Groundwater Remediation Systems

Quarterly Operations Report

July 1, 2022 through September 30, 2022

Brookhaven National Laboratory Upton, Long Island, New York

Prepared by:

Brookhaven National Laboratory
Environmental Protection Division

Upton, N.Y. 11973

Prepared for:

U.S. Department of Energy
Brookhaven Site Office

November 2022

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3rd Quarter Groundwater Remediation System Operations Report
July 1, 2022 through September 30, 2022
Brookhaven National Laboratory
Upton, Long Island, New York

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Section 1

System Operations Overview 3rd Quarter 2022

Table 1 – Summary of Operations						
Operable Unit System	***Type***	***Target Contaminant***	***Number of Wells***	***Years of Operation***	***Run Time For Quarter (%)***	***Pounds VOCS Removed (Quarter/Cum)***
Operable Unit I						
South Boundary	Pump and Treat (AS)	VOC	2	Operate- 16 Standby- 9	Closure Approved 9/19	0 369
Operable Unit III						
South Boundary	Pump and Treat (AS)	VOC	8	25	99%PP	1.6 3,075
HFBR Pump and Recharge	Pump and Recirculate	Tritium	4	Operate- 9 Standby- 16	Closure Approved 3/19	NA 180
Industrial Park	Recirculation/ In-Well (AS/Carbon)/ Pump and Treat (Carbon)	VOC VOC	7 2	Operate- 16 Standby- 7 Operate- 4 Standby-3	Standby Standby	0 1066 0 10
Building 96	Recirculation Well (AS/Carbon)	VOC	4	Operate- 18 Standby- 3	100% PP	0.1 146
Middle Road	Pump and Treat (AS)	VOC	7	21	99%	3.1 1350
Western South Boundary	Pump and Treat (AS)	VOC	6	20	99%	3.4 195
North Street	Pump and Treat (Carbon)	VOC	2	Operate – 11 Standby - 7	Closure Approved 3/20	NA 342
North Street East	Pump and Treat (Carbon)	VOC/EDB	4	Operate – 12 Standby - 6	99%	0.36 48
LIPA/Airport	Pump and Treat (Carbon)	VOC	10	18	100%	1.1 499
Industrial Park East	Pump and Treat (Carbon)	VOC	2	Operate- 5 Standby- 4	Dismantled 2013	NA 38
Chemical Holes	Pump and Treat (IE)	Sr-90	3	Operate - 15 Standby- 4	Standby	NA
BGRR/WCF	Pump and Treat (IE)	Sr-90	9	17	100% PP	NA
Freon	Pump and Treat (AS)	Freon-11	1	Operate – 4 Standby – 6	Closure Approved 9/19	0 106
Operable Unit VI						
EDB	Pump and Treat (Carbon)	EDB	2	18	100%	NA*

AS = air stripping
IE = ion exchange
EDB = ethylene dibromide
NA = not applicable
PP = system is pulse pumping
* EDB has only been detected in the influent at trace levels, just above standard, therefore no removal is reported.

Section 2

Q3-2022 Operations Summary
OU I/RA V South Boundary Pump & Treat System
(System Closed)

Process: Groundwater extraction and air stripping treatment, with discharge to the RA V recharge basin

Goal: Reach Maximum Contaminant Levels (MCLs) in core monitoring wells within 30 years for the Upper Glacial aquifer (by 2030). The Petition for Closure of the OU I South Boundary Groundwater Treatment System was approved by the regulators in September 2019.
Note: Current Landfill monitoring well data is included in the attached data tables since this is one of the sources of the OU I/RA V plume.

Start Date: January 1997

Table 2-1
OU I South Boundary Pump & Treat System
Pumping Rates (gpm)

Extraction Well	EW-1*	EW-2*
Site ID #	115-27	115-43
Screen Interval (ft bls)	150-190	104-124/134-154
Desired Rate (GPM)	0	0
July	Off	Off
August	Off	Off
September	Off	Off
Actual (Avg. over Qtr.)	Off	Off

* The system was shut down and approved for closure in September 2019.

Figure 2-1
OU I South Boundary Pump & Treat System
Cumulative Mass Removal VOCs vs. Time

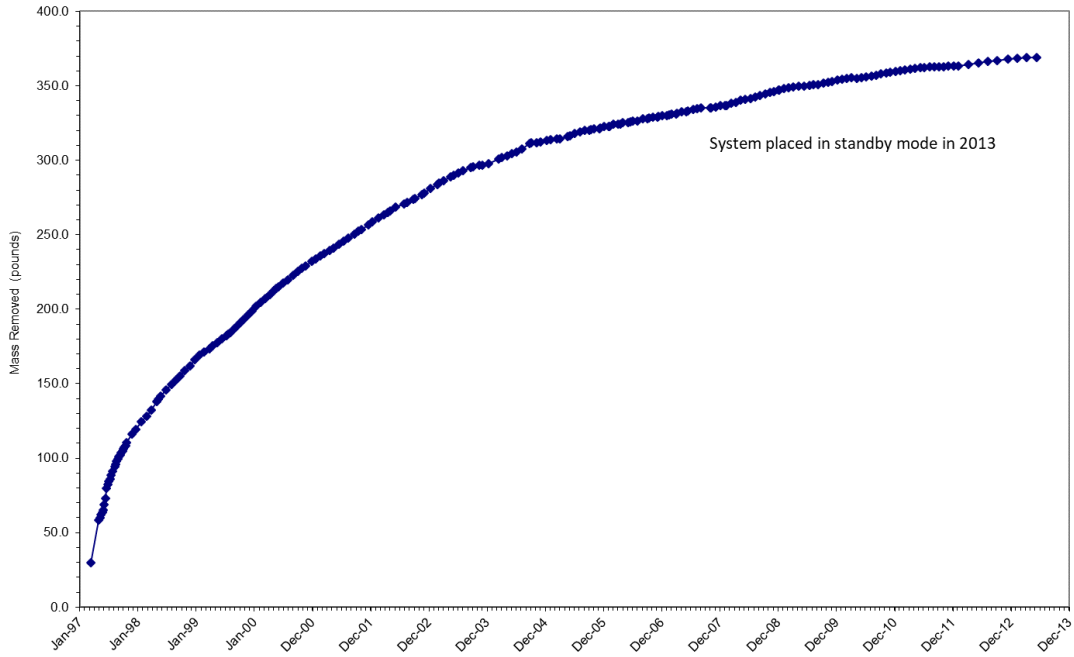


Figure 2-2
OU I South Boundary Pump & Treat System
Influent TVOC Concentrations vs. Time

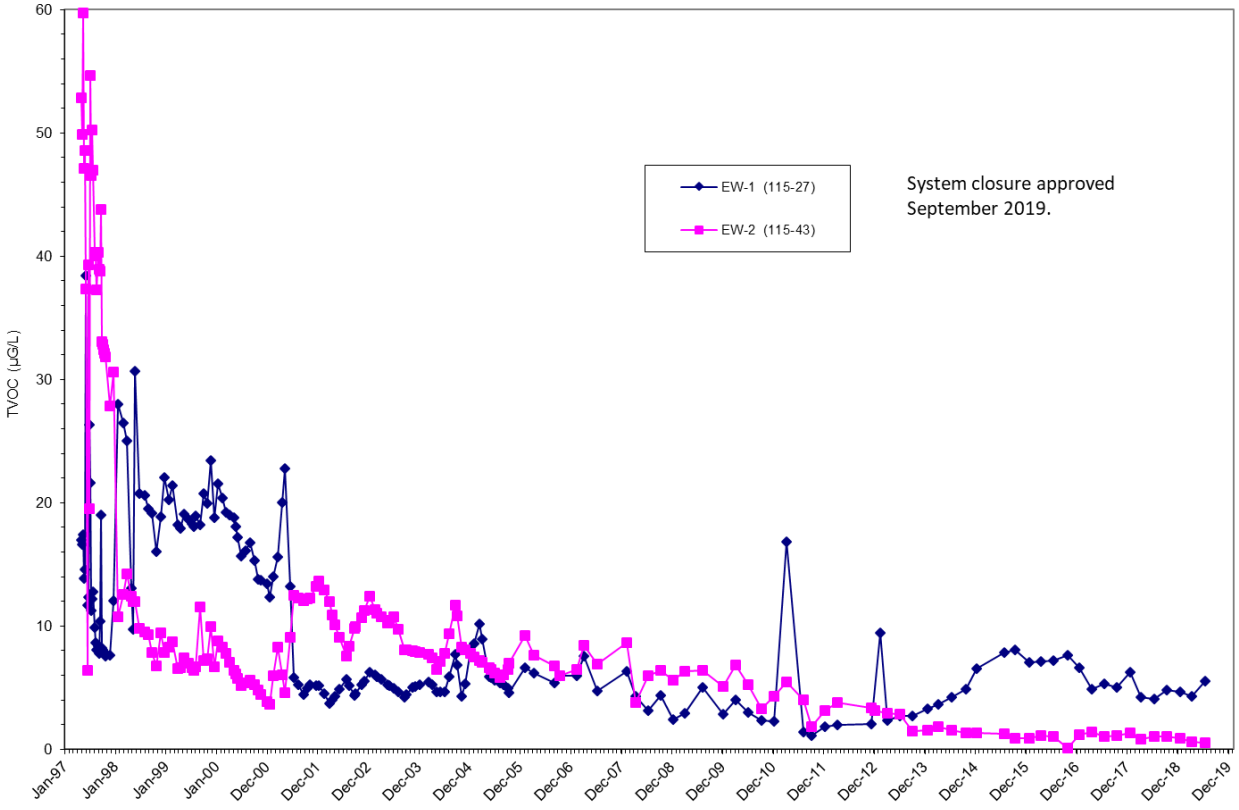


Table 2-2
Effluent Water Quality
SPDES Equivalency Permit Concentrations July 1 through September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	Monitor	NA [1]	GPD	Continuous
pH (range)	6.0- 9.0	NA [1]	SU	Weekly
Benzene	0.8	NA [1]	µg/L	Monthly
Chloroform	7.0	NA [1]	µg/L	Monthly
Chloroethane	5.0	NA [1]	µg/L	Monthly
1,2-Dichloroethane	5.0	NA [1]	µg/L	Monthly
1,1-Dichloroethene	5.0	NA [1]	µg/L	Monthly
1,1,1-Trichloroethane	5.0	NA [1]	µg/L	Monthly
Carbon Tetrachloride	5.0	NA [1]	µg/L	Quarterly
1,2-Dichloropropane	5.0	NA [1]	µg/L	Quarterly
Methylene Chloride	5.0	NA [1]	µg/L	Quarterly
Trichloroethylene	5.0	NA [1]	µg/L	Quarterly
Vinyl Chloride	2.0	NA [1]	µg/L	Quarterly
1,2-Xylene	5.0	NA [1]	µg/L	Quarterly
Sum of 1,3 and 1,4-Xylenes	10.0	NA [1]	µg/L	Quarterly

[1] The system is closed.

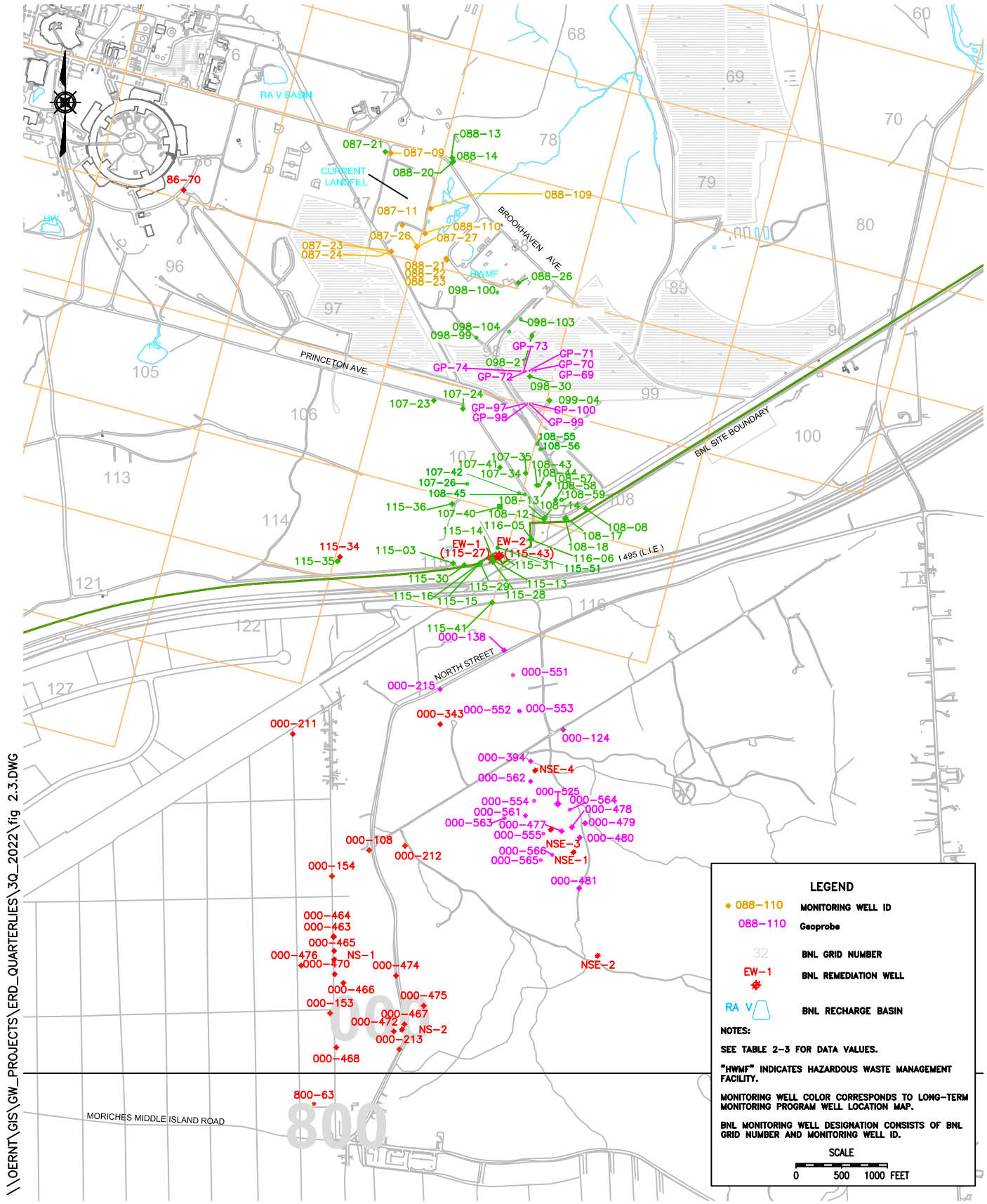
System Operations

July through September 2022:

The system remained closed.

Planned Operational Changes

- Maintain the VOC post-closure groundwater monitoring program of an annual sample collection from post-closure wells: 107-40, 107-41, 115-13, 115-16, and 115-51. Maintain quarterly sampling of Current Landfill well 088-109 and sentinel well 098-99.



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ENVIRONMENTAL PROTECTION DIVISION

TITLE:

OU I SOUTH BOUNDARY
OUIII NORTH STREET/NORTH STREET EAST MONITORING WELL NETWORK

SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
JEB	–	08/08/11	NA
CHKD:	APPD:	REV.:	NOTES:
LDS	––	11/18/22	–

FIGURE NO.: 2.3

Table 2-3
OU I RA V South Boundary - Current Landfill Monitoring Well Data - Current Landfill
'Hits Only' July through September 2022

Site ID : 088-109

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	09/19/2022	25.11	--	--	UG/L	13.50		
1,1-Dichloroethane	09/19/2022	7.8	0.5	--	UG/L	13.50		
Benzene	09/19/2022	0.41	0.5	--	UG/L	13.50	J	
Chloroethane	09/19/2022	16.9	0.5	--	UG/L	13.50		

Site ID : 098-99

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	09/19/2022	2.93	--	--	UG/L	44.50		
1,1-Dichloroethane	09/19/2022	2.93	0.5	--	UG/L	44.50		

Table 2-3
OU I RA V South Boundary Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 088-109

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	09/19/2022	25.11	--	--	UG/L	13.50		
1,1-Dichloroethane	09/19/2022	7.8	0.5	--	UG/L	13.50		
Benzene	09/19/2022	0.41	0.5	--	UG/L	13.50	J	
Chloroethane	09/19/2022	16.9	0.5	--	UG/L	13.50		

Site ID : 088-26

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/18/2022	2.32	0.506	0.358	PCI/L	25.00		

Site ID : 098-100

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	09/09/2022	78.7	0.776	2.68	PCI/L	17.50		

Site ID : 098-103

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	09/09/2022	37.5	0.785	1.8	PCI/L	20.00		

Site ID : 098-104

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	09/09/2022	197	0.791	4.47	PCI/L	20.00		

Site ID : 098-21

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	09/08/2022	1.58	0.779	0.564	PCI/L	28.80		

Site ID : 098-30

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	09/08/2022	32.2	0.701	1.72	PCI/L	37.80		

Site ID : 098-99

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	09/19/2022	2.93	--	--	UG/L	44.50		
1,1-Dichloroethane	09/19/2022	2.93	0.5	--	UG/L	44.50		

Site ID : 107-34

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	09/07/2022	2.61	1.18	0.838	PCI/L	55.00		

Site ID : 107-35

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	09/07/2022	3.53	0.78	0.648	PCI/L	65.00		

Site ID : 107-40

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	09/12/2022	1.63	--	--	UG/L	145.00		

Table 2-3
OU I RA V South Boundary Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 107-40

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
1,1-Dichloroethane	09/12/2022	1.06	0.5	--	UG/L	145.00		
Chloroethane	09/12/2022	0.57	0.5	--	UG/L	145.00	J	

Site ID : 108-43

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	09/07/2022	4.96	0.775	0.727	PCI/L	65.00		

Site ID : 108-45

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/30/2022	2.01	0.7	0.581	PCI/L	69.50		

Site ID : 108-57

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	09/07/2022	7.54	0.783	0.957	PCI/L	70.00		

Site ID : 108-58

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	09/07/2022	6.63	0.767	0.902	PCI/L	70.00		

Site ID : 115-13

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	09/01/2022	1.7	--	--	UG/L	145.00		
Chloroform	09/01/2022	1.7	0.5	--	UG/L	145.00		

Site ID : 115-16

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/31/2022	3.48	--	--	UG/L	130.00		
1,1-Dichloroethane	08/31/2022	1.64	0.5	--	UG/L	130.00		
Chloroethane	08/31/2022	1.84	0.5	--	UG/L	130.00		

Qualifiers :

J = Estimated value.

D = Compound was identified in an analysis at a secondary dilution factor.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Section 3

Q3-2022 Operations Summary
OU III South Boundary Pump and Treat System

Process: Groundwater extraction and air stripping treatment, with discharge to both the OU III and RAV recharge basins.

Goal: Reach Maximum Contaminant Levels (MCLs) in core monitoring wells in OU III within 30 years for the Upper Glacial aquifer (by 2030).

Start Date: June 1997

Table 3-1
OU III South Boundary
Pumping Rates (gpm)

Extraction Well	EW-3	EW-4	EW-5	EW-6	EW-7	EW-8	EW-12	EW-17
Site ID	121-17	121-16	121-15	122-14	122-13	122-12	122-30	121-46
Screen Interval (ft bls)	150-190	160-180 &190-200	160-200	160-200	170-210	190-210 & 230-250	180-220	207-237
Desired Flow Rate (gpm)	0*	0*	0*	0*	0*	0*	0*	150
July (Avg monthly gpm)	0	0	0	0	0	0	0	139
August " "	0	0	0	0	0	0	0	157
September " "	0	0	0	0	0	0	0	158
Actual (Avg. over Qtr)	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**151**

* Extraction wells placed in standby mode: EW-12 (2003), EW-8 (2006), EW-6 (2007), EW-7 (2007), EW-3, EW-5 (2015) and EW-4 (2021).

Figure 3-1
OU III South Boundary
Cumulative Mass Removal of VOC's vs. Time

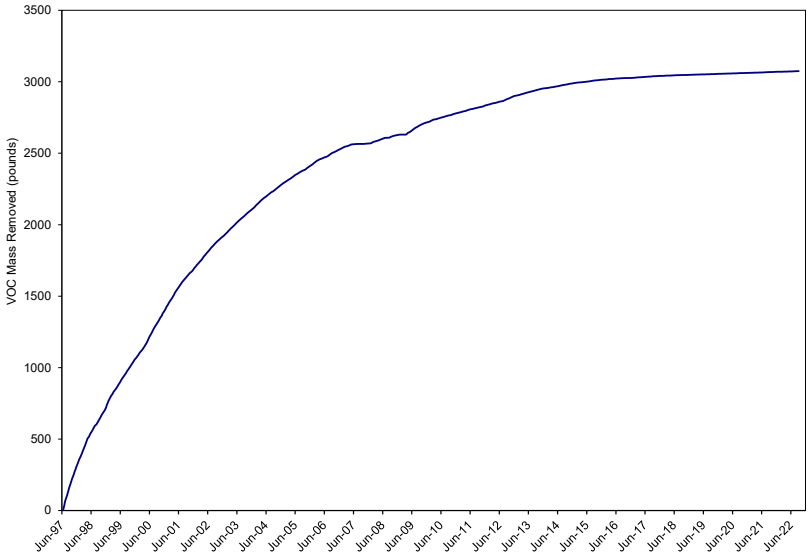


Figure 3-2
OU III South Boundary
Influent TVOC Concentration vs. Time

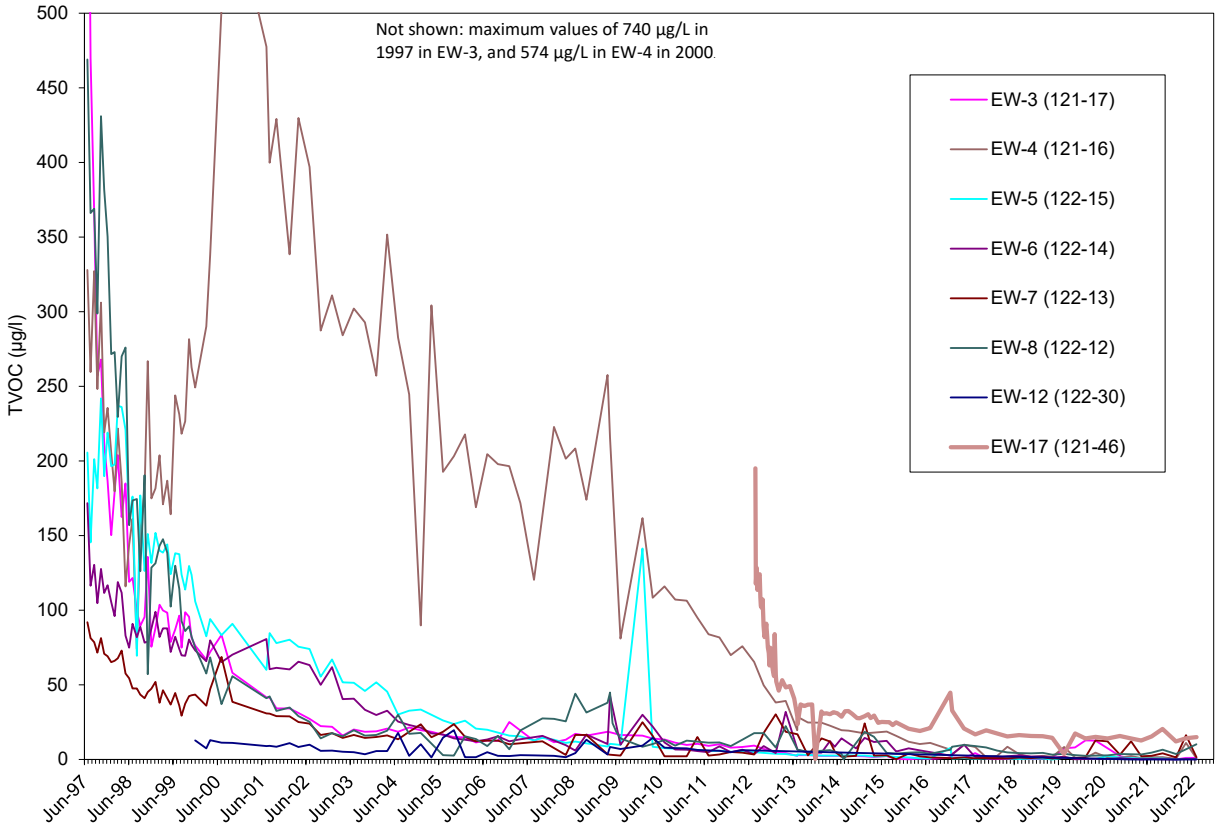


Table 3-2
OU III South Boundary Effluent Water Quality
SPDES Equivalency Permit Concentrations July 1 through September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	**Monitor**	**1,291,710[1]**	**GPD**	**Continuous**
pH (range)	**6.5 - 8.5**	**6.9– 7.9[2]**	**SU**	**Monthly[3]**
Carbon Tetrachloride	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Chloroform	**7**	**<0.50**	**µg/L**	**Monthly[3]**
Dichlorodifluoromethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1-Dichloroethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1-Dichloroethylene	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Methyl Chloride	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Tetrachloroethylene	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Toluene	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1,1-Trichloroethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1,2 Trichloroethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Trichloroethylene	**10**	**<0.50**	**µg/L**	**Monthly[3]**

[1] = The maximum monthly average flow rate for both the OU III South Boundary, Middle Road, and Western South Boundary Systems, during the operational period.
[2] = The minimum and maximum pH values during the operational period.
[3] = Beginning in April 2003, a SPDES modification was approved revising the pH and volatile organic sampling to once a month.

System Operations

July 2022:

Extraction well EW-17 was in full-time operation. Wells EW-3, EW-4, EW-5, EW-6, EW-7, EW-8 and EW-12 remained in standby mode. The effluent sample was taken from OU III South Boundary air stripping tower. The system treated approximately 6 million gallons of water.

August 2022:

The system operated normally for the month. Extraction well EW-17 was in full-time operation. Wells EW-3, EW-4, EW-5, EW-6, EW-7, EW-8 and EW-12 remained in standby mode. The effluent sample was taken from OU III South Boundary air stripping tower. The system treated approximately 6.8 million gallons of water.

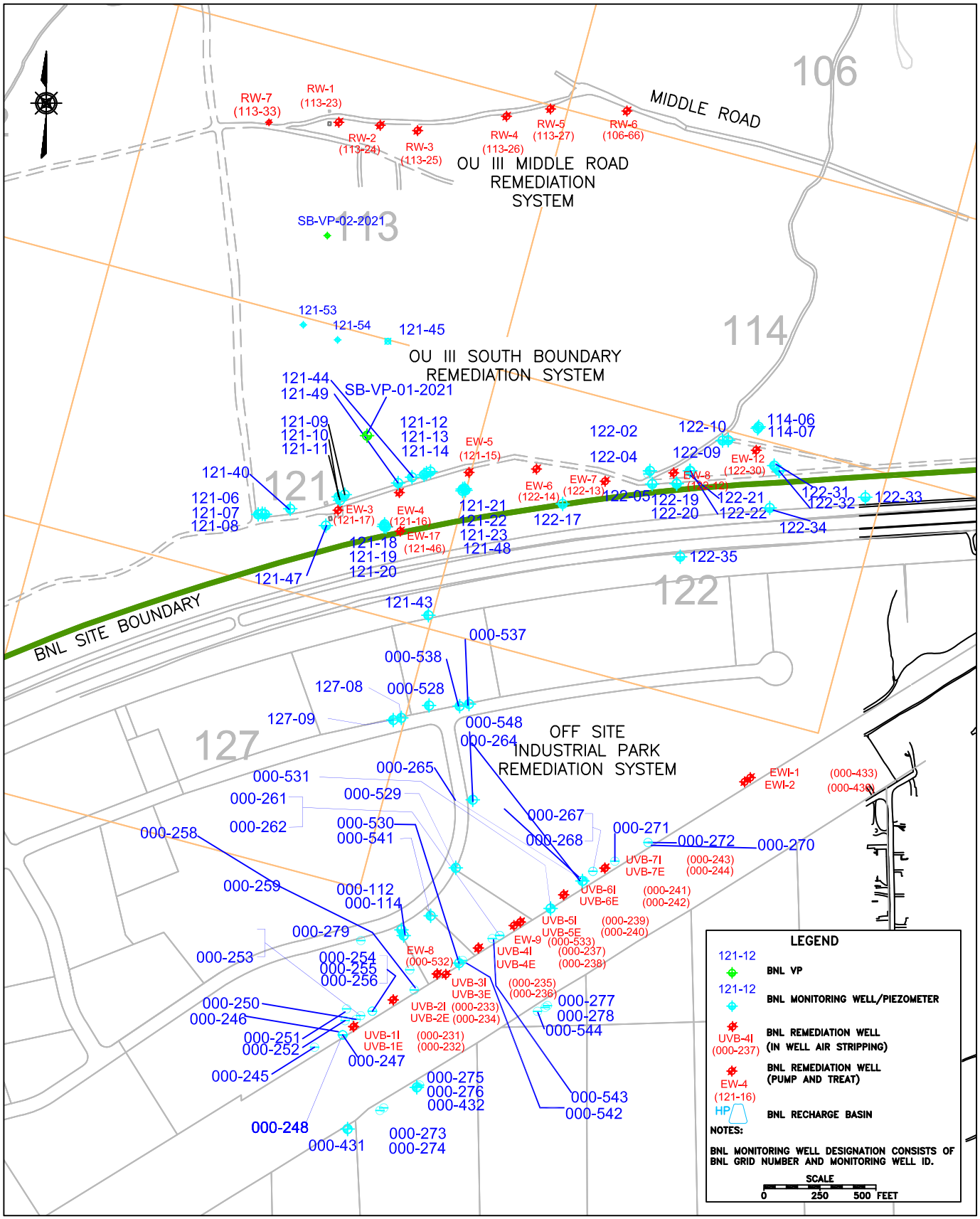
September 2022:

The system operated normally for the month. Extraction well EW-17 was in full time operation. Wells EW-3, EW-4, EW-5, EW-6, EW-7, EW-8 and EW-12 remained in standby mode. The effluent sample was taken from OU III South Boundary air stripping tower. The system treated approximately 6.8 million gallons of water.

The system treated approximately 19.6 million gallons of water during the third quarter of 2022.

Planned Operational Changes

- Maintain wells EW-3, EW-4, EW-5, EW-6, EW-7, EW-8, and EW-12 in standby mode. The system's extraction wells will continue to be sampled on a quarterly basis. The wells will be restarted if extraction or monitoring well data indicate TVOC concentrations exceed the 50 µg/L capture goal. During the third quarter, TVOC concentrations in extraction wells EW-3, EW-4 EW-5, EW-6, EW-7, and EW-8 and adjacent monitoring wells were less than 50 µg/L.
- Continue to operate well EW-17 on a full-time basis. During the third quarter, TVOC concentrations in extraction well EW-17 were less than 50 µg/L. TVOC concentrations in monitoring well 121-49, located upgradient of and at the same depth as EW-17, have remained below 50 µg/L for the last four quarters with a maximum concentration of 17 µg/L in the third quarter 2022.
- Perform groundwater modeling simulations to help evaluate the best location, extraction rates, and number of extraction wells to optimize the system and achieve cleanup goals.



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ENVIRONMENTAL PROTECTION DIVISION

TITLE: OU III SOUTH BOUNDARY/INDUSTRIAL PARK/INDUSTRIAL PARK EAST MONITORING WELL NETWORKS
SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT:HZ.:	DATE:	PROJECT NO.:
JEB	–	09/12/14	–
CHKD:	APPD:	REV.:	NOTES:
LDS	–	10/18/22	–

FIGURE NO.: 3–3

Table 3-3
OU III South Boundary Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 121-06

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	1.1	--	--	UG/L	45.00		
Chloroform	07/18/2022	1.1	0.5	--	UG/L	45.00		

Site ID : 121-12

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	2	--	--	UG/L	50.00		
Chloroform	07/18/2022	2	0.5	--	UG/L	50.00		

Site ID : 121-18

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	2.5	--	--	UG/L	70.00		
Chloroform	07/18/2022	2.5	0.5	--	UG/L	70.00		

Site ID : 121-21

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	1.1	--	--	UG/L	70.00		
Chloroform	07/18/2022	1.1	0.5	--	UG/L	70.00		

Site ID : 121-49

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	17.2	--	--	UG/L	215.00		
Carbon tetrachloride	07/18/2022	0.48	0.5	--	UG/L	215.00	J	
Chloroform	07/18/2022	0.46	0.5	--	UG/L	215.00	J	
Tetrachloroethylene	07/18/2022	16	0.5	--	UG/L	215.00		
Trichloroethylene	07/18/2022	0.26	0.5	--	UG/L	215.00	J	

Site ID : 121-53

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/20/2022	148.51	--	--	UG/L	229.00		
1,1,1-Trichloroethane	07/20/2022	2.1	0.5	--	UG/L	229.00		
1,1,2,2-Tetrachloroethane	07/20/2022	0.2	0.5	--	UG/L	229.00	J	
1,1-Dichloroethane	07/20/2022	0.47	0.5	--	UG/L	229.00	J	
1,1-Dichloroethylene	07/20/2022	2.3	0.5	--	UG/L	229.00		
Carbon tetrachloride	07/20/2022	19	0.5	--	UG/L	229.00		
Chloroform	07/20/2022	1.6	0.5	--	UG/L	229.00		
Dichlorodifluoromethane	07/20/2022	0.34	0.5	--	UG/L	229.00	J	
Tetrachloroethylene	07/20/2022	120	0.5	--	UG/L	229.00	E	
Trichloroethylene	07/20/2022	2.5	0.5	--	UG/L	229.00		

Table 3-3
OU III South Boundary Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 121-54

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/20/2022	101.74	--	--	UG/L	220.00		
1,1,1-Trichloroethane	07/20/2022	0.61	0.5	--	UG/L	220.00		
1,1-Dichloroethylene	07/20/2022	0.57	0.5	--	UG/L	220.00		
Carbon tetrachloride	07/20/2022	16	0.5	--	UG/L	220.00		
Chloroform	07/20/2022	0.67	0.5	--	UG/L	220.00		
Tetrachloroethylene	07/20/2022	83	2	--	UG/L	220.00	D	
Trichloroethylene	07/20/2022	0.89	0.5	--	UG/L	220.00		

Site ID : 122-10

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	0.63	--	--	UG/L	154.50		
Chloroform	07/18/2022	0.41	0.5	--	UG/L	154.50	J	
Tetrachloroethylene	07/18/2022	0.22	0.5	--	UG/L	154.50	J	

Table 3-4
OU III South Boundary Extraction Well Data
'Hits Only' July through September 2022

Site ID : 121-15 (EW-5)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	0.37	--	--	UG/L	0.00		
Chloroform	07/14/2022	0.37	0.5	--	UG/L	0.00	J	

Site ID : 121-16 (EW-4)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	0.82	--	--	UG/L	0.00		
Chloroform	07/14/2022	0.28	0.5	--	UG/L	0.00	J	
Tetrachloroethylene	07/14/2022	0.54	0.5	--	UG/L	0.00		

Site ID : 121-17 (EW-3)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	1.11	--	--	UG/L	0.00		
Chloroform	07/14/2022	0.33	0.5	--	UG/L	0.00	J	
Methyl tert-butyl ether	07/14/2022	0.48	0.5	--	UG/L	0.00	J	
Tetrachloroethylene	07/14/2022	0.3	0.5	--	UG/L	0.00	J	

Site ID : 121-46 (EW-17)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	14.97	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/14/2022	0.36	0.5	--	UG/L	0.00	J	
1,1-Dichloroethylene	07/14/2022	0.41	0.5	--	UG/L	0.00	J	
Carbon tetrachloride	07/14/2022	2.2	0.5	--	UG/L	0.00		
Chloroform	07/14/2022	0.61	0.5	--	UG/L	0.00		
Tetrachloroethylene	07/14/2022	11	0.5	--	UG/L	0.00		
Trichloroethylene	07/14/2022	0.39	0.5	--	UG/L	0.00	J	

Site ID : 122-12 (EW-8)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	10.15	--	--	UG/L	0.00		
cis-1,2-Dichloroethylene	07/14/2022	2.9	0.5	--	UG/L	0.00		
Methylene chloride	07/14/2022	1.4	0.5	--	UG/L	0.00		
Tetrachloroethylene	07/14/2022	5	0.5	--	UG/L	0.00		
Toluene	07/14/2022	0.35	0.5	--	UG/L	0.00	J	
Trichloroethylene	07/14/2022	0.5	0.5	--	UG/L	0.00		

Site ID : 122-13 (EW-7)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	1.61	--	--	UG/L	0.00		

Table 3-4
OU III South Boundary Extraction Well Data
'Hits Only' July through September 2022

Site ID : 122-13 (EW-7)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Chloroform	07/14/2022	0.31	0.5	--	UG/L	0.00	J	
cis-1,2-Dichloroethylene	07/14/2022	0.32	0.5	--	UG/L	0.00	J	
Dichlorodifluoromethane	07/14/2022	0.24	0.5	--	UG/L	0.00	J	
Tetrachloroethylene	07/14/2022	0.74	0.5	--	UG/L	0.00		

Site ID : 122-14 (EW-6)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	0.24	--	--	UG/L	0.00		
Tetrachloroethylene	07/14/2022	0.24	0.5	--	UG/L	0.00	J	

Table 3-5
OU III South Boundary Influent Data
'Hits Only' July through September 2022

Site ID : 121-41 (System Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	8.21	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/14/2022	0.27	0.5	--	UG/L	0.00	J	
1,1-Dichloroethylene	07/14/2022	0.33	0.5	--	UG/L	0.00	J	
Carbon tetrachloride	07/14/2022	0.8	0.5	--	UG/L	0.00		
Chloroform	07/14/2022	0.39	0.5	--	UG/L	0.00	J	
cis-1,2-Dichloroethylene	07/14/2022	0.37	0.5	--	UG/L	0.00	J	
Tetrachloroethylene	07/14/2022	5.8	0.5	--	UG/L	0.00		
Trichloroethylene	07/14/2022	0.25	0.5	--	UG/L	0.00	J	
8260 TVOC	08/05/2022	14.88	--	--	UG/L	0.00		
1,1,1-Trichloroethane	08/05/2022	0.37	0.5	--	UG/L	0.00	J	
1,1-Dichloroethylene	08/05/2022	0.38	0.5	--	UG/L	0.00	J	
Carbon tetrachloride	08/05/2022	2.1	0.5	--	UG/L	0.00		
Chloroform	08/05/2022	0.64	0.5	--	UG/L	0.00		
Tetrachloroethylene	08/05/2022	11	0.5	--	UG/L	0.00		
Trichloroethylene	08/05/2022	0.39	0.5	--	UG/L	0.00	J	
8260 TVOC	09/07/2022	14.86	--	--	UG/L	0.00		
1,1,1-Trichloroethane	09/07/2022	0.39	0.5	--	UG/L	0.00	J	
1,1-Dichloroethylene	09/07/2022	0.39	0.5	--	UG/L	0.00	J	
Carbon tetrachloride	09/07/2022	2	0.5	--	UG/L	0.00		
Chloroform	09/07/2022	0.64	0.5	--	UG/L	0.00		
Tetrachloroethylene	09/07/2022	11	0.5	--	UG/L	0.00		
Trichloroethylene	09/07/2022	0.44	0.5	--	UG/L	0.00	J	

Table 3-6
OU III South Boundary Effluent Data
'Hits Only' July through September 2022

Site ID : 095-126 (System Effluent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	0	--	--	UG/L	0.00		
8260 TVOC	08/05/2022	0	--	--	UG/L	0.00		
8260 TVOC	09/07/2022	0	--	--	UG/L	0.00		

Qualifiers :

J = Estimated value.

D = Compound was identified in an analysis at a secondary dilution factor.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Section 4

Q3-2022 Operations Summary
OU III Middle Road Pump and Treat System

Process: Groundwater extraction and air stripping treatment, with discharge to both the OU III and RAV recharge basins.

Goal: Reach Maximum Contaminant Levels (MCLs) in core monitoring wells in OU III within 30 years for the Upper Glacial aquifer (by 2030).

Start Date: October 23, 2001

Table 4-1
OU III Middle Road
Pumping Rates (gpm)

Extraction Well	RW-1	RW-2	RW-3	RW-4	RW-5	RW-6	RW-7
Site ID #	113-23	113-24	113-25	113-26	113-27	106-66	113-33
Screen Interval (ft bls)	90-130	170-200	228-268	150-180	150-180	188-218	202-222
Desired Flow Rate (gpm)	0*	150	125	0*	0*	0*	125
July (Avg monthly gpm)	0	136	0	0	0	0	145
August " " "	0	42	92	0	0	0	148
September " " "	0	0	131	0	0	0	114
Actual (Avg. over Qtr.)	**0**	**59**	**74**	**0**	**0**	**0**	**136**

* Extraction wells placed in standby mode: RW-4 and RW-5 (2003), RW-6 (2006), and RW-1 (2015).

Figure 4-1
OU III Middle Road
Cumulative Mass Removal of VOC's vs. Time

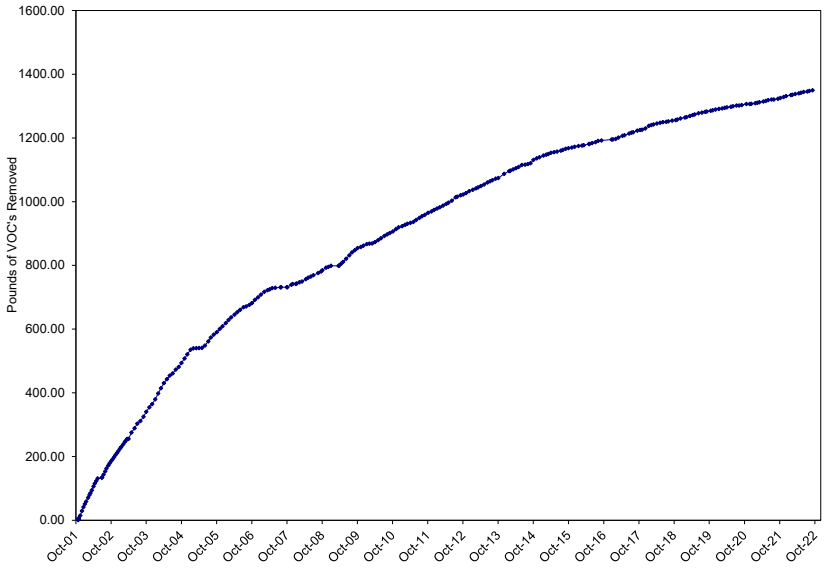


Figure 4-2
OU III Middle Road
Extraction Well TVOC Concentrations vs. Time

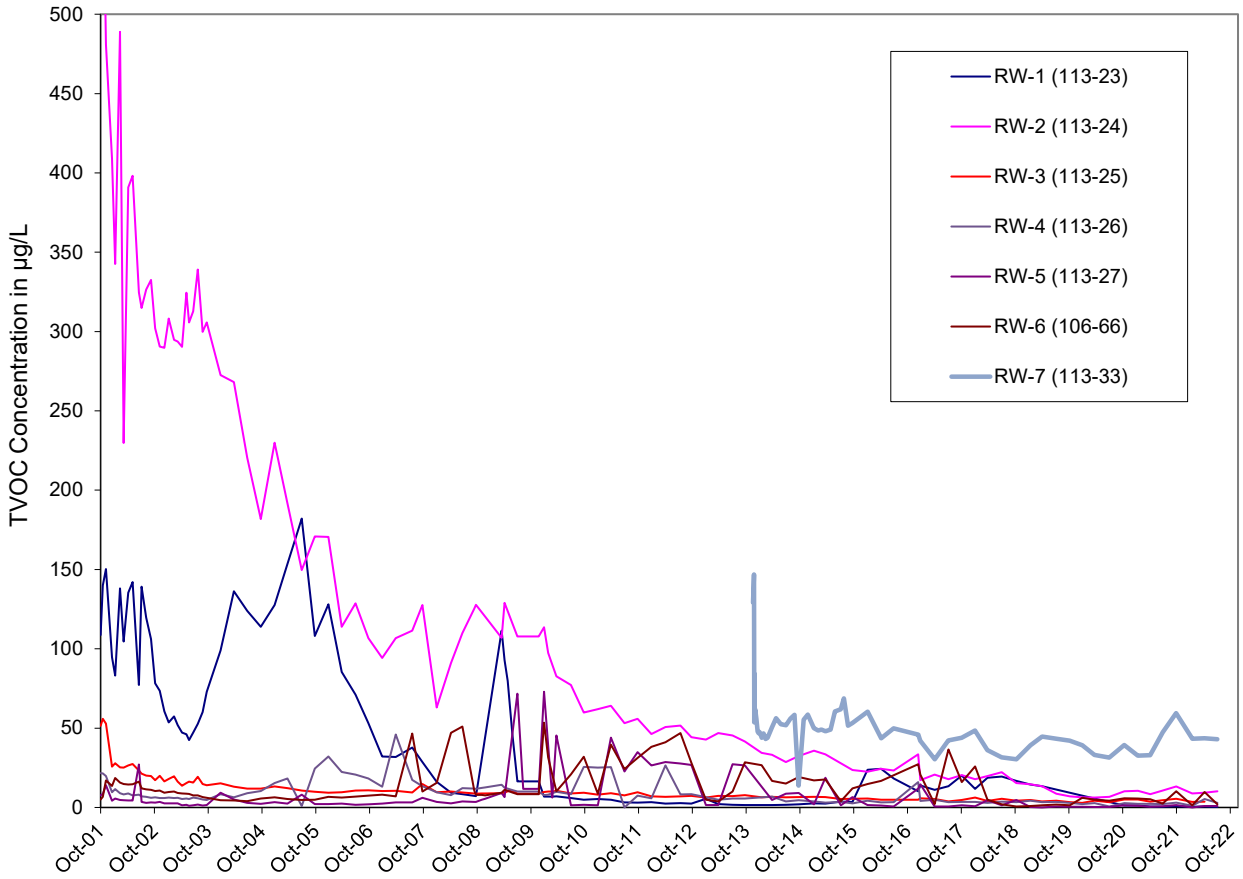


Table 4-2
OU III Middle Road Effluent Water Quality
SPDES Equivalency Permit Concentrations July 1, 2022 – September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	**Monitor**	**1,291,710[1]**	**GPD**	**Continuous**
pH (range)	**6.5 - 8.5**	**6.9– 7.9[2]**	**SU**	**Monthly[3]**
Carbon Tetrachloride	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Chloroform	**7**	**<0.50**	**µg/L**	**Monthly[3]**
Dichlorodifluoromethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1-Dichloroethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1-Dichloroethylene	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Methyl Chloride	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Tetrachloroethylene	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Toluene	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1,1-Trichloroethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1,2 Trichloroethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Trichloroethylene	**10**	**<0.50**	**µg/L**	**Monthly[3]**

[1] The maximum monthly average flow for the OU III Middle Road, South Boundary, and Western South Boundary Systems during the operational period.
[2] The minimum and maximum pH values during the operational period.
[3] Beginning in April 2003, a SPDES modification was approved revising the pH and volatile organic sampling to once a month.

System Operations

July 2022:

Extraction wells RW-2 and RW-7 were in full-time operation. Wells RW-1, RW-4, RW-5 and RW-6 remained in standby mode. Extraction well RW-3 was off for repairs during July. The effluent sample was taken from OU III South Boundary air stripping tower. The system treated approximately 12.5 million gallons of water.

August 2022:

The system operated normally for the month. Extraction wells RW-3 and RW-7 were in full-time operation. Wells RW-1, RW-4, RW-5 and RW-6 remained in standby mode.

Extraction well RW-2 was off for repairs for the majority of the month. The effluent sample was taken from OU III South Boundary air stripping tower. The system treated approximately 12.6 million gallons of water.

September 2022:

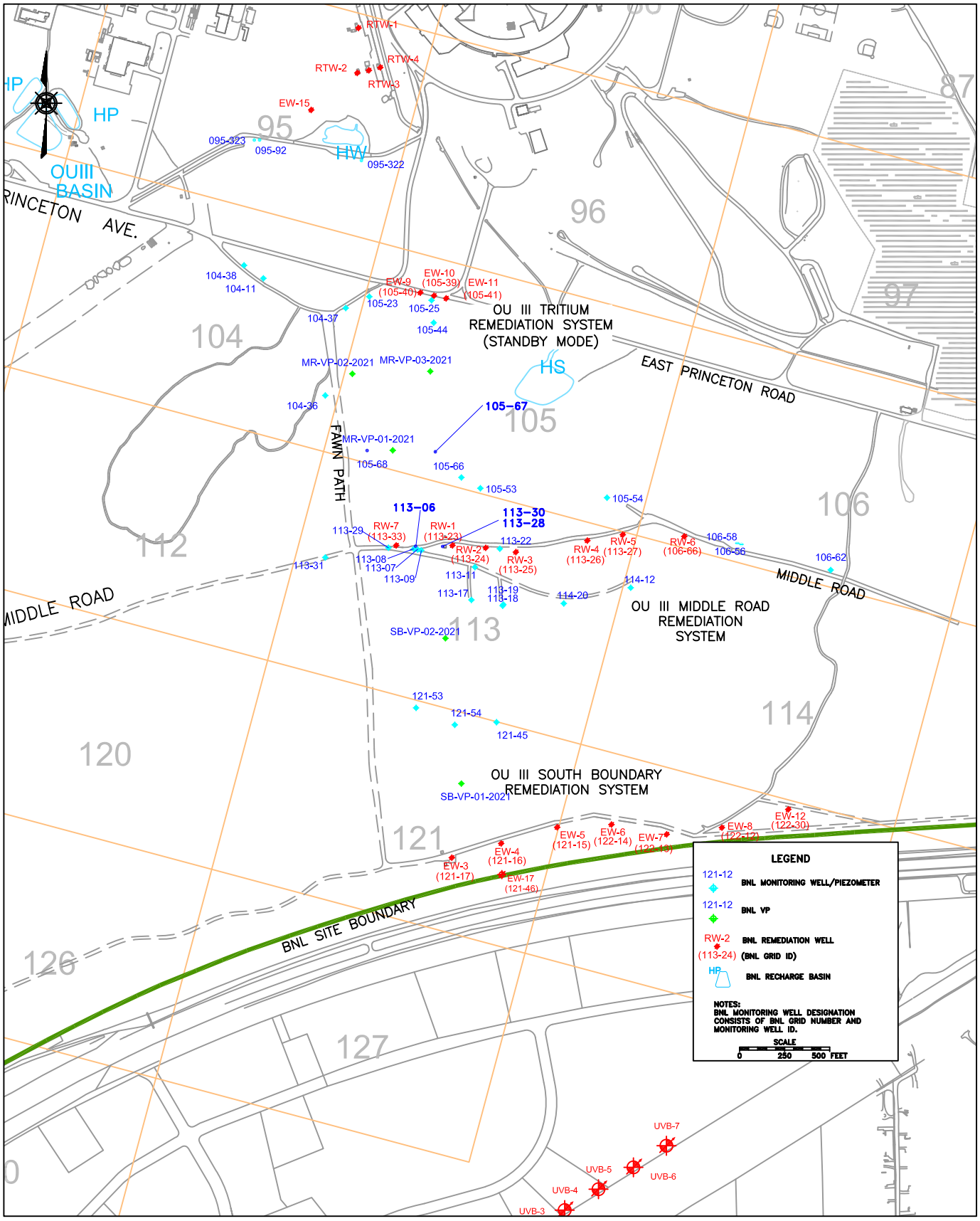
The system operated normally for the month. Extraction wells RW-3 and RW-7 were in full-time operation. Wells RW-1, RW- 4, RW-5 and RW-6 remained in standby mode. Extraction well RW-2 was off for the month for well repairs. The effluent sample was taken from OU III South Boundary air stripping tower. The system treated approximately 11 million gallons of water.

The system treated approximately 36 million gallons of water during the third quarter of 2022.

Planned Operational Changes

- Continue operation of extraction wells RW-2, RW-3 and RW-7, and maintain RW-1, RW-4, RW-5 and RW-6 in standby mode. Restart the well(s) if extraction or monitoring well data indicate that TVOC concentrations exceed the 50 µg/L capture goal. TVOC concentrations in extraction wells RW-1, RW-4, RW-5 and RW-6 and adjacent monitoring wells were below 50 µg/L in the third quarter.

- Perform groundwater modeling simulations to help evaluate the best location, extraction rates, and number of extraction wells to optimize the system and achieve cleanup goals.



\\OERNT\GIS\GW_PROJECTS\ERD_QUARTERLIES\3Q_2022\FIG 4-3.DWG

ENVIRONMENTAL PROTECTION DIVISION

TITLE:

OU III MIDDLE ROAD MONITORING WELL NETWORK

SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT:HZ.:	DATE:	PROJECT NO.:
JEB	–	02/08/07	–
CHKD:	APPD:	REV.:	NOTES:
LDS	––	10/18/22	–

FIGURE NO.: 4–3

Table 4-3
OU III Middle Road Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 095-322

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	38.91	--	--	UG/L	180.00		
1,1,1-Trichloroethane	07/13/2022	3.1	0.5	--	UG/L	180.00		
1,1-Dichloroethane	07/13/2022	0.55	0.5	--	UG/L	180.00		
1,1-Dichloroethylene	07/13/2022	6.6	0.5	--	UG/L	180.00		
Chloroform	07/13/2022	0.66	0.5	--	UG/L	180.00		
Tetrachloroethylene	07/13/2022	20	0.5	--	UG/L	180.00		
Trichloroethylene	07/13/2022	8	0.5	--	UG/L	180.00		

Site ID : 095-323

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	19.62	--	--	UG/L	205.00		
1,1,1-Trichloroethane	07/13/2022	1.8	0.5	--	UG/L	205.00		
1,1,2,2-Tetrachloroethane	07/13/2022	1.2	0.5	--	UG/L	205.00		
1,1-Dichloroethylene	07/13/2022	1.1	0.5	--	UG/L	205.00		
Chloroform	07/13/2022	0.62	0.5	--	UG/L	205.00		
Tetrachloroethylene	07/13/2022	11	0.5	--	UG/L	205.00		
Trichloroethylene	07/13/2022	3.9	0.5	--	UG/L	205.00		

Site ID : 104-37

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	102.43	--	--	UG/L	209.00		
1,1,1-Trichloroethane	07/13/2022	2.6	0.5	--	UG/L	209.00		
1,1,2,2-Tetrachloroethane	07/13/2022	1.1	0.5	--	UG/L	209.00		
1,1-Dichloroethylene	07/13/2022	4.1	0.5	--	UG/L	209.00		
Carbon tetrachloride	07/13/2022	2.5	0.5	--	UG/L	209.00		
Chloroform	07/13/2022	0.73	0.5	--	UG/L	209.00		
Tetrachloroethylene	07/13/2022	87	2	--	UG/L	209.00	D	
Trichloroethylene	07/13/2022	4.4	0.5	--	UG/L	209.00		

Site ID : 105-23

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	15.59	--	--	UG/L	180.00		
1,1,1-Trichloroethane	07/13/2022	0.2	0.5	--	UG/L	180.00	J	
1,1-Dichloroethylene	07/13/2022	0.3	0.5	--	UG/L	180.00	J	
Carbon tetrachloride	07/13/2022	0.45	0.5	--	UG/L	180.00	J	
Chloroform	07/13/2022	0.32	0.5	--	UG/L	180.00	J	

Table 4-3
OU III Middle Road Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 105-23

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Tetrachloroethylene	07/13/2022	14	0.5	--	UG/L	180.00		
Trichloroethylene	07/13/2022	0.32	0.5	--	UG/L	180.00	J	

Site ID : 105-66

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	205.88	--	--	UG/L	184.00		
1,1,1-Trichloroethane	07/14/2022	1.3	0.5	--	UG/L	184.00		
1,1,2,2-Tetrachloroethane	07/14/2022	0.45	0.5	--	UG/L	184.00	J	
1,1-Dichloroethane	07/14/2022	0.22	0.5	--	UG/L	184.00	J	
1,1-Dichloroethylene	07/14/2022	1.1	0.5	--	UG/L	184.00		
Carbon tetrachloride	07/14/2022	6.9	0.5	--	UG/L	184.00		
Chloroform	07/14/2022	0.82	0.5	--	UG/L	184.00		
Methyl tert-butyl ether	07/14/2022	0.19	0.5	--	UG/L	184.00	J	
Tetrachloroethylene	07/14/2022	190	2.5	--	UG/L	184.00	D	
Trichloroethylene	07/14/2022	4.9	0.5	--	UG/L	184.00		

Site ID : 105-67

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	71.19	--	--	UG/L	185.00		
1,1,1-Trichloroethane	07/14/2022	3.1	0.5	--	UG/L	185.00		
1,1,2,2-Tetrachloroethane	07/14/2022	0.59	0.5	--	UG/L	185.00		
1,1-Dichloroethylene	07/14/2022	2.7	0.5	--	UG/L	185.00		
Chloroform	07/14/2022	0.48	0.5	--	UG/L	185.00	J	
Methyl tert-butyl ether	07/14/2022	0.22	0.5	--	UG/L	185.00	J	
Tetrachloroethylene	07/14/2022	63	2.5	--	UG/L	185.00	D	
Trichloroethylene	07/14/2022	1.1	0.5	--	UG/L	185.00		

Site ID : 105-68

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	181.44	--	--	UG/L	205.00		
1,1,1-Trichloroethane	07/14/2022	0.67	0.5	--	UG/L	205.00		
1,1,2,2-Tetrachloroethane	07/14/2022	2.4	0.5	--	UG/L	205.00		
1,1-Dichloroethylene	07/14/2022	0.57	0.5	--	UG/L	205.00		
Carbon tetrachloride	07/14/2022	7.3	0.5	--	UG/L	205.00		
Chloroform	07/14/2022	1.2	0.5	--	UG/L	205.00		
Tetrachloroethylene	07/14/2022	160	2.5	--	UG/L	205.00	D	

Table 4-3
OU III Middle Road Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 105-68

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Trichloroethylene	07/14/2022	9.3	0.5	--	UG/L	205.00		

Site ID : 113-17

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/15/2022	21.09	--	--	UG/L	177.00		
Carbon tetrachloride	07/15/2022	0.39	0.5	--	UG/L	177.00	J	
Chloroform	07/15/2022	1.2	0.5	--	UG/L	177.00		
Tetrachloroethylene	07/15/2022	19	0.5	--	UG/L	177.00		
Trichloroethylene	07/15/2022	0.5	0.5	--	UG/L	177.00		

Site ID : 113-19

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/15/2022	26.43	--	--	UG/L	230.00		
1,1,1-Trichloroethane	07/15/2022	8.9	0.5	--	UG/L	230.00		
1,1-Dichloroethane	07/15/2022	1.1	0.5	--	UG/L	230.00		
1,1-Dichloroethylene	07/15/2022	5.4	0.5	--	UG/L	230.00		
Carbon tetrachloride	07/15/2022	5.8	0.5	--	UG/L	230.00		
Chloroform	07/15/2022	0.82	0.5	--	UG/L	230.00		
cis-1,2-Dichloroethylene	07/15/2022	0.41	0.5	--	UG/L	230.00	J	
Trichloroethylene	07/15/2022	4	0.5	--	UG/L	230.00		

Site ID : 113-30

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	7.34	--	--	UG/L	190.00		
Carbon tetrachloride	07/14/2022	1.2	0.5	--	UG/L	190.00		
Chloroform	07/14/2022	0.54	0.5	--	UG/L	190.00		
Tetrachloroethylene	07/14/2022	5.4	0.5	--	UG/L	190.00		
Trichloroethylene	07/14/2022	0.2	0.5	--	UG/L	190.00	J	

Site ID : 113-31

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	2.73	--	--	UG/L	190.00		
1,1,1-Trichloroethane	07/14/2022	1.6	0.5	--	UG/L	190.00		
1,1-Dichloroethylene	07/14/2022	0.3	0.5	--	UG/L	190.00	J	
Chloroform	07/14/2022	0.26	0.5	--	UG/L	190.00	J	
Trichloroethylene	07/14/2022	0.57	0.5	--	UG/L	190.00		

Site ID : 114-12

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/15/2022	0.93	--	--	UG/L	155.00		

Table 4-3
OU III Middle Road Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 114-12

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Chloroform	07/15/2022	0.93	0.5	--	UG/L	155.00		

Site ID : 121-53

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/20/2022	148.51	--	--	UG/L	229.00		
1,1,1-Trichloroethane	07/20/2022	2.1	0.5	--	UG/L	229.00		
1,1,2,2-Tetrachloroethane	07/20/2022	0.2	0.5	--	UG/L	229.00	J	
1,1-Dichloroethane	07/20/2022	0.47	0.5	--	UG/L	229.00	J	
1,1-Dichloroethylene	07/20/2022	2.3	0.5	--	UG/L	229.00		
Carbon tetrachloride	07/20/2022	19	0.5	--	UG/L	229.00		
Chloroform	07/20/2022	1.6	0.5	--	UG/L	229.00		
Dichlorodifluoromethane	07/20/2022	0.34	0.5	--	UG/L	229.00	J	
Tetrachloroethylene	07/20/2022	120	0.5	--	UG/L	229.00	E	
Trichloroethylene	07/20/2022	2.5	0.5	--	UG/L	229.00		

Table 4-4
OU III Middle Road Extraction Well Data
'Hits Only' July through September 2022

Site ID : 106-66 (RW-6)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	1.9	--	--	UG/L	0.00		
Chloroform	07/14/2022	0.2	0.5	--	UG/L	0.00	J	
Tetrachloroethylene	07/14/2022	1.7	0.5	--	UG/L	0.00		

Site ID : 113-23 (RW-1)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	0.35	--	--	UG/L	0.00		
Chloroform	07/14/2022	0.35	0.5	--	UG/L	0.00	J	

Site ID : 113-24 (RW-2)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	10.13	--	--	UG/L	0.00		
Carbon tetrachloride	07/14/2022	0.67	0.5	--	UG/L	0.00		
Chloroform	07/14/2022	0.53	0.5	--	UG/L	0.00		
Tetrachloroethylene	07/14/2022	8.5	0.5	--	UG/L	0.00		
Trichloroethylene	07/14/2022	0.43	0.5	--	UG/L	0.00	J	

Site ID : 113-26 (RW-4)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	2.93	--	--	UG/L	0.00		
Carbon tetrachloride	07/14/2022	0.8	0.5	--	UG/L	0.00		
Chloroform	07/14/2022	0.89	0.5	--	UG/L	0.00		
Tetrachloroethylene	07/14/2022	0.41	0.5	--	UG/L	0.00	J	
Trichloroethylene	07/14/2022	0.83	0.5	--	UG/L	0.00		

Site ID : 113-27 (RW-5)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	0.93	--	--	UG/L	0.00		
Chloroform	07/14/2022	0.93	0.5	--	UG/L	0.00		

Site ID : 113-33 (RW-7)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	42.94	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/14/2022	0.74	0.5	--	UG/L	0.00		
1,1,2,2-Tetrachloroethane	07/14/2022	0.19	0.5	--	UG/L	0.00	J	
1,1-Dichloroethylene	07/14/2022	0.26	0.5	--	UG/L	0.00	J	
Carbon tetrachloride	07/14/2022	4.5	0.5	--	UG/L	0.00		
Chloroform	07/14/2022	0.56	0.5	--	UG/L	0.00		

Table 4-4
OU III Middle Road Extraction Well Data
'Hits Only' July through September 2022

Site ID : 113-33 (RW-7)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Tetrachloroethylene	07/14/2022	36	0.5	--	UG/L	0.00		
Trichloroethylene	07/14/2022	0.69	0.5	--	UG/L	0.00		

Table 4-5
OU III Middle Road Influent Data
'Hits Only' July through September 2022

Site ID : 113-34 (Combo Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	13.73	--	--	UG/L	0.00		
1,1-Dichloroethylene	07/14/2022	0.22	0.5	--	UG/L	0.00	J	
Carbon tetrachloride	07/14/2022	1.4	0.5	--	UG/L	0.00		
Chloroform	07/14/2022	0.6	0.5	--	UG/L	0.00		
Tetrachloroethylene	07/14/2022	11	0.5	--	UG/L	0.00		
Trichloroethylene	07/14/2022	0.51	0.5	--	UG/L	0.00		
8260 TVOC	08/05/2022	21.49	--	--	UG/L	0.00		
1,1,1-Trichloroethane	08/05/2022	0.4	0.5	--	UG/L	0.00	J	
1,1-Dichloroethylene	08/05/2022	0.3	0.5	--	UG/L	0.00	J	
Carbon tetrachloride	08/05/2022	2.2	0.5	--	UG/L	0.00		
Tetrachloroethylene	08/05/2022	18	0.5	--	UG/L	0.00		
Trichloroethylene	08/05/2022	0.59	0.5	--	UG/L	0.00		
8260 TVOC	09/07/2022	21.22	--	--	UG/L	0.00		
1,1,1-Trichloroethane	09/07/2022	1.3	0.5	--	UG/L	0.00		
1,1-Dichloroethane	09/07/2022	0.28	0.5	--	UG/L	0.00	J	
1,1-Dichloroethylene	09/07/2022	0.6	0.5	--	UG/L	0.00		
Carbon tetrachloride	09/07/2022	1.9	0.5	--	UG/L	0.00		
Chloroform	09/07/2022	0.34	0.5	--	UG/L	0.00	J	
Tetrachloroethylene	09/07/2022	16	0.5	--	UG/L	0.00		
Trichloroethylene	09/07/2022	0.8	0.5	--	UG/L	0.00		

Qualifiers :

J = Estimated value.
D = Compound was identified in an analysis at a secondary dilution factor.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Section 5

Q3-2022 Operations Summary
OU III Industrial Park In-Well Air Stripping System

Process: Groundwater extraction and in-well air stripping treatment, with discharge in same well (recirculating well technology) for wells UVB-1 through UVB-7, and groundwater extraction and liquid phase granular activated carbon treatment, with discharge to injection wells for wells EW-8 and EW-9.

Goal: Reach Maximum Contaminant Levels (MCLs) in core monitoring wells within 30 years for the Upper Glacial aquifer (by 2030), and 65 years for the Magothy aquifer (by 2065).

Start Date: September 1999

Table 5-1
OU III Industrial Park
Pumping Rates (gpm)

Recirculation Treatment Well	**UVB-1**	**UVB-2**	**UVB-3**	**UVB-4**	**UVB-5**	**UVB-6**	**UVB-7**	**EW-8**	**EW-9**
Site Id #	000-231	000-233	000-235	000-237	000-239	000-241	000-243	000-532	000-533
Screened Interval (feet below grade)	220-240	195-215	194-214	170-190	180-200	190-210	205-225	230-250	220-240
Desired Flow Rate (GPM)	*0	*0	*0	*0	*0	*0	*0	**0	**0
July	*0	*0	*0	*0	*0	*0	*0	**0	**0
August	*0	*0	*0	*0	*0	*0	*0	**0	**0
September	*0	*0	*0	*0	*0	*0	*0	**0	**0
Actual (Avg.over Qtr.)	*0	*0	*0	*0	*0	*0	*0	**0	**0

Note:
*Wells UVB-1 to UVB-7 were placed in stand-by mode February 2017.
Wells EW-8 and EW-9 started full-time operation January 2015.
**Wells EW-8 and EW-9 started one month on and one month off pulsed pumping February 2018 and were placed in stand-by mode July 2019.

Figure 5-1
OU III Industrial Park
Cumulative Mass Removal of VOCs vs. Time

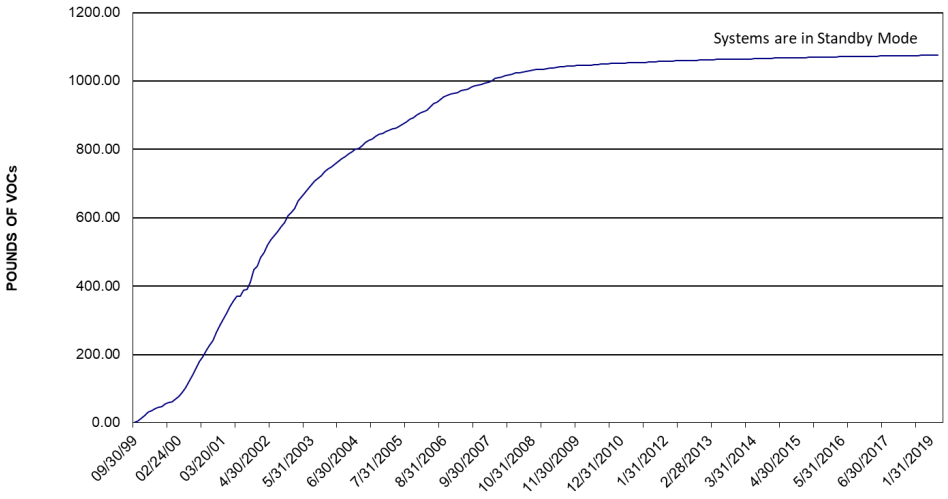
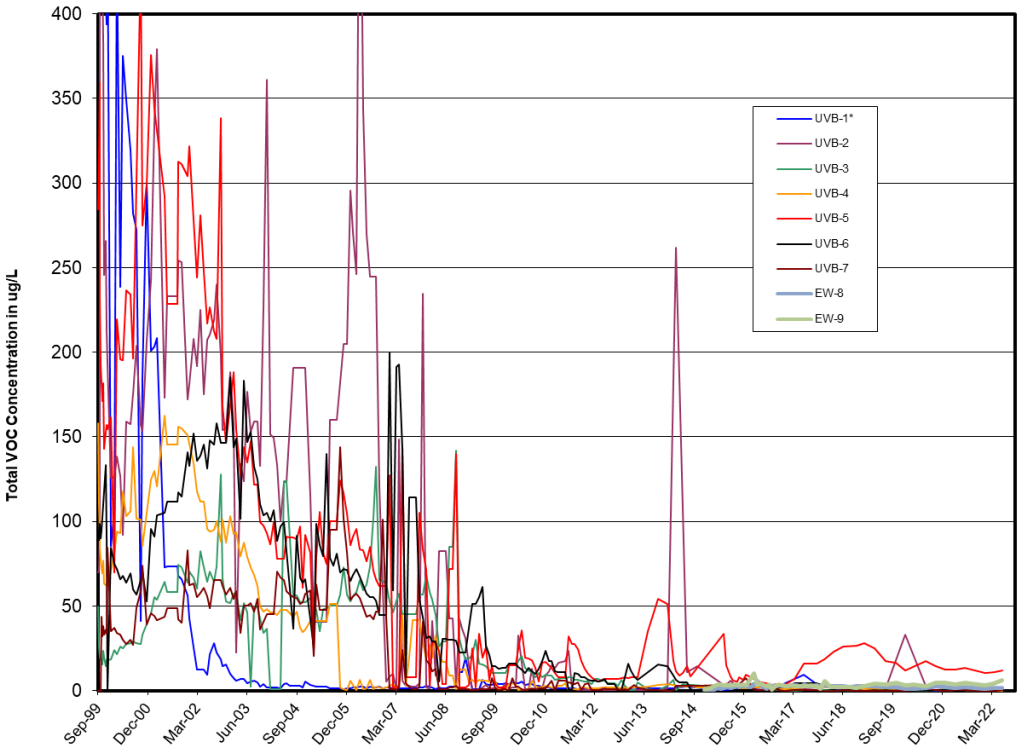


Figure 5-2
OU III Industrial Park
Influent TVOC Concentrations vs. Time



*Startup concentrations for UVB-1 are not illustrated on this graph.
TVOC concentration of 1,900 µg/L in September 1999, and 1,485 µg/L in October 1999.

Table 5-2
OU III Industrial Park Effluent Water Quality for EW-8 and EW-9
SPDES Equivalency Permit Concentrations July 1 – September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	Monitor	N/A	GPM	Continuous
pH (range)	5.0 - 8.5	N/A	SU	Weekly
Carbon Tetrachloride	5	N/A	ug/L	Monthly[1]
Chloroform	7	N/A	ug/L	Monthly[1]
1,2-Dichloroethane	0.6	N/A	ug/L	Monthly[1]
1,1-Dichloroethylene	5	N/A	ug/L	Monthly[1]
Tetrachloroethylene	5	N/A	ug/L	Monthly[1]
Trichloroethene	5	N/A	ug/L	Monthly[1]
1,1,1-Trichloroethane	5	N/A	ug/L	Monthly[1]

[1] The minimum measurement frequency shall be monthly following a period of 24 consecutive weekly sampling events showing no exceedances of the stated discharge limitations. Monthly sampling was initiated in August 2015.
NA = Not applicable since the system was placed in standby mode in July 2019.

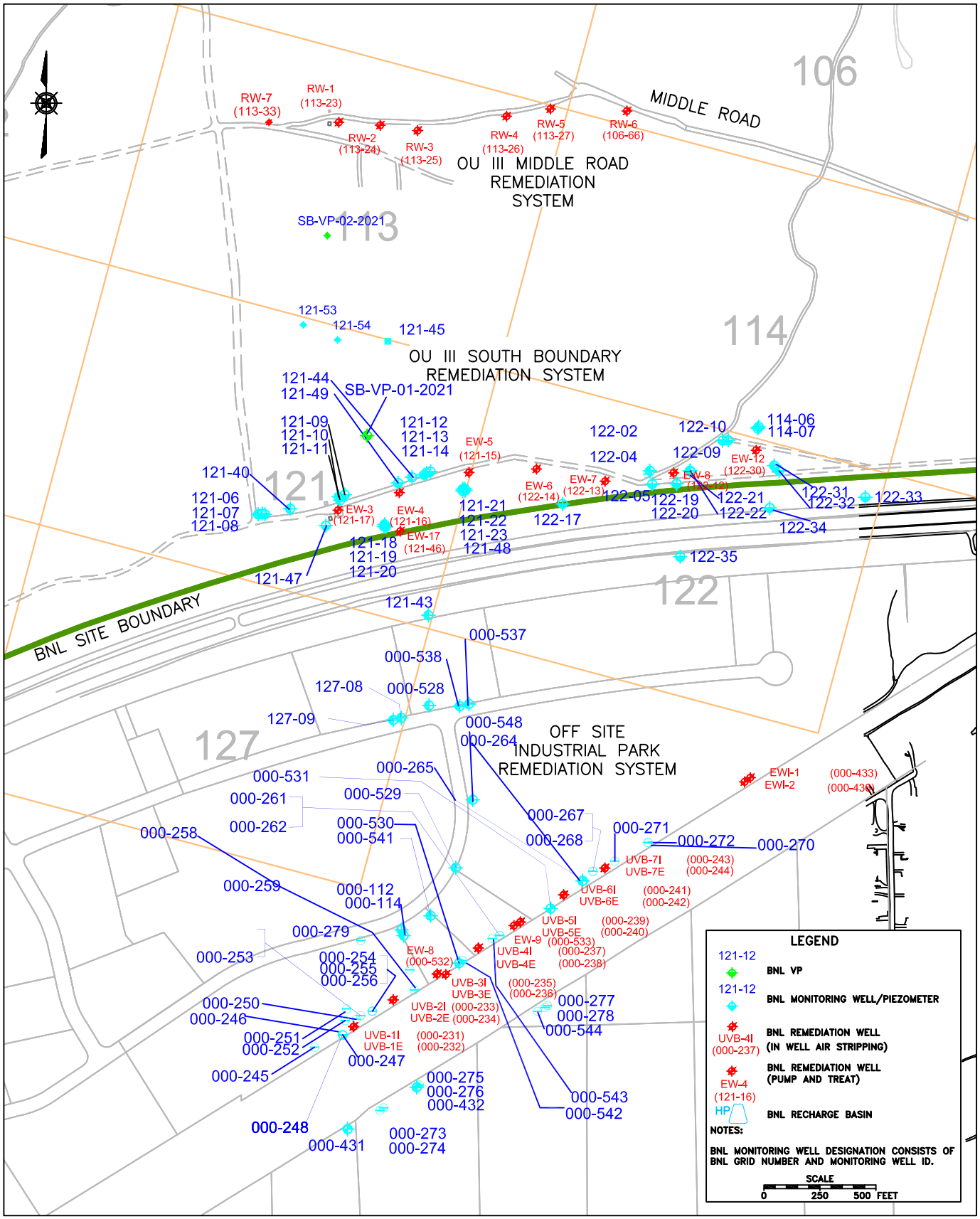
System Operation

July through September 2022:

Extraction wells UVB-1 through UVB-7, EW-8 and EW-9 remained in stand-by mode.

Planned Operational Changes

- Maintain the seven UVB wells, and EW-8 and EW-9 in standby. If TVOC concentrations exceed the 50 µg/L capture goal adjacent to any of the wells they may be restarted. During the third quarter, TVOC concentrations in treatment wells UVB-1 through UVB-7, extraction wells EW-8 and EW-9, and all but one adjacent core monitoring wells were below 50 µg/L. Monitoring well 000-541, located upgradient of EW-8 detected TVOCs up to 53 µg/L in July. The only other detection in this well above the capture goal since 2015 was in November 2021 at 54 µg/L. Quarterly monitoring of this well will continue to be evaluated.



\\OERNT\GIS\GW_PROJECTS\ERD_QUARTERLIES\3Q_2022\FIG 5-3.DWG

ENVIRONMENTAL PROTECTION DIVISION

TITLE: OU III SOUTH BOUNDARY/INDUSTRIAL PARK/INDUSTRIAL PARK EAST MONITORING WELL NETWORKS
SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT:HZ.:	DATE:	PROJECT NO.:
JEB	–	09/12/14	–
CHKD:	APPD:	REV.:	NOTES:
LDS	–	10/18/22	–

FIGURE NO.: 5–3

Table 5-3
OU III Industrial Park Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 000-112

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/02/2022	0.97	--	--	UG/L	180.00		
Chloroform	08/02/2022	0.77	0.5	--	UG/L	180.00		
Tetrachloroethylene	08/02/2022	0.2	0.5	--	UG/L	180.00	J	

Site ID : 000-249

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/02/2022	3.81	--	--	UG/L	264.00		
Carbon tetrachloride	08/02/2022	1.8	0.5	--	UG/L	264.00		
Chloroform	08/02/2022	0.64	0.5	--	UG/L	264.00		
Tetrachloroethylene	08/02/2022	1	0.5	--	UG/L	264.00		
Trichloroethylene	08/02/2022	0.37	0.5	--	UG/L	264.00	J	

Site ID : 000-253

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/02/2022	2.63	--	--	UG/L	225.50		
Chloroform	08/02/2022	1.7	0.5	--	UG/L	225.50		
Tetrachloroethylene	08/02/2022	0.93	0.5	--	UG/L	225.50		

Site ID : 000-256

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/01/2022	1.85	--	--	UG/L	222.50		
Chloroform	08/01/2022	1.3	0.5	--	UG/L	222.50		
Tetrachloroethylene	08/01/2022	0.55	0.5	--	UG/L	222.50		

Site ID : 000-259

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/01/2022	9	--	--	UG/L	202.50		
1,1,1-Trichloroethane	08/01/2022	0.49	0.5	--	UG/L	202.50	J	
1,1-Dichloroethylene	08/01/2022	0.29	0.5	--	UG/L	202.50	J	
Carbon tetrachloride	08/01/2022	0.89	0.5	--	UG/L	202.50		
Chloroform	08/01/2022	0.57	0.5	--	UG/L	202.50		
Tetrachloroethylene	08/01/2022	6.2	0.5	--	UG/L	202.50		
Trichloroethylene	08/01/2022	0.56	0.5	--	UG/L	202.50		

Site ID : 000-262

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/28/2022	6.32	--	--	UG/L	182.50		
1,1,1-Trichloroethane	07/28/2022	0.65	0.5	--	UG/L	182.50		

Table 5-3
OU III Industrial Park Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 000-262

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
1,1-Dichloroethylene	07/28/2022	0.24	0.5	--	UG/L	182.50	J	
Carbon tetrachloride	07/28/2022	0.72	0.5	--	UG/L	182.50		
Chloroform	07/28/2022	0.47	0.5	--	UG/L	182.50	J	
cis-1,2-Dichloroethylene	07/28/2022	0.84	0.5	--	UG/L	182.50		
Tetrachloroethylene	07/28/2022	2.2	0.5	--	UG/L	182.50		
Trichloroethylene	07/28/2022	1.2	0.5	--	UG/L	182.50		

Site ID : 000-268

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/03/2022	1.35	--	--	UG/L	215.50		
Chloroform	08/03/2022	0.28	0.5	--	UG/L	215.50	J	
Tetrachloroethylene	08/03/2022	0.87	0.5	--	UG/L	215.50		
Trichloroethylene	08/03/2022	0.2	0.5	--	UG/L	215.50	J	

Site ID : 000-271

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/03/2022	0.28	--	--	UG/L	215.50		
Chloroform	08/03/2022	0.28	0.5	--	UG/L	215.50	J	

Site ID : 000-279

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/27/2022	2.5	--	--	UG/L	193.00		
Chloroform	07/27/2022	1.2	0.5	--	UG/L	193.00		
Tetrachloroethylene	07/27/2022	1.3	0.5	--	UG/L	193.00		

Site ID : 000-528

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/28/2022	3.99	--	--	UG/L	220.00		
1,1,1-Trichloroethane	07/28/2022	0.24	0.5	--	UG/L	220.00	J	
Chloroform	07/28/2022	0.37	0.5	--	UG/L	220.00	J	
cis-1,2-Dichloroethylene	07/28/2022	0.35	0.5	--	UG/L	220.00	J	
Dichlorodifluoromethane	07/28/2022	0.25	0.5	--	UG/L	220.00	J	
Tetrachloroethylene	07/28/2022	2.5	0.5	--	UG/L	220.00		
Trichloroethylene	07/28/2022	0.28	0.5	--	UG/L	220.00	J	

Site ID : 000-529

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/04/2022	11.63	--	--	UG/L	215.00		

Table 5-3
OU III Industrial Park Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 000-529

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
1,1,1-Trichloroethane	08/04/2022	2.8	0.5	--	UG/L	215.00		
1,1-Dichloroethylene	08/04/2022	1.5	0.5	--	UG/L	215.00		
Carbon tetrachloride	08/04/2022	0.81	0.5	--	UG/L	215.00		
Chloroform	08/04/2022	0.52	0.5	--	UG/L	215.00		
Tetrachloroethylene	08/04/2022	4.6	0.5	--	UG/L	215.00		
Trichloroethylene	08/04/2022	1.4	0.5	--	UG/L	215.00		

Site ID : 000-530

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/02/2022	30.29	--	--	UG/L	210.00		
1,1,1-Trichloroethane	08/02/2022	17	0.5	--	UG/L	210.00		
1,1-Dichloroethane	08/02/2022	0.92	0.5	--	UG/L	210.00		
1,1-Dichloroethylene	08/02/2022	9.8	0.5	--	UG/L	210.00		
Chloroform	08/02/2022	0.59	0.5	--	UG/L	210.00		
cis-1,2-Dichloroethylene	08/02/2022	0.28	0.5	--	UG/L	210.00	J	
Trichloroethylene	08/02/2022	1.7	0.5	--	UG/L	210.00		

Site ID : 000-531

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/29/2022	25.59	--	--	UG/L	205.00		
1,1,1-Trichloroethane	07/29/2022	2	0.5	--	UG/L	205.00		
1,1-Dichloroethylene	07/29/2022	2.2	0.5	--	UG/L	205.00		
Carbon tetrachloride	07/29/2022	11	0.5	--	UG/L	205.00		
Chloroform	07/29/2022	1.5	0.5	--	UG/L	205.00		
cis-1,2-Dichloroethylene	07/29/2022	0.41	0.5	--	UG/L	205.00	J	
Tetrachloroethylene	07/29/2022	0.98	0.5	--	UG/L	205.00		
Trichloroethylene	07/29/2022	7.5	0.5	--	UG/L	205.00		

Site ID : 000-537

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/04/2022	46.94	--	--	UG/L	245.00		
1,1,1-Trichloroethane	08/04/2022	7.4	0.5	--	UG/L	245.00		
1,1-Dichloroethylene	08/04/2022	2.6	0.5	--	UG/L	245.00		
Carbon tetrachloride	08/04/2022	1.2	0.5	--	UG/L	245.00		
Chloroform	08/04/2022	0.83	0.5	--	UG/L	245.00		
cis-1,2-Dichloroethylene	08/04/2022	0.71	0.5	--	UG/L	245.00		

Table 5-3
OU III Industrial Park Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 000-537

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Tetrachloroethylene	08/04/2022	27	0.5	--	UG/L	245.00		
Trichloroethylene	08/04/2022	7.2	0.5	--	UG/L	245.00		

Site ID : 000-538

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/28/2022	19.57	--	--	UG/L	215.00		
1,1,1-Trichloroethane	07/28/2022	3.7	0.5	--	UG/L	215.00		
1,1-Dichloroethylene	07/28/2022	1.7	0.5	--	UG/L	215.00		
Carbon tetrachloride	07/28/2022	0.7	0.5	--	UG/L	215.00		
Chloroform	07/28/2022	0.5	0.5	--	UG/L	215.00		
cis-1,2-Dichloroethylene	07/28/2022	0.57	0.5	--	UG/L	215.00		
Tetrachloroethylene	07/28/2022	8.1	0.5	--	UG/L	215.00		
Trichloroethylene	07/28/2022	4.3	0.5	--	UG/L	215.00		

Site ID : 000-541

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/29/2022	53.25	--	--	UG/L	235.00		
1,1,1-Trichloroethane	07/29/2022	2.8	0.5	--	UG/L	235.00		
1,1-Dichloroethane	07/29/2022	0.54	0.5	--	UG/L	235.00		
1,1-Dichloroethylene	07/29/2022	2.3	0.5	--	UG/L	235.00		
Carbon tetrachloride	07/29/2022	17	0.5	--	UG/L	235.00		
Chloroform	07/29/2022	8.5	0.5	--	UG/L	235.00		
cis-1,2-Dichloroethylene	07/29/2022	0.31	0.5	--	UG/L	235.00	J	
Tetrachloroethylene	07/29/2022	9.8	0.5	--	UG/L	235.00		
Trichloroethylene	07/29/2022	12	0.5	--	UG/L	235.00		

Site ID : 000-544

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/27/2022	20.78	--	--	UG/L	230.00		
1,1,1-Trichloroethane	07/27/2022	9.2	0.5	--	UG/L	230.00		
1,1-Dichloroethylene	07/27/2022	6.3	0.5	--	UG/L	230.00		
Carbon tetrachloride	07/27/2022	3.7	0.5	--	UG/L	230.00		
Chloroform	07/27/2022	0.75	0.5	--	UG/L	230.00		
cis-1,2-Dichloroethylene	07/27/2022	0.23	0.5	--	UG/L	230.00	J	
Trichloroethylene	07/27/2022	0.6	0.5	--	UG/L	230.00		

Site ID : 000-548

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	09/23/2022	19.4	--	--	UG/L	235.00		

Table 5-3
OU III Industrial Park Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 000-548

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
1,1,1-Trichloroethane	09/23/2022	6.5	0.5	--	UG/L	235.00		
1,1-Dichloroethylene	09/23/2022	2.6	0.5	--	UG/L	235.00		
Carbon tetrachloride	09/23/2022	2	0.5	--	UG/L	235.00		
Chloroform	09/23/2022	0.45	0.5	--	UG/L	235.00	J	
cis-1,2-Dichloroethylene	09/23/2022	0.17	0.5	--	UG/L	235.00	J	
Tetrachloroethylene	09/23/2022	0.88	0.5	--	UG/L	235.00		
Trichloroethylene	09/23/2022	6.8	0.5	--	UG/L	235.00		

Site ID : 127-08

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/28/2022	28.97	--	--	UG/L	240.00		
1,1,1-Trichloroethane	07/28/2022	0.8	0.5	--	UG/L	240.00		
1,1-Dichloroethylene	07/28/2022	0.47	0.5	--	UG/L	240.00	J	
Carbon tetrachloride	07/28/2022	5.8	0.5	--	UG/L	240.00		
Chloroform	07/28/2022	1.3	0.5	--	UG/L	240.00		
Tetrachloroethylene	07/28/2022	19	0.5	--	UG/L	240.00		
Trichloroethylene	07/28/2022	1.6	0.5	--	UG/L	240.00		

Site ID : 127-09

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/28/2022	4.66	--	--	UG/L	225.00		
Carbon tetrachloride	07/28/2022	0.46	0.5	--	UG/L	225.00	J	
Chloroform	07/28/2022	2	0.5	--	UG/L	225.00		
Tetrachloroethylene	07/28/2022	2.2	0.5	--	UG/L	225.00		

Table 5-4
OU III Industrial Park Extraction Well Data
'Hits Only' July through September 2022

Site ID : 000-532 (EW-8)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	1.73	--	--	UG/L	253.00		
1,1,1-Trichloroethane	07/18/2022	0.82	0.5	--	UG/L	253.00		
1,1-Dichloroethane	07/18/2022	0.29	0.5	--	UG/L	253.00	J	
1,1-Dichloroethylene	07/18/2022	0.35	0.5	--	UG/L	253.00	J	
Tetrachloroethylene	07/18/2022	0.27	0.5	--	UG/L	253.00	J	

Site ID : 000-533 (EW-9)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	5.95	--	--	UG/L	243.00		
1,1,1-Trichloroethane	07/18/2022	2	0.5	--	UG/L	243.00		
1,1-Dichloroethane	07/18/2022	0.63	0.5	--	UG/L	243.00		
1,1-Dichloroethylene	07/18/2022	2.3	0.5	--	UG/L	243.00		
cis-1,2-Dichloroethylene	07/18/2022	0.17	0.5	--	UG/L	243.00	J	
Methyl tert-butyl ether	07/18/2022	0.49	0.5	--	UG/L	243.00	J	
Trichloroethylene	07/18/2022	0.36	0.5	--	UG/L	243.00	J	

Table 5-5
OU III Industrial Park Influent Data
'Hits Only' July through September 2022

Site ID : 000-231 (UVB-1 Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	0.44	--	--	UG/L	230.00		
1,1,1-Trichloroethane	07/18/2022	0.25	0.5	--	UG/L	230.00	J	
1,1-Dichloroethylene	07/18/2022	0.19	0.5	--	UG/L	230.00	J	

Site ID : 000-235 (UVB-3 Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	0.27	--	--	UG/L	204.00		
1,1,1-Trichloroethane	07/18/2022	0.27	0.5	--	UG/L	204.00	J	

Site ID : 000-237 (UVB-4 Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	0	--	--	UG/L	180.00		

Site ID : 000-239 (UVB-5 Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	12.11	--	--	UG/L	190.00		
1,1,1-Trichloroethane	07/18/2022	0.96	0.5	--	UG/L	190.00		
1,1-Dichloroethylene	07/18/2022	0.69	0.5	--	UG/L	190.00		
Carbon tetrachloride	07/18/2022	3.7	0.5	--	UG/L	190.00		
Chloroform	07/18/2022	0.66	0.5	--	UG/L	190.00		
cis-1,2-Dichloroethylene	07/18/2022	0.7	0.5	--	UG/L	190.00		
Tetrachloroethylene	07/18/2022	1.8	0.5	--	UG/L	190.00		
Trichloroethylene	07/18/2022	3.6	0.5	--	UG/L	190.00		

Site ID : 000-241 (UVB-6 Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	0.59	--	--	UG/L	200.00		
1,1,1-Trichloroethane	07/18/2022	0.34	0.5	--	UG/L	200.00	J	
1,1-Dichloroethylene	07/18/2022	0.25	0.5	--	UG/L	200.00	J	

Site ID : 000-243 (UVB-7 Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/18/2022	0.35	--	--	UG/L	215.00		
1,1,1-Trichloroethane	07/18/2022	0.35	0.5	--	UG/L	215.00	J	

Qualifiers :

J = Estimated value.
D = Compound was identified in an analysis at a secondary dilution factor.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Section 6

OU III Former Carbon Tetrachloride Pump & Treat System (System Closed)

The Draft Petition for Closure for the OU III Carbon Tetrachloride Groundwater Removal Action was submitted to the regulators for review in August 2009. Following the incorporation of EPA comments, in October 2009 the Final Petition for Closure for the OU III Carbon Tetrachloride Groundwater Removal Action was issued to the regulators. EPA and NYSDEC provided approval in October 2009. Since that time, activities have been concluded with decommissioning and dismantling of the Carbon Tetrachloride treatment system. A decommissioning report was submitted to the regulators in March 2011.

Section 7
Q3-2022 Operations Summary
OU III Building 96 Pump and Treat System

Process: Three (3) re-circulation wells each connected to an individual shallow tray air-stripping unit and one (1) well with a shallow tray air-stripping unit, with discharge to a drainage culvert and Recharge Basin HS.

Goal: Remediation of the volatile organic compounds (VOCs) in the source area and reach Maximum Contaminant Levels (MCLs) in core monitoring wells within 30 years for the Upper Glacial aquifer (by 2030).

Start Date: January 2001

Table 7-1
OU III Building 96
Pumping Rates (gpm)

Recirculation Treatment Well	RTW-1	RTW-2	RTW-3	RTW-4
Site Id #	095-151	095-153	095-155	095-157
Screen Interval (feet bls)	48-58	48-58	48-58	48-58
Desired Flow Rate (gpm)	60	0	0	0
July	0	0	0	0
August	58	0	0	0
September	0	0	0	0
Actual (Avg. over Qtr.)	**19**	**0**	**0**	**0**

Note: RTW-1 was restarted in 2008 with discharge to Basin HS. RTW-2 and RTW-3 were placed in standby mode in January 2016. RTW-4 was placed in standby mode in 2012. RTW-2 was restarted November 2018 and placed back in standby June 2020. In June 2019, RTW-1 pumping rate was increased from 30 gpm to 60 gpm. In May 2022, RTW-1 began pulsed pumping.

Figure 7-1
OU III Building 96
Cumulative Mass Removal of VOC's vs. Time

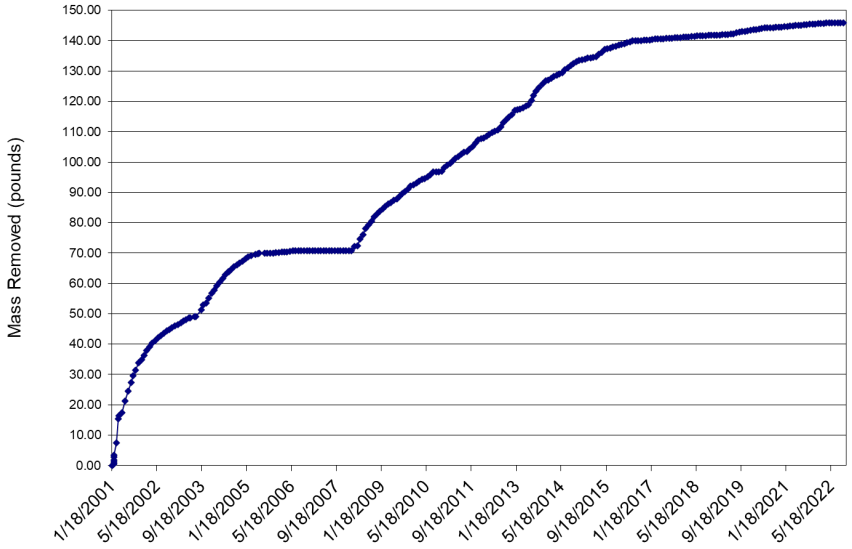


Figure 7-2
OU III Building 96
Influent TVOC Concentrations vs. Time

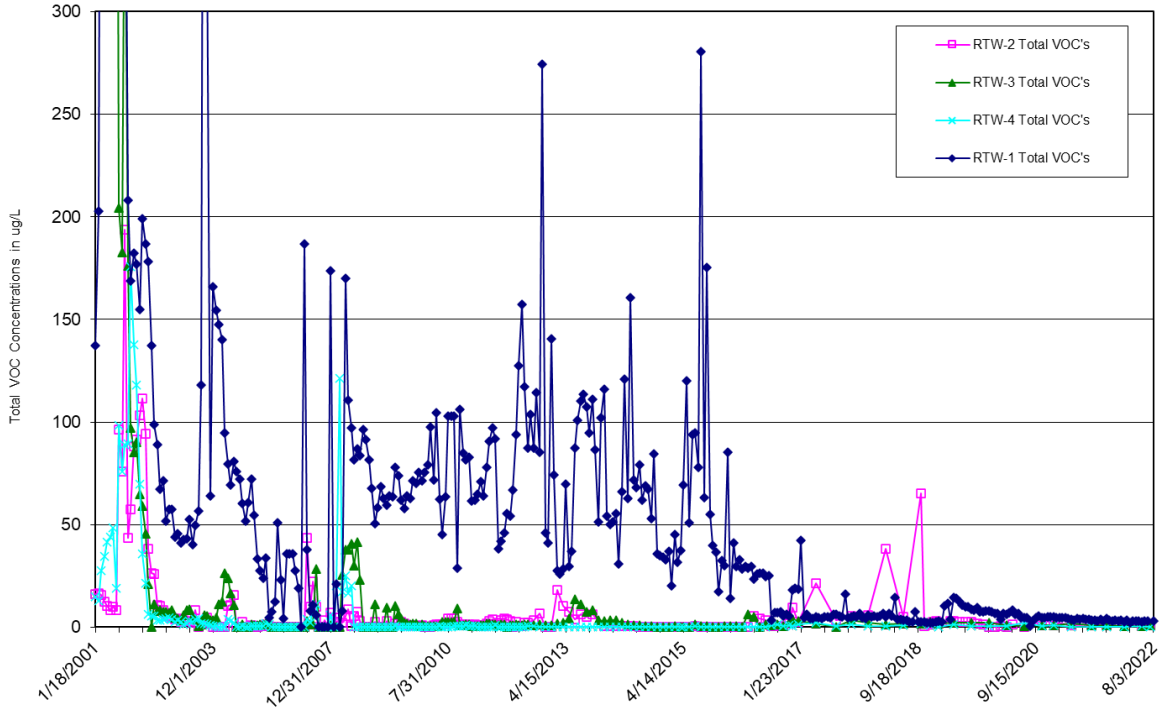


Table 7-2
Effluent Water Quality for RTW-1
SPDES Equivalency Permit Concentrations July 1, 2022– September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	65	58	GPM	Continuous
pH (range)	5.0 - 8.5	7.2 – 7.7	SU	Monthly
Tetrachloroethylene	5.0	<0.5	ug/L	Monthly
1,1,1-Trichloroethane	5.0	<0.5	ug/L	Monthly
Thallium, Total	Monitor	<2.0	ug/L	Monthly
Trichlorofluoromethane	5.0	<0.5	ug/L	Monthly
Methyl Bromide	5.0	<0.5	ug/L	Monthly
Methyl Chloride	5.0	<0.5	ug/L	Monthly
Methylene Chloride	5.0	<0.5	ug/L	Monthly
1,2-Dichloroethane	0.6	<0.5	ug/L	Monthly
Perfluorooctanesulfonic acid (PFOS)	Monitor	NS	ng/L	Quarterly
Perfluorooctanoic acid (PFOA)	Monitor	NS	ng/L	Quarterly

NS = Not sampled.
Note: In September 2022, a SPDES equivalency permit renewal was issued by NYSDEC. Sampling for PFOS and PFOA are required on a quarterly basis using EPA Method 1633 for the analysis. RTW-1 was off for pulsed pumping in September 2022, therefore PFOS and PFOA system samples were not collected this quarter.

System Operations

July 2022:

The system was off this month for pulsed pumping. Wells RTW-2, RTW-3 and RTW-4 remained in standby mode.

August 2022:

Extraction well RTW-1 ran normally for the month. Wells RTW-2, RTW-3 and RTW-4

remained in standby mode. The system treated approximately 2.5 million gallons of water.

September 2022:

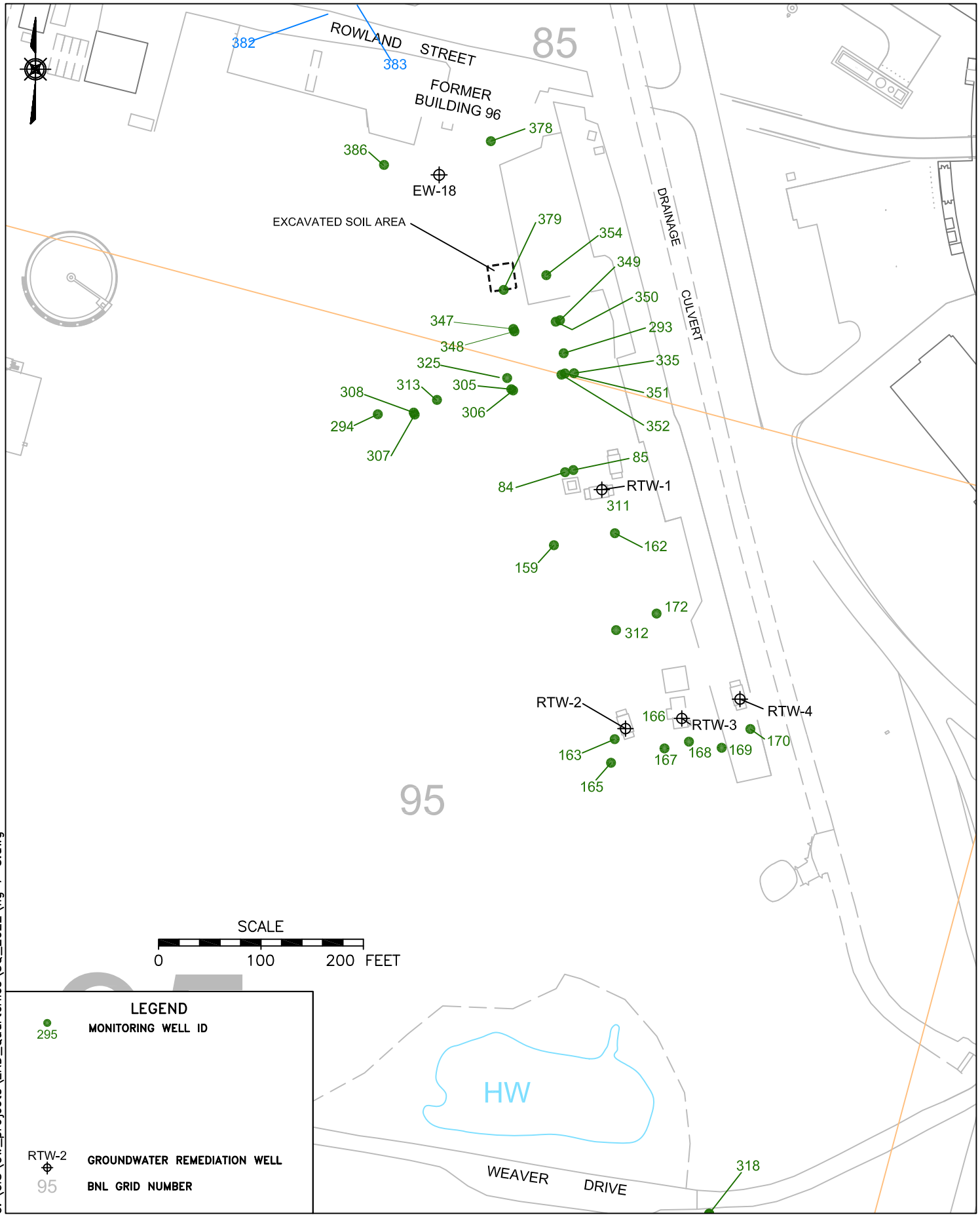
The system was off for pulsed pumping this month. Wells RTW-2, RTW-3 and RTW-4 remained in standby mode.

The system treated approximately 2.5 million gallons of water during the third quarter of 2022.

During the third quarter of 2022, the highest PCE concentration in the Building 96 monitoring wells was 89 µg/L in well 085-379. The maximum PCE detection in extraction well RTW-1 in the third quarter was 2.6 µg/L. Trichlorofluoromethane (Freon-11) was not detected in the third quarter in RTW-1 and the monitoring wells.

Planned Operational Changes

- Maintain extraction well RTW-1 in a pulsed pumping mode and operate every other month. Continue to monitor for any rebound of concentrations over the system capture goal. During the third quarter, wells 085-379 and 095-325 exceeded the 50 µg/L TVOC capture goal with concentrations of 89 µg/L and 51 µg/L, respectively. Well 085-379 is approximately 200 feet upgradient of RTW-1. Well 095-325 is located approximately 150 feet upgradient of RTW-1 and 20 feet deeper than 085-379.
- As per a recommendation in the 2021 CERCLA Five-Year Review Report, continue to closely monitor TVOC concentrations in the plume source area and evaluate/implement a liquid carbon with zero-valent iron in-situ treatment for the immediate source area.
- Maintain treatment wells RTW-2, RTW-3, and RTW-4 in standby mode, and restart the wells if extraction or monitoring well data indicate that TVOC concentrations exceed 50 µg/L. During the third quarter of 2022, the maximum TVOC concentration was 0.81 µg/L in extraction well RTW-3. Extraction wells RTW-2, RTW-3 or RTW-4 did not exceed a TVOC concentration of 50 µg/L.



ENVIRONMENTAL PROTECTION DIVISION

TITLE:

OU III BUILDING 96 MONITORING WELL NETWORK

SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	06/15/18	–
CHKD:	APPD:	REV.:	NOTES:
LDS	--	10/18/22	–

FIGURE NO.: 7-3

Table 7-3
OU III Building 96 Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 085-335

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/06/2022	14	--	--	UG/L	35.00		
Tetrachloroethylene	07/06/2022	14	0.5	--	UG/L	35.00		

Site ID : 085-348

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/06/2022	20.58	--	--	UG/L	35.00		
Chloroform	07/06/2022	0.38	0.5	--	UG/L	35.00	J	
cis-1,2-Dichloroethylene	07/06/2022	0.2	0.5	--	UG/L	35.00	J	
Tetrachloroethylene	07/06/2022	20	0.5	--	UG/L	35.00		

Site ID : 085-349

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/06/2022	14	--	--	UG/L	23.00		
Tetrachloroethylene	07/06/2022	14	0.5	--	UG/L	23.00		

Site ID : 085-350

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/06/2022	8.2	--	--	UG/L	35.00		
Tetrachloroethylene	07/06/2022	8.2	0.5	--	UG/L	35.00		

Site ID : 085-351

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/11/2022	6	--	--	UG/L	24.72		
Tetrachloroethylene	07/11/2022	6	0.5	--	UG/L	24.72		

Site ID : 085-352

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/06/2022	15	--	--	UG/L	35.00		
Tetrachloroethylene	07/06/2022	15	0.5	--	UG/L	35.00		

Site ID : 085-354

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/12/2022	13.2	--	--	UG/L	24.50		
1,1,1-Trichloroethane	07/12/2022	0.2	0.5	--	UG/L	24.50	J	
Tetrachloroethylene	07/12/2022	13	0.5	--	UG/L	24.50		

Site ID : 085-379

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/11/2022	89.49	--	--	UG/L	22.89		
1,1,1-Trichloroethane	07/11/2022	0.31	0.5	--	UG/L	22.89	J	

Table 7-3
OU III Building 96 Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 085-379

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Tetrachloroethylene	07/11/2022	89	2	--	UG/L	22.89	D	
Trichloroethylene	07/11/2022	0.18	0.5	--	UG/L	22.89	J	

Site ID : 095-159

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	45.2	--	--	UG/L	50.00		
1,1,1-Trichloroethane	07/07/2022	0.78	0.5	--	UG/L	50.00		
1,1-Dichloroethylene	07/07/2022	0.23	0.5	--	UG/L	50.00	J	
Chloroform	07/07/2022	0.19	0.5	--	UG/L	50.00	J	
Tetrachloroethylene	07/07/2022	44	0.5	--	UG/L	50.00		

Site ID : 095-162

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	1	--	--	UG/L	50.00		
Chloroform	07/07/2022	1	0.5	--	UG/L	50.00		

Site ID : 095-172

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	1.4	--	--	UG/L	50.00		
Chloroform	07/07/2022	1.4	0.5	--	UG/L	50.00		

Site ID : 095-305

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	2.1	--	--	UG/L	23.00		
Tetrachloroethylene	07/07/2022	2.1	0.5	--	UG/L	23.00		

Site ID : 095-306

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	18.33	--	--	UG/L	35.00		
cis-1,2-Dichloroethylene	07/07/2022	0.33	0.5	--	UG/L	35.00	J	
Tetrachloroethylene	07/07/2022	18	0.5	--	UG/L	35.00		

Site ID : 095-312

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	0.55	--	--	UG/L	50.00		
Chloroform	07/07/2022	0.55	0.5	--	UG/L	50.00		

Site ID : 095-318

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/08/2022	1.29	--	--	UG/L	66.00		

Table 7-3
OU III Building 96 Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 095-318

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Chloroform	07/08/2022	0.43	0.5	--	UG/L	66.00	J	
Tetrachloroethylene	07/08/2022	0.86	0.5	--	UG/L	66.00		

Site ID : 095-325

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/06/2022	51.27	--	--	UG/L	45.00		
Chloroform	07/06/2022	0.19	0.5	--	UG/L	45.00	J	
cis-1,2-Dichloroethylene	07/06/2022	0.84	0.5	--	UG/L	45.00		
Tetrachloroethylene	07/06/2022	50	2.5	--	UG/L	45.00	D	
Trichloroethylene	07/06/2022	0.24	0.5	--	UG/L	45.00	J	

Site ID : 095-84

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/08/2022	32	--	--	UG/L	35.00		
Tetrachloroethylene	07/08/2022	32	0.5	--	UG/L	35.00		

Site ID : 095-85

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/08/2022	1.4	--	--	UG/L	95.00		
Chloroform	07/08/2022	1.4	0.5	--	UG/L	95.00		

Table 7-5
OU III Building 96 Influent Data
'Hits Only' July through September 2022

Site ID : 095-151 (RTW-1 Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/03/2022	3.18	--	--	UG/L	0.00		
Chloroform	08/03/2022	0.58	0.5	--	UG/L	0.00		
Tetrachloroethylene	08/03/2022	2.6	0.5	--	UG/L	0.00		

Site ID : 095-153 (RTW-2 Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	0.84	--	--	UG/L	0.00		
Chloroform	07/07/2022	0.64	0.5	--	UG/L	0.00		
Tetrachloroethylene	07/07/2022	0.2	0.5	--	UG/L	0.00	J	

Site ID : 095-155 (RTW-3 Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	0.81	--	--	UG/L	0.00		
Chloroform	07/07/2022	0.61	0.5	--	UG/L	0.00		
Tetrachloroethylene	07/07/2022	0.2	0.5	--	UG/L	0.00	J	

Site ID : 095-157 (RTW-4 Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	0.25	--	--	UG/L	0.00		
Chloroform	07/07/2022	0.25	0.5	--	UG/L	0.00	J	

Table 7-6
OU III Building 96 Effluent Data
'Hits Only' July through September 2022

Site ID : 095-152 (RTW-1 Effluent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/03/2022	0	--	--	UG/L	0.00		
Thallium	08/03/2022	0.09	0.2	--	UG/L	0.00	B	

Qualifiers :

J = Estimated value.
D = Compound was identified in an analysis at a secondary dilution factor.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Section 8

OU IV Former Air Sparge/Soil Vapor Extraction System (System Closed)

A petition was submitted in June 2002 for closure of this project. The EPA and DEC provided their approval for system closure in July 2003. The system was decommissioned in the fall of 2003. Per the *2010 Groundwater Status Report*, groundwater monitoring related to the OU IV Air Sparge/Soil Vapor Extraction System is concluded.

Section 9

Q3-2022 Operations Summary
OU VI Ethylene Dibromide Pump & Treat System

Process: Groundwater extraction and liquid phase granular activated carbon treatment, with discharge to injection wells.

Goal: Reach the ethylene dibromide Maximum Contaminant Level (MCL) in core monitoring wells within 30 years for the Upper Glacial aquifer (by 2030).

Start Date: October 2004

Table 9-1
OU VI Ethylene Dibromide Pump and Treat System
Pumping Rates (gpm)

Extraction Well	EW-1E	EW-2E
Site Id #	000-503	000-504
Screened Interval (feet below grade)	115-135	115-135
Desired Flow Rate (GPM)	160	190
July	152	181
August	163	188
September	116	183
Actual (Avg. over Qtr.)	**144**	**184**

Figure 9-1
OU VI Cumulative Mass Removal of EDB vs. Time

Note: Due to the low concentrations of ethylene dibromide in the extraction wells, presentation of a mass removal graph is not appropriate.

Figure 9-2
OU VI Ethylene Dibromide
Influent EDB Concentration vs. Time

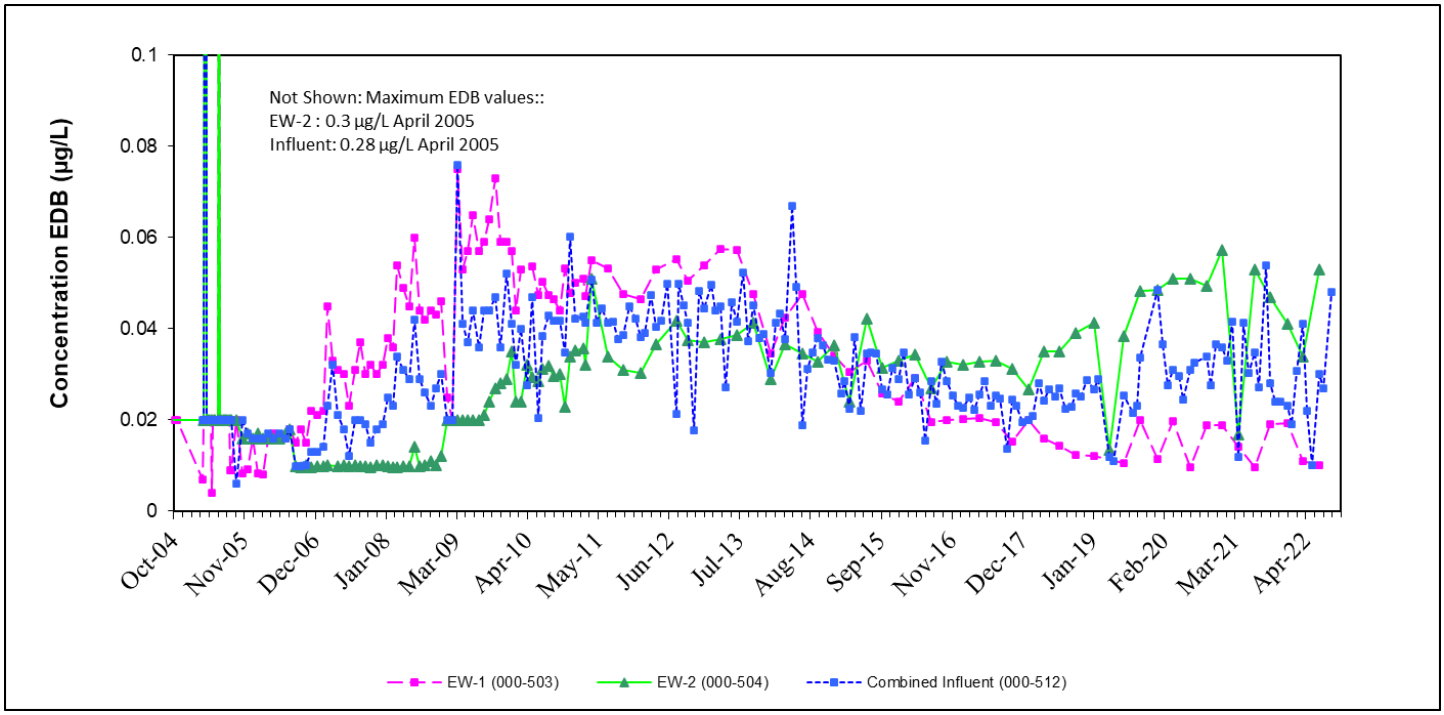


Table 9-2
OU VI Ethylene Dibromide Effluent Water Quality
SPDES Equivalency Permit Concentrations July 1, 2022 – September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	450	345	GPM	Continuous
pH	5.0 - 8.5	5.4-5.7	SU	Weekly
Ethylene Dibromide	.03	<0.02	ug/L	Monthly**
Chloroform	7.0	0.66	ug/L	Monthly**
1,1-Dichloroethene	5.0	<0.5	ug/L	Monthly**
1,1,1-Trichloroethane	5.0	<0.5	ug/L	Monthly**
Methyl Chloride	5.0	<0.5	ug/L	Monthly**
Methylene Chloride	5.0	<0.5	ug/L	Monthly**

***Minimum to maximum value for pH during this operational period.**
**** The minimum measurement frequency shall be monthly following a period of 24 consecutive weekly sampling events showing no exceedances of the stated discharge limitations.**

System Operations Summary

July 2022:

The system ran normally for the month. The system treated approximately 14 million gallons of water.

August 2022:

The system ran normally for the month. The system treated approximately 14.5 million gallons of water.

September 2022:

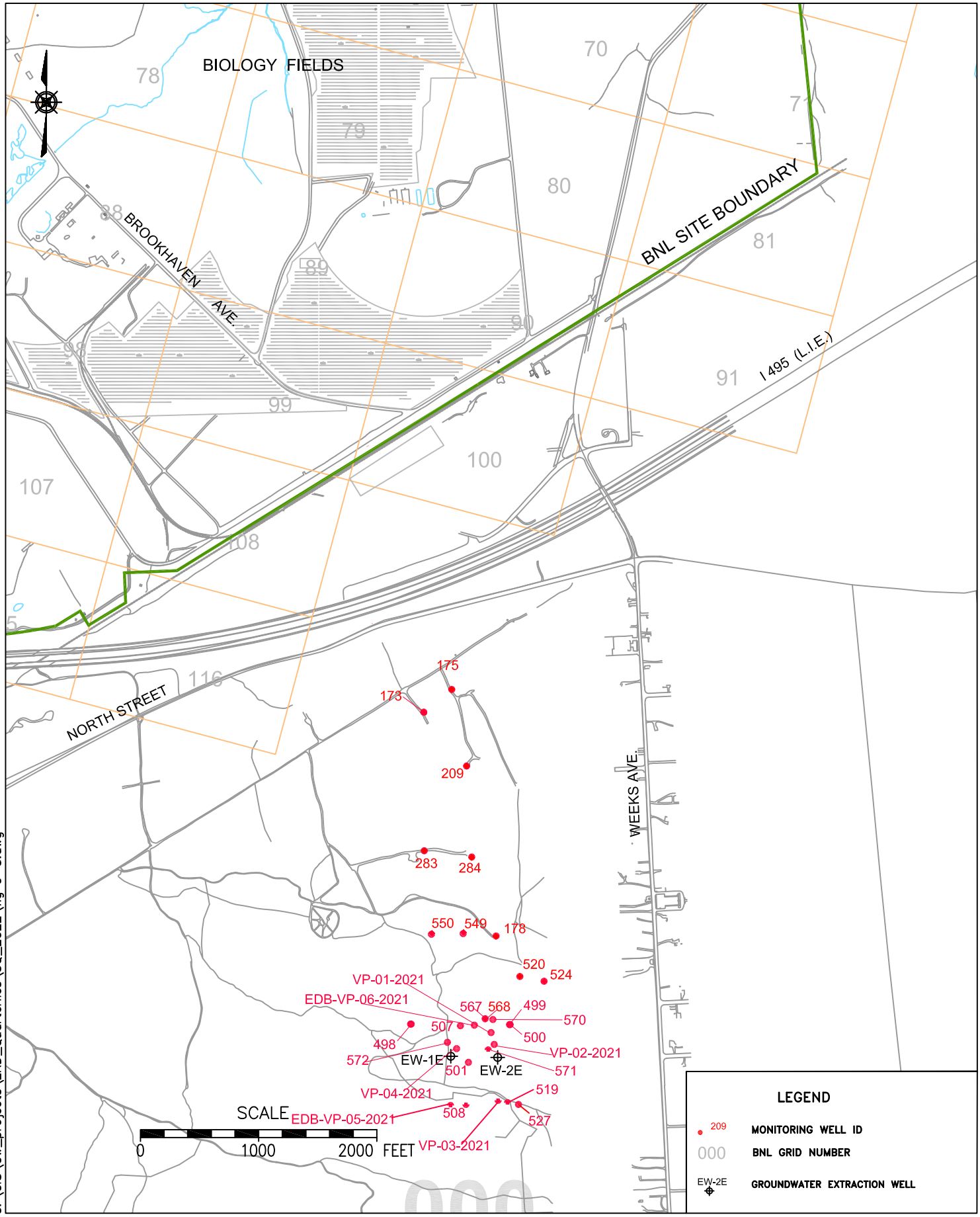
Well EW-1 was off from September 8 to September 22 to repair a leaking pipe. The system treated approximately 12.5 million gallons of water.

The system treated approximately 41 million gallons of water during the third quarter of 2022.

The regional groundwater flow model was updated to reflect the current hydrogeologic conditions for the EDB plume that the Gardiners Clay unit is not present beneath the southern portion of this plume as was previously understood. Capture analysis was completed in September 2022 and identified modifications to the current remediation system necessary for capture of the deeper portion of the plume. Solute transport modeling is being performed.

Planned Operational Changes

- Maintain full time operation of the treatment system and continue quarterly sampling of the extraction wells.
- Based on the data collected from the deeper vertical profile wells, the monitoring wells and the capture and cleanup timeframe assessment, the following is recommended:
    - Complete solute transport modeling to evaluate the number and location of new extraction wells necessary to accelerate groundwater remediation and achieve the 2030 cleanup objective for the EDB plume.
    - Following the modeling, prepare a system design modification for submittal to the regulators.



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ENVIRONMENTAL PROTECTION DIVISION

TITLE:

OU VI EDB

SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
JEB	–	09/26/05	–
CHKD:	APPD:	REV.:	NOTES:
LDS	––	10/18/22	–
FIGURE NO.:			
9–3			

Table 9-3
OU VI Ethylene Dibromide Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 000-500

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
EDB	08/15/2022	0.13	0.011	--	UG/L	135.00		

Table 9-4
OU VI Ethylene Dibromide Extraction Well Data
'Hits Only' July through September 2022

Site ID : 000-503 (EW-1)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	0.97	--	--	UG/L	0.00		
Chloroform	07/07/2022	0.97	0.5	--	UG/L	0.00		
EDB	07/07/2022	0.01	0.01	--	UG/L	0.00		

Site ID : 000-504 (EW-2)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	0.96	--	--	UG/L	0.00		
Chloroform	07/07/2022	0.96	0.5	--	UG/L	0.00		
EDB	07/07/2022	0.053	0.011	--	UG/L	0.00		

Table 9-5
OU VI Ethylene Dibromide Influent Data
'Hits Only' July through September 2022

Site ID : 000-512 (Combined Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	0.98	--	--	UG/L	0.00		
Chloroform	07/07/2022	0.98	0.5	--	UG/L	0.00		
EDB	07/07/2022	0.03	0.011	--	UG/L	0.00		
8260 TVOC	08/03/2022	0.98	--	--	UG/L	0.00		
Chloroform	08/03/2022	0.98	0.5	--	UG/L	0.00		
EDB	08/03/2022	0.027	0.01	--	UG/L	0.00		
8260 TVOC	09/14/2022	0.94	--	--	UG/L	0.00		
Chloroform	09/14/2022	0.94	0.5	--	UG/L	0.00		
EDB	09/14/2022	0.048	0.011	--	UG/L	0.00		

Table 9-6
OU VI Ethylene Dibromide Effluent Data
'Hits Only' July through September 2022

Site ID : 000-510 (System Effluent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	0	--	--	UG/L	0.00		
EDB	07/07/2022	0.011	0.011	--	UG/L	0.00	U	
EDB	07/07/2022	0.5	0.5	--	UG/L	0.00	U	
8260 TVOC	08/03/2022	0.29	--	--	UG/L	0.00		
Chloroform	08/03/2022	0.29	0.5	--	UG/L	0.00	J	
EDB	08/03/2022	0.011	0.011	--	UG/L	0.00	U	
EDB	08/03/2022	0.5	0.5	--	UG/L	0.00	U	
8260 TVOC	09/14/2022	0.66	--	--	UG/L	0.00		
Chloroform	09/14/2022	0.66	0.5	--	UG/L	0.00		
EDB	09/14/2022	0.011	0.011	--	UG/L	0.00	U	
EDB	09/14/2022	0.5	0.5	--	UG/L	0.00	U	

Qualifiers :

J = Estimated value.

D = Compound was identified in an analysis at a secondary dilution factor.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Section 10

Q-3 2022 Quarterly Operations Summary
OU III HFBR Tritium Pump and Recharge System
(System Closed)

Process: Pump and recharge (to the RAV basin) with monitored natural attenuation for tritium. Carbon filtration was also included in the pump and recharge system to remove VOCs that were also present in the groundwater.

Goal: Reach Maximum Contaminant Levels (MCLs) in core monitoring wells within 30 years for the Upper Glacial aquifer (by 2030). NYSDEC and EPA approved of the Petition for Closure in August 2018 and March 2019, respectively.

Start Date: May 1997

Table 10-1
OU III HFBR Pump and Recharge System
Pumping Rates (gpm)

Extraction Well	**EW-9**	**EW-10**	**EW-11**	**EW-16**
Site ID #	105-40	105-39	105-41	096-119
Screen Interval (ft bls)	130-150	130-150	130-150	80-120
Desired Flow Rate (gpm)	0 *	0 *	0 *	0 *
July (Avg monthly gpm)	0	0	0	0
August " "	0	0	0	0
September " "	0	0	0	0
Actual (Avg. over Qtr.)	**0**	**0**	**0**	**0**

* The system was approved for closure in March 2019.

Figure 10-1
OU III HFBR Pump & Treat System
Extraction Wells Tritium Concentrations vs. Time

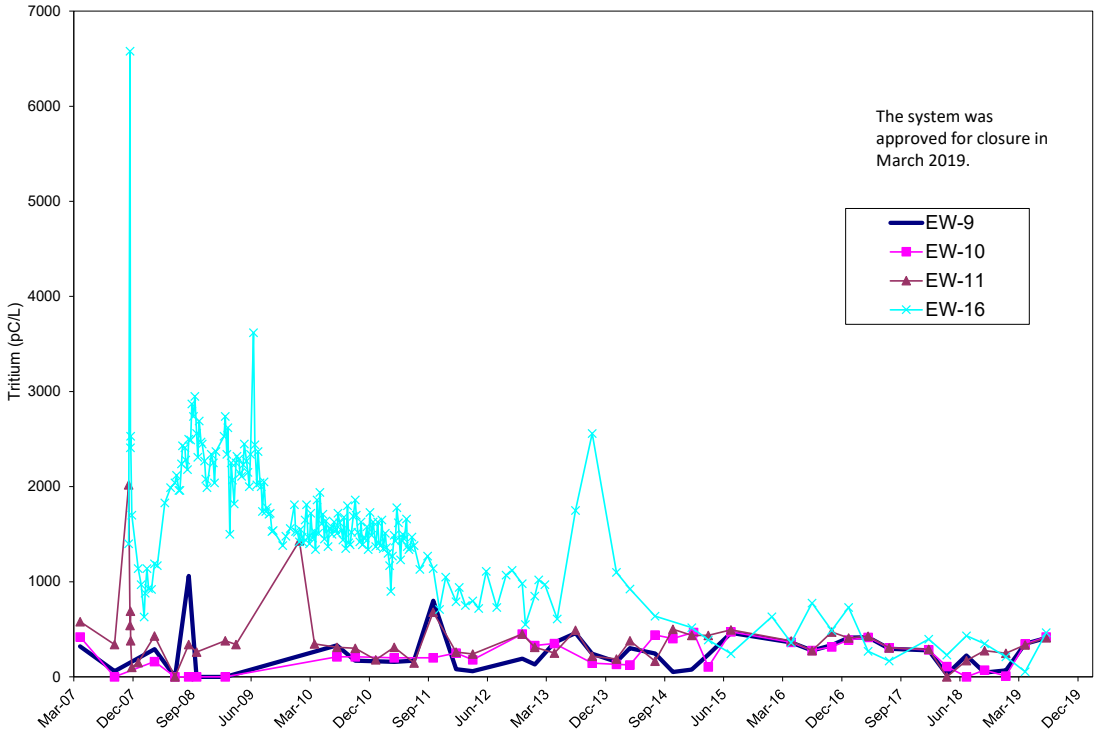


Table 10-2
Effluent Water Quality
SPDES Equivalency Permit Concentrations July 1, 2022 – September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	Monitor	NA	GPD	Continuous
pH (range)	5.6 - 8.5	NA	SU	Weekly
Carbon Tetrachloride	5.0	NA	ug/L	2/Month
Chloroform	7.0	NA	ug/L	2/Month
1,1-Dichloroethane	5.0	NA	ug/L	2/Month

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
1,2-Dichloroethane	**0.6**	**NA**	**ug/L**	**2/Month**
1,1-Dichloroethene	**5.0**	**NA**	**ug/L**	**2/Month**
Cis-1,2-Dichloroethylene	**5.0**	**NA**	**ug/L**	**2/Month**
trans-1,2-Dichloroethylene	**5.0**	**NA**	**ug/L**	**2/Month**
Methyl Chloride	**5.0**	**NA**	**ug/L**	**2/Month**
Methylene Chloride	**5.0**	**NA**	**ug/L**	**2/Month**
Methyl Bromide	**5.0**	**NA**	**ug/L**	**2/Month**
Tetrachloroethylene	**5.0**	**NA**	**ug/L**	**2/Month**
1,1,1-Trichloroethane	**5.0**	**NA**	**ug/L**	**2/Month**
Trichloroethylene	**5.0**	**NA**	**ug/L**	**2/Month**

NA = Not applicable. The system is closed.

Monitoring Activities

The current monitoring well network is depicted on **Figure 10-1**. The third quarter monitoring well analytical results are shown on **Table 10-3**. The highest tritium concentration immediately downgradient of the HFBR in the third quarter of 2022 was 4,996 pCi/L in well 075-804. Sampling of the extraction wells for this system was discontinued in July 2019.

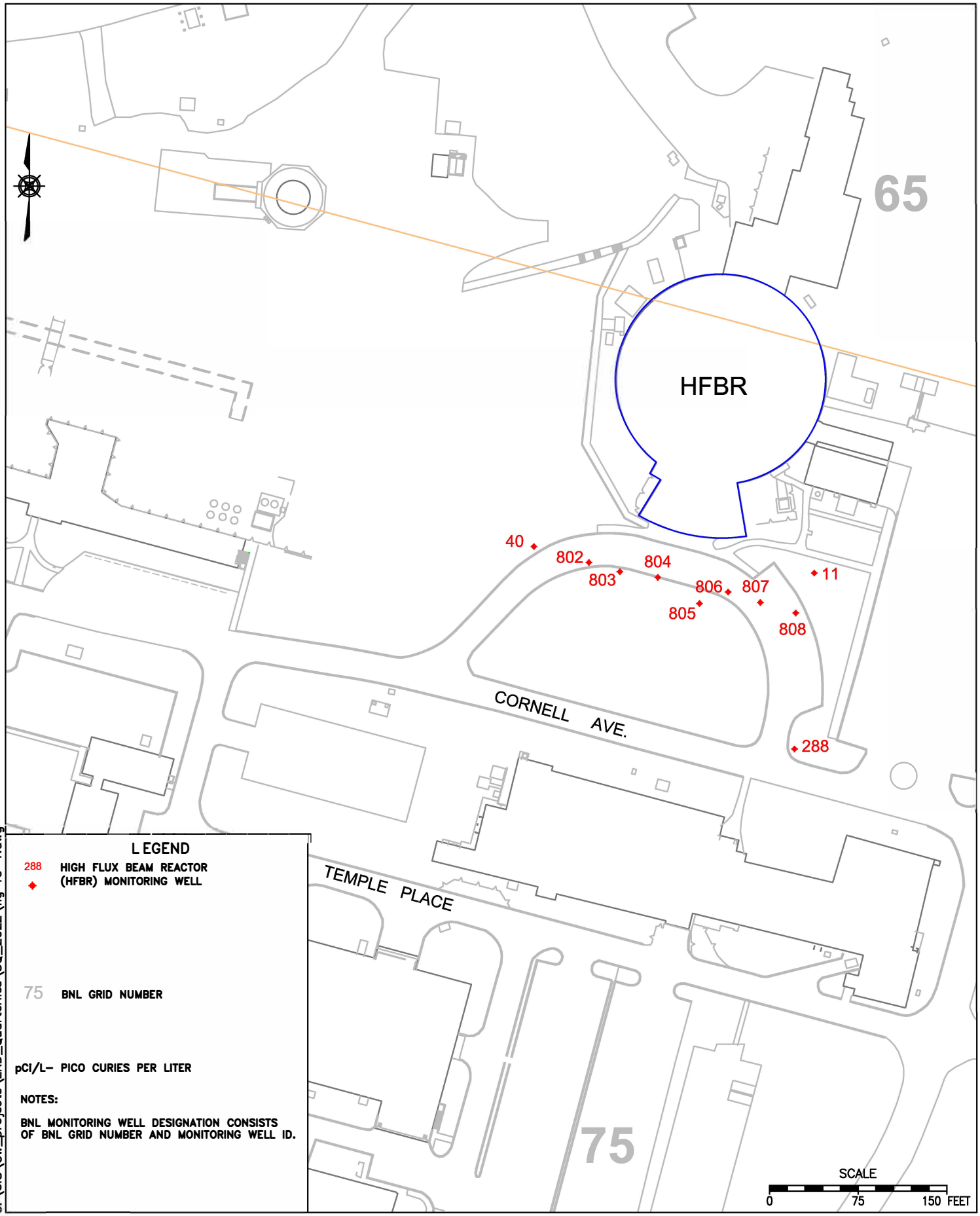
System Operations

July through September 2022:

The system remained closed.

Planned Operational Changes

- Continue to monitor the source area with the ten wells located immediately downgradient of the HFBR. Maintain the quarterly sampling frequency of the ten monitoring wells.
- Maintain the downgradient monitoring wells and extraction wells until a determination is made on their utilization related to PFAS and 1,4-dioxane.
- The carbon vessels and related equipment were repurposed for the operation of the new groundwater treatment system that will treat Per- and Poly fluoroalkyl substances downgradient of the Former Firehouse.



LEGEND

288 HIGH FLUX BEAM REACTOR (HFBR) MONITORING WELL

75 BNL GRID NUMBER

pCI/L– PICO CURIES PER LITER

NOTES:

BNL MONITORING WELL DESIGNATION CONSISTS OF BNL GRID NUMBER AND MONITORING WELL ID.

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ENVIRONMENTAL PROTECTION DIVISION

TITLE:

OU III HFBR AOC 29

THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	06/14/16	–
CHKD:	APPD:	REV.:	NOTES:
LDS	–	10/18/22	–

FIGURE NO.: 10–1

Table 10-3
OU III HFBR Tritium Plume Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 075-11

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Tritium	08/19/2022	376.493	257.397	157.981	PCI/L	61.50		N2

Site ID : 075-804

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Tritium	08/19/2022	4996.196	257.792	230.031	PCI/L	56.50		

Site ID : 075-805

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Tritium	08/19/2022	712.833	256.496	163.741	PCI/L	55.36		

Site ID : 075-806

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Tritium	08/19/2022	1090.308	257.038	170.843	PCI/L	50.90		

Qualifiers :

J = Estimated value.

D = Compound was identified in an analysis at a secondary dilution factor.

N2 = Not usable based on the results that are not distinguishable from background. The value is less than or equal to the sum of the MDA and the uncertainty or RDL.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Section 11

Q3-2022 Operations Summary
OU III Western South Boundary Pump & Treat System

Process: Groundwater extraction and air stripping treatment. As of March 2019, the water is treated at the OU III South Boundary/Middle Road air stripper towers and discharged to both the OU III and RA V recharge basins.

Goal: Reach Maximum Contaminant Levels (MCLs) in core monitoring wells in OU III within 30 years for the Upper Glacial aquifer (by 2030).

Start Date: September 2002

Table 11-1
OU III Western South Boundary Pump & Treat System
Pumping Rates (gpm)

Extraction Well	WSB-1	WSB-2	WSB-3	WSB-4	WSB-5	WSB-6
Site ID #	126-12	127-05	111-17	119-13	130-12	130-13
Screen Interval (ft bls)	140-160	150-170	168-188	170-190	160-190	196-216
Desired Flow Rate (GPM)	100	0*	75	75	75	75
July (Avg monthly gpm)	117	0	7	72	100	101
August " "	115	0	39	88	102	103
September " "	108	0	85	94	101	106
Actual (Avg. over Qtr.)	**113**	**0**	**44**	**85**	**101**	**103**

* Extraction well WSB-2 is in standby mode. Extraction wells WSB-3 through WSB-6 became operational in March 2019.

Figure 11-1
OU III Western South Boundary Pump & Treat System
Cumulative Mass Removal of VOCs vs. Time

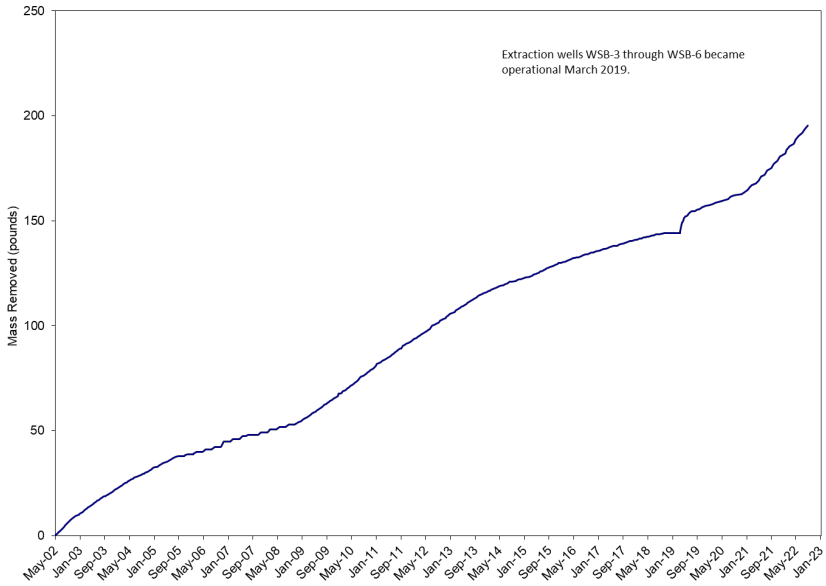


Figure 11-2
OU III Western South Boundary Pump & Treat System
Influent TVOC Concentrations vs. Time

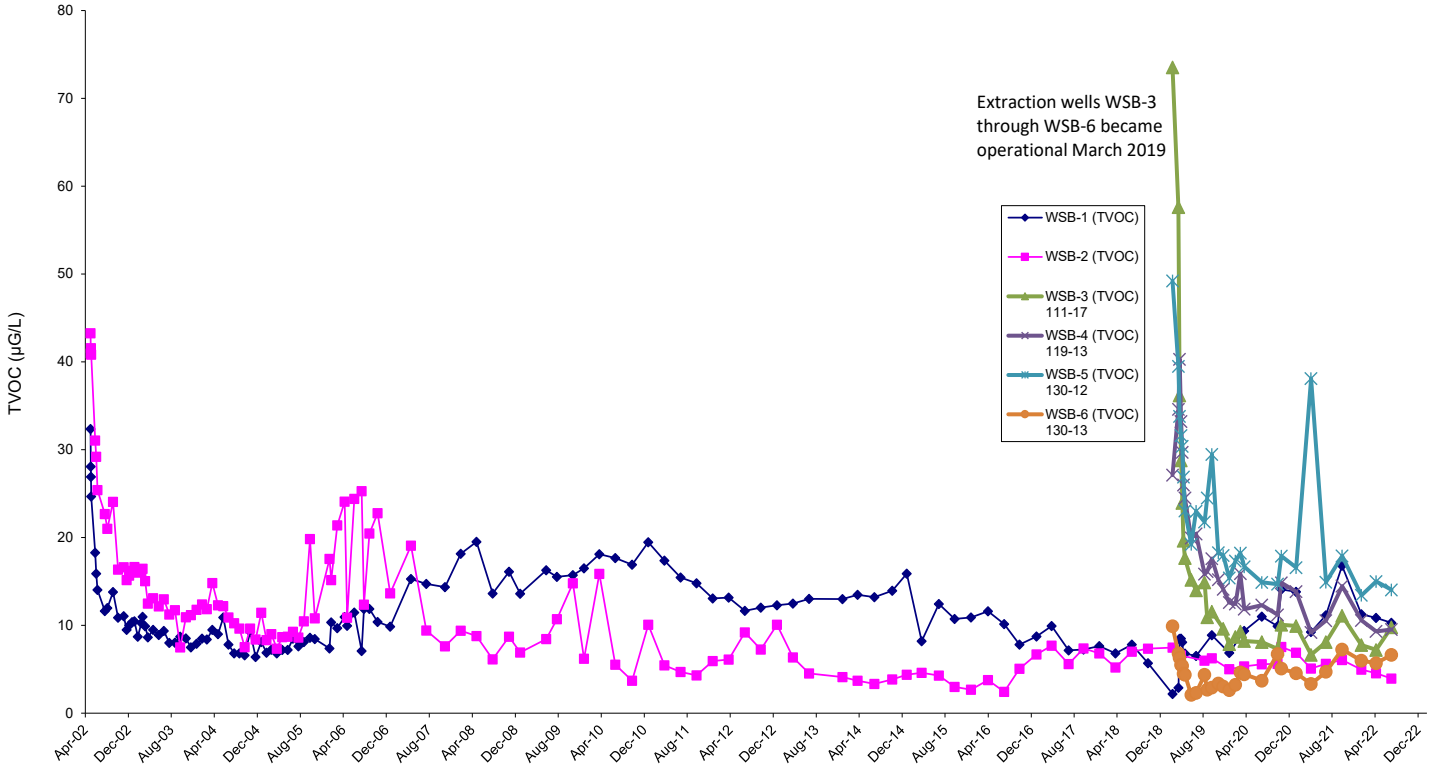


Table 11-2
OUIII Western South Boundary Effluent Water Quality
SPDES Equivalency Permit Concentrations July 1, 2022 – September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	**Monitor**	**1,291,710[1]**	**GPD**	**Continuous**
pH (range)	**6.5 - 8.5**	**6.9– 7.9[2]**	**SU**	**Monthly[3]**
Carbon Tetrachloride	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Chloroform	**7**	**<0.50**	**µg/L**	**Monthly[3]**
Dichlorodifluoromethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1-Dichloroethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1-Dichloroethylene	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Methyl Chloride	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Tetrachloroethylene	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Toluene	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1,1-Trichloroethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
1,1,2 Trichloroethane	**5**	**<0.50**	**µg/L**	**Monthly[3]**
Trichloroethylene	**10**	**<0.50**	**µg/L**	**Monthly[3]**

[1] The maximum monthly average flow for the Middle Road and South Boundary, and Western South Boundary Systems during the operational period.
[2] The minimum and maximum pH values during the operational period.
[3] Beginning in April 2003, a SPDES modification was approved revising the pH and volatile organic sampling to once a month.
Note: As of March 2019, the water from the Western South Boundary is treated at the OU III South Boundary/Middle Road air stripper towers and discharged under that equivalency permit. This change in discharge location was reflected starting with the April 2019 DMR.

System Operations

July 2022:

The system operated normally with extraction wells WSB-1, WSB-4, WSB-5 and WSB-6. Extraction well WSB-2 was in standby mode and WSB-3 was off for repairs. The effluent sample was taken from OU III South Boundary air stripping tower. The system treated approximately 18 million gallons of water.

August 2022:

Extraction well WSB-1, WSB-4, WSB-5 and WSB-6 ran normally. Extraction well WSB-2 was in standby mode and WSB-3 was off the majority of the month for repairs. The system treated approximately 20 million gallons of water.

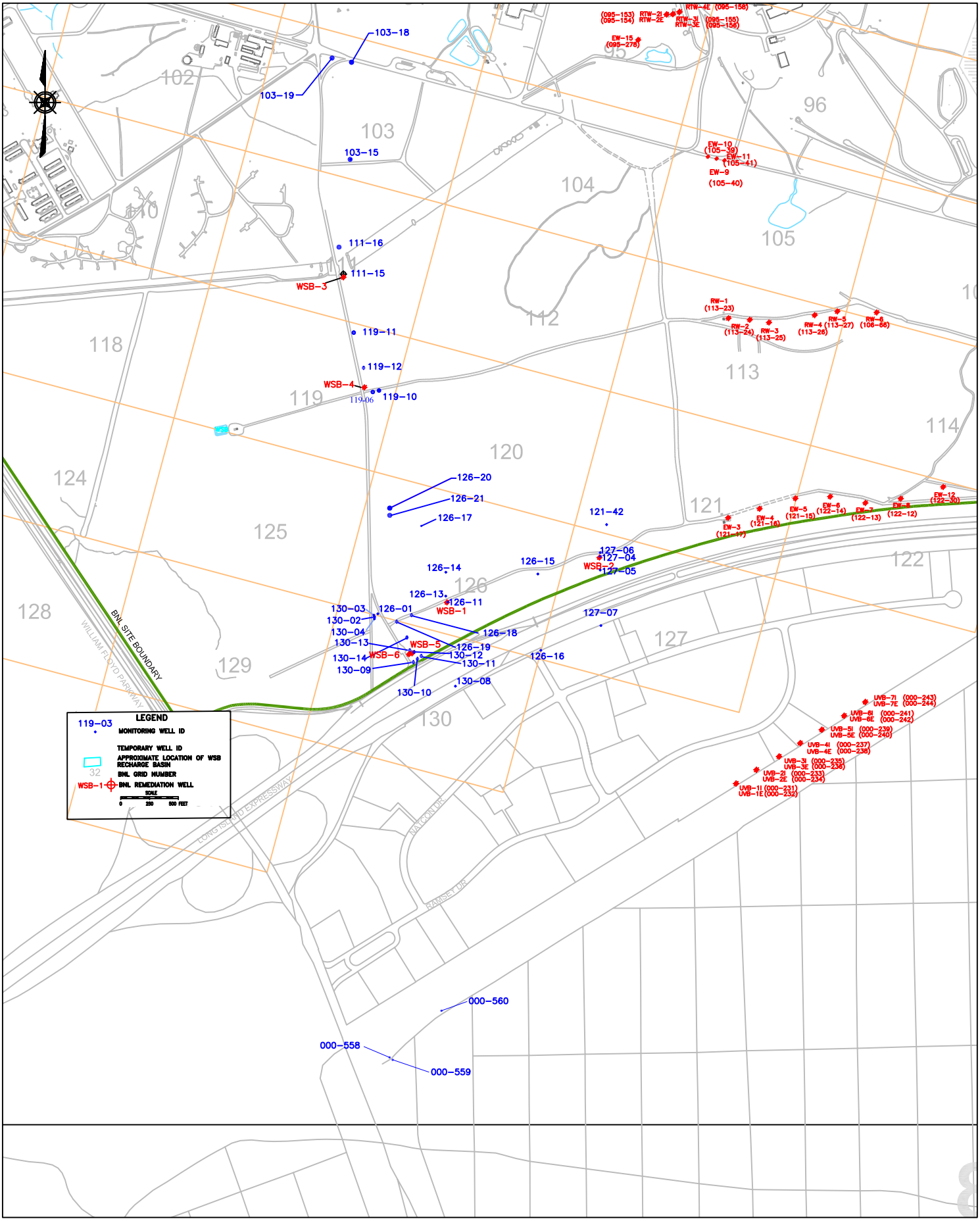
September 2022:

Extraction well WSB-1, WSB-4, WSB-5 and WSB-6 ran normally. Extraction well WSB-2 was in standby mode and WSB-3 was off for the first week of the month. The system treated approximately 22 million gallons of water.

The system treated approximately 60 million gallons of water during the third quarter of 2022.

Planned Operational Changes

- Continue full-time operation of extraction well WSB-1 based on elevated concentrations persisting in well 126-14. If TVOC concentrations drop below 20 µg/L in this monitoring well, begin pulse pumping well of WSB-1. In the second and third quarters of 2022, the TVOC concentrations in this well were 14 µg/L. TVOC concentrations will continue to be monitored through the fourth quarter to see if the results remain below 20 µg/L.
- Continue full time operation of extraction wells WSB-3 through WSB-6.
- Based on the TVOC concentrations below the capture goal of 20 µg/L, maintain extraction well WSB-2 in standby mode. If TVOC concentrations greater than 20 µg/L are observed in WSB-2 or the adjacent core monitoring wells, extraction well WSB-2 may be put into full time operation. During the third quarter, TVOC concentrations in WSB-2 were below the capture goal of 20 µg/L. The adjacent monitoring wells were not scheduled to be sampled in the third quarter.



\\OERNT\GIS\GW_PROJECTS\ERD QUARTERLIES\3Q_2022\FIG 11-3.DWG

ENVIRONMENTAL PROTECTION DIVISION

OU III WESTERN SOUTH BOUNDARY PUMP AND TREAT SYSTEM MONITORING WELL LOCATIONS

SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
JEB	–	09/26/05	–
CHKD:	APPD:	REV.:	NOTES:
LDS	--	10/18/22	–

FIGURE NO.: 11-3

Table 11-3
OU III Western South Boundary Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 000-558

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/25/2022	21.5	--	--	UG/L	165.00		
1,1,1-Trichloroethane	07/25/2022	3.1	0.5	--	UG/L	165.00		
1,1-Dichloroethane	07/25/2022	1.2	0.5	--	UG/L	165.00		
1,1-Dichloroethylene	07/25/2022	4.9	0.5	--	UG/L	165.00		
Chloroform	07/25/2022	5.1	0.5	--	UG/L	165.00		
Dichlorodifluoromethane	07/25/2022	3.4	0.5	--	UG/L	165.00		
Trichloroethylene	07/25/2022	3.8	0.5	--	UG/L	165.00		

Site ID : 000-559

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/25/2022	1.7	--	--	UG/L	215.00		
Dichlorodifluoromethane	07/25/2022	1.7	0.5	--	UG/L	215.00		

Site ID : 000-560

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/27/2022	25.5	--	--	UG/L	169.50		
1,1,1-Trichloroethane	07/27/2022	3	0.5	--	UG/L	169.50		
1,1-Dichloroethane	07/27/2022	1.1	0.5	--	UG/L	169.50		
1,1-Dichloroethylene	07/27/2022	4.6	0.5	--	UG/L	169.50		
Chloroform	07/27/2022	3.1	0.5	--	UG/L	169.50		
Dichlorodifluoromethane	07/27/2022	9.7	0.5	--	UG/L	169.50		
Trichloroethylene	07/27/2022	4	0.5	--	UG/L	169.50		

Site ID : 103-15

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/22/2022	33.1	--	--	UG/L	200.00		
1,1-Dichloroethane	07/22/2022	4.6	0.5	--	UG/L	200.00		
1,1-Dichloroethylene	07/22/2022	7.1	0.5	--	UG/L	200.00		
Dichlorodifluoromethane	07/22/2022	16	0.5	--	UG/L	200.00		
Trichloroethylene	07/22/2022	5.4	0.5	--	UG/L	200.00		

Site ID : 103-18

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/22/2022	10.49	--	--	UG/L	170.00		
1,1-Dichloroethane	07/22/2022	1.4	0.5	--	UG/L	170.00		
1,1-Dichloroethylene	07/22/2022	2.2	0.5	--	UG/L	170.00		
Dichlorodifluoromethane	07/22/2022	3.9	0.5	--	UG/L	170.00		

Table 11-3
OU III Western South Boundary Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 103-18

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Tetrachloroethylene	07/22/2022	0.19	0.5	--	UG/L	170.00	J	
Trichloroethylene	07/22/2022	2.8	0.5	--	UG/L	170.00		

Site ID : 103-19

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/22/2022	6.5	--	--	UG/L	170.00		
1,1-Dichloroethane	07/22/2022	1.3	0.5	--	UG/L	170.00		
1,1-Dichloroethylene	07/22/2022	1.4	0.5	--	UG/L	170.00		
Dichlorodifluoromethane	07/22/2022	1.4	0.5	--	UG/L	170.00		
Trichloroethylene	07/22/2022	2.4	0.5	--	UG/L	170.00		

Site ID : 111-15

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/22/2022	0.18	--	--	UG/L	175.00		
1,1-Dichloroethylene	08/22/2022	0.18	0.5	--	UG/L	175.00	J	

Site ID : 111-16

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/23/2022	4.74	--	--	UG/L	173.00		
1,1,1-Trichloroethane	08/23/2022	0.46	0.5	--	UG/L	173.00	J	
1,1-Dichloroethane	08/23/2022	0.71	0.5	--	UG/L	173.00		
1,1-Dichloroethylene	08/23/2022	1.5	0.5	--	UG/L	173.00		
Chloroform	08/23/2022	0.56	0.5	--	UG/L	173.00		
Dichlorodifluoromethane	08/23/2022	0.47	0.5	--	UG/L	173.00	J	
Tetrachloroethylene	08/23/2022	0.28	0.5	--	UG/L	173.00	J	
Trichloroethylene	08/23/2022	0.76	0.5	--	UG/L	173.00		

Site ID : 119-10

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/22/2022	8.1	--	--	UG/L	200.00		
1,1-Dichloroethane	07/22/2022	2.1	0.5	--	UG/L	200.00		
1,1-Dichloroethylene	07/22/2022	1.9	0.5	--	UG/L	200.00		
Dichlorodifluoromethane	07/22/2022	2.7	0.5	--	UG/L	200.00		
Trichloroethylene	07/22/2022	1.4	0.5	--	UG/L	200.00		

Site ID : 119-11

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/22/2022	53.97	--	--	UG/L	180.00		

Table 11-3
OU III Western South Boundary Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 119-11

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
1,1,1-Trichloroethane	08/22/2022	7.5	0.5	--	UG/L	180.00		
1,1-Dichloroethane	08/22/2022	6.5	0.5	--	UG/L	180.00		
1,1-Dichloroethylene	08/22/2022	35	0.5	--	UG/L	180.00		
1,2-Dichloroethane	08/22/2022	0.37	0.5	--	UG/L	180.00	J	
Chloroform	08/22/2022	0.17	0.5	--	UG/L	180.00	J	
Dichlorodifluoromethane	08/22/2022	0.63	0.5	--	UG/L	180.00		
Trichloroethylene	08/22/2022	3.8	0.5	--	UG/L	180.00		

Site ID : 119-12

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/23/2022	5.5	--	--	UG/L	179.00		
1,1,1-Trichloroethane	08/23/2022	2.1	0.5	--	UG/L	179.00		
1,1-Dichloroethylene	08/23/2022	1.4	0.5	--	UG/L	179.00		
Chloroform	08/23/2022	0.6	0.5	--	UG/L	179.00		
Trichloroethylene	08/23/2022	1.4	0.5	--	UG/L	179.00		

Site ID : 126-14

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/21/2022	14	--	--	UG/L	155.00		
1,1,1-Trichloroethane	07/21/2022	7.1	0.5	--	UG/L	155.00		
1,1-Dichloroethylene	07/21/2022	5.2	0.5	--	UG/L	155.00		
Trichloroethylene	07/21/2022	1.7	0.5	--	UG/L	155.00		

Site ID : 126-16

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/26/2022	15.8	--	--	UG/L	135.00		
1,1,1-Trichloroethane	07/26/2022	2	0.5	--	UG/L	135.00		
1,1-Dichloroethane	07/26/2022	0.97	0.5	--	UG/L	135.00		
1,1-Dichloroethylene	07/26/2022	3.7	0.5	--	UG/L	135.00		
Chloroform	07/26/2022	3.3	0.5	--	UG/L	135.00		
Dichlorodifluoromethane	07/26/2022	2.8	0.5	--	UG/L	135.00		
Tetrachloroethylene	07/26/2022	0.23	0.5	--	UG/L	135.00	J	
Trichloroethylene	07/26/2022	2.8	0.5	--	UG/L	135.00		

Site ID : 126-17

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/21/2022	0.33	--	--	UG/L	140.00		

Table 11-3
OU III Western South Boundary Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 126-17

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
1,1,1-Trichloroethane	07/21/2022	0.16	0.5	--	UG/L	140.00	J	
Trichloroethylene	07/21/2022	0.17	0.5	--	UG/L	140.00	J	

Site ID : 126-18

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/21/2022	1.21	--	--	UG/L	165.00		
1,1,1-Trichloroethane	07/21/2022	0.48	0.5	--	UG/L	165.00	J	
1,1-Dichloroethylene	07/21/2022	0.73	0.5	--	UG/L	165.00		

Site ID : 126-19

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/21/2022	15.23	--	--	UG/L	195.00		
1,1,1-Trichloroethane	07/21/2022	1.8	0.5	--	UG/L	195.00		
1,1-Dichloroethane	07/21/2022	2.8	0.5	--	UG/L	195.00		
1,1-Dichloroethylene	07/21/2022	4.1	0.5	--	UG/L	195.00		
Chloroform	07/21/2022	0.93	0.5	--	UG/L	195.00		
Dichlorodifluoromethane	07/21/2022	5.6	0.5	--	UG/L	195.00		

Site ID : 126-20

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/21/2022	8.85	--	--	UG/L	140.00		
1,1,1-Trichloroethane	07/21/2022	3.4	0.5	--	UG/L	140.00		
1,1-Dichloroethylene	07/21/2022	4	0.5	--	UG/L	140.00		
1,2-Dichloroethane	07/21/2022	0.23	0.5	--	UG/L	140.00	J	
Chloroform	07/21/2022	0.27	0.5	--	UG/L	140.00	J	
Tetrachloroethylene	07/21/2022	0.43	0.5	--	UG/L	140.00	J	
Trichloroethylene	07/21/2022	0.52	0.5	--	UG/L	140.00		

Site ID : 126-21

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/21/2022	1.48	--	--	UG/L	204.00		
1,1,1-Trichloroethane	07/21/2022	0.34	0.5	--	UG/L	204.00	J	
1,1-Dichloroethylene	07/21/2022	0.76	0.5	--	UG/L	204.00		
Chloroform	07/21/2022	0.38	0.5	--	UG/L	204.00	J	

Site ID : 127-07

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/26/2022	3.93	--	--	UG/L	151.00		

Table 11-3
OU III Western South Boundary Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 127-07

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
1,1,1-Trichloroethane	07/26/2022	0.64	0.5	--	UG/L	151.00		
1,1-Dichloroethane	07/26/2022	0.23	0.5	--	UG/L	151.00	J	
1,1-Dichloroethylene	07/26/2022	1	0.5	--	UG/L	151.00		
Chloroform	07/26/2022	0.75	0.5	--	UG/L	151.00		
Dichlorodifluoromethane	07/26/2022	0.85	0.5	--	UG/L	151.00		
Trichloroethylene	07/26/2022	0.46	0.5	--	UG/L	151.00	J	

Site ID : 130-08

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/26/2022	1.5	--	--	UG/L	150.00		
Chloroform	07/26/2022	1.5	0.5	--	UG/L	150.00		

Site ID : 130-09

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/25/2022	2.1	--	--	UG/L	140.00		
Chloroform	07/25/2022	2.1	0.5	--	UG/L	140.00		

Site ID : 130-10

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/25/2022	2	--	--	UG/L	155.00		
Chloroform	07/25/2022	2	0.5	--	UG/L	155.00		

Site ID : 130-11

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/26/2022	2.47	--	--	UG/L	200.00		
1,1,1-Trichloroethane	07/26/2022	0.4	0.5	--	UG/L	200.00	J	
1,1-Dichloroethylene	07/26/2022	0.67	0.5	--	UG/L	200.00		
Chloroform	07/26/2022	1.4	0.5	--	UG/L	200.00		

Site ID : 130-14

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/23/2022	14.03	--	--	UG/L	208.00		
1,1-Dichloroethane	08/23/2022	0.88	0.5	--	UG/L	208.00		
1,1-Dichloroethylene	08/23/2022	0.84	0.5	--	UG/L	208.00		
Chloroform	08/23/2022	0.31	0.5	--	UG/L	208.00	J	
Dichlorodifluoromethane	08/23/2022	12	0.5	--	UG/L	208.00		

Table 11-4
OU III Western South Boundary Extraction Well Data
'Hits Only' July through September 2022

Site ID : 111-17 (WSB-3)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/27/2022	9.78	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/27/2022	0.83	0.5	--	UG/L	0.00		
1,1-Dichloroethane	07/27/2022	1.1	0.5	--	UG/L	0.00		
1,1-Dichloroethylene	07/27/2022	5.8	0.5	--	UG/L	0.00		
Chloroform	07/27/2022	1.3	0.5	--	UG/L	0.00		
Dichlorodifluoromethane	07/27/2022	0.19	0.5	--	UG/L	0.00	J	
Trichloroethylene	07/27/2022	0.56	0.5	--	UG/L	0.00		

Site ID : 119-13 (WSB-4)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	9.53	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/14/2022	2.2	0.5	--	UG/L	0.00		
1,1-Dichloroethane	07/14/2022	0.55	0.5	--	UG/L	0.00		
1,1-Dichloroethylene	07/14/2022	5.6	0.5	--	UG/L	0.00		
Chloroform	07/14/2022	0.16	0.5	--	UG/L	0.00	J	
Dichlorodifluoromethane	07/14/2022	0.43	0.5	--	UG/L	0.00	J	
Trichloroethylene	07/14/2022	0.59	0.5	--	UG/L	0.00		

Site ID : 126-12 (WSB-1)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	10.29	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/14/2022	3.1	0.5	--	UG/L	0.00		
1,1-Dichloroethylene	07/14/2022	5.6	0.5	--	UG/L	0.00		
Chloroform	07/14/2022	0.91	0.5	--	UG/L	0.00		
Trichloroethylene	07/14/2022	0.68	0.5	--	UG/L	0.00		

Site ID : 127-05 (WSB-2)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	3.95	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/14/2022	0.74	0.5	--	UG/L	0.00		
1,1-Dichloroethylene	07/14/2022	0.87	0.5	--	UG/L	0.00		
Chloroform	07/14/2022	0.64	0.5	--	UG/L	0.00		
Trichloroethylene	07/14/2022	1.7	0.5	--	UG/L	0.00		

Site ID : 130-12 (WSB-5)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	14.04	--	--	UG/L	0.00		

Table 11-4
OU III Western South Boundary Extraction Well Data
'Hits Only' July through September 2022

Site ID : 130-12 (WSB-5)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
1,1,1-Trichloroethane	07/14/2022	4.3	0.5	--	UG/L	0.00		
1,1-Dichloroethane	07/14/2022	0.35	0.5	--	UG/L	0.00	J	
1,1-Dichloroethylene	07/14/2022	6.2	0.5	--	UG/L	0.00		
Chloroform	07/14/2022	1.4	0.5	--	UG/L	0.00		
Dichlorodifluoromethane	07/14/2022	0.79	0.5	--	UG/L	0.00		
Trichloroethylene	07/14/2022	1	0.5	--	UG/L	0.00		

Site ID : 130-13 (WSB-6)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	6.63	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/14/2022	0.46	0.5	--	UG/L	0.00	J	
1,1-Dichloroethane	07/14/2022	0.67	0.5	--	UG/L	0.00		
1,1-Dichloroethylene	07/14/2022	1.3	0.5	--	UG/L	0.00		
Dichlorodifluoromethane	07/14/2022	4.2	0.5	--	UG/L	0.00		

Table 11-5
OU III Western South Boundary Influent Data
'Hits Only' July through September 2022

Site ID : 121-55 (System Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	10.32	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/14/2022	2.7	0.5	--	UG/L	0.00		
1,1-Dichloroethane	07/14/2022	0.39	0.5	--	UG/L	0.00	J	
1,1-Dichloroethylene	07/14/2022	4.8	0.5	--	UG/L	0.00		
Chloroform	07/14/2022	0.76	0.5	--	UG/L	0.00		
Dichlorodifluoromethane	07/14/2022	1.1	0.5	--	UG/L	0.00		
Trichloroethylene	07/14/2022	0.57	0.5	--	UG/L	0.00		
8260 TVOC	08/05/2022	9.12	--	--	UG/L	0.00		
1,1,1-Trichloroethane	08/05/2022	2.1	0.5	--	UG/L	0.00		
1,1-Dichloroethane	08/05/2022	0.46	0.5	--	UG/L	0.00	J	
1,1-Dichloroethylene	08/05/2022	4.3	0.5	--	UG/L	0.00		
Chloroform	08/05/2022	0.85	0.5	--	UG/L	0.00		
Dichlorodifluoromethane	08/05/2022	0.79	0.5	--	UG/L	0.00		
Trichloroethylene	08/05/2022	0.62	0.5	--	UG/L	0.00		
8260 TVOC	09/07/2022	10.41	--	--	UG/L	0.00		
1,1,1-Trichloroethane	09/07/2022	2.7	0.5	--	UG/L	0.00		
1,1-Dichloroethane	09/07/2022	0.4	0.5	--	UG/L	0.00	J	
1,1-Dichloroethylene	09/07/2022	4.7	0.5	--	UG/L	0.00		
Chloroform	09/07/2022	0.84	0.5	--	UG/L	0.00		
Dichlorodifluoromethane	09/07/2022	1.1	0.5	--	UG/L	0.00		
Trichloroethylene	09/07/2022	0.67	0.5	--	UG/L	0.00		

Table 11-6
OU III Western South Boundary Effluent Data
'Hits Only' July through September 2022

Site ID : 095-126 (System Effluent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/14/2022	0	--	--	UG/L	0.00		
8260 TVOC	08/05/2022	0	--	--	UG/L	0.00		
8260 TVOC	09/07/2022	0	--	--	UG/L	0.00		

Qualifiers :

J = Estimated value.

D = Compound was identified in an analysis at a secondary dilution factor.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Section 12
Q3-2022 Operations Summary
OU III Strontium-90 Chemical Holes Treatment System

Process: Groundwater extraction and treatment via zeolite resin (Clinoptilolite) for the removal of Sr-90, with discharge to dry wells.

Goal: Reach Maximum Contaminant Levels (MCLs) in core monitoring wells within 40 years for the Upper Glacial aquifer (by 2040).

Start Date: February 2003

Table 12-1
OU III Sr-90 Chemical Holes
Pumping Rates (gpm)

Extraction Well	EW-1 *	EW-2*	EW-3*
Site Id #	106-92	106-123	106-124
Screen Interval (ft bls)	23.5-38.5	35-45	35-45
Desired Flow Rate (gpm)	0.0	0.0	0.0
July (Avg monthly gpm)	0.0	0.0	0.0
August	0.0	0.0	0.0
September	0.0	0.0	0.0
Actual (Avg. over Qtr. when on)	0.0	0.0	0.0

* All three extraction wells began pulse pumping (one month on and two months off) in October 2014. In October 2015, EW-1 resumed full time operation. In April 2016, EW-1 was placed into pulsed pumping mode (one month on and one month off). In October 2016, EW-2 and EW-3 were placed in stand-by mode while EW-1 continued in pulsed pumping mode. EW-1 was placed in stand-by mode in July 2018.

Figure 12-1
Chemical Holes Strontium-90 Cumulative Millicuries Removed

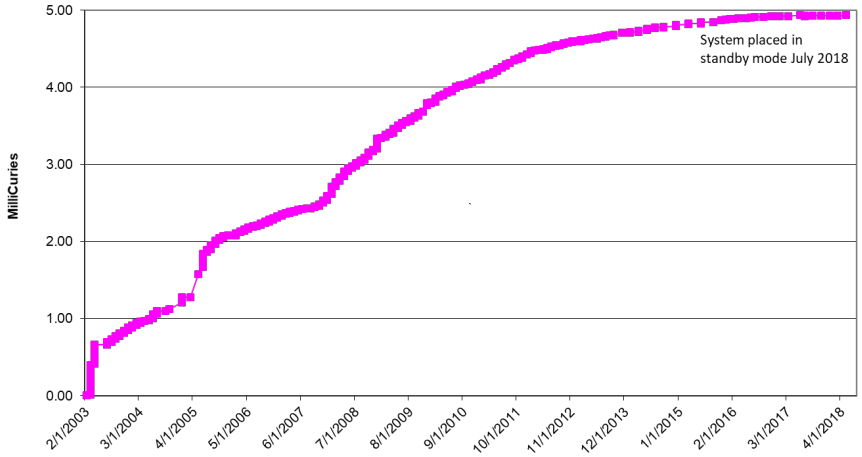


Figure 12-2
Chemical Holes Influent Strontium-90 Concentrations

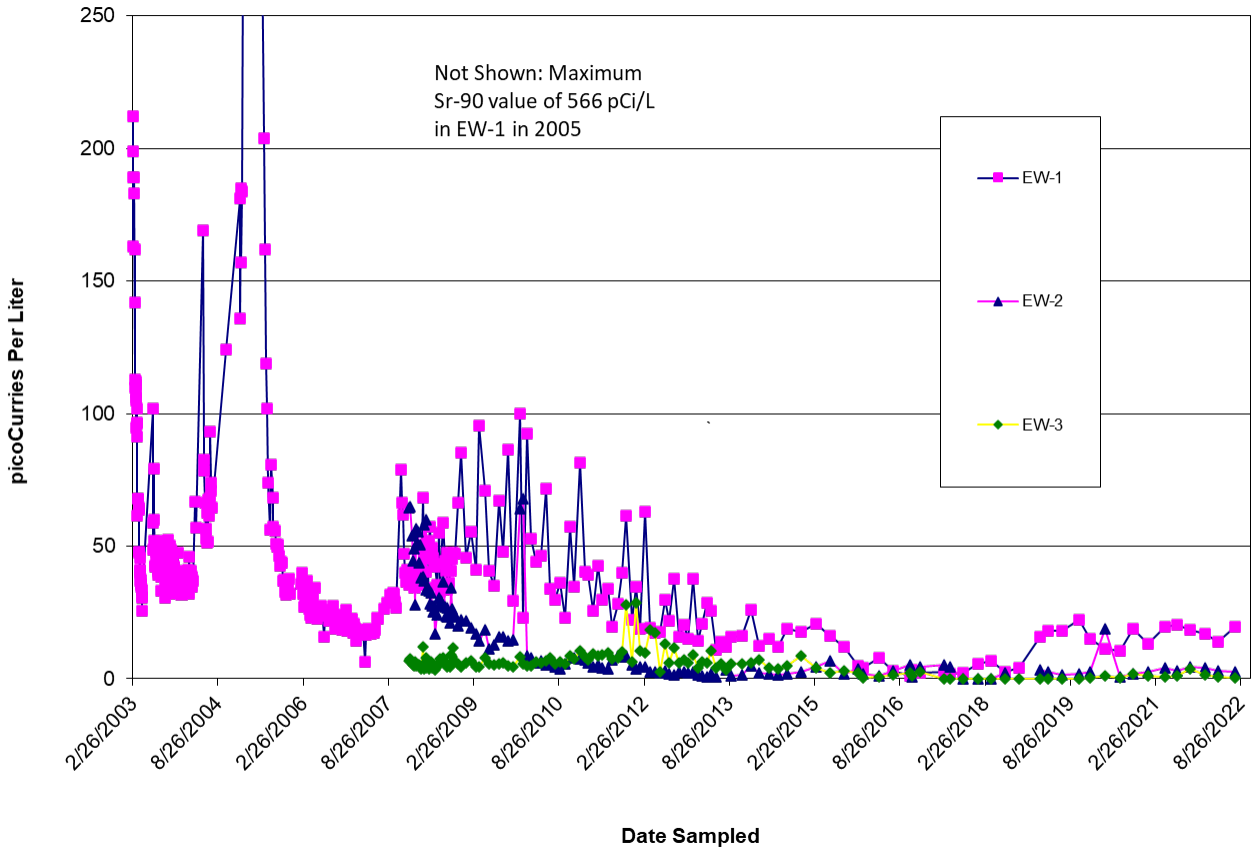


Table 12-2
OU III Sr-90 Chemical Holes Treatment System Effluent Water Quality
SPDES Equivalency Permit Concentrations July 1 – September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	**Monitor**	**NA**	**GPM**	**Continuous**
pH (range)	**5.0 - 8.5**	**NA**	**SU**	**Monthly**
Sr-90	**8**	**NA**	**pCi/L**	**Monthly**

NA = Not Applicable. The system was shut down in July 2018.
ND = Not Detected.

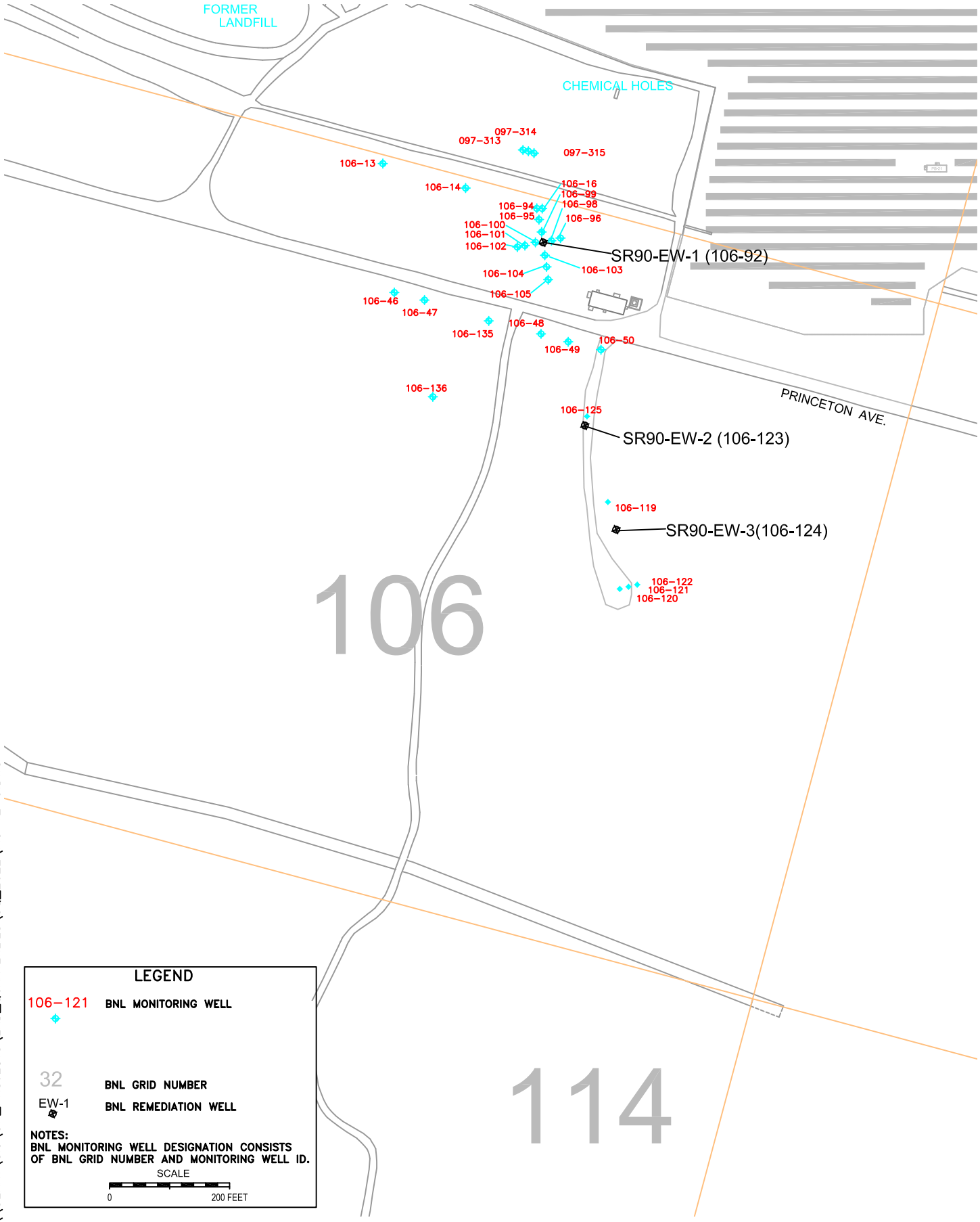
Systems Operations

July through September 2022:

The system was in stand-by mode.

Planned Operational Changes

- Maintain the system in stand-by mode. If significant rebound is identified, the extraction wells may be restarted. During the third quarter, Sr-90 concentrations in extraction well EW-1 and EW-2 were 19.5 pCi/L and 2.71 pCi/L, respectively. Extraction well EW-3 did not detect Sr-90. The maximum Sr-90 concentration in the monitoring wells during the third quarter was 41 pCi/L in well 097-314, which is located upgradient of EW-1.
- If Sr-90 concentrations in the monitoring and extraction wells do not show any significant rebound, then a Petition for Closure of the treatment system may be prepared.



ENVIRONMENTAL PROTECTION DIVISION

TITLE:

CHEMICAL HOLES Sr-90 MONITORING WELL NETWORK

SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
JEB	–	07/15/08	–
CHKD:	APPD:	REV.:	NOTES:
LDS	--	10/18/22	–

FIGURE NO.: 12-3

Table 12-3
OU III Strontium-90 Chemical Holes Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 097-313

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/29/2022	11.9	0.758	1.04	PCI/L	37.93		

Site ID : 097-314

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/29/2022	41.2	0.782	1.74	PCI/L	37.85		

Site ID : 097-315

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/29/2022	4.25	0.765	0.799	PCI/L	37.74		

Site ID : 106-100

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/24/2022	2.73	0.573	0.559	PCI/L	32.96		

Site ID : 106-101

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/24/2022	5.73	0.688	0.883	PCI/L	35.67		

Site ID : 106-102

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/24/2022	0.645	0.621	0.405	PCI/L	34.31	J	N2

Site ID : 106-103

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/24/2022	31.8	0.911	2.04	PCI/L	30.36		

Site ID : 106-104

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/24/2022	7.35	0.587	0.851	PCI/L	32.43		

Site ID : 106-105

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/23/2022	1.17	0.708	0.512	PCI/L	30.52		N2

Site ID : 106-125

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/25/2022	3.9	0.8	0.83	PCI/L	40.00		

Site ID : 106-13

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/29/2022	2.44	0.792	0.629	PCI/L	34.00		

Site ID : 106-135

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/25/2022	1.01	0.566	0.418	PCI/L	35.00		

Table 12-3
OU III Strontium-90 Chemical Holes Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 106-136

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/26/2022	8.08	0.757	0.989	PCI/L	35.00		

Site ID : 106-14

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/29/2022	1.02	0.798	0.527	PCI/L	35.00		N2

Site ID : 106-16

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/29/2022	20.7	0.784	1.26	PCI/L	38.68		

Site ID : 106-46

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/26/2022	1.12	0.782	0.514	PCI/L	34.00		N2

Site ID : 106-48

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/25/2022	0.702	0.585	0.389	PCI/L	37.30	J	N2

Site ID : 106-94

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/26/2022	16.3	0.785	1.11	PCI/L	38.42		

Site ID : 106-95

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/29/2022	11.2	0.769	1.16	PCI/L	38.48		

Site ID : 106-96

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/26/2022	0.978	0.788	0.502	PCI/L	37.70		N2

Site ID : 106-98

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/24/2022	3.99	0.588	0.641	PCI/L	33.10		

Site ID : 106-99

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	08/24/2022	20.3	0.596	1.33	PCI/L	34.20		

Table 12-4
OU III Strontium-90 Chemical Holes Extraction Well Data
'Hits Only' July through September 2022

Site ID : 106-123 (EW-2)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	07/18/2022	2.71	0.712	0.501	PCI/L	0.00		

Site ID : 106-92 (EW-1)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	07/18/2022	19.5	0.537	0.774	PCI/L	0.00		

Qualifiers :

J = Estimated value.

D = Compound was identified in an analysis at a secondary dilution factor.

N2 = Not usable based on the results that are not distinguishable from background. The value is less than or equal to the sum of the MDA and the uncertainty or RDL.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Section 13

Q3-2022 Operations Summary
OU III Former Industrial Park East Pump & Treat System
(System Closed)

The Petition for Closure for the OU III Industrial Park East Groundwater Treatment System was submitted to the regulators for review in May 2013. Approval was received from the regulators in June and July 2013 that the system met its treatment goals and can now be dismantled. Any remaining contaminants in the downgradient portion of the plume beyond the capture zone of the extraction wells will attenuate to below MCLs in the Upper Glacial and Magothy aquifers before the required 2030 and 2065 cleanup timeframes, respectively.

Dismantlement activities have been initiated including the abandonment of four groundwater monitoring wells (000-489, 000-493, 000-513, 000-514) and the two groundwater extraction wells (EWI-1 and EWI-2) in September 2013. Final decommissioning of the treatment system will be performed following the completion of remediation of the deep VOC contamination in the Industrial Park.

The building, carbon units, and the two recharge wells are being used with the two new extraction wells for remediation of the deep VOC contamination in the Industrial Park.

The post closure monitoring network consists of four wells. In accordance with the recommendation in the *2015 Groundwater Status Report*, VOC monitoring for seven wells was discontinued in the fourth quarter of 2016 since the wells have been below the AWQS for a minimum of four consecutive sampling events. The data from the four wells are also evaluated as part of the North Street and Magothy monitoring programs. Monitoring will continue until MCLs are achieved for a minimum of four consecutive sampling events. The monitoring schedule is described in the BNL Environmental Monitoring Plan (EMP).

Section 14

Q3-2022 Operations Summary
OU III North Street Pump & Treat System
(System Closed)

Process: Groundwater extraction and liquid phase granular activated carbon treatment, with discharge to injection wells

Goal: Reach Maximum Contaminant Levels (MCLs) or asymptotic conditions in core monitoring wells within 30 years for the Upper Glacial aquifer and within 65 years for the Magothy aquifer (by 2030 and 2065, respectively).

Start Date: June 2004

Table 14-1
OU III North Street Pump & Treat System
Pumping Rates (gpm)

Extraction Well	NS-1	NS-2
Site ID #	000-471	000-473
Screen Interval (ft bls)	165-205	190-220
Design Flow Rate (GPM)	0*	0*
July	0*	0*
August	0*	0*
September	0*	0*
Actual (Avg. over Qtr.)	0*	0*

*=The system is shut down and approved for closure in March 2020.

Figure 14-1
OU III North Street Pump & Treat System
Cumulative Mass Removal of VOCs vs. Time

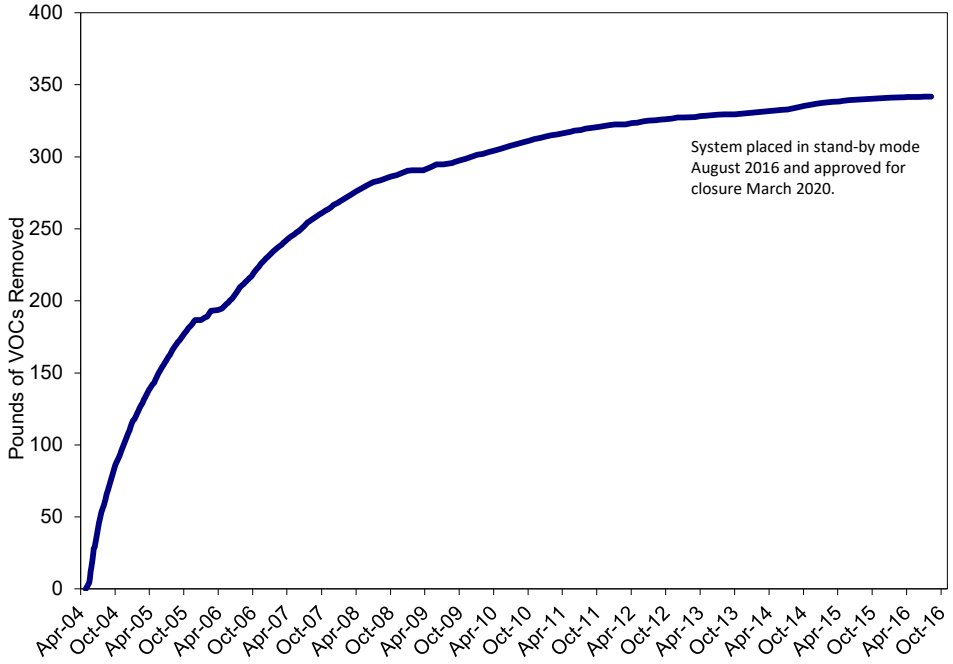


Figure 14-2
OU III North Street Pump & Treat System
Influent TVOC Concentrations vs. Time

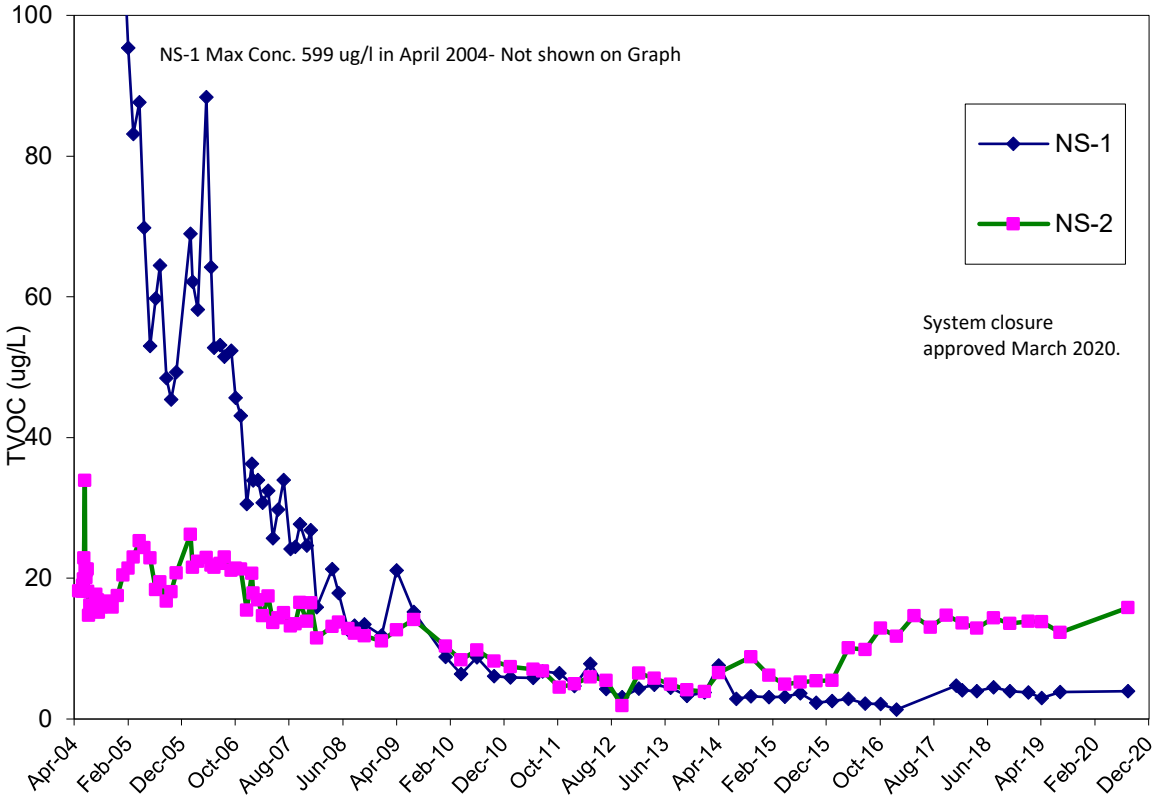


Table 14-2
Effluent Water Quality
SPDES Equivalency Permit Concentrations July 1 – September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	**Monitor**	NA [1]	**GPD**	**Continuous**
pH (range)	**5.5 - 8.5**	NA [1]	**SU**	**Monthly**
Carbon Tetrachloride	**5**	NA [1]	**µg/L**	**Monthly**
Chloroform	**5**	NA [1]	**µg/L**	**Monthly**
1,1-Dichloroethane	**5**	NA [1]	**µg/L**	**Monthly**
1,2-Dichloroethane	**0.6**	NA [1]	**µg/L**	**Monthly**
1,1-Dichloroethylene	**5**	NA [1]	**µg/L**	**Monthly**
Tetrachloroethylene	**5**	NA [1]	**µg/L**	**Monthly**
Toluene	**5**	NA [1]	**µg/L**	**Monthly**
1,1,1-Trichloroethane	**5**	NA [1]	**µg/L**	**Monthly**
Trichloroethylene	**5**	NA [1]	**µg/L**	**Monthly**
Ethylene Dibromide (EDB)	**0.03**	NA [1]	**µg/L**	**Monthly**

[1] The system is closed. [NA=] Not Applicable.

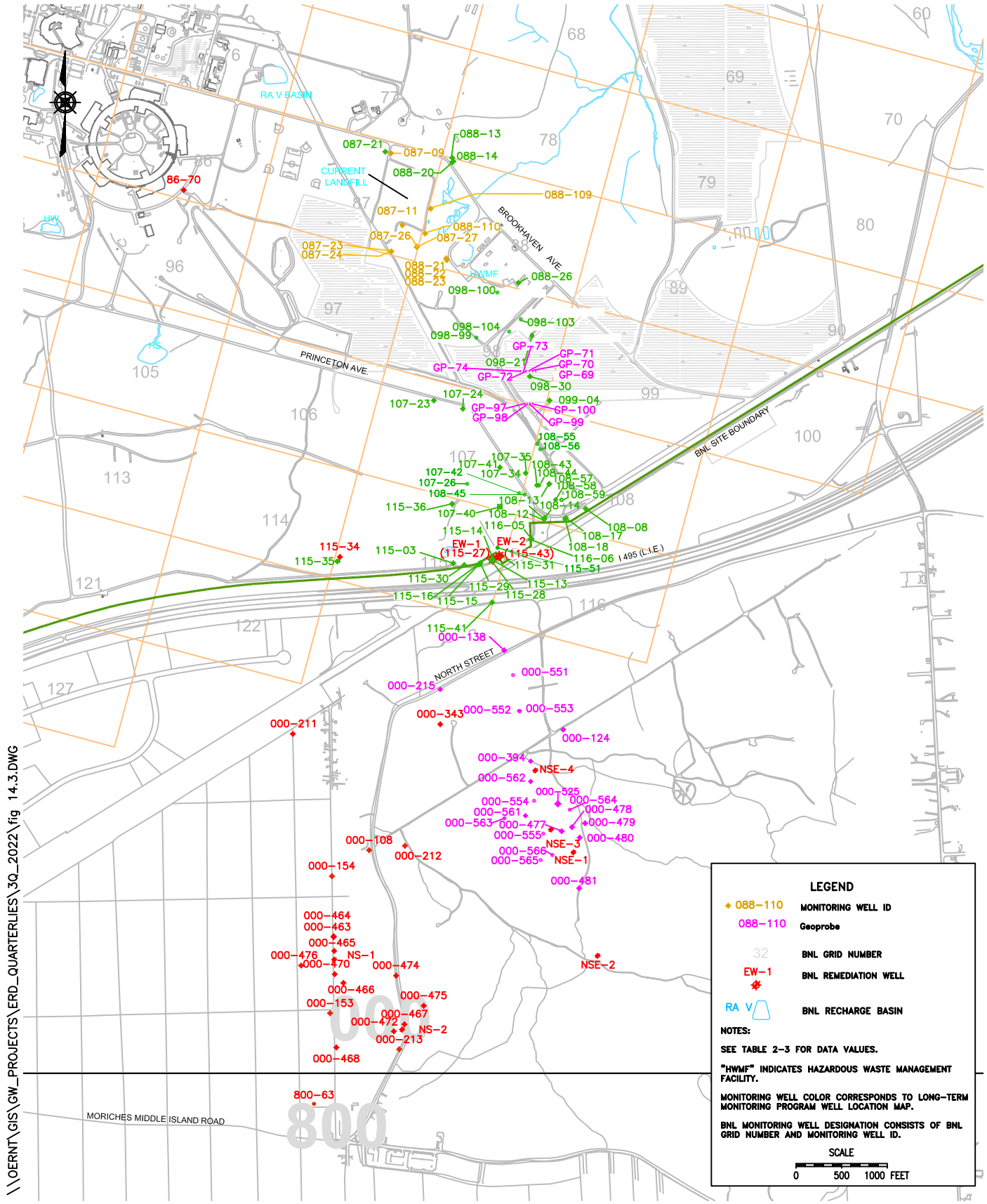
System Operations

July through September 2022:

The system remained closed.

Planned Operational Changes

- NS-1 and NS-2 will remain shut down until the PFAS and 1,4 dioxane characterization is completed. After the completion of this characterization, a determination of the future use of these wells and treatment system infrastructure will be determined. The seven remaining monitoring wells are sampled annually in the fourth quarter.



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ENVIRONMENTAL PROTECTION DIVISION

TITLE:

OU I SOUTH BOUNDARY
OUIII NORTH STREET/NORTH STREET EAST MONITORING WELL NETWORK

SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
JEB	–	08/08/11	NA
CHKD:	APPD:	REV.:	NOTES:
LDS	––	11/18/22	–

FIGURE NO.: 14.3

Section 15

Q3-2022 Operations Summary
OU III North Street East Pump & Treat System

Process: Groundwater extraction and liquid phase granular activated carbon treatment, with discharge to injection wells.

Goal: Reach Maximum Contaminant Levels (MCLs) in core monitoring wells within 30 years for the Upper Glacial aquifer (by 2030).

Start Date: June 2004

Table 15-1
OU III North Street East Pump & Treat System
Pumping Rates (gpm)

Extraction Well	NSE-1	NSE-2	NSE-EDB-3	NSE-EDB-4
Site ID #	000-487	000-488	000-561	000-562
Screen Interval (ft bls)	161-191	152-182	195-215	182-202
Desired Flow Rate (GPM)	0	0	100	100
July	0*	0*	100	108
August	0*	0*	93	101
September	0*	0*	99	107
Actual (Avg. over Qtr.)	0*	0*	97	105

Notes: *As documented in the 2019 Groundwater Status Report, the original VOC system (NSE-1 and NSE-2) is administratively closed for its originally designed purpose. NSE-EDB-3 and NSE-EDB-4 began operation in July 2020.

Figure 15-1
OU III North Street East Pump & Treat System
Cumulative Mass Removal of VOCs vs. Time

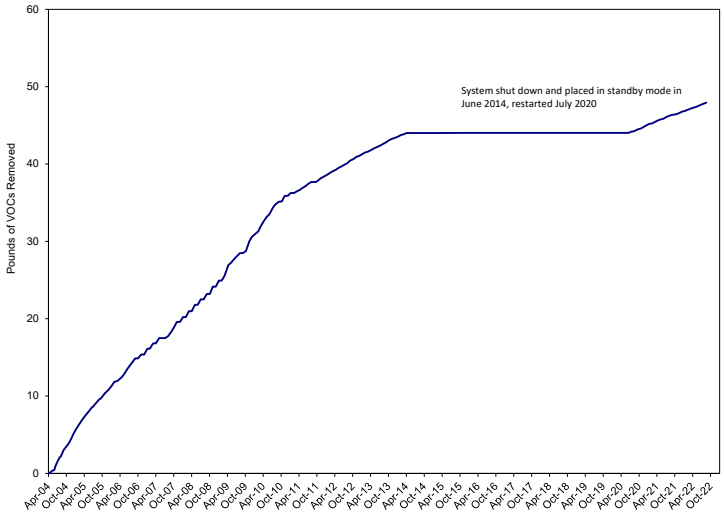


Figure 15-2
OU III North Street East Pump & Treat System
Extraction Well TVOC Concentrations vs. Time

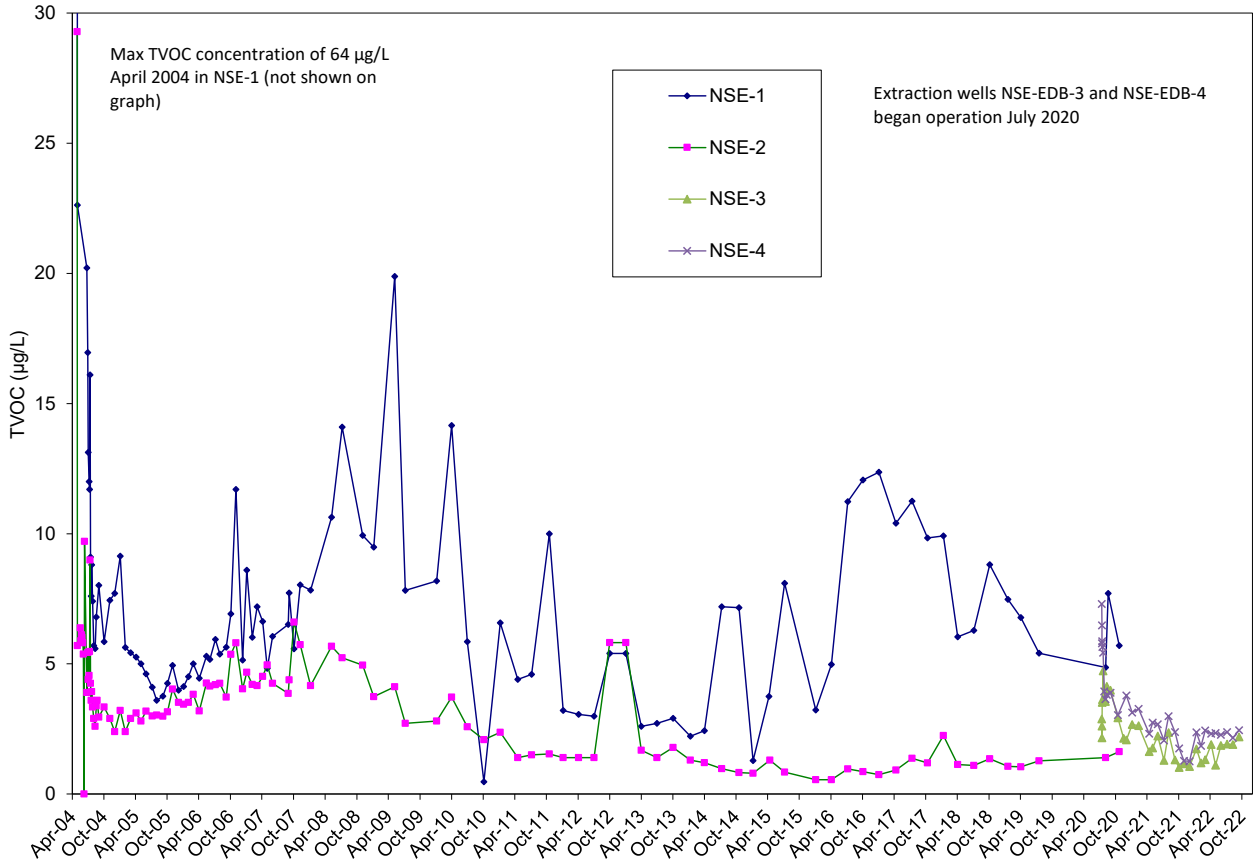


Figure 15-3
OU III North Street East Pump & Treat System
Extraction Well EDB Concentrations vs. Time

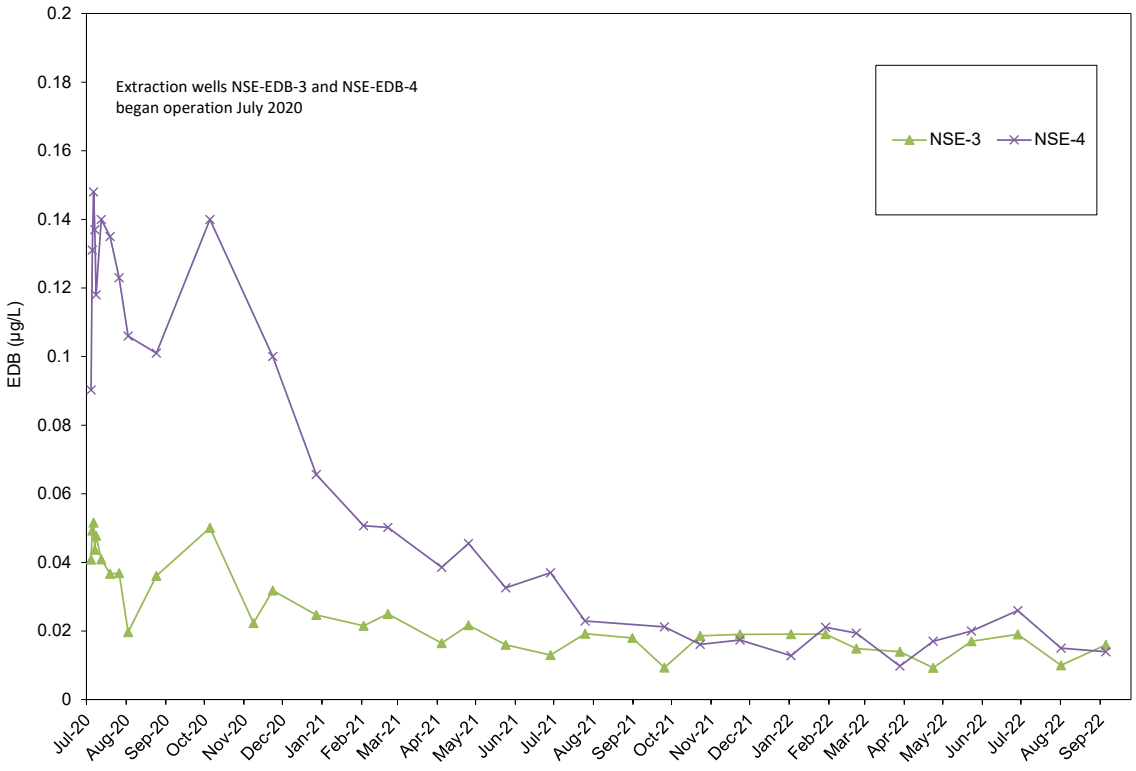


Table 15-2
Effluent Water Quality
SPDES Equivalency Permit Concentrations July 1 – September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	Monitor	289,355	GPD	Continuous
pH (range)	5.5 - 8.5	5.6-5.7	SU	Monthly
Carbon Tetrachloride	5	<0.5	µg/L	Monthly
Chloroform	5	1.2	µg/L	Monthly
1,1-Dichloroethane	5	<0.5	µg/L	Monthly
1,2-Dichloroethane	0.6	<0.5	µg/L	Monthly
1,1-Dichloroethylene	5	<0.5	µg/L	Monthly

Tetrachloroethylene	**5**	**<0.5**	**µg/L**	**Monthly**
Toluene	**5**	**<0.5**	**µg/L**	**Monthly**
1,1,1-Trichloroethane	**5**	**<0.5**	**µg/L**	**Monthly**
Trichloroethylene	**5**	**<0.5**	**µg/L**	**Monthly**
Ethylene Dibromide (EDB)	**0.03**	**<0.011**	**µg/L**	**Monthly**

System Operations

July 2022:

Extraction wells NSE-EDB-3 and NSE-EDB-4 operated normally for the month. The system treated approximately 9 million gallons of water.

August 2022:

Extraction wells NSE-EDB-3 and NSE-EDB-4 were operational. The system treated approximately 9 million gallons of water.

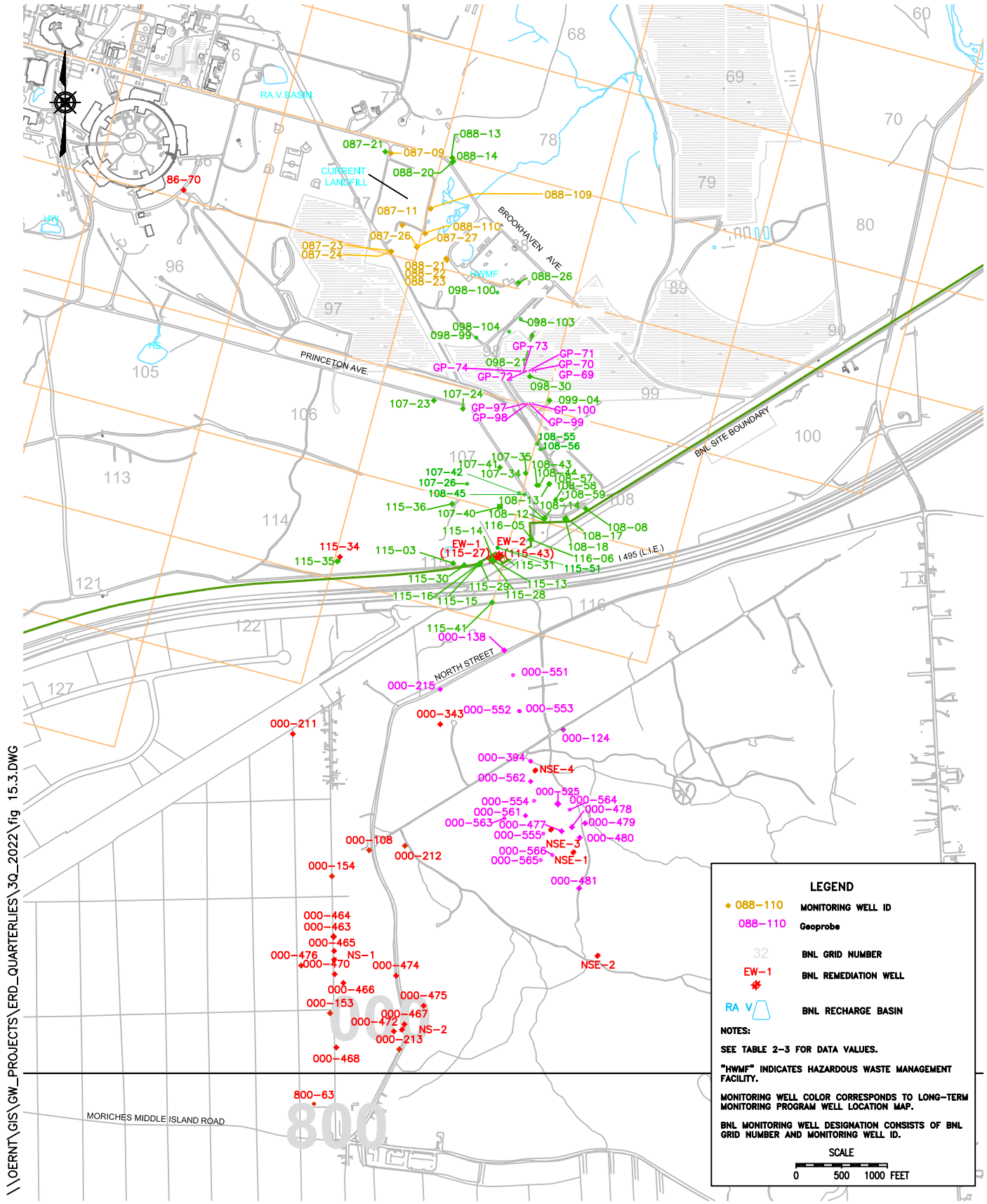
September 2022:

Extraction wells NSE-EDB-3 and NSE-EDB-4 were operational. The system treated approximately 9 million gallons of water.

The system treated approximately 27 million gallons of water during the third quarter of 2022.

Planned Operational Changes

- Continue full time operation of the EDB treatment system and maintain a monthly sampling of extraction wells NSE-EDB-EW-3 and NSE-EDB-EW-4.



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ENVIRONMENTAL PROTECTION DIVISION

TITLE:

OU I SOUTH BOUNDARY
OUIII NORTH STREET/NORTH STREET EAST MONITORING WELL NETWORK

SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
JEB	–	08/08/11	NA
CHKD:	APPD:	REV.:	NOTES:
LDS	––	11/18/22	–

FIGURE NO.: 15.3

Table 15-3
OU III North Street East Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 000-394

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
EDB	08/11/2022	0.13	0.011	--	UG/L	178.00		

Site ID : 000-552

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
EDB	08/11/2022	0.14	0.01	--	UG/L	155.00		

Site ID : 000-553

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
EDB	08/11/2022	0.01	0.01	--	UG/L	175.00		

Site ID : 000-554

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
EDB	08/11/2022	0.053	0.011	--	UG/L	195.00		

Table 15-4
OU III North Street East Extraction Well Data
'Hits Only' July through September 2022

Site ID : 000-561 (NSE-EDB-3)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	1.92	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/07/2022	0.31	0.5	--	UG/L	0.00	J	
Chloroform	07/07/2022	0.94	0.5	--	UG/L	0.00		
EDB	07/07/2022	0.019	0.01	--	UG/L	0.00		
Tetrachloroethylene	07/07/2022	0.24	0.5	--	UG/L	0.00	J	
Trichloroethylene	07/07/2022	0.43	0.5	--	UG/L	0.00	J	
8260 TVOC	08/10/2022	1.9	--	--	UG/L	0.00		
1,1,1-Trichloroethane	08/10/2022	0.36	0.5	--	UG/L	0.00	J	
Chloroform	08/10/2022	1	0.5	--	UG/L	0.00		
Tetrachloroethylene	08/10/2022	0.25	0.5	--	UG/L	0.00	J	
Trichloroethylene	08/10/2022	0.29	0.5	--	UG/L	0.00	J	
8260 TVOC	09/14/2022	2.19	--	--	UG/L	0.00		
1,1,1-Trichloroethane	09/14/2022	0.39	0.5	--	UG/L	0.00	J	
Chloroform	09/14/2022	1.1	0.5	--	UG/L	0.00		
EDB	09/14/2022	0.016	0.011	--	UG/L	0.00		
Tetrachloroethylene	09/14/2022	0.24	0.5	--	UG/L	0.00	J	
Trichloroethylene	09/14/2022	0.46	0.5	--	UG/L	0.00	J	

Site ID : 000-562 (NSE-EDB-4)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	2.38	--	--	UG/L	0.00		
Chloroform	07/07/2022	0.89	0.5	--	UG/L	0.00		
EDB	07/07/2022	0.026	0.01	--	UG/L	0.00		
Methyl tert-butyl ether	07/07/2022	0.2	0.5	--	UG/L	0.00	J	
Tetrachloroethylene	07/07/2022	0.95	0.5	--	UG/L	0.00		
Trichloroethylene	07/07/2022	0.34	0.5	--	UG/L	0.00	J	
8260 TVOC	08/10/2022	2.16	--	--	UG/L	0.00		
Chloroform	08/10/2022	0.98	0.5	--	UG/L	0.00		
EDB	08/10/2022	0.015	0.01	--	UG/L	0.00		
Tetrachloroethylene	08/10/2022	0.94	0.5	--	UG/L	0.00		
Trichloroethylene	08/10/2022	0.24	0.5	--	UG/L	0.00	J	
8260 TVOC	09/14/2022	2.45	--	--	UG/L	0.00		
Chloroform	09/14/2022	0.97	0.5	--	UG/L	0.00		
EDB	09/14/2022	0.014	0.011	--	UG/L	0.00		

Table 15-4
OU III North Street East Extraction Well Data
'Hits Only' July through September 2022

Site ID : 000-562 (NSE-EDB-4)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Methyl tert-butyl ether	09/14/2022	0.26	0.5	--	UG/L	0.00	J	
Tetrachloroethylene	09/14/2022	0.87	0.5	--	UG/L	0.00		
Trichloroethylene	09/14/2022	0.35	0.5	--	UG/L	0.00	J	

Table 15-5
OU III North Street East Influent Data
'Hits Only' July through September 2022

Site ID : 000-441 (Combined Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	2.22	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/07/2022	0.23	0.5	--	UG/L	0.00	J	
Chloroform	07/07/2022	0.97	0.5	--	UG/L	0.00		
EDB	07/07/2022	0.023	0.011	--	UG/L	0.00		
Tetrachloroethylene	07/07/2022	0.61	0.5	--	UG/L	0.00		
Trichloroethylene	07/07/2022	0.41	0.5	--	UG/L	0.00	J	
8260 TVOC	08/10/2022	2.47	--	--	UG/L	0.00		
1,1,1-Trichloroethane	08/10/2022	0.25	0.5	--	UG/L	0.00	J	
Chloroform	08/10/2022	1.1	0.5	--	UG/L	0.00		
EDB	08/10/2022	0.012	0.01	--	UG/L	0.00		
Tetrachloroethylene	08/10/2022	0.63	0.5	--	UG/L	0.00		
Trichloroethylene	08/10/2022	0.49	0.5	--	UG/L	0.00	J	
8260 TVOC	09/14/2022	1.92	--	--	UG/L	0.00		
Chloroform	09/14/2022	0.98	0.5	--	UG/L	0.00		
EDB	09/14/2022	0.015	0.011	--	UG/L	0.00		
Tetrachloroethylene	09/14/2022	0.54	0.5	--	UG/L	0.00		
Trichloroethylene	09/14/2022	0.4	0.5	--	UG/L	0.00	J	

Table 15-6
OU III North Street East Effluent Data
'Hits Only' July through September 2022

Site ID : 000-444 (System Effluent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	1.17	--	--	UG/L	0.00		
Chloroform	07/07/2022	0.96	0.5	--	UG/L	0.00		
EDB	07/07/2022	0.011	0.011	--	UG/L	0.00	U	
EDB	07/07/2022	0.5	0.5	--	UG/L	0.00	U	
Methyl tert-butyl ether	07/07/2022	0.21	0.5	--	UG/L	0.00	J	
8260 TVOC	08/10/2022	1.29	--	--	UG/L	0.00		
Chloroform	08/10/2022	1.1	0.5	--	UG/L	0.00		
EDB	08/10/2022	0.011	0.011	--	UG/L	0.00	U	
EDB	08/10/2022	0.5	0.5	--	UG/L	0.00	U	
Methyl tert-butyl ether	08/10/2022	0.19	0.5	--	UG/L	0.00	J	
8260 TVOC	09/14/2022	1.46	--	--	UG/L	0.00		
Chloroform	09/14/2022	1.2	0.5	--	UG/L	0.00		
EDB	09/14/2022	0.011	0.011	--	UG/L	0.00	U	
EDB	09/14/2022	0.5	0.5	--	UG/L	0.00	U	
Methyl tert-butyl ether	09/14/2022	0.26	0.5	--	UG/L	0.00	J	

Qualifiers :

J = Estimated value.
D = Compound was identified in an analysis at a secondary dilution factor.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Section 16

Q3-2022 Operations Summary
OU III LIPA/Airport Treatment System

Process: Groundwater extraction and liquid phase granular activated carbon treatment, with discharge to injection wells.

Goal: Reach Maximum Contaminant Levels (MCLs) in core monitoring wells within 30 years for the Upper Glacial aquifer (by 2030), and within 65 years for the Magothy aquifer (by 2065).

Start Date: August 2004

Table 16-1
OU III LIPA/Airport Treatment System
Pumping Rates (gpm)

Extraction Well	EW-1L	EW-2L	EW-3L	EW-4L*	RTW-1A	RTW-2A	RTW-3A	RTW-4A*	RTW-5A	RW-6A
Site ID	000-453	000-455	000-457	000-461	800-109	800-110	800-111	800-112	800-113	800-132
Screen Interval (ft bls)	217-237	224-244	216-236	304-324	188-208	188-208	210-230	268-288	220-240	165-185
Desired Flow Rate (GPM)	0**	0**	0**	0**	100	0**	0**	100	0***	200
July	0	0	0	0	106	0	0	0	0	159
August	0	0	0	0	98	0	0	0	0	146
September	0	0	0	0	96	0	0	5	0	143
Actual (Avg. over QTR.)	**0**	**0**	**0**	**0**	**100**	**0**	**0**	**1.6**	**0**	**149**

***** EW-4L and RTW-4A are Magothy aquifer extraction wells.

** EW-1L and EW-3L were placed in standby mode in 2007, EW-2L in 2010 and EW-4L in 2017. RTW-2A and RTW-3A were placed in standby in March 2020.

***RTW-5A was placed in standby mode in September 2016.

Figure 16-1
OU III LIPA/ Airport Treatment System
Cumulative Mass Removal of VOCs vs. Time

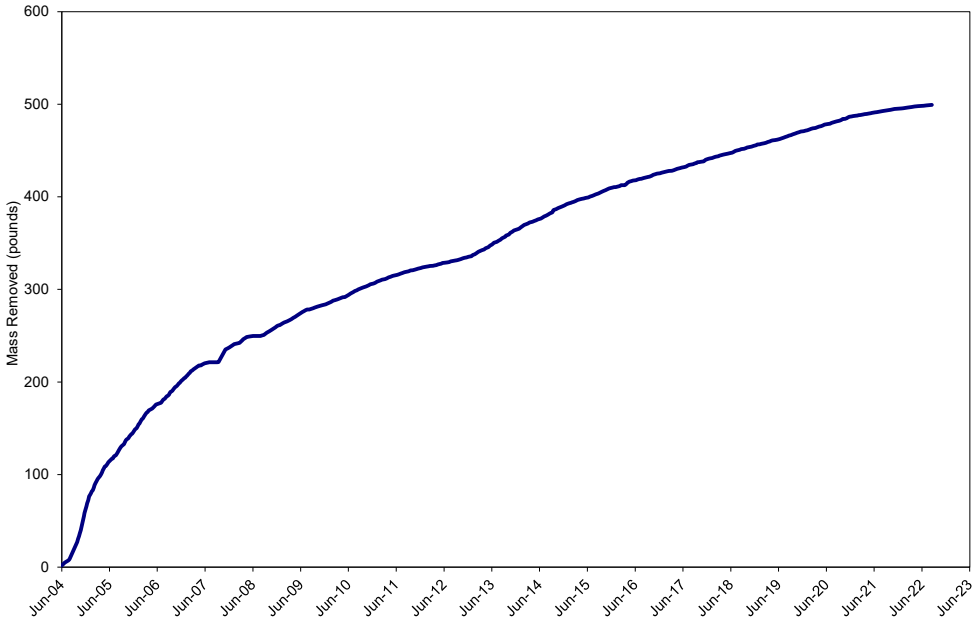


Figure 16-2
OU III LIPA/ Airport Treatment System
Influent TVOC Concentrations vs. Time

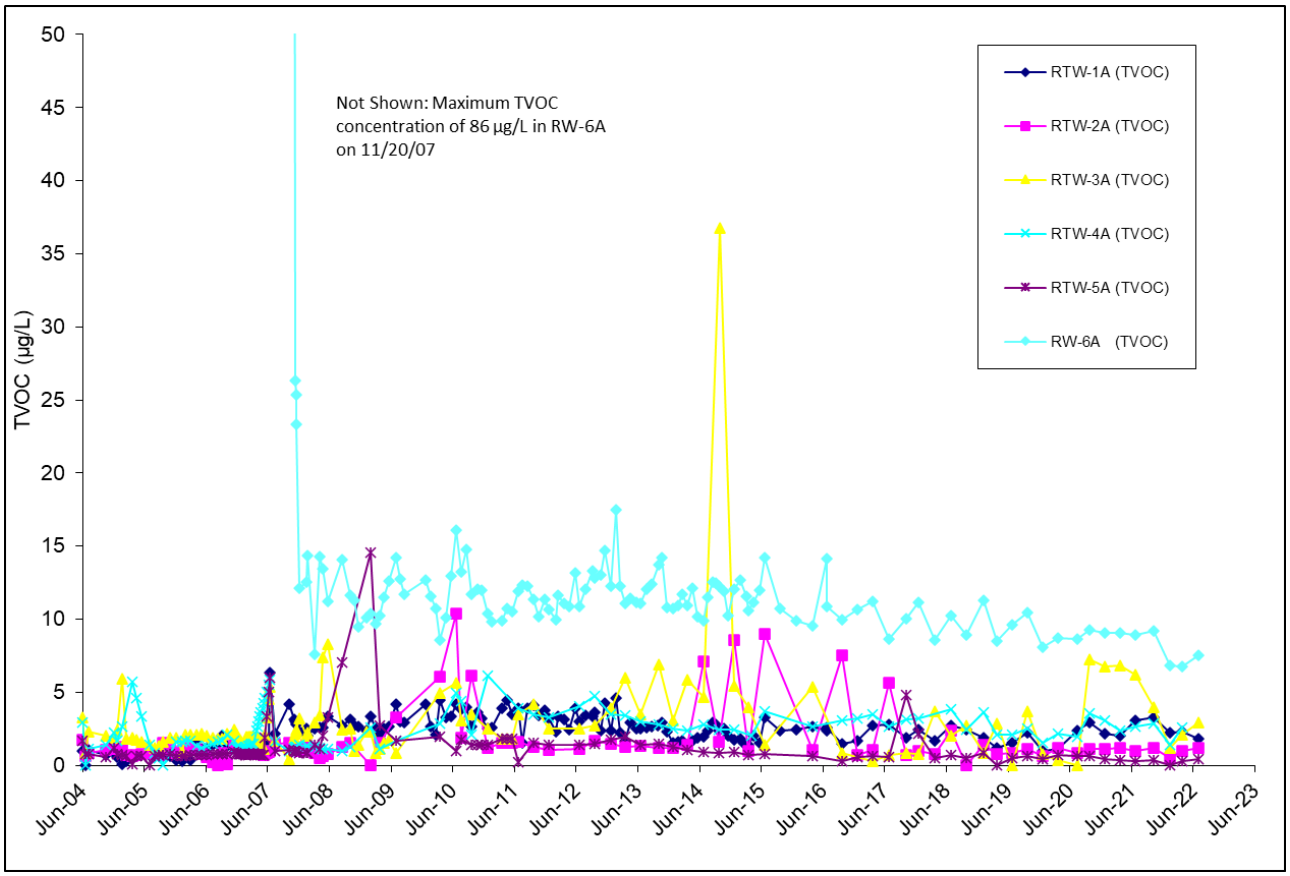


Figure 16-3
OU III LIPA/ Airport Treatment System
Influent TVOC Concentrations vs. Time

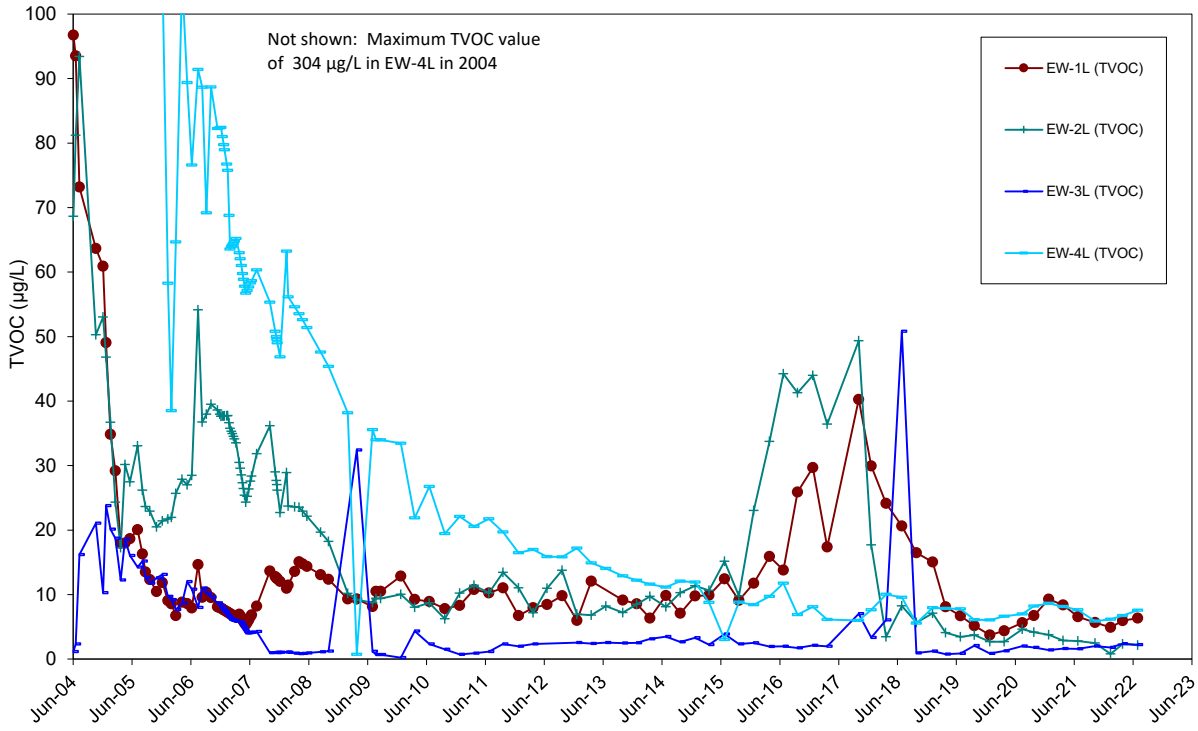


Table 16-2
Effluent Water Quality
SPDES Equivalency Permit Concentrations July 1 – September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	Monitor	382,235 [1]	GPD	Continuous
pH (range)	5.5 – 7.5	5.6-5.9	SU	Monthly
Carbon Tetrachloride	5	<0.50	µg/L	Monthly
Chloroform	7	<0.50	µg/L	Monthly
1,1-Dichloroethane	5	<0.50	µg/L	Monthly
1,1-Dichloroethylene	5	<0.50	µg/L	Monthly
Methylene Chloride	5	<0.50	µg/L	Monthly
1,1,1-Trichloroethane	5	<0.50	µg/L	Monthly
Trichloroethylene	10	<0.50	µg/L	Monthly

[1] The average flow for the operational period at the influent flow meter.

System Operations

July 2022:

Extraction wells RTW-1A, and RW-6A ran normally for the month. RTW-4A was down for the month for pump repairs. The four LIPA extraction wells and Airport extraction wells RTW-2A, RTW-3A, and RTW-5A remained in standby mode. The system treated approximately 12 million gallons of water.

August 2022:

Extraction wells RTW-1A and RW-6A ran normally for the month. RTW-4A was down for the month for pump repairs. The four LIPA extraction wells and Airport extraction wells RTW-2A, RTW-3A, and RTW-5A remained in standby mode. The system treated approximately 11 million gallons of water.

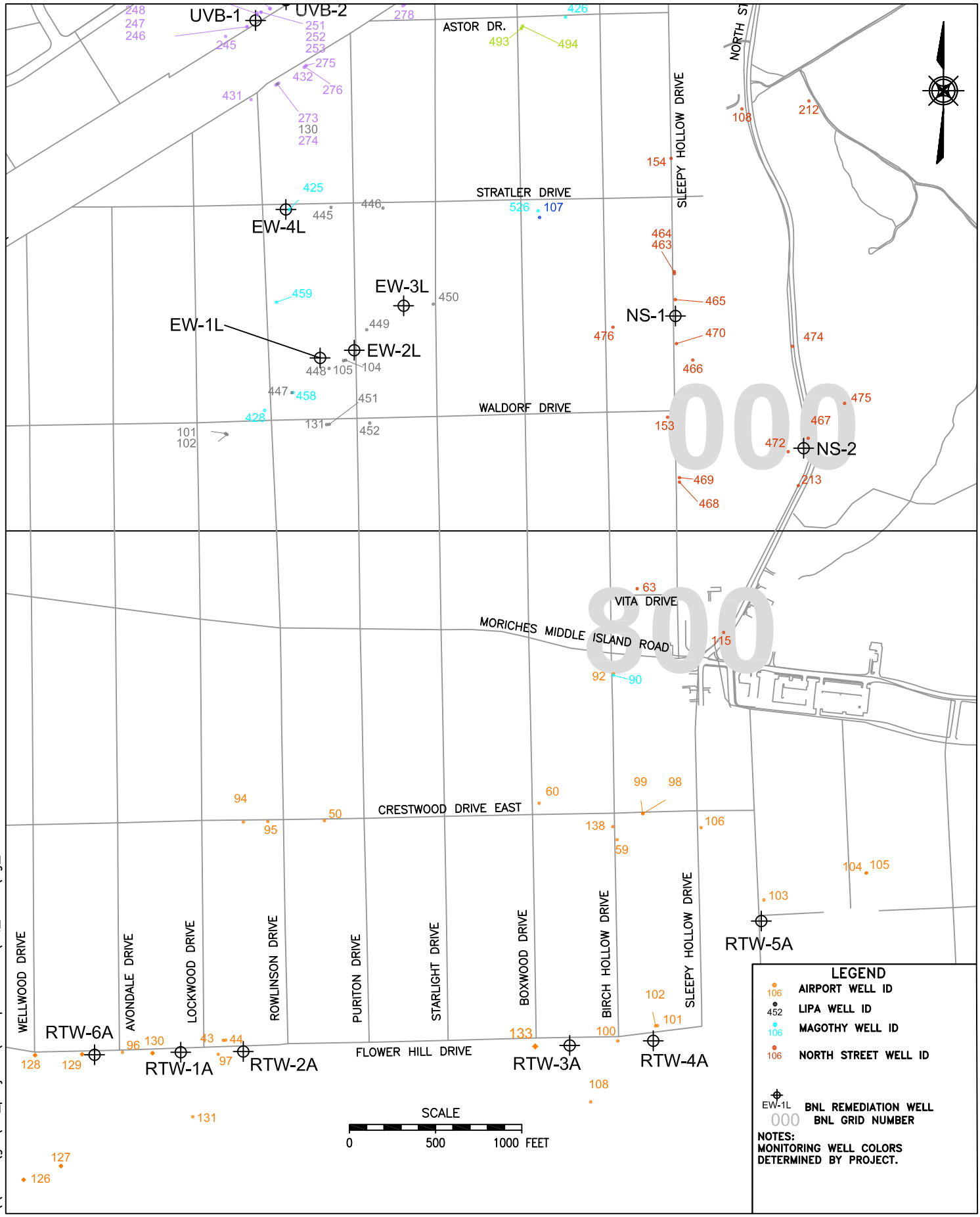
September 2022:

Extraction wells RTW-1A and RW-6A ran normally for the month. Extraction well RTW-4A was off for three weeks for repair. The four LIPA extraction wells and Airport extraction wells RTW-2A, RTW-3A, and RTW-5A remained in standby mode. The system treated approximately 11 million gallons of water.

The system treated approximately 34 million gallons of water during the third quarter of 2022.

Planned Operational Changes

- Continue full time operation of Airport extraction wells RTW-1A, RTW-4A and RW-6A. Maintain wells RTW-2A, RTW-3A and RTW-5A in standby mode. If TVOC concentrations above the capture goal of 10 µg/L are observed in any of the extraction wells or the monitoring wells adjacent to wells that are not operating, the well(s) will be put back into full-time operation. During the third quarter of 2022, extraction wells RTW-2A, RTW-3A, RTW-5A, and adjacent monitoring wells did not exceed TVOC concentrations of 10 µg/L.
- Maintain LIPA wells EW-1L, EW-2L, EW-3L and EW-4L in standby mode. These extraction wells may be restarted if TVOC concentrations rebound above the 50 µg/L capture goal in either the plume core monitoring wells or the extraction wells. During the third quarter of 2022, none of the LIPA extraction wells detected TVOCs above the capture goal of 50 µg/L. The monitoring wells were not scheduled to be sampled in the third quarter.
- Increase the sampling frequency for the 17 LIPA monitoring wells to quarterly in the fourth quarter 2022 in an effort to support the decision for a petition for closure.



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ENVIRONMENTAL PROTECTION DIVISION

TITLE:

OU III AIRPORT/LIPA

SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
JEB	–	09/26/05	–
CHKD:	APPD:	REV.:	NOTES:
LDS	––	10/18/22	–

FIGURE NO.: 16–3

Table 16-3
OU III LIPA/Airport Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 800-108

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/08/2022	0.7	--	--	UG/L	216.00		
Chloroform	08/08/2022	0.7	0.5	--	UG/L	216.00		

Site ID : 800-131

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/05/2022	0.64	--	--	UG/L	194.00		
Carbon tetrachloride	08/05/2022	0.29	0.5	--	UG/L	194.00	J	
Chloroform	08/05/2022	0.35	0.5	--	UG/L	194.00	J	

Site ID : 800-133

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/08/2022	2.12	--	--	UG/L	225.00		
1,1,1-Trichloroethane	08/08/2022	0.36	0.5	--	UG/L	225.00	J	
Carbon tetrachloride	08/08/2022	0.26	0.5	--	UG/L	225.00	J	
Chloroform	08/08/2022	1.5	0.5	--	UG/L	225.00		

Site ID : 800-60

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	08/09/2022	0.5	--	--	UG/L	210.00		
Chloroform	08/09/2022	0.5	0.5	--	UG/L	210.00		

Table 16-4
OU III LIPA/Airport Extraction Well Data
'Hits Only' July through September 2022

Site ID : 000-453 (EW-1L)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	6.36	--	--	UG/L	227.00		
1,1,1-Trichloroethane	07/13/2022	1.6	0.5	--	UG/L	227.00		
1,1-Dichloroethylene	07/13/2022	1.8	0.5	--	UG/L	227.00		
1,2,3-Trichlorobenzene	07/13/2022	0.4	0.5	--	UG/L	227.00	J	
1,2-Dichloroethane	07/13/2022	0.32	0.5	--	UG/L	227.00	J	
Carbon tetrachloride	07/13/2022	0.27	0.5	--	UG/L	227.00	J	
Chloroform	07/13/2022	0.57	0.5	--	UG/L	227.00		
Hexachlorobutadiene	07/13/2022	0.35	0.5	--	UG/L	227.00	J	
Naphthalene	07/13/2022	0.21	0.5	--	UG/L	227.00	J	
Trichloroethylene	07/13/2022	0.84	0.5	--	UG/L	227.00		

Site ID : 000-455 (EW-2L)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	2.17	--	--	UG/L	234.00		
1,1,1-Trichloroethane	07/13/2022	0.45	0.5	--	UG/L	234.00	J	
1,1-Dichloroethylene	07/13/2022	0.3	0.5	--	UG/L	234.00	J	
Chloroform	07/13/2022	0.91	0.5	--	UG/L	234.00		
Trichloroethylene	07/13/2022	0.51	0.5	--	UG/L	234.00		

Site ID : 000-457 (EW-3L)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	2.25	--	--	UG/L	226.00		
Chloroform	07/13/2022	1.6	0.5	--	UG/L	226.00		
Toluene	07/13/2022	0.37	0.5	--	UG/L	226.00	J	
Trichloroethylene	07/13/2022	0.28	0.5	--	UG/L	226.00	J	

Site ID : 000-461 (EW-4L)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	7.58	--	--	UG/L	314.00		
1,1,1-Trichloroethane	07/13/2022	0.2	0.5	--	UG/L	314.00	J	
Carbon tetrachloride	07/13/2022	0.9	0.5	--	UG/L	314.00		
Chloroform	07/13/2022	0.98	0.5	--	UG/L	314.00		
Tetrachloroethylene	07/13/2022	4.3	0.5	--	UG/L	314.00		
Trichloroethylene	07/13/2022	1.2	0.5	--	UG/L	314.00		

Site ID : 800-109 (RTW-1A)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	1.79	--	--	UG/L	198.00		

Table 16-4
OU III LIPA/Airport Extraction Well Data
'Hits Only' July through September 2022

Site ID : 800-109 (RTW-1A)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Carbon tetrachloride	07/13/2022	0.79	0.5	--	UG/L	198.00		
Chloroform	07/13/2022	0.75	0.5	--	UG/L	198.00		
Trichloroethylene	07/13/2022	0.25	0.5	--	UG/L	198.00	J	

Site ID : 800-110 (RTW-2A)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	1.22	--	--	UG/L	198.00		
Carbon tetrachloride	07/13/2022	0.58	0.5	--	UG/L	198.00		
Chloroform	07/13/2022	0.64	0.5	--	UG/L	198.00		

Site ID : 800-111 (RTW-3A)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	2.96	--	--	UG/L	220.00		
1,1,1-Trichloroethane	07/13/2022	0.5	0.5	--	UG/L	220.00		
1,1-Dichloroethylene	07/13/2022	0.22	0.5	--	UG/L	220.00	J	
Carbon tetrachloride	07/13/2022	0.75	0.5	--	UG/L	220.00		
Chloroform	07/13/2022	0.74	0.5	--	UG/L	220.00		
Trichloroethylene	07/13/2022	0.75	0.5	--	UG/L	220.00		

Site ID : 800-113 (RTW-5A)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	0.42	--	--	UG/L	230.00		
Chloroform	07/13/2022	0.42	0.5	--	UG/L	230.00	J	

Site ID : 800-132 (RTW-6A)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	7.1	--	--	UG/L	175.00		
1,1-Dichloroethylene	07/13/2022	0.26	0.5	--	UG/L	175.00	J	
Carbon tetrachloride	07/13/2022	1.9	0.5	--	UG/L	175.00		
Chloroform	07/13/2022	0.74	0.5	--	UG/L	175.00		
Trichloroethylene	07/13/2022	4.2	0.5	--	UG/L	175.00		

Table 16-5
OU III LIPA/Airport Influent Data
'Hits Only' July through September 2022

Site ID : 800-122 (Combined Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	2.57	--	--	UG/L	0.00		
Carbon tetrachloride	07/13/2022	0.66	0.5	--	UG/L	0.00		
Chloroform	07/13/2022	0.51	0.5	--	UG/L	0.00		
Trichloroethylene	07/13/2022	1.4	0.5	--	UG/L	0.00		
8260 TVOC	08/03/2022	5.71	--	--	UG/L	0.00		
1,1-Dichloroethylene	08/03/2022	0.18	0.5	--	UG/L	0.00	J	
Carbon tetrachloride	08/03/2022	1.7	0.5	--	UG/L	0.00		
Chloroform	08/03/2022	0.83	0.5	--	UG/L	0.00		
Trichloroethylene	08/03/2022	3	0.5	--	UG/L	0.00		
8260 TVOC	09/13/2022	5.83	--	--	UG/L	0.00		
1,1-Dichloroethylene	09/13/2022	0.21	0.5	--	UG/L	0.00	J	
Carbon tetrachloride	09/13/2022	1.6	0.5	--	UG/L	0.00		
Chloroform	09/13/2022	0.82	0.5	--	UG/L	0.00		
Trichloroethylene	09/13/2022	3.2	0.5	--	UG/L	0.00		

Table 16-6
OU III LIPA/Airport Effluent Data
'Hits Only' July through September 2022

Site ID : 800-124 (System Effluent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/13/2022	0	--	--	UG/L	0.00		
8260 TVOC	08/03/2022	0	--	--	UG/L	0.00		
8260 TVOC	09/13/2022	0	--	--	UG/L	0.00		

Qualifiers :

J = Estimated value.

D = Compound was identified in an analysis at a secondary dilution factor.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Section 17

Q3-2022 Operations Summary
OU III Strontium-90 BGRR/WCF Treatment System

Process: Groundwater extraction with liquid phase granular activated carbon treatment for volatile organic compounds, followed by clinoptilolite zeolite treatment for the removal of Sr-90, with discharge to dry wells.

Goal: Reach Maximum Contaminant Levels (MCLs) in core monitoring wells within 70 years for the Upper Glacial aquifer (by 2070).

Start Date: June 2005

Table 17-1
OU III Strontium-90 BGRR/WCF Treatment System
Pumping Rates (gpm)

Extraction Well	SR-1	SR-2	SR-3*	SR-4*	SR-5*	SR-6*	SR-7*	SR-8*	SR-9*
Site Id #	065-368	065-369	075-676	075-677	075-678	065-403	075-702	075-703	075-704
Screen Interval (ft bls)	33-53	33.5-53.5	51-71	35-75	35-75	85-105	82-102	77-97	67-87
Desired Flow Rate (gpm)	**5**	**5**	**5**	**5**	**5**	**10**	**10**	**10**	**10**
July (Avg gpm)	5.4	5.4	0	0	0	0	0	0	0
August "	6.9	2.7	0	0	0	0	0	0	0
September "	6.8	0	0	0	0	0	0	0	0
Actual (Avg. over Qtr.)	**6.4**	**2.7**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

*Wells SR-4 and SR-5 were placed in standby mode in September 2016. Well SR-6 was placed in standby mode in October 2017. Wells SR-3 and SR-7 were placed in standby mode October 2018. Well SR-8 was placed in pulsed pumping mode in October 2018. Well SR-3 was put back in operation in February 2019. Well SR-3 and SR-8 were put in standby mode May 2022. Well SR-9 was placed in pulsed pumping mode May 2022.

Figure 17-1
Strontium-90 BGRR/WCF Treatment System
Cumulative Millicuries Removed

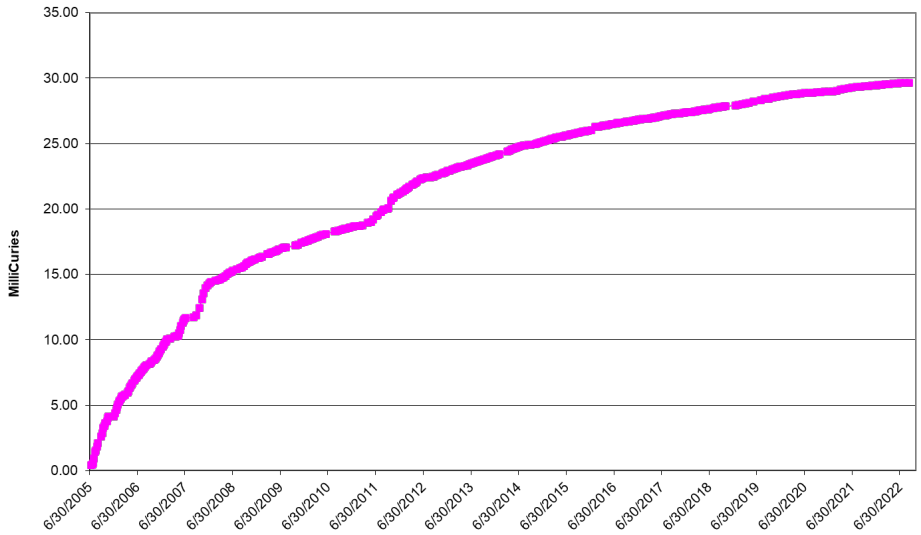


Figure 17-2
Strontium-90 BGRR/WCF Treatment System
Influent Sr-90 Concentrations vs. Time

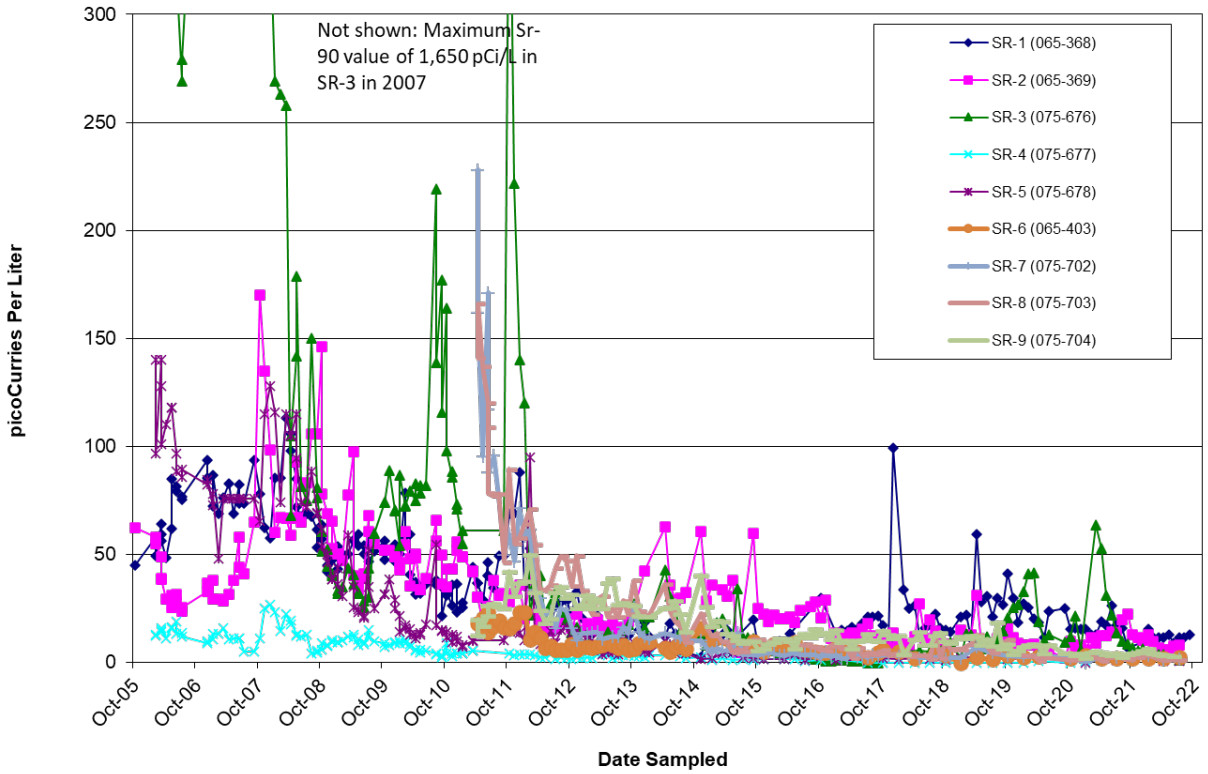


Table 17-2
Strontium-90 BGRR/WCF Treatment System Effluent Water Quality
SPDES Equivalency Permit Concentrations July 1, 2022 – September 30, 2022

Parameter	Permit Limit	Max. Measured Value	Units	Frequency
Flow	75	11	GPM	Continuous
pH (range)	5.5 – 8.5	6.3– 6.4	SU	Weekly
Strontium-90	8.0	0.8	PCi/L	Monthly[1]
Chloroform	7.0	<0.5	ug/L	Monthly[1]
1,1-Dichloroethane	5.0	<0.5	ug/L	Monthly[1]
Ethylbenzene	5.0	<0.5	ug/L	Monthly[1]
Methyl Chloride	5.0	<0.5	ug/L	Monthly[1]
Methylene Chloride	5.0	<0.5	ug/L	Monthly[1]
Toluene	5.0	<0.5	ug/L	Monthly[1]
1,2,3-Trichlorobenzene	5.0	<0.5	ug/L	Monthly[1]
1,1,1-Trichloroethane	5.0	0.7	ug/L	Monthly[1]
1,2,4-Trimethylbenzene	5.0	<0.5	ug/L	Monthly[1]
Xylene, total	10.0	<0.5	ug/L	Monthly[1]

[1] The minimum measurement frequency shall be monthly following a period of 24 consecutive weekly sampling events showing no exceedances of the stated discharge limitations.

System Operations

July 2022:

The system ran normally for the month with extraction wells SR-1 and SR-2 operating. Extraction well SR-9 was off for pulsed-pumping. The system treated approximately 0.5 million gallons of water.

August 2022:

Extraction well SR-1 operated full time. Extraction well SR-9 was off for the month due to a faulty pump and motor. Well SR-2 was off from August 15 to October 20 due to the

pump and motor needing to be replaced. The system treated approximately 0.4 million gallons of water.

September 2022:

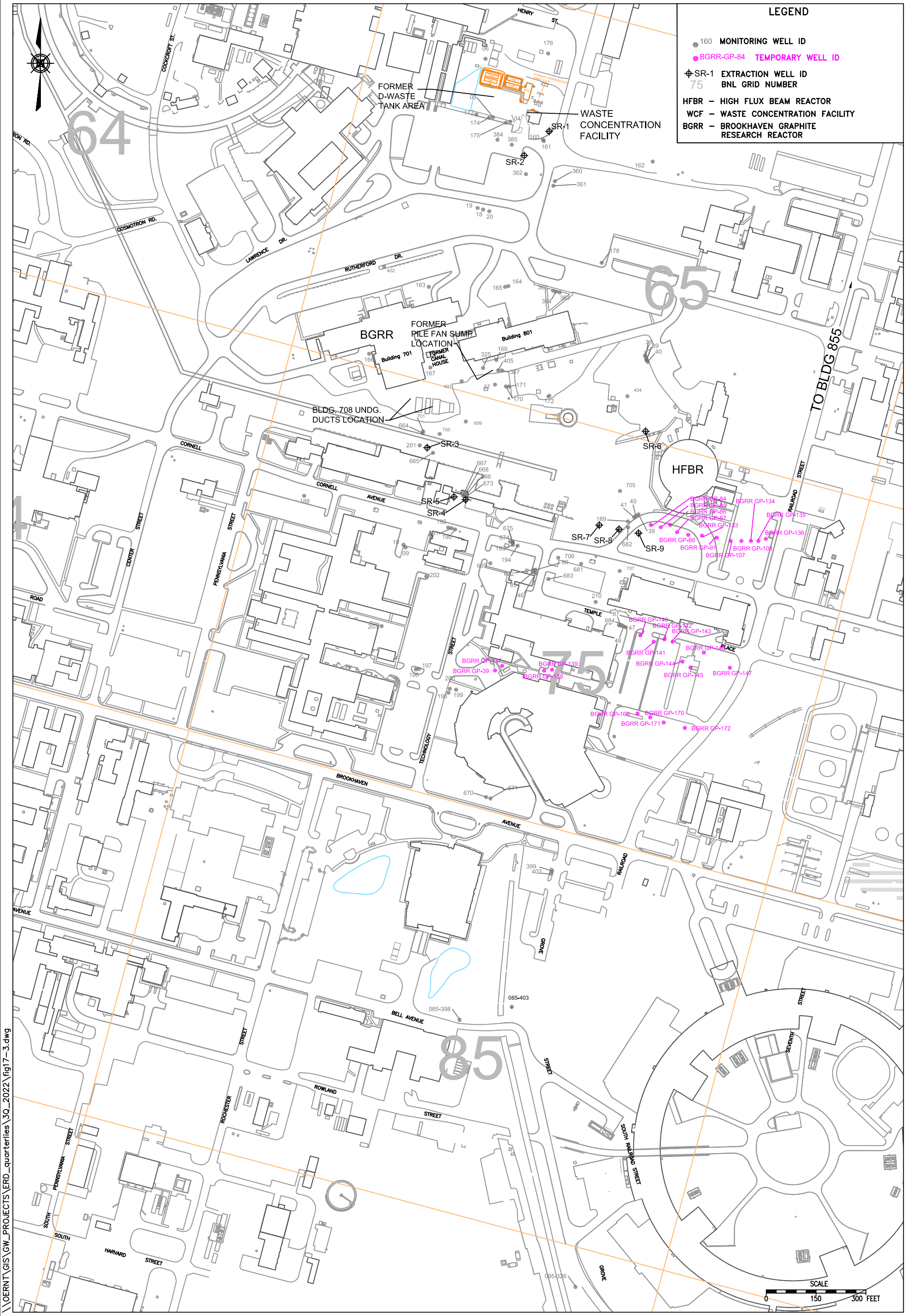
Extraction wells SR-2 and SR-9 were off for the month waiting for the pumps and motors to be replaced. Extraction well SR-1 operated full time. The system treated approximately 0.3 million gallons of water.

Extraction wells SR-3 through SR-8 were off in stand-by mode for this quarter. Wells SR-3 and SR-8 were placed in standby mode in May 2022. Well SR-9 began pulsed pumping in May 2022. The system treated approximately 1.2 million gallons of water during the third quarter of 2022.

In the third quarter, two additional temporary wells were installed as part of an effort to track the migration of Sr-90 from the BGRR/WCF. The maximum Sr-90 concentration in these temporary wells was 25 pCi/L in BGRR-GP-134. The temporary well locations are shown on Figure 17-3 and the data for these two wells are presented on Table 17-7.

Planned Operational Changes

- Continue operating wells SR-1 and SR-2 in full time mode, and maintain wells SR-3, SR-4, SR-5, SR-6, SR-7 and SR-8 in standby mode. If significant rebound occurs, place these extraction wells back in full time operation. Sr-90 concentrations in SR-4, SR-5, SR-6 and SR-7 have remained below the drinking water standard (DWS) since May 2016. Sr-90 concentrations in SR-8 have remained below the DWS since November 2019. The last Sr-90 detection above the DWS for SR-3 or 075-701 was in SR-3 in September 2021.
- Maintain extraction well SR-9 in pulsed pumping mode (one month on and one month off). During the third quarter, well SR-9 was off for repairs and was not sampled.



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ENVIRONMENTAL PROTECTION DIVISION

TITLE:

OU III BGRR/WCF

SITEWIDE REMEDIATION SYSTEMS THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
JEB	–	03/15/13	
CHKD:	APPD:	REV.:	NOTES:
LDS	--	10/18/22	
FIGURE NO.:		17–3	

Table 17-3
OU III Strontium-90 BGRR/WCF Monitoring Well Data
'Hits Only' July through September 2022

Site ID : 075-664

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	07/01/2022	1.16	0.627	0.47	PCI/L	68.00		
Strontium-90	08/01/2022	1.79	0.78	0.618	PCI/L	68.00		
Strontium-90	09/01/2022	0.869	0.837	0.51	PCI/L	64.00		N2

Site ID : 075-701

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	07/01/2022	4.07	0.779	0.655	PCI/L	60.19		
Strontium-90	08/01/2022	3.86	0.773	0.743	PCI/L	61.62		
Strontium-90	09/01/2022	2.03	0.609	0.427	PCI/L	62.29		

Table 17-4
OU III Strontium-90 BGRR/WCF Extraction Well Data
'Hits Only' July through September 2022

Site ID : 065-368 (SR-1)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	07/07/2022	11.6	0.474	0.522	PCI/L	0.00		
Strontium-90	08/10/2022	11.6	0.774	1.07	PCI/L	0.00		
Strontium-90	09/09/2022	12.7	0.804	0.706	PCI/L	0.00		

Site ID : 065-369 (SR-2)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	07/07/2022	7.86	0.474	0.445	PCI/L	0.00		

Site ID : 065-403 (SR-6)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	07/08/2022	2.53	0.769	0.626	PCI/L	0.00		

Site ID : 075-676 (SR-3)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	07/08/2022	1.1	0.761	0.504	PCI/L	0.00		N2

Site ID : 075-677 (SR-4)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	07/08/2022	2.98	0.76	0.626	PCI/L	0.00		

Site ID : 075-702 (SR-7)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	07/12/2022	1.43	0.784	0.548	PCI/L	0.00		

Site ID : 075-703 (SR-8)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
Strontium-90	07/08/2022	1.28	0.767	0.576	PCI/L	0.00		N2

Table 17-5
OU III Strontium-90 BGRR/WCF Influent Data
'Hits Only' July through September 2022

Site ID : 066-216 (Combined Influent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	1.25	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/07/2022	0.79	0.5	--	UG/L	0.00	J	
1,1-Dichloroethane	07/07/2022	0.46	0.5	--	UG/L	0.00	J	
Strontium-90	07/07/2022	10.4	0.512	0.539	PCI/L	0.00		
Tritium	07/07/2022	521	511	320	PCI/L	0.00		N2
8260 TVOC	08/10/2022	1.16	--	--	UG/L	0.00		
1,1,1-Trichloroethane	08/10/2022	0.69	0.5	--	UG/L	0.00	J	
1,1-Dichloroethane	08/10/2022	0.47	0.5	--	UG/L	0.00	J	
Strontium-90	08/10/2022	10.2	0.76	1.04	PCI/L	0.00		
Tritium	08/10/2022	657	347	236	PCI/L	0.00		
8260 TVOC	09/08/2022	1.64	--	--	UG/L	0.00		
1,1,1-Trichloroethane	09/08/2022	1.12	0.5	--	UG/L	0.00		
1,1-Dichloroethane	09/08/2022	0.52	0.5	--	UG/L	0.00	J	
Strontium-90	09/08/2022	10.2	0.468	0.504	PCI/L	0.00		
Tritium	09/08/2022	929	467	304	PCI/L	0.00		

Table 17-6
OU III Strontium-90 BGRR/WCF Effluent Data
'Hits Only' July through September 2022

Site ID : 066-219 (System Effluent)

Chemical	Sample Date	Value	Det. Limit	Error	Units	Depth	Lab Qual	Review Qual
8260 TVOC	07/07/2022	0.85	--	--	UG/L	0.00		
1,1,1-Trichloroethane	07/07/2022	0.44	0.5	--	UG/L	0.00	J	
1,1-Dichloroethane	07/07/2022	0.41	0.5	--	UG/L	0.00	J	
Strontium-90	07/07/2022	0.656	0.452	0.285	PCI/L	0.00	J	UJ(+)-B
8260 TVOC	08/10/2022	1.02	--	--	UG/L	0.00		
1,1,1-Trichloroethane	08/10/2022	0.5	0.5	--	UG/L	0.00	J	
1,1-Dichloroethane	08/10/2022	0.52	0.5	--	UG/L	0.00	J	
Strontium-90	08/10/2022	0.825	0.759	0.492	PCI/L	0.00		N2
8260 TVOC	09/08/2022	1.17	--	--	UG/L	0.00		
1,1,1-Trichloroethane	09/08/2022	0.66	0.5	--	UG/L	0.00	J	
1,1-Dichloroethane	09/08/2022	0.51	0.5	--	UG/L	0.00	J	
Strontium-90	09/08/2022	0.542	0.674	0.407	PCI/L	0.00	U	

Qualifiers :

J = Estimated value.

D = Compound was identified in an analysis at a secondary dilution factor.

N1 = Not usable based on the results that are not distinguishable from background. The value is less than or equal to the sum of the MDA and the uncertainty or RDL.

Organic Compounds :

B = Compound was found in both the sample And associated laboratory blank.

Inorganic Compounds :

B = Result Is between instrument detection limit And contract required reporting limit.

Table 17-7
BGRR/WCF Temporary Well Data
"Hits Only" July through September 2022

Site ID : BGRR-GP-134

Chemical Name	Sample Date	Value	Detlim	Error	Units	Depth	Qual
Strontium-90	7/6/2022	1.17	0.481	0.313	PCI/L	67	
Strontium-90	7/5/2022	2.54	0.536	0.373	PCI/L	72	
Strontium-90	7/5/2022	2.78	0.456	0.346	PCI/L	77	
Strontium-90	7/5/2022	14.5	0.448	0.566	PCI/L	82	
Strontium-90	7/5/2022	23.8	0.515	0.787	PCI/L	87	
Strontium-90	7/5/2022	25.4	0.624	0.954	PCI/L	92	
Strontium-90	7/5/2022	16.1	0.858	0.884	PCI/L	97	
Strontium-90	7/5/2022	11.6	0.509	0.567	PCI/L	102	
Strontium-90	7/1/2022	7.84	0.508	0.516	PCI/L	107	
Strontium-90	7/1/2022	4.93	0.466	0.389	PCI/L	112	
Strontium-90	7/1/2022	1.59	0.245	0.196	PCI/L	117	

Site ID : BGRR-GP-135

Chemical Name	Sample Date	Value	Detlim	Error	Units	Depth	Qual
Strontium-90	7/8/2022	1.19	0.575	0.371	PCI/L	67	
Strontium-90	7/7/2022	0.951	0.652	0.41	PCI/L	77	N2
Strontium-90	7/7/2022	4.96	0.761	0.582	PCI/L	82	
Strontium-90	7/7/2022	14.7	0.859	0.867	PCI/L	87	
Strontium-90	7/7/2022	12.1	0.714	0.748	PCI/L	92	
Strontium-90	7/7/2022	9.6	1.07	0.855	PCI/L	97	
Strontium-90	7/7/2022	3.62	0.563	0.449	PCI/L	102	
Strontium-90	7/7/2022	1.44	1.08	0.666	PCI/L	107	N2
Strontium-90	7/6/2022	1.41	0.78	0.537	PCI/L	112	
Strontium-90	7/6/2022	4.3	0.682	0.514	PCI/L	117	

N2 = The reported activity value is less than or equal to the sum of the MDA and the uncertainty. Possible false positive

Section 18

Q-3 2022 Quarterly Monitoring Summary
g-2 Source Area and Tritium Plume

1.0 Background

In November 1999, tritium was detected in the groundwater near the g-2 experiment at concentrations above the 20,000 pCi/L maximum contaminant level (MCL). Sodium-22 was also detected in the groundwater, but at concentrations well below the 400 pCi/L MCL. An investigation into the source of the contamination revealed that the tritium and sodium-22 originated from activated soil shielding located adjacent to the g-2 target building. Rainwater was able to infiltrate the activated soils and carry the tritium and sodium-22 into the groundwater. To prevent additional rainwater infiltration into the activated soil shielding, a concrete cap was constructed over the soil shielding in December 1999.

Following the concurrence of the NYSDEC, a Record of Decision (ROD) was signed by the U.S. DOE and U.S. EPA in early 2007. This ROD requires continued routine inspection and maintenance of the impermeable cap, groundwater monitoring of the source area to verify the continued effectiveness of the storm water controls and monitoring the tritium plume until it attenuates to less than the 20,000 pCi/L MCL.

2.0 Monitoring Activities

Surveillance of groundwater quality is accomplished using six wells located immediately downgradient of the source area, and 10 wells located further downgradient, southeast of AGS facility Building 912. The monitoring frequency for the six wells located immediately downgradient of the source area wells is semi-annual, with samples collected during the 2nd and 4th quarters of the year. The 10 wells located downgradient of Building 912 are sampled during the 4th quarter.

Source Area Monitoring Results:

No samples were collected during the 3rd Quarter. During the 2nd Quarter 2022 sampling period, the maximum tritium concentration in source area monitoring wells was 6,410 pCi/L in well 054-124 (Figure 18-1). The overall reductions in tritium concentrations observed in source area monitoring wells indicate that the cap is effectively preventing rainwater infiltration into the activated soil shielding and the amount of residual tritium that is available to be flushed out of the deep vadose zone is decreasing.

3.0 Recommendations

- Continue to sample the six monitoring wells directly downgradient of the source area (near Building 912A) semiannually (2nd and 4th Quarters), and the 10 wells located near Building 912 annually (4th Quarter).
- Continue scheduled inspections and perform required maintenance of the g-2 cap.
- Monitoring results will be communicated to the regulatory agencies via quarterly and annual reports.

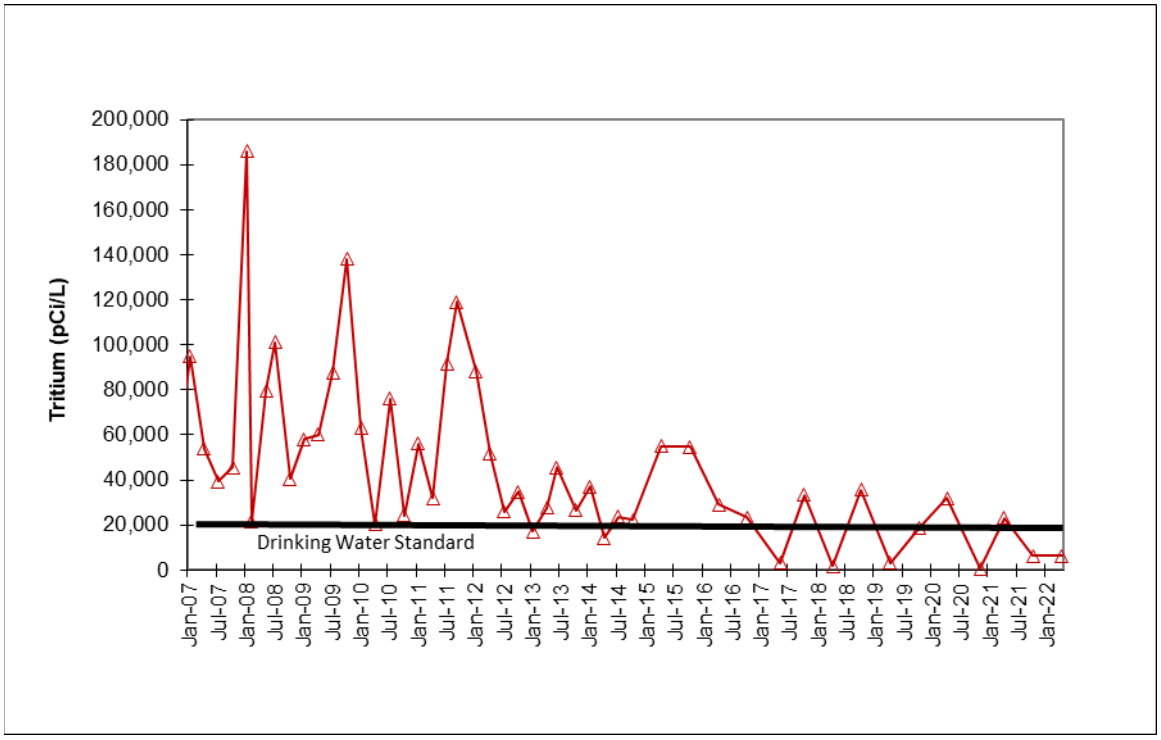


Figure 18-1. Maximum tritium concentrations observed from January 2007 through April 2022 in groundwater downgradient of the g-2 source area.

Section 19

Q-3 2022 Quarterly Monitoring Summary
BLIP Source Area

1.0 Background

The Brookhaven Linac Isotope Producer (BLIP) is an active accelerator facility located in the central portion of the site. The BLIP facility has been in operation since 1972 and is a national resource for producing the radioisotopes that are crucial in nuclear medicine for both research and clinical use. BLIP also supports BNL's research on diagnostic and therapeutic radiopharmaceuticals.

Beam line operations have resulted in the activation of soils that surround the BLIP target vessel. These activated soils are approximately 30 feet below the BLIP building, in a small zone surrounding the target vessel. In 1998, low levels of tritium were detected in the groundwater near the BLIP facility experiment at concentrations of approximately three times the 20,000 pCi/L MCL. Sodium-22 was also detected in the groundwater, but the levels were less than the 400 pCi/L MCL. Corrective actions were implemented in 1998 to prevent additional rainwater from entering the activated soil. These included repairing and reconfiguring the building's roof gutters and downspouts, resealing the paved areas south of the building, and installing a concrete cap in the remaining areas around the building. In 2000, a colloidal silica grout was injected into the activated soil to further immobilize the tritium and sodium-22, and in 2004 an additional impermeable cap was constructed over the beam line that runs from the Linac to the BLIP facility.

Following the concurrence of the NYSDEC, a Record of Decision (ROD) was signed by the U.S. DOE and U.S. EPA in early 2007. This ROD requires continued routine inspection and maintenance of the impermeable cap and groundwater monitoring to verify the continued effectiveness of the storm water controls.

2.0 Monitoring Activities

Three groundwater monitoring wells are positioned immediately downgradient of the BLIP facility. The wells are currently monitored on a semi-annual basis (during the 2nd and 4th Quarters).

Monitoring Results:

No samples were collected during the 3rd Quarter. During the 2nd Quarter 2022 sample period, tritium was not detected in the three downgradient wells. Since early 2006, tritium concentrations in the groundwater downgradient of BLIP have been continually less than the 20,000 pCi/L MCL (Figure 19-1). The overall reductions in tritium concentrations observed in the source area wells since 2006 indicate that the cap is effectively preventing rainwater infiltration into the activated soil shielding and the amount of residual tritium that is available to be flushed out of the deep vadose zone is decreasing.

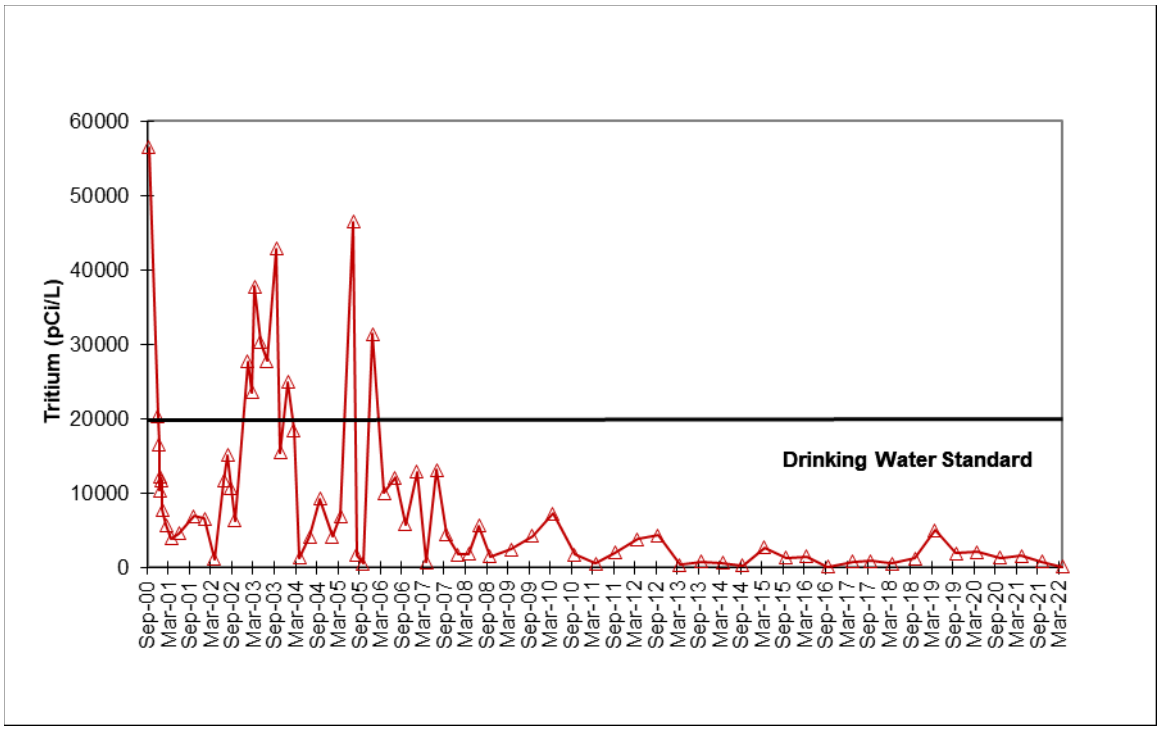


Figure 19-1. Maximum tritium concentrations observed from 2000 through April 2022 in groundwater immediately downgradient of the BLIP Facility.

3.0 Recommendations

The following are recommendations for the BLIP facility:

- Continue monitoring the three wells immediately downgradient of BLIP for tritium on a semiannual basis (2nd and 4th Quarters).
- Continue scheduled inspections and perform required maintenance of the BLIP cap.
- Monitoring results will continue to be communicated to the regulatory agencies via quarterly and annual reports.

Section 20
Q3-2022 Operations Summary
OU III Building 452 Freon-11 Pump & Treat System
(System Closed)

Process: Groundwater extraction and air stripping treatment, with discharge to a drainage culvert leading to Recharge Basin HS.

Goal: Remediation of Freon-11 in the groundwater and reach Maximum Contaminant Levels (MCLs) in core monitoring wells within 30 years for the Upper Glacial aquifer (by 2030). NYSDEC and EPA approved of the Petition for Closure in August and September 2019, respectively.

Start Date: March 2012

Table 20-1
OU III Building 452 Freon-11 Pump & Treat System
Pumping Rate (gpm)

Extraction Well	**EW-18**
Site Id #	095-316
Screened Interval (feet below grade)	55-65
Desired Flow Rate (GPM)	0*
Actual Flow Rate	0*

* The system was approved for closure in September 2019.

Figure 20-1
OU III Building 452 Freon-11 Pump & Treat System
Cumulative Mass Removal of Trichlorofluoromethane vs. Time

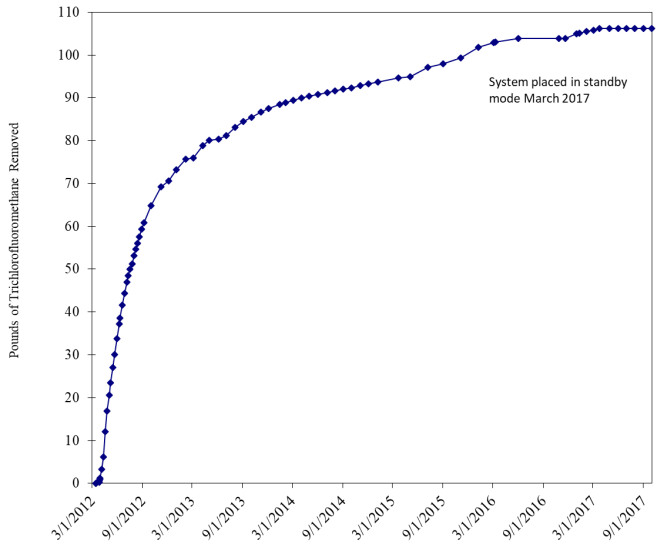


Figure 20-2
OU III Building 452 Freon-11 Pump & Treat System
Influent Trichlorofluoromethane Concentrations vs. Time

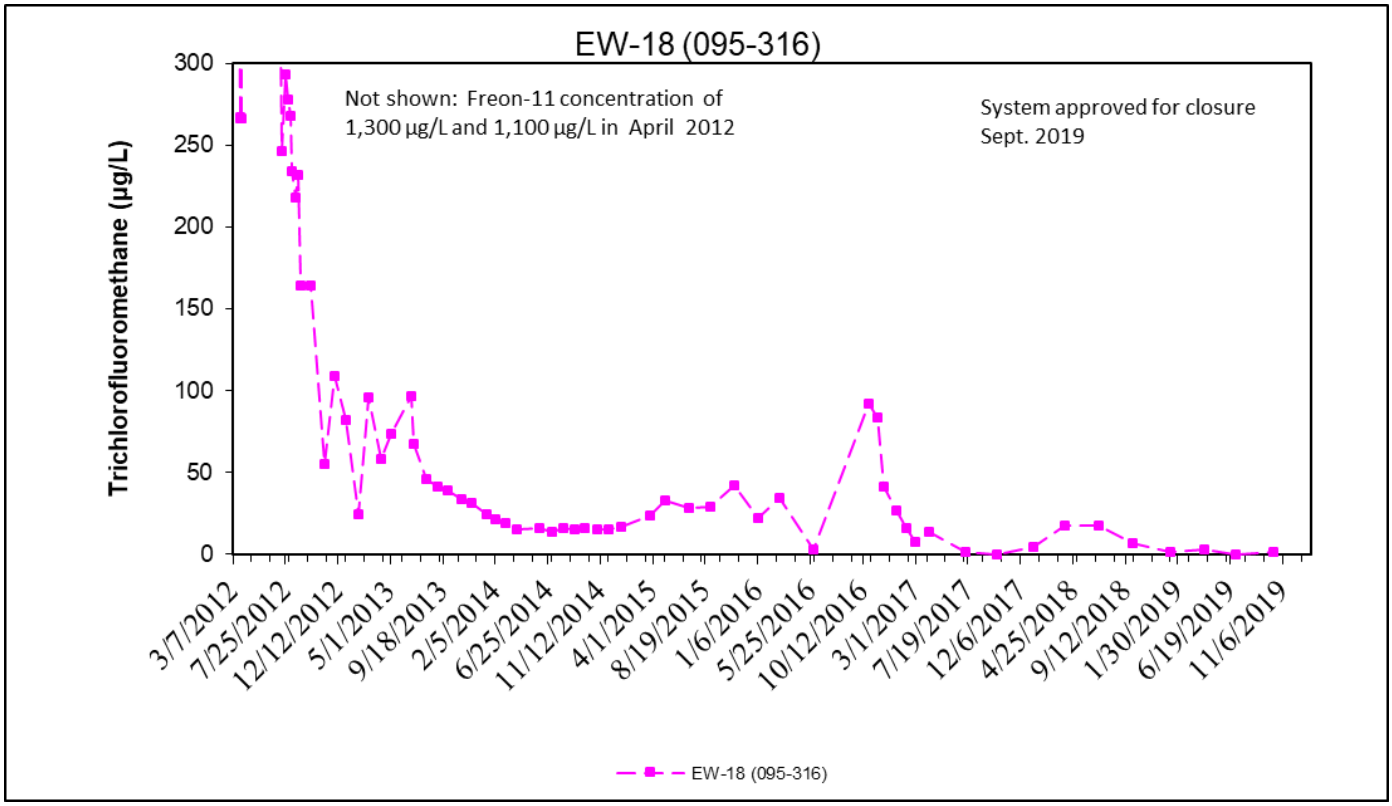


Table 20-2
Effluent Water Quality
SPDES Equivalency Permit Concentrations (System Closed)

Parameter	Permit Limit	Max. Measured Value	Units	Frequency*
Flow	120	NA	GPM	Continuous
pH (range)	5.0 - 8.5	NA	SU	Weekly
Benzene	1.0	NA	ug/L	Monthly
Bromodichloromethane	50	NA	ug/L	Monthly
Carbon Tetrachloride	5.0	NA	ug/L	Monthly
Chloroform	7.0	NA	ug/L	Monthly
Dichlorodifluoromethane	5.0	NA	ug/L	Monthly
1,1-Dichloroethylene	5.0	NA	ug/L	Monthly
4-Isopropyltoluene	5.0	NA	ug/L	Monthly
Methyl Chloride	5.0	NA	ug/L	Monthly
Methylene Chloride	5.0	NA	ug/L	Monthly
Tetrachloroethylene	5.0	NA	ug/L	Monthly
Toluene	5.0	NA	ug/L	Monthly
1,2,3-Trichlorobenzene	5.0	NA	ug/L	Monthly
1,1,1-Trichloroethane	5.0	NA	ug/L	Monthly
Trichlorofluoromethane	5.0	NA	ug/L	Monthly
1,2,4-Trimethylbenzene	5.0	NA	ug/L	Monthly
Xylene (meta + para)	10.0	NA	ug/L	Monthly

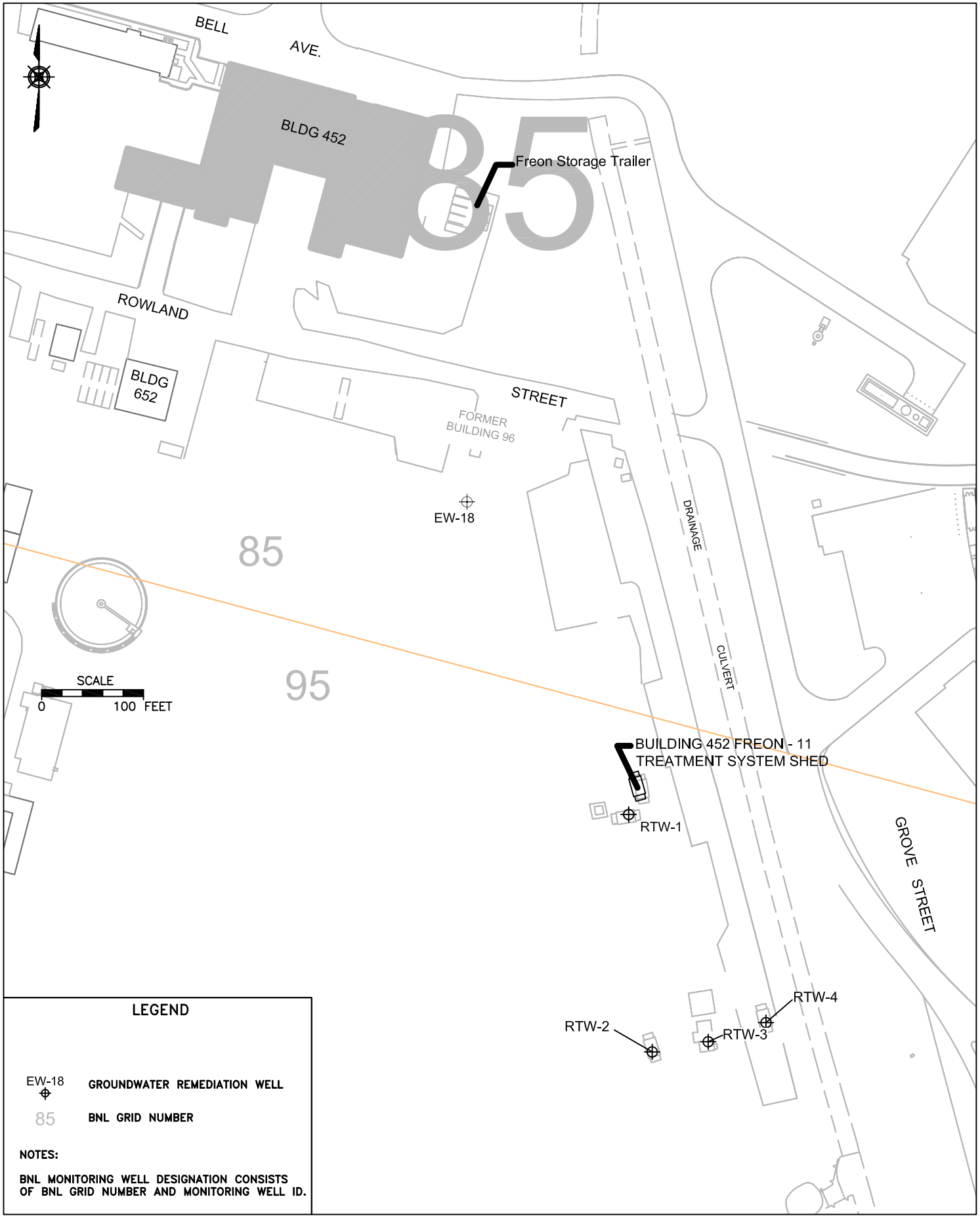
NA = Not analyzed. The system is closed.

System Operations

Treatment for the former Freon-11 plume is complete. The air stripping treatment system is being used to treat the water from Building 96 extraction well RTW-1.

Planned Operational Changes

- Postpone decisions to abandon extraction well EW-18 and the remaining monitoring wells until the PFAS plume originating from the former firehouse area has been fully characterized and a determination is made on their utilization related to emerging contaminants.



LEGEND

EW-18 — GROUNDWATER REMEDIATION WELL

85 — BNL GRID NUMBER

NOTES:

BNL MONITORING WELL DESIGNATION CONSISTS OF BNL GRID NUMBER AND MONITORING WELL ID.

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ENVIRONMENTAL PROTECTION DIVISION

TITLE:

BUILDING 452 AREA FREON-11 MONITORING WELL NETWORK

SITEWIDE REMEDIATION SYSTEMS
THIRD QUARTER 2022 OPERATIONS REPORT

DWN:	VT: HZ.:	DATE:	PROJECT NO.:
AJZ	–	08/24/12	
CHKD:	APPD:	REV.:	NOTES:
LDS	--	10/18/22	--

FIGURE NO.: 20-3