

Ms. Sarah Johnston
Project Manager
New York State Department of Environmental Conservation
Remedial Bureau D
625 Broadway
Albany, New York 12233-7015

Arcadis of New York, Inc.
290 Broadhollow Road,
Suite 307 E
Melville
New York 11747
Phone: 631 249 7600
Fax: 631 249 7610
www.arcadis.com

Date: November 25, 2025

Our Ref: 30279534.RPTI4
30287745.NAVI4

Subject: 2025 Third Quarter Operation, Maintenance, and Monitoring Report,
Operable Unit 2, Northrop Grumman and Naval Weapons Industrial Reserve
Plant (NWIRP) Sites, Bethpage, New York.
(NYSDEC Site #'s 1-30-003A and B)

Dear Ms. Johnston:

On behalf of Northrop Grumman, Arcadis is providing the NYSDEC with the Third Quarter 2025 Operation, Maintenance, and Monitoring Report (Report). This Report was prepared to document the operation, maintenance, and monitoring (OM&M) activities conducted for the on-site portion of the Operable Unit 2 (OU2) groundwater remedy and the results of ongoing volatile organic compound (VOC) and inorganic monitoring in groundwater to meet the remedial objectives set forth in the March 2001 OU2 Record of Decision (ROD) and associated December 2019 Amended Record of Decision (AROD).

Table 1 summarizes OU2 remedial system performance operational data, mass removed, and water balance. **Tables 2 and 3A/3B** provide the analytical results for remedial system water and vapor samples, respectively, for this period. **Tables 4A and 4B** provide an air quality impact analysis (under 6 CRR-NY 212 [Rule 212]) for quarterly vapor sample results collected from the Building 96 and Building 102 systems, respectively, including air modeling analysis if warranted. **Table 5** provides validated analytical results associated with groundwater monitoring efforts completed during this period. **Figures 1 through 3** show the Locations of Wells and On-site Groundwater Remedy, ONCT Groundwater Extraction and Treatment System Site Plan, and the ONCT Groundwater Extraction and Treatment System Schematic, respectively.

Sarah Johnston
NYSDEC
November 25, 2025

Please contact us if you have any questions or comments.

Sincerely,
Arcadis of New York, Inc.



Christopher Engler, P.E.
New York PE-069748
Vice President

Email: christopher.engler@arcadis.com
Direct Line: 315.409.6579

CC. Ed Hannon – Northrop Grumman
Fred Weber – Northrop Grumman
Chris Engelhardt – NYSDEC Region 1
Jason Pelton – NYSDEC
Jess LaClair – NYSDEC
James Sullivan – New York State Department of Health
Stephanie Selmer – New York State Department of Health
Angela Pettinelli – NCDOH
Salvatore Caruso– NCDOH
Richard Castle – NCDOH
Bryan C. Revell – NAVFAC Mid-Atlantic Environmental
Melissa Cushing - NAVFAC Mid-Atlantic Environmental
Rick Moore - TetraTech NUS, Inc.
David Brayack – TetraTech NUS, Inc.
Paul Bluestein – Glenn Springs Holdings, Inc.
Manfred Bohms – Steel Equities
Nidal Azzam – USEPA
Alexis Stabulas - USEPA
Matthew Russo – Town of Oyster Bay
Kevin Reilly – Massapequa Water District
Richard Kern – Liberty Utilities
James Edgette – South Farmingdale Water District
John Reinhardt – Town of Hempstead Water District
Michael Boufis – Bethpage Water District
Carlo San Giovanni - Arcadis
Bethpage Public Library
File

Enclosures

Tables

Table 1
Operational Summary for the Treatment System
Third Quarter 2025⁽¹⁾ Reporting Period
Operable Unit 2
Northrop Grumman
Bethpage, New York



	Quarterly Flow Rates (gpm)		Quarterly Flow Volumes (MG)			Quarterly VOC Concentrations (µg/L)		VOC Mass Removed (lbs)		Third Quarter Remedial Well Uptime (%)
	Current Model Design ⁽²⁾	Current Operational Flow ^(3,4)	Design ⁽²⁾	Actual ^(3,4)	% of Design	TCE ^(5,6)	TVOC ^(5,6)	Quarterly ⁽⁵⁾	Cumulative	
Influent Groundwater⁽⁷⁾										
Well 1	800	818	106	106	100%	347	367	325	60,952	97.4%
Well 3R	700	820	93	105	113%	147	199	175	96,655	96.7%
Well 17	1,000	1,002	132	110	83%	110	124	114	57,776	83.1%
Well 18	800	996	106	118	111%	20.7	39.0	38	8,032	89.2%
Well 19	500	502	66	60	91%	33.5	44.0	22	10,071	90.5%
Total ⁽⁸⁾	3,800	4,138	503	499	99%	--	--	674	233,486	--
Effluent Groundwater ^(9,14)										
Calpine	100 - 400	48	--	6	--	--	--	--	--	--
OXY Biosparge ⁽¹⁰⁾	2 - 42	0	--	0	--	--	--	--	--	--
West Recharge Basins	1,112 - 1,455	1,428	--	189	--	ND	ND	--	--	--
South Recharge Basins (Building 102)	2231 - 4631	2,175	296 - 607	288	--	ND	ND	--	--	--
South Recharge Basins (Building 109)	1,500	1,881	199	249	--	--	--	--	--	--
South Recharge Basins (Combined)	2231 - 4631	4,056	495 - 806	537	--	--	--	--	--	--
Total	--	5,532	--	732	--	--	--	--	--	--
Additional Flow to South Recharge Basins										
Storm Water Runoff Contributing to South Recharge Basins Flow Volume ⁽¹¹⁾	--	--	--	16.5	--	--	--	--	--	--
Total Flow Volume to South Recharge Basins ^(10,11,12)	--	--	495 - 806	554	--	--	--	--	--	--
Treatment Efficiencies ⁽¹³⁾										
Building 96 System:	>99.9%									
Building 102 System:	>99.9%									

See Notes and Abbreviations on last page.

Notes and Abbreviations:

- (1) Quarterly reporting period: July 1, 2025 through September 30, 2025.
- (2) "Current Model Design" flow rates were determined for the five remedial wells and for the South Recharge Basin (SRB) based on computer modeling (ARCADIS G&M, Inc. 2002, updated in 2021 and 2023). Flow rates for Calpine Power Plant (Calpine), Occidental Chemical (OXY) Biosparge, and West Recharge Basin flow rates are typical flow rates and are provided for reader information. Flow to SRB reflects operation of the B109 treatment system. High-end of range of flow to the SRB reflects up to a 2,400 gpm contribution from B109. Model simulations demonstrated ONCT capture zone maintained for SRB discharge rates within range. "Design" flow volumes represent the volume of water that is expected to be pumped/discharged during the reporting period and is calculated by multiplying the design rate by the reporting period duration.
- (3) Actual flow rates for the remedial wells represent the average actual pumping rates when the pumps are operational and do not take into account the time that a well is not operational. Actual flow volumes are collated from the monthly SPDES reports, which are calculated using the SCADA instantaneous flow rates transmitted from local flow meters.
- (4) "Actual" flow rates for the system discharges represent the average flow rate during the reporting period and are determined by dividing the total flow recorded during the reporting period by the reporting period duration.
- (5) The TCE and TVOC concentrations are from the quarterly sampling event performed during this reporting period on August 5, 2025. The VOC pounds of mass removed are calculated from the quarterly flow volumes and VOC concentrations from the quarterly sampling event performed during this reporting period.
- (6) The TCE and TVOC concentrations for the West Recharge Basin (Outfall 006 of the Building 96 System) and the South Recharge Basin (Outfall 005 of the Building 102 System) are representative of effluent samples collected at the Building 96 and Building 102 treatment systems, prior to discharge to the West and South Recharge Basins.
- (7) Building 96 (Wells 1 and 3R): Building 96 shut down on 7/31/25 to 8/1/25 for changeout of the carbon in the exterior GAC units. Building 96 shut down on 9/29/25 to 9/30/25 for small-scale maintenance and repairs. Building 102 (Wells 17, 18, and 19): Building 102 shut down on 7/12/25 for South Recharge Basin sluice gate repairs. Well 19 was restarted on 7/17/25, Well 18 was restarted on 7/18/25, and Well 17 was restarted on 7/24/25. Building 102 shut down from 8/13/25 to 8/14/25 for small-scale maintenance and repairs. Building 102 shut down on 9/13/25 for South Recharge Basin sluice gate repairs and was restarted on 9/16/25.
- (8) Total pumpage/recharge rates are accurate to ±15% based on available information and expected or typical precision/accuracy factors for the gauges and meters.
- (9) There are four possible discharges for the effluent groundwater: South Recharge Basins, West Recharge Basins, Calpine, and the OXY Biosparge system. Treated water is continuously discharged to the south and west recharge basins during routine operation, and is available "on-demand" to both Calpine for use as make-up water, and the OXY Biosparge remediation system. For this quarter, the quarterly flow rates to the south and west recharge basins (SRB and WRB, respectively) were calculated using the remedial well flow rates and available additional information and assumptions provided by Northrop Grumman regarding flow distribution, as follows: the Building 96 system (Remedial Wells 1 and 3R) discharges effluent water to the WRB, less Calpine usage and less 119 gpm of Building 102 steam condenser usage (15.8 MG); the Building 102 System (Remedial Wells 17 through 19), including the Building 102 steam condenser usage (15.8 MG), and the Building 109 System (Remedial Wells 20 through 22) discharge effluent water to the SRB.
- (10) Oxy has not reported any water usage for the OXY Biosparge system since May 2016.
- (11) Storm water runoff volume is calculated by multiplying the adjusted tributary area and NOAA precipitation data for the reporting periods. The tributary area is adjusted by the runoff coefficient to exclude the infiltration volume from the total rainfall volume. The tributary area, runoff coefficient, and adjusted tributary area are from Dvirka and Bartilucci Consulting Engineers' Storm Water Permit Evaluation Report (January, 28, 2010). The NOAA precipitation data are calculated as a sum of NOAA daily precipitation data for the reporting period. NOAA precipitation data are retrieved from Station GHCND:USW00054787 - FARMINGDALE REPUBLIC AIRPORT, NY US.
- (12) Total flow volume to South Recharge Basins is estimated as a sum of flow volumes contributed by the effluent groundwater to South Recharge Basins (B102 and B109 treatment systems) and from storm water runoff to South Recharge Basins. Third Quarter 2025 calculated South Recharge Basin flow volume is within historical operating range.
- (13) Treatment system efficiencies are calculated by dividing the difference between the remedial well flow weighted influent and effluent TVOC concentrations by the remedial well flow weighted influent concentration.
- (14) RW-21 system start-up testing was initiated in May 2023, and continuing with full-scale operation beginning in August 2023. As such, flow volumes to the south recharge basins are representative of volumes from the Building 102 and Building 109 treatment systems since RW-21 system start-up.

- Not Applicable
- µg/L micrograms per liter
- gpm gallons per minute
- lbs pounds
- MG million gallons
- NOAA National Oceanic and Atmospheric Administration
- SCADA Supervisory Controls and Data Acquisition
- SPDES State Pollution Discharge Elimination System
- TCE trichloroethene
- TVOC total volatile organic compounds
- VOC volatile organic compounds

Table 2
 Concentrations of Constituents in Remedial Wells and
 Treatment System Effluents
 Third Quarter 2025⁽¹⁾ Reporting Period
 Operable Unit 2
 Northrop Grumman
 Bethpage, New York

Constituents ⁽²⁾ (units in µg/L)	CAS#	Location ID: Sample ID: Sample Date:	WELL 1 WELL 1 8/5/2025	WELL 3R WELL 3R 8/5/2025	96 EFFLUENT 96 EFFLUENT 8/5/2025	WELL 17 WELL 17 8/5/2025	WELL 18 WELL 18 8/5/2025	WELL 19 WELL 19 8/5/2025	102 EFFLUENT 102 EFFLUENT 8/5/2025
Volatile Organic Compounds (VOCs)⁽³⁾									
1,1,1-Trichloroethane	00071-55-6		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	00079-34-5		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	00079-00-5		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethane	00075-34-3		0.84 J	1.5	<1.0	<1.0	1.4	<1.0	<1.0
1,1-Dichloroethene	00075-35-4		1.5	4.4	<1.0	0.79 J	1.8	0.78 J	<1.0
1,2-Dichloroethane	00107-06-2		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	00078-87-5		1.7	<1.0	<1.0	0.80 J	<1.0	<1.0	<1.0
2-Butanone (MEK)	00078-93-3		<10	<10	<10	<10	<10	<10	<10
2-Hexanone (MBK)	00591-78-6		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-Pentanone (MIK)	00108-10-1		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Acetone	00067-64-1		<10	<10	<10	<10	<10	<10	<10
Benzene	00071-43-2		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane	00075-27-4		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromoform	00075-25-2		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Bromomethane	00074-83-9		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Carbon Disulfide	00075-15-0		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Carbon Tetrachloride	00056-23-5		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	00108-90-7		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	00075-00-3		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	00067-66-3		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloromethane	00074-87-3		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-Dichloroethene	00156-59-2		5.4	3.9	<1.0	2.0	2.2	4.8	<1.0
cis-1,3-Dichloropropene	10061-01-5		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dibromochloromethane	00124-48-1		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	00100-41-4		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Dichloromethane	00075-09-2		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Styrene	00100-42-5		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	00127-18-4		9.1	38.3	<1.0	9.0	12.0	3.9	<1.0
Toluene	00108-88-3		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	00156-60-5		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	10061-02-6		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Trichloroethylene	00079-01-6		347	147	<1.0	110	20.7	33.5	<1.0
Trichlorotrifluoroethane (Freon 113)	00076-13-1		1.3 J	1.8 J	<5.0	1.1 J	0.70 J	0.83 J	<5.0
Vinyl Chloride	00075-01-4		<1.0	1.6	<1.0	<1.0	<1.0	<1.0	<1.0
Xylene-o	00095-47-6		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylene-m,p	179601-23-1		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total VOCs⁽⁴⁾			367	199	ND	124	39	44	ND
1,4-Dioxane⁽³⁾			6.0	6.3	6.7	4.1	2.8	5.6	4.7

Notes and abbreviations on last page.

Table 2
Concentrations of Constituents in Remedial Wells and
Treatment System Effluents
Third Quarter 2025⁽¹⁾ Reporting Period
Operable Unit 2
Northrop Grumman
Bethpage, New York

Notes and Abbreviations:

- (1) Quarterly reporting period: July 1, 2025 through September 30, 2025.
- (2) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016).
- (3) VOC samples analyzed using USEPA Method 8260C. 1,4-Dioxane samples analyzed using USEPA Method 8270D-SIM.
- (4) TVOC concentrations are rounded to the number of decimal places of the individual VOC with the least numerical precision (decimal place), including whole numbers with no decimal place.

- 1.5** Bold value indicates a detection
- < 1.0 Compound is not detected above its laboratory quantification limit
- µg/L micrograms per liter
- J Compound detected below its reporting limit; value is estimated
- ND Not detected
- OU2 Operable Unit 2
- USEPA United States Environmental Protection Agency
- VOC Volatile Organic Compound

Table 3A
Vapor Sample Analytical Results,
Building 96 Treatment System,
Third Quarter 2025⁽¹⁾ Reporting Period
Operable Unit 2
Northrop Grumman
Bethpage, New York



Constituents (units in µg/m ³)	Location ID: Sample ID: Sample Date:	96 INFLUENT T96 INFLUENT 8/5/2025	96 MID-EFFLUENT T96 MIDTRAIN 8/5/2025	96 EFFLUENT T96 EFFLUENT 8/5/2025
Volatile Organic Compounds (VOCs)⁽²⁾	CAS #			
1,1,1-Trichloroethane	00071-55-6	<22	<0.44	<1.1
1,1,2,2-Tetrachloroethane	00079-34-5	<27	<0.55	<1.4
1,1,2-Trichloroethane	00079-00-5	<22	<0.44	<1.1
1,1-Dichloroethane	00075-34-3	61.5	<0.65	<1.6
1,1-Dichloroethene	00075-35-4	145	<0.13	<0.32
1,2-Dichloroethane	00107-06-2	<32	<0.65	<1.6
1,2-Dichloropropane	00078-87-5	48.5	<0.74	<1.8
Benzene	00071-43-2	<26	<0.51	<1.3
Bromodichloromethane	00075-27-4	<27	<0.54	<1.3
Bromoform	00075-25-2	<17	<0.33	<0.83
Bromomethane	00074-83-9	<31	<0.62	<1.6
Carbon Disulfide	00075-15-0	<25	<0.50	<1.2
Carbon Tetrachloride	00056-23-5	<10	<0.20	<0.50
Chlorobenzene	00108-90-7	<37	<0.74	<1.8
Chloroethane	00075-00-3	<21	1.1	<1.1
Chloroform	00067-66-3	21 J	<0.78	<2.0
Chloromethane	00074-87-3	<17	1.0	0.99
cis-1,2-Dichloroethene	00156-59-2	229	0.48	1.7
cis-1,3-Dichloropropene	10061-01-5	<36	<0.73	<1.8
Dibromochloromethane	00124-48-1	<34	<0.68	<1.7
Ethylbenzene	00100-41-4	<35	<0.69	<1.7
Dichloromethane	00075-09-2	<28	0.83	<1.4
Styrene	00100-42-5	<34	<0.68	<1.7
Tetrachloroethene	00127-18-4	1,420	7.5	<0.54
Toluene	00108-88-3	<30	<0.60	<1.5
trans-1,2-Dichloroethene	00156-60-5	<32	<0.63	<1.6
trans-1,3-Dichloropropene	10061-02-6	<36	<0.73	<1.8
Trichloroethylene	00079-01-6	15,400	65.6	351
Trichlorotrifluoroethane (Freon 113)	00076-13-1	103	<0.61	<1.5
Vinyl Chloride	00075-01-4	32.0	26.8	22
Xylene-o	00095-47-6	<35	<0.69	<1.7
Xylene-m,p	179601-23-1	<35	<0.69	<1.7
Total VOCs⁽³⁾		17,460	103.3	376

Notes and abbreviations on last page.

Table 3A
Vapor Sample Analytical Results,
Building 96 Treatment System,
Third Quarter 2025⁽¹⁾ Reporting Period
Operable Unit 2
Northrop Grumman
Bethpage, New York



Notes and Abbreviations:

- (1) Quarterly reporting period: July 1, 2025 through September 30, 2025.
 - (2) Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15.
 - (3) TVOC concentrations are rounded to the number of decimal places of the individual VOC with the least numerical precision (decimal place), including whole numbers with no decimal place.
- 1.0** Bold value indicates a detection
- < 22 Compound is not detected above its laboratory quantification limit
- µg/m³ micrograms per cubic meter
- J Compound detected below its reporting limit; value is estimated
- ELAP Environmental Laboratory Approval Program
- NYSDOH New York State Department of Health
- USEPA United States Environmental Protection Agency
- VOC Volatile Organic Compound

Table 3B
Vapor Sample Analytical Results
Building 102 Treatment System
Third Quarter 2025⁽¹⁾ Reporting Period
Operable Unit 2
Northrop Grumman
Bethpage, New York



Constitents (units in µg/m3)	Location ID:	102 INFLUENT	102 EFFLUENT
	Sample ID: Sample Date:	102 INFLUENT 8/5/2025	102 EFFLUENT 8/5/2025
<u>Volatile Organic Compounds (VOCs) ⁽²⁾</u>	CAS #		
1,1,1-Trichloroethane	00071-55-6	4.6	8.2
1,1,2,2-Tetrachloroethane	00079-34-5	<5.5	<2.7
1,1,2-Trichloroethane	00079-00-5	<4.4	<2.2
1,1-Dichloroethane	00075-34-3	32	37
1,1-Dichloroethene	00075-35-4	44	43.2
1,2-Dichloroethane	00107-06-2	<6.5	2.5 J
1,2-Dichloropropane	00078-87-5	14	6.0
Benzene	00071-43-2	<5.1	<2.6
Bromodichloromethane	00075-27-4	<5.4	<2.7
Bromoform	00075-25-2	<3.3	<1.7
Bromomethane	00074-83-9	<6.2	<3.1
Carbon Disulfide	00075-15-0	<5.0	<2.5
Carbon Tetrachloride	00056-23-5	<2.0	4.6
Chlorobenzene	00108-90-7	<7.4	<3.7
Chloroethane	00075-00-3	<4.2	<2.1
Chloroform	00067-66-3	6.8 J	8.8
Chloromethane	00074-87-3	<3.3	1.1 J
cis-1,2 Dichloroethene	00156-59-2	108	126
cis-1,3-Dichloropropene	10061-01-5	<7.3	<3.6
Dibromochloromethane	00124-48-1	<6.8	<3.4
Ethylbenzene	00100-41-4	<6.9	<3.5
Dichloromethane	00075-09-2	<5.6	<2.8
Styrene	00100-42-5	<6.8	<3.4
Tetrachloroethene	00127-18-4	459	1.3
Toluene	00108-88-3	<6.0	<3.0
trans-1,2-Dichloroethene	00156-60-5	<6.3	2.0 J
trans-1,3-Dichloropropene	10061-02-6	<7.3	<3.6
Trichloroethylene	00079-01-6	2,620	887
Trichlorotrifluoroethane (Freon 113)	00076-13-1	35	38
Vinyl Chloride	00075-01-4	<0.82	<0.41
Xylene-o	00095-47-6	<6.9	<3.5
Xylene-m,p	179601-23-1	<6.9	<3.5
Total VOCs ⁽³⁾		3,323	1,166

Notes and abbreviations on last page.

Table 3B
Vapor Sample Analytical Results
Building 102 Treatment System
Third Quarter 2025⁽¹⁾ Reporting Period
Operable Unit 2
Northrop Grumman
Bethpage, New York



Notes and Abbreviations:

- (1) Quarterly reporting period: July 1, 2025 through September 30, 2025.
- (2) Vapor samples collected by Arcadis on the dates shown and submitted to a NYSDOH ELAP certified laboratory for VOC analyses per Modified USEPA Method TO-15.
- (3) TVOC concentrations are rounded to the number of decimal places of the individual VOC with the least numerical precision (decimal place), including whole numbers with no decimal place.

8.2	Bold value indicates a detection
< 2.7	Compound is not detected above its laboratory quantification limit
µg/m ³	micrograms per cubic meter
J	Compound detected below its reporting limit; value is estimated
ELAP	Environmental Laboratory Approval Program
NYSDOH	New York State Department of Health
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

Table 4A
 Rule 212 Evaluation
 Building 96 Treatment System
 Third Quarter 2025⁽¹⁾ Reporting Period
 Operable Unit 2
 Northrop Grumman
 Bethpage, New York



Project VOCs	CAS#	HTAC ²	Building 96 Treatment System Effluent Conc. (ug/m ³) ³	Building 96 Emissions (lb/yr) ⁴	Rule 212 Limit (lb/yr) ⁵	Rule 212 Evaluation ⁶	Further evaluation Required? ⁶
Chloromethane	74-87-3	No	0.99	0.144	100	Less than limit, Rule 212 compliant	N
cis-1,2 Dichloroethene	156-59-2	No	1.7	0.247	100	Less than limit, Rule 212 compliant	N
Trichloroethylene	79-01-6	Yes	351	51.028	500	Less than limit, Rule 212 compliant	N
Vinyl Chloride	75-01-4	Yes	22.0	3.198	100	Less than limit, Rule 212 compliant	N

Flowrates and Normalized Modeling Impacts

Description	Flow (cfm)	AERMOD Normalized Ambient Impact at 1 g/s	
		Hourly ([μg/m ³]/[g/s])	Annual ([μg/m ³]/[g/s])
Building 96	4,440	148.1	4.3

Notes and Abbreviations:

- (1) Quarterly reporting period: July 1, 2025 through September 30, 2025.
- (2) High toxicity air contaminant (HTAC) based on 6 CRR-NY Rule 212-2.2, Table 2 – High Toxicity Air Contaminant List.
- (3) Effluent concentrations based on sampling performed in the quarterly reporting period. Compounds not detected above the laboratory reporting limit are excluded from the air quality impact analysis summary.
- (4) Emission rate calculated based on maximum effluent concentration and maximum air flow rates measured during the sampling events. Emission rate standardized at 70 °F and 1 atm.

$$\text{Trichloroethylene (lb/yr)} = \text{Trichloroethylene } [\mu\text{g/m}^3] \times \text{Air Flow Rate } [\text{ft}^3/\text{min}] \times (1 \text{ m}^3/35.3147 \text{ ft}^3) \times (60 \text{ min/hr}) \times (0.000001 \text{ g/1 } \mu\text{g}) \times (0.0022 \text{ lb/g}) \times 8,760 \text{ hrs/yr}$$
- (5) 100 lb/yr for non-HTACs, and mass emission limits based on Rule 212-2.2, Table 2 for HTACs.
- (6) For HTACs, no further demonstration is required if the actual emissions are less than mass emission limit. For non-HTACs, no further demonstration is required if the actual emissions are less than 100 lbs/yr.

SGC	Short-Term Guideline Concentrations
AGC	Annual Guideline Concentrations
°F	Degrees Fahrenheit
atm	Atmosphere
lb	Pound
min	Minute
hr	Hour
yr	Year
μg	Microgram
g	Gram
ft	Foot
m	Meter

Table 4B
 Rule 212 Evaluation
 Building 102 Treatment System
 Third Quarter 2025⁽¹⁾ Reporting Period
 Operable Unit 2
 Northrop Grumman
 Bethpage, New York



Project VOCs	CAS#	HTAC ²	Building 102 Treatment System Effluent Conc. (ug/m3) ³	Building 102 Emissions (lb/yr) ⁴	Rule 212 Limit (lb/yr) ⁵	Rule 212 Evaluation ⁶	Further evaluation Required? ⁶
1,1,1-Trichloroethane	71-55-6	No	8.2	2.027	100	Less than limit, Rule 212 compliant	N
1,1-Dichloroethane	75-34-3	No	37	9.147	100	Less than limit, Rule 212 compliant	N
1,1-Dichloroethene	75-35-4	No	43.2	10.680	100	Less than limit, Rule 212 compliant	N
1,2-Dichloroethane	107-06-2	Yes	2.5	0.618	100	Less than limit, Rule 212 compliant	N
1,2-Dichloropropane	78-87-5	No	6.0	1.483	100	Less than limit, Rule 212 compliant	N
Carbon Tetrachloride	56-23-5	Yes	4.6	1.137	100	Less than limit, Rule 212 compliant	N
Chloroform	67-66-3	Yes	8.8	2.175	100	Less than limit, Rule 212 compliant	N
Chloromethane	74-87-3	No	1.1	0.272	100	Less than limit, Rule 212 compliant	N
cis-1,2 Dichloroethene	156-59-2	No	126	31.149	100	Less than limit, Rule 212 compliant	N
Tetrachloroethene	127-18-4	Yes	1.3	0.321	1,000	Less than limit, Rule 212 compliant	N
trans-1,2-Dichloroethene	156-60-5	No	2.0	0.494	100	Less than limit, Rule 212 compliant	N
Trichloroethylene	79-01-6	Yes	887	219.277	500	Less than limit, Rule 212 compliant	N
Trichlorotrifluoroethane (Freon 113)	76-13-1	No	38	9.394	100	Less than limit, Rule 212 compliant	N

Flowrates and Normalized Modeling Impacts

Description	Flow (cfm)	AERMOD Normalized Ambient Impact at 1 g/s	
		Hourly ((µg/m ³)/(g/s))	Annual ((µg/m ³)/(g/s))
Building 102	7,550	348.9	2.3

Notes and Abbreviations:

- Quarterly reporting period: July 1, 2025 through September 30, 2025.
- High toxicity air contaminant (HTAC) based on 6 CRR-NY Rule 212-2.2, Table 2 – High Toxicity Air Contaminant List.
- Effluent concentrations based on sampling performed in the quarterly reporting period. Compounds not detected above the laboratory reporting limit are excluded from the air quality impact analysis summary.
- Emission rate calculated based on maximum effluent concentration and maximum air flow rates measured during the sampling events. Emission rate standardized at 70 °F
 $\text{Trichloroethylene (lb/yr)} = \text{Trichloroethylene } [\mu\text{g}/\text{m}^3] \times \text{Air Flow Rate } [\text{ft}^3/\text{min}] \times (1 \text{ m}^3/35.3147 \text{ ft}^3) \times (60 \text{ min}/\text{hr}) \times (0.000001 \text{ g}/1 \mu\text{g}) \times (0.0022 \text{ lb}/\text{g}) \times 8,760$
- 100 lb/yr for non-HTACs, and mass emission limits based on Rule 212-2.2, Table 2 for HTACs.
- For HTACs, no further demonstration is required if the actual emissions are less than mass emission limit. For non-HTACs, no further demonstration is required if the actual emissions are less than 100 lbs/yr.

SGC	Short-Term Guideline Concentrations
AGC	Annual Guideline Concentrations
°F	Degrees Fahrenheit
atm	Atmosphere
lb	Pound
min	Minute
hr	Hour
yr	Year
µg	Microgram
g	Gram
ft	Foot
m	Meter

Table 5
Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring and Outpost (BPOW) Wells
Third Quarter 2025
Operable Unit 2
Northrop Grumman
Bethpage, New York

Constituents (units in ug/L)	Well ID:	BPOW 1-2	BPOW1-4	BPOW 1-5	BPOW 1-6	BPOW 2-1	BPOW 2-2	BPOW 2-3
	Sample ID: Date:	BPOW 1-2 8/4/2025	BPOW1-4 8/1/2025	BPOW 1-5 8/1/2025	BPOW 1-6 8/1/2025	BPOW 2-1 7/29/2025	BPOW 2-2 7/29/2025	BPOW 2-3 7/29/2025
Volatile Organic Constituents ^(1, 2, 3)								
1,1,1-Trichloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2,2-Tetrachloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113)		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,1-Dichloroethene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
1,2-Dichloropropane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
2-Butanone (MEK)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-Pentanone		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Acetone		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Benzene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromoform		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromomethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Disulfide		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Carbon Tetrachloride		<0.50 J	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chlorobenzene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chlorodibromomethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloroform		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloromethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,2-Dichloroethene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
cis-1,3-Dichloropropene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Dichloromethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
m&p-Xylenes		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Methyl N-Butyl Ketone (2-Hexanone)		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
o-Xylene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Styrene (Monomer)		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Tetrachloroethene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,2-Dichloroethene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
trans-1,3-Dichloropropene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Trichloroethene		0.75	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Vinyl chloride		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
TVOCs ⁽⁴⁾		0.75	ND	ND	ND	ND	ND	ND
1,4 Dioxane ^(1, 2, 3)		<0.20	0.42	<0.20	<0.20	4.9	0.69	4.3

See notes and abbreviations on last page.

Table 5
Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring and Outpost (BPOW) Wells
Third Quarter 2025
Operable Unit 2
Northrop Grumman
Bethpage, New York

Constituents (units in ug/L)	Well ID:	BPOW 3-1	BPOW 3-2	BPOW 3-3	BPOW 3-4	BPOW 3-4	BPOW 4-1R	BPOW 4-2R	GM-21D2
	Sample ID: Date:	BPOW 3-1 7/30/2025	BPOW 3-2 7/30/2025	BPOW 3-3 7/30/2025	BPOW 3-4 7/30/2025	REP073025BM1 7/30/2025	BPOW 4-1R 7/31/2025	BPOW 4-2R 7/31/2025	GM-21D2 8/6/2025
Volatile Organic Constituents ^(1, 2, 3)									
1,1,1-Trichloroethane		<0.50	<0.50	<0.50	1.1	1.2	<0.50	<0.50	<1.0
1,1,2,2-Tetrachloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113)		<1.0	<1.0	1.2	14.0	15.6	26.0	58.0	<5.0 J
1,1,2-Trichloroethane		<0.50	<0.50	<0.50	1.5	1.8	<0.50	<0.50	<1.0
1,1-Dichloroethane		<0.50	<0.50	<0.50	1.6	1.8	<0.50	<0.50	<1.0
1,1-Dichloroethene		<0.50	<0.50	<0.50	12.8	14.2	0.61	1.0	<1.0
1,2-Dichloroethane		<0.50	<0.50	<0.50	0.31 J	0.28 J	<0.50	<0.50	<1.0
1,2-Dichloropropane		<0.50	<0.50	<0.50	<0.50	0.19 J	<0.50	<0.50	<1.0
2-Butanone (MEK)		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<10
4-Methyl-2-Pentanone		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0
Acetone		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	3.3 J	<10
Benzene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Bromodichloromethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Bromoform		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Bromomethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0
Carbon Disulfide		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0 J
Carbon Tetrachloride		<0.50	<0.50	<0.50	0.93	1.0	0.30 J	0.41 J	<1.0
Chlorobenzene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Chlorodibromomethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Chloroethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Chloroform		<0.50	<0.50	<0.50	2.2	2.4	0.81	<0.50	<1.0
Chloromethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
cis-1,2-Dichloroethene		<0.50	<0.50	<0.50	2.5	2.8	0.23 J	0.39 J	<1.0
cis-1,3-Dichloropropene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Dichloromethane		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<2.0
Ethylbenzene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
m&p-Xylenes		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Methyl N-Butyl Ketone (2-Hexanone)		<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0
o-Xylene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Styrene (Monomer)		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Tetrachloroethene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	0.57 J
Toluene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
trans-1,2-Dichloroethene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
trans-1,3-Dichloropropene		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
Trichloroethene		<0.50	<0.50	<0.50	246 D	230 D	0.86	5.8	3.7
Vinyl chloride		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0
TVOCs ⁽⁴⁾		ND	ND	1.2	283	271	28.8	71.1	4.3
1,4 Dioxane ^(1, 2, 3)		0.86	3.7	10.0	20.8	21.4	4.2	3.2	4.5

See notes and abbreviations on last page.

Table 5
Concentrations of Volatile Organic Compounds and 1,4 Dioxane in Monitoring and Outpost (BPOW) Wells
Third Quarter 2025
Operable Unit 2
Northrop Grumman
Bethpage, New York

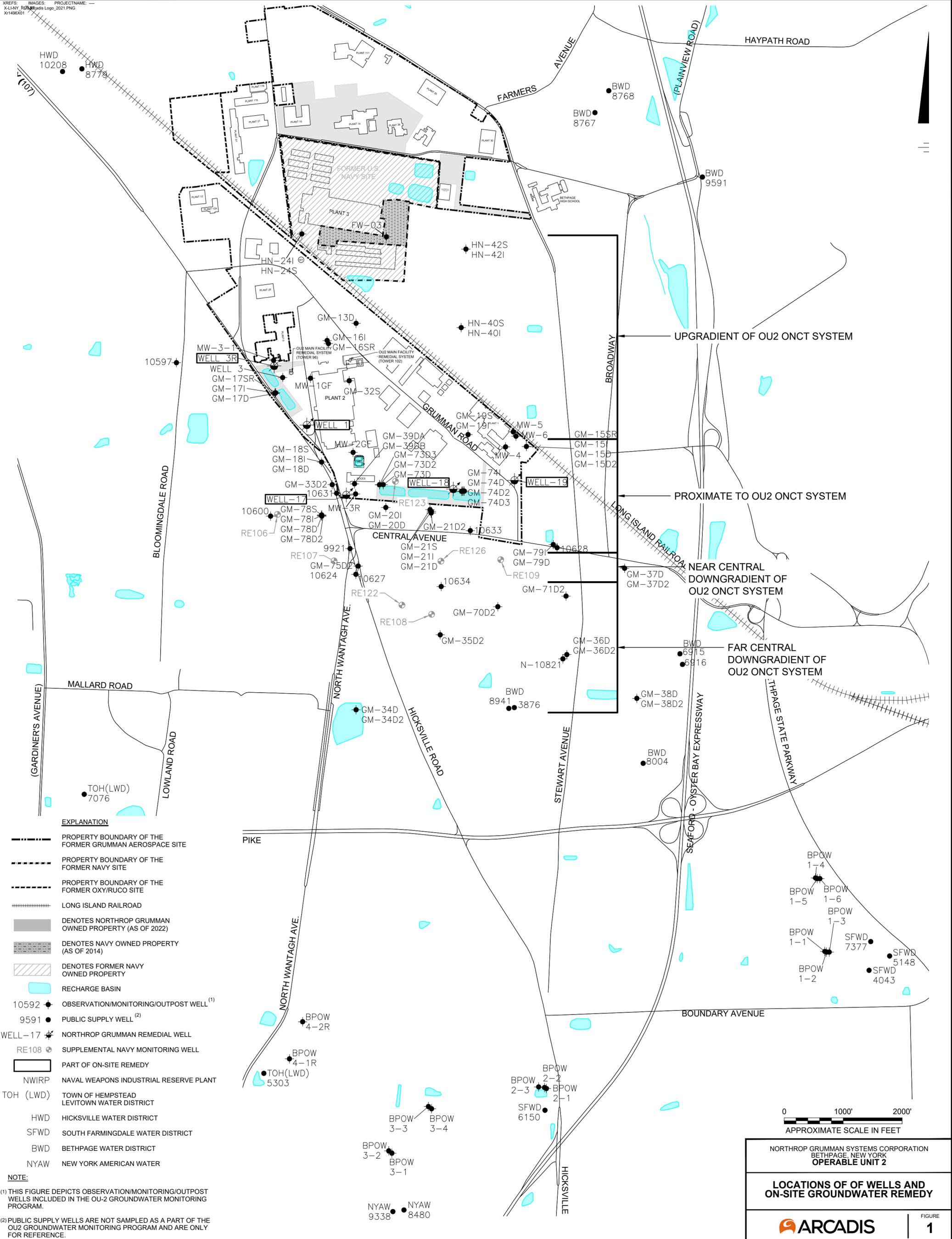
Notes and Abbreviations:

- (1) Samples from outpost (BPOW) wells were analyzed for VOCs using USEPA Method 524.2. Samples were analyzed for 1,4-dioxane using USEPA Method 522.
- (2) Sample from monitoring well (GM-21D2) were analyzed for VOCs using USEPA Method 8260C. Samples were analyzed for 1,4-dioxane using USEPA Method 8270D-SIM.
- (3) Results for the program are validated at 20% frequency, per protocols specified in OU2 Groundwater Monitoring Plan (Arcadis 2016).
- (4) TVOC concentrations are rounded to the number of decimal places of the individual VOC with the least precision (decimal places), including whole numbers with no decimal place.

Bold	Value indicates constituent detected
TVOCs	Total Volatile Organic Compounds
REP	Blind Duplicate Sample
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds
µg/L	micrograms per liter
<0.5	Compound not detected above its laboratory quantification limit
D	Result was reported from the diluted run
J	Value is estimated concentration
ND	Not Detected

Figures

XREFS: IMAGES: PROJECTNAME: ---
 X:\L\NY_R01\Arcadis Logo_2021.PNG
 X:\1496301



EXPLANATION

- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF THE FORMER NAVY SITE
- PROPERTY BOUNDARY OF THE FORMER OXY/RUCO SITE
- ++++ LONG ISLAND RAILROAD
- DENOTES NORTHROP GRUMMAN OWNED PROPERTY (AS OF 2022)
- DENOTES NAVY OWNED PROPERTY (AS OF 2014)
- DENOTES FORMER NAVY OWNED PROPERTY
- RECHARGE BASIN
- 10592 ● OBSERVATION/MONITORING/OUTPOST WELL (1)
- 9591 ● PUBLIC SUPPLY WELL (2)
- WELL-17 ● NORTHROP GRUMMAN REMEDIAL WELL
- RE108 ● SUPPLEMENTAL NAVY MONITORING WELL
- PART OF ON-SITE REMEDY
- NWIRP NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- TOH (LWD) TOWN OF HEMPSTEAD LEVITOWN WATER DISTRICT
- HWD HICKSVILLE WATER DISTRICT
- SFWD SOUTH FARMINGDALE WATER DISTRICT
- BWD BETHPAGE WATER DISTRICT
- NYAW NEW YORK AMERICAN WATER

NOTE:
 (1) THIS FIGURE DEPICTS OBSERVATION/MONITORING/OUTPOST WELLS INCLUDED IN THE OU-2 GROUNDWATER MONITORING PROGRAM.
 (2) PUBLIC SUPPLY WELLS ARE NOT SAMPLED AS A PART OF THE OU2 GROUNDWATER MONITORING PROGRAM AND ARE ONLY FOR REFERENCE.

0 1000' 2000'
 APPROXIMATE SCALE IN FEET

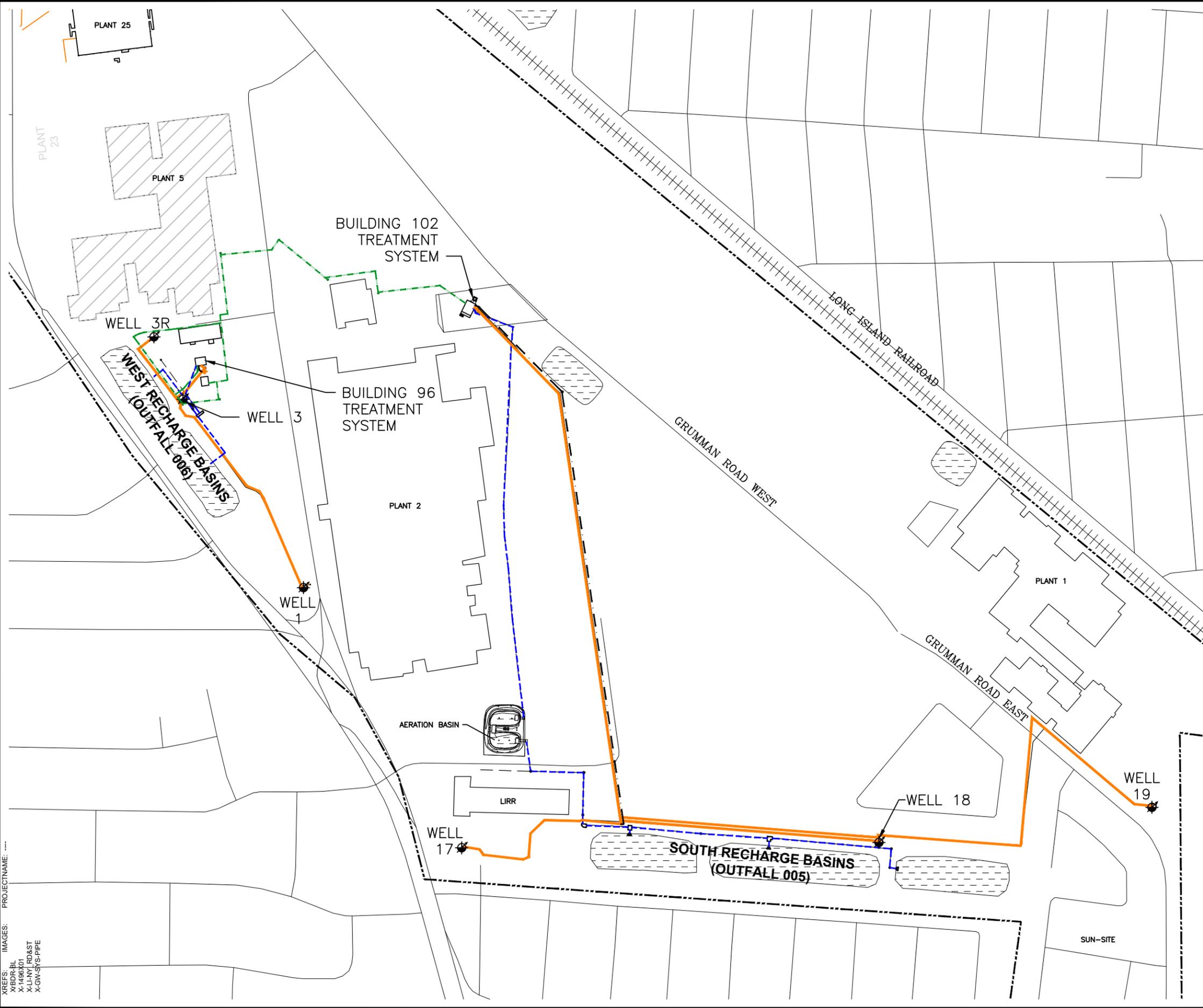
NORTHROP GRUMMAN SYSTEMS CORPORATION
 BETHPAGE, NEW YORK
OPERABLE UNIT 2

**LOCATIONS OF OF WELLS AND
 ON-SITE GROUNDWATER REMEDY**

ARCADIS | **FIGURE 1**

CITY:SYRACUSE,NY DIV:GROUPEPENY DBA:ARCADIS L:DAIS DC:(G)I TH:(G)I LVR:(G)ONCT-GW-ETS-STEP1AN.dwg LAYOUT:2 SAVED:5/30/2024 4:50 PM ACADVER:24.2S (LMS TECH) PAGES:SETUP:--- PLOT:STY:ETABLE:--- PLOTTED:5/30/2024 4:51 PM BY:SMALL BRIAN

XREFS: IMAGES: PROJECTNAME: ---
 XBD:R-BL
 X-1466(K)I
 X-LL:NTL:RD&ST
 X-GW:ST:PIPE



LEGEND:

- FORMER NORTHROP GRUMMAN PROPERTY LINE
- INFLUENT LINE
- BYPASS
- STORM DRAIN (EFFLUENT)
- NON POTABLE WATER DISTRIBUTION LINE (EFFLUENT)
- +++++ RAILROAD TRACKS
- x-x-x- FENCE
- WELL 18 REMEDIAL WELL
- BASIN
- ONCT ON-SITE CONTAMINANT

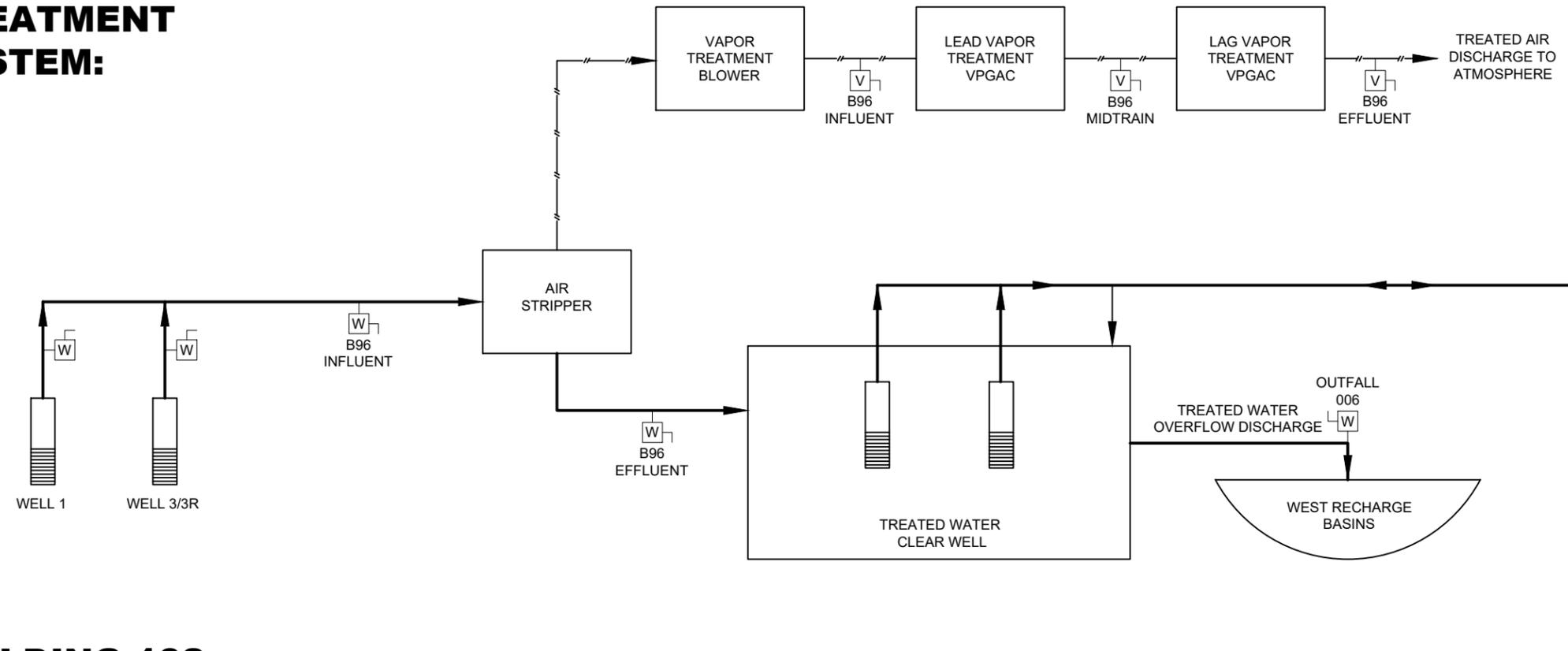
NOTES:

1. DRAWING IS NOT TO BE USED FOR DESIGN PURPOSES. LAYOUT OF PIPING IS FOR REPRESENTATION ONLY (LOCATIONS ARE APPROXIMATE).
2. THE PIPING REPRESENTED IN THIS DRAWING MAY BE CONSTRUCTED OF CAST IRON PIPE (CIP), DUCTILE IRON PIPE (DIP), ASBESTOS CEMENT PIPE (ACP) OR TRANSITE, OR A COMBINATION OF THESE PIPE TYPES.

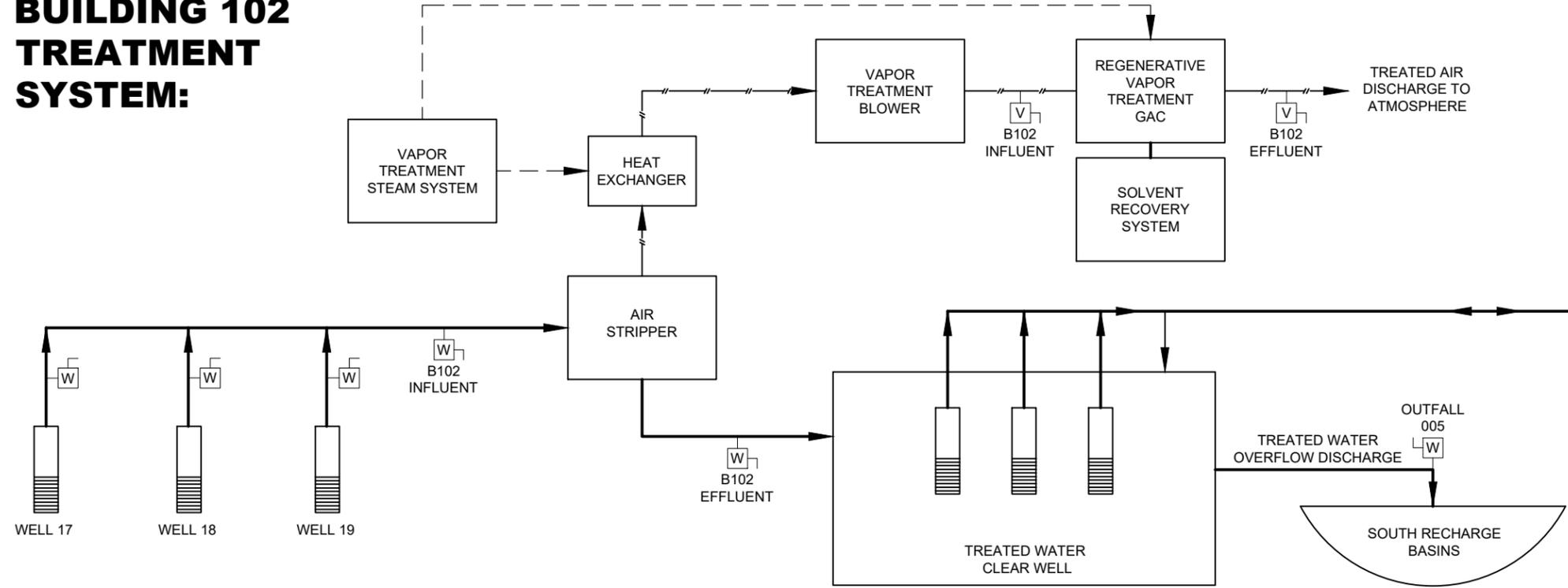
NORTHROP GRUMMAN BETHPAGE, NEW YORK OPERABLE UNIT 2	
ONCT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SITE PLAN	
	FIGURE 2

CITY: MANCHESTER DIV/GRP: ENV/CAD DB: B.SMALL PM: TM
 C:\Users\BSSMAIL\OneDrive\Documents\ARCADIS\ACC US\AUS-9898989-NOR GRUM_BETHPAGE_NY\Project Files\10_WIP\101_ARC_ENV\202401-DWG\OU2-F03-GWE SYSTEM.dwg LAYOUT: 3
 PLOTTED: 3/28/2024 12:05 PM BY: SMALL, BRIAN
 XREFS: IMAGES: PROJECTNAME: ---
 PAGES: 24.2S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTFULL.CTB

BUILDING 96 TREATMENT SYSTEM:



BUILDING 102 TREATMENT SYSTEM:



NOTE: SCHEMATIC REPRESENTS SYSTEM CONFIGURATIONS AT THE TIME OF SAMPLE LOCATION EVENTS, AFTER B96 RECONFIGURATION TO BYPASS THE REGENERATIVE VAPOR-PHASE GAC COMPONENTS

- LEGEND:
- PROCESS WATER
 - - - PROCESS AIR
 - - - - STEAM
 - W SAMPLE LOCATION
 - W WATER SAMPLE
 - V VAPOR SAMPLE
 - ONCT ON-SITE CONTAMINANT

NORTHROP GRUMMAN
 BETHPAGE, NEW YORK
OPERABLE UNIT 2

**ONCT GROUNDWATER
 EXTRACTION AND TREATMENT
 SYSTEM SCHEMATIC**

ARCADIS

FIGURE
3