ARCADIS Design & Consultancy for natural and built assets

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ENVIRONMENT

Subject:
July to December 2016 Semi-Annual Progress Report
Northrop Grumman Systems Corporation
Operable Unit 3 (OU3), NYSDEC Site ID # 1-30-003A,
Bethpage, New York

Date:
January 11, 2017

Contact:
David Stern

Phone:
631-391-5284

Email:
David.Stern@arcadis.com

Our ref:
NY001496.2016.RPTB6

Dear Steve:

In accordance with Section III of Administrative Order on Consent (AOC) Index # W1-0018-04-01, and the May 2011 Work Plan for Modification of AOC Progress Report (work plan), this letter reports OU3 activities performed by Northrop Grumman Systems Corporation (Northrop Grumman) during July through December 2016. Activities planned for January through July 2017 are also summarized. In accordance with the approved work plan, these reports will be submitted to the NYSDEC on a semi-annual basis until it is determined that the reports are no longer necessary. The site plan showing well locations is provided on **Figure 1**.

OU3 ACTIVITIES CONDUCTED DURING JULY THROUGH DECEMBER 2016

Bethpage Park Soil Gas Containment System (Formerly Soil Gas IRM)

- Continued Operation, Maintenance, and Monitoring (OM&M) of the Bethpage Park Soil Gas Containment System (BPSGCS)
- Submitted BPSGCS Quarterly OM&M Reports (August and November 2016) to the NYSDEC

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Bethpage Park Groundwater Containment System (Formerly Groundwater IRM)

- Continued OM&M of the Bethpage Park Groundwater Containment System (BPGWCS)
- Submitted BPGWCS Quarterly OM&M Reports (August and November 2016) to the NYSDEC

Other

- Performed quarterly monitoring rounds for Monitoring Wells MW109-3 and MW111-4 and monthly monitoring rounds for Monitoring Well MW116-5 from July through December 2016. Data obtained from the July through December 2016 period are provided in Table 1.

OU3 ACTIVITIES SCHEDULED DURING JANUARY THROUGH JULY 2017

Bethpage Park Soil Gas Containment System

- Continue OM&M of the BPSGCS
- Submit OU3 BPSGCS Annual 2016 Report (March 2017) and First Quarter 2017 Report (May 2017) to the NYSDEC

Bethpage Park Groundwater Containment System

- Continue OM&M of the BPGWCS
- Submit OU3 BPGWCS Annual 2016 Report (March 2017) and First Quarter 2017 Report (May 2017) to the NYSDEC
- Perform annual monitoring round for BPGWCS system in July 2017

Other

- Perform quarterly monitoring rounds for Monitoring Wells MW109-3 and MW111-4 and monthly monitoring rounds for Monitoring Well MW116-5.

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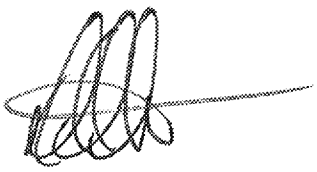
Feel free to call us if you have any questions.

Sincerely,

Arcadis of New York, Inc.



David E. Stern

Senior Scientist/Associate Project Manager

Copies:
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K. Smith, Northrop Grumman
E. Hannon, Northrop Grumman
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C. Stein – USEPA
R. Alvey – USEPA
Bethpage Public Library – Public Repository
C. San Giovanni, Arcadis
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Enclosures:

Tables

1 Concentrations of Volatile organic Compounds in Groundwater Samples Collected from Monitoring Wells

Figures

1 Site Plan

Table 1.
Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Northrop Grumman Systems Corporation, Bethpage, New York

ARCADIS Design & Consultancy for natural and built assets

Constituents (units in ug/L)	Location ID: Sample Date:	MW-109-3 7/7/2016	MW-109-3 10/14/2016		MW-111-4 7/6/2016	MW-111-4 10/14/2016
1,1,1-Trichloroethane		< 1.0	< 1.0		< 20	< 10
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0		< 20	< 10
1,1,2-Trichloroethane		< 1.0	< 1.0		< 20	< 10
1,1-Dichloroethane		**4.5**	**4.6**		**15.3 J**	**12.2**
1,1-Dichloroethene		**1.1**	**1.2**		**7.2 J**	**5.4 J**
1,2-Dichloroethane		**1.0**	**1.2**		< 20	**5.0 J**
1,2-Dichloropropane		**0.42 J**	< 1.0		< 20	< 10
2-Butanone		< 10	< 10		< 200	< 100
2-Hexanone		< 5.0	< 5.0		< 100	< 50
4-methyl-2-pentanone		< 5.0	< 5.0		< 100	< 50
Acetone		< 10	< 10		< 200	< 100
Benzene		< 0.50	< 0.50		< 10	< 5.0
Bromodichloromethane		< 1.0	< 1.0		< 20	< 10
Bromoform		< 1.0	< 1.0		< 20	< 10
Bromomethane		< 2.0	< 2.0		< 40	< 20
Carbon Disulfide		< 2.0	< 2.0		< 40	< 20
Carbon Tetrachloride		< 1.0	< 1.0		< 20	< 10
Chlorobenzene		< 1.0	< 1.0		< 20	< 10
Chlorodifluoromethane (Freon 22)		< 5.0	**1.3 J**		< 100	< 50
Chloroethane		< 1.0	< 1.0		< 20	< 10
Chloroform		**7.4**	**6.0**		**4.7 J**	**3.8 J**
Chloromethane		< 1.0	< 1.0		< 20	< 10
cis-1,2-dichloroethene		**318 D**	**319**		**968**	**850**
cis-1,3-dichloropropene		< 1.0	< 1.0		< 20	< 10
Dibromochloromethane		< 1.0	< 1.0		< 20	< 10
Dichlorodifluoromethane (Freon 12)		< 2.0	< 2.0		< 40	< 20
Ethylbenzene		< 1.0	< 1.0		< 20	< 10
Methylene Chloride		< 2.0	< 2.0		< 40	< 20
Styrene		< 1.0	< 1.0		< 20	< 10
Tetrachloroethene		**2.1**	**2.4**		**12.5 J**	**10.0**
Toluene		< 1.0	< 1.0		< 20	< 10
trans-1,2-dichloroethene		**1.8**	**2.3**		< 20	**23.5**
trans-1,3-dichloropropene		< 1.0	< 1.0		< 20	< 10
Trichloroethylene		**313 D**	**455**		**2130**	**1670**
Trichlorotrifluoroethane (Freon 113)		< 5.0	< 5.0		< 100	< 50
Vinyl Chloride		**0.49 J**	< 1.0		< 20	< 10
Xylene-o		< 1.0	< 1.0		< 20	< 10
Xylenes - m,p		< 1.0	< 1.0		< 20	< 10
TVOCs		**650**	**790**		**3100**	**2600**

See Notes and Abbreviations on Last Page

Table 1.
Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Northrop Grumman Systems Corporation, Bethpage, New York

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Constituents (units in ug/L)	Location ID: Sample Date:	MW-116-5 7/8/2016	MW-116-5 8/5/2016	MW-116-5 9/7/2016	MW-116-5 10/13/2016	MW-116-5 11/4/2016	MW-116-5 12/16/2016
1,1,1-Trichloroethane		**1.7**	**1.5 J**	**1.5 J**	< 10	**1.6 J**	<10
1,1,2,2-Tetrachloroethane		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
1,1,2-Trichloroethane		**2.5**	**2.3 J**	**2.2 J**	< 10	**1.5 J**	<10
1,1-Dichloroethane		**3.4**	**3.0 J**	**3.6**	**3.1 J**	**3.5 J**	**2.6 J**
1,1-Dichloroethene		**4.8**	**4.4 J**	**5.4**	**3.0 J**	**4.8**	**5.1 J**
1,2-Dichloroethane		**12.3**	**14.1**	**14.4**	**12.9**	**14.4**	**13.1**
1,2-Dichloropropane		**4.3**	**4.0 J**	**4.2**	< 10	**3.6 J**	<10
2-Butanone		< 10	< 50	< 25	< 100	< 40	<100
2-Hexanone		< 5.0	< 25	< 13	< 50	< 20	<50
4-methyl-2-pentanone		< 5.0	< 25	< 13	< 50	< 20	<50
Acetone		< 10	< 50	< 25	< 100	< 40	<100
Benzene		< 0.50	< 2.5	< 1.3	< 5.0	< 2.0	<5.0
Bromodichloromethane		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
Bromoform		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
Bromomethane		< 2.0	< 10	< 5.0	< 20	< 8.0	<20
Carbon Disulfide		< 2.0	< 10	< 5.0	< 20	< 8.0	<20
Carbon Tetrachloride		**1.7**	< 5.0	**1.6 J**	< 10	< 4.0	<10
Chlorobenzene		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
Chlorodifluoromethane (Freon 22)		< 5.0	< 25	< 13	< 50	< 20	<50
Chloroethane		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
Chloroform		**15.6**	**15.8**	**14.8**	**16.1**	**16.0**	**14.6**
Chloromethane		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
cis-1,2-dichloroethene		**218 D**	**225**	**243**	**222**	**254**	**230**
cis-1,3-dichloropropene		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
Dibromochloromethane		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
Dichlorodifluoromethane (Freon 12)		< 2.0	< 10	< 5.0	< 20	< 8.0	<20
Ethylbenzene		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
Methylene Chloride		< 2.0	< 10	< 5.0	< 20	< 8.0	<20
Styrene		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
Tetrachloroethene		**1.3**	**1.8 J**	**1.2 J**	< 10	< 4.0	<10
Toluene		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
trans-1,2-dichloroethene		**9.8**	**2.1 J**	**3.5**	**10.2**	**5.7**	<10
trans-1,3-dichloropropene		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
Trichloroethylene		**1590 D**	**1480**	**1500 D**	**1530**	**1540**	**1580**
Trichlorotrifluoroethane (Freon 113)		< 5.0	< 25	< 13	< 50	< 20	<50
Vinyl Chloride		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
Xylene-o		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
Xylenes - m,p		< 1.0	< 5.0	< 2.5	< 10	< 4.0	<10
TVOCs		**1900**	**1800**	**1800**	**1800**	**1800**	**1800**

See Notes and Abbreviations on Last Page

Table 1.
Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Northrop Grumman Systems Corporation Bethpage, New York.

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Notes and Abbreviations:

Results validated following protocols specified in March 2006 RI/FS Work Plan (ARCADIS G&M, Inc. 2006).

Samples were analyzed for TCL VOCs using USEPA Method 8260C.

TVOCs are rounded to two significant figures.

Bold value indicates a detection.

RI/FS	Remedial Investigation/Feasibility Study
NYSDEC	New York State Department of Environmental Conservation
USEPA	United States Enviromental Protection Agency
TCL	Target compound list
VOC	Volatile Organic Compound
TVOCs	Total Volatile Organic Compounds
ug/L	Micrograms per liter
J	Value is estimated
D	Value from a secondary dilution

CITY:SYRACUSE-NY DIV/GROUP:ENV DB:A.SANCHEZ LD:ALS PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
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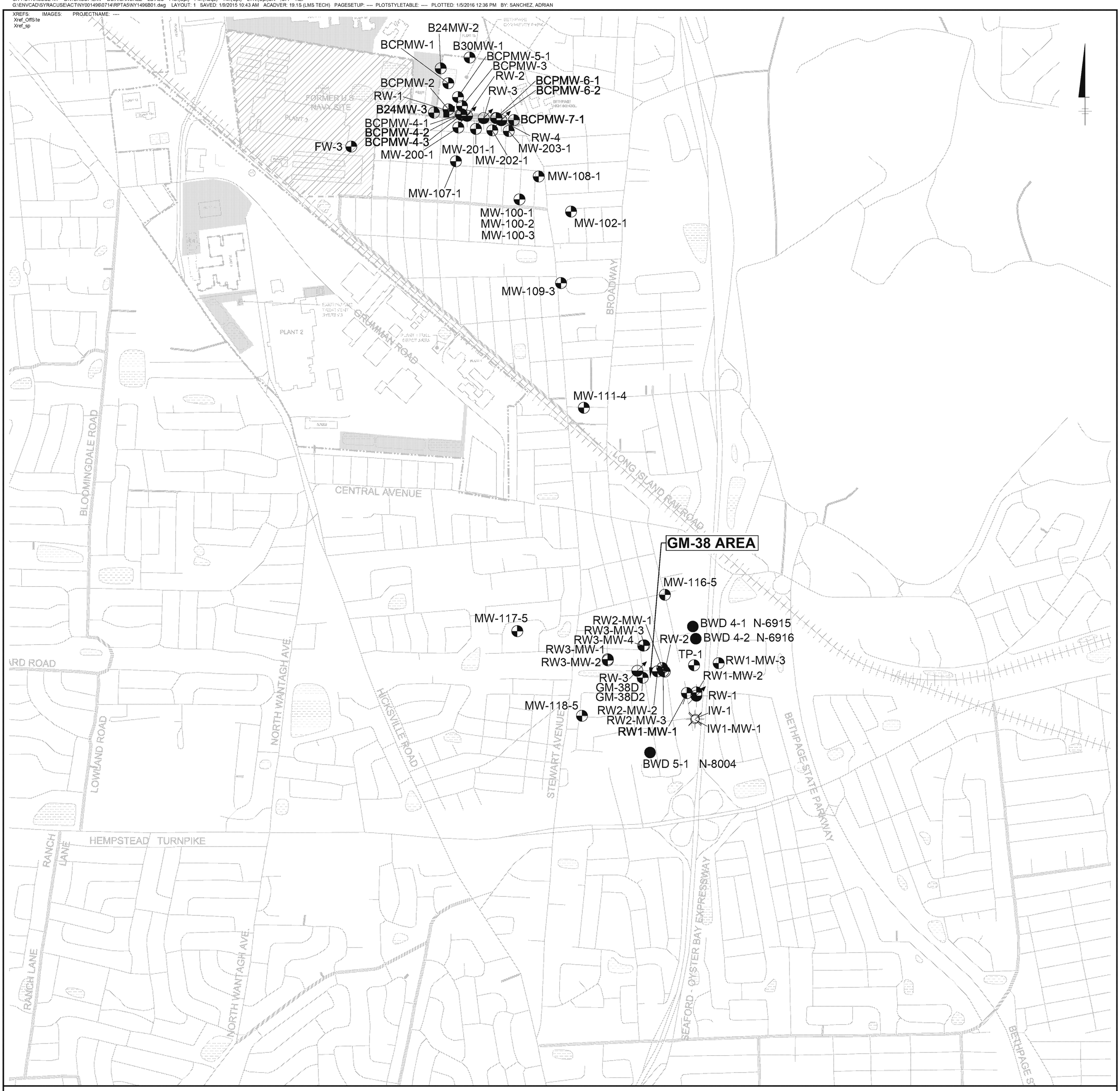

EXPLANATION:

- FORMER NORTHROP GRUMMAN PROPERTY BOUNDARY
- FORMER OCCIDENTAL CHEMICAL CORPORATION PROPERTY BOUNDARY
- NORTHROP GRUMMAN PROPERTY
- FORMER NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- MONITORING WELL
- REMEDIAL WELL
- INJECTION WELL
- PUBLIC SUPPLY WELL

NAVY AND BETHPAGE WELLS SHOWN FOR REFERENCE PURPOSES

0 500' 1000' 2000'
APPROXIMATE SCALE IN FEET

NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK

SITE PLAN
SHOWING OU3 WELL LOCATIONS

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FIGURE
1