which are estimated in number to be 150. The drums will be transported off-site for treatment and disposal;
- Capping of the southern region of the landfill. Grading of the landfill will be based upon the final capping configuration determined during the remedial design phase;
- An explosive gas survey will be performed to determine the need for constructing a passive gas venting layer or trench system underlying the low permeability cap material;
- Performance of a pre-design ecological assessment to define impacts of the landfill on fish, wildlife, and associated habitats (especially wetlands). This information will be used to determine whether any wetland excavation is advisable to best protect fish and wildlife, and if the assessment is determined to be necessary, the information will be used to determine the extent of appropriate action;
- EPA will recommend to local agencies that institutional controls be undertaken to ensure that future land use at the site is restricted so as to preclude certain uses of the site, such as is restricted so as to preclude certain uses of the site, such as restricting certain types of access to the landfill and eliminating groundwater use for human consumption at the site;
- Implementation of long-term operation and maintenance of the landfill cap systems to provide for inspections and repairs; and
- An evaluation of site conditions no less than each five years to determine if the selected alternative is protective of human health and the environment.

The recharacterization of the site during pre-design studies indicated that disposal of industrial wastes in the 12-acre northern area of the site was more extensive than previously estimated in the 1995 ROD for OU1. Information gathered from studies conducted during 1996-1997 showed that the northern area contained approximately 126,000 cubic yards of industrial wastes commingled with municipal wastes. Therefore, in September 1999, EPA issued an Explanation of Significant Difference (ESD) for the OU1 ROD requiring the excavation and removal of all 126,000 cubic yards of waste material from the northern and central areas of the site and consolidating the material under a 6 NYCRR Part 360 landfill cap in the southern area of the site.

Status of Implementation

In September 1993, EPA issued an Administrative Order directing the PRPs to implement the OU2 remedy. The remedial construction of the municipal waterline extension was completed and became operational in October 1995.

In September 2000, the United States, New York State and several[2] parties agreed to enter a Consent Decree which included the implementation of the OU1 remedy. Wastes located in the low-lying regions of the northern

[2] The City of Batavia, Town of Batavia and Industries, Inc., are the PRPs that entered into the Consent Decree for the implementation of the OU1 remedy.

and central areas of the site as well as wastes situated in the wetlands and saturated groundwater zone in the southwest corner of the site were excavated and relocated and consolidated into the landfill in the southern region of the site. An estimated 800,000 cubic yards of waste and contaminated soils were consolidated under a landfill cap in the southern region of the site (see Figure 2). The cap, measuring approximately 15.5 acres, was constructed to meet the substantive requirements of 6 NYCRR Part 360-2.13(q) that included passive gas venting and leachate collection/management systems.

In lieu of the performance of a post-excavation soil and sediment sampling program for the northern, central and wetland areas, the PRPs' contractor removed an additional foot of visibly clean soil and sediment beyond the boundaries of the excavated wastes. The northern and central areas were graded and backfilled with approximately 43,000 cubic yards of granular soil and 12,000 cubic yards of topsoil and seeded for a vegetative cover.

A leachate collection system was constructed in the southern area of the landfill to control, minimize or eliminate, with the best available technology, the off-site migration of contaminant constituents into the local groundwater bearing zones. The leachate collection system includes a geosynthetic drainage composite (GDC) layer along with a series of a six-inch diameter perforated leachate collection pipes (LCPs) that were constructed across the southern area in an east-west orientation. The LCPs drain via gravity into a series of three leachate collection manholes. The GDC layer has the capacity to handle a peak monthly leachate generation of 16,000 gallons. A 20,000-gallon above-ground indoor leachate storage tank, equipped with an automatic overflow cutoff system, and a secondary containment structure of 22,000 gallons, was built to manage the leachate prior to shipment to a publicly owned treatment works.

A perimeter chain-linked fence around the site, including three gates, was installed. Signs restricting public access were also placed at approximately 100-foot intervals along the fenced perimeter. The fieldwork, completed in July 2004, included revegetating various areas of the landfill cap, replacing dead trees and plants in the wetland areas, and securing the leachate storage building from nesting birds.

After completion of the contaminated soil and sediment excavation activities in the northern area, approximately seven acres of scrub-shrub emergent wetlands (including some areas of standing water which support a submergent vegetative community) were restored or created in accordance with the PRPs' settlement of a Natural Resource Damages claims against them initiated by the Department of Interior (See Figure 2). The restoration work was initiated in 2002 and planting was completed in early June 2003. The wetland portions of the site have been restored as an environmental resource. Remedial construction activities pursuant to the September 1995 OU1 ROD were completed in July 2004.

IC Summary Table

Table 1: Summary of Planned and/or Implemented ICs.

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater, soils, sediment	Yes	Yes	Landfill	Prohibit the installation or utilization of wells for potable water usage and prohibit the installation of new building structures that may impede the	On June 10, 2005, Counsel for the Town of Batavia filed a Declaration of Easement and Covenants and Restrictions with the Genesee

				effectiveness of the landfill cap systems.	County Clerk's Office.

System Operations/Operation and Maintenance

To maintain the integrity and effectiveness of the landfill cap, routine operation and maintenance (O&M) activities are necessary. The inspection/maintenance plan for the cap calls for regular inspection and evaluation of the cap, mowing the vegetation during the growing season, and fence maintenance. Repairs are made to the cap, as necessary, to control the effects of settling, subsidence, erosion or other events, and to prevent rainfall runoff from eroding or otherwise damaging the final cover.

In addition to cap maintenance, the inspection/maintenance, plan also includes long-term groundwater monitoring, surface water monitoring, leachate management and disposal, and the maintenance of the passive gas venting system.

The site is routinely managed by the Town of Batavia technical personnel and on an annual basis an inspection is conducted as follows:

- The site is inspected for debris, litter and/or waste;
- The landfill cap is inspected for vegetation loss due to erosion or poor grass growth;
- Annual ground inspections each spring also note the status of woody plant species on the landfill surface and the side slopes;
- The landfill cap is inspected for settlement, ponding, and animal burrows;
- The gas venting pipes are inspected for damage;
- The site access gate and fence are inspected for operational locks and vandalism;
- The culverts and drainage ditches are inspected for operational locks, damage, and vandalism;
- The groundwater monitoring wells are inspected for operational locks, damage and vandalism; and
- The leachate storage tank (20,000 gallon capacity) and storage building are inspected for operational safety, structural integrity and security. Approximately 4,000 gallons of leachate is generated weekly which is periodically transported to an offsite POTW. Analytical testing of the generated leachate was last performed in 2007. However, provisions are in place to readily perform analytical testing on the leachate should it appear visually abnormal in color and composition. .
- No methane gas has historically been generated from the landfill.

The groundwater monitoring well network along the perimeter of the landfill consists of five wells in the upper unconsolidated unit or upper zone (BL-100U, BL-101U, BL-102U, BL-103U and BL-104U), two wells in the lower unconsolidated unit or lower zone (BL-105U and BL-10) and two wells in the bedrock unit (BL-106B and BL-107B). During the first year (2004) of the Environmental Monitoring Program (EMP) the wells were sampled quarterly, and quarterly reports were submitted to EPA. In the second and third years (2005 and 2006), the sampling and reporting frequency was on a semiannual basis. The groundwater sampling and reporting frequency for the site was reduced to an annual basis beginning in 2007.

Surface water monitoring at Wetland B-1 and Wetland C-2 (see Figure 2), situated on the north-eastern and north-western boundaries of the site, is conducted annually.

Climate Change

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

III. PROGRESS SINCE THE LAST REVIEW

The protectiveness statements from the last FYR are provided in Table 2 below.

Table 2: Protectiveness Determinations/Statements from the 2015 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	The remedies implemented at the site are protective of human health and the environment.

There were no issues or recommendations from the last FYR. The last FYR did identify suggestions for improving site conditions that did not impact protectiveness. The status of those suggestions is provided in Table 3 below.

Table 3: Status of Suggestions from the 2015 FYR

OU #	Comment	Suggestion	Current Status	Current Implementation Status Description*	Completion Date (if applicable)
1	Bent and damaged protective bollards	Replace and/or fix bent monitoring well bollards.	Considered But Not Implemented	Similar condition observed during site inspection conducted in October 2019. Additional discussions will be held with the Town representatives.	4/30/2021
1	Increase in arsenic and barium groundwater concentrations, and high turbidity conditions observed in May 2014 sampling event.	Change groundwater sampling methodology for all monitoring wells from bailer collection technique to low stress (low-flow) purging and sampling procedures.	Completed	Groundwater sampling methodology was changed from bailer collection technique to low stress (low-flow) sampling procedure.	5/25/2016
1	Bird infestation and animal burrowing into the Leachate Collection Tank Building.	Implement measures to prevent bird nesting and animal burrowing into the Leachate Collection Tank Building.	Completed	Heavy duty metal meshes were installed over all the building vents and openings to keep the birds out. A six-foot high chain- linked fence and densely packed gravel-stone bed encompass and protect the Leachate	12/14/2015

				Collection Tank Building from animal burrowing.	
1	Tree overgrowth along perimeter fencing.	Overgrown tree branches should be pruned at least biannually.	Under Discussion	Similar condition observed during site inspection conducted in October 2019. Additional discussions will be held with the Town representatives. .	4/30/2021
1	Several of the "Unauthorized Access Forbidden" signs are old and rusty.	Replacement of old and rusty signs.	Completed	New signs restricting unauthorized site access posted on the perimeter fencing.	12/21/2015

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On October 1, 2019, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at 42 Superfund sites in New York, New Jersey, Puerto Rico and the U.S. Virgin Islands including the Batavia Landfill Superfund site. The announcement can be found at the following web address: https://www.epa.gov/aboutepa/fiscal-year-2020-five-year-reviews. In addition to this notification, a public notice was posted locally online December 11, 2019, stating that there was a FYR and inviting the public to submit any comments to the U.S. EPA. Once the FYR is completed, the results will be made available on EPA's Batavia Landfill site webpage (https://www.epa.gov/superfund/batavia-landfill). Information will also be made available at the following information repositories:

Richmond Memorial Library
19 Ross Street
Batavia, New York

Town of Batavia Town Hall
3833 West Main Street
Batavia, New York

Data Review

Groundwater and surface water analytical results from 2015 through 2019 were reviewed and are discussed below. Groundwater results were compared to the more stringent of the state groundwater quality standards (GWQS) or federal maximum contaminant levels (MCLs). Since 2007, groundwater and surface water monitoring has been done on an annual basis.

Groundwater

The upper unconsolidated unit is currently monitored by five wells: BL-100U, BL-101U, BL102U, BL-103U, and BL-104U (see Figure 2). The lower unconsolidated unit is monitored by two wells, BL-105L and BL-10. The bedrock aquifer (Onondaga Formation) is monitored by two wells, BL-106B and BL-107B.

During the current FYR period, groundwater monitoring wells at the site have exceeded federal MCLs or the more stringent state GWQS for several volatile organic compounds (VOCs) and metals. VOC exceedances

included benzene, chlorobenzene, chloroethane, 1,1-dichloroethane, and toluene. Within this group of contaminants, national primary drinking water standards exist for benzene, chlorobenzene, and toluene.

Inorganic exceedances in groundwater included arsenic, barium, iron, magnesium, manganese, and sodium. Within this group of elements, background concentrations of barium, magnesium, and manganese were measured in April 1991. At that time, concentrations of these elements were found to exist at levels less than or close to current GWQS and/or MCLs in the background well. Of the inorganic constituents which exceeded standards during the current five-year review period, national primary drinking water standards exist for arsenic and barium.

Based on the data reviewed for this FYR, concentrations of contaminants in groundwater at the site have remained stable.

Upper unconsolidated unit

VOC exceedances occurred at three of the five upper unconsolidated unit monitoring wells during the FYR period (Table 3). BL-100 is located along the southern perimeter of the landfill, and recorded no VOC exceedances. Similarly, BL-103U, located along the landfill's eastern boundary, did not record any VOC exceedances during the review period. Well BL-102U, which was identified during the previous FYR period as recording the greatest number of regulatory exceedances, had no detectable concentrations of 1,1-dichloroethane during this FYR period, although chloroethane continued to be detected in concentrations above the state GWQS. The maximum concentration of chloroethane in the upper unit was detected in BL-102U at a concentration of 40 ppb, compared to the state GWQS of 5 ppb (Figure 3). In general, the VOC concentrations in this unit are stable or decreasing, and no increasing trends were observed.

During the current FYR period, inorganic contaminants including arsenic, iron, magnesium, manganese, and sodium (Table 4) were detected in the upper consolidated unit. Barium, which had previously been detected above the state GWQS of 1000 ppb, was detected at a maximum of 724 ppb (06/2015) during this period. During the previous review period, lead was detected above the federal MCL (15 ppb), but it was not observed in any wells within the upper unconsolidated unit between 2015 and 2019. Well BL-101U has continued to have the highest concentrations of arsenic in the upper unit (maximum concentration of 68.6 ppb in 06/2015 compared to the MCL of 10 ppb), however the concentrations have decreased since the previous FYR (Figure 4). Wells in this unit generally show stable to decreasing trends in inorganics concentrations over the FYR period.

Lower unconsolidated unit

In the lower unconsolidated unit, benzene, chloroethane, and toluene were detected above state GWQS but not federal MCLs during the FYR period (Table 5). Both monitoring wells sampled within this unit detected site-related contaminants, although BL-105L, which is located along the northwestern perimeter of the landfill only recorded one regulatory exceedance: toluene at a concentration of 5.5 ppb in 05/2018. In well BL-10, which is located slightly downgradient and approximately 100 ft northeast of the landfill perimeter, consistent VOC exceedances occurred at well BL-10 for benzene (maximum concentration 2.9 ppb in 2016-2018; GWQS: 1 ppb) and chloroethane (maximum concentration 42 ppb in 06/2017; GWQS: 5 ppb) (Figure 3). Monitoring data shows that on-site concentrations of VOCs within this unit remained stable throughout the review period.

Inorganic exceedances in the lower unconsolidated unit included arsenic, barium, iron, magnesium, manganese and sodium (Table 6). Similar to the previous review period, concentrations of arsenic in BL-105L were variable, with observed values ranging from non-detect to 53.2 ppb. Both barium and arsenic concentrations in BL-10 remained stable above the federal MCLs (arsenic) and state GWQS (barium) during the review period.

Bedrock unit

Bedrock aquifer wells BL-106B and BL-107B are respectively located approximately 800 and 1,100 ft downgradient of the northern edge of the landfill, and represent the distal extent of downgradient monitoring at the site. BL-106B is monitored for VOCs, and no exceedances were recorded during the current FYR period.

However, both BL-106B and BL-107B are analyzed for inorganics, and during the FYR period barium, iron, magnesium, manganese, and sodium exceeded regulatory standards (Table 7). No systematic increases in barium concentrations were observed in either well over the course of the review period, and concentrations consistently remained beneath the federal MCL of 2,000 ppb (Figure 5). The maximum observed value was 1,670 ppb in BL-107B (06/2017).

Surface Water

Surface water is monitored for VOCs and inorganics at two wetland locations, Wetland B-1 (sample point WL-B1) and Wetland C-1 (see Figure 2). VOC analytes did not exceed the EPA Ambient Water Quality Criteria (WQC) for surface water during the FYR period. Several inorganic results exceeded the WQC and/or the New York standards for aluminum, iron, and lead. Detectable concentrations of lead were observed only during the 2018 sampling event at Wetland C-1 (6.4 ppb; WQC = 2.5 ppb). Wetland B-1, which registered exceedances of aluminum, iron, lead, and selenium during the previous FYR period, has only exceeded standards for aluminum and iron since 2015 (maximum concentrations of 1,110 ppb and 12,500 ppb, respectively) (Table 8).

Site Inspection

The inspection of the Site was conducted on October 2, 2019. In attendance were Michael Walters, EPA RPM; Steve Mountain, P.E., Town of Batavia Engineer; Thomas Lichtenhal, Jr., P.E., Town of Batavia Assistant Engineer, and Aaron Richardson, a representative from the engineering consultant firm of Arcadis. The purpose of the inspection was to assess the protectiveness of the remedy.

The general physical condition of the landfill cap appeared structurally sound. There were no visible signs of deterioration such as erosion, ponding, drainage blockage, protruding objects or animal burrowing. The groundwater monitoring wells were all structurally intact, but the protective bollards around a few of the leachate collection outlet pipes were bent, resulting from past grass cutting activities with heavy-duty equipment. Small circular patches of brown and dead vegetation were observed around the leachate collection and gas venting pipes on the landfill cap, reportedly due to the limited application of herbicides prior to grass mowing. Significant tree over-growth infringing on and along several sections of the site perimeter fencing was also observed.

The wetland mitigation pond in the northern area of the site maintains a large body of standing water extending several acres, surrounded with lush, green vegetation interspersed with a brilliant mixture of colors, typical of the region in early Autumn.

Interview

On October 3, 2019, EPA conducted an interview with Mr. Steven Mountain, Town Engineer for the Town of Batavia. Mr. Mountain acknowledged that the operation and maintenance activities at the site over the last five years have been conducted in accordance with the federal and State regulations and the requirements of the EPA decision documents. To the best of his knowledge, no concerns have been raised by the public regarding site conditions or operations.

Based on site conditions revealed during the October 2, 2019, site inspection, the following was discussed and acknowledged:

- Trees along the fencing to the east and west of the landfill cap and at other areas require pruning;
- The use of weed-killers around the leachate collection and gas venting pipes should cease. Alternative means to protect and preserve these pipes from structural damage during grass mowing activities should be explored and implemented; monitor the small circular patches of brown and dead vegetation around the leachate

collection and gas venting pipes on the landfill cap for re-growth;
- Bent bollards around some of the leachate collection pipes should be fixed or replaced; and
- A sign prohibiting unauthorized access to the site should be posted on and maintained at the entrance gate.

Mr. Mountain acknowledged the Town's commitment to addressing the above-stated issues.

V. TECHNICAL ASSESSMENT

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

The 1993 ROD required the connection of the municipal water supply system to residents affected or potentially affected by the site. Potential exposure to site contaminants has been eliminated by the connection of the nearby residences to the municipal waterline.

The 1995 ROD, as modified by the ESD, required the excavation and consolidation of contaminated soils, sediment and wastes from the low-lying northern part of the site under a newly installed landfill cap in the higher terrain of the southern portion of the site; the installation of a leachate collection and management system, and the monitoring of the groundwater quality.

The purpose of the response action was to reduce the risk to human health and the environment and to eliminate or minimize adverse effects previous site conditions posed to the surrounding ecology due to the uncontrolled release of hazardous constituents into the soils, sediment, surface waters and groundwater.

The capping of the landfill minimizes the infiltration of precipitation into the landfill, thereby reducing the potential for contaminants leaching from the landfill and negatively impacting the wetlands habitat and groundwater quality. Capping was also completed to prevent direct contact exposure to contaminated soils. The leachate management system in place is designed to control, minimize or eliminate, with the best available technology, the off-site migration of contaminant constituents into the local groundwater bearing zones. In addition, the final remedy also involved the remediation and restoration of seven acres of wetlands at the site. Institutional controls have been put in place at the site to restrict future activities at the site that may negatively impact the effectiveness of the implemented site remedy or threaten human health and the environment. These site restrictions include a ban on the construction and usage of drinking water wells and new building structures that may impede the effectiveness of the landfill cap systems.

Monitoring data since the last FYR reveal stable to decreasing concentrations of VOCs in the groundwater, with fewer regulatory exceedances. However, contaminants including benzene, chloroethane, 1,1-dichloroethane, chlorobenzene and toluene were detected above federal MCLs or the more stringent state standards in several locations within the upper unconsolidated unit. VOCs were not detected at concentrations above remediation goals in surface water samples collected from the surrounding wetland areas. The concentrations of inorganic constituents in the groundwater and surface water bodies at the site were variable throughout the review period but were generally stable to decreasing.

Based upon the information reviewed during the FYR process, including observations from a recent site inspection and interview with the Town official, the remedy is functioning as intended by the decision documents.

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

The 1994 baseline risk assessment was completed prior to much of the Risk Assessment Guidance for Superfund used currently by EPA. However, the process that was used remains valid.

The risk assessment evaluated exposures to residents (children and adults) and excavation workers (adults) who may access the Site currently or in the future. Exposure pathways evaluated included: ingestion of groundwater, ingestion of and dermal contact with soil/waste and sediment and ingestion of and dermal contact with surface water (qualitative only).

Several volatile organic as well as inorganic contaminants were identified in the various site media as would be expected of a landfill. Unacceptable risks resulting from the human health risk assessment included: ingestion of groundwater by future residents (risk drivers: antimony, arsenic, vinyl chloride and zinc), ingestion of site sediment by current/future residents (risk drivers: chrysene, lead) and ingestion of subsurface soil in the Waste Pit Area by future excavation workers (risk driver: antimony).

Groundwater was screened against federal MCLs and state GWQS and the EPA drinking water action level of 15 ppb for lead which remains the current action level. EPA residential soil screening criteria were used to evaluate soils. Sediment was screened against NYSDEC technical screening criteria as cleanup goals during the feasibility study (FS) process for a site remedy, but a subsequent ecological risk assessment was performed utilizing ecological risk-based criteria. The criteria available for the evaluation of contaminants in Galloway Swamp and other localized surface water bodies at the time of the risk assessment were the U.S. EPA Ambient Water Quality Criteria (WQC) established under the Clean Water Act which remain appropriate.

Overall, contaminant concentrations appear to be decreasing over time or remain consistent with previous results. In the last five years, the following contaminants were detected above groundwater standards (state GWQS and/or federal MCLs): benzene, chloroethane, 1,1-dichloroethane, arsenic, barium, iron, magnesium, manganese, and sodium. Acetone, 1,2-dichloroethane, cis-1,2-dichlroethane, vinyl chloride, lead and selenium have not been above standards in the last five years.

Aluminum and iron and a single exceedance of lead (6.4 ppb in Wetland C-1 in 2018) in surface water were the only contaminants above surface water criteria (WQC) in the last five years. At the time of the risk assessment, arsenic in surface water resulted in an unacceptable risk. Arsenic has been non-detect since the implementation of the remedy. The fluctuations in both total aluminum and total iron concentrations are consistent with historical fluctuations observed at these locations and may be naturally-occurring as neither was identified as a contaminant of concern in either ROD.

No previously unidentified contaminants were detected in the groundwater or surface waters of the site in the last five-year monitoring period.

Contaminated soils from drum area R and the magnesium fines area were consolidated under the southern portion of the landfill cap as part of the remedy to prevent groundwater migration. This portion of the remedy addressed the RAOs of preventing direct contact with landfill wastes and contamination, preventing the infiltration of contaminants into the groundwater and controlling surface water runoff and erosion. The constructed cap included both a passive gas venting and leachate collection and management system. The passive gas venting system was necessary to control landfill gas and the installation of a leachate collection system was necessary to prevent contamination from reaching groundwater. The disturbed wetland areas were remediated. As a result, the selected remedy remains protective of human health and the environment.

Soil vapor intrusion is evaluated when soils and/or groundwater are known or suspected to contain VOCs. While some VOCs remain in groundwater, the site is a landfill mostly surrounded by wetlands. There are no buildings near the site (within 100 feet) and none are expected in the foreseeable future. Based on these lines of evidence, the vapor intrusion pathway remains incomplete at the Batavia Landfill and a vapor intrusion investigation is not necessary at this time. Continued monitoring of VOCs in groundwater will ensure protectiveness of human health via the vapor intrusion pathway.

Since contaminated soils/sediments are inaccessible under the cap the dermal contact pathway has been interrupted. These actions further removed the contamination from contact with groundwater and surface water which is the reason we are seeing a decreasing trend in contaminant concentrations over time. Continued

monitoring will confirm. Further, groundwater is not being used for potable purposes and the public water line has been extended so the ingestion of groundwater pathway is no longer complete. Finally, groundwater as well as surface water continue to be monitored. As such, the remedy remains protective of human health.

No additional sources of contamination, COCs, exposed populations or exposure pathways have been identified since the last FYR. There have been no other changes in site conditions that could affect the protectiveness of the remedy.

Although the ecological risk assessment screening and toxicity values used to support the ROD may not necessarily reflect the current values, the excavation, capping and leachate collection system eliminate any potential risk from surface soil contaminants to terrestrial receptors. The surface water sampling data indicated that the concentrations of aluminum, iron, and lead exceeded surface water quality criteria. The lead concentration exceeded the chronic surface water quality value, but did not exceed the acute value and the aluminum and iron concentrations were consistent with previous sampling events. Therefore, the surface water monitoring program should be continued to ensure future protectiveness.

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

No other information has come to light that would call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

No issues affecting protectiveness were identified in the FYR. However, it is suggested that overgrown tree branches along sections of the perimeter fencing be pruned, the application of herbicides on the landfill cap prior to grass mowing be stopped, bent protective bollards around leachate collection and gas venting pipes be repaired or replaced, and that a sign prohibiting unauthorized access be placed and maintained on the entrance gate.

OTHER FINDINGS

None.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)		
Operable Unit: 1	*Protectiveness Determination:* Protective	*Planned Addendum Completion Date:* Click here to enter a date
Protectiveness Statement: The remedy for OU1 is protective of human health and the environment.		

Sitewide Protectiveness Statement	
Protectiveness Determination: Protective	*Planned Addendum Completion Date:* Click here to enter a date
Protectiveness Statement: The remedies for Batavia Landfill are protective of human health and the environment.	

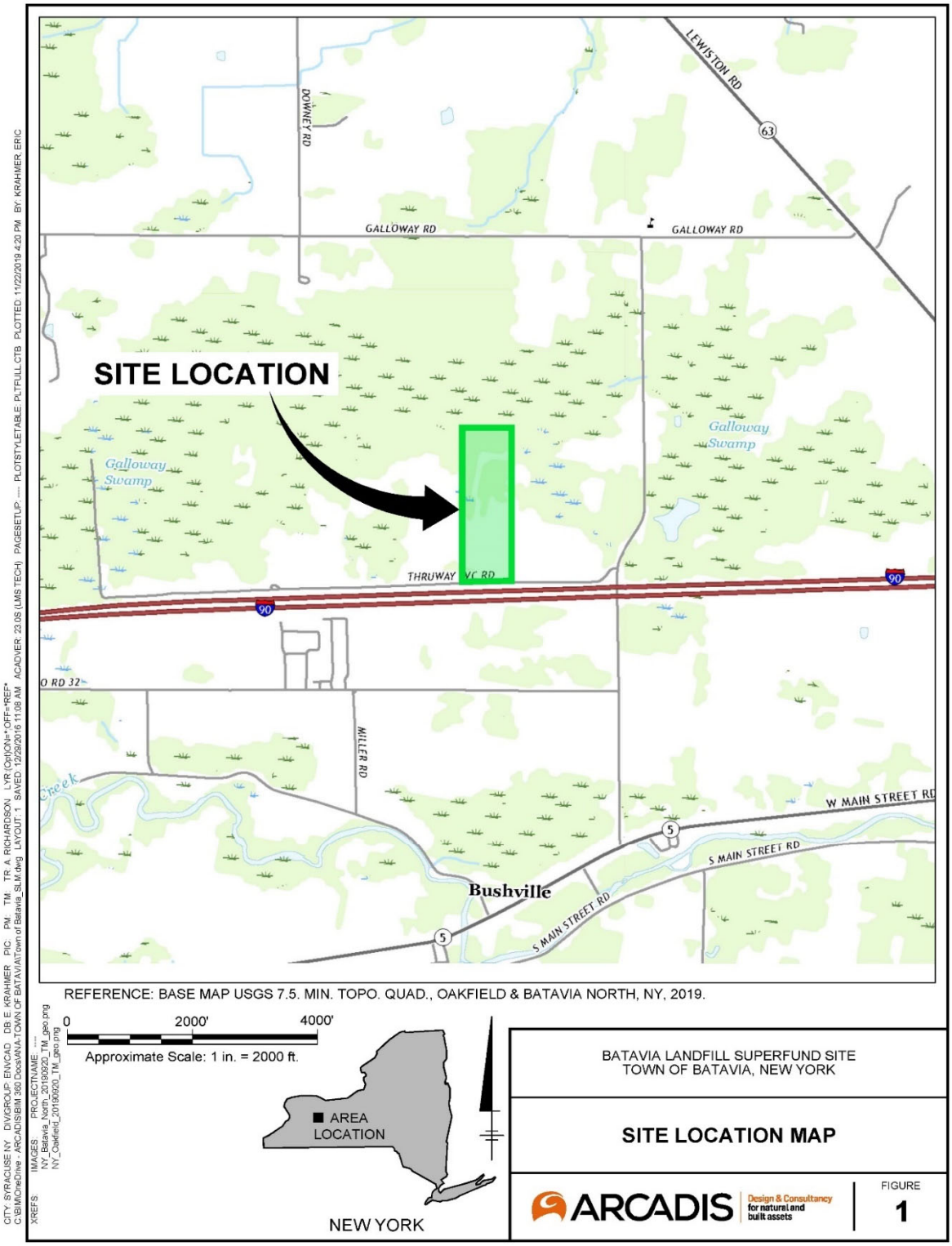
VIII. NEXT REVIEW

The next FYR report for the Batavia Landfill Superfund site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Documents Reviewed for Five -Year Review
OU1 Record of Decision - Batavia Landfill, EPA, June 1995
Explanation of Significant Differences (ESD), EPA, September 1996
Remedial Investigation Report, Vol. 1-5, GZA GeoEnvironmental of New York, May 1992
Feasibility Study, GZA GeoEnvironmental of New York, March 1994
Remedial Design Work Plan, Blasland, Bouck & Lee, Inc., January1996
Remedial Design Report, Blasland, Bouck & Lee, Inc., April 2000
Fourth Five Year Review Report for the Batavia Landfill Superfund Site, EPA, September 2015
2007 Wetland Monitoring Report for the Batavia Landfill Superfund Site, ARCADIS of New York, Inc., November 2007.
Summary of the 2008 Wetland Inspection and Maintenance Activities at the Batavia Landfill Superfund Site, ARCADIS of New York, Inc., October 2008.
2016 Groundwater and Surface-Water Sampling and Analysis Report and Annual Site Inspection Checklist, Batavia Landfill Superfund Site, ARCADIS of New York, Inc., September 2016
Annual Progress Report for 2017, Batavia Landfill Site, prepared by Arcadis, dated January 11, 2018.
2017 Groundwater and Surface-Water Sampling and Analysis Report and Annual Site Inspection Checklist, Batavia Landfill Superfund Site, ARCADIS of New York, Inc., August 22, 2017.
2018 Groundwater and Surface-Water Sampling and Analysis Report and Annual Site Inspection Checklist, Batavia Landfill Superfund Site, ARCADIS of New York, Inc., July 23, 2018.
2019 Groundwater and Surface-Water Sampling and Analysis Report and Annual Site Inspection Checklist, Batavia Landfill Superfund Site, ARCADIS of New York, Inc., August 12, 2019.

APPENDIX B - FIGURES



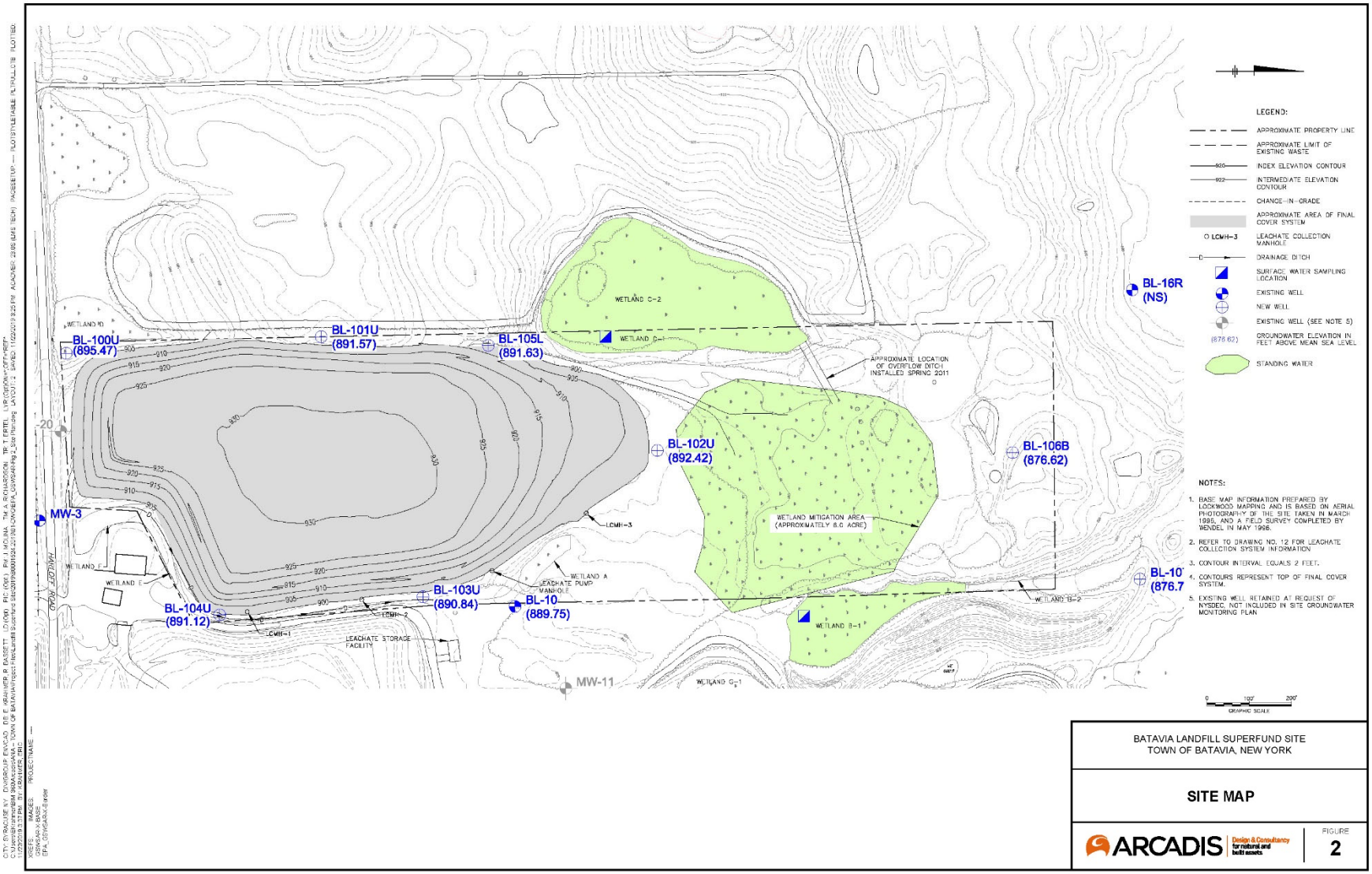

LEGEND:
APPROXIMATE PROPERTY LINE
APPROXIMATE LIMIT OF EXISTING WASTE
INDEX ELEVATION CONTOUR
INTERMEDIATE ELEVATION CONTOUR
CHANGE-IN-GRADE
APPROXIMATE AREA OF FINAL COVER SYSTEM
LCMH-3 LEACHATE COLLECTION MANHOLE
DRAINAGE DITCH
SURFACE WATER SAMPLING LOCATION
EXISTING WELL
NEW WELL
EXISTING WELL (SEE NOTE 5)
(876.62) GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
STANDING WATER
NOTES:
1. BASE MAP INFORMATION PREPARED BY LOCKWOOD MAPPING AND IS BASED ON AERIAL PHOTOGRAPHY OF THE SITE TAKEN IN MARCH 1995, AND A FIELD SURVEY COMPLETED BY WENDEL IN MAY 1998.
2. REFER TO DRAWING NO. 12 FOR LEACHATE COLLECTION SYSTEM INFORMATION
3. CONTOUR INTERVAL EQUALS 2 FEET.
4. CONTOURS REPRESENT TOP OF FINAL COVER SYSTEM.
5. EXISTING WELL RETAINED AT REQUEST OF NYSDEC. NOT INCLUDED IN SITE GROUNDWATER MONITORING PLAN
BL-100U (895.47)
BL-101U (891.57)
BL-105L (891.63)
BL-102U (892.42)
BL-106B (876.62)
BL-16R (NS)
BL-10 (876.7
MW-3
MW-11
BL-104U (891.12)
BL-103U (890.84)
BL-10 (889.75)
WETLAND C-2
WETLAND C-1
WETLAND B-2
WETLAND B-1
WETLAND A
WETLAND D
WETLAND E
WETLAND F
WETLAND G-1
APPROXIMATE LOCATION OF OVERFLOW DITCH INSTALLED SPRING 2011
WETLAND MITIGATION AREA (APPROXIMATELY 8.6 ACRE)
LEACHATE PUMP MANHOLE
LEACHATE STORAGE FACILITY
LCMH-1
LCMH-2
LCMH-3
PAVILION ROAD
GRAPHIC SCALE
BATAVIA LANDFILL SUPERFUND SITE
TOWN OF BATAVIA, NEW YORK
SITE MAP
ARCADIS Design & Consultancy for natural and built assets
FIGURE 2

Figure 2

Figure 3

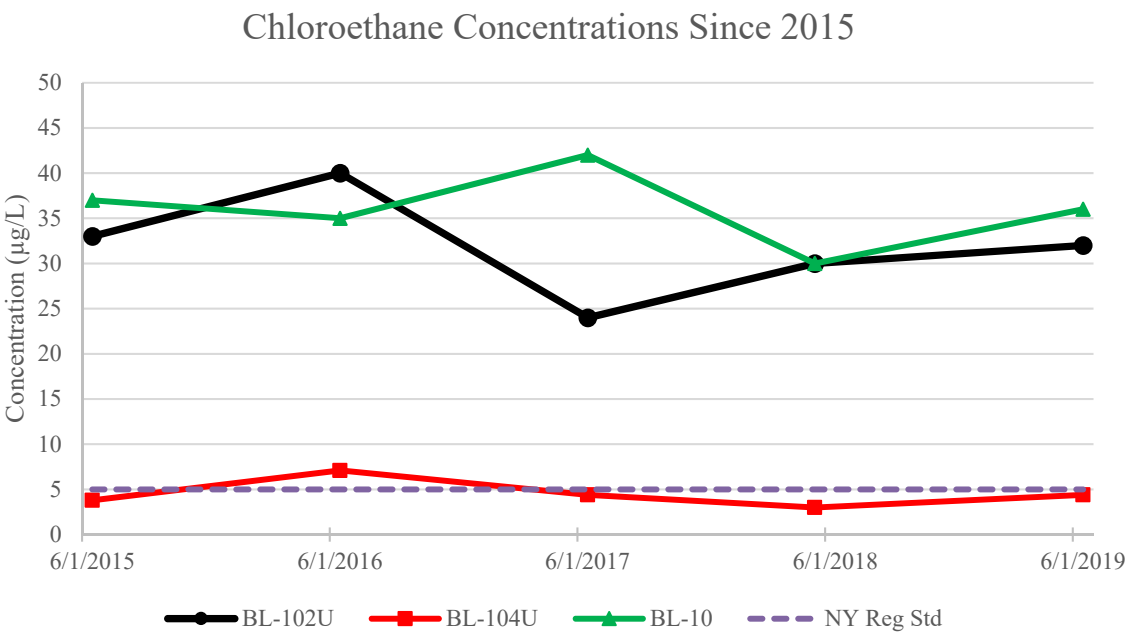

Chloroethane Concentrations Since 2015
Concentration (µg/L)
50
45
40
35
30
25
20
15
10
5
0
6/1/2015
6/1/2016
6/1/2017
6/1/2018
6/1/2019
BL-102U
BL-104U
BL-10
NY Reg Std

Figure 4

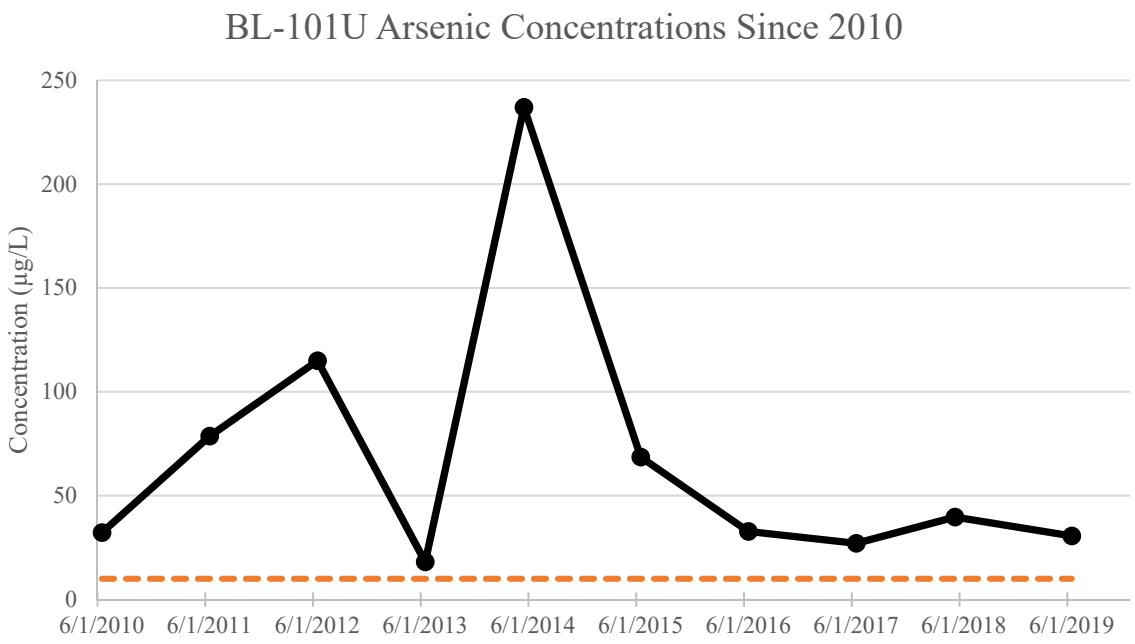
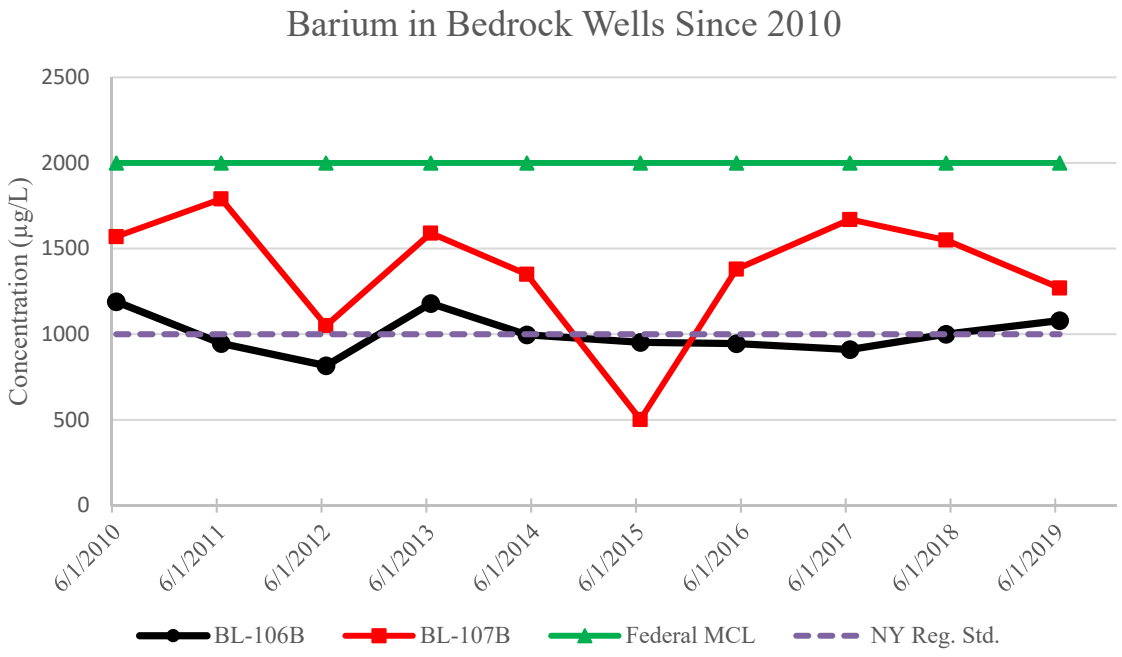

BL-101U Arsenic Concentrations Since 2010
Concentration (µg/L)
250
200
150
100
50
0
6/1/2010
6/1/2011
6/1/2012
6/1/2013
6/1/2014
6/1/2015
6/1/2016
6/1/2017
6/1/2018
6/1/2019

Figure 5


Barium in Bedrock Wells Since 2010
Concentration (µg/L)
2500
2000
1500
1000
500
0
6/1/2010
6/1/2011
6/1/2012
6/1/2013
6/1/2014
6/1/2015
6/1/2016
6/1/2017
6/1/2018
6/1/2019
BL-106B
BL-107B
Federal MCL
NY Reg. Std.

ATTACHMENT 1 - TABLES

Table 4: Upper Unconsolidated Unit Groundwater Monitoring Results
Volatile Organic Compounds Exceeding Standards
Batavia Landfill Superfund Site
Five Year Review
2015-2019

Analyte	NYS TOGS 1.1.1	MCL	BL-100U		BL-101U		BL-102U		BL-103U		BL-104U	
			Max.	Date	Max.	Date	Max.	Date	Max.	Date	Max.	Date
Benzene	1	5	0.26	6/01/15	0.62 J	6/04/19	-	6/04/19	0.30 J	6/22/17	**7.8**	5/29/18
Chloroethane	5	None	-	6/04/19	2.4 J	6/01/15	**40.0**	6/07/17	3.3 J	6/04/19	**7.1**	5/29/18
1,1-dichloroethane	5	None	-	6/04/19	**9.0**	6/22/17	1.9	6/17/16	-	6/04/19	0.91 J	6/22/17
1,2-dichloroethane	0.6	5	-	6/04/19	-	6/04/19	-	6/04/19	-	6/04/19	-	6/05/19
1,1-dichloroethene	5	7	-	6/04/19	-	6/04/19	2.3	6/07/16	-	6/04/19	-	6/05/19
cis-1,2-dichloroethene	5	70	0.67 J	6/01/15	1.5J	6/01/15	3.9	6/07/16	0.40 J	5/29/18	-	6/05/19
Vinyl chloride	2	2	-	6/04/19	0.51J	6/01/15	1.6	6/07/16	-	6/04/19	-	6/05/19

Notes:

All concentrations in micrograms/liter (µg/L); Blank cells indicate that the analyte was not detected above NYS TOGS 1.1.1 or MCL.

J – The analyte was positively identified; however, the associated value is an estimated concentration.

NYS TOGS 1.1.1 – New York State Department of Environmental Conservation, Division of Water Technical and Operational Guidance Series 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998.

MCL - National Primary Drinking Water Regulations Maximum Contaminant Levels, USEPA EPA 816-F-09-0004, May 2009.

Exceedances are highlighted and bolded.

Table 5: Upper Unconsolidated Unit Groundwater Monitoring Result Inorganic Analytes
Exceeding Standards
Batavia Landfill Superfund Site
Five Year Review
2015-2019

Analyte	NYS TOGS 1.1.1	MCL	BL-100U		BL-101U		BL-102U		BL-103U		BL-104U	
			Max. Conc.	Date	Maxi. Conc.	Date	Max. Conc.	Date	Max. Conc.	Date	Max. Conc.	Date
Arsenic	25	10	**27.5**	6/22/16	**68.6**	6/01/15	-	6/04/19	31.9	5/26/16	-	6/05/19
Barium	1,000	2,000	739.0	6/01/15	**724.0**	6/01/15	104.0	6/01/15	197.0	5/26/16	496.0	6/01/15
Iron	300	None	**27,200.0**	6/01/15	**17,000.0**	6/01/15	**8,790.0**	6/07/16	**16,400.0**	5/26/16	**32,400.0**	6/22/17
Lead	25	15	-	6/04/19	-	6/04/19	-	6/04/19	-	6/04/19	-	6/05/19
Magnesium	35,000	None	**140,000.0**	6/01/15	**124,000.0**	6/01/15	32,500.0	6/07/16	**51,900.0**	5/26/16	**50,800.0**	6/01/15
Manganese	300	None	**1,920.0**	6/01/15	**404.0**	6/22/17	263.0	6/07/16	**339.0**	5/26/16	**347.0**	6/22/17
Sodium	20,000	None	**651,000.0**	6/01/15	**37,300.0**	6/01/15	13,4000.0	6/22/17	**19,000.0**	5/26/16	**519,000.0**	6/22/17

Notes:

All concentrations in micrograms/liter (ug/L); Blank cells indicate that the analyte was not detected above NYS TOGS 1.1.1 or MCL.

NYS TOGS 1.1.1 – New York State Department of Environmental Conservation, Division of Water Technical and Operational Guidance Series 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998.

MCL - National Primary Drinking Water Regulations Maximum Contaminant Levels, USEPA EPA 816-F-09-0004, May 2009.

Lead MCL is regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed 15 µg/L, water systems must take additional steps.

Exceedances are highlighted and bolded.

Table 6: Lower Unconsolidated Unit Groundwater Monitoring Results Volatile Organic Compounds
Exceeding Standards
Batavia Landfill Superfund Site
Five Year Review
2015-2019

Analyte	NYS TOGS 1.1.1	MCL	BL-105L		BL-10	
			Maximum	Date	Maximum	Date
Benzene	1	5	-	6/04/19	**2.9**	5/29/18
Chloroethane	5	None	-	6/04/19	**42.0**	6/22/17
1,1-dichloroethane	5	None	-	6/04/19	0.50	6/22/17
cis-1,2-dichloroethene	5	70	-	6/04/19	0.34J	5/25/16
Toluene	5	1,000	**5.5**	6/29/18	-	6/05/19

Notes:

All concentrations in micrograms/liter (µg/L); Blank cells indicate that the analyte was not detected above NYS TOGS 1.1.1 or MCL.

J – The analyte was positively identified; however, the associated value is an estimated concentration.

NYS TOGS 1.1.1 – New York State Department of Environmental Conservation, Division of Water Technical and Operational Guidance Series 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998.

MCL - National Primary Drinking Water Regulations Maximum Contaminant Levels, USEPA EPA 816-F-09-0004, May 2009.

Exceedances are highlighted and bolded.

Table 7: Lower Unconsolidated Unit Groundwater Monitoring Results Inorganic Analytes
Exceeding Standards
Batavia Landfill Superfund Site
Five Year Review
2015-2019

Analyte	NYS TOGS 1.1.1	MCL	BL-105L		BL-10	
			Maximum	Date	Maximum	Date
Arsenic	25	10	**52.3**	6/22/17	**38.7**	6/22/17
Barium	1,000	2,000	105.0	6/22/17	**1,220.0**	6/22/17
Lead	25	15	-	6/04/19	-	6/05/19
Iron	300	None	**21,9000.0**	6/04/19	**13,000.0**	6/22/17
Magnesium	35,000	None	**58,400.0**	5/29/18	**110,000.0**	6/22/17
Manganese	300	None	**841.0**	6/01/15	34.5	6/05/19
Sodium	20,000	None	**13,000.0**	5/29/18	**125,000.0**	6/22/17

Notes:

All concentrations in micrograms/liter (µg/L); Blank cells indicate that the analyte was not detected above NYS TOGS 1.1.1 or MCL.

NYS TOGS 1.1.1 – New York State Department of Environmental Conservation, Division of Water Technical and Operational Guidance Series 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998.

MCL - National Primary Drinking Water Regulations Maximum Contaminant Levels, USEPA EPA 816-F-09-0004, May 2009.

Exceedances are high-lighted and bolded.

Table 8: Bedrock Aquifer Groundwater Monitoring Results Inorganic Analytes
Exceeding Standards
Batavia Landfill Superfund Site
Five Year Review
2015-2019

Analyte	NYS TOGS 1.1.1	MCL	BL-106B		BL-107B	
			Maximum	Date	Maximum	Date
Arsenic	25	10	-	6/04/19	-	6/04/19
Barium	1,000	2,000	**1,080.0**	6/04/19	**1,670.0**	6/22/17
Lead	25	15	-	6/04/19	-	6/04/19
Iron	300	None	**34,900.0**	5/25/16	**12,800.0**	6/04/19
Magnesium	35,000	None	**80,900.0**	6/04/19	**87.300.0**	6/22/17
Manganese	300	None	73.3	5/25/16	**300.0**	6/01/15
Sodium	20,000	None	**21,7000**	5/29/18	**79,800.0**	6/04/19

Notes:

All concentrations in micrograms/liter (µg/L); Blank cells indicate that the analyte was not detected above NYS TOGS 1.1.1 or MCL.

NYS TOGS 1.1.1 – New York State Department of Environmental Conservation, Division of Water Technical and Operational Guidance Series 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998.

MCL - National Primary Drinking Water Regulations Maximum Contaminant Levels, USEPA EPA 816-F-09-0004, May 2009.

Exceedances are highlighted and bolded.

Table 9: Wetlands Surface Water Monitoring Results Inorganic Analytes
Exceeding Standards
Batavia Landfill Superfund Site
Five Year Review
2015-2019

Analyte	NYS TOGS 1.1.1	Fed WQC	WL-B1		WL-C1	
			Maximum	Date	Maximum	Date
Aluminum	100	87	**1,110.0**	5/29/18	**3,730.0**	5/29/18
Iron	300	1,000	**12,500.0**	5/29/18	**4,090.0**	5/29/18
Magnesium	None	None	19,100.00	5/29/18	19,300.0	5/25/16
Lead	3	2.5	-	6/04/19	6.4	5/29/18
Selenium	4.6	5	-	6/04/19	-	6/04/19
Zinc	185	264	72.0	5/29/18	34.4	5/29/18

Notes:

All concentrations in micrograms/liter (µg/L); Blank cells indicate that the analyte was not detected above NYS TOGS 1.1.1 or WQC.

NYS TOGS 1.1.1 – New York State Department of Environmental Conservation, Division of Water Technical and Operational Guidance Series 1.1.1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998.

Fed WQC – Criterion Continuous Concentration values are taken from *National Recommended Water Quality Criteria: 2002* (WQC), USEPA EPA 822-R-02-047, November 2002.

Exceedances are highlighted and bolded.