

Mr. Michael Squire
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Date: October 13, 2023
Our Ref: 30181850
Subject: **2023 Groundwater Sampling & Soil Cover Inspection Report**
NYSEG Waterville Former MGP Site
Waterville, New York

Dear Mr. Squire,

On behalf of NYSEG, Arcadis of New York, Inc. (Arcadis) is pleased to present this annual report summarizing the results of groundwater sampling and soil cover inspection activities conducted in 2023 at the Waterville manufactured gas plant (MGP) site. Relevant background information is provided below, followed by a discussion of the 2023 results and recommendations for the site.

Background

As required by the New York State Department of Environmental Conservation's (NYSDEC's) Record of Decision (ROD) issued in March 2002, NYSEG administered a 5-year post-interim remedial measure (IRM) groundwater and soil cover monitoring program at the Waterville, New York Former MGP site. The 5-year monitoring program consisted of sampling eight monitoring wells for BTEX (benzene, toluene, ethylbenzene, and xylenes) and PAHs (polycyclic aromatic hydrocarbons) on a biannual basis from May 2002 to November 2006. NYSEG submitted an evaluation of the results of this monitoring program to the NYSDEC on May 8, 2007. Based on the NYSDEC's comments on this evaluation, NYSEG agreed (in a letter dated January 4, 2008) to revise the scope of the monitoring to annual sampling of one well (MW98-7D) and continuing with the soil cover inspections annually for an additional 5 years (until 2012). Based on the results of the supplemental 5-year groundwater monitoring program concluding in 2012 and discussions with the NYSDEC, NYSEG agreed to continue sampling groundwater from MW98-7D and conducting the soil cover inspections on an annual basis for an unspecified duration.

2023 Groundwater Sampling Event

Arcadis sampled groundwater from monitoring well MW98-7D and conducted site wide synoptic water-level gauging on July 6, 2023. The location of site monitoring wells and other pertinent site features can be found on Figure 1. Consistent with the previous sampling events, the sampling from MW98-7D was conducted using low-flow purging techniques. The low-flow method consists of slowly purging water from the well at a rate of approximately 100 to 200 milliliters per minute (mL/min) until readings of the following field parameters stabilize: pH, dissolved oxygen, oxidation-reduction potential (ORP), turbidity and conductivity. The table below presents the values for these field parameters at the time of sampling:

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Well ID	pH (S.U.)	Temperature (°C)	Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	Turbidity (NTU)
MW98-7D	7.43	13.5	0.415	0.35	59.3	4.9

Notes:

S.U. = Standard Units.
°C = degrees Celsius.
mS/cm = milliSiemens per centimeter.
mg/L = milligrams per liter.
mV = milliVolts.
NTU = Nephelometric Turbidity Units.

No problems arose during the groundwater sampling event. The groundwater sampling log and sampling chain-of-custody are provided in Attachment 1. The collected sample was analyzed for BTEX and PAHs by Eurofins of Buffalo, New York in accordance with NYSDEC Analytical Services Protocol (ASP). The laboratory provided Category B deliverables and the data package was validated by Arcadis. The data validation concluded that the laboratory results are useable for their intended purpose. A copy of the Data Usability Summary Report (DUSR) can be provided upon request.

Historical analytical results for MW98-7D are summarized in Table 1 in comparison to NYSDEC Class GA Standards and Guidance Values. Consistent with previous sampling events, groundwater sampled from MW98-7D exceeded the NYSDEC Class GA Standards for all the BTEX compounds. Also consistent with previous events, several PAHs continue to be detected in the sample collected from well MW98-7D; however, only acenaphthene and naphthalene were detected at concentrations above the NYSDEC Class GA Guidance Value for these compounds. The levels for both BTEX and PAHs were within the range of concentrations detected during the previous sampling rounds. As shown on the time-series graph provided in Attachment 2, dissolved-phase BTEX concentrations at MW98-7D have decreased since sampling began in 2004 and results from the July 6, 2023 event were some of the lowest observed concentrations. Similarly, there is also an overall slight downward trend in the concentration of dissolved phase PAHs.

2023 Inspection of Soil Cover Area

On July 6, 2023, Arcadis also performed the annual inspection of the soil cover portion of the site, as required by the site's ROD. Findings of the inspection were generally consistent with those found during previous years. Please refer to the photographic log in Attachment 3 for pictures of relevant features of the soil cover. As observed in previous years, the above-ground pool (Photo # 1) and 5 rectangular gardens (Photos #2 & 3) behind 139 Babbott are still present at the site. However, only the pool and northernmost garden appear to be within the footprint of the soil cover. It should be noted that at least one of the rectangular gardens (southernmost) now appears to be a flower garden. The homeowner previously used this garden as a vegetable garden prior to 2022. The small decorative garden/covered shrubs observed since 2018 east of monitoring well CW91-6 (Photo #4) is also still present and appears to be partially within the footprint of the soil cover. No additional disturbances were observed during the 2023 inspection and the soil cover appeared in good condition (Photos #5 & 6).

Summary

The 2023 PAH analytical results for the groundwater sample collected from MW98-7D are slightly lower than the 2022 results and are within the range of concentrations historically detected at this well. Only acenaphthene and naphthalene were found to exceed Class GA Guidance Values for these compounds. BTEX concentrations also decreased in 2023 compared to historical analytical results but remained within the range of more recent

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sampling results observed in groundwater from this well. Consistent with previous years, BTEX concentrations exceeded Class GA Standards for each respective compound. There is a slightly downward overall trend for PAHs when reviewing historical data. Analytical data from the 2024 sampling event will be evaluated to determine if any discernible trends develop but are anticipated to remain relatively stable.

Aside from the disturbances caused by the installation of the above-ground pool and the small northernmost rectangular garden observed since 2014, the soil cover appeared to be in good condition with no obvious damage.

The next groundwater sampling and soil cover inspection event is scheduled for the summer of 2024. If you have any questions, please feel free to contact John Ruspantini of NYSEG at 585.484.6787 or me at 315.671.9379.

Sincerely,
Arcadis of New York, Inc.



David A. Cornell
Senior Geologist

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CC. John J. Ruspantini, CHMM, NYSEG
Keith A. White, C.P.G., Arcadis

Enclosures:

- Table 1 – Summary of Groundwater Sampling Results in Comparison to NYSDEC Class GA Standards and Guidance Values
- Figure 1 – Site Map
- Attachment 1 – Field Notes
- Attachment 2 – MW98-7D Time-Series Graph
- Attachment 3 – Soil Cover Inspection Photograph Log

Table

Table 1
Summary of Groundwater Sampling Results in Comparison to NYSDEC Class GA Standards and Guidance Values



2023 Groundwater Sampling and Soil Cover Inspection Report
Waterville Former MGP Site
Waterville, New York

Location ID: Date Collected:	NYSDEC TOGS 1.1.1 Water Standards and Guidance Values	Units	MW98-7D 05/10/05	MW98-7D 11/10/05	MW98-7D 05/10/06	MW98-7D 11/07/06	MW98-7D 05/01/08	MW98-7D 05/28/09	MW98-7D 06/03/11	MW98-7D 06/14/12	MW98-7D 06/28/13
Detected Volatile Organics											
Benzene	1	ug/L	160 [150]	90	140 [140]	110 [94]	140 D [120 D]	110 D08 [120 D08]	57 [170]	90 J	8.9
Ethylbenzene	5	ug/L	110 [110]	84	97 [93]	85 [66 J]	86 [81]	90 M7 [91]	36 [150]	97 J	6.3
m&p-Xylene	--	ug/L	NA	NA	NA	NA	38 [36]	39 [40]	20 [62]	39	3.3
o-Xylene	--	ug/L	NA	NA	NA	NA	52 [50]	52 M7 [53]	26 [77]	54 J	4.2
Toluene	5	ug/L	26 [28]	20 J	27 [26]	18 [16 J]	26 [24]	22 [23]	9.0 [34]	18	2.2
Xylenes (total)	5	ug/L	110 [110]	81	95 [91]	90 [64 J]	NA	92 M7 [93]	46 [140]	93 J	7.5
Total BTEX	--	ug/L	406 [398]	275 J	359 [350]	303 [240 J]	342 [311]	314 [327]	148 [494]	298 J	24.9
Detected Semivolatile Organics											
2-Methylnaphthalene	--	ug/L	110 [120]	140 [140]	130 [52]	100 J [82 J]	110 [97]	110 M7 [140 D08]	NA	NA	NA
Acenaphthene	20	ug/L	110 [110]	140 [140]	96 J [92]	140 [110]	120 [120]	120 D08 [140 D08]	130 [160]	86 J	120 D
Acenaphthylene	--	ug/L	23 J [22 J]	24 J [23 J]	19 J [14 J]	19 J [15 J]	22 [22]	19 [25]	21 J [24 J]	12 J	20
Anthracene	50	ug/L	7.0 J [7.2 J]	11 J [11 J]	44 J [5.2 J]	8.7 J [7.6 J]	8.0 [9.0]	7.8 [9.6]	8.5 J [9.6 J]	6.3 J	7.7
Dibenzofuran	--	ug/L	NA	NA	NA	NA	2.0 J [2.0 J]	2.3 [2.9]	NA	NA	NA
Fluoranthene	50	ug/L	2.6 J [2.3 J]	100 U [100 U]	100 U [21 U]	3.5 J [3.0 J]	3.0 J [3.0 J]	2.6 [3.2]	48 U [48 U]	49 U	2.7 J
Fluorene	50	ug/L	13 J [13 J]	100 U [17 J]	57 J [28]	14 J [12 J]	16 [15]	19 [24]	20 J [22 J]	15 J	18
Naphthalene	10	ug/L	970 [1,000]	1,200 [1,100]	910 [360]	1,300 [930]	1,100 D [980 D]	850 D08 [1,100 D08]	780 [1,000]	600	990 D
Phenanthrene	50	ug/L	44 J [42 J]	54 J [51 J]	75 J [39]	51 J [44 J]	46 [45]	44 [56]	59 [69]	37 J	49
Pyrene	50	ug/L	2.9 J [3.4 J]	100 U [100 U]	100 U [21 U]	4.1 J [3.1 J]	4.0 J [4.0 J]	3.0 [3.7]	3.3 J [3.7 J]	49 U	3.4 J
Total PAHs	--	ug/L	1,280 J [1,320 J]	1,570 J [1,480 J]	1,330 J [590 J]	1,640 J [1,210 J]	1,430 J [1,300 J]	1,180 [1,500]	1,020 J [1,290 J]	756 J	1,210 J
Detected Inorganics											
Iron	300	ug/L	859	1,200	1,180	1,130	NA	NA	NA	NA	NA
Manganese	300	ug/L	1,130	1,390	1,380	1,220	NA	NA	NA	NA	NA
Nitrate	--	ug/L	100 U	100 U	110	100 U	NA	NA	NA	NA	NA
Sulfate	250,000	ug/L	5,000 U	5,000 U	5,000 U	5,000 U	NA	NA	NA	NA	NA
Total Organic Carbon	--	ug/L	1,700	1,800	2,100	1,700	NA	NA	NA	NA	NA

See Notes on Page 2.

Table 1
Summary of Groundwater Sampling Results in Comparison to NYSDEC Class GA Standards and Guidance Values



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Waterville Former MGP Site
Waterville, New York

Location ID: Date Collected:	NYSDEC TOGS 1.1.1 Water Standards and Guidance Values	Units	MW98-7D 06/20/14	MW98-7D 07/09/15	MW98-7D 07/20/16	MW98-7D 06/15/17	MW98-7D 06/26/18	MW98-7D 06/13/19	MW98-7D 07/15/20	MW98-7D 07/01/21	MW98-7D 07/07/22	MW98-7D 07/06/23
Detected Volatile Organics												
Benzene	1	ug/L	17	68	39 J	130 DJ	48 [49]	93 [88]	45 [44]	49 [48]	54 [56]	39 [42]
Ethylbenzene	5	ug/L	11	66	48 J	110 DJ	47 [47]	97 J [92]	68 [66]	79 [75]	82 [81]	58 [65]
m&p-Xylene	--	ug/L	6.9	31	22	48 J	21 [21]	38 [35]	27 [26]	29 [29]	35 [33]	22 [25]
o-Xylene	--	ug/L	10	43	30 J	62 J	29 [28]	52 [51]	41 [39]	41 [40]	44 [45]	30 [34]
Toluene	5	ug/L	3.3	15	9.7	37 J	11 [11]	22 [22]	14 [14]	16 [15]	18 [19]	11 [13]
Xylenes (total)	5	ug/L	17	74	52 J	110 J	50 [49]	90 [86]	68 [65]	70 [69]	79 [78]	52 [59]
Total BTEX	--	ug/L	48.3	223	149 J	387 J	156 [156]	302 J [288]	195 [189]	214 [207]	233 [234]	160 [180]
Detected Semivolatile Organics												
2-Methylnaphthalene	--	ug/L	NA									
Acenaphthene	20	ug/L	61	35 J	100 EJ	150 EJ	88 DJ [62]	86 J [75 J]	80 J [72 J]	170 J [180 J]	120 J [130 J]	76 [91]
Acenaphthylene	--	ug/L	5.6	0.66 J	18	27	18 [13]	9.6 J [8.5 J]	15 J [15 J]	25 [25]	19 [21J]	11 [15]
Anthracene	50	ug/L	4.2	4.9 J	7.8	9.1	6.9 [4.9 J]	6.3 J [6.0 J]	7.9 J [5.8 J]	8.8 [9]	14U [14 U]	7.8 [8.5]
Dibenzofuran	--	ug/L	NA									
Fluoranthene	50	ug/L	1.7 J	1.7 J	2.6 J	3.1 J	2.4 J [1.7 J]	100 UJ [100 U]	100 U [100 U]	3.3 J [3.6 J]	20 U [20 U]	2.7 J [2.8 J]
Fluorene	50	ug/L	8.5	9.7	14	15	9.4 [7.2]	100 UB [100 UB]	8.6 J [8.4 J]	15 [15]	18 U [18 U]	8.9 [11]
Naphthalene	10	ug/L	1.9 U	0.86 J	640 D	910 D	440 D [370 D]	100 U [100 U]	590 [540]	630 D [800 D]	230 D [270 D]	51 [92]
Phenanthrene	50	ug/L	23	24	45	58 J	39 J [29]	100 UBJ [100 UB]	27 J [25 J]	55 J [59 J]	49 J [51 J]	40 [43]
Pyrene	50	ug/L	2.2	2.0 J	2.8 J	4.0 J	2.7 J [2.0 J]	100 UJ [100 U]	100 U [100 U]	3.9 J [4 J]	17 U [17 U]	3.2 J [3.4 J]
Total PAHs	--	ug/L	106 J	78.8 J	830 J	1,180 J	606 J [490 J]	102 J [89.5 J]	729 J [666 J]	911 J [1096 J]	418 J [472 J]	201 J [267 J]
Detected Inorganics												
Iron	300	ug/L	NA									
Manganese	300	ug/L	NA									
Nitrate	--	ug/L	NA									
Sulfate	250,000	ug/L	NA									
Total Organic Carbon	--	ug/L	NA									

Notes:

D = Compound quantitated using a secondary dilution.

D08 = Compound quantitated using a secondary dilution.

E = Analyte exceeded calibration range.

J = Indicates an estimated value.

U = The compound was analyzed for but not detected. The associated value is the compound quantitation limit.

[] = duplicate sample

NA = Not Analyzed

ug/L = micrograms per liter

Figure

Attachment 1

Field Notes

Site

Event

GROUND-WATER SAMPLING LOG

Sampling Personnel: DRM / DAC Well ID: MW98-7D
 Client / Job Number: DEC Date: 7-6-23
 Weather: 85° Sunny Time In: 1005 Time Out: 1130

Well Information

Depth to Water: (feet) 6.61 (from MP)
 Total Depth: (feet) 18.47 (from MP)
 Length of Water Column: (feet) 11.86
 Volume of Water in Well: (gal) 1.93
 Three Well Volumes: (gal) 5.8

Well Type: Flushmount Stick-Up
 Well Material: Stainless Steel PVC
 Well Locked: Yes No
 Measuring Point Marked: Yes No
 Well Diameter: 1" 2 Other:

Purging Information

Purging Method: Bailer Peristaltic Waterra Other:
 Tubing/Bailer Material: Steel Polyethylene Teflon Other:
 Sampling Method: Bailer Peristaltic Waterra Other:
 Duration of Pumping: (min) 65
 Average Pumping Rate: (ml/min) 200 Water-Quality Meter Type: YSI Pro
 Total Volume Removed: (gal) Did well go dry: Yes No

Conversion Factors				
gal / ft. of water	1" ID	2" ID	4" ID	6" ID
		0.041	0.163	0.653
1 gal = 3.785 L = 3785 ml = 0.1337 cubic feet				

Unit Stability			
pH	DO	Cond.	ORP
± 0.1	± 10%	± 3.0%	± 10 mV

Parameter:	1	2	3	4	5	6	7	8	9
Volume Purged (gal) L	1	2	3	4	5	6	7	8	9
Rate (mL/min)	200	200	200	200	200	200	200	200	200
Depth to Water (ft.)	8.21	8.62	8.97	9.34	9.50	9.59	9.65	9.67	9.68
pH	7.41	7.38	7.36	7.36	7.39	7.38	7.40	7.42	7.43
Temp. (C)	13.6	13.7	13.8	13.4	13.4	13.4	13.4	13.4	13.5
Conductivity (mS/cm)	0.394	0.399	0.402	0.399	0.408	0.407	0.412	0.414	0.415
Dissolved Oxygen (mg/L)	1.50	0.97	0.52	0.45	0.39	0.37	0.38	0.36	0.35
ORP (mV)	41.3	43.4	46.4	51.5	53.6	55.4	57.7	58.7	59.8
Turbidity (NTU)	24.9	23.9	23.0	22.1	18.4	12.7	8.4	6.8	4.9
Notes:									

Sampling Information

Analyses	#	Laboratory
8260C PTEX	3	Eurofins
82700 PAH	2	1.
Sample ID: <u>MW98-7D</u>	Sample Time: <u>1100</u>	
MS/MSD: <u>Yes</u>	No	
Duplicate: <u>Yes</u>	No	
Duplicate ID: <u>DUP-070623</u>	Dup. Time: <u>1105</u>	
Chain of Custody Signed By:		

Problems / Observations

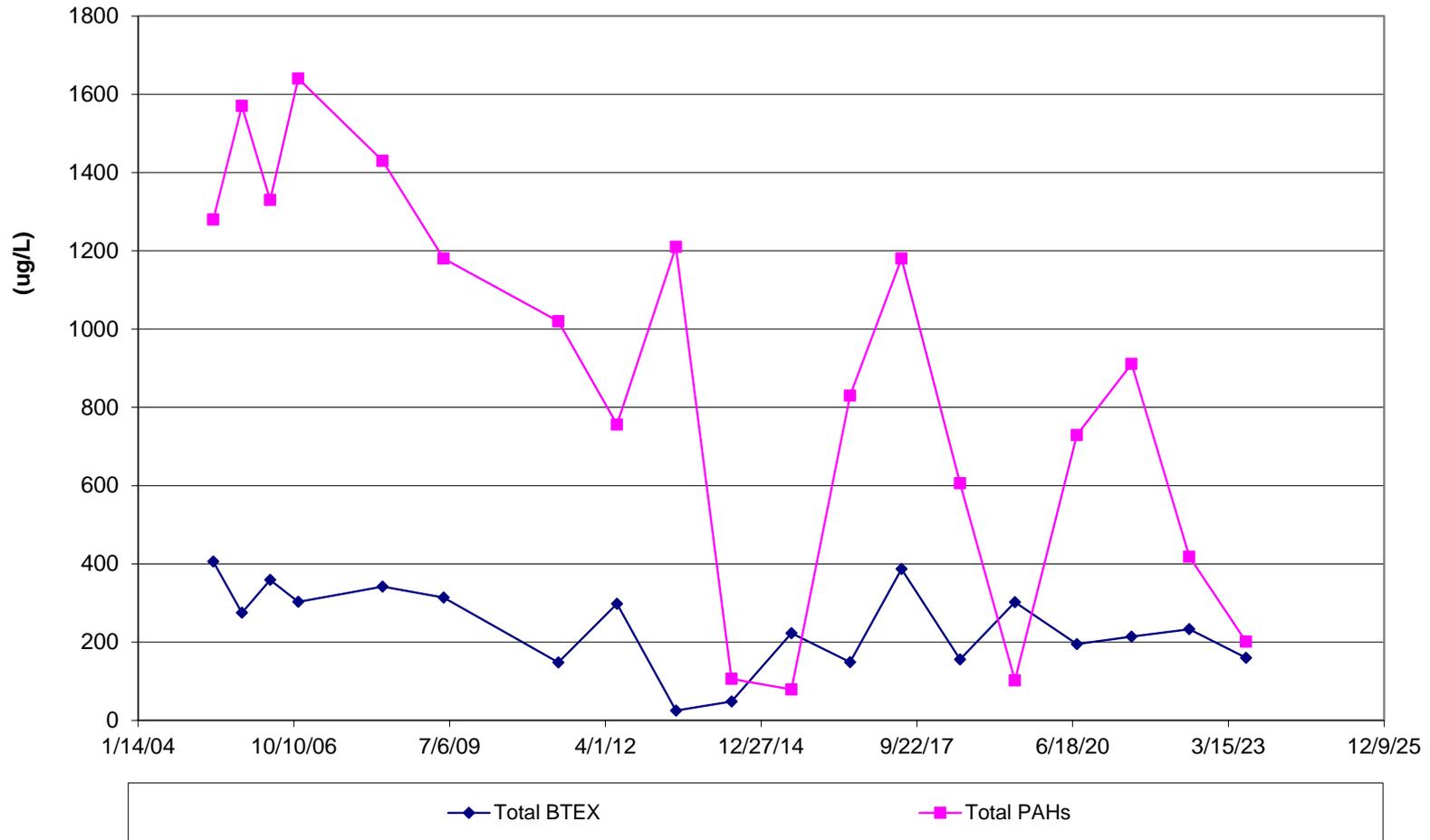
Start: 1015
 End: 1120
 Slight sheen in bucket
 Slight MGP-like odor

Attachment 2

MW98-7D Time Series Graph

**TOTAL BTEX & PAH CONCENTRATION OVER TIME
MONITORING WELL - MW98-7D**

**2023 GROUNDWATER SAMPLING & SOIL COVER INSPECTION REPORT
NYSEG
WATERVILLE FORMER MGP SITE
WATERVILLE, NEW YORK**



Attachment 3

Soil Cover Inspection Photograph Log

SOIL COVER INSPECTION PHOTOGRAPH LOG

CLIENT: NYSEG	SITE NAME: Waterville Former MGP Site
PROJECT#: 30114126	SITE LOCATION: Waterville, New York
PHOTOGRAPH #: 1	
PHOTOGRAPHER: DM	
DATE: 07/6/2023	
DIRECTION: West	
COMMENT: View of above-ground swimming pool and rectangular gardens behind 139 Babbott Avenue property. MW98-7 well cluster in the foreground.	

CLIENT: NYSEG	SITE NAME: Waterville Former MGP Site
PROJECT#: 30114126	SITE LOCATION: Waterville, New York
PHOTOGRAPH #: 2	
PHOTOGRAPHER: DM	
DATE: 07/6/2023	
DIRECTION: North	
COMMENT: View of rectangular gardens behind 139 Babbott Avenue property. Flower garden in the foreground (southernmost garden).	

SOIL COVER INSPECTION PHOTOGRAPH LOG

CLIENT: NYSEG	SITE NAME: Waterville Former MGP Site
PROJECT#: 30114126	SITE LOCATION: Waterville, New York
PHOTOGRAPH #: 3	
PHOTOGRAPHER: DM	
DATE: 07/6/2023	
DIRECTION: East	
COMMENT: View of Northernmost rectangular garden behind 139 Babbott Avenue property.	

CLIENT: NYSEG	SITE NAME: Waterville Former MGP Site
PROJECT#: 30114126	SITE LOCATION: Waterville, New York
PHOTOGRAPH #: 4	
PHOTOGRAPHER: DM	
DATE: 07/6/2023	
DIRECTION: Northeast	
COMMENT: View of Covered shrubs behind 139 Babbott Avenue property.	

SOIL COVER INSPECTION PHOTOGRAPH LOG

CLIENT: NYSEG	SITE NAME: Waterville Former MGP Site
PROJECT#: 30114126	SITE LOCATION: Waterville, New York
PHOTOGRAPH #: 5	
PHOTOGRAPHER: DM	
DATE: 07/6/2023	
DIRECTION: Northeast	
COMMENT: View of soil cover looking Northeast.	

CLIENT: NYSEG	SITE NAME: Waterville Former MGP Site
PROJECT#: 30114126	SITE LOCATION: Waterville, New York
PHOTOGRAPH #: 6	
PHOTOGRAPHER: DM	
DATE: 07/6/2023	
DIRECTION: North	
COMMENT: View of soil cover looking North. MW98-7 well cluster in the foreground.	