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ENVIRONMENT

Mr. Steven M. Scharf, P.E.
Project Engineer
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
Remedial Action, Bureau A
625 Broadway
Albany, New York 12233-7015

Subject:
January to June 2015 Semi-Annual Progress Report
Northrop Grumman Systems Corporation
Operable Unit 3 (OU3), NYSDEC Site ID # 1-30-003A,
Bethpage, New York

Date:
July 10, 2015

Contact:
David Stern

Phone:
631-391-5284

Email:
David.Stern@arcadis-us.com

Our ref:
NY001496.0714.RPTA5

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, this letter reports OU3 activities performed by Northrop Grumman Systems Corporation (Northrop Grumman) during the months from January to June 2015. Activities planned for July to December 2015 are also summarized. In accordance with our 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 January to June 2015

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 the BPSGCS 2014 Annual and First Quarter 2015 OM&M Reports (February and May 2015) to the NYSDEC

Bethpage Park Groundwater Containment System (Formerly Groundwater IRM)

- Continued OM&M of the Bethpage Park Groundwater Containment System (BPGWCS)
- Submitted the BPGWCS First Quarter 2015 OM&M Reports (May 2015) 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 January to June 2015. Validated data obtained from the January to June 2015 period are provided in **Table 1**.

OU3 Activities Scheduled During July to December 2015

Bethpage Park Soil Gas Containment System

- Continue OM&M of the BPSGCS
- Submit OU3 BPSGCS Second and Third Quarter 2015 Reports (August and November 2015) to the NYSDEC

Bethpage Park Groundwater Containment System

- Continue OM&M of the BPGWCS
- Submit OU3 BPGWCS Annual 2014 Reports (August 2015) to the NYSDEC pending conclusion of Pre-Design Hydraulic Effectiveness Evaluation study performed by ERM Group Inc.
- Submit OU3 BPGWCS Second and Third Quarter 2015 Reports (August and November 2014) to the NYSDEC

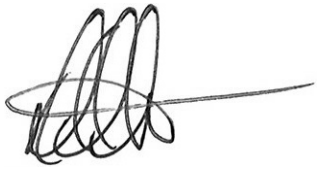
Other

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

Feel free to call us if you have any questions.

Sincerely,

ARCADIS of New York, Inc.



David E. Stern
Senior Scientist/Associate Project Manager

Enclosures

Copies:
K. Smith, Northrop Grumman
E. Hannon, Northrop Grumman
F. Weber, Northrop Grumman
C. Henry, EMAGIN
C. Stein – USEPA
R. Alvey – USEPA
Bethpage Public Library – Public Repository
C. San Giovanni, ARCADIS
M. Wolfert, ARCADIS
File, ARCADIS

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Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Sample Location: / Sample Date: / Constituent Name (units in ug/L)	MW-109-3 2/11/2015	MW-109-3 * 2/11/2015	MW-109-3 5/20/2015	MW-109-3 * 5/20/2015	MW-111-4 2/11/2015	MW-111-4 5/20/2015
1,1,1-Trichloroethane	< 1.0	< 1.0	<1.0	<1.0	**3.0 J**	<10
1,1,2,2-Tetrachloroethane	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
1,1,2-Trichloroethane	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
1,1-Dichloroethane	**5.9**	**5.9**	**4.8**	**4.9**	**16.8**	**16.9**
1,1-Dichloroethene	**1.6**	**1.4**	**1.1**	**1.2**	**9.7**	**11.5**
1,2-Dichloroethane	**1.4**	**1.4**	**0.93 J**	**1.0**	**6.9**	**6.6 J**
1,2-Dichloropropane	**0.37 J**	<1.0	<1.0	**0.41 J**	< 5.0	<10
2-Butanone	< 10	< 10	<10	<10	< 50	<100
2-Hexanone	< 5.0	< 5.0	<5.0	<5.0	< 25	<50
4-methyl-2-pentanone	< 5.0	< 5.0	<5.0	<5.0	< 25	<50
Acetone	< 10	< 10	<10	<10	< 50	<100
Benzene	< 1.0	< 1.0	<0.50	<0.50	< 5.0	<5.0
Bromodichloromethane	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
Bromoform	< 4.0	< 4.0	<1.0	<1.0	< 20	<10
Bromomethane	< 2.0	< 2.0	<2.0	<2.0	< 10	<20
Carbon Disulfide	< 2.0	< 2.0	<2.0	<2.0	< 10	<20
Carbon tetrachloride	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
Chlorobenzene	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
Chlorodifluoromethane (Freon 22)	**1.6 J**	**1.7 J**	<5.0	<5.0	< 25	<50
Chloroethane	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
Chloroform	**5.3**	**5.3**	**5.6**	**5.7**	**4.1 J**	**4.2 J**
Chloromethane	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
cis-1,2-dichloroethene	**412 D**	**419 D**	**390 D**	**383 D**	**1100 D**	**1340**
cis-1,3-dichloropropene	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
Dibromochloromethane	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
Dichlorodifluoromethane (Freon 12)	**0.60 J**	**0.69 J**	<2.0	<2.0	< 25	<20
Ethylbenzene	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
Methylene Chloride	< 2.0	< 2.0	<2.0	<2.0	< 10	<20
Styrene	< 5.0	< 5.0	<1.0	<1.0	< 25	<10
Tetrachloroethene	**3.1**	**3.1**	**2.6**	**2.5**	**12.9**	**14.7**
Toluene	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
trans-1,2-dichloroethene	**1.3**	**1.2**	**1.3**	**1.5**	**14.0**	<10
trans-1,3-dichloropropene	< 1.0	< 1.0	<1.0	<1.0	< 5.0	<10
Trichloroethylene	**464 D**	**475 D**	**427 D**	**411 D**	**2580 D**	**2920 D**
Trichlorotrifluoroethane (Freon 113)	< 5.0	< 5.0	<5.0	<5.0	< 25	<50
Vinyl Chloride	**0.77 J**	**0.82 J**	**0.42 J**	**0.39 J**	< 5.0	<10
Xylene-o	< 5.0	< 5.0	<1.0	<1.0	< 5.0	<10
Xylenes - m,p	< 5.0	< 5.0	<1.0	<1.0	< 5.0	<10
TVOCs	**900**	**920**	**830**	**810**	**3700**	**4300**

Notes and Abbreviations on last page.

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Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Sample Location:	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-6	MW-116-5
Sample Date:	1/15/2015	2/10/2015	3/10/2015	4/9/2015	5/19/2015	6/5/2015
Constituent Name (units in ug/L)						
1,1,1-Trichloroethane	<5.0	**1.3 J**	**1.5**	**1.4**	<10	<10
1,1,2,2-Tetrachloroethane	<5.0	< 2.5	<1.0	<1.0	<10	<10
1,1,2-Trichloroethane	**2.6 J**	**2.2 J**	**2.0**	**1.8**	<10	<10
1,1-Dichloroethane	**2.7 J**	**2.3 J**	**2.3**	**2.1**	**2.3 J**	<10
1,1-Dichloroethene	**5.8**	**3.4**	**3.8**	**4.0**	<10	<10
1,2-Dichloroethane	**13.8**	**14.5**	**12.8**	**11.8**	**11.0**	**11.2**
1,2-Dichloropropane	**5.2**	**3.8**	**4.0**	**3.3**	<10	<10
2-Butanone	<50	< 25	<10	<10	<100	<100
2-Hexanone	<25	< 13	<5.0	<5.0	<50	<50
4-methyl-2-pentanone	<25	< 13	<5.0	<5.0	<50	<50
Acetone	<50	< 25	<10	<10	<100	<100
Benzene	<5.0	< 2.5	<1.0	<0.50	<5.0	<5.0
Bromodichloromethane	<5.0	< 2.5	<1.0	<1.0	<10	<10
Bromoform	<20	< 10	<4.0	<1.0	<10	<10
Bromomethane	<10	< 5.0	<2.0	<2.0	<20	<20
Carbon Disulfide	<10	< 5.0	<2.0	<2.0	<20	<20
Carbon tetrachloride	**1.8 J**	**1.8 J**	**1.8**	**1.5**	<10	<10
Chlorobenzene	<5.0	< 2.5	<1.0	<1.0	<10	<10
Chlorodifluoromethane (Freon 22)	<25	< 13	<5.0	<5.0	<50	<50
Chloroethane	<5.0	< 2.5	<1.0	<1.0	<10	<10
Chloroform	**18.7**	**16.1**	**15.7**	**14.5**	**16.1**	**14.1**
Chloromethane	<5.0	< 2.5	<1.0	<1.0	<10	<10
cis-1,2-dichloroethene	**309**	**224**	**223 D**	**206 D**	**224**	**189**
cis-1,3-dichloropropene	<5.0	< 2.5	<1.0	<1.0	<10	<10
Dibromochloromethane	<5.0	< 2.5	<1.0	<1.0	<10	<10
Dichlorodifluoromethane (Freon 12)	<25	< 13	<5.0	<2.0	<20	<20
Ethylbenzene	<5.0	< 2.5	<1.0	<1.0	<10	<10
Methylene Chloride	<10	< 5.0	<2.0	<2.0	<20	<20
Styrene	<25	< 13	<5.0	<1.0	<10	<10
Tetrachloroethene	<5.0	**1.1 J**	**1.0**	**1.0**	<10	<10
Toluene	<5.0	< 2.5	<1.0	<1.0	<10	<10
trans-1,2-dichloroethene	<5.0	**7.5**	**3.3**	**2.0**	<10	<10
trans-1,3-dichloropropene	<5.0	< 2.5	<1.0	<1.0	<10	<10
Trichloroethylene	**1690 D**	**1500 D**	**1510 D**	**1340 D**	**1640**	**1410**
Trichlorotrifluoroethane (Freon 113)	<25	< 13	<5.0	<5.0	<50	<50
Vinyl Chloride	<5.0	< 2.5	<1.0	<1.0	<10	<10
Xylene-o	<5.0	< 2.5	<1.0	<1.0	<10	<10
Xylenes - m,p	<5.0	< 2.5	<1.0	<1.0	<10	<10
TVOCs	**2000**	**1800**	**1800**	**1600**	**1900**	**1600**

Notes and Abbreviations on last page.

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Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Wells, Operable Unit 3 (Former Grumman Settling Ponds), Bethpage, New York.

Notes:

Results validated following protocols specified in March 2006 RI/FS Work Plan (ARCADIS G&M, Inc. 2006).
Samples collected between 4/11/2008 and 7/14/2014 were analyzed for the TCL VOCs using NYSDEC ASP Method 2000 OLM4.3.
Samples collected subsequent to 8/13/2014 were analyzed for TCL VOCs using EPA Method 8260C.
TVOCs are rounded to two significant figures.

Acronyms:

Bold value indicates a detection.

RI/FS	Remedial Investigation/Feasibility Study
NYSDEC	New York State Department of Environmental Conservation
TCL	Target compound list
VOCs	Volatile Organic Compounds
TVOCs	Total Volatile Organic Compounds
ASP	Analytical services protocol
ug/L	Micrograms per liter
J	Value is estimated
D	Constituent identified from secondary dilution.
*	Quality Assurance and Quality Control (QA/QC) duplicate sample

CITY:(Reqd) DIV/GROUP:MELVILLE-NY DB:A.SANCHEZ LD: PIC: PM: TM: LYR:(Opt)ON=*;OFF=*REF*
G:\ENVCAD\SYRACUSE\ACT\NY001496\0714\RPTA5\NY1496B01.dwg LAYOUT: 1 SAVED: 1/9/2015 10:41 AM ACADVER: 18.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 1/9/2015 10:42 AM BY: SANCHEZ, ADRIAN
XREFS: IMAGES: PROJECTNAME: ----
Xref_OffSite
Xref_sp

B24MW-2
BCPMW-1
B30MW-1
BCPMW-5-1
BCPMW-3
RW-2
BCPMW-6-1
BCPMW-2
RW-3
BCPMW-6-2
RW-1
B24MW-3
BCPMW-7-1
BCPMW-4-1
BCPMW-4-2
RW-4
FW-3
BCPMW-4-3
MW-201-1
MW-203-1
MW-200-1
MW-202-1
MW-108-1
MW-107-1
MW-100-1
MW-100-2
MW-100-3
MW-102-1
MW-109-3
MW-111-4
MW-116-5
MW-117-5
RW2-MW-1
RW3-MW-3
RW3-MW-4
RW-2
BWD 4-1 N-6915
BWD 4-2 N-6916
RW3-MW-1
RW3-MW-2
TP-1
RW1-MW-3
RW-3
RW1-MW-2
GM-38D
GM-38D2
RW-1
MW-118-5
RW2-MW-2
IW-1
RW2-MW-3
IW1-MW-1
RW1-MW-1
BWD 5-1 N-8004

GM-38 AREA

BETHPAGE COMMUNITY PARK
BETHPAGE HIGH SCHOOL
FORMER U.S. NAVY SITE
PLANT 1
PLANT 1 FUEL DEPOT AREA
PLANT 2
PLANT 3
PLANT 12
PLANT 12A
PLANT 25
PLANT 27
PLANT 30
PLANT 35
BOCES
EXISTING OU2 TREATMENT SYSTEMS
GRUMMAN ROAD
BROADWAY
CENTRAL AVENUE
LONG ISLAND RAILROAD
BLOOMINGDALE ROAD
LOWLAND ROAD
NORTH WANTAGH AVE.
HICKSVILLE ROAD
STEWART AVENUE
SEAFORD - OYSTER BAY EXPRESSWAY
BETHPAGE STATE PARKWAY
HEMPSTEAD TURNPIKE
RANCH LANE

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