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Infrastructure, environment, facilities

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Mr. Steven Scharf, P.E.
New York State Department of Environmental Conservation (NYSDEC)
Division of Environmental Remediation
625 Broadway
Albany, New York 12233-7015

Subject:
Results of First Quarter 2009 Groundwater Monitoring,
Operable Unit 2, Northrop Grumman Systems Corporation (Northrop Grumman) and Naval Weapons Industrial Reserve Plant (NWIRP) Sites, Bethpage, New York.
(NYSDEC Site #s 1-30-003A and B)

ENVIRONMENT

Date:
June 18, 2009

Contact:
David E. Stern

Phone:
(631) 391-5284

Email:
David.stern@arcadis-us.com

Our ref:
NY001492.0409.00004

Dear Mr. Scharf:

On behalf of Northrop Grumman Systems Corporation (Northrop Grumman), ARCADIS is providing the New York State Department of Environmental Conservation (NYSDEC) with the validated results of groundwater monitoring performed in accordance with the approved groundwater monitoring plan (ARCADIS G&M, Inc. 2006) and the Public Water Supply Contingency Plan (PWSCP) (ARCADIS G&M, Inc. 2003) for the First Quarter of 2009 for Operable Unit 2 (OU2). Table 1 provides OU2 remedial system performance operational data and water balance. Tables 2, 3, and 4 provide the analytical results of monitoring for this period. Figure 1 shows the site plan with well locations.

Please contact us if you have any questions or comments.

Sincerely,

ARCADIS U.S., Inc.

David E. Stern
Senior Hydrogeologist

Carlo San Giovanni
Project Manager

Enclosures

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Table 1. Summary of Operational Data and Water Balance for the On-Site Portion of the OU2 Groundwater Remedy, First Quarter 2009, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

Identification	Design Pumping/ Recharge Rate [a] (gpm)	Current Actual Average Pumping/Recharge Rate [b] (gpm)	Design Total Pumpage/Recharge (MG)	Current Actual Total Pumpage/Recharge (MG)	Current Percent of Design Pumpage/ Recharge	Current TCE Concentration (ug/L)	Current TVOC Concentration [c] ug/L	1st Quarter 2009 Estimated VOC Mass Removed [d] (lbs)
Remedial Wells			**Groundwater Removed from Aquifer**					
Well 1	800	790	111.7	109.3	98%	350	465	423
Well 3	700	706	97.8	97.6	100%	2,700	2,987	2,428
Well 17	1,000	1,051	139.7	139.5	100%	230	273	317
Well 18	600	643	83.8	83.5	100%	100	124	86
Well 19	700	716	97.8	95.0	97%	190	225.0	178
Rounded Totals:	**3,800**	**3,906**	**531**	**525**	**99%**	**--**	**--**	**3,432**
Recharge Basins [a]			**Treated Water Recharged to Aquifer**					
West Recharge Basins	0	1,090	0	152.3	--	--	--	--
South Recharge Basins	2,231	2,706	311.6	378.0	121%	--	--	--
Rounded Totals:	**2,231**	**3,796**	**312**	**530.3**	**170%**	**--**	**--**	**--**
Treated Water Sent to Calpine								
Calpine Demand	100-400	106	14-56	14.8	--	--	--	--

Treatment Efficiencies		**Average SPDES Outfall TVOC Concentrations (ug/L) [f]**
Tower 96 System Efficiency [e] :	**>99.9%**	**0.4**
Tower 102 System Efficiency [e] :	**99.7%**	**0.7**

see footnotes on last page

Table 1. Summary of Operational Data and Water Balance for the On-Site Portion of the OU2 Groundwater Remedy, First Quarter 2009, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

(a) - Design remedial well pumping rates based on computer modeling (ARCADIS G& M, Inc. 2003c). Acceptable design recharge rates based on computer modeling (ARCADIS G&M, Inc. 2004b). Design pumping and recharge rates were modified in April, 2005. Recharge includes remedial well pumpage (minus Calpine demand, Oxy biosparge system demand, and pipe loss), plus incidental runoff from precipitation. Current average recharge rates have been determined using the entire 98-day span of time as opposed to current average pumping rates, which account for varying amounts of downtime, as indicated below.

(b) - OU2 wells were operational during the First Quarter 2009, at the following percentages: Well-1 (99%), Well-3 (99%); Well-17 (95%), Well-18 (93%), and Well-19 (95%). The Actual Average Pumping Rates and rate of treated water sent to Calpine are for when the wells are pumping.

(c) - The TVOC concentration for each well was calculated based on First Quarter 2009 groundwater monitoring data (Table 2).

(d) - TVOC mass removed is based on the TVOC data given above and the following formula:

(TVOC concentration in ug/L) X (gallons pumped) X (3.785 L/gal) X (1 x 10^{-6} g/ug) X (2.2 x 10^{-3} lb/g)

(e) Air Stripping Efficiency calculated from values above and in Table 2 using the following formula:

$$1 - \left[\left(\frac{\text{Average SPDES TVOC Concentration at Outfall}}{\frac{[(\text{TVOC}_{\text{Well 1}} \times Q_{\text{Well 1}}) + (\text{TVOC}_{\text{Well 2}} \times Q_{\text{Well 2}}) \text{ etc...}]}{(Q_{\text{Well 1}} + Q_{\text{Well 2}} \text{ etc..})}} \right) \right]$$

-When non-detectable levels of VOCs are found in the effluent, a value of zero is used to estimate the efficiency of the air stripper.

(f) -Towers 102 and 96 outfalls utilize SPDES Outfalls 005 and 006 (commonly known as the South Recharge Basins and Plant 5 Recharge Basins, respectively). Complete SPDES reporting provided to NYSDEC by NGC under separate cover.

--	Not Available or Not Applicable	lb/g	pounds per gram
TVOC	Total Volatile Organic Compounds	lbs	pounds
g/ug	grams per microgram	MG	Million Gallons
gpm	gallons per minute	ug/L	micrograms per liter
L/gal	Liters per gallon	OU2	Operable Unit 2
SPDES	State Pollutant Discharge Elimination System	Q	Pumping Rate
NGC	Northrop Grumman Systems Corporation	NYSDEC	New York State Department of Environmental Conservation

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Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2009, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	N-10627 N-10627 3/17/2009	N-10631 N-10631 3/17/2009	FW-03 FW-03 2/27/2009	GM-13D GM-13D 2/27/2009	GM-15S GM-15S 2/24/2009	GM-15I GM-15I 3/31/2009	GM-15D GM-15D 2/27/2009	GM-15D2 GM-15D2 2/27/2009
1,1,1-Trichloroethane		< 5	< 5	**0.43 J**	**5.3**	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		< 5	< 5	< 5	**7.6**	< 5	< 5	< 5	< 5
1,1-Dichloroethene		< 5	< 5	< 5	**17**	< 5	< 5	< 5	**0.98 J**
1,2-Dichloroethane		< 5	< 5	< 5	**0.31 J**	< 5	< 5	< 5	< 5
1,2-Dichloropropane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Butanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Acetone		< 50 B	< 50	< 50	< 50 B	< 50 B	< 50	< 50	**2.8 J**
Benzene		< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromoform		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon Disulfide		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroform		< 5	< 5	< 5	**0.39 J**	< 5	< 5	< 5	< 5
Chloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	< 5	**0.76 J**	**32**	< 5	< 5	< 5	**0.36 J**
cis-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methylene Chloride		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Styrene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		< 5	< 5	**56**	**260 D**	< 5	< 5	**0.69 J**	**12**
Toluene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloroethylene		**0.64 J**	**0.38 J**	**3.4 J**	**80**	**5.2**	**4 J**	**1.5 J**	**11**
Trichlorotrifluoroethane (Freon 113)		< 5	< 5	< 5	**3.4 J**	< 5	< 5	< 5	**1.3 J**
Vinyl Chloride		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Xylene-o		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	Total VOCs	**0.64**	**0.38**	**60.59**	**408.4**	**5.2**	**4**	**2.19**	**29.64**

Bold	Constituent detected
VOCs	Volatile Organic Compounds
ug/L	Micrograms per liter
J	Constituent value is estimated
D	Constituent identified at a secondary dilution

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Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2009, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-17I GM-17I 2/17/2009	GM-17D GM-17D 2/17/2009	GM-18I GM-18I 3/31/2009	GM-18D GM-18D 4/1/2009	GM-20I GM-20I 3/21/2009	GM-20D GM-20D 3/21/2009	GM-21S GM-21S 3/29/2009	GM-21I GM-21I 4/1/2009
1,1,1-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Btanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Acetone		< 50	< 50	**2 J**	**4.5 J**	**1.3 J**	**2 J**	< 50 B	**2.5 J**
Benzene		< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromoform		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon Dislfide		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroform		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	< 5	**0.81 J**	< 5	< 5	< 5	< 5	< 5
cis-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methylene Chloride		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Styrene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tolene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloroethylene		< 5	**0.32 J**	**4 J**	**1.5 J**	< 5	< 5	< 5	< 5
Trichlorotrifloroethane (Freon 113)		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Vinyl Chloride		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Xylene-o		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	Total VOCs	0	**0.32**	**6.81**	**6**	**1.3**	**2**	0	**2.5**

Bold	Constituent detected
VOCs	Volatile Organic Compounds
ug/L	Micrograms per liter
J	Constituent value is estimated
D	Constituent identified at a secondary dilution

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Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2009, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-21D / GM-21D / 3/20/2009	GM-33D2 / GM-33D2 / 3/17/2009	GM-34D / GM-34D / 2/25/2009	GM-34D2 / GM-34D2 / 2/25/2009	GM-35D2 / GM-35D2 / 3/23/2009	GM-36D / GM-36D / 3/24/2009	GM-36D2 / GM-36D2 / 3/24/2009	GM-37D / GM-37D / 3/30/2009
1,1,1-Trichloroethane		< 5	< 5	**0.41 J**	< 10	**0.34 J**	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
1,1-Dichloroethane		< 5	< 5	**1 J**	< 10	< 5	< 5	< 5	< 5
1,1-Dichloroethene		< 5	< 5	**13**	**2.4 J**	**0.69 J**	< 5	**0.41 J**	< 5
1,2-Dichloroethane		< 5	< 5	**0.31 J**	< 10	< 5	< 5	< 5	< 5
1,2-Dichloropropane		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
2-Btanone		< 50	< 50	< 50	< 100	< 50	< 50	< 50	< 50
2-Hexanone		< 50	< 50	< 50	< 100	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 50	< 50	< 100	< 50	< 50	< 50	< 50
Acetone		< 50	< 50	< 50	< 100 B	< 50	**1.6 J**	**2 J**	< 50 B
Benzene		< 0.7	< 0.7	< 0.7	< 1.4	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Bromoform		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Bromomethane		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Carbon Dislfide		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Chlorobenzene		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Dibromochloromethane		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Chloroethane		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Chloroform		< 5	< 5	**0.62 J**	< 10	< 5	< 5	< 5	< 5
Chloromethane		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	**0.75 J**	**8.8**	**6.8 J**	**1.9 J**	< 5	< 5	< 5
cis-1,3-dichloropropene		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Ethylbenzene		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Methylene Chloride		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Styrene		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Tetrachloroethene		< 5	**9.5**	**12**	**9.6 J**	**8.8**	< 5	< 5	**0.47 J**
Tolene		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Trichloroethylene		**0.69 J**	**56**	**860 D**	**280**	**210 D**	**2.8 J**	**0.91 J**	< 5
Trichlorotrifloroethane (Freon 113)		< 5	**25**	**18**	**4.2 J**	**4.4 J**	< 5	< 5	< 5
Vinyl Chloride		< 2	< 2	< 2	< 4	< 2	< 2	< 2	< 2
Xylene-o		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
Xylenes - m,p		< 5	< 5	< 5	< 10	< 5	< 5	< 5	< 5
	Total VOCs	**0.69**	**91.25**	**915.44**	**303**	**227.09**	**4.4**	**3.32**	**0.47**

Bold	Constituent detected
VOCs	Volatile Organic Compounds
ug/L	Micrograms per liter
J	Constituent value is estimated
D	Constituent identified at a secondary dilution

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Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2009, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-37D2 GM-37D2 3/28/2009	GM-38D GM-38D 3/22/2009	GM-38D2 GM-38D2 3/22/2009	GM-39D$_A$ GM-39D$_A$ 3/16/2009	GM-39D$_B$ GM-39D$_B$ 3/16/2009	GM-70D2 GM-70D2 3/30/2009	GM-71D2 GM-71D2 3/31/2009	GM-73D GM-73D 2/17/2009
1,1,1-Trichloroethane		**1.3 J**	**3.7 J**	< 25	< 5	< 5	< 5	**1.9 J**	< 5
1,1,2,2-Tetrachloroethane		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		**3.4 J**	**5.8 J**	< 25	< 5	< 5	< 5	**3.8 J**	< 5
1,1-Dichloroethene		**1.4 J**	**5.8 J**	**2.2 J**	< 5	< 5	< 5	**2.6 J**	< 5
1,2-Dichloroethane		< 5	< 25	< 25	< 5	< 5	< 5	**0.37 J**	< 5
1,2-Dichloropropane		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
2-Btanone		< 50	< 250	< 250	< 50	< 50	< 50	< 50	< 50
2-Hexanone		< 50	< 250	< 250	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 250	< 250	< 50	< 50	< 50	< 50	< 50
Acetone		< 50	< 250	< 250	< 50	< 50	< 50 B	< 50	< 50 B
Benzene		< 0.7	< 3.5	< 3.5	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Bromoform		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Bromomethane		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Carbon Dislfide		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 25	< 25	< 5	< 5	< 5	**0.83 J**	< 5
Chlorobenzene		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Chloroethane		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Chloroform		**0.35 J**	< 25	< 25	< 5	< 5	< 5	**0.99 J**	< 5
Chloromethane		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	< 25	**2.3 J**	< 5	< 5	< 5	**1.4 J**	< 5
cis-1,3-dichloropropene		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Methylene Chloride		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Styrene		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		**0.42 J**	**9.4 J**	< 25	< 5	**0.36 J**	**4.6 J**	< 5	< 5
Tolene		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Trichloroethylene		**1.9 J**	**990 D**	**550**	**5.1**	**68**	**27**	**9.1**	**16**
Trichlorotrifloroethane (Freon 113)		< 5	< 25	**3.5 J**	< 5	< 5	**0.84 J**	< 5	< 5
Vinyl Chloride		< 2	< 10	< 10	< 2	< 2	< 2	< 2	< 2
Xylene-o		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p		< 5	< 25	< 25	< 5	< 5	< 5	< 5	< 5
	Total VOCs	**8.77**	**1014.7**	**558**	**5.1**	**68.36**	**32.44**	**20.99**	**16**

Bold	Constituent detected
VOCs	Volatile Organic Compounds
ug/L	Micrograms per liter
J	Constituent value is estimated
D	Constituent identified at a secondary dilution

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Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2009, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-73D2 GM-73D2 2/17/2009	GM-74I GM-74I 2/17/2009	GM-74D GM-74D 2/17/2009	GM-74D2 GM-74D2 2/17/2009	GM-75D2 GM-75D2 3/17/2009	GM-78S GM-78S 2/24/2009	GM-78I GM-78I 2/24/2009	GM-79I GM-79I 3/20/2009
1,1,1-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,1-Dichloroethane		< 5	< 5	< 5	**0.36 J**	< 5	< 5	< 5	< 5
1,1-Dichloroethene		**0.35 J**	< 5	< 5	**0.76 J**	**1.2 J**	< 5	< 5	< 5
1,2-Dichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
1,2-Dichloropropane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
2-Btanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Acetone		< 50	< 50	< 50 B	< 50	< 50 B	< 50 B	< 50 B	< 50
Benzene		< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromoform		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Bromomethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon Dislfide		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chlorobenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Dibromochloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloroform		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	< 5	< 5	< 5	**0.36 J**	< 5	< 5	< 5
cis-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Ethylbenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Methylene Chloride		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Styrene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Tetrachloroethene		**0.55 J**	< 5	**0.32 J**	**8.2**	**3.3 J**	< 5	< 5	< 5
Tolene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Trichloroethylene		**40**	< 5	**2.5 J**	**8.6**	**140**	< 5	< 5	< 5
Trichlorotrifloroethane (Freon 113)		< 5	< 5	< 5	**0.82 J**	**0.86 J**	< 5	< 5	< 5
Vinyl Chloride		< 2	< 2	< 2	< 2	< 2	< 2	< 2	< 2
Xylene-o		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Xylenes - m,p		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
	Total VOCs	**40.9**	0	**2.82**	**19.27**	**145.72**	0	0	0

Bold	Constituent detected
VOCs	Volatile Organic Compounds
ug/L	Micrograms per liter
J	Constituent value is estimated
D	Constituent identified at a secondary dilution

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Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2009, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-79D GM-79D 3/20/2009	HN-24I HN-24I 2/27/2009	HN-40S HN-40S 2/23/2009	HN-40I HN-40I 2/23/2009	HN-42I HN-42I 2/23/2009	HN-42S HN-42S 2/23/2009	GP-1 WELL 1 2/23/2009	GP-3 WELL 3 2/23/2009
1,1,1-Trichloroethane		< 5	**1.9 J**	< 5	< 5	< 5	< 5	**0.75 J**	< 100
1,1,2,2-Tetrachloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
1,1,2-Trichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
1,1-Dichloroethane		**0.42 J**	**2.4 J**	< 5	< 5	< 5	< 5	**1.1 J**	< 100
1,1-Dichloroethene		**0.51 J**	**6.6**	< 5	< 5	< 5	< 5	**3.3 J**	**13 J**
1,2-Dichloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
1,2-Dichloropropane		< 5	< 5	< 5	< 5	< 5	< 5	**3.4 J**	< 100
2-Btanone		< 50	< 50	< 50	< 50	< 50	< 50	< 130	< 1000
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 130	< 1000
4-methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 130	< 1000
Acetone		**1.7 J**	< 50	< 50	< 50	**1.6 J**	**2.5 J**	< 130	< 1000
Benzene		< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 1.8	< 14
Bromodichloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Bromoform		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Bromomethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Carbon Dislfide		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Carbon tetrachloride		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Chlorobenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Dibromochloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Chloroethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Chloroform		< 5	**1.1 J**	**0.34 J**	**0.76 J**	< 5	< 5	< 13	< 100
Chloromethane		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
cis-1,2-dichloroethene		**0.45 J**	**1.3 J**	< 5	< 5	**7.1**	< 5	**4.6 J**	**13 J**
cis-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Ethylbenzene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Methylene Chloride		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Styrene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Tetrachloroethene		**0.96 J**	**13**	< 5	< 5	< 5	< 5	**97**	**69 J**
Tolene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
trans-1,2-dichloroethene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
trans-1,3-dichloropropene		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Trichloroethylene		**48**	**21**	< 5	< 5	**18**	< 5	**350**	**2700**
Trichlorotrifloroethane (Freon 113)		**0.75 J**	**3.6 J**	< 5	< 5	< 5	< 5	**4.7 J**	**12 J**
Vinyl Chloride		< 2	< 2	< 2	< 2	< 2	< 2	< 5	**180**
Xylene-o		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
Xylenes - m,p		< 5	< 5	< 5	< 5	< 5	< 5	< 13	< 100
	Total VOCs	**52.79**	**51.83**	**0.34**	**0.76**	**26.7**	**2.5**	**464.85**	**2987**

Bold	Constituent detected
VOCs	Volatile Organic Compounds
ug/L	Micrograms per liter
J	Constituent value is estimated
D	Constituent identified at a secondary dilution

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Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2009, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	TOWER 102 EFF / TOWER 102 EFF / 2/23/2009	WELL 17 / WELL 17 / 2/23/2009	WELL 18 / WELL 18 / 2/23/2009	WELL 19 / WELL 19 / 2/23/2009	TOWER 96 EFF / TOWER 96 EFF / 2/23/2009
1,1,1-Trichloroethane		< 5	**0.64 J**	**1.6 J**	**0.66 J**	< 5
1,1,2,2-Tetrachloroethane		< 5	< 10	< 5	< 5	< 5
1,1,2-Trichloroethane		< 5	< 10	< 5	< 5	< 5
1,1-Dichloroethane		< 5	**1 J**	**1.3 J**	**0.93 J**	< 5
1,1-Dichloroethene		< 5	**1.8 J**	**4.9 J**	**1.5 J**	< 5
1,2-Dichloroethane		< 5	< 10	< 5	**0.7 J**	< 5
1,2-Dichloropropane		< 5	< 10	< 5	< 5	< 5
2-Btanone		< 50	< 100	< 50	< 50	< 50
2-Hexanone		< 50	< 100	< 50	< 50	< 50
4-methyl-2-pentanone		< 50	< 100	< 50	< 50	< 50
Acetone		< 50	**3.3 B**	< 50	< 50	< 50
Benzene		< 0.7	< 1.4	< 0.7	< 0.7	< 0.7
Bromodichloromethane		< 5	< 10	< 5	< 5	< 5
Bromoform		< 5	< 10	< 5	< 5	< 5
Bromomethane		< 5	< 10	< 5	< 5	< 5
Carbon Dislfide		< 5	< 10	< 5	< 5	< 5
Carbon tetrachloride		< 5	< 10	< 5	< 5	< 5
Chlorobenzene		< 5	< 10	< 5	< 5	< 5
Dibromochloromethane		< 5	< 10	< 5	< 5	< 5
Chloroethane		< 5	< 10	< 5	< 5	< 5
Chloroform		< 5	< 10	< 5	**0.75 J**	< 5
Chloromethane		< 5	< 10	< 5	< 5	< 5
cis-1,2-dichloroethene		< 5	**3.6 J**	**1.7 J**	**21**	< 5
cis-1,3-dichloropropene		< 5	< 10	< 5	< 5	< 5
Ethylbenzene		< 5	< 10	< 5	< 5	< 5
Methylene Chloride		< 5	< 10	< 5	< 5	< 5
Styrene		< 5	< 10	< 5	< 5	< 5
Tetrachloroethene		< 5	**24**	**12**	**7.9**	< 5
Tolene		< 5	< 10	< 5	< 5	< 5
trans-1,2-dichloroethene		< 5	< 10	< 5	< 5	< 5
trans-1,3-dichloropropene		< 5	< 10	< 5	< 5	< 5
Trichloroethylene		**0.34 J**	**230**	**100**	**190 D**	**1.2 J**
Trichlorotrifloroethane (Freon 113)		< 5	**8.4 J**	**1.8 J**	**0.95 J**	< 5
Vinyl Chloride		< 2	< 4	< 2	< 2	< 2
Xylene-o		< 5	< 10	< 5	< 5	< 5
Xylenes - m,p		< 5	< 10	< 5	< 5	< 5
	Total VOCs	**0.34**	**272.74**	**123.67**	**224.83**	**1.2**

Bold Constituent detected
VOCs Volatile Organic Compounds
ug/L Micrograms per liter
J Constituent value is estimated
D Constituent identified at a secondary dilution

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Table 3. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Monitoring Wells, First Quarter 2009, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

	Well:	N-10631	GM-15S	GM-78S	GM-78I	MW-01GF	MW-02GF	MW-4	MW-5	MW-6
CONSTITUENT	**Sample ID:**	N-10631	GM-15S	GM-78S	GM-78I	MW-01GF	MW-02GF	PT1MW-04	PT1MW-05	PT1MW-06
(Units in mg/L)	**Date:**	3/17/2009	2/24/2009	2/24/2009	2/24/2009	3/29/2009	3/29/2009	2/24/2009	2/24/2009	2/24/2009
Cadmium		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Cadmium (Dissolved)		< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5
Chromium		**38**	**458**	< 10	< 10	< 10	**98**	< 10	**450**	**243**
Chromium (Dissolved)		**28**	**452**	< 10	< 10	< 10	**101**	< 10	**453**	**248**

ug/L Micrograms per liter
Bold Constituent detected above IDL.
-- Not analyzed

Table 4. Concentrations of Site-Related Volatile Organic Compounds Detected in Outpost Wells, First Quarter 2009, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

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CONSTITUENT (Units in ug/L)	Well:	BPOW 1-1 [3]	BPOW 1-2 [3]	BPOW 1-3 [3]	BPOW 3-1	BPOW 3-2	BPOW 4-1	BPOW 4-2
	Sample ID:	BPOW 1-1	BPOW 1-2	BPOW 1-3	BPOW 3-1	BPOW 3-2	BPOW 4-1	BPOW 4-2
	Date:	3/3/2009	3/3/2009	3/4/2009	3/6/2009	3/6/2009	3/13/2009	3/16/2009
1,1,1-Trichloroethane		**1.9**	< 0.5	**1.5**	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2,2-Tetrachloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1,2-Trichloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethane		**0.74**	< 0.5	**0.66**	< 0.5	< 0.5	< 0.5	< 0.5
1,1-Dichloroethene		**1**	< 0.5	**1**	< 0.5	< 0.5	< 0.5	< 0.5
1,2-Dichloroethane		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carbon Tetrachloride		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chlorobenzene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chloroform		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
cis-1,2-Dichloroethene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichlorotrifluoroethane (Freon 113)		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	**0.31 J**	< 0.5
Tetrachloroethene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
trans-1,2-Dichloroethene		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Trichloroethene		**1.4**	< 0.5	**0.55**	< 0.5	< 0.5	< 0.5	< 0.5
Total Site-Related VOCs [1] :		**5.04**	0	**3.71**	0	0	0.31	0
TVOC Trigger Value [2]:		**0.6**	**0.6**	**0.6**	**1.5**	**1.5**	**1.5**	**1.5**

Note: Outpost wells OW2-1 and OW2-2 were not sampled by Northrop Grumman this round, due to ongoing NYSDEC investigation of non-site related VOCs (benzene and methyl tertiary butyl ether) detected in these wells.

(1) Site-related VOCs were established in the Public Water Supply Contingency Plan (PWSCP) (ARCADIS G&M, Inc. 2003).

(2) TVOC Trigger Values were established in the PWSCP (ARCADIS G&M, Inc. 2003).

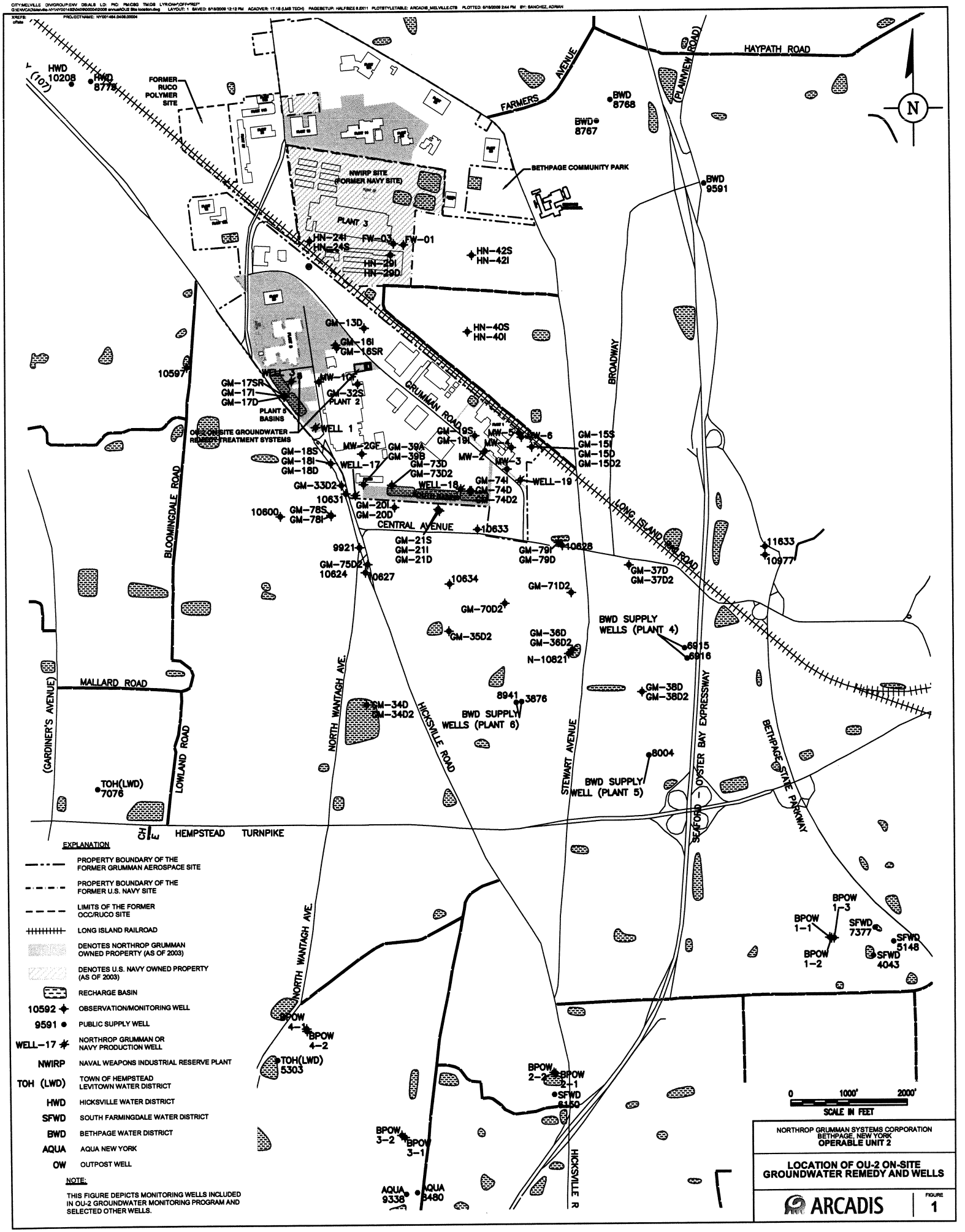
(3) The TVOC Trigger Value for Cluster 1 was initially exceeded on April 23, 2004; confirmatory sampling and reporting was conducted as per the PWSCP (ARCADIS G&M, Inc. 2003)

ug/L Micrograms per liter

Bold Constituent detected

TVOC Total Volatile Organic Compounds

J Constituent value is estimated



EXPLANATION

- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF THE FORMER U.S. NAVY SITE
- LIMITS OF THE FORMER OCC/RUCO SITE
- LONG ISLAND RAILROAD
- DENOTES NORTHROP GRUMMAN OWNED PROPERTY (AS OF 2003)
- DENOTES U.S. NAVY OWNED PROPERTY (AS OF 2003)
- RECHARGE BASIN
- 10592 OBSERVATION/MONITORING WELL
- 9591 PUBLIC SUPPLY WELL
- WELL-17 NORTHROP GRUMMAN OR NAVY PRODUCTION WELL
- 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
- AQUA AQUA NEW YORK
- OW OUTPOST WELL

NOTE:

THIS FIGURE DEPICTS MONITORING WELLS INCLUDED IN OU-2 GROUNDWATER MONITORING PROGRAM AND SELECTED OTHER WELLS.

NORTHROP GRUMMAN SYSTEMS CORPORATION
BETHPAGE, NEW YORK
OPERABLE UNIT 2

LOCATION OF OU-2 ON-SITE GROUNDWATER REMEDY AND WELLS

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FIGURE 1