ARCADIS

*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 Fourth Quarter 2007 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 4, 2008

Contact:
David E. Stern

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David.stern@arcadis-us.com

Our ref:
NY001464.0407.00004

Dear Mr. Scharf:

On behalf of Northrop Grumman 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 Fourth Quarter of 2007 for Operable Unit 2 (OU2).

Table 1 provides OU2 remedial systems performance and operational data and water balance for the Fourth Quarter of 2007. Tables 2 and 3 provide the results of monitoring for volatile organic compounds (VOCs) for monitoring wells and outpost wells, 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 Scientist

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, Fourth Quarter 2007, 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 | 4th Quarter 2007 Estimated VOC Mass Removed [d] (lbs) |
|---|---|---|---|---|---|---|---|---|
| **Remedial Wells** | | | **Groundwater Removed from Aquifer** | | | | | |
| Well 1 | 800 | 840 | 104.8 | 109.0 | 104% | 380 | 490 | 445 |
| Well 3 | 700 | 735 | 91.7 | 95.4 | 104% | 2,800 | 2,920 | 2,320 |
| Well 17 | 1,000 | 1,034 | 131.0 | 122.0 | 93% | 300 | 322 | 327 |
| Well 18 | 600 | 666 | 78.6 | 82.9 | 105% | 120 | 130 | 90 |
| Well 19 | 700 | 693 | 91.7 | 81.7 | 89% | 170 | 197.0 | 134 |
| **Rounded Totals:** | **3,800** | **3,968** | **498** | **491** | **99%** | -- | -- | **3,316** |
| **Recharge Basins [a]** | | | **Treated Water Recharged to Aquifer** | | | | | |
| West Recharge Basins | 412 | 836 | 54 | 109.5 | 203% | -- | | -- |
| South Recharge Basins | 2,231 | 2,642 | 292.4 | 346.2 | 118% | -- | -- | -- |
| **Rounded Totals:** | **2,643** | **3,478** | **346** | **455.7** | **132%** | -- | -- | -- |
| **Treated Water Sent to Calpine** | | | | | | | | |
| Calpine Demand | 600-1000 | 484 | 77.8 - 131 | 62.8 | -- | -- | -- | -- |

| **Treatment Efficiencies** | **Average SPDES Outfall TVOC Concentrations (ug/L) [f]** |
|---|---|
| Tower 96 System Efficiency [e]: | **99.9%** **1.2** |
| Tower 102 System Efficiency [e]: | **100.0%** **0** |

see footnotes on last page

Table 1. Summary of Operational Data and Water Balance for the On-Site Portion of the OU2 Groundwater Remedy, Fourth Quarter 2007, Operable Unit 2, Northrop Grumman Corporation, Bethpage, New York.

(a) - Remedial well pumping rates based on computer modeling (ARCADIS G& M, Inc. 2003c). Acceptable minimum recharge rates based on computer modeling (ARCADIS G&M, Inc. 2004b). Design pumping and recharge rates were modified in April, 2005 and will be shown herein when procured equipment is installed and the wells returned to service at NYSDEC-approved modified pumping rates. Recharge includes remedial well pumpage (minus pipe loss) and incidental runoff from precipitation. Current average recharge rates have been determined using the entire 91-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 Fourth Quarter 2007, at the following percentages: Well-1 (99%), Well-3 (100%); Well-17 (90%), Well-18 (95%), 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 Fourth Quarter 2007 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 9 using the following formula:

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

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 |

Table 2. Concentration of Volatile Organiz Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, Fourth Quarter 2007, Operable Unit 2, Northrop Grumman Corporation, Bethpage, New York

| CONSTITUENT (Units in ug/L) | WELL: / SAMPLE ID: / DATE: | GM-21I GM-21I-20071218 12/18/2007 | GM-21D GM-21D-20071218 12/18/2007 | GM-20I GM-20I-20071219 12/19/2007 |
|---|---|---|---|---|
| 1,1,1-TRICHLOROETHANE | | < 5 | < 5 | < 5 |
| 1,1,2,2-TETRACHLOROETHANE | | < 5 | < 5 | < 5 |
| 1,1,2-TRICHLOROETHANE | | < 5 | < 5 | < 5 |
| 1,1-DICHLOROETHANE | | < 5 | < 5 | < 5 |
| 1,1-DICHLOROETHENE | | < 5 | < 5 | < 5 |
| 1,2-DICHLOROETHANE | | < 5 | < 5 | < 5 |
| 1,2-DICHLOROPROPANE | | < 5 | < 5 | < 5 |
| 2-BUTANONE | | < 50 | < 50 | < 50 |
| 2-HEXANONE | | < 50 | < 50 | < 50 |
| 4-METHYL-2-PENTANONE | | < 50 | < 50 | < 50 |
| ACETONE | | < 50 | < 50 | < 50 |
| BENZENE | | < 0.7 | < 0.7 | < 0.7 |
| BROMODICHLOROMETHANE | | < 5 | < 5 | < 5 |
| BROMOFORM | | < 5 | < 5 | < 5 |
| BROMOMETHANE | | < 5 | < 5 | < 5 |
| CARBON DISULFIDE | | < 50 | < 50 | < 50 |
| CARBON TETRACHLORIDE | | < 5 | < 5 | < 5 |
| CHLOROBENZENE | | < 5 | < 5 | < 5 |
| CHLORODIBROMOMETHANE | | < 5 | < 5 | < 5 |
| CHLOROETHANE | | < 5 | < 5 | < 5 |
| CHLOROFORM | | < 7 | < 7 | < 7 |
| CHLOROMETHANE | | < 5 | < 5 | < 5 |
| CIS-1,2-DICHLOROETHENE | | < 5 | < 5 | < 5 |
| CIS-1,3-DICHLOROPROPENE | | < 5 | < 5 | < 5 |
| ETHYLBENZENE | | < 5 | < 5 | < 5 |
| FREON 113 | | < 5 | < 5 | < 5 |
| FREON 12 | | < 5 | < 5 | < 5 |
| METHYLENE CHLORIDE | | < 5 | < 5 | < 5 |
| STYRENE | | < 5 | < 5 | < 5 |
| TETRACHLOROETHENE | | < 5 | < 5 | < 5 |
| TOLUENE | | < 5 | < 5 | < 5 |
| TRANS-1,2-DICHLOROETHENE | | < 5 | < 5 | < 5 |
| TRANS-1,3-DICHLOROPROPENE | | < 5 | < 5 | < 5 |
| TRICHLOROETHYLENE | | < 5 | < 5 | < 5 |
| VINYL CHLORIDE | | < 2 | < 2 | < 2 |
| XYLENE-O | | < 5 | < 5 | < 5 |
| XYLENES - M,P | | < 5 | < 5 | < 5 |
| **Total VOCs** | | 0 | 0 | 0 |

| | |
|---|---|
| ug/L | Micrograms per liter |
| **Bold** | Constituent detected |
| VOCs | Volatile Organic Compounds |

Table 2. Concentration of Volatile Organiz Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, Fourth Quarter 2007, Operable Unit 2, Northrop Grumman Corporation, Bethpage, New York

| CONSTITUENT (Units in ug/L) | WELL: / SAMPLE ID: / DATE: | GM-20D GM-20D-20071219 12/19/2007 | GM-33D-2 GM-33D-2-20071220 12/20/2007 | GM-34D GM-34D-20071213 12/13/2007 |
|---|---|---|---|---|
| 1,1,1-TRICHLOROETHANE | | < 5 | < 5 | < 25 |
| 1,1,2,2-TETRACHLOROETHANE | | < 5 | < 5 | < 25 |
| 1,1,2-TRICHLOROETHANE | | < 5 | < 5 | < 25 |
| 1,1-DICHLOROETHANE | | < 5 | < 5 | < 25 |
| 1,1-DICHLOROETHENE | | < 5 | < 5 | < 25 |
| 1,2-DICHLOROETHANE | | < 5 | < 5 | < 25 |
| 1,2-DICHLOROPROPANE | | < 5 | < 5 | < 25 |
| 2-BUTANONE | | < 50 | < 50 | < 250 |
| 2-HEXANONE | | < 50 | < 50 | < 250 |
| 4-METHYL-2-PENTANONE | | < 50 | < 50 | < 250 |
| ACETONE | | < 50 | < 50 | < 250 |
| BENZENE | | < 0.7 | < 0.7 | < 3.5 |
| BROMODICHLOROMETHANE | | < 5 | < 5 | < 25 |
| BROMOFORM | | < 5 | < 5 | < 25 |
| BROMOMETHANE | | < 5 | < 5 | < 25 |
| CARBON DISULFIDE | | < 50 | < 50 | < 250 |
| CARBON TETRACHLORIDE | | < 5 | < 5 | < 25 |
| CHLOROBENZENE | | < 5 | < 5 | < 25 |
| CHLORODIBROMOMETHANE | | < 5 | < 5 | < 25 |
| CHLOROETHANE | | < 5 | < 5 | < 25 |
| CHLOROFORM | | < 7 | < 7 | < 35 |
| CHLOROMETHANE | | < 5 | < 5 | < 25 |
| CIS-1,2-DICHLOROETHENE | | < 5 | < 5 | < 25 |
| CIS-1,3-DICHLOROPROPENE | | < 5 | < 5 | < 25 |
| ETHYLBENZENE | | < 5 | < 5 | < 25 |
| FREON 113 | | < 5 | **43** | < 25 |
| FREON 12 | | < 5 | < 5 | < 25 |
| METHYLENE CHLORIDE | | < 5 | < 5 | < 25 |
| STYRENE | | < 5 | < 5 | < 25 |
| TETRACHLOROETHENE | | < 5 | **14** | < 25 |
| TOLUENE | | < 5 | < 5 | < 25 |
| TRANS-1,2-DICHLOROETHENE | | < 5 | < 5 | < 25 |
| TRANS-1,3-DICHLOROPROPENE | | < 5 | < 5 | < 25 |
| TRICHLOROETHYLENE | | < 5 | **76** | **960** |
| VINYL CHLORIDE | | < 2 | < 2 | < 10 |
| XYLENE-O | | < 5 | < 5 | < 25 |
| XYLENES - M,P | | < 5 | < 5 | < 25 |
| **Total VOCs** | | 0 | **133** | **960** |

| | |
|---|---|
| ug/L | Micrograms per liter |
| **Bold** | Constituent detected |
| VOCs | Volatile Organic Compounds |

Table 2. Concentration of Volatile Organiz Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, Fourth Quarter 2007, Operable Unit 2, Northrop Grumman Corporation, Bethpage, New York

| CONSTITUENT (Units in ug/L) | WELL: / SAMPLE ID: / DATE: | GM-34D-2 GM-34D-2-20071220 12/20/2007 | GM-35D-2 GM-35D-2-20071219 12/19/2007 | GM-75D-2 GM-75D-2-20071220 12/20/2007 |
|---|---|---|---|---|
| 1,1,1-TRICHLOROETHANE | | < 10 | < 10 | < 10 |
| 1,1,2,2-TETRACHLOROETHANE | | < 10 | < 10 | < 10 |
| 1,1,2-TRICHLOROETHANE | | < 10 | < 10 | < 10 |
| 1,1-DICHLOROETHANE | | < 10 | < 10 | < 10 |
| 1,1-DICHLOROETHENE | | < 10 | < 10 | < 10 |
| 1,2-DICHLOROETHANE | | < 10 | < 10 | < 10 |
| 1,2-DICHLOROPROPANE | | < 10 | < 10 | < 10 |
| 2-BUTANONE | | < 100 | < 100 | < 100 |
| 2-HEXANONE | | < 100 | < 100 | < 100 |
| 4-METHYL-2-PENTANONE | | < 100 | < 100 | < 100 |
| ACETONE | | < 100 | < 100 | < 100 |
| BENZENE | | < 1.4 | < 1.4 | < 1.4 |
| BROMODICHLOROMETHANE | | < 10 | < 10 | < 10 |
| BROMOFORM | | < 10 | < 10 | < 10 |
| BROMOMETHANE | | < 10 | < 10 | < 10 |
| CARBON DISULFIDE | | < 100 | < 100 | < 100 |
| CARBON TETRACHLORIDE | | < 10 | < 10 | < 10 |
| CHLOROBENZENE | | < 10 | < 10 | < 10 |
| CHLORODIBROMOMETHANE | | < 10 | < 10 | < 10 |
| CHLOROETHANE | | < 10 | < 10 | < 10 |
| CHLOROFORM | | < 14 | < 14 | < 14 |
| CHLOROMETHANE | | < 10 | < 10 | < 10 |
| CIS-1,2-DICHLOROETHENE | | < 10 | < 10 | < 10 |
| CIS-1,3-DICHLOROPROPENE | | < 10 | < 10 | < 10 |
| ETHYLBENZENE | | < 10 | < 10 | < 10 |
| FREON 113 | | < 10 | < 10 | < 10 |
| FREON 12 | | < 10 | < 10 | < 10 |
| METHYLENE CHLORIDE | | < 10 | < 10 | < 10 |
| STYRENE | | < 10 | < 10 | < 10 |
| TETRACHLOROETHENE | | < 10 | < 10 | < 10 |
| TOLUENE | | < 10 | < 10 | < 10 |
| TRANS-1,2-DICHLOROETHENE | | < 10 | < 10 | < 10 |
| TRANS-1,3-DICHLOROPROPENE | | < 10 | < 10 | < 10 |
| TRICHLOROETHYLENE | | **200** | **230** | **220** |
| VINYL CHLORIDE | | < 4 | < 4 | < 4 |
| XYLENE-O | | < 10 | < 10 | < 10 |
| XYLENES - M,P | | < 10 | < 10 | < 10 |
| **Total VOCs** | | **200** | **230** | **220** |

| | |
|---|---|
| ug/L | Micrograms per liter |
| **Bold** | Constituent detected |
| VOCs | Volatile Organic Compounds |

Table 2. Concentration of Volatile Organiz Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, Fourth Quarter 2007, Operable Unit 2, Northrop Grumman Corporation, Bethpage, New York

| CONSTITUENT (Units in ug/L) | WELL: / SAMPLE ID: / DATE: | GM-79I GM-79I-20071218 12/18/2007 | GM-79D GM-79D-20071218 12/18/2007 | WELL 17 WELL 17-20071205 12/5/2007 |
|---|---|---|---|---|
| 1,1,1-TRICHLOROETHANE | | < 5 | < 5 | < 13 |
| 1,1,2,2-TETRACHLOROETHANE | | < 5 | < 5 | < 13 |
| 1,1,2-TRICHLOROETHANE | | < 5 | < 5 | < 13 |
| 1,1-DICHLOROETHANE | | < 5 | < 5 | < 13 |
| 1,1-DICHLOROETHENE | | < 5 | < 5 | < 13 |
| 1,2-DICHLOROETHANE | | < 5 | < 5 | < 13 |
| 1,2-DICHLOROPROPANE | | < 5 | < 5 | < 13 |
| 2-BUTANONE | | < 50 | < 50 | < 130 |
| 2-HEXANONE | | < 50 | < 50 | < 130 |
| 4-METHYL-2-PENTANONE | | < 50 | < 50 | < 130 |
| ACETONE | | < 50 | < 50 | < 130 |
| BENZENE | | < 0.7 | < 0.7 | < 1.8 |
| BROMODICHLOROMETHANE | | < 5 | < 5 | < 13 |
| BROMOFORM | | < 5 | < 5 | < 13 |
| BROMOMETHANE | | < 5 | < 5 | < 13 |
| CARBON DISULFIDE | | < 50 | < 50 | < 130 |
| CARBON TETRACHLORIDE | | < 5 | < 5 | < 13 |
| CHLOROBENZENE | | < 5 | < 5 | < 13 |
| CHLORODIBROMOMETHANE | | < 5 | < 5 | < 13 |
| CHLOROETHANE | | < 5 | < 5 | < 13 |
| CHLOROFORM | | < 7 | < 7 | < 18 |
| CHLOROMETHANE | | < 5 | < 5 | < 13 |
| CIS-1,2-DICHLOROETHENE | | < 5 | < 5 | < 13 |
| CIS-1,3-DICHLOROPROPENE | | < 5 | < 5 | < 13 |
| ETHYLBENZENE | | < 5 | < 5 | < 13 |
| FREON 113 | | < 5 | < 5 | < 13 |
| FREON 12 | | < 5 | < 5 | < 13 |
| METHYLENE CHLORIDE | | < 5 | < 5 | < 13 |
| STYRENE | | < 5 | < 5 | < 13 |
| TETRACHLOROETHENE | | < 5 | < 5 | **22** |
| TOLUENE | | < 5 | < 5 | < 13 |
| TRANS-1,2-DICHLOROETHENE | | < 5 | < 5 | < 13 |
| TRANS-1,3-DICHLOROPROPENE | | < 5 | < 5 | < 13 |
| TRICHLOROETHYLENE | | < 5 | **34** | **300** |
| VINYL CHLORIDE | | < 2 | < 2 | < 5 |
| XYLENE-O | | < 5 | < 5 | < 13 |
| XYLENES - M,P | | < 5 | < 5 | < 13 |
| **Total VOCs** | | 0 | **34** | **322** |

| | |
|---|---|
| ug/L | Micrograms per liter |
| **Bold** | Constituent detected |
| VOCs | Volatile Organic Compounds |

Table 2. Concentration of Volatile Organiz Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, Fourth Quarter 2007, Operable Unit 2, Northrop Grumman Corporation, Bethpage, New York

| CONSTITUENT (Units in ug/L) | WELL: / SAMPLE ID: / DATE: | WELL 18 / WELL 18-20071205 / 12/5/2007 | WELL 19 / WELL 19-20071205 / 12/5/2007 | 102TOWER EFF / 102TOWER EFF-20071205 / 12/5/2007 |
|---|---|---|---|---|
| 1,1,1-TRICHLOROETHANE | | < 5 | < 5 | < 5 |
| 1,1,2,2-TETRACHLOROETHANE | | < 5 | < 5 | < 5 |
| 1,1,2-TRICHLOROETHANE | | < 5 | < 5 | < 5 |
| 1,1-DICHLOROETHANE | | < 5 | < 5 | < 5 |
| 1,1-DICHLOROETHENE | | < 5 | < 5 | < 5 |
| 1,2-DICHLOROETHANE | | < 5 | < 5 | < 5 |
| 1,2-DICHLOROPROPANE | | < 5 | < 5 | < 5 |
| 2-BUTANONE | | < 50 | < 50 | < 50 |
| 2-HEXANONE | | < 50 | < 50 | < 50 |
| 4-METHYL-2-PENTANONE | | < 50 | < 50 | < 50 |
| ACETONE | | < 50 | < 50 | < 50 |
| BENZENE | | < 0.7 | < 0.7 | < 0.7 |
| BROMODICHLOROMETHANE | | < 5 | < 5 | < 5 |
| BROMOFORM | | < 5 | < 5 | < 5 |
| BROMOMETHANE | | < 5 | < 5 | < 5 |
| CARBON DISULFIDE | | < 50 | < 50 | < 50 |
| CARBON TETRACHLORIDE | | < 5 | < 5 | < 5 |
| CHLOROBENZENE | | < 5 | < 5 | < 5 |
| CHLORODIBROMOMETHANE | | < 5 | < 5 | < 5 |
| CHLOROETHANE | | < 5 | < 5 | < 5 |
| CHLOROFORM | | < 7 | < 7 | < 7 |
| CHLOROMETHANE | | < 5 | < 5 | < 5 |
| CIS-1,2-DICHLOROETHENE | | < 5 | **19** | < 5 |
| CIS-1,3-DICHLOROPROPENE | | < 5 | < 5 | < 5 |
| ETHYLBENZENE | | < 5 | < 5 | < 5 |
| FREON 113 | | < 5 | < 5 | < 5 |
| FREON 12 | | < 5 | < 5 | < 5 |
| METHYLENE CHLORIDE | | < 5 | < 5 | < 5 |
| STYRENE | | < 5 | < 5 | < 5 |
| TETRACHLOROETHENE | | **10** | **8** | < 5 |
| TOLUENE | | < 5 | < 5 | < 5 |
| TRANS-1,2-DICHLOROETHENE | | < 5 | < 5 | < 5 |
| TRANS-1,3-DICHLOROPROPENE | | < 5 | < 5 | < 5 |
| TRICHLOROETHYLENE | | **120** | **170** | < 5 |
| VINYL CHLORIDE | | < 2 | < 2 | < 2 |
| XYLENE-O | | < 5 | < 5 | < 5 |
| XYLENES - M,P | | < 5 | < 5 | < 5 |
| **Total VOCs** | | **130** | **197** | 0 |

| | |
|---|---|
| ug/L | Micrograms per liter |
| **Bold** | Constituent detected |
| VOCs | Volatile Organic Compounds |

Table 2. Concentration of Volatile Organiz Compounds Detected in Monitoring Wells and Groundwater Remedial Wells, Fourth Quarter 2007, Operable Unit 2, Northrop Grumman Corporation, Bethpage, New York

| CONSTITUENT (Units in ug/L) | WELL: / SAMPLE ID: / DATE: | WELL 1 / WELL 1-20071205 / 12/5/2007 | WELL 3 / WELL 3-20071205 / 12/5/2007 | 96TOWER EFF / 96TOWER EFF-20071205 / 12/5/2007 |
|---|---|---|---|---|
| 1,1,1-TRICHLOROETHANE | | < 13 | < 100 | < 5 |
| 1,1,2,2-TETRACHLOROETHANE | | < 13 | < 100 | < 5 |
| 1,1,2-TRICHLOROETHANE | | < 13 | < 100 | < 5 |
| 1,1-DICHLOROETHANE | | < 13 | < 100 | < 5 |
| 1,1-DICHLOROETHENE | | < 13 | < 100 | < 5 |
| 1,2-DICHLOROETHANE | | < 13 | < 100 | < 5 |
| 1,2-DICHLOROPROPANE | | < 13 | < 100 | < 5 |
| 2-BUTANONE | | < 130 | < 1000 | < 50 |
| 2-HEXANONE | | < 130 | < 1000 | < 50 |
| 4-METHYL-2-PENTANONE | | < 130 | < 1000 | < 50 |
| ACETONE | | < 130 | < 1000 | < 50 |
| BENZENE | | < 1.8 | < 14 | < 0.7 |
| BROMODICHLOROMETHANE | | < 13 | < 100 | < 5 |
| BROMOFORM | | < 13 | < 100 | < 5 |
| BROMOMETHANE | | < 13 | < 100 | < 5 |
| CARBON DISULFIDE | | < 130 | < 1000 | < 50 |
| CARBON TETRACHLORIDE | | < 13 | < 100 | < 5 |
| CHLOROBENZENE | | < 13 | < 100 | < 5 |
| CHLORODIBROMOMETHANE | | < 13 | < 100 | < 5 |
| CHLOROETHANE | | < 13 | < 100 | < 5 |
| CHLOROFORM | | < 18 | < 140 | < 7 |
| CHLOROMETHANE | | < 13 | < 100 | < 5 |
| CIS-1,2-DICHLOROETHENE | | < 13 | < 100 | < 5 |
| CIS-1,3-DICHLOROPROPENE | | < 13 | < 100 | < 5 |
| ETHYLBENZENE | | < 13 | < 100 | < 5 |
| FREON 113 | | < 13 | < 100 | < 5 |
| FREON 12 | | < 13 | < 100 | < 5 |
| METHYLENE CHLORIDE | | < 13 | < 100 | < 5 |
| STYRENE | | < 13 | < 100 | < 5 |
| TETRACHLOROETHENE | | **110** | < 100 | < 5 |
| TOLUENE | | < 13 | < 100 | < 5 |
| TRANS-1,2-DICHLOROETHENE | | < 13 | < 100 | < 5 |
| TRANS-1,3-DICHLOROPROPENE | | < 13 | < 100 | < 5 |
| TRICHLOROETHYLENE | | **380** | **2800** | < 5 |
| VINYL CHLORIDE | | < 5 | **120** | < 2 |
| XYLENE-O | | < 13 | < 100 | < 5 |
| XYLENES - M,P | | < 13 | < 100 | < 5 |
| **Total VOCs** | | **490** | **2920** | 0 |

| | |
|---|---|
| ug/L | Micrograms per liter |
| **Bold** | Constituent detected |
| VOCs | Volatile Organic Compounds |

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Table 3. Concentrations of Site-Related Volatile Organic Compounds Detected in Outpost Wells, Fourth Quarter 2007, Operable Unit 2, Northrop Grumman Corporation, Bethpage, New York. [4]

| CONSTITUENT (Units in ug/L) | Location ID: / Sample ID: / Sample Date: | BPOW-1-1 BPOW 1-1-20071210 12/10/2007 | BPOW-1-2 BPOW 1-2-20071210 12/10/2007 | BPOW-1-3 BPOW 1-3-20071210 12/10/2007 | BPOW-3-1 BPOW 3-1-20071211 12/11/2007 | BPOW-3-2 BPOW 3-2-20071211 12/11/2007 | BPOW-4-1 BPOW 4-1-20071212 12/12/2007 |
|---|---|---|---|---|---|---|---|
| 1,1,1-TRICHLOROETHANE | | **1.5** | < 0.5 | **3.3** | < 0.5 | < 0.5 | < 0.5 |
| 1,1,2,2-TETRACHLOROETHANE | | < 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 |
| 1,1-DICHLOROETHANE | | **0.74** | < 0.5 | **1.1** | < 0.5 | < 0.5 | < 0.5 |
| 1,1-DICHLOROETHENE | | **1** | < 0.5 | **2.7** | < 0.5 | < 0.5 | < 0.5 |
| 1,2-DICHLOROETHANE | | < 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 |
| CHLOROBENZENE | | < 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 |
| CIS-1,2-DICHLOROETHENE | | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| TETRACHLOROETHENE | | < 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 |
| TRICHLOROETHYLENE | | **1.3** | < 0.5 | **0.8** | < 0.5 | < 0.5 | < 0.5 |
| VINYL CHLORIDE | | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| **Total Site-Related VOCs [1] [3]:** | | **4.54** | **0** | **7.9** | **0** | **0** | **0** |
| **TVOC Trigger Value [2]:** | | **0.6** | **0.6** | **0.6** | **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) 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

Table 3. Concentrations of Site-Related Volatile Organic Compounds Detected in Outpost Wells, Fourth Quarter 2007, Operable Unit 2, Northrop Grumman Corporation, Bethpage, New York. [4]

| CONSTITUENT (Units in ug/L) | Location ID: / Sample ID: / Sample Date: | BPOW-4-2 / BPOW 4-2-20071212 / 12/12/2007 |
|---|---|---|
| 1,1,1-TRICHLOROETHANE | | < 0.5 |
| 1,1,2,2-TETRACHLOROETHANE | | < 0.5 |
| 1,1,2-TRICHLOROETHANE | | < 0.5 |
| 1,1-DICHLOROETHANE | | < 0.5 |
| 1,1-DICHLOROETHENE | | < 0.5 |
| 1,2-DICHLOROETHANE | | < 0.5 |
| CARBON TETRACHLORIDE | | < 0.5 |
| CHLOROBENZENE | | < 0.5 |
| CHLOROFORM | | < 0.5 |
| CIS-1,2-DICHLOROETHENE | | < 0.5 |
| TETRACHLOROETHENE | | < 0.5 |
| TRANS-1,2-DICHLOROETHENE | | < 0.5 |
| TRICHLOROETHYLENE | | < 0.5 |
| VINYL CHLORIDE | | < 0.5 |
| **Total Site-Related VOCs [1] [3]:** | | **0** |
| **TVOC Trigger Value [2]:** | | **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).

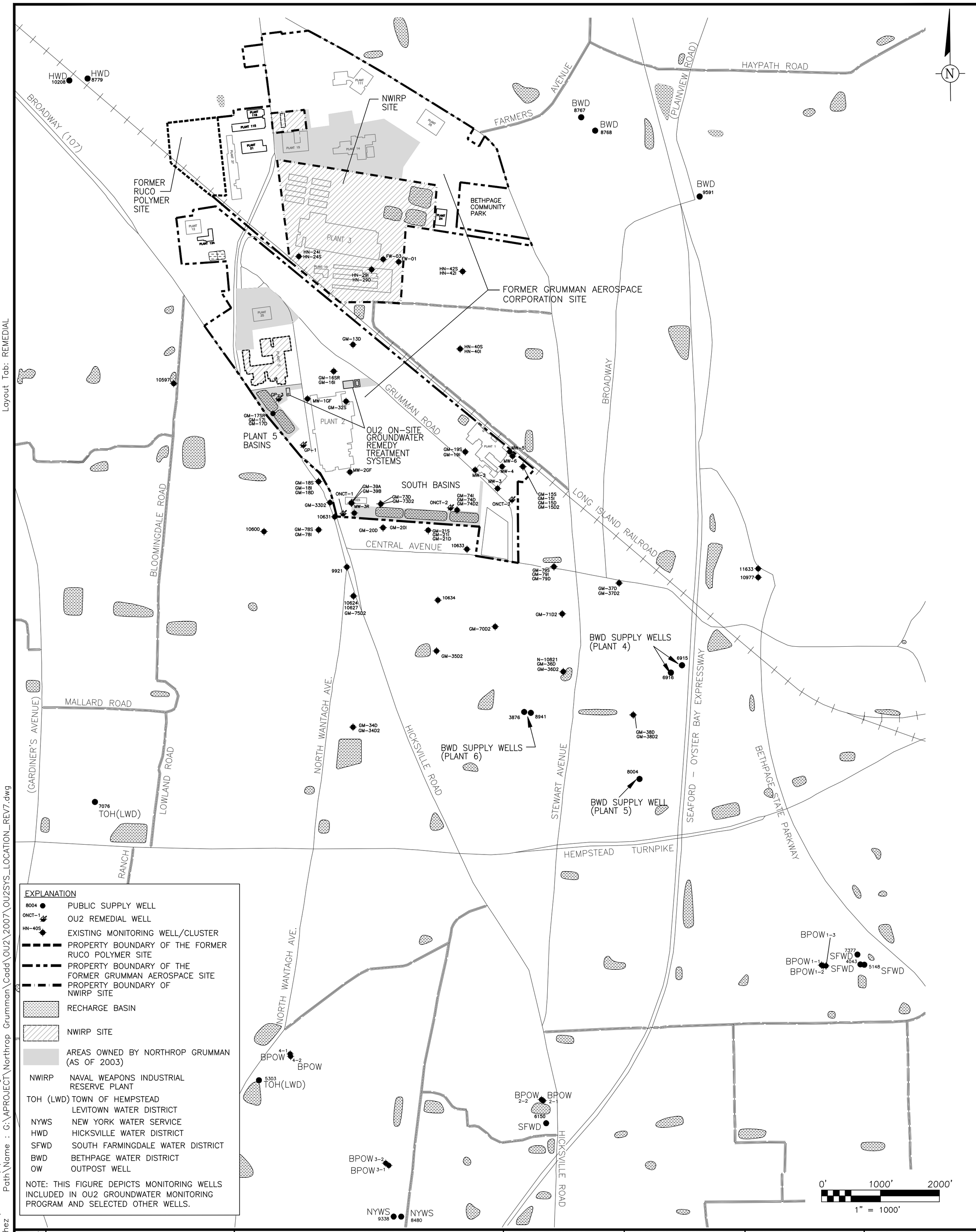
(4) Outpost well cluster OW-2 not sampled this round, due to ongoing NYSDEC investigation of non-site related VOCs (benzene and methyl tertiary butyl ether) detected in these wells.

ug/L Micrograms per liter

**Bold** Constituent detected

TVOC Total Volatile Organic Compounds

NE Not established




EXPLANATION

- 8004 ● PUBLIC SUPPLY WELL
- ONCT-1 OU2 REMEDIAL WELL
- HN-40S EXISTING MONITORING WELL/CLUSTER
- PROPERTY BOUNDARY OF THE FORMER RUCO POLYMER SITE
- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF NWIRP SITE
- RECHARGE BASIN
- NWIRP SITE
- AREAS OWNED BY NORTHROP GRUMMAN (AS OF 2003)

| | |
|---|---|
| NWIRP | NAVAL WEAPONS INDUSTRIAL RESERVE PLANT |
| TOH (LWD) | TOWN OF HEMPSTEAD LEVITOWN WATER DISTRICT |
| NYWS | NEW YORK WATER SERVICE |
| HWD | HICKSVILLE WATER DISTRICT |
| SFWD | SOUTH FARMINGDALE WATER DISTRICT |
| BWD | BETHPAGE WATER DISTRICT |
| OW | OUTPOST WELL |

NOTE: THIS FIGURE DEPICTS MONITORING WELLS INCLUDED IN OU2 GROUNDWATER MONITORING PROGRAM AND SELECTED OTHER WELLS.

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www.arcadis-us.com



PROJECT TITLE

OPERABLE UNIT 2
NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

| PROJECT MANAGER | DEPARTMENT MANAGER | LEAD DESIGNER | CHECKED BY |
|---|---|---|---|
| C. SAN GIOVANNI | M. WOLFERT | | M. SAURBORN |

SHEET TITLE

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

| TASK/PHASE NUMBER | DRAWN BY |
|---|---|
| 00004 | A. SANCHEZ |
| PROJECT NUMBER | DRAWING NUMBER |
| NY001464.0407 | 1 |

Acad Version : R17.0s (LMS Tech)
User Name : alsanchez
Current Plotstyle : ByColor
Layout Tab: REMEDIAL
Date/Time : Tue, 21 Aug 2007 – 10:41am
Path\Name : G:\APROJECT\Northrop Grumman\Cadd\OU2\2007\OU2SYS_LOCATION_REV7.dwg