ARCADIS
Infrastructure, environment, facilities

ARCADIS U.S., Inc.
Two Huntington Quadrangle
Suite 1S10
Melville
New York 11747
Tel 631 249 7600
Fax 631 249 7610
www.arcadis-us.com

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 2008 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:
July 31, 2008

Contact:
David E. Stern

Phone:
(631) 391-5284

Email:
David.stern@arcadis-us.com

Our ref:
NY001464.0408.00004

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) for the First Quarter of 2008 for Operable Unit 2 (OU2). Table 1 provides OU2 remedial systems performance and operational data and water balance. Tables 2, 3, and 4 provide the results of monitoring for volatile organic compounds (VOCs) and metals in monitoring wells and for VOCs in outpost wells, for this period, respectively. 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 Scientist

Carlo San Giovanni
Project Manager

Enclosures

Copies:
See Attached Distribution List

Copies:
Walter Parish – NYSDEC Region 1
Bill Spitz, NYSDEC Region 1
Jacqueline Nealon – New York State Department of Health
John Lovejoy – Nassau County Department of Health
Robert Weitzmann – Nassau County Department of Health
John Cofman – Northrop Grumman
Kent Smith – Northrop Grumman
Lora Fly – NAVFAC Midlant Environmental
David Brayack – TetraTech NUS, Inc.
Richard Passmore – Glenn Springs Holdings, Inc.
Kevin Lumpe – Steel Equities
Michael Negrelli – USEPA
Matthew Russo – Town of Oyster Bay
Anthony J. Sabino – Forchelli Curto
Frank Flood – Massapequa Water District
Joseph Trotta – New York Water Service
William Bier – South Farmingdale Water District
Arnold Palleschi – Town of Hempstead Water District
Andrew Musgrave – Bethpage Water District
Lois Lovisolo – Bethpage Public Library (Public Repository)
File

ARCADIS

Table 1. Summary of Operational Data and Water Balance for the On-Site Portion of the OU2 Groundwater Remedy, First Quarter 2008, Operable Unit 2, Northrop Grumman 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 2008 Estimated VOC Mass Removed [d] (lbs)
Remedial Wells			**Groundwater Removed from Aquifer**					
Well 1	800	830	112.9	110.1	98%	420	540	495
Well 3	700	732	98.8	100.2	101%	2,900	3,040	2,536
Well 17	1,000	1,041	141.1	145.5	103%	300	324	393
Well 18	600	614	84.7	85.8	101%	120	130	93
Well 19	700	709	98.8	97.0	98%	190	218.8	177
Rounded Totals:	**3,800**	**3,926**	**536**	**539**	**101%**	--	--	**3,694**
Recharge Basins [a]			**Treated Water Recharged to Aquifer**					
West Recharge Basins	412	461	58	65.1	112%	--		--
South Recharge Basins	2,231	2,975	314.8	419.8	133%	--	--	--
Rounded Totals:	**2,643**	**3,436**	**373**	**484.9**	**130%**	--	--	--
Treated Water Sent to Calpine								
Calpine Demand	600-1000	484	84.7-141	68.3	--	--	--	--

Treatment Efficiencies		**Average SPDES Outfall TVOC Concentrations (ug/L) [f]**
Tower 96 System Efficiency [e] :	**>99.9 %**	**0.2**
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 2008, Operable Unit 2, Northrop Grumman 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 2008, at the following percentages: Well-1 (94%), Well-3 (97%); Well-17 (99%), Well-18 (99%), and Well-19 (97%). 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 2008 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 (1×10^{-6} g/ug) X (2.2×10^{-3} lb/g)

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

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

-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 96 and 102 outfalls are identified as Outfalls 005 and 006, respectively (commonly known as the Plant 5 Recharge Basins and South 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 Corporation	NYSDEC	New York State Department of Environmental Conservation

ARCADIS

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2008, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

	Well:	N-10627	N-10631	FW-03	GM-13D	GM-15S	GM-15I	GM-15D	GM-15D2	GM-17I
CONSTITUENT	**Sample ID:**	N-10627	N-10631	FW-03	GM-13D	GM-15S	GM-15I	GM-15D	GM-15D-2	GM-17I
(Units in ug/L)	**Date:**	3/14/2008	3/13/2008	3/13/2008	3/25/2008	3/12/2008	3/11/2008	3/11/2008	3/11/2008	3/7/2008
Chloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromomethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl chloride		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Chloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Methylene chloride		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Acetone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Carbon disulfide		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1-Dichloroethene		< 5.0	< 5.0	< 5.0	**12**	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1-Dichloroethane		< 5.0	< 5.0	< 5.0	**5.8**	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,2-Dichloroethene		< 5.0	< 5.0	< 5.0	**27**	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
trans-1,2-Dichloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chloroform		< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0
1,2-Dichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
2-Butanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
1,1,1-Trichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Carbon tetrachloride		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromodichloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,2-Dichloropropane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Trichloroethene		< 5.0	< 5.0	**5**	**68**	< 5.0	< 5.0	< 5.0	**10**	< 5.0
Dibromochloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Benzene		< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70
trans-1,3-Dichloropropene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Bromoform		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
4-Methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50
Tetrachloroethene		< 5.0	< 5.0	**31**	**250 D**	< 5.0	< 5.0	< 5.0	**12**	< 5.0
1,1,2,2-Tetrachloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Toluene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Chlorobenzene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Ethylbenzene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Styrene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Xylene (total)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Vinyl Acetate		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Freon 113		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total VOCs		0	0	**36**	**362.8**	0	0	0	**22**	0

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

ARCADIS

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2008, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-17D / GM-17D / 3/7/2008	GM-18D / GM-18D / 3/21/2008	GM-20I / GM-20I / 3/2/2008	GM-20D / GM-20D / 3/3/2008	GM-21S / GM-21S / 3/18/2008	GM-21I / GM-21I / 3/3/2008	GM-21D / GM-21D / 3/3/2008	GM-33D2 / GM-33D-2 / 3/14/2008	GM-34D / GM-34D / 3/13/2008
Chloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Bromomethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Vinyl chloride		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 10
Chloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Methylene chloride		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Acetone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 250
Carbon disulfide		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 250
1,1-Dichloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
1,1-Dichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
cis-1,2-Dichloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
trans-1,2-Dichloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Chloroform		< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 35
1,2-Dichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
2-Butanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 250
1,1,1-Trichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Carbon tetrachloride		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Bromodichloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
1,2-Dichloropropane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
cis-1,3-Dichloropropene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Trichloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	**63**	**800**
Dibromochloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
1,1,2-Trichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Benzene		< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 3.5
trans-1,3-Dichloropropene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Bromoform		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
4-Methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 250
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 250
Tetrachloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	**13**	< 25
1,1,2,2-Tetrachloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Toluene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Chlorobenzene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Ethylbenzene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Styrene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Xylene (total)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Vinyl Acetate		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 25
Freon 113		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	**24**	< 25
Total VOCs		0	0	0	0	0	0	0	**100**	**800**

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

ARCADIS

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2008, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-34D2 / GM-34D-2 / 3/13/2008	GM-35D2 / GM-35D2 / 4/9/2008	GM-36D / GM-36D / 3/5/2008	GM-36D-2 / GM-36D-2 / 3/5/2008	GM-37D / GM-37D / 3/6/2008	GM-37D2 / GM-37D-2 / 3/6/2008	GM-38D / GM-38D / 3/10/2008	GM-38D2 / GM-38D-2 / 3/10/2008	$GM\text{-}39D_A$ / GM-39D / 3/18/2008
Chloromethane		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Bromomethane		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Vinyl chloride		< 2.0	< 4.0	< 2.0	< 2.0	< 2.0	< 2.0	< 20	< 20	< 2.0
Chloroethane		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Methylene chloride		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Acetone		< 50	< 100	< 50	< 50	< 50	< 50	< 500	< 500	< 50
Carbon disulfide		< 50	< 100	< 50	< 50	< 50	< 50	< 500	< 500	< 50
1,1-Dichloroethene		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
1,1-Dichloroethane		< 5.0	< 10	< 5.0	< 5.0	< 5.0	**5.3**	< 50	< 50	< 5.0
cis-1,2-Dichloroethene		**13**	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
trans-1,2-Dichloroethene		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Chloroform		< 7.0	< 14	< 7.0	< 7.0	< 7.0	< 7.0	< 70	< 70	< 7.0
1,2-Dichloroethane		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
2-Butanone		< 50	< 100	< 50	< 50	< 50	< 50	< 500	< 500	< 50
1,1,1-Trichloroethane		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Carbon tetrachloride		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Bromodichloromethane		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
1,2-Dichloropropane		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
cis-1,3-Dichloropropene		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Trichloroethene		**250 D**	**240**	< 5.0	< 5.0	< 5.0	< 5.0	**1000**	**1000**	**19**
Dibromochloromethane		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
1,1,2-Trichloroethane		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Benzene		< 0.70	< 1.4	< 0.70	< 0.70	< 0.70	< 0.70	< 7.0	< 7.0	< 0.70
trans-1,3-Dichloropropene		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Bromoform		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
4-Methyl-2-pentanone		< 50	< 100	< 50	< 50	< 50	< 50	< 500	< 500	< 50
2-Hexanone		< 50	< 100	< 50	< 50	< 50	< 50	< 500	< 500	< 50
Tetrachloroethene		**8.1**	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
1,1,2,2-Tetrachloroethane		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Toluene		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Chlorobenzene		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Ethylbenzene		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Styrene		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Xylene (total)		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Vinyl Acetate		< 5.0	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Freon 113		**5.2**	< 10	< 5.0	< 5.0	< 5.0	< 5.0	< 50	< 50	< 5.0
Total VOCs		**276.3**	**240**	0	0	0	**5.3**	**1000**	**1000**	**19**

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

ARCADIS

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2008, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-39D$_B$ GM-39D-2 3/18/2008	GM-71D2 GM-71D-2 3/5/2008	GM-73D GM-73D 3/18/2008	GM-73D2 GM-73D-2 3/17/2008	GM-74I GM-74I 3/17/2008	GM-74D GM-74D 3/17/2008	GM-74D2 GM-74D-2 3/17/2008	GM-75D2 GM-75D-2 3/14/2008	GM-78S GM-78S 3/12/2008
Chloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Bromomethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Vinyl chloride		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0	< 2.0
Chloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Methylene chloride		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Acetone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 100	< 50
Carbon disulfide		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 100	< 50
1,1-Dichloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
1,1-Dichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
cis-1,2-Dichloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
trans-1,2-Dichloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Chloroform		< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 14	< 7.0
1,2-Dichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
2-Butanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 100	< 50
1,1,1-Trichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Carbon tetrachloride		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Bromodichloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
1,2-Dichloropropane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
cis-1,3-Dichloropropene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Trichloroethene		**46**	**7.8**	**6.4**	**58**	< 5.0	< 5.0	**7.3**	**200**	< 5.0
Dibromochloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
1,1,2-Trichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Benzene		< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 1.4	< 0.70
trans-1,3-Dichloropropene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Bromoform		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
4-Methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 100	< 50
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 100	< 50
Tetrachloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	**7.2**	< 10	< 5.0
1,1,2,2-Tetrachloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Toluene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Chlorobenzene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Ethylbenzene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Styrene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Xylene (total)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Vinyl Acetate		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Freon 113		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10	< 5.0
Total VOCs		**46**	**7.8**	**6.4**	**58**	0	0	**14.5**	**200**	0

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

ARCADIS

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2008, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	GM-78I GM-78I 3/12/2008	GM-79I GM-79I 3/21/2008	GM-79D GM-79D 3/21/2008	HN-24I HN-24I 3/13/2008	HN-40S HN-40S 3/13/2008	HN-40I HN-40I 3/13/2008	HN-42S HN-42S 3/12/2008	HN-42I HN-42I 3/12/2008	GP-1 WELL -1 2/26/2008
Chloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Bromomethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Vinyl chloride		< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0	< 4.0
Chloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Methylene chloride		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Acetone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 100
Carbon disulfide		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 100
1,1-Dichloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
1,1-Dichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
cis-1,2-Dichloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	**5.8**	< 10
trans-1,2-Dichloroethene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Chloroform		< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 7.0	< 14
1,2-Dichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
2-Butanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 100
1,1,1-Trichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Carbon tetrachloride		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Bromodichloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
1,2-Dichloropropane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
cis-1,3-Dichloropropene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Trichloroethene		< 5.0	< 5.0	**39**	**15**	< 5.0	< 5.0	< 5.0	**15**	**420 D**
Dibromochloromethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
1,1,2-Trichloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Benzene		< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 0.70	< 1.4
trans-1,3-Dichloropropene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Bromoform		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
4-Methyl-2-pentanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 100
2-Hexanone		< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 100
Tetrachloroethene		< 5.0	< 5.0	< 5.0	**9.8**	< 5.0	< 5.0	< 5.0	< 5.0	**120**
1,1,2,2-Tetrachloroethane		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Toluene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Chlorobenzene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Ethylbenzene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Styrene		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Xylene (total)		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Vinyl Acetate		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Freon 113		< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0	< 10
Total VOCs		0	0	**39**	**24.8**	0	0	0	**20.8**	**540**

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

ARCADIS

Table 2. Concentrations of Volatile Organic Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, First Quarter 2008, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

	Well:	GP-3	T-96 EFF	WELL-17	WELL-18	WELL-19	T-102 EFF
CONSTITUENT	**Sample ID:**	WELL -3	96 TOWER EFF	WELL-17	WELL-18	WELL-19	102 TOWER EFF
(Units in ug/L)	**Date:**	2/26/2008	2/26/2008	2/26/2008	2/26/2008	2/26/2008	2/26/2008
Chloromethane		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Bromomethane		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Vinyl chloride		**140**	< 2.0	< 4.0	< 2.0	< 2.0	< 2.0
Chloroethane		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Methylene chloride		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Acetone		< 1000	< 50	< 100	< 50	< 50	< 50
Carbon disulfide		< 1000	< 50	< 100	< 50	< 50	< 50
1,1-Dichloroethene		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
1,1-Dichloroethane		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
cis-1,2-Dichloroethene		< 100	< 5.0	< 10	< 5.0	**20**	< 5.0
trans-1,2-Dichloroethene		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Chloroform		< 140	< 7.0	< 14	< 7.0	< 7.0	< 7.0
1,2-Dichloroethane		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
2-Butanone		< 1000	< 50	< 100	< 50	< 50	< 50
1,1,1-Trichloroethane		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Carbon tetrachloride		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Bromodichloromethane		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
1,2-Dichloropropane		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
cis-1,3-Dichloropropene		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Trichloroethene		**2900**	< 5.0	**300**	**120**	**190**	< 5.0
Dibromochloromethane		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
1,1,2-Trichloroethane		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Benzene		< 14	< 0.70	< 1.4	< 0.70	< 0.70	< 0.70
trans-1,3-Dichloropropene		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Bromoform		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
4-Methyl-2-pentanone		< 1000	< 50	< 100	< 50	< 50	< 50
2-Hexanone		< 1000	< 50	< 100	< 50	< 50	< 50
Tetrachloroethene		< 100	< 5.0	**24**	**10**	**8.8**	< 5.0
1,1,2,2-Tetrachloroethane		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Toluene		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Chlorobenzene		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Ethylbenzene		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Styrene		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Xylene (total)		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Vinyl Acetate		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Freon 113		< 100	< 5.0	< 10	< 5.0	< 5.0	< 5.0
Total VOCs		**3040**	0	**324**	**130**	**218.8**	0

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

ARCADIS

Table 3. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Monitoring Wells, First Quarter 2008, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in mg/L)	Well: / Sample ID: / Date:	N-10631 N-10631 3/13/2008	GM-15S GM-15S 3/12/2008	GM-78S GM-78S 3/12/2008	GM-78I GM-78I 3/12/2008	MW-1GF MW-01GF 3/18/2008	MW-2GF MW-02GF 3/18/2008	MW-04 PT1MW-04 3/12/2008	MW-05 PT1MW-05 3/12/2008	MW-06 PT1MW-06 3/12/2008
Cadmium		< 0.00500	--	< 0.00500	< 0.00500	< 0.00500	< 0.00500	--	--	--
Cadmium (Dissolved)		< 0.00500	--	--	--	< 0.00500	< 0.00500	--	--	--
Chromium		**0.0295**	**0.574**	< 0.0100	< 0.0100	< 0.0100	**0.0271**	< 0.0100	**0.342**	**0.24**
Chromium (Dissolved)		**0.0151**	--	--	--	< 0.0100	**0.0271**	--	--	--

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

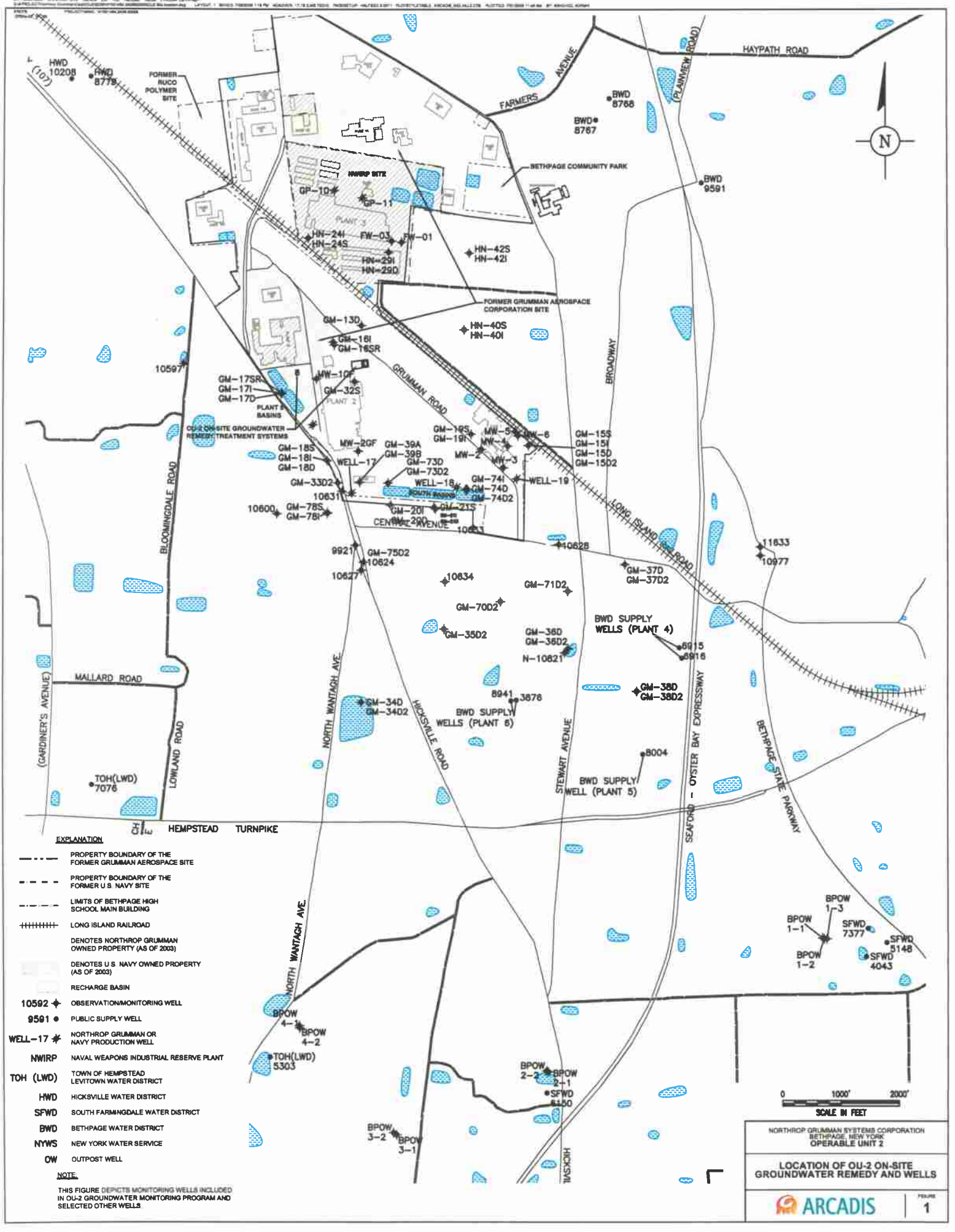
ARCADIS

Table 4. Concentrations of Site-Related Volatile Organic Compounds Detected in Outpost Wells, First Quarter 2008, Operable Unit 2, Northrop Grumman Systems Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	Well: / Sample ID: / Date:	OW 1-1 / BPOW 1-1 / 3/31/2008	OW 1-2 / BPOW 1-2 / 3/31/2008	OW 1-3 / BPOW 1-3 / 3/31/2008	OW 3-1 / BPOW 3-1 / 4/1/2008	OW 3-2 / BPOW 3-2 / 4/1/2008	OW 4-1 / BPOW 4-1 / 4/1/2008	OW 4-2 / BPOW 4-2 / 4/1/2008
Chlorobenzene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloroethene		**1.2**	< 0.50	**2.1**	< 0.50	< 0.50	< 0.50	< 0.50
1,1-Dichloroethane		**1.2**	< 0.50	**1**	< 0.50	< 0.50	< 0.50	< 0.50
trans-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
cis-1,2-Dichloroethene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Chloroform		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,2-Dichloroethane		**2.1**	< 0.50	**2.8**	< 0.50	< 0.50	< 0.50	< 0.50
1,1,1-Trichloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Carbon tetrachloride		**1.3**	< 0.50	**0.72**	< 0.50	< 0.50	< 0.50	< 0.50
Trichloroethene		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
1,1,2-Trichloroethane		< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50
Total Site-Related VOCs [1]:		**5.8[3]**	0	**6.62[3]**	0	0	0	0
TVOC Trigger Value [2]:		**0.6**	**0.6**	**0.6**	**1.5**	**1.5**	**1.5**	**1.5**

(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).
(4) TVOCs initially detected in Cluster 2 on May 3, 2004; confirmatory sampling and reporting was conducted as per the PWSCP (ARCADIS G&M, Inc. 2003).
(4) Outpost well cluster OW-2 not sampled this round, due to ongoing NYSDEC investigation of non-site related VOCs (benzene and methyl tertiary butyl ether) detected in these wells.

ug/L Micrograms per liter
Bold Constituent detected
TVOC Total Volatile Organic Compounds
NE Not established



EXPLANATION

- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF THE FORMER U.S. NAVY SITE
- LIMITS OF BETHPAGE HIGH SCHOOL MAIN BUILDING
- 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
- NYWS NEW YORK WATER SERVICE
- 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

ARCADIS

FIGURE 1