ARCADIS Design & Consultancy for natural and built assets

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ENVIRONMENT

Date:

April 10, 2017

Contact:

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Our ref:

NY001496.0216.LARA5

Subject:

First Quarter 2017 Progress Report
Northrop Grumman Systems Corporation
Operable Unit 2, NYSDEC Site ID # 1-30-003A,
Bethpage, New York

Dear Jason and Steve:

In accordance with Appendix “A”, Section XIII of Administrative Order on Consent (AOC) Index # W1-118-14-12, this letter reports Operable Unit 2 (OU2) activities performed by Northrop Grumman Systems Corporation (Northrop Grumman) during the First Quarter of 2017 (January through March 2017). Activities planned for Second Quarter of 2017 (April through June 2017) are also described.

This progress report provides data that have been received as final and/or validated from the current period that are not included in other routine reporting for OU2 (e.g., quarterly reports as specified in the Groundwater Monitoring Plan).

As this is an ongoing remediation project, Northrop Grumman has transitioned the frequency of these progress reports from monthly to quarterly. Therefore, the next report will be submitted following the close of June 2017.

OU2 ACTIVITIES CONDUCTED DURING FIRST QUARTER 2017

OU2 On-Site Containment (ONCT) System

- Continued Operation, Maintenance and Monitoring (OM&M) of the OU2 ONCT system
- Completed First Quarter 2017 ONCT system sampling
- Data not routinely reported are provided for the current period as follows:
    - Analytical data associated with Tower 96 Effluent and monthly sampling of ONCT Tower 96 system Remedial Wells 1 and 3R are provided in Table 1

Regional Groundwater Monitoring & Outpost Well Monitoring

- Continued supplemental monthly VOC sampling of Monitoring Well GM-21D2
- Completed First Quarter 2017 routine OU2 groundwater monitoring activities
- Data not routinely reported are provided for the current period as follows:
    - Analytical data for Monitoring Well GM-21D2 are provided in Table 1

Northrop Grumman Cooperation with Navy

- Coordinated with Navy and conducted First Quarter 2017 sampling of additional outpost wells and plume monitoring wells
- Prepared and submitted Fourth Quarter sampling event data for Navy owned wells, including Form 1 packages, to Navy for distribution

Other

- Prepared and submitted 2016 Annual Operation Maintenance and Monitoring Report
- Prepared and submitted the January 2017 AOC quarterly progress report

OU2 ACTIVITIES SCHEDULED FOR SECOND QUARTER 2017

OU2 On-Site Containment (ONCT) System

- Continue OM&M of OU2 ONCT system
- Conduct Second Quarter 2017 ONCT system sampling

Regional Groundwater Monitoring & Outpost Well Monitoring

- Initiate and complete Second Quarter 2017 sampling including water level collection from wells in Northrop Grumman's routine monitoring program
- Continue supplemental VOC sampling at Monitoring Well GM-21D2

Northrop Grumman Cooperation with Navy

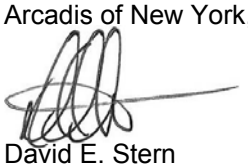
- Initiate and complete Second Quarter 2017 sampling including water level collection from additional outpost wells and plume monitoring wells

Other

- Submit the First Quarter 2017 AOC quarterly progress report
- Submit the First Quarter 2017 OU2 Operation Maintenance and Monitoring Report

Sincerely,

Arcadis of New York, Inc.



David E. Stern

Senior Hydrogeologist/Associate Project Manager

Enclosures

Copies:
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Edward J. Hannon, Northrop Grumman
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Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

ARCADIS Design & Consultancy for natural and built assets

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	GM-21D2 / GM-21D2_20161223 / 12/23/2017	GM-21D2 / GM-21D2_20170130 / 1/30/2017	GM-21D2 / REP013017M01 / 1/30/2017
Volatile Organic Compounds [1]				
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		**0.64 J**	**0.57 J**	**0.58 J**
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		**0.87 J**	**0.63 J**	**0.60 J**
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0
Tetrachloroethene		**4.6**	**4.5**	**4.4**
Toluene		< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0
Trichloroethene		**25.2**	**22.8**	**22.0**
Vinyl chloride		< 1.0	< 1.0	< 1.0
Total VOCs[2]		**31**	**29**	**28**

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

ARCADIS Design & Consultancy for natural and built assets

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	GM-21D2 / GM-21D2_20170216 / 2/16/2017	QAQC / TB013017MO1 / 1/30/2017	QAQC / FB013017MO1 / 1/30/2017
Volatile Organic Compounds [1]				
1,1,1-Trichloroethane		< 1.0	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	< 1.0
1,1-Dichloroethene		**0.61 J**	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		**0.50 J**	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0
Tetrachloroethene		**4.7**	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0
Trichloroethene		**23.5**	< 1.0	< 1.0
Vinyl chloride		< 1.0	< 1.0	< 1.0
Total VOCs[2]		**29**	0.0	0.0

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

ARCADIS Design & Consultancy for natural and built assets

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	QAQC TB021617PP1 2/16/2017	QAQC FB021617PP1 2/16/2017	WELL 1 WELL 1_20170119 1/19/2017
Volatile Organic Compounds [1]				
1,1,1-Trichloroethane		< 1.0	< 1.0	**0.33 J**
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		< 5.0	< 5.0	**4.2 J**
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		< 1.0	< 1.0	**0.77 J**
1,1-Dichloroethene		< 1.0	< 1.0	**2.5**
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	**4.6**
2-Butanone (MEK)		< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0
Acetone		< 10	**9.9 J**	< 10
Benzene		< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0
Chloroform		< 1.0	**0.35 J**	**0.26 J**
Chloromethane		< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		< 1.0	< 1.0	**5.2**
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0
Tetrachloroethene		< 1.0	< 1.0	**20.1**
Toluene		< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0
Trichloroethene		< 1.0	< 1.0	**618**
Vinyl chloride		< 1.0	< 1.0	< 1.0
Total VOCs[2]		0.0	**10**	**660**

Notes and Abbreviations on last page.

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Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

ARCADIS Design & Consultancy for natural and built assets

Constituents (units in µg/L)	Well ID: / Sample ID: / Sample Date:	WELL 3R / WELL 3R_20170119 / 1/19/2017	96 EFFLUENT / T96 EFFLUENT_20170119 / 1/19/2017	QAQC / TB-011917-SW-1 / 1/19/2017
Volatile Organic Compounds [1]				
1,1,1-Trichloroethane		**0.69 J**	< 1.0	< 1.0
1,1,2,2-Tetrachloroethane		< 1.0	< 1.0	< 1.0
1,1,2-trichloro-1,2,2-trifluoroethane		**5.0**	< 5.0	< 5.0
1,1,2-Trichloroethane		< 1.0	< 1.0	< 1.0
1,1-Dichloroethane		**1.4**	< 1.0	< 1.0
1,1-Dichloroethene		**4.6**	< 1.0	< 1.0
1,2-Dichloroethane		< 1.0	< 1.0	< 1.0
1,2-Dichloropropane		< 1.0	< 1.0	< 1.0
2-Butanone (MEK)		< 10	< 10	< 10
4-Methyl-2-Pentanone		< 5.0	< 5.0	< 5.0
Acetone		< 10	< 10	< 10
Benzene		< 0.50	< 0.50	< 0.50
Bromodichloromethane		< 1.0	< 1.0	< 1.0
Bromoform		< 1.0	< 1.0	< 1.0
Bromomethane		< 2.0	< 2.0	< 2.0
Carbon Disulfide		< 2.0	< 2.0	< 2.0
Carbon Tetrachloride		< 1.0	< 1.0	< 1.0
Chlorobenzene		< 1.0	< 1.0	< 1.0
Chlorodibromomethane		< 1.0	< 1.0	< 1.0
Chloroethane		< 1.0	< 1.0	< 1.0
Chloroform		**0.25 J**	< 1.0	< 1.0
Chloromethane		< 1.0	< 1.0	< 1.0
cis-1,2-Dichloroethene		**4.7**	< 1.0	< 1.0
cis-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0
Dichloromethane		< 2.0	< 2.0	< 2.0
Ethylbenzene		< 1.0	< 1.0	< 1.0
m&p-Xylenes		< 1.0	< 1.0	< 1.0
Methyl N-Butyl Ketone (2-Hexanone)		< 5.0	< 5.0	< 5.0
o-Xylene		< 1.0	< 1.0	< 1.0
Styrene (Monomer)		< 1.0	< 1.0	< 1.0
Tetrachloroethene		**28.9**	< 1.0	< 1.0
Toluene		< 1.0	< 1.0	< 1.0
trans-1,2-Dichloroethene		< 1.0	< 1.0	< 1.0
trans-1,3-Dichloropropene		< 1.0	< 1.0	< 1.0
Trichloroethene		**471**	**2.4**	< 1.0
Vinyl chloride		**4.1**	< 1.0	< 1.0
Total VOCs[2]		**520**	**2.4**	0.0

Notes and Abbreviations on last page.

Table 1.
Concentrations of Volatile Organic Compounds
Operable Unit 2, Northrop Grumman Systems Corporation
Bethpage, New York

Notes and Abbreviations:

(1) Sample analysis by VOC Method 8260C.

(2) Results rounded to two significant figures.

Results validated following protocols specified in OU2 Groundwater Monitoring Plan (ARCADIS 2016), or as received as final from the laboratory as of the end of the AOC reporting period.

Bold value indicates a detection

µg/L	Micrograms per liter
D	Sample was diluted
<1.0	Constituent not detected above its laboratory quantification limit.
OU2	Operable Unit 2
FB	Field Blank
J	Value is estimated concentration
QAQC	Quality Assurance/Quality Control sample
REP	Blind replicate sample
TB	Trip blank