ARCADIS of New York, Inc.
Two Huntington Quadrangle
Suite 1S10
Melville
New York 11747
Tel 631.249.7600
Fax 631.249.7610
www.arcadis-us.com

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:
July to December 2012 Semi-Annual Progress Report
Northrop Grumman Systems Corporation
Operable Unit 3 (OU3), NYSDEC Site ID # 1-30-003A,
Bethpage, New York

Date:
January 10, 2013

Contact:
David Stern

Phone:
631-391-5284

Email:
David.Stern@arcadis-us.com

Our ref:
NY001496.0711.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 July to December 2012. Activities planned for January to June 2013 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.

OU3 Activities Conducted During July to December 2012

Soil Gas IRM

- Continued Operation, Maintenance, and Monitoring (OM&M) of the Soil Gas Interim Remedial Measure (IRM)
- Submitted the Soil Gas IRM Quarterly OM&M Reports (August and November 2012) to the NYSDEC

Groundwater IRM

- Continued OM&M of the Groundwater IRM
- Submitted the Groundwater IRM Quarterly OM&M Reports (August and November 2012) 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 to December 2012. Validated data obtained from the July to December 2012 period are provided in Tables 1 and 2.

OU3 Activities Scheduled During January to June 2013

Soil Gas IRM

- Continue OM&M of the Soil Gas IRM
- Submit OU3 Soil Gas IRM Annual Report and Quarterly Report to the NYSDEC

Groundwater IRM

- Continue OM&M of the Groundwater IRM
- Submit OU3 Groundwater IRM Annual Report and Quarterly Report 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
C. Henry, EMAGIN
C. Stein – USEPA
M. Poetzch – USEPA
Bethpage Public Library – Public Repository
C. San Giovanni, ARCADIS
M. Wolfert, ARCADIS
File, ARCADIS

ARCADIS

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

Compound (ug/L)	Sample Location: / Sample Date:	MW-109-3 4/14/2009	MW-109-3 7/8/2009	MW-109-3 10/22/2009	MW-109-3 4/14/2010	MW-109-3 2/21/2011	MW-109-3 5/20/2011	MW-109-3 8/11/2011	MW-109-3 11/17/2011	MW-109-3 3/13/2012	MW-109-3 5/22/2012
1,1,1-Trichloroethane		**1.8 J**	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1,2,2-Tetrachloroethane		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1,2-Trichloroethane		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1-Dichloroethane		**18 J**	**16 J**	**17 J**	**16 J**	**15J**	**14J**	**13 J**	**12J**	**11J**	**8.4 J**
1,1-Dichloroethene		**7.4 J**	**5.7 J**	**7.7 J**	**5.4 J**	**5.3J**	**6.1J**	**3.6 J**	**5J**	**5J**	< 50
1,2-Dichloroethane		**6.4 J**	**4.5 J**	**5.8 J**	**6.2 J**	**4.8J**	**4.5J**	**4.1 J**	**3.5J**	**3.1J**	**2.6 J**
1,2-Dichloropropane		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
2-Butanone		< 250	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500
2-Hexanone		< 250	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500
4-methyl-2-pentanone		< 250	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500
Acetone		< 250	< 500 B	< 500	< 500	< 500	< 500	< 500 B	< 500	< 500	< 500
Benzene		< 3.5	< 7	< 7	< 7	< 7	< 7	< 7	< 7	< 7	< 7
Bromodichloromethane		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Bromoform		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Bromomethane		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Disulfide		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon tetrachloride		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Chlorobenzene		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Chlorodifluoromethane (Freon 22)		**2.2 J**	< 50	< 50	< 50	< 50	**3.2J**	**2.5 J**	**3.2J**	**3.9J**	< 50
Chloroethane		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Chloroform		**7 J**	**4.5 J**	**5.6 J**	**5.3 J**	**5.2J**	**5.6J**	**6.1 J**	**5.8J**	**5.6J**	**5.7 J**
Chloromethane		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
cis-1,2-dichloroethene		**1100 D**	**1000**	**1100**	**1000**	**770**	**760**	**850**	**790**	**750**	**610**
cis-1,3-dichloropropene		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Dibromochloromethane		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Dichlorodifluoromethane (Freon 12)		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	**2.8J**	< 50
Ethylbenzene		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Methyl tert-Butyl Ether		--	--	--	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Methylene Chloride		< 25	< 50	< 50 B	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Styrene		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Tetrachloroethene		**9.1 J**	**5.9 J**	**6.2 J**	**6.2 J**	**5.9J**	**6.2J**	**6.9 J**	**4.9J**	**5.1J**	**3.7 J**
Toluene		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
trans-1,2-dichloroethene		**3.9 J**	**4 J**	**4.5 J**	**3.7 J**	**4.2J**	**8.3J**	**4.2 J**	**3.8J**	**4.2J**	**4.8 J**
trans-1,3-dichloropropene		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Trichloroethylene		**2300 D**	**1200**	**1700**	**1500**	**1500**	**1800**	**1300**	**1400**	**1200**	**980**
Trichlorofluoromethane (Freon 11)		--	--	--	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Trichlorotrifluoroethane (Freon 113)		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Vinyl Chloride		**2.1 J**	**4.6 J**	**4 J**	**4.6 J**	<20	<20	< 20	< 20	< 20	< 50
Xylene-o		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Xylenes - m,p		< 25	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TVOC		**3500**	**2200**	**2900**	**2600**	**2300**	**2600**	**2200**	**2200**	**1900**	**1600**

See notes on last page.

ARCADIS

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

Compound (ug/L)	Sample Location: / Sample Date:	MW-109-3 9/14/2012	MW-111-4 5/6/2008	MW-111-4 7/15/2009	MW-111-4 11/3/2009	MW-111-4 4/14/2010	MW-111-4 2/18/2011	MW-111-4 5/20/2011	MW-111-4 8/11/2011	MW-111-4 11/18/2011
1,1,1-Trichloroethane		< 50	< 250	**9 J**	< 250	< 250	< 250	< 250	**6.5 J**	**11J**
1,1,2,2-Tetrachloroethane		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
1,1,2-Trichloroethane		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
1,1-Dichloroethane		**7.7 J**	< 250	**35 J**	**32 J**	**34 J**	**27J**	**33J**	**23 J**	**27J**
1,1-Dichloroethene		**3.4 J**	< 250	**26 J**	**22 J**	**26 J**	**28J**	**23J**	**22 J**	**26J**
1,2-Dichloroethane		< 50	< 250	**27 J**	**26 J**	**18 J**	**17J**	**19J**	**15 J**	**17J**
1,2-Dichloropropane		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
2-Butanone		< 500	< 2500	< 1000	< 2500	< 2500	< 2500	< 2500	< 1300	< 1300J
2-Hexanone		< 500	< 2500	< 1000	< 2500	< 2500	< 2500	< 2500	< 1300	< 1300J
4-methyl-2-pentanone		< 500	< 2500	< 1000	< 2500	< 2500	< 2500	< 2500	< 1300	< 1300J
Acetone		< 500	< 2500	< 1000	< 2500	< 2500	< 2500	< 2500	< 1300 B	< 1300J
Benzene		< 7	< 35	< 14	< 35	< 35	< 35	< 35	< 18	< 18J
Bromodichloromethane		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Bromoform		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Bromomethane		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Carbon Disulfide		< 50	< 2500	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Carbon tetrachloride		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Chlorobenzene		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Chlorodifluoromethane (Freon 22)		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Chloroethane		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Chloroform		**5.1 J**	< 350	**9.6 J**	< 250	< 250	< 250	< 250	**7 J**	**5.8J**
Chloromethane		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
cis-1,2-dichloroethene		**550**	**1500**	**1600**	**1500**	**1300**	**1000**	**1300**	**1500**	**1500J**
cis-1,3-dichloropropene		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Dibromochloromethane		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Dichlorodifluoromethane (Freon 12)		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Ethylbenzene		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Methyl tert-Butyl Ether		< 50	--	--	--	< 250	< 250	< 250	< 130	< 130J
Methylene Chloride		< 50 B	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Styrene		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Tetrachloroethene		**3.3 J**	< 250	**8.8 J**	< 250	< 250	< 250	< 250	**17 J**	**16J**
Toluene		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
trans-1,2-dichloroethene		**5.6 J**	< 250	< 100	< 250	< 250	< 250	< 250	**8.3 J**	< 130J
trans-1,3-dichloropropene		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Trichloroethylene		**970**	**8800**	**5100 D**	**5700**	**6000**	**6700**	**5600**	**4500**	**5500 DJ**
Trichlorofluoromethane (Freon 11)		< 50	--	--	--	< 250	< 250	< 250	< 130	< 130J
Trichlorotrifluoroethane (Freon 113)		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Vinyl Chloride		< 20	< 100	< 40	< 100	< 100	< 100	< 100	< 50	< 50J
Xylene-o		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
Xylenes - m,p		< 50	< 250	< 100	< 250	< 250	< 250	< 250	< 130	< 130J
TVOC		**1500**	**10000**	**6800**	**7300**	**7400**	**7800**	**7000**	**6100**	**7100**

See notes on last page.

ARCADIS

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

Compound (ug/L)	Sample Location:	MW-111-4	MW-111-4	MW-111-4
	Sample Date:	3/12/2012	5/22/2012	9/14/2012
1,1,1-Trichloroethane		**11J**	**6.5 J**	**5.3 J**
1,1,2,2-Tetrachloroethane		< 250	< 130	< 130
1,1,2-Trichloroethane		< 250	< 130	< 130
1,1-Dichloroethane		**28J**	**25 J**	**19 J**
1,1-Dichloroethene		**34J**	**19 J**	**17 J**
1,2-Dichloroethane		**15J**	**15 J**	**12 J**
1,2-Dichloropropane		< 250	< 130	< 130
2-Butanone		< 2500	< 1300	< 1300
2-Hexanone		< 2500	< 1300	< 1300
4-methyl-2-pentanone		< 2500	< 1300	< 1300
Acetone		< 2500	< 1300	< 1300
Benzene		< 35	< 18	< 18
Bromodichloromethane		< 250	< 130	< 130
Bromoform		< 250	< 130	< 130
Bromomethane		< 250	< 130	< 130
Carbon Disulfide		< 250	< 130	< 130
Carbon tetrachloride		< 250	< 130	< 130
Chlorobenzene		< 250	< 130	< 130
Chlorodifluoromethane (Freon 22)		< 250	< 130	< 130
Chloroethane		< 250	< 130	< 130
Chloroform		< 250	< 130	**6.8 J**
Chloromethane		< 250	< 130	< 130
cis-1,2-dichloroethene		**1600**	**1300**	**1300**
cis-1,3-dichloropropene		< 250	< 130	< 130
Dibromochloromethane		< 250	< 130	< 130
Dichlorodifluoromethane (Freon 12)		< 250	< 130	< 130
Ethylbenzene		< 250	< 130	< 130
Methyl tert-Butyl Ether		< 250	< 130	< 130
Methylene Chloride		< 250	< 130	< 130
Styrene		< 250	< 130	< 130
Tetrachloroethene		**16J**	**15 J**	**15 J**
Toluene		< 250	< 130	< 130
trans-1,2-dichloroethene		< 250	**5.8 J**	**9.3 J**
trans-1,3-dichloropropene		< 250	< 130	< 130
Trichloroethylene		**5300**	**4600**	**3700**
Trichlorofluoromethane (Freon 11)		< 250	< 130	< 130
Trichlorotrifluoroethane (Freon 113)		< 250	< 130	< 130
Vinyl Chloride		< 100	< 50	< 50
Xylene-o		< 250	< 130	< 130
Xylenes - m,p		< 250	< 130	< 130
TVOC		**7000**	**6000**	**5800**

See notes on last page.

ARCADIS

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 analyzed for the TCL VOCs using NYSDEC ASP Method 2000 OLM4.2.

Acronyms:

Bold value indicates a detection.

RI/FS	Remedial Investigation/Feasibility Study.
NYSDEC	New York State Department of Environmental Conservation.
TCL	Target compound list.
VOC	Volatile Organic Compound.
TVOC	Total Volatile Organic Compounds
ASP	Analytical services protocol.
ug/L	Micrograms per liter.
J	Value is estimated.
D	Constituent identified from secondary dilution.
B	Constituent detected in an associated blank.
--	Not analyzed

ARCADIS

Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Well MW116-5, Northrop Grumman Systems Corporation, Bethpage, New York.

Location ID:	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5
Sample Date:	4/11/2008	8/4/2008	9/29/2008	12/29/2008	3/31/2009	7/22/2009	11/3/2009	12/3/2009
Constituent Name (units in ug/L)								
1,1,1-Trichloroethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1,2,2-Tetrachloroethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1,2-Trichloroethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1-Dichloroethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1-Dichloroethene	< 50	< 50	< 50	< 50	**3.7 J**	< 50	< 50	< 50
1,2-Dichloroethane	< 50	< 50	< 50	< 50	**15 J**	**6.5 J**	**7.0 J**	**7.9 J**
1,2-Dichloropropane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
2-Butanone	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500
2-Hexanone	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500
4-methyl-2-pentanone	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500
Acetone	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500
Benzene	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0
Bromodichloromethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Bromoform	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Bromomethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Disulfide	< 500	< 500	< 500	< 500	< 50	< 50	< 50	< 50
Carbon Tetrachloride	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Chlorobenzene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Chlorodifluoromethane (Freon 22)	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Chloroethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Chloroform	< 70	< 70	< 70	< 70	**34 J**	**15 J**	**13 J**	**14 J**
Chloromethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50 R
cis-1,2-dichloroethene	**130**	**130**	**140**	**150**	**210**	**130**	**150**	**160**
cis-1,3-dichloropropene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Dibromochloromethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Dichlorodifluoromethane (Freon 12)	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Ethylbenzene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Methyl tert-Butyl Ether	--	--	--	--	--	--	--	--
Methylene Chloride	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Styrene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Tetrachloroethene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Toluene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
trans-1,2-dichloroethene	< 50	< 50	< 50	< 50	**5.6 J**	< 50	**5.3 J**	< 50
trans-1,3-dichloropropene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Trichloroethylene	**1100**	**1100**	**1300**	**1100**	**1200**	**1100**	**2000**	**2000 D**
Trichlorofluoromethane (CFC-11)	--	--	--	--	--	--	--	--
Trichlorotrifluoroethane (Freon 113)	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Vinyl Chloride	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Xylene-o	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Xylenes - m,p	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TVOCs	**1200**	**1200**	**1400**	**1300**	**1500**	**1300**	**2200**	**2200**

Notes and Abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Well MW116-5, Northrop Grumman Systems Corporation, Bethpage, New York.

Location ID:	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5
Sample Date:	1/13/2010	2/8/2010	3/11/2010	4/26/2010	5/26/2010	6/25/2010	7/27/2010	8/25/2010	9/20/2010
Constituent Name (units in ug/L)									
1,1,1-Trichloroethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1,2,2-Tetrachloroethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1,2-Trichloroethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1-Dichloroethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1-Dichloroethene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	**3.6 J**
1,2-Dichloroethane	**7.5 J**	**5.6 J**	**7.0 J**	**7.7 J**	**8.2 J**	**9.0 J**	**8.2 J**	**8.4 J**	**9.0 J**
1,2-Dichloropropane	< 50	< 50	< 50	< 50	< 50	< 50	**4.5 J**	**5.1 J**	**5.1 J**
2-Butanone	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500
2-Hexanone	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500
4-methyl-2-pentanone	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500	< 500
Acetone	< 500	< 500 B	< 500	< 500	< 500	< 500	< 500	< 500	**9.5 J**
Benzene	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0
Bromodichloromethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Bromoform	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Bromomethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Disulfide	< 50	**3.4 J**	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon Tetrachloride	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Chlorobenzene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Chlorodifluoromethane (Freon 22)	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Chloroethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Chloroform	**12 J**	**9.4 J**	**10 J**	**13 J**	**15 J**	**20 J**	**15 J**	**15 J**	**15 J**
Chloromethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
cis-1,2-dichloroethene	**150**	**130**	**150**	**180**	**170**	**180**	**180**	**190**	**160**
cis-1,3-dichloropropene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Dibromochloromethane	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Dichlorodifluoromethane (Freon 12)	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Ethylbenzene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Methyl tert-Butyl Ether	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Methylene Chloride	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Styrene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Tetrachloroethene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Toluene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
trans-1,2-dichloroethene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	**3.5 J**	< 50
trans-1,3-dichloropropene	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Trichloroethylene	**2000**	**1600**	**1700**	**1800**	**1800**	**1700**	**1700**	**1900**	**2100 D**
Trichlorofluoromethane (CFC-11)	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Trichlorotrifluoroethane (Freon 113)	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Vinyl Chloride	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20
Xylene-o	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Xylenes - m,p	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
TVOCs	**2200**	**1700**	**1900**	**2000**	**2000**	**1900**	**1900**	**2100**	**2300**

Notes and Abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Well MW116-5, Northrop Grumman Systems Corporation, Bethpage, New York.

Location ID:	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5[(1)]	MW-116-5
Sample Date:	10/22/2010	11/22/2010	12/17/2010	1/17/2011	2/16/2011	3/22/2011	4/21/2011	5/19/2011
Constituent Name (units in ug/L)								
1,1,1-Trichloroethane	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
1,1,2,2-Tetrachloroethane	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
1,1,2-Trichloroethane	< 100	< 50	**3.1 J**	< 50	**3.6 J**	**3.3 J**	**4.2 J**	**3.6 J**
1,1-Dichloroethane	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
1,1-Dichloroethene	< 100	**4.0 J**	**4.5 J**	**5.8 J**	**5.8 J**	**6.3 J**	**4.4 J**	**6.1 J**
1,2-Dichloroethane	**12 J**	**15 J**	**16 J**	**17 J**	**20 J**	**17 J**	**17 J**	**17 J**
1,2-Dichloropropane	< 100	**4.3 J**	**3.3 J**	**3.8 J**	**4.4 J**	**4.4 J**	**4.2 J**	**5.6 J**
2-Butanone	<1000	< 500	< 500	< 500	< 500	< 500	500R	< 500
2-Hexanone	<1000	< 500	< 500	< 500	< 500	< 500	500R	< 500
4-methyl-2-pentanone	<1000	< 500	< 500	< 500	< 500	< 500	500R	< 500
Acetone	<1000	< 500	< 500	< 500	< 500	< 500	500R	< 500
Benzene	< 14	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	7.0R	< 7.0
Bromodichloromethane	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Bromoform	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Bromomethane	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Carbon Disulfide	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Carbon Tetrachloride	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Chlorobenzene	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Chlorodifluoromethane (Freon 22)	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Chloroethane	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Chloroform	**18 J**	**28 J**	**31 J**	**32 J**	**33 J**	**32 J**	**32 J**	**34 J**
Chloromethane	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
cis-1,2-dichloroethene	**170**	**230**	**250**	**270**	**270**	**270**	**300 J**	**280**
cis-1,3-dichloropropene	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Dibromochloromethane	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Dichlorodifluoromethane (Freon 12)	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Ethylbenzene	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Methyl tert-Butyl Ether	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Methylene Chloride	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Styrene	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Tetrachloroethene	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Toluene	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
trans-1,2-dichloroethene	< 100	**4.8 J**	**4.7 J**	< 50	**5.9J**	**6.1J**	50R	**4.3J**
trans-1,3-dichloropropene	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Trichloroethylene	**2100**	**1800**	**1800**	**1900**	**1900**	**1900**	**2000J**	**2200**
Trichlorofluoromethane (CFC-11)	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Trichlorotrifluoroethane (Freon 113)	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Vinyl Chloride	< 40	< 20	< 20	< 20	< 20	< 20	50R	< 20
Xylene-o	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
Xylenes - m,p	< 100	< 50	< 50	< 50	< 50	< 50	50R	< 50
TVOCs	**2300**	**2100**	**2100**	**2200**	**2200**	**2200**	**2400**	**2600**

Notes and Abbreviations on last page.

Table 1. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Well MW116-5, Northrop Grumman Systems Corporation, Bethpage, New York.

Location ID:	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5
Sample Date:	6/21/2011	7/19/2011	8/22/2011	9/22/2011	10/17/2011	11/16/2011	12/21/2011	1/24/2012
Constituent Name (units in ug/L)								
1,1,1-Trichloroethane	<100	<100	<100	<100	<100	<100	< 100	< 100
1,1,2,2-Tetrachloroethane	<100	<100	<100	<100	<100	<100	< 100	< 100
1,1,2-Trichloroethane	<100	<100	<100	<100	**4.8 J**	<100	< 100	< 100
1,1-Dichloroethane	<100	<100	<100	<100	<100	<100	< 100	< 100
1,1-Dichloroethene	<100	**6.2 J**	**6.0 J**	**5.4 J**	**5 J**	**5.8 J**	< 100	< 100
1,2-Dichloroethane	**15 J**	**15 J**	**14 J**	**12 J**	**14 J**	**17 J**	**16 J**	**20 J**
1,2-Dichloropropane	<100	**7.0 J**	**6.6 J**	<100	**8 J**	**8.6 J**	**7.6 J**	< 100
2-Butanone	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000
2-Hexanone	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000
4-methyl-2-pentanone	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000
Acetone	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000	< 1000
Benzene	< 14	< 14	< 14	< 14	< 14	< 14	< 14	< 14
Bromodichloromethane	<100	<100	<100	<100	<100	<100	< 100	< 100
Bromoform	<100	<100	<100	<100	<100	<100	< 100	< 100
Bromomethane	<100	<100	<100	<100	<100	<100	< 100	< 100
Carbon Disulfide	<100	<100	<100	<100	<100	<100	< 100	< 100
Carbon Tetrachloride	<100	<100	<100	<100	<100	<100	< 100	< 100
Chlorobenzene	<100	<100	<100	<100	<100	<100	< 100	< 100
Chlorodifluoromethane (Freon 22)	<100	<100	<100	<100	<100	<100	< 100	< 100
Chloroethane	<100	<100	<100	<100	<100	<100	< 100	< 100
Chloroform	**28 J**	**28 J**	**25 J**	**29 J**	**25 J**	**26J**	**26 J**	**35 J**
Chloromethane	<100	<100	<100	<100	<100	<100	< 100	< 100
cis-1,2-dichloroethene	**350**	**350**	**270**	**350**	**360**	**390**	**380**	**430**
cis-1,3-dichloropropene	<100	<100	<100	<100	<100	<100	< 100	< 100
Dibromochloromethane	<100	<100	<100	<100	<100	<100	< 100	< 100
Dichlorodifluoromethane (Freon 12)	<100	<100	<100	<100	<100	<100	< 100	< 100
Ethylbenzene	<100	<100	<100	<100	<100	<100	< 100	< 100
Methyl tert-Butyl Ether	<100	<100	<100	<100	<100	<100	< 100	< 100
Methylene Chloride	<100	<100	<100	<100	<100	**4.6 BJ**	< 100	< 100
Styrene	<100	<100	<100	<100	<100	<100	< 100	< 100
Tetrachloroethene	<100	<100	<100	<100	<100	<100	< 100	< 100
Toluene	<100	<100	<100	<100	<100	<100	< 100	< 100
trans-1,2-dichloroethene	<100	<100	<100	<100	**5 J**	<100	**9.6 J**	**11 J**
trans-1,3-dichloropropene	<100	<100	<100	<100	<100	<100	< 100	< 100
Trichloroethylene	**2300**	**2600**	**2700**	**2600**	**3000**	**2900**	**2700**	**2400**
Trichlorofluoromethane (CFC-11)	< 50	<100	<100	<100	<100	<100	< 100	< 100
Trichlorotrifluoroethane (Freon 113)	< 50	<100	<100	<100	<100	<100	< 100	< 100
Vinyl Chloride	< 20	< 40	< 40	< 40	< 40	< 40	< 40	< 40
Xylene-o	< 50	<100	<100	<100	<100	<100	< 100	< 100
Xylenes - m,p	< 50	<100	<100	<100	<100	<100	< 100	< 100
TVOCs	**2700**	**3000**	**3000**	**3000**	**3400**	**3400**	**3100**	**2900**

Notes and Abbreviations on last page.

Table 2. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Well MW116-5, Northrop Grumman Systems Corporation, Bethpage, New York.

Location ID:	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5	MW-116-5
Sample Date:	2/22/2012	3/30/2012	4/30/2012	5/30/2012	6/28/2012	7/24/2012	8/30/2012	9/20/2012	11/13/2012
Constituent Name (units in ug/L)									
1,1,1-Trichloroethane	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
1,1,2,2-Tetrachloroethane	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
1,1,2-Trichloroethane	< 100	< 100	< 100	<50	<50	**2.3 J**	<50	**2.6 J**	< 50
1,1-Dichloroethane	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
1,1-Dichloroethene	**4.4 J**	**5.4 J**	**4.2 J**	**3.6 J**	<50	**2.8 J**	**2.6 J**	**2.5 J**	**3.5 J**
1,2-Dichloroethane	**16 J**	**13 J**	**9.4 J**	**10 J**	<50	**10 J**	**7.9 J**	**9.3 J**	**8.5 J**
1,2-Dichloropropane	< 100	< 100	**6.2 J**	**4.9 J**	**5.2 J**	**4.3 J**	**3.2 J**	**5.2 J**	**5.2 J**
2-Butanone	< 1000	< 1000	< 1000	<500	<500	<500	<500	<500	< 500
2-Hexanone	< 1000	< 1000	< 1000	<500	<500	<500	<500	<500	< 500
4-methyl-2-pentanone	< 1000	< 1000	< 1000	<500	<500	<500	<500	<500	< 500
Acetone	< 1000	< 1000	< 1000	<500	<500 B	<500	<500	<500	< 500
Benzene	< 14	< 14	< 14	< 7	< 7	<7	<7	<7	< 7
Bromodichloromethane	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Bromoform	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Bromomethane	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Carbon Disulfide	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Carbon Tetrachloride	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Chlorobenzene	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Chlorodifluoromethane (Freon 22)	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Chloroethane	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Chloroform	**26 J**	**20 J**	**13 J**	**14 J**	**14 J**	**14 J**	**13 J**	**13 J**	**12 J**
Chloromethane	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
cis-1,2-dichloroethene	**370**	**270**	**230**	**210**	**210**	**200**	**190**	**220**	**190**
cis-1,3-dichloropropene	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Dibromochloromethane	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Dichlorodifluoromethane (Freon 12)	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Ethylbenzene	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Methyl tert-Butyl Ether	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Methylene Chloride	**5 J**	< 100	< 100	<50	<50	<50	<50	<50	< 50
Styrene	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Tetrachloroethene	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Toluene	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
trans-1,2-dichloroethene	**4.8 J**	< 100	**4.6 J**	**3.7 J**	**2.2 J**	<50	<50	**2.2 J**	< 50
trans-1,3-dichloropropene	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Trichloroethylene	**2500**	**1900**	**1900**	**2000**	**1900**	**1900**	**1700**	**1900**	**1700**
Trichlorofluoromethane (CFC-11)	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Trichlorotrifluoroethane (Freon 113)	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Vinyl Chloride	< 40	< 40	< 40	< 20	<50	<20	<20	<20	< 20
Xylene-o	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
Xylenes - m,p	< 100	< 100	< 100	<50	<50	<50	<50	<50	< 50
TVOCs	**2900**	**2200**	**2200**	**2200**	**2100**	**2100**	**1900**	**2200**	**1900**

Notes and Abbreviations on last page.

Table 2. Concentrations of Volatile Organic Compounds in Groundwater Samples Collected from Monitoring Well MW116-5, Northrop Grumman Systems Corporation, Bethpage, New York.

Notes and Abbreviations:

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

Samples analyzed for the TCL VOCs using NYSDEC ASP Method 2000 OLM4.2.

TVOCs are rounded to two significant figures.

"B" qualified data not included in sum of VOCs.

(1) : Detected concentrations are estimated and non-detected values are rejected because sample was analyzed one day out of the allowable holding time.

Bold value indicates a detection.

RI/FS	Remedial Investigation/Feasibility Study
NYSDEC	New York State Department of Environmental Conservation
TCL	Target compound list
VOC	Volatile Organic Compound
TVOC	Total Volatile Organic Compounds
ASP	Analytical services protocol
ug/L	Micrograms per liter
B	Compound detected in associated blank sample
J	Value is estimated
R	Value is rejected
D	Value from a secondary dilution