Second Quarter 2002
Groundwater Monitoring Report

Operable Unit 2
Northrop Grumman Corporation,
Bethpage, New York
NYSDEC Site #1-30-0003A

ARCADIS

Infrastructure, buildings, environment, communications

P R E P A R E D F O R

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Our Ref.:
NY001348.0006.00004

Date:
7 January 2003

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1. Introduction

This groundwater monitoring report was prepared as part of the operation, maintenance, and monitoring (OM&M) activities for the Operable Unit 2 (OU2) groundwater remedy at the Northrop Grumman Corporation (NGC) Bethpage, New York facility. The OU2 groundwater remedy consists of two, separate groundwater extraction and treatment systems, which are commonly referred to as the ONCT system and the GP-1 system. For the purpose of this report, the two groundwater extraction and treatment systems will be collectively referred to as the "OU2 groundwater remedy". The monitoring activities described in this report include both the hydraulic (i.e., groundwater elevation and remedial system pumpage measurements) and groundwater and air quality monitoring; these activities are currently being conducted by NGC on a voluntary basis in accordance with the New York State Department of Environmental Conservation (NYSDEC)-approved OU2 Groundwater Monitoring Plan (ARCADIS Geraghty & Miller, Inc., 2001a). The purpose of the monitoring is to evaluate the effectiveness of the OU2 groundwater remedy at achieving the remedial goal of preventing the off-site migration of volatile organic compound (VOC)-impacted groundwater, determine changes and trends in on- and off-site groundwater quality, and to document the operational performance of the OU2 groundwater remedy. On March 29, 2001, a groundwater Record of Decision (ROD) for the NGC and Naval Weapons Industrial Reserve Plant (NWIRP) sites was signed and issued by the NYSDEC. In addition to other items, the ROD incorporated the former groundwater Interim Remedial Measure (IRM) (i.e., the ONCT and GP-1 remedial systems) into the final OU2 groundwater remedy for the sites. Upon execution of a Remedial Design/Remedial Action (RD/RA) Consent Order, an OM&M plan, following NYSDEC guidance (NYSDEC 1990), will be prepared and submitted to the NYSDEC for review. Following NYSDEC approval of the OM&M plan, the specified groundwater monitoring and reporting will be implemented as a required component of the OU2 groundwater remedy.

This report describes groundwater flow conditions and groundwater quality observed during the Second Quarter of 2002 and compares the current data to data from the previous round. In addition, this report describes the operations and performance of the OU2 groundwater remedy through June 2002. As provided in previous groundwater monitoring reports, this report also includes findings and conclusions. The conclusions and recommendations made in this report will continue to be re-evaluated in future reports as additional hydraulic and groundwater quality data become available. Recommendations will be incorporated, as appropriate, into the final OM&M Plan.

2. Monitoring Program

Except as described in Section 2.3 (Modifications to Field Program) of this report, the Second Quarter 2002 groundwater monitoring network (hydraulic and groundwater quality) is consistent with the network listed in the NYSDEC-approved OU2 groundwater monitoring plan. The locations of the NGC site, the OU2 groundwater remedy, the neighboring properties (i.e., the NWIRP and Occidental Chemical Corporation/RUCO Polymer Corporation sites), and the existing wells are shown on Figure 1.

The hydrogeologic zones monitored as part of this program include the shallow zone, the intermediate zone, the deep zone, and the deep2 (D2) zone. These zones were defined and discussed, in detail, in the groundwater flow modeling report, which is provided as Appendix B of the Groundwater Feasibility Study (ARCADIS Geraghty & Miller, Inc. 2000).

This monitoring report includes the following appendices: Appendix A, water-level measurement logs; Appendix B, groundwater sampling logs; Appendix C, chain-of-custody records; and Appendix D, data validation memoranda for the Second Quarter 2002 monitoring round.

2.1 Hydraulic Monitoring

On July 8, 2002, the Second Quarter 2002 hydraulic monitoring round was conducted by ARCADIS G&M, Inc. (ARCADIS). As part of this round, water levels were measured in wells forming the hydraulic monitoring network (except as described in Section 2.3 of this report) to determine the hydraulic effects, both horizontally and vertically, of pumping the OU2 remedial wells and Industrial Well GP-3. The results of the Second Quarter 2002 hydraulic monitoring round are described in Section 4 (Groundwater Flow) of this report.

2.2 Groundwater Quality Monitoring

Between June 13 and July 12, 2002, the Second Quarter 2002 groundwater quality monitoring round was conducted by ARCADIS. As part of this round, groundwater samples were collected in general to evaluate the effectiveness of the OU2 groundwater remedy. The goals of the groundwater monitoring program are described in detail in the OU2 groundwater monitoring plan. Section 5 (Groundwater Quality) of

this report summarizes the analytical results of groundwater samples collected during the Second Quarter of 2002.

2.3 Modifications to Field Program

Modifications to the Second Quarter 2002 groundwater monitoring program are described below.

The number of wells where water levels were measured and groundwater samples were collected was modified this round, as follows:

- This round reflects the addition of Wells HN-40S and HN-42S to the shallow zone hydraulic monitoring network and Wells HN-24I, HN-29I, HN-40I, and HN-42I to the intermediate zone hydraulic monitoring network. These wells provide additional coverage in the northern portion of the site to better define shallow zone and intermediate zone groundwater flow conditions upgradient of the OU2 groundwater remedy.

- Due to silt in the well screen, water-level measurements and groundwater samples cannot currently be obtained from Well N-10624.

- A water-level measurement cannot currently be made in Well GP-3 because the depth of the airline (used to determine the depth to water) below land surface was not recorded at the time of installation.

3. OU2 Operational Performance Monitoring

OU2 operational performance monitoring activities are conducted by both NGC and ARCADIS personnel, and include hydraulic measurements (depth to groundwater and treatment system pumpage), groundwater sampling/analysis and remedial system influent/effluent water and effluent air sampling/analysis. Collectively, these data are utilized, as described in the 2001 Annual Groundwater Monitoring Report (ARCADIS G&M, 2002), to evaluate the effectiveness of the OU2 groundwater remedy. Additional details on the rationale and sampling/measurement procedures for performance monitoring and quarterly monitoring are provided in the 2000 Annual Groundwater Monitoring Report (ARCADIS) Geraghty & Miller, Inc. 2001c).

During the Second Quarter 2002, NGC monitored total pumpage for the OU2 remedial wells (i.e., GP-1, ONCT-1, ONCT-2, and ONCT-3) and Industrial Well GP-3 on a

weekly basis, and NGC collected water samples from the OU2 remedial wells, Industrial Well GP-3, and from the influent and effluent streams from the OU2 treatment systems (i.e., the GP-1 and ONCT systems) on a weekly basis. Water samples collected by NGC personnel were analyzed by NGC's internal laboratory for trichloroethene (TCE) or TCE and vinyl chloride monomer (VCM). Analytical results of samples collected by NGC for the OU2 remedial wells and Industrial Well GP-3 and the OU2 treatment systems are provided in Tables 1 and 2, respectively, and are discussed in Section 5 and Section 3.2, respectively of this report.

Well pumpage (i.e., for the OU2 remedial wells and Industrial Well GP-3) data are discussed in Section 3.1 of this report.

In addition to the samples collected by NGC, ARCADIS collected water samples as part of the Second Quarter 2002 performance monitoring activities from Industrial Well GP-3, Remedial Wells GP-1, ONCT-1, ONCT-2, and ONCT-3, and the influent/effluent streams of the GP-1 and ONCT systems. These samples were analyzed for the full Target Compound List (TCL) for VOCs, and are discussed in Section 5 (Groundwater Quality) of this report. In addition, ARCADIS collected hydraulic measurements and instantaneous pumping rates from the OU2 remedial wells; these data are discussed in Section 3.1 of this report. Table 3 summarizes the pumpage from the OU2 remedial wells and Well GP-3, as well as the total VOC mass removed this quarter.

3.1 Pumpage

For the Second Quarter 2002, the total pumpage and average pumping rates for the OU2 remedial wells were calculated using methods described in previous quarterly reports. The design pumping rates (i.e., remedial well pumping rates, determined by groundwater modeling, that would prevent the off-site migration of VOC-impacted groundwater) of OU2 Remedial Wells GP-1, ONCT-1, ONCT-2, and ONCT-3 are 1,075 gallons per minute (gpm); 1,000 gpm; 600 gpm; and 700 gpm, respectively (Geraghty & Miller, Inc. 1996), for a combined rate of 3,375 gpm. If the OU2 remedial wells were pumped continuously at the design rates over the full 91-day period (i.e., March 28 to June 26, 2002) that constituted the Second Quarter 2002 monitoring period, the result would be a total of 442.3 million gallons (MG) pumped.

The number of days each OU2 remedial well was operational out of the possible 91 days and their average pumping rates, when operational, are provided in Table 3. These periods of operation and average pumping rates equate to approximately 461

MG pumped by the OU2 remedial wells for the period of record this quarter, or approximately 104 percent of the total design pumpage given above. As described in previous reports, pumpage from Well GP-3 supplements the total gallons pumped. Well GP-3 was operational for all of the period of record this quarter and pumped at an average rate of 395 gpm. This equates to 51.8 MG pumped in addition to the quantity pumped by the OU2 remedial wells. As shown on Table 3, the actual Second Quarter 2002 pumpage rates for the ONCT remedial wells exceeded the design pumping rates, and Remedial Well GP-1 pumped a total volume that was 95 percent of the total which would have been pumped had Well GP-1 operated at the design rate.

Table 4 summarizes the performance data collected from the OU2 remedial wells for the First and Second Quarters of 2002. Based on instantaneous pumping rate and drawdown measurements made during the Second Quarter 2002, the specific capacities of the OU2 remedial wells are similar to results from the First Quarter 2002. A depth to groundwater cannot be obtained for Industrial Well GP-3 because depth and submergence records of the airline in Well GP-3 are not available. Therefore, the specific capacity for Well GP-3 could not be calculated. The specific capacities calculated for Remedial Wells GP-1, ONCT-1, ONCT-2 and ONCT-3 for the Second Quarter 2002 were more than sufficient to allow the wells to yield enough water to contain the VOC-impacted plume on site.

3.2 Remedial System Performance Data

The following subsections of this report discuss the OU2 groundwater remedy treatment system performance data (which includes the ONCT and GP-1 systems air stripper performance data) and summarize the VOC mass removed by the OU2 remedial system.

3.2.1 Air Stripper Efficiency

Based on the average influent and effluent TCE concentration data collected by NGC for the ONCT and GP-1 systems (Table 2), OU2 groundwater remedy treatment systems TCE removal efficiencies are both greater than 99.9 percent (Table 2). Based on the influent and effluent TVOC sample results (Table 10) obtained by ARCADIS, TVOC removal efficiencies for the ONCT and GP-1 systems are both greater than 99.9 percent. Based on both data sets, OU2 groundwater remedy treatment system removal efficiencies are essentially identical and remain high.

3.2.2 Contaminant Mass Removal

Based on the VOC concentrations and pumping totals for the OU2 remedial wells and Industrial Well GP-3, approximately 2,074 pounds (lbs) of VOCs were removed from groundwater and treated by the OU2 groundwater remedy treatment systems in the Second Quarter 2002 (Table 3).

4. Groundwater Flow

This section presents the results of the depth to groundwater measurements made during the Second Quarter 2002, and evaluates the effectiveness of the OU2 groundwater remedy at achieving the goal of preventing the off-site migration of VOC-impacted groundwater. The evaluation of the hydraulic data is performed using methods described in previous quarterly reports.

The Second Quarter 2002 depth to groundwater measurement round was conducted on July 8, 2002 while the OU2 groundwater remedy was operating above its design total pumping rate (3,706 gpm actual vs. 3,375 gpm design); Table 5 summarizes the wells measured and groundwater-level data obtained. Figures 2 through 4 depict the shallow zone water-table configuration/groundwater flow directions and the potentiometric surface configuration/groundwater flow directions in the intermediate and D2 zones, respectively. These figures collectively illustrate the effect (i.e., hydraulic containment) that operation of the OU2 groundwater remedy has on horizontal groundwater flow patterns. To evaluate the effect the OU2 groundwater remedy has on vertical groundwater flow, vertical hydraulic gradients were calculated using the water-level data from shallow/intermediate, intermediate/deep, and deep/D2 monitoring well clusters; these data are summarized in Table 6. The following subsections of this report describe groundwater flow conditions in each aquifer horizon described above.

4.1 Shallow Zone

Figure 2 show the water-table configuration and horizontal groundwater flow directions in the shallow zone during the Second Quarter 2002. The effects of the OU2 groundwater remedy treatment system discharges and stormwater runoff (as recharge to the South Recharge Basins and the Plant 5 Recharge Basins) on shallow groundwater flow during this quarter are described below. The following sections also describe vertical hydraulic gradients measured this quarter and compare these gradients to the simulated steady-state vertical gradients predicted by the groundwater flow

model under the scenario where the OU2 remedial wells are preventing the off-site movement of VOC-impacted groundwater (ARCADIS Geraghty & Miller, Inc. 2000).

Figure 2 depicts the configuration of the water table on July 8, 2002 and shows groundwater mounding beneath the NGC site around the South Recharge Basins. Upgradient of the South Recharge Basins, which includes areas on the NGC and NWIRP sites, the horizontal direction of shallow groundwater flow is generally to the southeast. The treated water discharge to the Plant 5 Recharge Basins results in a water-table elevation beneath and around the Plant 5 Basins of greater than 60 feet relative to mean sea level (ft msl). Monitoring Wells GM-16SR/GM-16I exhibited a downward vertical gradient, with Wells GM-17SR/GM-17I and GM-18S/GM-18I exhibiting an upward vertical gradient this round.

The maximum elevation of the mound beneath and around the South Recharge Basins is greater than 65 ft msl, and the mound extends across the width of the southern boundary of the site. The regional southeast shallow groundwater flow direction is locally modified by the mounding with the result that the horizontal direction of shallow groundwater flow in the vicinity of the South Recharge Basins is radially to the north, south, west, and east away from the basins, thereby creating a hydraulic barrier that prevents on-site, VOC-impacted groundwater in this area from moving off-site in the shallow zone. The mounding around the South Recharge Basins also increases the vertical hydraulic gradient in the vicinity of the basins, resulting in a downward vertical groundwater flow component from the shallow zone to the intermediate zone. Water-level data for this round from the shallow-intermediate monitoring well clusters in the area of the South Recharge Basins (GM-19S/GM-19I; GM-21S/GM-21I; GM-78S/GM-78I, and GM-79S/GM-79I [Figure 2 and Table 6]) show that the vertical hydraulic gradients are oriented downward with the steepest gradient at the well cluster nearest the basins (i.e., GM-21S/GM-21I).

Vertical gradients, calculated from groundwater elevation data from clustered monitoring wells, that are close to or greater than groundwater flow model predictions are a key indication that the OU2 groundwater remedy, through pumpage of remedial wells from the D2 zone and recharge to the shallow zone, has created an effective hydraulic barrier to off-site groundwater flow. As shown on Table 6, vertical gradients this quarter at the monitoring well clusters located in the vicinity of the basins (i.e., GM-19S/GM-19I; GM-21S/GM-21I; and GM-79S/GM-79I) are oriented downward and are greater than gradients predicted by the groundwater flow model while the vertical gradients at Well Clusters GM-16SR/GM-16I and GM-78S/GM-78I are also oriented downward and are close to model predictions. These data indicate that in the

vicinity of the South Recharge Basins, there is a strong downward vertical component of groundwater flow from the shallow zone toward the intermediate zone.

In conclusion, the radial horizontal flow components near the South Recharge Basins coupled with the downward vertical gradients collectively create a hydraulic barrier that prevents on-site, VOC-impacted groundwater from migrating off-site in the shallow zone.

4.2 Intermediate Zone

The interpretation of horizontal and vertical groundwater flow in the intermediate zone during the Second Quarter of 2002 was conducted using the same methods as described in Section 4.2 (Shallow Zone). The intermediate zone potentiometric surface configuration and horizontal groundwater flow directions this quarter are shown on Figure 3. Table 6 summarizes the vertical gradients for intermediate/deep wells this quarter.

As shown on Figure 3, the configuration of the potentiometric surface in the intermediate zone is similar to the water-level configuration observed in the shallow zone, with mounding centered beneath the South Recharge Basins (maximum water-level elevation at the South Recharge Basins is greater than 62 ft msl). This indicates that the OU2 groundwater remedy treatment system discharge and stormwater runoff are substantially affecting groundwater flow in the intermediate zone, with the horizontal component of flow near the South Recharge Basins oriented radially away from the basins. The resultant vertical gradients in monitoring well clusters near the basins (i.e., GM-15I/GM-15D, GM-17I/GM-17D, GM-18I/GM-18D, GM-20I/GM-20D, GM-21I/GM-21D; GM-74I/GM-74D, and GM-79I/GM-79D) are oriented downward and are greater than or close to model predictions.

Collectively, these data indicate that the hydraulic barrier to groundwater flow extends vertically downward to the intermediate zone and is similar in extent to that observed in the shallow zone, thereby preventing the off-site migration of VOC-impacted groundwater in the intermediate zone.

4.3 Deep Zone

As stated in previous reports, since groundwater in the deep zone is expected to be flowing in a predominantly vertical (downward) direction in the general vicinity of the OU2 remedial wells/Plant 5 and South Recharge Basins, the analysis of the

effectiveness of the OU2 groundwater remedy at achieving the goals in this zone is conducted using vertical gradient calculations for deep/D2 monitoring well clusters. Table 6 summarizes the vertical hydraulic gradients calculated from data collected from well clusters in the deep/D2 zones during the Second Quarter 2002 round and compares them to model-predicted gradients.

The vertical gradients in on-site/near site Well Clusters GM-15D/GM-15D2 (northeast of the South Basins), GM-74D/GM-74D2 (at the South Basins), and GM-18D/GM-33D2 (west of the South Basins) are oriented downward as expected, and are close to or greater than model predictions (Table 6). For deep/D2 well clusters located generally south (off-site) of the NGC site property boundary, vertical gradients were also calculated based on this round of data and are oriented downward and are greater than the model-predicted gradients.

In conclusion, vertical hydraulic gradients calculated for the Second Quarter 2002 from deep/D2 monitoring well clusters are oriented downward and are close to or greater than steady-state gradients predicted by the groundwater flow model. Furthermore, vertical gradients in well clusters near the NGC site boundary indicate that the mounding of the water table coupled with pumpage from the OU2 remedial wells in the D2 zone is forcing on-site groundwater downward through the deep zone, toward the pumpage in the D2 zone, and prevents groundwater from flowing off-site in the deep zone.

4.4 D2 Zone

On July 8, 2002, water levels were measured in on- and off-site D2 monitoring wells and OU2 Remedial Wells GP-1, ONCT-1, ONCT-2, and ONCT-3, which are screened in the D2 zone. Figure 4 depicts the potentiometric surface configuration and horizontal groundwater flow directions in the D2 zone under pumping conditions.

The result of pumping the OU2 remedial wells and Well GP-3 is the formation of cones of depression (areas of depressed water levels) in the D2 zone centered on each well that coalesce into one large zone of capture that extends along the entire southern property boundary and also extends northwest along the western boundary of the NGC site (see Figure 4). Although a water level cannot currently be measured in Well GP-3, it is reasonable to assume that the cone of depression around this pumping well causes the cumulative capture zone to extend farther to the northwest than is currently shown on Figure 4. At its farthest downgradient extent the capture zone is approximately 700 ft south of the NGC site boundary. Within the capture zone (upgradient and as far as

700 ft downgradient of the OU2 remedial wells), groundwater flow directions are oriented toward the centers of pumping; indicating that groundwater in this area is fully contained and captured by the OU2 groundwater remedy. Beyond the downgradient extent of the capture zone, groundwater continues to flow downgradient until it is influenced by the pumping of nearby public supply wells or continues to flow south-southeast in the direction of regional groundwater flow.

The data from the D2 zone indicate that the pumpage of the OU2 remedial wells has created a hydraulic barrier in this zone, thereby preventing the off-site migration of VOC-impacted groundwater.

4.5 Summary of Groundwater Flow Conditions

Treated water discharge and discharge of stormwater (collectively as recharge to the water table) has maintained the hydraulic barrier in the shallow and intermediate zones and the resultant downward component of groundwater flow near the South Recharge Basins. Deep/deep2 monitoring well pairs near the areas of pumping and recharging produced by the OU2 groundwater remedy continue to exhibit vertical hydraulic gradients generally greater than model predictions. The area of capture in the D2 zone produced by the pumpage of the OU2 remedial wells has not substantially changed since last quarter and extends across the entire southern boundary and downgradient of the NGC site. Overall, the hydraulic data indicate that operation of the OU2 groundwater remedy has maintained an effective hydraulic barrier throughout the shallow, intermediate, deep, and D2 zones, which prevents the off-site migration of on-site, VOC-impacted groundwater.

5. Groundwater Quality

The Second Quarter 2002 groundwater sampling round was conducted between June 13 and July 12, 2002. In the following subsections of this report the conceptual effect of the OU2 groundwater remedy on the VOC plume is discussed, the distribution of VOCs in the shallow, intermediate, deep, and D2 zones is described, and comparisons are made between the VOC concentrations and the New York State (NYS) Standards, Criteria, and Guidance Values (SCGs) (NYSDEC 1998). The water quality results (i.e., VOCs, VCM, SVOCs, and Cd/Cr) for this round are also compared to the results of the previous groundwater monitoring round. Also provided below are the results of the library search for Tentatively Identified Compounds (TICs) and results of the QA/QC samples collected this round.

5.1 Volatile Organic Compounds

The goal of the on-site OU2 groundwater remedy is to capture, remove, and treat groundwater from the on-site portion of the VOC plume and, thereby prevent VOC-impacted groundwater from moving off-site. The operation of the OU2 groundwater remedy will cause the plume to bifurcate into an on-site portion and an off-site portion. As treated groundwater and precipitation continue to recharge the aquifer, a clean zone will develop between the on- and off-site portions of the bifurcated plume, within which VOC impacts will not occur or will be minimal. This clean zone will increase in size as VOC-impacted groundwater downgradient (south) and beyond the capture zone of the OU2 remedial wells continues to migrate through the aquifer in the regional direction of groundwater flow to the south-southeast. The continued growth of this clean zone depends on maintaining the hydraulic barrier created by the on-site OU2 groundwater remedy. The rate of growth will largely depend on the regional groundwater velocity in the Magothy aquifer, which is generally less than one foot per day.

Based on the above considerations, groundwater samples collected from wells immediately south (off-site) of the OU2 remedial wells will be the first to show water quality improvement (i.e., a decreasing trend in contaminant concentrations over time) although the improvement, due to the natural slow groundwater velocity, will be slow to occur. Monitoring wells located further downgradient will take a longer time to show an improvement in groundwater quality, as compared to wells immediately south of the OU2 remedial wells, due to the relatively slow groundwater velocity and greater distance from the remedial wells.

VOC-impacted groundwater that migrated off-site prior to the implementation of the OU2 groundwater remedy would have to migrate past off-site monitoring wells before the wells would show groundwater quality improvement related to operation of the OU2 groundwater remedy. Depending on the contaminant concentrations and heterogeneity of the off-site groundwater, monitored water quality in off-site wells may show several trend changes before long-term trends, associated with the operation of the OU2 groundwater remedy, are revealed.

Depending on the exact location of the well, water quality in on-site wells may increase, decrease, or stay the same over the short to mid-term, but over the long term a general decrease in VOC concentrations will be observed.

The following subsections of this report focus on the on- and off-site detections of VOCs in groundwater samples collected.

5.1.1 Shallow and Intermediate Zones

Groundwater quality data from the shallow and intermediate monitoring wells are summarized in Tables 7 and 8, respectively. The water quality data from the shallow and intermediate wells sampled this quarter support the interpretation of the hydraulic data and confirm that the operation of the OU2 groundwater remedy has formed an effective hydraulic barrier that prevents the off-site movement of VOC-impacted groundwater in the shallow and intermediate zones. A detailed discussion of the water quality data for the shallow and intermediate zones follows.

Of the 14 shallow wells sampled this quarter, eight wells exhibited no exceedences of SCGs with either no VOC detections or TVOC concentrations less than 2 micrograms per liter (µg/L) (Well GM-14 had 10 ug/L of acetone which is a known laboratory contaminant and therefore, this result is considered anomalous), and five wells (GM-15S, GM-16S, GM-32S, GM-78S, and FW-03) exhibited one or more VOCs at concentrations exceeding SCGs (Table 7). TCE was the main constituent detected in wells with detectable VOC concentrations and exceeded the SCG in Wells GM-15S, GM-16S, GM-32S, GM-78S, and FW-03; tetrachloroethene (PCE) exceeded the SCG in Well FW-03. Well FW-03, which is located over 4,000 ft north and upgradient of the OU2 remedial wells (Figure 1) exhibited the highest TVOC result with a concentration similar to the last round. TVOC concentrations for other shallow wells have remained essentially the same as last round except at Wells GM-16SR and GM-32S where concentrations have increased compared to the last round. Wells N-10631, N-10634, GM-14, GM-17SR, GM-18S, GM-21S, and MW-3R, which exhibited no detections or trace concentrations of VOCs, are located at or downgradient of the Plant 5 Recharge Basins/South Recharge Basins/southern NGC property boundary and attest to the effectiveness of the hydraulic barrier in preventing VOC-impacted groundwater from migrating off-site in the shallow zone.

Of the 13 intermediate wells sampled this quarter, four wells (Wells GM-15I, GM-16I, HN-24I, and HN-40I) had SCG exceedences with TCE exceeding the SCG in all four wells. Other VOCs detected exceeding SCGs in Well HN-24I included 1,1-DCE, 1,1,1-TCA, and Freon 113. No other well had an SCG exceedance for any other compound. Of these four wells, Well HN-24I had the highest TVOC concentrations (190 µg/L). Well HN-24I is located approximately 4,400 feet upgradient (north) of the ONCT remedial wells. For the nine wells with no SCG exceedences, TVOC

concentrations ranged from non-detect to 4 µg/L with wells in the South Recharge Basins/southern NGC property boundary area (i.e., GM-17I, GM-18I, GM-20I, GM-21I, GM-74I, GM-78I, and GM-79I) exhibiting TVOC concentrations of 1 µg/L or less (except for Well GM-78I which had a TVOC concentration of 4 µg/L), which attests to the effectiveness of the hydraulic barrier in preventing VOC-impacted groundwater from migrating off-site in the intermediate zone.

Eleven of the 13 intermediate wells sampled this quarter exhibited unchanged TVOC concentrations compared to the last round. Wells GM-16I and HN-24I showed decreased TVOC concentrations versus last round.

5.1.2 Deep Zone

Groundwater quality data from deep monitoring wells are summarized in Table 9. Similar to the conclusion developed for the shallow and intermediate zones, in general, the data from the deep wells sampled this quarter indicates that the operation of the OU2 remedial system forms an effective hydraulic barrier and prevents the off-site movement of VOC-impacted groundwater in the deep zone.

Of the 14 deep monitoring wells sampled this round, seven wells had no exceedences of SCGs and six of these wells exhibited TVOC concentrations of 4 µg/L or less. The other seven wells each exhibited at least one constituent that exceeded SCGs. Five of the seven wells with SCG exceedences are located substantial distances upgradient of the OU2 remedial wells or are located south of the site with some wells located substantial distances south of the site.

Well GM-13D exhibited the highest TVOC concentration (1,568 µg/L) and the most SCG exceedences and is located approximately 2,850 feet upgradient of the ONCT remedial wells. Wells GM-15D and GM-74D, exhibited TVOC concentrations of 26.9 µg/L and 24.7 µg/L, respectively. These wells are located slightly upgradient and near Wells ONCT-3 and ONCT-2, respectively. Wells GM-17D, GM-18D, GM-20D, and GM-21D, located along the southwestern and southern boundary of the NGC site, exhibited TVOC concentrations ranging from non-detect to 3 µg/L with no SCG exceedences and attest to the effectiveness of the OU2 groundwater remedy in preventing the off-site migration of TVOC-impacted groundwater in the deep zone.

All wells exhibited TVOC concentrations that essentially were the same as last round, except for downgradient Well GM-79D (95 µg/L) , which showed an increase in

TVOC concentration. TCE was the predominant compound detected in the deep zone wells except for Well GM-13D, where PCE was the predominant compound detected.

5.1.3 Deep2 Zone

Groundwater monitoring data from the D2 zone are summarized in Table 10. NGC (weekly basis) and ARCADIS (quarterly basis) collected groundwater samples from the OU2 remedial wells and Well GP-3, and influent/effluent water samples from the GP-1 and ONCT treatment systems. In addition, ARCADIS collected groundwater samples (quarterly) from the network of D2 monitoring wells listed in the NYSDEC-approved groundwater monitoring plan. NGC analyzed samples for TCE or TCE/VCM while samples collected by ARCADIS were analyzed for the TCL VOCs.

5.1.3.1 OU2 Remedial Wells and Well GP-3

The weekly TCE concentrations for the OU2 remedial wells and Well GP-3 and the average of those results are provided in Table 1. Compared with the previous round, average TCE concentrations have increased in Well GP-1, decreased in Well ONCT-1, and remained essentially the same in Wells ONCT-2, ONCT-3, and GP-3. Review of the data in Table 10 shows that TCE continues to be the predominant compound detected in all OU2 remedial wells and in Well GP-3.

Section 3.2 (Remedial System Performance Data) includes an evaluation of the efficiencies of the OU2 groundwater remedy treatment systems.

5.1.3.2 Deep2 Monitoring Wells

TVOC concentrations on the eastern portion of the site (at and east of Well ONCT-2) were substantially less than on the western portion of the NGC site with values ranging from 5 µg/L (Well GM-74D2) to 197 µg/L (Well ONCT-2). On the western portion of the NGC site, TVOC concentrations ranged from 128 µg/L (Well GM-33D2) to 2,009 µg/L (Well GP-3). Except for Well GM-74D2, all wells had one or more exceedences of SCGs.

Although the hydraulic information discussed above for the D2 zone indicates that operation of the OU2 groundwater remedy is preventing the off-site migration of VOC-impacted groundwater in the D2 zone, there are no D2 monitoring wells immediately south of the NGC site to provide data with which to confirm the conclusion reached based on hydraulic information. However, Well GM-33D2, which is located a short

distance west of the NGC site and Well ONCT-1, continues to show a decline in TVOC concentration over time from approximately 10,000 µg/L in early 1999 to 128 µg/L in the Second Quarter 2002 round. This represents more than a 98 percent decrease in TVOC concentration in this well, which is attributable primarily to the pumping of the OU2 groundwater remedy (which has been in operation since September 1998), and specifically Well ONCT-1. This data is strong evidence that remedial well pumping is causing groundwater to flow from the area around Well GM-33D2 toward the remedial wells and prevents VOC-impacted groundwater from moving off-site in the D2 zone in this area.

TVOC concentrations in the eight off-site wells ranged from non-detect (Well GM-36D2) to 2,012 µg/L (Well GM-38D2), with six of the eight wells having one or more exceedences of SCGs. TVOC concentrations in wells exhibiting SCG exceedences are generally higher or the same this round in comparison to the previous round.

As stated above, continued monitoring of water quality in off-site wells may show several trend changes before a long-term trend associated with the OU2 groundwater remedy operation is revealed.

5.2 Vinyl Chloride Monomer

In accordance with the NYSDEC-approved groundwater monitoring plan, groundwater monitoring of the VCM subplume emanating from the RUCO Polymer site (near the NWIRP area – see Figure 1) is performed by sampling Monitoring Wells GM-23S, GM-23I, MW-52S, MW-52I, and MW-52D on a semi-annual basis (twice yearly during the First and Third Quarter rounds). Other monitoring wells used, in part, as outpost wells to monitor the position of the VCM subplume are monitored on a quarterly basis; these include Wells GM-17SR, GM-17I, GM-17D, GM-18S, GM-18I, and GM-18D (these six wells are also sampled to monitor the effectiveness of the OU2 groundwater remedy). However, VCM is a parameter that is analyzed for in all wells sampled for VOCs; Section 5.1 (Volatile Organic Compounds) of this report provides a complete discussion of other VOCs detected in the VCM monitoring well network. This section discusses the results of the Second Quarter 2002 monitoring round and compares these results to those of the previous round. Tables 7 through 10 include VCM concentrations in groundwater for this quarter and the previous round.

VCM was not detected in the shallow zone, intermediate zone, or deep zone this round (Tables 7, 8, and 9, respectively). In the D2 zone, VCM was detected in Well GP-3 above the SCG at an average concentration of 14.6 µg/L (concentrations ranged from

9.1 µg/L to 21 µg/L) based on the weekly sampling performed by NGC, and was detected at 57 µg/L in the quarterly sample collected by ARCADIS. Since Well GP-3 is located substantially further downgradient than monitoring wells that historically have exhibited detections of VCM above SCGs, and is deeper than any monitoring well in the network, it is reasonable to conclude that the extent of the VCM subplume is greater than previously defined by RUCO. VCM was not detected in any other D2 zone well (Table 10). Based on the current and previous rounds of data from the outpost monitoring wells (i.e., GM-17 and GM-18well clusters) no substantial changes in the position of the VCM subplume were evident.

5.3 Tentatively Identified Compounds

For all groundwater samples collected during this round, in addition to the TCL VOCs, the laboratory was asked to perform an analysis and library search to identify and evaluate whether volatile TICs exist in the groundwater samples. TICs detected in groundwater samples collected during the Second Quarter 2002 round are summarized in Table 11. Since the laboratory instruments cannot be calibrated to determine exact TIC concentrations (i.e., they are not included in the TCL VOC list), the concentrations in Table 11 should be used for qualitative purposes only.

5.4 Quality Control Samples - VOCs

Based on the analytical results (Table 12) for the Second Quarter 2002 round, low levels of VOCs (e.g., 2-butanone and methylene chloride) were detected. These results were used to validate groundwater sample results for this round. The data validation memorandum for VOCs is provided in Appendix D.

5.5 Semi-Volatile Organic Compounds (Plant 1 Fuel Depot)

Well GM-14, located downgradient of the NGC Plant 1 Fuel Depot, is monitored on a quarterly basis for SVOCs. As shown on Table 13, SVOCs were not detected in Well GM-14 or the associated blank sample this round.

5.6 Cadmium and Chromium

Groundwater monitoring data from shallow and intermediate monitoring wells for the Second Quarter 2002 and the previous round for cadmium (Cd) and chromium (Cr) are provided in Table 14. Based on the current round of data, Well MW-3R exhibited Cd (total and dissolved) concentrations exceeding the SCG, Well N-10631 exhibited a Cr

(total only) concentration exceeding the SCG; and Well GM-32S exhibited Cr (total and dissolved) concentrations exceeding the SCG. The remaining wells had no exceedences of SCGs. Results for last round and this round were similar with the exception that the Cr concentration in Well MW-3R decreased to a value below the SCG and increased in Well N-10631 to a value that exceeded the SCG this round.

The results this round generally show little difference overall between the filtered and unfiltered samples results, indicating that the metals analyzed for exist predominantly in the dissolved phase.

5.7 Quality Control Samples - Cadmium/Chromium

Cadmium/chromium were not detected in the equipment blank samples collected this quarter (Table 14).

5.8 Data Validation

ARCADIS performed validation of the groundwater quality data (including TICs) collected from wells by following the contract laboratory program national functional guidelines for organic and inorganic data review (USEPA 1999). The quality of the data is considered acceptable with the qualifications indicated on Tables 7 through 14. The data validation memorandum for Cd/Cr is provided in Appendix D.

6. Findings and Conclusions

6.1 OU2 Groundwater Remedy

1. During the 91 days of the Second Quarter 2002, the OU2 groundwater remedy pumped and treated 461 MG of water, which is approximately 104 percent of the total design pumpage. Well GP-3 supplemented the total pumpage by an additional 51.8 MG. Pumpage from Remedial Wells ONCT-1, ONCT-2, and ONCT-3 exceeded the design criteria, while Well GP-1 pumpage was close to the design pumpage.

2. OU2 remedial wells specific capacities were more than sufficient to allow the wells to yield enough water to contain the VOC-impacted groundwater plume on site.

3. During the Second Quarter 2002, approximately 2,074 lbs of VOCs were removed from the aquifer and treated by the OU2 groundwater remedy and Well GP-3. Based on the performance sampling data collected by NGC and ARCADIS from the OU2 groundwater remedy treatment systems influent/effluent streams, treatment system efficiencies were very high.

6.2 Groundwater Flow

1. Water-level data for the shallow and intermediate zones for the Second Quarter of 2002 indicate that operation of the OU2 groundwater remedy has maintained the groundwater mounding in the South Recharge Basins area. Consequently, the hydraulic barrier in the shallow zone has been maintained, and extends to the intermediate zone and prevents off-site migration of VOC-impacted groundwater in these zones.

2. For the Second Quarter of 2002, downward vertical hydraulic gradients near the NGC southern boundary area remain close to or greater in magnitude than those predicted by the groundwater flow model. This indicates that the mounding of the water table coupled with pumpage from the D2 zone is continuing to force on-site groundwater to move downward toward the OU2 remedial wells in the D2 zone, which prevents VOC-impacted groundwater from flowing off-site in the deep zone.

3. The configuration of the potentiometric surface in the D2 zone in the Second Quarter of 2002 indicates that the capture zone, due to pumpage of the OU2 remedial wells, extends across the entire NGC southern property boundary and to the northwest toward Well GP-3 and continues to fully control and contain groundwater on-site and more than 700 ft south of the site in the D2 zone.

6.3 Groundwater Quality

1. Shallow and intermediate wells in areas within the VOC plume on the NGC and NWIRP sites upgradient of the OU2 groundwater remedy exhibited the highest VOC concentrations. At the NGC southern boundary and immediately south of it, shallow and intermediate wells exhibited low or non-detectable VOC concentrations. These results confirm the effectiveness of the OU2 groundwater remedy in preventing the off-site migration of VOC-impacted groundwater in the shallow and intermediate zones.

2. Deep wells along the NGC southern boundary exhibit low to non-detectable VOC concentrations. Recharge of water to the South Recharge Basins, combined with the pumpage of the OU2 remedial wells, forces groundwater downward through the deep zone, which prevents the off-site migration of VOC-impacted groundwater in the deep zone and thereby results in these low to non-detectable VOC concentrations.

3. In the D2 zone, Well GM-33D2, which is the closest monitoring well to Remedial Well ONCT-1, exhibited a continued decrease in TVOC concentration, providing strong evidence that the OU2 groundwater remedy continues to be effective in preventing on-site VOC-impacted groundwater from moving off-site in the D2 zone in this area and in reducing VOC concentrations in the D2 zone in this area. Off-site and in areas upgradient of the OU2 groundwater remedy, VOC concentrations have exhibited varying trends. Continued monitoring of water quality in off-site wells may show several trend changes before a long-term trend associated with the OU2 groundwater remedy operation, is revealed.

4. For the Second Quarter 2002, VCM was not detected in the shallow, intermediate, or deep zones. In the D2 zone, VCM was detected in Well GP-3. The current data indicate that the extent of the VCM subplume (horizontal and vertical) is greater than previously defined by RUCO.

5. Well MW-3R continues to exhibit Cd concentrations exceeding the SCG. Wells N-10631 and GM-32S exhibited Cr concentrations exceeding the SCG. The remaining wells exhibited no exceedences of SCGs. Total and dissolved analytical results showed little difference indicating that the metals analyzed for exist predominantly in the dissolved phase.

7. Recommendation

ARCADIS makes no recommendations for modifications to the groundwater monitoring program at this time.

8. References

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Table 1. Select VOC Concentrations in Water Samples Collected from OU2 Remedial Wells and Industrial Well GP-3, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York. [1]

		OU2 REMEDIAL WELLS				INDUSTRIAL WELL	
Sample Collection Date	Well ID: / Units: / Constituents:	GP-1 (ug/L) VCM	GP-1 (ug/L) TCE	ONCT-1 (ug/L) TCE	ONCT-2 (ug/L) TCE	ONCT-3 (ug/L) TCE	GP-3 (ug/L) VCM	GP-3 (ug/L) TCE
4/1/2002		<0.5	276	640	128	16	15.4	1,813
4/8/2002		<0.5	366	880	166	19	16.3	1,494
4/15/2002		<0.5	397	782	130	24	16.1	2,226
4/22/2002		<0.5	348	690	140	16	NA	NA
4/30/2002		<0.5	360	738	173	12	21.0	1,570
5/6/2002		<0.5	412	748	155	16	19.0	1,426
5/13/2002		<0.5	328	478	131	13	13.6	1,368
5/20/2002		<0.5	390	538	137	13	14.1	1,278
5/28/2002		<0.5	365	603	126	13	13.4	1,220
6/4/2002		<0.5	290	370	89	14	9.8	920
6/10/2002		<0.5	282	554	164	13	9.1	1,176
6/17/2002		<0.5	358	434	99	11	12.7	1,189
6/28/2002		<0.5	360	563	123	14	15.1	1,798
Average Concentration:		**<0.5**	**349**	**617**	**135**	**15**	**14.6**	**1,457**

(1) Water samples were collected and analyzed for TCE and VCM by Northrop Grumman; analytical results were not validated.

VOC Volatile Organic Compound
OU2 Operable Unit 2
ug/L Micrograms per liter
TCE Trichloroethene
VCM Vinyl Chloride Monomer
NA Not Analyzed

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Table 2. Select VOC Concentrations in Water Samples Collected from the OU2 Treatment Systems Influent and Effluent, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York. [1]

Sample Collection Date	Sample ID:	ONCT System (WWRP-5E) Influent	ONCT System (WWRP-5E) Effluent	GP-1 System (WWRP-5) Influent		GP-1 System (WWRP-5) Effluent	
	Units:	(ug/L)	(ug/L)	(ug/L)		(ug/L)	
	Constituents:	TCE	TCE	VCM	TCE	VCM	TCE
4/1/2002		640	<0.5	<0.5	841	NA	<0.5
4/8/2002		330	<0.5	<0.5	899	NA	<0.5
4/15/2002		414	<0.5	<0.5	1040	NA	<0.5
4/22/2002		294	<0.5	<0.5	190	NA	<0.5
4/30/2002		273	<0.5	2.6	790	NA	0.5
5/6/2002		459	<0.5	3.7	560	NA	<0.5
5/13/2002		300	<0.5	3.6	506	NA	<0.5
5/20/2002		310	<0.5	2.8	564	NA	<0.5
5/28/2002		340	<0.5	2.3	503	NA	<0.5
6/4/2002		171	<0.5	<0.5	432	NA	<0.5
6/10/2002		358	<0.5	1.3	531	NA	<0.5
6/17/2002		189	1.0	1.4	558	NA	<0.5
6/28/2002		202	<0.5	1.0	549	NA	<0.5
Average Concentration: [2]		**329**	**0.08**	**1.4**	**613**	**NA**	**0.04**

GP-1 system average TCE removal efficiency:	**>99.9%**
ONCT system average TCE removal efficiency:	**>99.9%**

(1) Water samples were collected and analyzed by Northrop Grumman; analytical results were not validated.

(2) For calculations which include non-detected results, a value of zero was used in computing the average VOC concentration for the period of record.

VOC	Volatile Organic Compound
OU2	Operable Unit 2
TCE	Trichloroethene
VCM	Vinyl Chloride Monomer
ug/L	Micrograms per liter
WWRP	Wastewater Recovery Plant
WWRP-5E	WWRP 5E system influent and effluent consists of water from OU2 Remedial Wells ONCT-1 (Well 17), ONCT-2 (Well 18), and ONCT-3 (Well 19).
WWRP5	WWRP 5 system influent and effluent consists of water from OU2 Remedial Well GP-1 and Industrial Well GP-3.
NA	Not Analyzed

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Table 3. Summary of Operational Data for the OU2 Remedial Wells and Industrial Well GP-3, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Design Pumping Rate (gpm)	Actual Average Pumping Rate [a] (gpm)	Design Total Pumpage (MG)	Actual Total Pumpage [a] (MG)	Percent of Design Pumpage	Average TCE Concentration (ug/L)	Average TVOC Concentration [b] (ug/L)	Estimated TVOC Mass Removed [c] (lbs)
OU2 Wells								
GP-1	1,075	1,006	140.9	133.2	95%	349	420	466
ONCT-1	1,000	1,137	131.0	150.4	115%	616	629	787
ONCT-2	600	607	78.6	80.3	102%	136	149	100
ONCT-3	700	728	91.7	97.4	106%	15	27	22
Industrial Well								
GP-3	--	395	--	51.8	--	1,456	1,618	698
OU2 WELLS ROUNDED TOTALS: (d)	**3,375**	**3,478**	**442.3**	**461.0**	**104%**	**--**	**--**	**2,073**

(a) - Average pumping rates were calculated based on Northrop Grumman records of total pumpage and hours of operation from March 28, 2002 through June 26, 2002.
- OU2 wells and Well GP-3 were 100 percent operational from March 26, 2002 to June 26, 2002 (91 days)
- Pumping rates are accurate to +/-15% due to limitations in flow metering.

(b) - TVOC concentration in each well and TVOC mass removed by each well were calculated based on Second Quarter 2002 average TCE concentration per well and Second Quarter 2002 groundwater monitoring data per well which indicated that TCE concentrations were a percentage of the TVOC concentration, as follows: GP-1 (83 percent), ONCT-1 (98 percent), ONCT-2 (91 percent), ONCT-3 (55 percent), and GP-3 (90 percent).

(c) - TVOC mass removed during the Second Quarter 2002 was based on the TCE/TVOC ratios given above and the following formula:

$$\frac{((\text{TCE concentration in ug/L}) \times (\text{gallons pumped}) \times (3.785\ \text{L/gal}) \times (1 \times 10^{-6}\ \text{g/ug}) \times (2.2 \times 10^{-3}\ \text{lb/g}))}{(\text{TCE concentration in ug/L} / \text{TVOC concentration in ug/L})}$$

(d) Total TVOC mass removed includes the OU2 wells and Well GP-3.

OU2	Operable Unit 2
gpm	gallons per minute
MG	Million Gallons
ug/L	micrograms per liter
lbs	pounds
--	Not Available or Not Applicable
TCE	Trichloroethene
TVOC	Total Volatile Organic Compound
L/gal	Liters per gallon
g/ug	grams per microgram
lb/g	pounds per gram

Table 4. OU2 Remedial Well Performance Data, First and Second Quarters 2002, Northrop Grumman Corporation Bethpage, New York.

Well Identification	Baseline Round Static Depth to Water 5/9/1997 [1] (ft bmp)	Last Two Water-Level Measurement Dates	Pumping Depth to Water (ft bmp)	Pumping Rate (gpm)	Drawdown (ft)	Specific Capacity [2] (gpm/ft)
ONCT-1	44.12	April 15, 2002	NM	1100	--	--
		July 8, 2002	74.25	1150	30.13	38.2
ONCT-2	50.15	April 15, 2002	70.20	590	20.05	29.4
		July 8, 2002	70.66	714	20.51	34.8
ONCT-3	49.13	April 15, 2002	69.75	692	20.62	33.6
		July 8, 2002	71.37	722	22.24	32.5
GP-1	55.75	April 15, 2002	95.00	1080	39.25	27.5
		July 8, 2002	95.00	1120	39.25	28.5

(1) Static depth to groundwater in Well GP-1 was measured on February 27, 2001 while the well pump was not in operation.

(2) Specific capacity is calculated by dividing the pumping rate by the drawdown.

OU2	Operable Unit 2
gpm	gallons per minute
ft bmp	feet below measuring point
ft	feet
gpm/ft	gallons per minute per foot of drawdown
NM	A depth to water measurement could not be made this round.
--	Not Available

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Table 5. Water-Level Measurement Data, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water July 8, 2002 (ft bmp)	Water-Level Elevation July 8, 2002 (ft msl)
Shallow Wells			
FW-03	124.30	NM[1]	NM[1]
N-9921	94.23	39.31	54.92
N-10597	109.85	48.93	60.92
N-10600	102.41	46.20	56.21
N-10631	103.47	45.59	57.88
N-10633	103.80	44.99	58.81
N-10634	101.20	46.57	54.63
N-10821	91.58	41.78	49.80
GM-15S	109.35	51.39	57.96
GM-16SR	115.86	55.10	60.76
GM-17SR	115.79	55.33	60.46
GM-18S	107.60	48.58	59.02
GM-19S	109.86	48.82	61.04
GM-21S	105.81	40.50	65.31
GM-78S	104.94	48.10	56.84
GM-79S (N-10628)	100.88	46.74	54.14
HN-40S	116.35	55.87	60.48
HN-42S	120.32	58.31	62.01
Intermediate Wells			
N-10624[1]	93.61	NM[2]	NM[2]
GM-15I	109.13	51.05	58.08
GM-16I	115.81	55.14	60.67
GM-17I	115.83	55.35	60.48
GM-18I	109.03	49.87	59.16
GM-19I	109.86	49.26	60.60
GM-20I	103.88	42.23	61.65
GM-21I	105.72	43.04	62.68
GM-74I	107.42	44.55	62.87
GM-78I	105.06	48.44	56.62
GM-79I	100.88	47.05	53.83
HN-24I [3]	125.80	62.83	62.97
HN-29I [3]	116.42	53.94	62.48
HN-40I [3]	115.91	55.34	60.57
HN-42I [3]	119.61	57.15	62.46

See notes on last page

Table 5. Water-Level Measurement Data, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Measuring Point Elevation (ft msl)	Depth to Water July 8, 2002 (ft bmp)	Water-Level Elevation July 8, 2002 (ft msl)
Deep Wells			
N-10627	93.70	39.44	54.26
GM-13D	113.97	53.46	60.51
GM-15D	109.66	53.93	55.73
GM-17D	115.68	57.31	58.37
GM-18D	108.88	52.58	56.30
GM-20D	103.92	44.79	59.13
GM-21D	105.66	49.65	56.01
GM-34D	71.19	21.83	49.36
GM-36D	91.63	42.50	49.13
GM-37D	97.26	46.31	50.95
GM-38D	91.75	45.89	45.86
GM-74D	107.43	51.79	55.64
GM-79D	101.25	48.59	52.66
Deep2 Wells			
GM-15D2	109.59	56.85	52.74
GM-33D2	106.85	57.12	49.73
GM-34D2	71.19	24.70	46.49
GM-35D2	96.28	48.24	48.04
GM-36D2	91.60	46.13	45.47
GM-37D2	97.17	47.23	49.94
GM-38D2	91.56	48.65	42.91
GM-70D2	99.58	48.46	51.12
GM-71D2	98.45	49.46	48.99
GM-73D2	104.62	53.44	51.18
GM-74D2	107.36	58.63	48.73
GM-75D2	93.63	42.96	50.67
GP-1[4)]	116.78	95.00	21.78
ONCT-1	104.10	74.25	29.85
ONCT-2	110.00	70.66	39.34
ONCT-3	108.70	71.37	37.33

1) Well FW-03 was not accessible for measurement this round.

2) Water-level measurements collected from Well N-10624 are considered anomalous due to silt in the well screen.

3) Dates of depth to water measurments are as follows: Wells HN-24I and HN-29I (July 9, 2002); and Wells HN-40I and HN-42I (June 13, 2002).

4) Water-levels were measured by inflating airline set at 120 ft bmp (gauge at wellhead) and subtracting the reading on the gauge from 120 to obtain the depth to water in feet.

ft msl feet relative to mean sea level

ft bmp below measuring point

NM Not Measured

Table 6. Comparison of Second Quarter 2002 Vertical Hydraulic Gradients to Model-Predicted Gradients, Northrop Grumman Corporation, Bethpage, New York.

Well Pairing Identification	Measuring Point Elevation (ft msl)	Well Screen Midpoint Elevation (ft msl)	7/8/2002 Water-Level Elevation (ft msl)	7/8/2002 Vertical Gradient (ft/ft) * 10^{-3}	Model-Predicted, OU2 Steady-State Vertical Gradient (ft/ft) * 10^{-3}	Increase Compared to Model-Predicted, Steady-State Vertical Gradient
Shallow-Intermediate Wells						
GM-15S	109.35	34.53	57.96			
GM-15I	109.13	9.29	58.08	-4.75	4.20	-8.95
GM-16SR	115.77	66.77	60.76			
GM-16I	115.81	-24.19	60.67	0.99	1.11	-0.12
GM-17SR	115.79	50.79	60.46			
GM-17I	115.83	5.83	60.48	-0.44	4.50	-4.95
GM-18S	107.60	42.60	59.02			
GM-18I	109.03	9.03	59.16	-4.17	1.78	-5.95
GM-19S	109.86	64.36	61.04			
GM-19I	109.86	-25.14	60.60	4.92	2.44	2.47
GM-21S	105.81	40.81	65.31			
GM-21I	105.72	-29.28	62.68	37.52	18.44	19.08
GM-78S	104.94	39.94	56.84			
GM-78I	105.06	5.56	56.62	6.40	8.73	-2.33
GM-79S	100.88	35.88	54.14			
GM-79I	101.09	-73.91	53.83	2.82	0.91	1.91
Intermediate-Deep Wells						
GM-15I	109.29	9.29	58.08			
GM-15D	109.66	-227.34	52.74	22.57	6.52	16.04
GM-17I	115.83	5.83	60.48			
GM-17D	115.68	-172.32	58.37	11.84	7.86	3.98
GM-18I	109.03	9.03	59.16			
GM-18D	108.88	-186.12	56.30	14.66	7.74	6.92
GM-20I	103.88	3.88	61.65			
GM-20D	103.92	-117.08	59.13	20.83	18.22	2.61
GM-21I	105.72	-29.28	62.68			
GM-21D	105.66	-177.34	56.01	45.05	43.97	1.08
GM-74I	107.42	8.42	62.87			
GM-74D	107.43	-192.57	55.64	35.97	20.17	15.80
GM-79I	101.09	-73.91	53.83			
GM-79D	101.25	-183.75	52.66	10.65	15.48	-4.83
Deep-Deep 2 Wells						
GM-18D	108.88	-186.12	56.30			
GM-33D2	106.85	-403.15	49.73	30.27	12.30	17.97
GM-15D	109.66	-227.34	55.73			
GM-15D2	109.59	-436.41	52.74	14.30	14.19	0.12

see footnotes on last page

Table 6. Comparison of Second Quarter 2002 Vertical Hydraulic Gradients to Model-Predicted Gradients, Northrop Grumman Corporation, Bethpage, New York.

Well Pairing Identification	Measuring Point Elevation (ft msl)	Well Screen Midpoint Elevation (ft msl)	7/8/2002 Water-Level Elevation (ft msl)	7/8/2002 Vertical Gradient (ft/ft) * 10^{-3}	Model-Predicted, OU2 Steady-State Vertical Gradient (ft/ft) * 10^{-3}	Increase Compared to Model-Predicted, Steady-State Vertical Gradient
Deep-Deep 2 Wells						
GM-34D	71.19	-242.81	49.36			
GM-34D2	71.19	-443.81	46.49	14.28	2.33	11.95
GM-36D	91.63	-117.37	49.13			
GM-36D2	91.60	-443.40	45.47	11.23	2.75	8.48
GM-37D	97.26	-154.74	50.95			
GM-37D2	97.17	-282.83	49.94	7.89	3.88	4.01
GM-38D	91.75	-238.25	45.86			
GM-38D2	91.56	-393.44	42.91	19.01	6.08	12.93
GM-74D	107.43	-192.57	55.64			
GM-74D2	107.36	-444.64	48.73	27.41	28.26	-0.84
N-10627	93.70	-198.80	54.26			
GM-75D2	93.63	-421.37	50.67	16.13	2.25	13.88

Vertical hydraulic gradients are calculated as follows:

$$\frac{(\text{Water-Level Elevation}_1 - \text{Water-Level Elevation}_2)}{(\text{Screen Midpoint Elevation}_1 - \text{Screen Midpoint Elevation}_2)}$$

A positive "+" gradient value indicates a downward hydraulic gradient.
A negative "-" gradient value indicates an upward hydraulic gradient.

ft msl feet relative to mean sea level
ft feet

1 indicates shallower well of pairing.
2 indicates deeper well of pairing.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	10631	10631	10634	10634	FW-03	FW-03
		SAMPLE ID:	N-10631	N-10631	N-10634	N10634	FW-03	FW-03
		DATE:	03/27/02	06/14/02	03/26/02	06/19/02	04/11/02	07/09/02
Chloromethane	5		<5	<5 J	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5 J
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5	<5 J	<5	<5	<5	<5
Methylene chloride	5		<5	<5 J	<5	<5	<5	<5
Acetone	50		<10	<10 J	<10	<10 J	<10	<10
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10 J	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		<5	**2 J**	<5	<5	**19**	**16**
Dibromochloromethane .	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	**0.5 J**
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	**19**	**12**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5	**8**
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	**2 J**
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	**12**
Vinyl Acetate	NE		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	**0.9 J**	<5
Total VOCs			0	**2**	0	0	**38.9**	**50.5**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
NA Not analyzed
[ ] Value exceeds associated SCG value.
R Unusable value
NE No SCG established
Bold value indicates a detection.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-14 GM 14 07/10/02	GM-15S GM-15S 03/28/02	GM-15S GM 15S 07/10/02	GM-16SR GM-16SR 03/27/02	GM-16SR GM 16SR 07/08/02	GM-17SR GM-17SR 05/03/02
Chloromethane	5		<10 J	<5	<5	<5	<5	<5
Bromomethane	5		<10	<5	<5	<5	<5	<5
Vinyl Chloride	2		<10 J	<2	<2	<2	<2	<2
Chloroethane	5		<10 J	<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		**10 J**	<10	<10	<10	<10	<10
Carbon disulfide	50		<10	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	**0.5 J**	<5	**1 J**	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		<5	**26**	**11**	<5	**6**	<5
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<5	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<10
2-Hexanone	50		<10 R	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	**3 J**	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Vinyl Acetate	NE		<10	<5	<5	<5	<5	<5 J
Freon-113 *	5		NA	<5	<5	<5	<5	<5
Total VOCs			**10**	**26**	**11.5**	0	**10**	0

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
NA Not analyzed
[ ] Value exceeds associated SCG value.
R Unusable value
NE No SCG established
Bold value indicates a detection.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	GM-17SR	GM-18S	GM-18S	GM-21S	GM-21S	GM-32S
		SAMPLE ID:	GM-17SR	GM-18S	GM-18S	GM-21S	GM-21S	GM-32S
		DATE:	06/18/02	03/27/02	06/14/02	03/29/02	06/17/02	04/12/02
Chloromethane	5		<5	<5	<5 J	<5	<5 J	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5	<5	<5 J	<5	<5 J	<5
Methylene chloride	5		<5	<5	<5 J	<5	<5 J	<5
Acetone	50		<10 J	<10	<10 J	<10	<10 J	<10
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	**2 J**
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10 J	<10	<10 J	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		<5	<5	**2 J**	<5	<5	**54**
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	<5	**0.5 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			0	0	**2**	0	0	**56.5**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
NA Not analyzed
[ ] Value exceeds associated SCG value.
R Unusable value
NE No SCG established
Bold value indicates a detection.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-32S GM-32S 07/08/02	GM-78S GM-78S 04/09/02	GM-78S GM-78S 06/18/02	HN-40S HN-40S 03/25/02	HN-40S HN-40S 06/13/02	HN-42S HN-42S 03/25/02
Chloromethane	5		<5	<5	<5	<5	<5 J	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5	<5	<5	<5	<5 J	<5
Methylene chloride	5		<5	<5	<5	<5	<5 J	<5
Acetone	50		<10	<10	<10 J	<10	<10 J	<10
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		**1 J**	**1 J**	**0.8 J**	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10 J	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		**86**	**7**	**8**	<5	<5	<5
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		**2 J**	<5	<5	<5	<5	**0.6 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			**89**	**8**	**8.8**	0	0	**0.6**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
NA Not analyzed
[ ] Value exceeds associated SCG value.
R Unusable value
NE No SCG established
Bold value indicates a detection.

Table 7. Concentrations of Volatile Organic Compounds Detected in Shallow Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	HN-42S HN-42S 06/13/02	MW-03R MW-3R 03/27/02	MW-03R MW-3R 06/14/02
Chloromethane	5		<5 J	<5	<5 J
Bromomethane	5		<5	<5	<5
Vinyl Chloride	2		<2	<2	<2
Chloroethane	5		<5 J	<5	<5 J
Methylene chloride	5		<5 J	<5	<5 J
Acetone	50		<10 J	<10	<10 J
Carbon disulfide	50		<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5
Chloroform	7		<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5
2-Butanone	50		<10 J	<10	<10 J
1,1,1-Trichloroethane	5		<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5
Bromodichloromethane	50		<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5
Trichloroethene	5		<5	<5	**2 J**
Dibromochloromethane	5		<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5
Bromoform	50		<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10
2-Hexanone	50		<10	<10	<10
Tetrachloroethene	5		<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5
Toluene	5		<5	<5	<5
Chlorobenzene	5		<5	<5	<5
Ethylbenzene	5		<5	<5	<5
Styrene	5		<5	<5	<5
Xylene (total)	5		<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5
Freon-113 *	5		<5	<5	<5
Total VOCs			0	0	**2**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
NA Not analyzed
[ ] Value exceeds associated SCG value.
R Unusable value
NE No SCG established
Bold value indicates a detection.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-15I GM-15I 03/28/02	GM-15I GM 15I 07/10/02	GM-16I GM-16I 03/26/02	GM-16I GM 16I 07/08/02	GM-17I GM-17I 04/02/02	GM-17I GM-17I 06/18/02
Chloromethane	5		<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5	<5	<5	<5	<5 J	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		<10	<10	<10	<10	<10	<10 J
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	**2 J**	**1 J**	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	**5 J**	**3 J**	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	**3 J**	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		**9**	**6**	**43**	**17**	<5	<5
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	**13**	**3 J**	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	**4 J**	**0.6 J**	<5	<5
Total VOCs			**9**	**6**	**70**	**24.6**	0	0

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	GM-18I	GM-18I	GM-20I	GM-20I	GM-21I	GM-21I
		SAMPLE ID:	GM-18I	GM-18I	GM-20I	GM-20I	GM-21I	GM-21I
		DATE:	04/02/02	06/21/02	04/16/02	06/25/02	03/29/02	06/17/02
Chloromethane	5		<5	<5	<5	<5 J	<5	<5 J
Bromomethane	5		<5	<5	<5 J	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5 J	<5	<5	<5	<5	<5 J
Methylene chloride	5		<5	<5	<5	<5	<5	<5 J
Acetone	50		<10	<10 J	<10 J	<10 J	<10	<10 J
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10 J	<10 J	<10	<10 J
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		<5	<5	**0.7 J**	**0.9 J**	<5	<5
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10 J	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5	**0.3 J**
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5 J	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			0	0	**0.7**	**0.9**	0	**0.3**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	GM-74I	GM-74I	GM-78I	GM-78I	GM-79I	GM-79I
		SAMPLE ID:	GM-74I	GM-74I	GM-78I	GM-78I	GM-79I	GM-79I
		DATE:	04/04/02	06/19/02	04/09/02	06/18/02	04/09/02	07/12/02
Chloromethane	5		<5	<5	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5	<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		<10	<10 J	<10	<10 J	<10	<10
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		<5	<5	**5**	**4 J**	**1 J**	**1 J**
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10 J	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			0	0	**5**	**4**	**1**	**1**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	HN-24I HN-24I 04/11/02	HN-24I HN-24I 07/09/02	HN-29I HN-29I 04/11/02	HN-29I HN-29I 07/09/02	HN-40I HN-40I 03/25/02	HN-40I HN-40I 06/13/02
Chloromethane	5		<10	<5	<5	<5	<5	<5 J
Bromomethane	5		<10	<5	<5	<5	<5	<5
Vinyl Chloride	2		<4	<2	<2	<2	<2	<2
Chloroethane	5		<10	<5	<5	<5	<5	<5 J
Methylene chloride	5		<10	<5	<5	<5	<5	<5 J
Acetone	50		<20	<10	<10	<10	<10	<10 J
Carbon disulfide	50		<10	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		**15**	**8**	<5	<5	<5	<5
1,1-Dichloroethane	5		**4 J**	**2 J**	<5	**0.6 J**	<5	<5
cis-1,2-Dichloroethene	5		**8 J**	**3 J**	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<10	<5	<5	<5	<5	<5
Chloroform	7		<10	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<10	<5	<5	<5	<5	<5
2-Butanone	50		<20	<10	<10	<10	<10	<10 J
1,1,1-Trichloroethane	5		**11**	**6**	<5	<5	<5	<5
Carbon tetrachloride	5		<10	<5	<5	<5	<5	<5
Bromodichloromethane	50		<10	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<10	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<10	<5	<5	<5	<5	<5
Trichloroethene	5		**210**	**160**	**1 J**	**1 J**	**5**	**6**
Dibromochloromethane	5		<10	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<10	<5	<5	<5	<5	<5
Benzene	0.7		<1	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<10	<5	<5	<5	<5	<5
Bromoform	50		<10	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<20	<10	<10	<10	<10	<10
2-Hexanone	50		<20	<10	<10	<10	<10	<10
Tetrachloroethene	5		**7 J**	**3 J**	<5	**0.5 J**	**2 J**	**2 J**
1,1,2,2-Tetrachloroethane	5		<10	<5	<5	<5	<5	<5
Toluene	5		<10	<5	<5	<5	<5	<5
Chlorobenzene	5		<10	<5	<5	<5	<5	<5
Ethylbenzene	5		<10	<5	<5	<5	<5	<5
Styrene	5		<10	<5	<5	<5	<5	<5
Xylene (total)	5		<10	<5	<5	<5	<5	<5
Vinyl Acetate	NE		<10	<5	<5	<5	<5	<5
Freon-113 *	5		**45**	**8**	<5	<5	<5	<5
Total VOCs			**300**	**190**	1	**2.1**	7	**8**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	10627	10627	GM-13D	GM-13D	GM-15D	GM-15D
		SAMPLE ID:	N-10627	10627	GM-13D	GM 13D	GM-15D	GM 15D
		DATE:	04/10/02	07/11/02	04/15/02	07/08/02	03/28/02	07/10/02
Chloromethane	5		<5	<5	<50	<50	<5	<5
Bromomethane	5		<5	<5	<50 J	<50	<5	<5
Vinyl Chloride	2		<2	<2	<20	<20	<2	<2
Chloroethane	5		<5	<5	<50 J	<50	<5	<5
Methylene chloride	5		<5	<5	<50	<50	<5	<5
Acetone	50		<10	<10	<100 J	<100	<10	<10
Carbon disulfide	50		<5	<5	<50	<50	<5	<5
1,1-Dichloroethene	5		<5	<5	**100**	**110**	**6**	**3 J**
1,1-Dichloroethane	5		<5	<5	**69**	**54**	**11**	**7**
cis-1,2-Dichloroethene	5		<5	<5	**210**	**170**	**0.5 J**	**0.9 J**
trans-1,2-Dichloroethene	5		<5	<5	<50	<50	<5	<5
Chloroform	7		<5	<5	<50	<50	<5	**0.5 J**
1,2-Dichloroethane	5		<5	<5	<50	<50	<5	<5
2-Butanone	50		<10	<10	<100 J	<100	<10	<10
1,1,1-Trichloroethane	5		<5	<5	**120**	**110**	**4 J**	**2 J**
Carbon tetrachloride	5		<5	<5	<50	<50	<5	<5
Bromodichloromethane	50		<5	<5	<50	<50	<5	<5
1,2-Dichloropropane	5		<5	<5	<50	<50	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<50	<50	<5	<5
Trichloroethene	5		**4 J**	**4 J**	**290**	**300**	**10**	**8**
Dibromochloromethane	5		<5	<5	<50	<50	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<50	<50	<5	<5
Benzene	0.7		<0.7	<0.7	<7	<7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<50	<50	<5	<5
Bromoform	50		<5	<5	<50	<50	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<100	<100	<10	<10
2-Hexanone	50		<10	<10	<100 J	<100	<10	<10
Tetrachloroethene	5		**0.3 J**	<5	**890**	**810**	**6**	**5 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<50	<50	<5	<5
Toluene	5		<5	<5	<50	<50	**0.6 J**	<5
Chlorobenzene	5		<5	<5	<50	<50	<5	<5
Ethylbenzene	5		<5	<5	<50	<50	<5	<5
Styrene	5		<5	<5	<50	<50	<5	<5
Xylene (total)	5		<5	<5	<50	<50	<5	<5
Vinyl Acetate	NE		<5	<5	<50	<50	<5	<5
Freon-113 *	5		<5	<5	<50	**14 J**	<5	**0.5 J**
Total VOCs			**4.3**	**4**	**1,679**	**1,568**	**38.1**	**26.9**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-17D GM-17D 04/02/02	GM-17D GM-17D 06/18/02	GM-18D GM-18D 04/02/02	GM-18D GM-18D 06/21/02	GM-20D GM-20D 04/16/02	GM-20D GM-20D 06/25/02
Chloromethane	5		<5	<5	<5	<5	<5	<5 J
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2	<2
Chloroethane	5		<5 J	<5	<5 J	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		<10	<10 J	<10	<10 J	<10 J	<10 J
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<5
Chloroform	7		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10 J
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<5
Bromodichloromethane	50		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Trichloroethene	5		<5	<5	**0.9 J**	**3 J**	<5	<5
Dibromochloromethane	5		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<5
Bromoform	50		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<10 J
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	<5	<5
Chlorobenzene	5		<5	<5	<5	<5	<5	<5
Ethylbenzene	5		<5	<5	<5	<5	<5	<5
Styrene	5		<5	<5	<5	<5	<5	<5
Xylene (total)	5		<5	<5	<5	<5	<5	<5
Vinyl Acetate	NE		<5	<5	<5	<5	<5	<5
Freon-113 *	5		<5	<5	<5	<5	<5 J	<5
Total VOCs			0	0	**0.9**	3	0	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample.
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 9. Concentrations of Volatile Organic Compounds Detected in Deep Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-37D GM-37D 04/25/02	GM-37D GM 37D 07/02/02	GM-38D GM-38D 04/18/02	GM-38D GM 38D 07/01/02	GM-38D REP-3 07/01/02
Chloromethane	5		<5	<5	<25	<50	<50
Bromomethane	5		<5 J	<5	<25	<50	<50
Vinyl Chloride	2		<2	<2	<10	<20	<20
Chloroethane	5		<5	<5	<25	<50	<50
Methylene chloride	5		<5	<5	<25	<50	<50
Acetone	50		<10 J	<10	<50 J	<100	<100
Carbon disulfide	50		<5	<5	<25	<50	<50
1,1-Dichloroethene	5		**3 J**	**3 J**	<25	**6 J**	**7 J**
1,1-Dichloroethane	5		**6**	**5 J**	<25	<50	<50
cis-1,2-Dichloroethene	5		<5	<5	<25	<50	<50
trans-1,2-Dichloroethene	5		<5	<5	<25	<50	<50
Chloroform	7		**1 J**	**1 J**	<25	<50	<50
1,2-Dichloroethane	5		<5	<5	<25	<50	<50
2-Butanone	50		<10	<10	<50	<100	<100
1,1,1-Trichloroethane	5		**3 J**	**3 J**	<25	<50	<50
Carbon tetrachloride	5		<5	<5	<25	<50	<50
Bromodichloromethane	50		<5	<5	<25	<50	<50
1,2-Dichloropropane	5		<5	<5	<25	<50	<50
cis-1,3-Dichloropropene	5		<5	<5	<25	<50	<50
Trichloroethene	5		<5	<5	**670**	**720**	**800**
Dibromochloromethane	5		<5	<5	<25	<50	<50
1,1,2-Trichloroethane	5		<5	<5	<25	<50	<50
Benzene	0.7		<0.7	<0.7	<4	<7	<7
trans-1,3-Dichloropropene	5		<5	<5	<25	<50	<50
Bromoform	50		<5	<5	<25	<50	<50
4-Methyl-2-pentanone	50		<10	<10	<50	<100	<100
2-Hexanone	50		<10	<10	<50	<100	<100
Tetrachloroethene	5		**1 J**	**1 J**	<25	<50	<50
1,1,2,2-Tetrachloroethane	5		<5	<5	<25	<50	<50
Toluene	5		<5	<5	<25	<50	<50
Chlorobenzene	5		<5	<5	<25	<50	<50
Ethylbenzene	5		<5	<5	<25	<50	<50
Styrene	5		<5	<5	<25	<50	<50
Xylene (total)	5		<5	<5	<25	<50	<50
Vinyl Acetate	NE		<5 J	<5	<25	<50	<50
Freon-113 *	5		<5	<5	<25 J	<50	<50
Total VOCs			14	13	670	726	807

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample.
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

ARCADIS

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-15D2 GM-15D2 03/28/02	GM-15D2 GM 15D2 07/10/02	GM-33D2 GM 33D2 04/03/02	GM-33D2 GM-33D2 06/20/02	GM-33D2 REP-2 06/20/02
Chloromethane	5		<5	<5	**0.7 J**	<10 J	<5
Bromomethane	5		<5	<5	<10	<10	<5
Vinyl Chloride	2		<2	<2	<4	<4	<2
Chloroethane	5		<5	<5	<10	<10	<5
Methylene chloride	5		<5	<5	<10	<10	<5
Acetone	50		<10	<10	<20	<20 J	<10 J
Carbon disulfide	50		<5	<5	<10	<10	<5
1,1-Dichloroethene	5		**1 J**	**0.8 J**	**0.5 J**	<10	<5
1,1-Dichloroethane	5		<5	<5	<10	<10	<5
cis-1,2-Dichloroethene	5		<5	**0.4 J**	**1 J**	**1 J**	**1 J**
trans-1,2-Dichloroethene	5		<5	<5	<10	<10	<5
Chloroform	7		<5	<5	<10	<10	<5
1,2-Dichloroethane	5		<5	<5	<10	<10	<5
2-Butanone	50		<10	<10	<20	<20	<10
1,1,1-Trichloroethane	5		<5	<5	<10	<10	<5
Carbon tetrachloride	5		<5	<5	<10	<10	<5
Bromodichloromethane	50		<5	<5	<10	<10	<5
1,2-Dichloropropane	5		<5	<5	<10	<10	<5
cis-1,3-Dichloropropene	5		<5	<5	<10	<10	<5
Trichloroethene	5		17	12	200	120	170
Dibromochloromethane	5		<5	<5	<10	<10	<5
1,1,2-Trichloroethane	5		<5	<5	<10	<10	<5
Benzene	0.7		<0.7	<0.7	<1	<1	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<10	<10	<5
Bromoform	50		<5	<5	<10	<10	<5
4-Methyl-2-pentanone	50		<10	<10	<20 J	<20	<10
2-Hexanone	50		<10	<10	<20	<20	<10
Tetrachloroethene	5		15	9	**9 J**	**5 J**	9
1,1,2,2-Tetrachloroethane	5		<5	<5	<10	<10	<5
Toluene	5		<5	<5	<10	<10	<5
Chlorobenzene	5		<5	<5	<10	<10	<5
Ethylbenzene	5		<5	<5	<10	<10	<5
Styrene	5		<5	<5	<10	<10	<5
Xylene (total)	5		<5	<5	<10	<10	<5
Vinyl Acetate	NE		<5	<5	<10	<10	<5
Freon-113 *	5		**1 J**	**0.9 J**	6 J	**2 J**	**5 J**
Total VOCs			**34**	**23.1**	**217.2**	**128**	**185**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
B Constituent detected in associated blank sample.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-34D2 GM 34D2 04/03/02	GM-34D2 GM-34D2 06/20/02	GM-35D2 GM-35D2 04/26/02	GM-35D2 GM 35D2 07/08/02	GM-36D2 GM-36D2 04/23/02	GM-36D2 GM-36D2 07/09/02
Chloromethane	5		**0.9 J**	<10	<20	<20	<5	<5
Bromomethane	5		<5	<10	<20 J	<20	<5	<5 J
Vinyl Chloride	2		<2	<4	<8	<8	<2 J	<2
Chloroethane	5		<5	<10	<20	<20	<5 J	<5
Methylene chloride	5		<5	<10	<20	<20	<5	<5
Acetone	50		<10	<20 J	<40	<40	<10 J	<10
Carbon disulfide	50		<5	<10	<20	<20	<5	<5
1,1-Dichloroethene	5		**5 J**	**9 J**	<20	<20	<5	<5
1,1-Dichloroethane	5		**0.6 J**	<10	<20	<20	<5	<5
cis-1,2-Dichloroethene	5		**2 J**	**3 J**	**4 J**	**5 J**	<5	<5
trans-1,2-Dichloroethene	5		<5	<10	<20	<20	<5	<5
Chloroform	7		**0.2 J**	<10	<20	<20	<5	<5
1,2-Dichloroethane	5		<5	<10	<20	<20	<5	<5
2-Butanone	50		<10	<20	<40	<40	<10 J	<10
1,1,1-Trichloroethane	5		**0.9 J**	<10	<20	<20	<5	<5
Carbon tetrachloride	5		<5	<10	<20	<20	<5	<5
Bromodichloromethane	50		<5	<10	<20	<20	<5	<5
1,2-Dichloropropane	5		<5	<10	<20	<20	<5	<5
cis-1,3-Dichloropropene	5		<5	<10	<20	<20	<5	<5
Trichloroethene	5		**100**	**230**	**280**	**430**	<5	<5
Dibromochloromethane	5		<5	<10	<20	<20	<5	<5
1,1,2-Trichloroethane	5		<5	<10	<20	<20	<5	<5
Benzene	0.7		<0.7	<1	<3	<3	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<10	<20	<20	<5	<5
Bromoform	50		<5	<10	<20	<20	<5	<5
4-Methyl-2-pentanone	50		<10 J	<20	<40	<40	<10	<10
2-Hexanone	50		<10	<20	<40	<40	<10 J	<10
Tetrachloroethene	5		**9**	**10 J**	**4 J**	**5 J**	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<10	<20	<20	<5	<5
Toluene	5		<5	<10	<20	<20	<5	<5
Chlorobenzene	5		<5	<10	<20	<20	<5	<5
Ethylbenzene	5		<5	<10	<20	<20	<5	<5
Styrene	5		<5	<10	<20	<20	<5	<5
Xylene (total)	5		**0.2 J**	<10	<20	<20	<5	<5
Vinyl Acetate	NE		<5	<10	<20 J	<20	<5 J	<5
Freon-113 *	5		**10**	**19**	**11 J**	**11 J**	<5	<5
Total VOCs			**128.8**	**271**	**299**	**451**	0	0

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
B Constituent detected in associated blank sample.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-37D2 GM-37D2 04/26/02	GM-37D2 GM 37D2 07/02/02	GM-38D2 GM-38D2 04/18/02	GM-38D2 GM 38D2 07/01/02	GM-70D2 GM-70D2 04/17/02	GM-70D2 GM-70D2 06/26/02
Chloromethane	5		<5	<5	<50	<50	<5	<5 J
Bromomethane	5		<5 J	<5	<50 J	<50	<5 J	<5
Vinyl Chloride	2		<2	<2	<20	<20	<2	<2
Chloroethane	5		<5	<5	<50	<50	<5	<5
Methylene chloride	5		<5	<5	<50	<50	<5	<5
Acetone	50		<10	<10	<100 J	<100	<10 J	<10 J
Carbon disulfide	50		<5	<5	<50	<50	<5	<5
1,1-Dichloroethene	5		**3 J**	**3 J**	<50	<50	<5	<5
1,1-Dichloroethane	5		**12**	**10**	<50	<50	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	**7 J**	**12 J**	**2 J**	**2 J**
trans-1,2-Dichloroethene	5		<5	<5	<50	<50	<5	<5
Chloroform	**7**		**1 J**	**0.9 J**	<50	<50	<5	<5
1,2-Dichloroethane	5		<5	<5	<50	<50	<5	<5
2-Butanone	50		<10	<10	<100 J	<100	<10 J	<10 J
1,1,1-Trichloroethane	5		**3 J**	**3 J**	<50	<50	<5	<5
Carbon tetrachloride	5		<5	<5	<50	<50	<5	<5
Bromodichloromethane	50		<5	<5	<50	<50	<5	<5
1,2-Dichloropropane	5		<5	<5	<50	<50	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<50	<50	<5	<5
Trichloroethene	5		**3 J**	<5	**1200**	**2000**	**76**	**100**
Dibromochloromethane	5		<5	<5	<50	<50	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<50	<50	<5	<5
Benzene	0.7		<0.7	<0.7	<7	<7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<50	<50	<5	<5
Bromoform	50		<5	<5	<50	<50	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<100	<100	<10	<10 J
2-Hexanone	50		<10	<10	<100	<100	<10	<10
Tetrachloroethene	5		<5	**0.4 J**	<50	<50	**4 J**	**5 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<50	<50	<5	<5
Toluene	5		<5	<5	<50	<50	**0.9 J**	**0.8 J**
Chlorobenzene	5		<5	<5	<50	<50	<5	<5
Ethylbenzene	5		<5	<5	<50	<50	<5	<5
Styrene	5		<5	<5	<50	<50	<5	<5
Xylene (total)	5		<5	<5	<50	<50	<5	<5
Vinyl Acetate	NE		<5 J	<5	<50 J	<50	<5 J	<5
Freon-113 *	5		<5	<5	<50	<50	<5	**0.8 J**
Total VOCs			**22**	**17.3**	**1,207**	**2,012**	**82.9**	**109**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
B Constituent detected in associated blank sample.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-71D2 GM-71D2 04/25/02	GM-71D2 GM-71D2 06/26/02	GM-73D2 GM-73D2 04/04/02	GM-73D2 GM-73D2 06/19/02	GM-73D2 REP1 06/19/02	GM-74D2 GM-74D2 04/04/02
Chloromethane	5		<5	<5 J	<25	<25	<50	<5
Bromomethane	5		<5 J	<5	<25	<25	<50	<5
Vinyl Chloride	2		<2	<2	<10	<10	<20	<2
Chloroethane	5		<5	<5	<25	<25	<50	<5
Methylene chloride	5		<5	<5	<25	<25	<50	<5
Acetone	50		<10 J	<10 J	<50	<50 J	<100 J	<10
Carbon disulfide	50		<5	<5	<25	<25	<50	<5
1,1-Dichloroethene	5		<5	<5	**2 J**	<25	<50	<5
1,1-Dichloroethane	5		<5	**0.7 J**	<25	<25	<50	<5
cis-1,2-Dichloroethene	5		<5	<5	**2 J**	**3 J**	<50	<5
trans-1,2-Dichloroethene	5		<5	<5	<25	<25	<50	<5
Chloroform	7		**1 J**	**1 J**	<25	<25	<50	<5
1,2-Dichloroethane	5		<5	<5	<25	<25	<50	<5
2-Butanone	50		<10	<10 J	<50	<50	<100	<10
1,1,1-Trichloroethane	5		**0.6 J**	<5	<25	<25	<50	<5
Carbon tetrachloride	5		**2 J**	**1 J**	<25	<25	<50	<5
Bromodichloromethane	50		<5	<5	<25	<25	<50	<5
1,2-Dichloropropane	5		<5	<5	<25	<25	<50	<5
cis-1,3-Dichloropropene	5		<5	<5	<25	<25	<50	<5
Trichloroethene	5		**4 J**	**4 J**	**830**	**840**	**1100**	**2 J**
Dibromochloromethane	5		<5	<5	<25	<25	<50	<5
1,1,2-Trichloroethane	5		<5	<5	<25	<25	<50	<5
Benzene	0.7		<0.7	<0.7	<4	<4	<7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<25	<25	<50	<5
Bromoform	50		<5	<5	<25	<25	<50	<5
4-Methyl-2-pentanone	50		<10	<10 J	<50 J	<50	<100	<10 J
2-Hexanone	50		<10	<10	<50	<50	<100	<10
Tetrachloroethene	5		<5	<5	**2 J**	<25	<50	**0.6 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<25	<25	<50	<5
Toluene	5		<5	<5	<25	<25	<50	<5
Chlorobenzene	5		<5	<5	<25	<25	<50	<5
Ethylbenzene	5		<5	<5	<25	<25	<50	<5
Styrene	5		<5	<5	<25	<25	<50	<5
Xylene (total)	5		<5	<5	<25	<25	<50	<5
Vinyl Acetate	NE		<5 J	<5	<25	<25	<50	<5
Freon-113 *	5		<5	<5	**1 J**	<25	<50	<5
Total VOCs			**7.6**	**6.7**	**837**	**843**	**1,100**	**2.6**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
B Constituent detected in associated blank sample.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-74D2 GM-74D2 06/19/02	GM-75D2 GM-75D2 04/10/02	GM-75D2 GM 75D2 07/11/02	GM-75D2 REP 7/11/02 07/11/2002	GP-1 GP-1 04/15/02
Chloromethane	5		<5	<50	<50	<50	<25
Bromomethane	5		<5	<50	<50	<50	<25 J
Vinyl Chloride	2		<2	<20	<20	<20	<10
Chloroethane	5		<5	<50	<50	<50	<25
Methylene chloride	5		<5	<50	<50	<50	<25
Acetone	50		<10 J	<100	<100	<100	<50 J
Carbon disulfide	50		<5	<50	<50	<50	<25
1,1-Dichloroethene	5		<5	**41 J**	**39 J**	**38 J**	<25
1,1-Dichloroethane	5		<5	<50	<50	<50	<25
cis-1,2-Dichloroethene	5		<5	<50	<50	<50	**9 J**
trans-1,2-Dichloroethene	5		<5	<50	<50	<50	<25
Chloroform	7		<5	<50	<50	<50	<25
1,2-Dichloroethane	5		<5	<50	<50	<50	<25
2-Butanone	50		<10	<100	<100	<100	<50 J
1,1,1-Trichloroethane	5		<5	<50	<50	<50	<25
Carbon tetrachloride	5		<5	<50	<50	<50	<25
Bromodichloromethane	50		<5	<50	<50	<50	<25
1,2-Dichloropropane	5		<5	<50	<50	<50	<25
cis-1,3-Dichloropropene	5		<5	<50	<50	<50	<25
Trichloroethene	5		**4 J**	**1000**	**1400**	**1200**	**440**
Dibromochloromethane	5		<5	<50	<50	<50	<25
1,1,2-Trichloroethane	5		<5	<50	<50	<50	<25
Benzene	0.7		<0.7	<7	<7	<7	<4
trans-1,3-Dichloropropene	5		<5	<50	<50	<50	<25
Bromoform	50		<5	<50	<50	<50	<25
4-Methyl-2-pentanone	50		<10	<100	<100	<100	<50
2-Hexanone	50		<10	<100	<100	<100	<50 J
Tetrachloroethene	5		**1 J**	**4 J**	<50	<50	**69**
1,1,2,2-Tetrachloroethane	5		<5	<50	<50	<50	<25
Toluene	5		<5	<50	<50	<50	<25
Chlorobenzene	5		<5	<50	<50	<50	<25
Ethylbenzene	5		<5	<50	<50	<50	<25
Styrene	5		<5	<50	<50	<50	<25
Xylene (total)	5		<5	<50	<50	<50	<25
Vinyl Acetate	NE		<5	<50	<50	<50	<25
Freon-113 *	5		<5	<50	<50	7 J	**10 J**
Total VOCs			**5**	**1,045**	**1,439**	**1,245**	**528**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
B Constituent detected in associated blank sample.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GP-1 GP-1 07/08/02	GP-3 GP-3 04/15/02	GP-3 GP-3 07/08/02	GP-1/3 INFLUENT GP 1/3 INF 04/15/02	GP-1/3 INFLUENT GP 1/3 INF 07/08/02
Chloromethane	5		<25	<100	<50	<50	<50
Bromomethane	5		<25	<100 J	<50	<50 J	<50
Vinyl Chloride	2		<10	<40	**57**	<20	**16 J**
Chloroethane	5		<25	<100	<50	<50 J	<50
Methylene chloride	5		<25	<100	<50	<50	<50
Acetone	50		<50	<200 J	<100	<100 J	<100
Carbon disulfide	50		<25	<100	<50	<50	<50
1,1-Dichloroethene	5		**6 J**	<100	**18 J**	**9 J**	**10 J**
1,1-Dichloroethane	5		<25	<100	<50	<50	<50
cis-1,2-Dichloroethene	5		**9 J**	**12 J**	**10 J**	**10 J**	**10 J**
trans-1,2-Dichloroethene	5		<25	<100	<50	<50	<50
Chloroform	7		<25	<100	<50	<50	<50
1,2-Dichloroethane	5		<25	<100	<50	<50	<50
2-Butanone	50		<50	<200 J	<100	<100 J	**25 JB**
1,1,1-Trichloroethane	5		<25	<100	<50	<50	<50
Carbon tetrachloride	5		<25	<100	<50	<50	<50
Bromodichloromethane	50		<25	<100	<50	<50	<50
1,2-Dichloropropane	5		<25	<100	<50	<50	<50
cis-1,3-Dichloropropene	5		<25	<100	<50	<50	<50
Trichloroethene	5		**510**	**2100**	**1800 D**	**1100**	**1400**
Dibromochloromethane	5		<25	<100	<50	<50	<50
1,1,2-Trichloroethane	5		<25	<100	<50	<50	<50
Benzene	0.7		<4	<14	<7	<7	<7
trans-1,3-Dichloropropene	5		<25	<100	<50	<50	<50
Bromoform	50		<25	<100	<50	<50	<50
4-Methyl-2-pentanone	50		<50	<200	<100	<100	<100
2-Hexanone	50		<50	<200 J	<100	<100 J	<100
Tetrachloroethene	5		**80**	**59 J**	**88**	**81**	**98**
1,1,2,2-Tetrachloroethane	5		<25	<100	<50	<50	<50
Toluene	5		<25	<100	<50	<50	<50
Chlorobenzene	5		<25	<100	<50	<50	<50
Ethylbenzene	5		<25	<100	<50	<50	<50
Styrene	5		<25	<100	<50	<50	<50
Xylene (total)	5		<25	<100	<50	<50	<50
Vinyl Acetate	NE		<25	<100	<50	<50	<50
Freon-113 *	5		**10 J**	**26 J**	**36 J**	**18 J**	**18 J**
Total VOCs			**615**	**2,197**	**2,009**	**1,218**	**1,577**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
B Constituent detected in associated blank sample.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	ONCT INFLUENT ONCTINF 04/15/02	ONCT INFLUENT ONCTINF 07/08/02	ONCT EFFLUENT ONCTEFF 04/15/02
Chloromethane	5		<25	<25	<5
Bromomethane	5		<25 J	<25	<5 J
Vinyl Chloride	2		<10	<10	<2
Chloroethane	5		<25	<25	<5
Methylene chloride	5		<25	<25	**0.6 J**
Acetone	50		<50 J	<50	<10 J
Carbon disulfide	50		<25	<25	<5
1,1-Dichloroethene	5		<25	<25	<5
1,1-Dichloroethane	5		<25	<25	<5
cis-1,2-Dichloroethene	5		<25	**4 J**	<5
trans-1,2-Dichloroethene	5		<25	<25	<5
Chloroform	7		<25	<25	<5
1,2-Dichloroethane	5		<25	<25	<5
2-Butanone	50		<50 J	<50	<10 J
1,1,1-Trichloroethane	5		<25	<25	<5
Carbon tetrachloride	5		<25	<25	<5
Bromodichloromethane	50		<25	<25	<5
1,2-Dichloropropane	5		<25	<25	<5
cis-1,3-Dichloropropene	5		<25	<25	<5
Trichloroethene	5		**500 J**	**710**	<5
Dibromochloromethane	5		<25	<25	<5
1,1,2-Trichloroethane	5		<25	<25	<5
Benzene	0.7		<4	<4	<0.7
trans-1,3-Dichloropropene	5		<25	<25	<5
Bromoform	50		<25	<25	<5
4-Methyl-2-pentanone	50		<50	<50	<10
2-Hexanone	50		<50 J	<50	<10 J
Tetrachloroethene	5		**8 J**	**9 J**	<5
1,1,2,2-Tetrachloroethane	5		<25	<25	<5
Toluene	5		<25	<25	<5
Chlorobenzene	5		<25	<25	<5
Ethylbenzene	5		<25	<25	<5
Styrene	5		<25	<25	<5
Xylene (total)	5		<25	<25	<5
Vinyl Acetate	NE		<25	<25	<5
Freon-113 *	5		<25 J	**4 J**	<5
Total VOCs			**508**	**727**	**0.6**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
B Constituent detected in associated blank sample.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 10. Concentrations of Volatile Organic Compounds Detected in Deep2 Wells, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	ONCT EFFLUENT ONCTEFF 07/08/02
Chloromethane	5		<5
Bromomethane	5		<5
Vinyl Chloride	2		<2
Chloroethane	5		<5
Methylene chloride	5		<5
Acetone	50		<10
Carbon disulfide	50		<5
1,1-Dichloroethene	5		<5
1,1-Dichloroethane	5		<5
cis-1,2-Dichloroethene	5		<5
trans-1,2-Dichloroethene	5		<5
Chloroform	7		<5
1,2-Dichloroethane	5		<5
2-Butanone	50		<10
1,1,1-Trichloroethane	5		<5
Carbon tetrachloride	5		<5
Bromodichloromethane	50		<5
1,2-Dichloropropane	5		<5
cis-1,3-Dichloropropene	5		<5
Trichloroethene	5		<5
Dibromochloromethane	5		<5
1,1,2-Trichloroethane	5		<5
Benzene	0.7		<0.7
trans-1,3-Dichloropropene	5		<5
Bromoform	50		<5
4-Methyl-2-pentanone	50		<10
2-Hexanone	50		<10
Tetrachloroethene	5		<5
1,1,2,2-Tetrachloroethane	5		<5
Toluene	5		<5
Chlorobenzene	5		<5
Ethylbenzene	5		<5
Styrene	5		<5
Xylene (total)	5		<5
Vinyl Acetate	NE		<5
Freon-113 *	5		<5
Total VOCs			0

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
D Constituent identified at a secondary dilution.
B Constituent detected in associated blank sample.
NYSDEC New York State Department of Environmental Conservation
(1) Standards, Criteria, and Guidance (SCG) values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.
REP Replicate sample
[ ] Value exceeds associated SCG value.
NE No SCG established
Bold value indicates a detection.

Table 11. Concentrations of Tentatively Identified Compounds (TICs) Detected in Groundwater and Blank Samples, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

WELL/BLANK SAMPLE IDENTIFICATION	SAMPLE ID	DATE	Tentatively Identified Compounds (Units in ug/L)				
			Unknown Siloxane	Octamethlycyclotetrasiloxane	Unknown	Unknown	Unknown Alkane
FW-03	FW-03	07/09/02	--	--	25 J	--	--
GM-14	GM 14	07/10/02	180 J	10 JN	--	--	--
GM-17I	GM-17I	06/18/02	--	--	10 J	--	--
GM-17SR	GM-17SR	06/18/02	--	--	6 J	--	--
GM-18I	GM-18I	06/21/02	--	--	130 J	--	--
GM-20D	GM-20D	06/25/02	--	--	5 J	12 J	--
GM-20I	GM-20I	06/25/02	--	--	6 J	--	--
GM-34D	GM-34D	06/20/02	--	--	21 J	20 J	--
GM-37D	GM 37D	07/02/02	--	--	18 J	13 J	--
GM-37D2	GM 37D2	07/02/02	--	--	23 J	8 J	--
GM-38D	GM 38D	07/01/02	--	--	280 J	--	--
GM-70D2	GM-70D2	06/26/02	--	--	8 J	--	--
GM-71D2	GM-71D2	06/26/02	--	--	12 J	--	--
GM-74D	GM-74D	06/19/02	--	--	81 J	--	--
GM-78S	GM-78S	06/18/02	--	--	10 J	--	--
HN-29I	HN-29I	07/09/02	--	--	--	--	8 J
HN-40I	HN-40I	06/13/02	--	--	11 J	--	--
GM-33D2	REP-2	06/20/02	--	--	10 J	--	--
GM-38D	REP-3	07/01/02	--	--	130 J	--	--
TRIP BLANK	TB 6/21/02	06/21/02	--	--	7 J	--	--
TRIP BLANK	TB062502	06/25/02	--	--	6 J	--	--
TRIP BLANK	TB062602	06/26/02	--	--	12 J	14 J	--
TRIP BLANK	TB070102	07/01/02	--	--	13 J	9 J	--
TRIP BLANK	TB070202	07/02/02	--	--	20 J	--	--
WATER EQ.BLANK	FB061702	06/17/02	--	--	16 J	--	--
WATER EQ.BLANK	FB061902	06/19/02	--	--	6 J	--	--

TICs are identified based on review of mass spectrometry results via a comprehensive library search of all organic compounds.

ug/L Micrograms per liter

-- Not Detected

N Presumtive evidence of this constituent. Calibrations were not run for this constituent; therefore, the results should be used for qualitative purposes only.

J Estimated value

EQ Equipment

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE:	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
	SAMPLE ID:	TB061302	TB061402	TB061702	TB 6-18-02	TB061902	TB 6/20/02	TB 6/21/02
	DATE:	06/13/2002	06/14/2002	06/17/2002	06/18/2002	06/19/2002	06/20/2002	06/21/2002
Chloromethane		<5 J	<5 J	<5 J	**3 JB**	**2 JB**	**2 JB**	<5
Bromomethane		<5	<5	<5	<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2	<2	<2	<2
Chloroethane		<5 J	<5 J	<5 J	<5	<5	<5	<5
Methylene chloride		**0.5 J**	**0.6 J**	**0.5 JB**	**0.6 JB**	**0.5 JB**	**0.6 JB**	**0.7 JB**
Acetone		<10 J	<10 J	<10 J	<10 J	<10 J	<10 J	<10 J
Carbon disulfide		<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5	<5
2-Butanone		**3 JB**	**3 JB**	**2 JB**	<10	<10	<10	**2 JB**
1,1,1-Trichloroethane		<5	<5	<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5 J	<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5	<5	<5
Total VOCs		**3.5**	**3.6**	**2.5**	**3.6**	**2.5**	**2.6**	**2.7**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE:	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
	SAMPLE ID:	TB062502	TB062602	TB070102	TB070202	TB070802	TB070902	TB071002
	DATE:	06/25/2002	06/26/2002	07/01/2002	07/02/2002	07/08/2002	07/09/2002	07/10/2002
Chloromethane		<5 J	<5 J	<5	<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5	<5	<5 J	<5 J
Vinyl Chloride		<2	<2	<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5	<5	<5
Methylene chloride		<5	<5	**0.5 JB**	**0.5 JB**	**0.5 J**	**0.6 JB**	**0.7 JB**
Acetone		<10 J	<10 J	<10	<10	<10	<10	<10
Carbon disulfide		<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5	<5
2-Butanone		<10 J	<10 J	**2 JB**	**3 JB**	**<10**	**4 JB**	**3 JB**
1,1,1-Trichloroethane		<5	<5	<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10 J	<10 J	<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5	<5	<5
Total VOCs		0	0	**2.5**	**3.5**	**0.5**	**4.6**	**3.7**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE:	TRIP BLANK	TRIP BLANK	WATER EQ.BLANK	WATER EQ.BLANK	WATER EQ.BLANK
	SAMPLE ID:	TB071102	TB071202	FB061302	FB061402	FB061702
	DATE:	07/11/2002	07/12/2002	06/13/2002	06/14/2002	06/17/2002
Chloromethane		<5	<5	<5 J	<5 J	<5 J
Bromomethane		<5	<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5 J	<5 J	<5 J
Methylene chloride		**0.8 J**	**0.7 J**	**0.6 J**	**0.5 J**	**0.5 JB**
Acetone		<10	<10	<10 J	<10 J	<10 J
Carbon disulfide		<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5
2-Butanone		<10	<10	**3 JB**	**3 JB**	**2 JB**
1,1,1-Trichloroethane		<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5 J
Freon-113 *		<5	<5	<5	<5	<5
Total VOCs		**0.8**	**0.7**	**3.6**	**3.5**	**2.5**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE:	WATER EQ.BLANK	WATER EQ.BLANK	WATER EQ.BLANK	WATER EQ.BLANK
	SAMPLE ID:	FB 6-18-02	FB061902	FB 6/20/02	FB 6/21/02
	DATE:	06/18/2002	06/19/2002	06/20/2002	06/21/2002
Chloromethane		**2 JB**	**2 JB**	<5	<5
Bromomethane		<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5
Methylene chloride		**0.6 JB**	**0.5 JB**	**0.5 JB**	**0.5 JB**
Acetone		<10 J	<10 J	<10 J	<10 J
Carbon disulfide		<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5
Chloroform		<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5
2-Butanone		<10	<10	**3 JB**	**3 JB**
1,1,1-Trichloroethane		<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5
Bromoform		<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5
Toluene		<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5
Styrene		<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5
Total VOCs		**2.6**	**2.5**	**3.5**	**3.5**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.

Table 12. Concentrations of Volatile Organic Compounds Detected in Blank Samples, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE:	WATER EQ.BLANK	WATER EQ.BLANK	WATER EQ.BLANK	WATER EQ.BLANK	WATER EQ.BLANK
	SAMPLE ID:	FB070802	FB070902	FB071009	FB071102	FB071202
	DATE:	07/08/2002	07/09/2002	07/10/2002	07/11/2002	07/12/2002
Chloromethane		<5	<5	<5	<5	<5
Bromomethane		<5	<5 J	<5 J	<5	<5
Vinyl Chloride		<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5
Methylene chloride		**0.4 J**	**0.6 JB**	**0.7 JB**	**0.5 J**	**1 J**
Acetone		<10	<10	<10	<10	<10
Carbon disulfide		<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5
2-Butanone		<10	**2 JB**	**3 JB**	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5
Toluene		<5	**0.6 J**	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5
Xylene (total)		<5	**2 J**	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5
Total VOCs		**0.4**	**5.2**	**3.7**	**0.5**	**1**

VOCs Volatile organic compounds
ug/L Micrograms per liter
J Estimated value
B Detected in an associated method blank.
* Freon 113 also known as 1,1,1-Trichloro-2,2,2-trifluoroethane.

Table 13. Concentrations of Semi-Volatile Organic Compounds, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SAMPLE TYPE:	GM-14	WATER EQ.BLANK
	SAMPLE ID:	GM 14	FB071002
	DATE:	07/10/02	07/10/02
1,3-Dichlorobenzene		<11	<12
1,4-Dichlorobenzene		<11	<12
1,2-Dichlorobenzene		<11	<12
1,2,4-Trichlorobenzene		<11	<12
Hexachlorobutadiene		<11	<12
Naphthalene		<11	<12
Phenol		<11	<12
Bis(2-chloroethyl)ether		<11	<12
2-Chlorophenol		<11	<12
2-Methylphenol		<11	<12
Propane, 2,2'-oxybis[1-chloro-		<11	<12
4-Methylphenol		<11	<12
N-Nitroso-di-n-propylamine		<11	<12
Hexachloroethane		<11	<12
Nitrobenzene		<11	<12
Isophorone		<11	<12
2-Nitrophenol		<11	<12
2,4-Dimethylphenol		<11	<12
Bis(2-chloroethoxy)methane		<11	<12
2,4-Dichlorophenol		<11	<12
4-Chloroaniline		<11	<12
4-Chloro-3-methylphenol		<11	<12
2-Methylnaphthalene		<11	<12
Hexachlorocyclopentadiene		<11	<12
2,4,6-Trichlorophenol		<11	<12
2,4,5-Trichlorophenol		<53	<59
2-Chloronaphthalene		<11	<12
2-Nitroaniline		<53	<59
Dimethylphthalate		<11	<12
Acenaphthylene		<11	<12
2,6-Dinitrotoluene		<11	<12
3-Nitroaniline		<53	<59
Acenaphthene		<11	<12
2,4-Dinitrophenol		<53	<59
4-Nitrophenol		<53	<59
Dibenzofuran		<11	<12
2,4-Dinitrotoluene		<11	<12
Diethylphthalate		<11	<12
CPPE4		<11	<12
Fluorene		<11	<12
4-Nitroaniline		<53	<59
4,6-Dinitro-2-methylphenol		<53	<59
N-Nitrosodiphenylamine (1)		<11	<12
Benzene, 1-bromo-4-phenoxy-		<11	<12
Hexachlorobenzene		<11	<12
Pentachlorophenol		<53	<59
Phenanthrene		<11	<12
Anthracene		<11	<12
Carbazole		<11	<12
Di-n-butylphthalate		<11	<12

See next page for footnotes.

Table 13. Concentrations of Semi-Volatile Organic Compounds, Second Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	GM-14 / GM 14 / 07/10/02	WATER EQ.BLANK / FB071002 / 07/10/02
Fluoranthene		<11	<12
Pyrene		<11	<12
Butylbenzylphthalate		<11	<12
3,3'-Dichlorobenzidine		<21	<24
Benzo(a)anthracene		<11	<12
Chrysene		<11	<12
Bis(2-ethylhexyl)phthalate (BEHP)		<11	<12
Di-n-octylphthalate		<11	<12
Benzo(b)fluoranthene		<11	<12
Benzo(k)fluoranthene		<11	<12
Benzo(a)pyrene		<11	<12
Indeno(1,2,3-cd)pyrene		<11	<12
Dibenz(a,h)anthracene		<11	<12
Benzo(g,h,i)perylene		<11	<12
Benzoic acid		<53	<59
Benzyl alcohol		<11	<12

ug/L Micrograms per liter.

ARCADIS

Table 14. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater Samples, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID: / DATE:	10631 N-10631 03/27/02	10631 N-10631 06/14/02	GM-16SR GM-16SR 03/27/02	GM-16SR GM 16SR 07/08/02	GM-17SR GM-17SR 05/03/02	GM-17SR GM-17SR 06/18/02	GM-18S GM-18S 03/27/02	GM-18S GM-18S 06/14/02
Cadmium, Total	5		**2.3 B**	**3 B**	<10	<1.3	<10	<1.3	<10	<1.3
Cadmium, Dissolved	5		**2.1 B**	**1.9 B**	<10	<1.3	<10	<1.3	<10	<1.3
Chromium, Total	50		**35.4**	**50.5**	**2.4 B**	<1.5	**3.9 B**	**1.8 B**	**2 B**	**24.3**
Chromium, Dissolved	50		**19.6**	**21.5**	<10	<1.5	<10	<1.5	<10	<1.5

(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.

ug/L Micrograms per liter

B Detected between the IDL and CRDL

IDL Instrument detection limit

CRDL Contract-required detection limit

NYSDEC New York State Department of Environmental Conservation

EQ Equipment

[ ] Value exceeds associated SCG value.

Bold Constituent detected above IDL.

-- Not analyzed.

Table 14. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater Samples, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID: / DATE:	GM-32S GM-32S 04/12/02	GM-32S GM 32S 07/08/02	GM-78S GM-78S 04/09/02	GM-78S GM-78S 06/18/2002	GM-78I GM-78I 04/09/02	GM-78I GM-78I 06/18/02	MW-01GF MW-1GF 04/12/02	MW-1GF MW-1GF 07/08/02	MW-02GF MW-2GF 04/12/02
Cadmium, Total	5		<10	<1.3	<10	<1.3	<10	<1.3	<10	<1.3	<10
Cadmium, Dissolved	5		<10	<1.3	--	--	--	--	<10	<1.3	<10
Chromium, Total	50		**109**	**125**	**3.4 B**	**2.7 B**	**6.2 B**	**8.7 B**	**3.3 B**	**2.8 B**	**41.1**
Chromium, Dissolved	50		**98.6**	**125**	--	--	--	--	<10	<1.5	**45.1**

(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.

ug/L Micrograms per liter

B Detected between the IDL and CRDL.

IDL Instrument detection limit

CRDL Contract-required detection limit

NYSDEC New York State Department of Environmental Conservation

EQ Equipment

Value exceeds associated SCG value.

Bold Constituent detected above IDL.

-- Not analyzed.

Table 14. Concentrations of Total and Dissolved Cadmium and Chromium Detected in Groundwater Samples, First and Second Quarters 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID: / DATE:	MW-2GF MW-2GF 07/08/02	MW-3R MW-3R 03/27/02	MW-3R MW-3R 06/14/02	WATER EQ.BLANK FB061402 06/14/02	WATER EQ.BLANK FB 6-18-02 06/18/02	WATER EQ.BLANK FB070802 07/08/02
Cadmium, Total	5		<1.3	**28.4**	**30.1**	<1.3	<1.3	<1.3
Cadmium, Dissolved	5		<1.3	**27.1**	**26.9**	--	--	--
Chromium, Total	50		**38**	**57.9**	**49.7**	<1.5	<1.5	<1.5
Chromium, Dissolved	50		**32.1**	**50**	**39.4**	--	--	--

(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 2000); most stringent value listed.

ug/L Micrograms per liter

B Detected between the IDL and CRDL.

IDL Instrument detection limit

CRDL Contract-required detection limit

NYSDEC New York State Department of Environmental Conservation

EQ Equipment

[ ] Value exceeds associated SCG value.

Bold Constituent detected above IDL.

-- Not analyzed.

NWIRP SITE

RUCO POLYMER SITE

NORTHROP GRUMMAN SITE

NORTHROP GRUMMAN PLANT 1 FUEL DEPOT AREA

NORTHROP GRUMMAN FORMER PLANT 2 CADMIUM/CHROMIUM MONITORING AREA

PLANT 5 BASINS

SOUTH BASINS

OU2 GROUNDWATER REMEDY TREATMENT SYSTEMS

BWD SUPPLY WELLS (PLANT 6)

BWD SUPPLY WELLS (PLANT 4)

BWD SUPPLY WELL (PLANT 5)

PLANT 111
PLANT 15
PLANT 14
PLANT 35
PLANT 37
PLANT 12
PLANT 3
PLANT 10
PLANT 23
PLANT 5
PLANT 2
PLANT 1
BOCES

MW-52S
MW-52I
MW-52D
HN-24I
HN-24S
FW-03
HN-29I
HN-29D
HN-42S
HN-42I
GM-23S
GM-23I
GM-13D
HN-40S
HN-40I
GM-16SR
GM-16I
MW-1GF
GM-32S
GM-17SR
GM-17I
GM-17D
GP-3
GP-1
MW-2GF
GM-14
GM-19S
GM-19I
GM-15S
GM-15I
GM-15D
GM-15D2
GM-18S
GM-18I
GM-18D
ONCT-1
GM-33D2
MW-3R
GM-73D2
ONCT-2
GM-74I
GM-74D
GM-74D2
ONCT-3
10597
10631
10600
GM-78S
GM-78I
GM-20D
GM-20I
GM-21S
GM-21I
GM-21D
10633
9921
10624
10627
GM-75D2
10634
GM-79S
GM-79I
GM-79D
GM-37D
GM-37D2
GM-71D2
GM-70D2
GM-35D2
N-10821
GM-36D
GM-36D2
6915
6916
3876
8941
GM-38D
GM-38D2
GM-34D
GM-34D2
8004

FARMERS AVENUE
(PLAINVIEW ROAD)
BROADWAY
GRUMMAN ROAD
CENTRAL AVENUE
LONG ISLAND RAILROAD
BLOOMINGDALE ROAD
NORTH WANTAGH AVE.
HICKSVILLE ROAD
STEWART AVENUE
SEAFORD - OYSTER BAY EXPRESSWAY
HEMPSTEAD TURNPIKE

N

EXPLANATION

- GP-3 ● INDUSTRIAL WELL
- ONCT-1 OU2 REMEDIAL WELL
- HN-40S EXISTING WELL/CLUSTER
- PROPERTY BOUNDARY OF THE RUCO POLYMER SITE
- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF NWIRP SITE
- NWIRP NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- BWD BETHPAGE WATER DISTRICT
- AREAS OWNED BY NORTHROP GRUMMAN (AS OF JUNE 2001)

0' 1000' 2000'

FILE: G:\APROJECT\NORTHROP GRUMMAN\CADD\OU2SYS_LOCATION-11-26.DWG, DATE: 11/26/2002 08:15:39AM, LAYOUT NAME: REMEDIAL

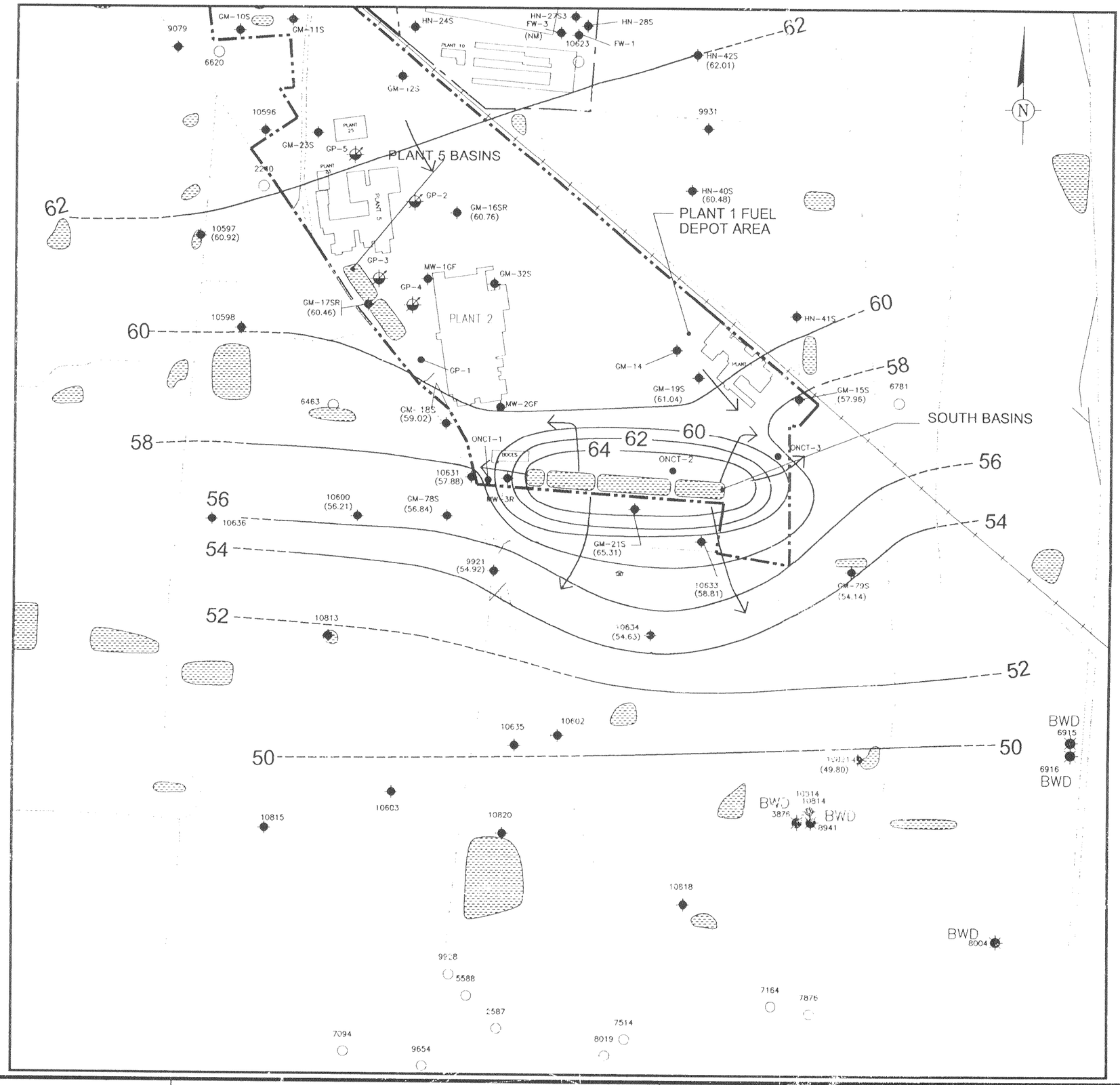
ARCADIS G&M
88 DURYEA ROAD
MELVILLE, NEW YORK 11747
TEL: 516/248-7601 FAX: 516/248-7610

NORTHROP GRUMMAN CORPORATION

BETHPAGE, NEW YORK

LOCATIONS OF OU2 GROUNDWATER REMEDY AND WELLS

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
A.C.	10/23/02	CSG	
		LEAD DESIGN PROF.	CHECKED D.S.
		PROJECT NUMBER NY001348.001	DRAWING NUMBER 1



EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- PROPERTY BOUNDARY OF THE U.S. NAVY SITE
- RECHARGE BASIN
- GM-19S (61.04) — LOCATION AND DESIGNATION OF SHALLOW MONITORING WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- 3876 — LOCATION AND DESIGNATION OF BETHPAGE WATER DISTRICT PUBLIC SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- 3554 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-3 — LOCATION AND DESIGNATION OF GRUMMAN INDUSTRIAL SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- ONCT-1 — LOCATION AND DESIGNATION OF ON-SITE OU2 REMEDIAL WELL (SHOWN FOR REFERENCE ONLY)
- HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- LINE OF EQUAL WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE APPROXIMATE)

OU2 OPERABLE UNIT 2

BWD BETHPAGE WATER DISTRICT

NM NOT MEASURED

USGS UNITED STATES GEOLOGICAL SURVEY

NOTES:

1. THIS FIGURE INCLUDES LOCATIONS OF MONITORING WELLS AND PUBLIC SUPPLY WELLS AS OF SEPTEMBER 25, 2001.
2. OU2 WELLS ONCT-1, ONCT-2, ONCT-3, AND GP-1 ARE SCREENED IN THE D2 ZONE.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.
5. BASIN LOCATIONS OBTAINED FROM USGS TOPOGRAPHIC MAPS (HICKSVILLE, AMITYVILLE, HUNTINGTION, AND FREEPORT QUADRANGLES), AND INFORMATION PROVIDED BY NORTHROP GRUMMAN.

0 800 FT

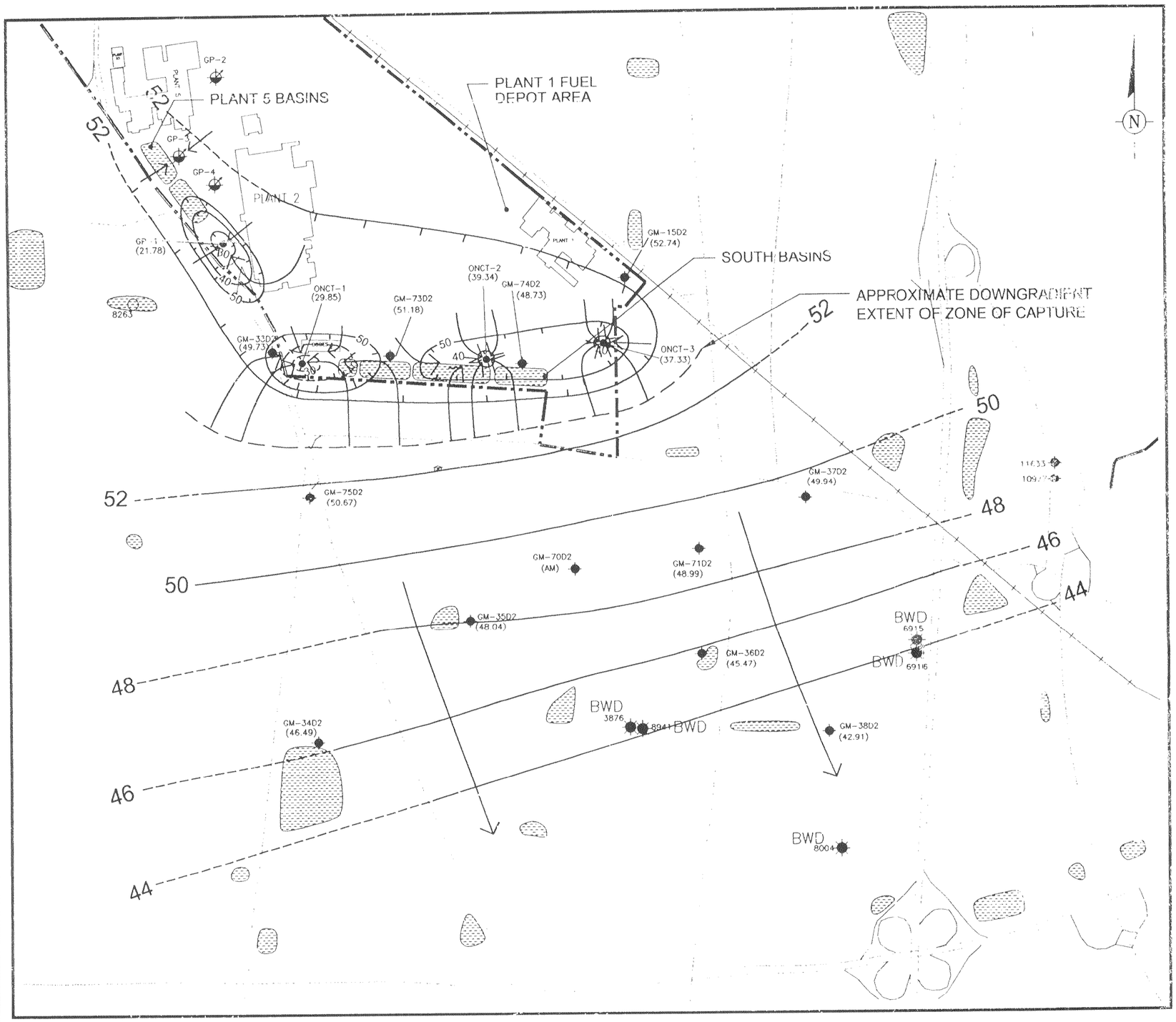
ARCADIS G&M
88 Duryea Road
Melville, New York 11747
Tel: 516/249-7600 Fax: 516/249-7610

NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	8/20/02	CSG	MW
		LEAD DESIGN PROF.	CHECKED
			DES

WATER-TABLE CONFIGURATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE SHALLOW ZONE
JULY 8, 2002

PROJECT NUMBER	DRAWING NUMBER
NY001348.006	2



EXPLANATION

PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION

RECHARGE BASIN

GM-36D2 (45.47) — LOCATION AND DESIGNATION OF D2 (VERY DEEP) MONITORING WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL.

3876 — LOCATION AND DESIGNATION OF BETHPAGE WATER DISTRICT PUBLIC SUPPLY WELL

8263 — LOCATION AND DESIGNATION OF ADDITIONAL WELL

GP-3 — LOCATION AND DESIGNATION OF GRUMMAN INDUSTRIAL SUPPLY

ONCT-3 (37.33) — LOCATION AND DESIGNATION OF ON-SITE OU2 REMEDIAL WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL

HORIZONTAL COMPONENT OF GROUNDWATER FLOW

52 — LINE OF EQUAL WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE APPROXIMATE)

LINE OF EQUAL WATER-LEVEL ELEVATION DENOTING A DECREASE IN POTENTIOMETRIC SURFACE ELEVATION IN FT. MSL.

OU2 OPERABLE UNIT 2

GPM GALLONS PER MINUTE

AM ANOMALOUS MEASUREMENT

BWD BETHPAGE WATER DISTRICT

USGS UNITED STATES GEOLOGICAL SURVEY

NOTES:

1. THIS FIGURE INCLUDES LOCATIONS OF MONITORING WELLS AND PUBLIC SUPPLY WELLS AS OF SEPTEMBER 25, 2001.
2. OU2 REMEDIAL WELLS GP-1, ONCT-1, ONCT-2, AND ONCT-3 ARE SCREENED IN THE D2 ZONE AND WERE PUMPING AT 1,120 GPM, 1,150 GPM, 714 GPM, AND 720 GPM, RESPECTIVELY AT THE TIME OF MEASUREMENT.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.
5. INDUSTRIAL SUPPLY WELL GP-3 IS SCREENED IN THE D2 ZONE AND WAS PUMPING AT A RATE OF 450 GPM AT THE TIME OF MEASUREMENT.
6. BASIN LOCATIONS OBTAINED FROM USGS TOPOGRAPHIC MAPS (HICKSVILLE, AMITYVILLE, HUNTINGTON, AND FREEPORT QUADRANGLES), AND INFORMATION PROVIDED BY NORTHROP GRUMMAN.

0 800 FT

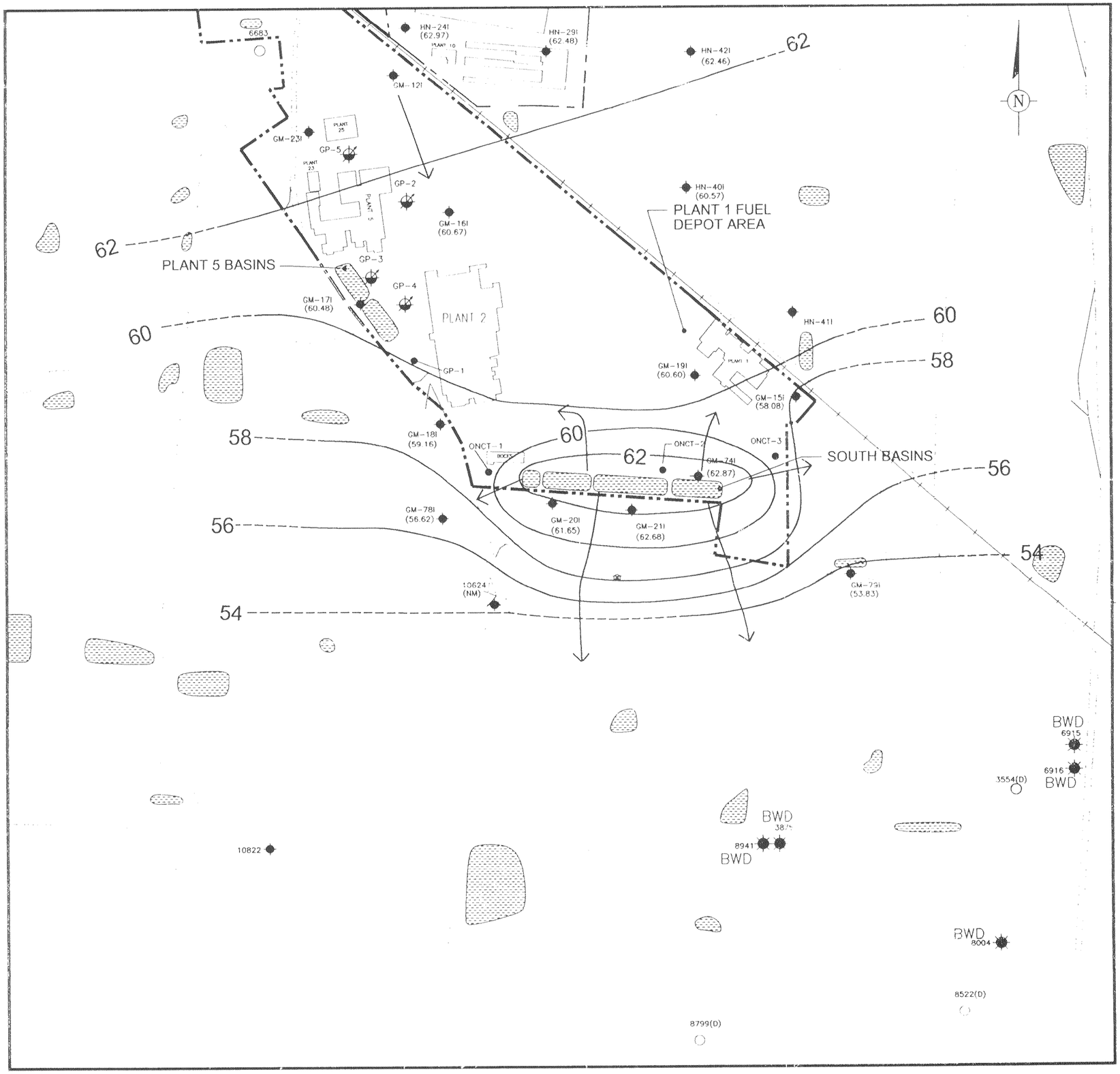
FILE: G:\APROJECT\NORTHROP GRUMMAN\CADD\DEEP 2Q-02R1.DWG, DATE: 11/26/2002 08:04:37AM

ARCADIS G&M
88 Duryea Road
Melville, New York 11747
Tel: 516/249-7600 Fax: 516/249-7610

NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

POTENTIOMETRIC SURFACE CONFIGURATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE D2 ZONE
JULY 8, 2002

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	8/30/02	COS	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY001348.006	4



EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- PROPERTY BOUNDARY OF THE U.S. NAVY SITE
- RECHARGE BASIN
- GM-15I (58.08) — LOCATION AND DESIGNATION OF INTERMEDIATE MONITORING WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- 3876 — LOCATION AND DESIGNATION OF BETHPAGE WATER DISTRICT PUBLIC SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- 6683 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-3 — LOCATION AND DESIGNATION OF GRUMMAN INDUSTRIAL SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- ONCT-1 — LOCATION AND DESIGNATION OF ON-SITE OU2 REMEDIAL WELL (SHOWN FOR REFERENCE ONLY)
- HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- 62 — LINE OF EQUAL WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE APPROXIMATE)

OU2	OPERABLE UNIT 2
NM	NOT MEASURED
BWD	BETHPAGE WATER DISTRICT
USGS	UNITED STATES GEOLOGICAL SURVEY

NOTES:

1. THIS FIGURE INCLUDES LOCATIONS OF MONITORING WELLS AND PUBLIC SUPPLY WELLS AS OF SEPTEMBER 25, 2001.
2. OU2 WELLS ONCT-1, ONCT-2, ONCT-3, AND GP-1 ARE SCREENED IN THE D2 ZONE.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.
5. BASIN LOCATIONS OBTAINED FROM USGS TOPOGRAPHIC MAPS (HICKSVILLE, AMITYVILLE, HUNTINGTON, AND FREEPORT QUADRANGLES), AND INFORMATION PROVIDED BY NORTHROP GRUMMAN.
6. DEPTH TO WATER AT THE FOLLOWING WELLS WAS AS FOLLOWS: HN-24I AND HN-29I (JULY 9) AND HN-40I AND HN-42I (JUNE 13).

0 800 FT

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BETHPAGE, NEW YORK

POTENTIOMETRIC SURFACE CONFIGURATION AND HORIZONTAL GROUNDWATER FLOW DIRECTIONS IN THE INTERMEDIATE ZONE
JULY 8, 2002

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	8/20/02	CSG	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY001348.006	3

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Appendix A

Water-Level Measurement Logs

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Page ____ of ____

Project NY001348.0006.00004 Well ____ Site ____

Screen Setting ____ Measuring Point Description ____ Height Above Ground Surface ____

Static Water Level ____ Measured With ____ Date/Time 10-14-02

Drawdown ☐ Start of Test ____ Pumping Well ____

Recovery ☐ End of Test ____

Distance From Well Measured To Pumping Well® ____ Discharge Rate ____ Orifice ____

Date & Time	Well Or t (mins)	Held (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Mano-meter (in)	Remarks 3)
MW 24S				55.43							
MW 24D				54.66							
MW 24I				54.50							
CM 21D				49.34							.11 higher
CM 21I				42.64							
CM 21S				40.35							
CM 20D				44.26							
CM 20I				41.59							
CM 1063				45.71							
CM 33D2				56.60							
CM 42S				59.19							
CM 42I				58.43							
CM 40S				56.64							
CM 40I				56.48							
CM 19S				49.02							
CM 17SR				55.24							
CM 17I				55.33							.10 higher
CM 17D				55.45							.10 higher
1059				49.27							
GW2				39.88							
1062				39.22							
75D2				42.20							.17 higher
CM 35-02				46.24							
1063				46.52							
71D2				48.19							
1061				41.17							

1) Dewatering Correction 2) Equivalent Artesian Drawdown 3) pH, Spec. Cond., Temp., Weather, Sand, Turbidity, etc.

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Page ____ of ____

Project NW001348.0006.0004 Well _____ Site _____

Screen Setting _____ Measuring Point Description _____ Height Above Ground Surface _____

Static Water Level _____ Measured With _____ Date/Time 10-14-02

Drawdown ☐ Start of Test _____ Pumping Well _____

Recovery ☐ End of Test _____

Distance From Well Measured To Pumping Well® _____ Discharge Rate ↓ _____ Orifice _____

Date & Time	Well Or t (mins)	Held (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Mano-meter (in)	Remarks 3)
UNCT-2											
UNCT-1				73.97							
GP-1				96.00		96.30					
GP-3				/							
~~UNC-3m~~											
~~UNC-E6~~											
UNCT 3				72.18							591.6 Bm
GM-13D											
GM 7411				44.75							.10 higher
GM 74D				51.66							.10 higher
GM7402				58.19							.11 higher
UNCF2				70.75							
GM 7302				52.90							
GM 73D				50.92							
MW3R				41.41							
GM 13D				53.92							
GM 14				54.35							
GM 15S				51.82							
GM 15I				51.60							
GM 7502				56.73							.11 higher
GM 15D				54.17							
GM 19S				49.20							
GM 19I				49.63							
GM 16SR				55.60							
GM 16I				55.69							
~~GM~~ 24I				63.54							

1) Dewatering Correction 2) Equivalent Artesian Drawdown 3) pH, Spec. Cond., Temp., Weather, Sand, Turbidity, etc.

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Page ____ of ____

Project NY001348.0006.00004 Well ________ Site ________

Screen Setting ________ Measuring Point Description ________ Height Above Ground Surface ________

Static Water Level ________ Measured With ________ Date/Time 10-14-02

Drawdown ☐ Start of Test ________ Pumping Well ________

Recovery ☐ End of Test ________

Distance From Well Measured To Pumping Well® ________ Discharge Rate ________ Orifice ________

Date & Time	Well Or t (mins)	Held (ft)	Wet (ft)	Depth to Water (ft)	s (ft)	Dew. 1) Corr. (ft)	Art. 2) s' (ft)		Q (gpm)	Mano-meter (in)	Remarks 3)
36D2				43.77							
36D				41.92							
70D2				47.78							
38D				44.79							
38D2				45.98							
37D				46.24							
37D2				46.67							
79D				48.46							.12 higher
79I				47.18							.10 higher
79S				46.52							
10633				44.82		[illegible]					
~~78S~~				46.49							
78S				48.26							
78I				48.60							
18D				52.63							all higher
18I				50.22							
23I				57.52							
23S				Dry							

1) Dewatering Correction 2) Equivalent Artesian Drawdown 3) pH, Spec. Cond., Temp., Weather, Sand, Turbidity, etc.

ARCADIS

Appendix B

Groundwater Sampling Logs

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00004 Well ID: GM-13D
Date: 10/9/02 Sampled By: KS
Sampling Time: 0955 Recorded By: KS
Weather: Cloudy, 65° Coded Replicate No.: REP100902

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow Dedicated BLADDER Pump
Casing Diameter: 4" Purge Rate: ~450 ml/min
Total Depth: 210.00' Total Volume Purged: 7 GALLONS
Depth to Water: 54.26' ~~Pump Intake Depth~~: Depth to Packer 199'
Water Column: Pump on: 1000 Off: 1115
Gallons/Foot: Parameters Sampled: CHECK COC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units)	Conductivity (µmhos/cm) x100	Temp °C/°F	Depth to Water	Diss. Oxygen	Comments
1005	~450							54.26'		
1010	↓			240	5.27	2.11	66.1	-	0.66	
1015				243	5.21	2.04	61.8	-	0.46	
1020				245	5.17	2.04	61.8	54.36'	0.49	
1025				245	5.20	2.02	61.8	-	0.48	
1030				245	5.14	2.03	61.9	-	0.44	
1035				247	5.11	2.02	62.7	54.28'	0.45	
1040				249	5.12	2.02	62.1	-	0.60	
1045				252	5.08	2.02	61.9	-	0.58	
1050				253	5.15	2.02	62.1	54.27'	0.51	
1055				255	5.15	2.02	62.3	-	0.52	
1100				255	5.15	2.02	62.5	-	0.53	
1105				256	5.16	2.02	62.7	54.28'	0.53	
	↓									

Well Secure: Yes Purge Water Disposal: NYC Sewer
Color: Colorless Turbidity(qualitative): Clear

ARCADIS GERAGHTY & MILLER

Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00004 Well ID: GM-15S

Date: 10-7-02 Sampled By: G.W.BA

Sampling Time: _____ Recorded By: _____

Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: REDIFLO Pump

Casing Diameter: _____ Purge Rate: 2GPM

Total Depth: 90.00 Total Volume Purged: _____

Depth to Water: 61.85 Pump Intake Depth _____

Water Column: 28.15 Pump on: _____ Off: _____

Gallons/Foot: 0.65 Parameters Sampled: _____

Gallons in Well: 18.29 x 3 = 55 Q = 2 T = 23 1V = 8

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
2:46 0					5.4	205	17.9			
2:52 I					5.3	218	17.4			
2:59 1V					5.3	218	17.3			
3:0? 2V					5.3	220	17.9			
3:09 3V			22		6.3	222	17.5			

Well Secure: _____ Purge Water Disposal: _____

Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 0004 Well ID: OM 1BI
Date: 10.8.02 Sampled By: KW BH
Sampling Time: _____ Recorded By: BH
Weather: Sunny Clear Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 51.79 Pump Intake Depth _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1:15			27.2	295	5.21	170.0	17.9	51.79	6.0	
1:20				296	5.20	169.4	17.9		6.0	
1:25				300	5.21	169.3	17.8		6.0	
1:30			24.2	300	5.17	217.0	17.8		6.0	
1:35				301	5.21	230.0	17.8		6.0	
1:40				302	5.21	231.0	17.8		6.0	
1:45			21.3	304	5.24	231.0	17.8		6.0	
1:50				304	5.20	231.0	17.8		6.0	
1:55				308	5.28	231.0	17.9		6.0	
2:00			25.5	309	5.28	233.0	17.8		6.0	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 0004 Well ID: GM 15 D
Date: 10 - 9 - 02 Sampled By: CW DH
Sampling Time: _____ Recorded By: DH
Weather: Sunny Clear Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Low flow
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 54.50 Pump Intake Depth _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
12:05			19.4	318	5.22	107.1	18.1	54.50	3.0	
12:10				324	5.20	115.2	17.4		3.0	
12:15			45.5	290	5.41	122.7	17.3		2.0	
12:20				225	5.60	129.8	17.1		2.0	
12:25			37.4	239	5.16	128.1	16.9		2.0	
12:30				246	5.03	127.4	16.9		2.0	
12:35			26.5	266	4.91	126.7	16.8		1.8	
12:40				276	4.85	128.4	16.8		1.8	
12:45			25.8	279	4.85	128.5	16.8		1.8	
12:50				284	4.80	190.2	16.7		1.8	
12:55				289	4.79	193.7	16.7		1.8	
1:00			23.7	291	4.80	193.9	16.7		1.8	
1:05				292	4.79	193.4	16.7		1.8	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 0004 Well ID: GM 15 D2

Date: 10-8-02 Sampled By: GW BM

Sampling Time: _____ Recorded By: BM

Weather: Sunny Clear Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow

Casing Diameter: 4" Purge Rate: _____

Total Depth: _____ Total Volume Purged: _____

Depth to Water: 57.38 Pump Intake Depth _____

Water Column: _____ Pump on: _____ Off: _____

Gallons/Foot: _____ Parameters Sampled: _____

Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
11:00			21.3	208	5.34	130.7	19.6	57.38	3.4	
11:05				285	5.14	101.7	17.9		3.4	
11:10			19.5	288	5.10	99.2	17.7		3.0	
11:15				297	4.97	95.4	17.3		4.0	
11:20			17.5	302	4.94	92.2	17.0		5.0	
11:25				306	4.98	92.6	17.3		5.0	
11:30			22.4	308	4.97	91.7	17.6		5.0	
11:35				314	4.97	91.5	17.6		5.0	
11:40				317	4.99	91.1	17.6		5.0	
11:45			14.2	318	4.99	91.1	17.6		5.0	
11:50				320	5.0	91.2	17.6		5.0	
11:55				320	5.0	91.1	17.6		5.0	
12:00			13.4	320	4.99	91.0	17.6		5.0	

Well Secure: _____ Purge Water Disposal: _____

Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: M001348-0006 Task: 00007 Well ID: GM-15D-2

Date: _____ Sampled By: _____

Sampling Time: _____ Recorded By: _____

Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: _____

Casing Diameter: _____ Purge Rate: _____

Total Depth: _____ Total Volume Purged: _____

Depth to Water: _____ Pump Intake Depth _____

Water Column: _____ Pump on: _____ Off: _____

Gallons/Foot: _____ Parameters Sampled: _____

Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
12:45	500ml			289	5.32	103.4	18.5	57.39	6.9	
12:50	|			303	5.13	97.9	18.4		6.8	
12:55	|			303	5.12	96.3	18.1	57.41	6.8	
1:00				306	5.06	95.8	18.1		7.0 ~~8~~ 6.0	
1:05				309	5.05	94.8	18.0		7.0 ~~8~~ 6.0	
1:10				309	5.01	94.9	18.0	57.41	7.0 ~~8~~ 6.0	
1:15				309	5.02	95.1	18.5		6.0	
1:20				311	5.01	95.0	17.9		6.1	
1:25				313	5.01	94.5	17.8	57.41	6.1	
1:30				315	5.00	94.2	17.8		6.1	

Well Secure: _____ Purge Water Disposal: _____

Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman | Project No.: NY001348.0006.00004 | Page: 1 of 1

Site Location: Bethpage, NY | Date: 10/8/02

Site/Well No.: GM-16I | Replicate No.: | Code No.:

Weather: Sunny, cool, 70° | Sampling Time: Begin 1320 End 1505

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	145.00
Depth to Water (ft bmp)	134.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	11.00
Casing Diameter/Type	4" (0.65)
Gallons in Well	7.15
Gallons Pumped/Bailed Prior to Sampling	22
~~Sample Pump Intake~~ Setting (ft bmp)	90 PSI
Purge Time	begin 1325 end 1505
Pumping Rate (gpm)	
Evacuation Method	Dedicated bladder Pump

Field Parameters

	I	1U	2U	3U
Color		light brown color		
Odor			odorless	
Appearance		Slightly cloudy,		
pH (s.u.)	6.81	8.60	8.54	8.21
Conductivity ~~(mS/cm)~~ (µmhos/cm)	2.50	2.61	2.61	2.50
Turbidity (NTU)				~100
Temperature ~~°C~~ °F	63.5	62.0	61.7	61.1
Dissolved Oxygen (mg/L)				
Salinity (%)				
Time ~~Sampling Method~~	1327	1357	1430	1500

Remarks: DTW: 153.35'

5 Gallon Pails: 1111 1/2

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY00BM0100006 Task: 00004 Well ID: 17-I
Date: 10-07-02 Sampled By: GW BM
Sampling Time: _____ Recorded By: BM
Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: Low flow
Casing Diameter: _____ Purge Rate: 450ml/min
Total Depth: _____ Total Volume Purged: _____
Depth to Water: _____ Pump Intake Depth 110ft
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
2:05	450ml/m			300	6.21	56.3	23.2	56.11	7.0	
2:10				300	6.07	62.9	21.8		2.9	
2:15				294	6.04	64.1	21.6	56.15	2.3	
2:20				288	6.03	64.3	22.1		2.3	
2:25				287	6.01	76.5	27.2	56.14	2.2	
2:30				284	6.06	77.8	22.2		2.1	
2:35				283	6.03	77.6	22.1	56.15	2.2	
2:40				280	6.05	78.0	22.1		2.1	
2:45		864		280	6.03	78.2	22.3		2.1	
2:50										

Well Secure: _____ Purge Water Disposal: _____
Color: Colorless Turbidity(qualitative): CLEAN ~~<50~~ <50 NTU

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 0004 Well ID: 17D
Date: 10-07-02 Sampled By: CW BH
Sampling Time: _____ Recorded By: BH
Weather: Overcast Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: _____ Pump Intake Depth _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
11:45				270	5.76	108.4	21.3	57.77	3.0	
11:50				274	5.76	100.9	21.2		3.0	
11:55				300	5.31	100.1	20.9		6.8	
12:00				305	5.30	100.0	20.9	57.78	6.9	
12:05				307	5.24	99.4	20.9		7.0	
12:10				312	5.02	100.1	20.8		7.8	
12:15				317	5.22	99.5	20.7		7.0	
12:20				314	5.24	99.8	20.7		8.0	
12:25				318	5.03	99.5	20.7	57.50	7.0	
12:30				315	5.25	99.9	20.7		8.0	
12:35				316	5.20	99.1	20.8		7.5	
12:40				320	5.15	98.3	20.9		8.0	
12:45				318	5.21	97.9	20.9		7.8	
##										

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project #: NY001348.0006.00004 ~~Project No.~~ Northrop Grumman Page 1 of 1

Site Location Bethpage, NY Date 10/7/02

Site/Well No. GM-18I Replicate No. Code No.

Weather Sunny, 75° Sampling Time: Begin 1545 End 1715

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point	TOC	Color		Colorless		
MP Elevation (ft)		Odor		odorless		
Land Surface Elevation (ft)		Appearance		Clear		
Sounded Well Depth (ft bmp)	105.00'	pH (s.u.)	5.60	5.09	5.10	5.56
Depth to Water (ft bmp)	94.00'	~~Conductivity (mS/cm)~~				
Water-Level Elevation (ft)		(µmhos/cm) X 0.001	1.19	1.33	1.31	1.32
Water Column in Well (ft)	11.00'	Turbidity (NTU)				<5
Casing Diameter/Type	4" (0.65)	Temperature (°C) °F	60.7	66.0	66.2	67.7
Gallons in Well	7.15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	22	Salinity (%)				
Packer Pressure ~~Sample Pump Intake Setting (ft bmp)~~	70 PSI	Time ~~Sampling Method~~	1548	1615	1640	1710
Purge Time	begin 1545 end 1715	Remarks	DTW: 50.37'			
Pumping Rate (gpm)		5 GALLON PAILS: III 1/2				
Evacuation Method	Dedicated bladder Pump					

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel KS

Well Casing Volumes

gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
et	msl	mean sea-level	s.u.	Standard units
ions per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
rams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00004 Well ID: CM-1PD
Date: 10-03-02 Sampled By: CW
Sampling Time: _____ Recorded By: CW
Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: Low flow
Casing Diameter: _____ Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 52.90 Pump Intake Depth _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
3:40				262	5.36	66.2	20.0		7.8	
3:45				268	5.32	66.4	19.4		7.8	
3:50				270	5.36	65.4	19.2		7.0	
3:55				280	5.22	67.8	18.7		7.2	
4:00				284	5.24	67.3	18.6		7.2	
4:05				288	5.21	75.2	18.5		7.0	
4:10				291	5.17	75.1	18.4		7.2	
4:15				295	5.17	75.0	18.4		7.4	
4:20				294	5.14	75.0	18.4		7.6	
4:25				297	5.16	75.1	18.3		7.4	
4:30				299	5.14	75.5	18.2		7.2	
4:35				301	5.10	75.1	18.3		7.4	
4:40			15.3	303	5.16	75.4	18.3		7.2	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project #: NY001348.0006.00004 Project No. Northrop Grumman Page 1 of 1

Site Location Bethpage, NY Date 10/1/2002

Site/Well No. GM-20I Replicate No. Code No.

Weather Sunny, 85° Sampling Time: Begin 1210 End 1500

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point	TOC	Color	colorless			
MP Elevation (ft)		Odor	odorless			
Land Surface Elevation (ft)		Appearance	slightly cloudy			
Sounded Well Depth (ft bmp)	105.00	pH (s.u.)	10.28	10.29	10.65	10.34
Depth to Water (ft bmp)	94.00	Conductivity ~~(mS/cm)~~ (µmhos/cm)	338	179	192.5	168.1
Water-Level Elevation (ft)		Turbidity (NTU)				>100
Water Column in Well (ft)	11.00	Temperature (°C)	20.7	20.4	20.3	20.2
Casing Diameter/Type	4" PVC (.65)	Dissolved Oxygen (mg/L)				
Gallons in Well	7.15	Salinity (%)				
Gallons Pumped/Bailed Prior to Sampling	22	~~Sampling Method~~ Time	1212	1305	1400	1455
~~Sample Pump Intake Setting (ft bmp)~~ Packer Pressure	70 PSI	Remarks	Start: DTW = 42.16'			
Purge Time	begin 1212 end 1455					
Pumping Rate (gpm)	IV = 1.5 5 GALLON BUCKETS		5 GAL PAILS: 1111 1/2			
Evacuation Method	DEDICATED BLADDER PUMP					

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman | Project No. NY001345.0006.00004 | Page 1 of 1

Site Location: Bethpage, NY | Date: 10/1/2002

Site/Well No. GM-20D | Replicate No. | Code No.

Weather: Sunny, 85° | Sampling Time: Begin 1500 End 1655

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point	TOC	Color		Colorless		
MP Elevation (ft)	[redacted]	Odor		odorless		
Land Surface Elevation (ft)		Appearance		clear		
Sounded Well Depth (ft bmp)	226'	pH (s.u.)	8.03	7.55	6.74	6.12
Depth to Water (ft bmp)	215'	Conductivity (mS/cm)	0			
Water-Level Elevation (ft)		(µmhos/cm)	125.7	116.9	115.6	113.8
Water Column in Well (ft)	11.00'	Turbidity (NTU)				250
Casing Diameter/Type	4" PVC (.65)	Temperature (°C)	20.4	17.4	17.1	17.2
Gallons in Well	7.15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	22	Salinity (%)				
~~Sample Pump Intake Setting (ft bmp)~~ Packer Crossover	105 PSI	~~Sampling Method~~ Time	1500	1535	1610	
Purge Time	begin 1500 end 1655	Remarks Static DTW = 4482'				
Pumping Rate (gpm)	1V = 1.5 5 GALLON BUCKETS	5 Gall Pails: IIII ½				
Evacuation Method	Dedicated Bladder Pump					

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman | Project No.: NY001348.0006.00004 | Page 1 of 1

Site Location: Bethpage, NY | Date: 10/3/07

Site/Well No.: GM-21I | Replicate No.: | Code No.:

Weather: Sunny, 85° | Sampling Time: Begin 1005 End 1155

Evacuation Data

Measuring Point	Toc
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	140.00
Depth to Water (ft bmp)	129.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	11.00
Casing Diameter/Type	4" (0.65)
Gallons in Well	7.15
Gallons Pumped/Bailed Prior to Sampling	22
~~Sample Pump Intake~~ Bailer Pressure Setting (ft bmp)	90 PSI
Purge Time	begin 1010 end 1150
Pumping Rate (gpm)	
Evacuation Method	Dedicated bladder Pump.

Field Parameters

	I	1V	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	9.18	9.97	9.94	9.99
Conductivity ~~(mS/cm)~~ (µmhos/cm) x100	1.21	1.23	1.27	1.29
Turbidity (NTU)				>50
Temperature ~~(°C)~~ °F	70.6	78.2	79.5	80.5
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	1010	1045		

Remarks: DTW: 42.89'

5 Gallon Pails: 11 1/2

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 0004 Well ID: GM 21 D
Date: 10·8·02 Sampled By: GW BH
Sampling Time: _____ Recorded By: BH
Weather: Sunny Clear Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: low Flow
Casing Diameter: 4" Purge Rate: _____
Total Depth: _____ Total Volume Purged: _____
Depth to Water: 49.89 Pump Intake Depth _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
2:45				302	5.94	104.3	14.0		2.9	
2:50				307	5.67	100.1	14.0		3.0	
2:55				330	4.93	83.9	18.3		4.0	
3:00				331	4.86	82.6	18.2		4.0	
3:05				333	4.89	82.4	17.9		4.0	
3:10				335	4.84	82.6	17.8		4.2	
3:15				334	4.87	83.2	17.8		4.2	
3:20				335	4.85	84.3	17.7		4.2	
3:25				336	4.83	85.7	17.6		4.8	
3:30				337	4.85	87.0	17.6		4.6	
3:35			121	339	4.83	88.8	17.6		4.8	
3:40				339	4.84	89.0	17.6		5.0	
3:45				334	4.85	90.0	17.6		5.0	
3:50			112	340	4.84	91.3	17.4		5.2	
3:55				340	4.84	92.1	17.3		5.6	
4:00			109	342	4.83	93.5	17.2		6.8	
4:05			115	342	4.83	93.8	17.2		6.6	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project	Northrop Grumman	Project No.	NY001348.0006.00004	Page	1 of 1
Site Location	Bethpage, NY			Date	10/9/02
Site/Well No.	6M-23I	Replicate No.		Code No.	
Weather	Cloudy, 65°	Sampling Time:	Begin 1130	End	1315

Evacuation Data		Field Parameters	I	1U	2U	3U
Measuring Point	TOC	Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	120.00	pH (s.u.)	5.06	5.34	4.87	5.12
Depth to Water (ft bmp)	109.00	Conductivity ~~(mS/cm)~~	0.92	0.81	0.81	0.82
Water-Level Elevation (ft)		(µmhos/cm) X1000				
Water Column in Well (ft)	11.00	Turbidity (NTU)				<50
Casing Diameter/Type	4"(0.65)	Temperature ~~(°C)~~ °F	62.7	60.9	60.6	60.7
Gallons in Well	7.15	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	22	Salinity (%)				
~~Sample Pump Intake~~ Packer Pressure Setting (ft bmp)	70 PSI	Time ~~Sampling Method~~	1145	1210	1240	1310
Purge Time	begin 1140 end 1315	Remarks	DTW: 57.37'			
Pumping Rate (gpm)			5 GALLON PAILS: ||| 1/2			
Evacuation Method	Dedicated Bladder Pump					

Constituents Sampled	Container Description	Number	Preservative
Chemical			

Sampling Personnel KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00004 Well ID: GM-33D2
Date: 10/9/02 Sampled By: KS
Sampling Time: 1340 Recorded By: KS
Weather: Cloudy, 65° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow Dedicated Bladder Pump
Casing Diameter: 4" Purge Rate: ~500 ml/min
Total Depth: Total Volume Purged: 8 GALLONS
Depth to Water: 57.32' Pump Intake Depth:
Water Column: Pump on: 1350 Off: 1505
Gallons/Foot: Parameters Sampled: CHECK TOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units)	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1355	~500	-						57.32	6.	
1400	↓			257	6.17	0.82	60.1	-	5.99	
1405				265	5.54	0.80	61.6	-	7.17	
1410				264	5.91	0.80	63.6	57.32'	7.28	
1415				264	5.94	0.79	63.2	-	7.70	
1420				262	5.72	0.79	63.3	-	7.57	
1425				269	5.64	0.79	62.9	57.32'	6.86	
1430				271	4.78	0.79	62.9	-	7.61	
1435				272	4.80	0.80	62.8	-	7.15	
1440				275	4.78	0.79	62.8	57.32'	7.53	
1445				277	5.30	0.78	62.3	-	7.51	
1450				278	5.28	0.78	61.8	-	7.54	
1455				280	5.29	0.78	61.8	57.32'	7.53	

ll Secure: YES
r: Color less
Odorless

Purge Water Disposal: NC Sewer
Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project	Northrup Grumman	Project No.	NY001348.0006.00004	Page	1 of 1
Site Location	Bethpage, NY			Date	10/3/02
Site/Well No.	GM-35D2	Replicate No.		Code No.	
Weather	Sunny, 75°	Sampling Time:	Begin 1215	End	1900

Evacuation Data	
Measuring Point	Toc
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	530.00
Depth to Water (ft bmp)	507.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	23.00
Casing Diameter/Type	4" (0.65)
Gallons in Well	14.95
Gallons Pumped/Bailed Prior to Sampling	45.00
~~Sample Pump Intake Setting (ft bmp)~~ Finker Pressure	225 PSI
Purge Time	begin 1223 end 1500
Pumping Rate (gpm)	
Evacuation Method	Dedicated Bladder Pump

Field Parameters	I	1V	2V	3V
Color	Colorless			
Odor	odorless			
Appearance	Clear			
pH (s.u.)	8.90	6.58	5.21	5.22
Conductivity ~~(mS/cm)~~ (µmhos/cm) x100	1.24	1.22	1.20	1.19
Turbidity (NTU)				<50
Temperature (~~°C~~ °F)	73.0	71.5	70.4	71.7
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	1225	1315	1400	1440

Remarks: DTW: 47.15'

5 Gallon pails: ~~||||~~ ||||

Samples Split w/ BWD (1/2 m)

Constituents Sampled	Container Description	Number	Preservative
Oneck Toc			

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	mililiter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman | Project No.: NY001348.0006.00001 | Page: 1 of 1

Site Location: Bethpage, NY | Date: 10/2/2002

Site/Well No.: GM-36D | Replicate No.: | Code No.:

Weather: Sunny, 85° | Sampling Time: Begin 1230 End 1445

Evacuation Data		Field Parameters	Σ	10	20	30
Measuring Point	TOC	Color		Colorless		
MP Elevation (ft)		Odor		odorless		
Land Surface Elevation (ft)		Appearance		Clear		
Sounded Well Depth (ft bmp)	214.00	pH (s.u.)	8.41	8.17	6.00	6.26
Depth to Water (ft bmp)	202.00	Conductivity ~~(mS/cm)~~ (µmhos/cm) X100	0.88	0.89	0.88	0.91
Water-Level Elevation (ft)		Turbidity (NTU)				<50
Water Column in Well (ft)	12.00	Temperature ~~(°C)~~ °F	66.1	66.9	68.0	67.9
Casing Diameter/Type	4" (0.65)	Dissolved Oxygen (mg/L)				
Gallons in Well	7.80	Salinity (%)				
Gallons Pumped/Bailed Prior to Sampling	24	~~Sampling Method~~ Time	1235	1315	1355	1435
~~Packer Pressure~~ ~~Sample Pump Intake~~ Setting (ft bmp)	110 PSI	Remarks	DTW: 42.49'			
Purge Time	begin 1235 end 1445					
Pumping Rate (gpm)		5 Gallon pails: NHP				
Evacuation Method	Dedicated Bladder Pump	Samples split w/ BWP (12m)				

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman | Project No.: NY001348.0006.00004 | Page: 1 of 1

Site Location: Bethpage, NY | Date: 10/2/2002

Site/Well No.: ~~GM~~ 36D2 | Replicate No.: | Code No.:

Weather: Sunny, 85° | Sampling Time: Begin 1030 End 1230

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	540.00
Depth to Water (ft bmp)	518.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	22.00
Casing Diameter/Type	4 (0.65)
Gallons in Well	14.30
Gallons Pumped/Bailed	43.00
Prior to Sampling	
Packer Pressure ~~Sample Pump Intake Setting (ft bmp)~~	235 PSI
Purge Time	begin 1035 end 1230
Pumping Rate (gpm)	
Evacuation Method	Dedicated bladder pump

Field Parameters

Field Parameters	I	IV	2V	3V
Color		Colorless		
Odor		odorless		
Appearance		clear		
pH (s.u.)	10.92	10.60	10.24	9.55
Conductivity (mS/cm)				
(µmhos/cm) x100	1.10	3.30	1.27	1.18
Turbidity (NTU)	~~150~~			<50
Temperature ~~(°C)~~ °F	67.9	65.6	67.1	67.1
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	1035	1115	1145	

Remarks: DTW: 45.53'

Sampling Pails: IIII IIII

Samples split w/ BWD (142.n)

Constituents Sampled	Container Description	Number	Preservative
Check TOC			

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman | Project No. NY001348.0006.00002 | Page 1 of 1

Site Location: Bethpage, NY | Date: 10/7/02

Site/Well No.: 6M-37D | Replicate No.: | Code No.:

Weather: Cloudy, 65° | Sampling Time: Begin 0820 End 1105

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	262.00'
Depth to Water (ft bmp)	240.00'
Water-Level Elevation (ft)	
Water Column in Well (ft)	22.00'
Casing Diameter/Type	4" (0.65)
Gallons in Well	14.30
Gallons Pumped/Bailed Prior to Sampling	45.00
~~Sample Pump Intake Setting (ft bmp)~~ (Packer Pressure)	110 PSI
Purge Time	begin 0820 end 1105
Pumping Rate (gpm)	
Evacuation Method	Dedicated Bladder Pump

Field Parameters

	I	1U	2U	3U
Color		colorless		
Odor		odorless		
Appearance		clear		
pH (s.u.)	4.10	4.32	4.32	4.16
~~Conductivity (mS/cm)~~ (µmhos/cm) X1000	1.04	1.86	1.88	1.89
Turbidity (NTU)				<50
Temperature ~~(°C)~~ °F	61.5	60.9	61.9	64.4
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	0830	0920	1010	

Remarks: DTW: 46.58'

5 Gallon pails: ||||

Samples split w/ H2M for BWD

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman — Project No. NY001348.0006.00002 — Page 1 of 1

Site Location: Bethpage, NY — Date: 10/7/02

Site/Well No.: 6M-3702 — Replicate No. — Code No.

Weather: cloudy, rain, 40° — Sampling Time: Begin 1110 End 1505

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	390.00
Depth to Water (ft bmp)	367.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	23.00
Casing Diameter/Type	4" (0.65)
Gallons in Well	14.95
Gallons Pumped/Bailed Prior to Sampling	45.00
~~Sample Pump Intake Setting (ft bmp)~~ Packer Pressure	180 PSI
Purge Time	begin 1110 end 1505
Pumping Rate (gpm)	
Evacuation Method	dedicated bladder pump

Field Parameters

	I	II	20	30
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	4.50	4.60	4.50	4.43
Conductivity ~~(mS/cm)~~ ~~(umhos/cm)~~ x1000	2.01	2.00	2.05	2.09
Turbidity (NTU)				450
Temperature ~~(°C)~~ °F	65.4	65.4	68.1	69.2
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	1110	1235	1350	1500

Remarks: DTW: 47.12'

5 Gallons: I II III

Sample split w/ H2M for BWD

Constituents Sampled	Container Description	Number	Preservative
check COC			

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman | Project No.: NY001348.0026.00004 | Page: 1 of 1

Site Location: Bethpage, NY | Date: 10/4/02

Site/Well No.: GM-38D | Replicate No.: Repo 1 | Code No.:

Weather: Cloudy, cool, 70° | Sampling Time: Begin 1200 End 1415

Evacuation Data

Measuring Point	Toc
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	340.00'
Depth to Water (ft bmp)	317.00'
Water-Level Elevation (ft)	
Water Column in Well (ft)	23.00'
Casing Diameter/Type	4" (0.65)
Gallons in Well	14.95
Gallons Pumped/Bailed Prior to Sampling	45.00
~~Sample Pump Intake~~ Packer Pressure Setting (ft bmp)	145 PSI
Purge Time	begin 1203 end 1415
Pumping Rate (gpm)	
Evacuation Method	Dedicated bladder pump

Field Parameters

	1	2U	2U	3U
Color		colorless		
Odor		odorless		
Appearance		clear		
pH (s.u.)	5.09	5.08	5.27	5.18
Conductivity ~~(mS/cm)~~ (µmhos/cm) x100	0.88	0.92	0.91	0.92
Turbidity (NTU)				<50
Temperature ~~(°C)~~ °F	59.9	59.8	60.4	60.6
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	1205	1240	1325	1410

Remarks: DTW: 45.41'

5 GALLON PAILS: IIII

Samples split w/ AMD (Hzm)

Constituents Sampled	Container Description	Number	Preservative
Check COC			
Sampled used as a replicate (Repo 1)			

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project	Northrop Grumman	Project No.	NY001348.0006.00001	Page	1 of 1
Site Location	Bethpage, NY			Date	10/11/02
Site/Well No.	GM-38D2	Replicate No.	MS/MSD	Code No.	
Weather	Cloudy, Cool, 70°	Sampling Time:	Begin 0920	End	1200

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point	TOC	Color		colorless		
MP Elevation (ft)		Odor		odorless		
Land Surface Elevation (ft)		Appearance		Clear		
Sounded Well Depth (ft bmp)	495.00	pH (s.u.)	4.51	4.89	4.91	4.62
Depth to Water (ft bmp)	472.00	Conductivity ~~(mS/cm)~~				
Water-Level Elevation (ft)		(µmhos/cm) mu	0.69	0.54	0.62	0.63
Water Column in Well (ft)	23.00	Turbidity (NTU)				<50
Casing Diameter/Type	4" (0.65)	Temperature ~~(°C)~~ °F	61.9	60.0	59.5	59.8
Gallons in Well	14.95	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	45.00	Salinity (%)				
Packer Pressure ~~Sample Pump Intake Setting (ft bmp)~~	220 PSI	TIME ~~Sampling Method~~	0942	1030	1114	1155
Purge Time	begin 0940 end 1200	Remarks	DTW: 47.59'			
Pumping Rate (gpm)			5 Gallon Pails: ~~IIII~~ IIII			
Evacuation Method	Dedicated Bladder Pump		Samples Split w/ BWD (Ham)			

Constituents Sampled	Container Description	Number	Preservative
Check COC			
Sample used for MS/MSD.			

Sampling Personnel KS

Well Casing Volumes

Gal./Ft.	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project	Northrup Grumman	Project No.	NY001348.0006.00004	Page	1 of 1
Site Location	Bethpage, NY			Date	10/8/02
Site/Well No.	GM-70D2	Replicate No.		Code No.	
Weather	Sunny, Cool, 70°	Sampling Time:	Begin 1040	End	1225

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	330.00
Depth to Water (ft bmp)	308.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	22.00
Casing Diameter/Type	4" (0.65)
Gallons in Well	14.30
Gallons Pumped/Bailed Prior to Sampling	45.00
~~Sample Pump Intake Setting (ft bmp)~~ Pump Pressure	145 PSI
Purge Time	begin 1045 end 1225
Pumping Rate (gpm)	
Evacuation Method	Dedicated bladder Pump

Field Parameters

	I	1V2	2V	3V
Color				colorless
Odor				odorless
Appearance				Clear
pH (s.u.)	5.96	5.18	6.04	5.6
Conductivity ~~(mS/cm)~~ (µmhos/cm) x100	0.86	0.84	0.84	0.83
Turbidity (NTU)				<50
Temperature (~~°C~~ °F)	59.4	58.8	59.6	59.4
Dissolved Oxygen (mg/L)				
Salinity (%)				
Time ~~Sampling Method~~	1045	1114	1145	1215

Remarks: DTW: 48.31'

5 Gallon Pails: ~~IIII~~ IIII

Samples split w/ H2M (BWD)

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Set control pressure back to ~90 PSI after water surfaces to control hose kicking around.

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	mililiter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman | Project No. NY 003348.0006.0002 | Page 1 of 1

Site Location: Bethpage, NY | Date: 10/8/02

Site/Well No.: GM-71D2 | Replicate No. | Code No.

Weather: Sunny, 75° | Sampling Time: Begin 0955 End 1020

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	464.00
Depth to Water (ft bmp)	447.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	22.00
Casing Diameter/Type	4" (0.65)
Gallons in Well	14.30
Gallons Pumped/Bailed Prior to Sampling	43.00
~~Sample Pump Intake Setting (ft bmp)~~	230 PSI
Purge Time	begin 0955 end 1020
Pumping Rate (gpm)	
Evacuation Method	Dedicated bladder pump

Field Parameters

	1	1V	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	5.31	5.02	5.02	4.85
Conductivity ~~(mS/cm)~~	0.87	0.95	0.95	0.94
(µmhos/cm)X100				
Turbidity (NTU)				<50
Temperature ~~(°C)~~ °F	56.7	57.3	56.0	55.0
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	0857	0925	0950	1015

Remarks: DTW: 49.20'

5 Gallon Pails: IIII IIII

Sampler Split w/ Heron (BWD)

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel: KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 000H Well ID: GM 74I

Date: 10.9.02 Sampled By: _____

Sampling Time: _____ Recorded By: _____

Weather: Cloudy Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Low flow

Casing Diameter: 4" Purge Rate: _____

Total Depth: 114 Total Volume Purged: _____

Depth to Water: 45.40 Pump Intake Depth 105.00

Water Column: _____ Pump on: _____ Off: _____

Gallons/Foot: _____ Parameters Sampled: _____

Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
10:20				306	5.68	54.0	19.7	45.40	7.0	
10:25				302	5.74	54.3	19.8		6.0	
10:30				304	5.71	54.3	19.8		7.0	
10:35				307	5.54	104.9	20.2		6.0	
10:40				309	5.54	104.1	20.2		7.0	
10:45				308	5.51	104.0	20.2		7.0	
10:50				308	5.51	104.0	20.2		7.0	
10:55				311	5.52	104.0	20.2		7.0	
11:00				309	5.52	104.1	20.2		7.0	
11:05				309	5.52	104.9	20.3		7.0	

Well Secure: _____ Purge Water Disposal: _____

Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 0004 Well ID: GM 74 D

Date: 10.9.02 Sampled By: CW BH

Sampling Time: _____ Recorded By: BH

Weather: Cloudy Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow

Casing Diameter: 4" Purge Rate: _____

Total Depth: _____ Total Volume Purged: _____

Depth to Water: 52.12 Pump Intake Depth _____

Water Column: _____ Pump on: _____ Off: _____

Gallons/Foot: _____ Parameters Sampled: _____

Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
12:10				349	4.90	84.6	18.2		6.0	
12:15				347	4.87	84.7	18.2		6.0	
12:20				347	4.78	85.4	18.0		6.6	
12:25				349	4.72	85.6	17.9		6.0	
12:30				350	4.74	85.9	17.9		6.0	
12:35				350	4.74	85.9	17.9		6.0	
12:40				348	4.76	86.8	17.8		6.2	
12:45				349	4.75	86.8	17.7		6.2	
12:50				349	4.76	87.0	17.7		6.4	
12:55				350	4.75	88.1	17.6		6.4	
1:00				356	4.76	87.9	17.6		6.4	
1:05				351	4.79	88.5	17.6		6.4	
1:10			32.9	351	4.75	88.3	17.6		6.6	

Well Secure: _____ Purge Water Disposal: _____

Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NP001341.0006 Task: 0004 Well ID: GM 74 D2
Date: 10.9.02 Sampled By: GW BH
Sampling Time: Recorded By: BH
Weather: Partly Sunny Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow
Casing Diameter: 4" Purge Rate:
Total Depth: Total Volume Purged:
Depth to Water: 58.64 Pump Intake Depth
Water Column: Pump on: Off:
Gallons/Foot: Parameters Sampled:
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1:30	400			339	5.11	62.7	17.5	58.64	6.6	
1:35				335	5.25	55.8	18.7		3.4	
1:40				311	5.23	54.4	18.3	58.64	2.4	
1:45				238	5.37	71.8	18.2		2.2	
1:50				236	5.54	71.6	18.2		2.3	
1:55				247	5.27	64.3	18.5	58.65	2.5	
2:00				264	5.10	67.2	18.5		2.7	
2:05				274	4.90	67.3	18.4	58.64	3.5	
2:10				281	5.00	69.1	18.3		3.7	
2:15				289	5.02	70.7	18.8		3.4	
2:20				289	4.97	70.0	18.8		3.4	
2:25				290	4.99	70.7	18.8		3.8	
2:30				290	4.99	70.7	18.8	58.64	3.8	

Well Secure: Purge Water Disposal:
Color: Turbidity(qualitative): less than 50 visual

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001227.0002 Task: 00004 Well ID: GM-75D-2
Date: 10-3-02 Sampled By: G.W.
Sampling Time: _____ Recorded By: G.W
Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: Low flow
Casing Diameter: _____ Purge Rate: ~500ml/min
Total Depth: _____ Total Volume Purged: _____
Depth to Water: _____ Pump Intake Depth _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1:25	500 ml/m			268	5.70	179.5	18.7	42.69	3.5	
1:30				290	4.91	182.1	17.7		4.7	
1:35				299	4.82	183.9	17.6		4.6	
1:40				303	4.80	184.3	17.5		4.8	
1:45				300	4.79	184.3	17.6		4.8	
1:50				306	4.78	185.1	17.7		4.8	
1:55				306	4.79	185.1	17.6		4.8	
2:00				309	4.80	184.9	17.5		4.8	
2:05				312	4.78	184.9	17.5		4.8	
2:10				312	4.79	184.9	17.5		4.8	
2:15				315	4.83	184.8	17.4		4.8	
2:20				317	4.82	184.8	17.4		4.8	
2:25			15.3	317	4.81	185.2	17.4		4.6	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project # NY001348.0006.00004 Project Mgr. GRUMMAN/ARCADIS Page 1 of 1

Site Location Bethpage, NY Date 10/10/02

Site/Well No. GM-78S Replicate No. Code No.

Weather Cloudy, 65° Sampling Time: Begin 1300 End 1400

Evacuation Data		Field Parameters	I	1 V	2 V	3 V
Measuring Point	TOC	Color		colorless		
MP Elevation (ft)		Odor		odorless		
Land Surface Elevation (ft)		Appearance		clear		
Sounded Well Depth (ft bmp)	70'	pH (s.u.)	6.78	6.87	6.79	6.02
Depth to Water (ft bmp)	48.58'	Conductivity (~~mS/cm~~)				
Water-Level Elevation (ft)		(µmhos/cm) x 100	3.55	3.66	3.61	3.59
Water Column in Well (ft)	21.42'	Turbidity (NTU)				<50
Casing Diameter/Type	4" (0.65)	Temperature ~~(°F)~~ °F	62.4	63.1	62.2	62.2
Gallons in Well		Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	42	Salinity (%)				
Sample Pump Intake Setting (ft bmp)		~~Sampling Method~~ Time	1:28	1:35	1:42	1:49
Purge Time	begin ____ end ____	Remarks	DTW: 48.58'			
Pumping Rate (gpm)	Q=2gpm T=21 MIN 1V=14 GALLONS (7 min)					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
CHECK VOC			

Sampling Personnel DP/KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00004 Well ID: GM-78I
Date: 10/10/02 Sampled By: KS/DP
Sampling Time: 1400 Recorded By: DP
Weather: CLOUDY, 65° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: LOW-FLOW NON-DEDICATED BLADDER
Casing Diameter: 4" Purge Rate: 500 ml/min
Total Depth: 110 Total Volume Purged:
Depth to Water: 48.87 Pump Intake Depth:
Water Column: Pump on: 1405 Off: 1525
Gallons/Foot: Parameters Sampled: CHECK COC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units)	Conductivity x100 (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
2:10	500			174	4.19	1.79	63.7	48.87	—	
2:15	↓			189	4.50	1.73	62.9		5.92	
2:20				196	5.02	1.74	62.6		5.35	
2:25				197	5.13	1.73	62.5	48.86	5.27	
2:30				201	5.06	1.73	62.7		5.30	
2:35				203	4.69	1.73	62.5		5.89	
2:40	↓			205	4.42	1.71	62.4	49.91	5.87	
2:45	300			206	4.36	1.71	62.3		3.85	
2:50	↓			208	4.42	1.72	62.6		4.89	
2:55	↓			209	4.38	1.72	62.3	48.86	3.97	
3:00	↓			210	4.32	1.71	62.0		3.61	
3:05	↓			210	4.33	1.72	62.1		4.00	
3:10	↓		<50	212	4.35	1.70	61.5	48.82	5.31	

Well Secure: YES Purge Water Disposal: NC SEWER
Color: COLORLESS Turbidity(qualitative): CLEAR
ODORLESS

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 0004 Well ID: 79I
Date: 10-4-02 Sampled By: Gw Brk
Sampling Time: _____ Recorded By: GW
Weather: OVERCAST DRIZZLY Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: LOW flow
Casing Diameter: 4" Purge Rate: _____
Total Depth: 180 Total Volume Purged: _____
Depth to Water: 47.40 Pump Intake Depth 175
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: _____
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
2:30	450 m/m			264	4.84	90.1	16.1	47.40	6.7	
2:35				270	4.84	90.3	15.6		5.9	
2:40				276	4.77	90.9	15.4	47.40	5.7	
2:45				283	4.87	90.1	15.4		5.7	
2:50				287	4.76	89.6	15.4	47.40	5.7	
2:55				291	4.86	89.4	15.5		5.7	
3:00				293	4.82	89.3	15.4	47.42	5.7	
3:05				297	4.81	88.6	15.4		5.7	
3:10				299	4.79	88.5	15.4	47.42	5.7	
3:15		7	15.7	304	4.80	88.2	15.4		5.7	
3:20										
3:25										
3:30										

Well Secure: _____ Purge Water Disposal: _____
Color: COLORLESS Turbidity(qualitative): CLEAR

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00004 Well ID: PZ0

Date: 10-4-02 Sampled By: GW BH

Sampling Time: _____ Recorded By: BH

Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: Low flow

Casing Diameter: 4" Purge Rate: 450ml/min

Total Depth: 290 Total Volume Purged: 9.0L

Depth to Water: _____ Pump Intake Depth _____

Water Column: _____ Pump on: _____ Off: _____

Gallons/Foot: _____ Parameters Sampled: _____

Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1:00				294	5.51	68.0	16.9	48.80	7.0	
1:05				298	5.42	65.7	16.6		7.0	
1:10				300	5.30	68.8	16.5		5.0	
1:15				267	5.28	65.1	16.2		3.0	
1:20				240	5.30	66.1	15.9		2.8	
1:25				232	5.30	65.7	15.9		2.8	
1:30				232	5.10	66.7	15.8		2.8	
1:35				235	5.10	64.9	15.8		2.8	
1:40				232	5.09	64.3	15.8		2.6	
1:45				240	5.08	64.2	15.8		2.0	
1:50				242	5.06	64.3	15.7		1.8	
1:55				246	5.03	64.7	15.7		1.8	
2:00				246	4.95	64.7	15.7	48.80	1.8	

Well Secure: _____ Purge Water Disposal: _____

Color: COLORLESS Turbidity(qualitative): SLIGHTLY TURBID

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00004 Well ID: HN-29D
Date: 10/15/02 Sampled By: DP
Sampling Time: 11:40 Recorded By: DP
Weather: 55° SUNNY Coded Replicate No.: —

WELL IMFORMATION

Casing Material: PVC Purge Method: LOW FLOW NON-DEDICATED BLADDER
Casing Diameter: 4" Purge Rate: 450 ML/MIN
Total Depth: ~~80~~ Total Volume Purged:
Depth to Water: 54.56 Pump Intake Depth
Water Column: Pump on: 12:00 Off: 1:22
Gallons/Foot: Parameters Sampled: SEE COC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity x100 (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
12:15	450			145	4.00	1.19	15.8	54.56	~~6.81~~	5.56
12:20				148	5.93	1.13	16.0	—	~~6.72~~	6.73
12:25				153	5.86	1.11	16.1	—	6.01	
12:30				157	5.75	1.10	16.1	54.57	6.00	
12:35				161	5.73	1.10	16.1	—	6.81	
12:40				163	5.60	1.10	16.1	—	6.42	
12:45				163	5.61	1.11	16.1	54.67	6.12	
12:50				163	5.50	1.11	16.2	—	6.52	
12:55				165	5.18	1.11	16.2	—	6.61	
1:00				165	5.18	1.11	16.2	54.69	6.00	
1:05				166	5.17	1.11	16.3	—	6.71	
1:10				167	5.40	1.11	16.3	—	6.51	
1:15	↓		<50	169	5.39	1.12	16.2	54.57	6.61	

Well Secure: YES, LOOSE SANITARY SEAL Purge Water Disposal: NC SEWER
Color: COLORLESS Turbidity(qualitative): CLEAR
ODOR: ODORLESS

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. N4001345.0006.4 | Page 1 of 1

Site Location: BETHPAGE, NY | Date: 14 OCT 02

Site/Well No.: MW 405 | Replicate No. | Code No.

Weather: 50° SUNNY | Sampling Time: Begin 1100 End

Evacuation Data

Measuring Point	T.O.C.
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	58.00
Depth to Water (ft bmp)	56.58
Water-Level Elevation (ft)	
Water Column in Well (ft)	~~58.00~~ 1.5
Casing Diameter/Type	4"
Gallons in Well	1
Gallons Pumped/Bailed Prior to Sampling	3.5
Sample Pump Intake Setting (ft bmp)	57.50
Purge Time	begin 1100 end
Pumping Rate (gpm)	0.5 gpm
Evacuation Method	

Field Parameters

	I	1V	2V	3V
Color	brown yellowish tint			
Odor	odorless			
Appearance	cloudy			
pH (s.u.)	3.36	3.79	3.67	3.90
Conductivity (mS/cm)		1.56		
(µmhos/cm)	1.61	~~2.44~~	1.53	1.51
Turbidity (NTU)		162.4		<200
Temperature ~~°C~~ °F	61.4	~~61.6~~	61.8	62.0
Dissolved Oxygen (mg/L)				

Salinity (%):

Sampling Method:

Remarks:

Constituents Sampled	Container Description	Number	Preservative
VOC	40 mL VOA	2	

Sampling Personnel: MS KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N4001348.0006 Task: 00004 Well ID: HN-40I
Date: 14 OCT 02 Sampled By: MS KS
Sampling Time: 1035 Recorded By: MS
Weather: 50° SUNNY Coded Replicate No.: ———

WELL IMFORMATION

Casing Material: PVC Purge Method: LOW FLOW
Casing Diameter: 4" Purge Rate: 350 mL/min
Total Depth: 118 Total Volume Purged:
Depth to Water: 56.39 Pump Intake Depth 113
Water Column: Pump on: 0935 Off: 1040
Gallons/Foot: Parameters Sampled: VOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate (mL/min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units)	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
0940	350			266	4.10	0.87	14.5	56.39	8.03	
0945	"			267	4.00	0.92	15.4	—	6.05	
0950	"			267	5.04	0.95	15.4	—	5.17	
0955	"			267	5.02	0.97	15.7	56.40	4.90	
1000	"			267	5.81	0.99	15.8	—	4.64	
1005	"			267	5.02	0.97	15.5	—	4.80	
1010	"			266	5.15	1.09	15.9	56.40	5.37	
1015	"			265	5.02	1.02	16.3	—	5.47	
1020	"			264	5.04	1.09	16.4	—	5.12	
1025	"			264	5.09	1.00	16.3	56.40	4.85	
1030	"			263	5.09	0.97	16.5	—	5.41	
1035	"	5gal	<50	263	5.03	0.98	16.5	56.39	5.00	

Well Secure:
Color: colorless odorless
Purge Water Disposal: NC Sewer
Turbidity(qualitative): clear

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project NY001348.0006.00004 Project No. _____ Page 1 of _____

Site Location _____ Date 14 OCT 02

Site/Well No. HN 423 Replicate No. _____ Code No. _____

Weather 50° SUNNY Sampling Time: Begin 1345 End 1430

Evacuation Data

Measuring Point	T.O.C.
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	59.45
Depth to Water (ft bmp)	59.11
Water-Level Elevation (ft)	
Water Column in Well (ft)	0.34
Casing Diameter/Type	
Gallons in Well	0.20
Gallons Pumped/Bailed Prior to Sampling	
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 1345 end 1430
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Color	brown
Odor	none
Appearance	turbid
pH (s.u.)	3.89
Conductivity (mS/cm)	2.30
(µmhos/cm)	
Turbidity (NTU)	
Temperature ~~(°C)~~ F	58.9
Dissolved Oxygen (mg/L)	
Salinity (%)	
Sampling Method	
Remarks	

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel MS KS

Well Casing Volumes

Gal./Ft.				
	1-¼" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N4001348.0006 Task: 00004 Well ID: HN421
Date: 14 OCT 02 Sampled By: MS KS
Sampling Time: _____ Recorded By: MS
Weather: 50° SUNNY Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: LOW FLOW
Casing Diameter: 4" Purge Rate: ~450 ml/min
Total Depth: 110 Total Volume Purged: 8 GALLONS
Depth to Water: 58.37 Pump Intake Depth 58'
Water Column: _____ Pump on: 1220 Off: 1345
Gallons/Foot: _____ Parameters Sampled: VOC
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1225	~450			39	3.55	3.45	15.5	58.37'	4.41	
1230				23	3.34	3.33	16.7	-	4.11	
1235				21	3.67	3.31	16.6	--	4.10	
1240				20	3.69	3.61	16.7	58.48'	4.01	
1245				20	3.62	3.61	16.8	-	4.04	
1250				20	3.54	3.60	16.9	-	4.06	
1255				20	3.44	3.60	17.3	58.47'	4.07	
1300				21	3.59	3.48	17.3	-	3.77	
1305				21	3.50	3.24	17.5	-	3.40	
1310				21	3.49	3.26	17.5	58.44'	3.38	
1315				22	3.38	3.17	17.7	-	3.83	
1320				22	4.03	2.91	17.6	-	4.39	
1325	↓		NTU	23	4.30	3.02	17.6	58.42'	4.38	
1330				24	4.23	3.04	17.6	-	4.39	
1335	↓			24	4.25	3.02	17.6	-	4.39	

Well Secure: YES Purge Water Disposal: NC Sewer
Color: Colorless Turbidity(qualitative): clear
odorless

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00004 Well ID: MW-52D
Date: 10/11/02 Sampled By: KS/DP
Sampling Time: 11:00 Recorded By: DP
Weather: RAINING, 50° Coded Replicate No.: MS/MSD

WELL IMFORMATION

Casing Material: PVC Purge Method: LOW FLOW NON-DEDICATED BLADDER
Casing Diameter: 2" Purge Rate: 450 ml/MIN
Total Depth: Total Volume Purged:
Depth to Water: 63.35 Pump Intake Depth
Water Column: Pump on: 11:35 Off: 12:59
Gallons/Foot: Parameters Sampled: SEE COC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity X100 (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
11:45	450			191	4.11	2.50	15.5	63.35	10.34	
11:50				186	4.06	2.65	15.7		9.94	
11:55				143	5.86	2.78	16.0		9.85	
12:00				83	5.13	2.90	16.3	63.35	9.72	
12:05										
12:10				106	5.98	3.02	16.6		9.65	
12:15				126	5.86	3.54	16.9	63.35	9.58	
12:20				140	5.79	3.10	17.3		9.47	
12:25										
12:30				145	5.79	2.94	17.6	63.35	9.34	
12:35				147	5.87	2.85	17.7		9.25	
12:40				147	5.77	2.79	17.9		9.16	
12:45			<50	143	5.84	2.77	18.1	63.35	9.24	
	↓									

Well Secure: YES Purge Water Disposal: NC SEWER
Color: YELLOW TINT Turbidity(qualitative): CLEAR
SWEET ODOR

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00004 Well ID: MW-52I
Date: 10/11/02 Sampled By: KS/DP
Sampling Time: 1:05 Recorded By: DP
Weather: RAINING, 50° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: LOW FLOW NON-DEDICATED BLADDER
Casing Diameter: 2" Purge Rate: 450ml/MIN
Total Depth: Total Volume Purged:
Depth to Water: 62.05 Pump Intake Depth
Water Column: Pump on: 1:49 Off: 3:15
Gallons/Foot: Parameters Sampled: SEE COC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
2:00	450			179	5.81	1.16	19.3	62.05	8.95	
2:05				213	5.56	1.17	19.3		8.95	
2:10				234	5.65	1.18	19.3		8.94	
2:15				243	5.61	1.18	19.3	62.14	8.94	
2:20				246	5.15	1.19	19.3		8.92	
2:25				250	5.60	1.20	19.4		8.92	
2:30				255	5.71	1.21	19.4	62.12	8.91	
2:35				257	5.70	1.23	19.4		889	
2:40				260	5.86	1.21	19.4		8.89	
2:45				261	5.84	1.24	19.5	62.06	8.87	
2:50				263	5.84	1.22	19.5		8.88	
2:55	V		<50	264	5.80	1.20	19.5		8.87	
3:00										

Well Secure: YES Purge Water Disposal: NC SEWER
Color: COLORLESS Turbidity(qualitative): CLEAR
SWEET ODOR

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N4001348.0006 Task: 00004 Well ID: N-10627
Date: 10/10/02 Sampled By: KS/DP
Sampling Time: 1040 Recorded By: DP
Weather: Cloudy, 60° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: LOW FLOW NON-DEDICATED BLADDER
Casing Diameter: 4" Purge Rate: ~ 450 ml/min
Total Depth: 295 Total Volume Purged: 9 GALLONS
Depth to Water: 39.48 Pump Intake Depth:
Water Column: Pump on: 10:50 AM Off: 1210
Gallons/Foot: Parameters Sampled: CHEM LOC
Gallons in Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units)	Conductivity (x100 µmhos/cm)	Temp (°C/°F)	Depth to Water	Diss. Oxygen	Comments
10:55	450			125	7.89	0.98	63.8	41.02	1.08	
11:00	↓			104	8.32	0.81	63.3		0.60	
11:05				71	8.80	0.74	63.0		0.45	
11:10				3	9.01	0.72	62.8		0.37	
11:15				-31	9.06	0.73	62.9	41.17	0.29	
11:20				-55	9.04	0.75	62.8		0.25	
11:25				-72	9.03	0.76	62.2		0.34	
11:30				-71	9.01	0.78	62.1	41.16	0.57	
11:35				-78	8.98	0.80	62.4		0.50	
11:40				-68	8.92	0.82	62.8		0.40	
11:45				-68	8.89	0.83	62.7	41.09	0.39	
11:50				-63	8.84	0.84	62.8		0.54	
11:55			(49.2)	-54	8.80	0.85	62.8		0.46	

Well Secure: YES, padlock missing Purge Water Disposal: NE Sewer
Color: COLORLESS Turbidity(qualitative): CLEAR
ODORLESS

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project NY001348.0006 Project No. 00004 Page 1 of 1

Site Location BOLIVAR NY Date 10/9/02

Site/Well No. N-10634 Replicate No. Code No.

Weather cloudy 65° Sampling Time: Begin 1345 End 1605

Evacuation Data		Field Parameters	I	W	2V	3V
Measuring Point	TOC	Color	BROWN TINT	~~Colorless~~		
MP Elevation (ft)		Odor		odorless		
Land Surface Elevation (ft)		Appearance			clear	
Sounded Well Depth (ft bmp)	67.00'	pH (s.u.)	7.02	~~6.98~~ 7.02	6.96	6.96
Depth to Water (ft bmp)	46.80'	Conductivity ~~(mS/cm)~~ (µmhos/cm) ×1000	0.97	0.98	0.97	0.97
Water-Level Elevation (ft)		Turbidity (NTU)				>100
Water Column in Well (ft)	20.20'	Temperature ~~(°C)~~ °F	58.8	57.9	57.4	57.2
Casing Diameter/Type	2" (.16)	Dissolved Oxygen (mg/L)				
Gallons in Well	3.35	Salinity (%)				
Gallons Pumped/Bailed Prior to Sampling	10	~~Sampling Method~~ Time	1356	1458	1600	1601
Sample Pump Intake Setting (ft bmp)	65'	Remarks				
Purge Time	begin 1350 end 1604					
Pumping Rate (gpm)						
Evacuation Method	2" Submersible Pump					

Constituents Sampled	Container Description	Number	Preservative
check COC			

Sampling Personnel KS / GW

Well Casing Volumes

Gal./Ft.				
	1-⅛" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-½" = 0.09	2-½" = 0.26	3-½" = 0.50	6" = 1.47

bmp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
°C	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
ft	feet	msl	mean sea-level	s.u.	Standard units
gpm	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
mg/L	Miligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS

Appendix C

Chain Of Custody Records

ARCADIS

Laboratory Task Order No./P.O. No. ______

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001313.0006.00004/Green...
Project Location ______, NY
Laboratory STL
Project Manager Carlo San Giovanni
Sampler(s)/Affiliation KS/ARCADIS

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOCs						Remarks	Total
TB100107	L	10/1/07		2							2
GM-20I	L	10/1/07		2							2
GM-20D	L	10/1/07		2							2

Sample Matrix: (L = Liquid); S = Solid; A = Air

Total No. of Bottles/Containers 6

Relinquished by: [illegible]	Organization: ARCADIS	Date 10/1/07	Time 1800	Seal Intact?
Received by:	Organization:	Date / /	Time	(Yes) No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: * 2 week TAT, report to Carlo San Giovanni

Delivery Method: ☐ In Person ☒ Common Carrier Fed-Ex (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

ARCADIS

Laboratory Task Order No./P.O. No.

CHAIN-OF-CUSTODY RECORD

Project Number/Name [illegible] / [illegible]
Project Location [illegible] NY
Laboratory STL - Shelton
Project Manager [illegible]
Sampler(s)/Affiliation [illegible] / [illegible]

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOC [illegible]						Remarks	Total
TZ100202	L	10/2/02		2							2
GM-36D2	L	10/2/02		2							2
GM-36D	L	10/2/02		2							2
GM-15D-2	L	10/2/02		2							2
GM-15S	L	10/2/02		2							2
TB10-2-02	L	10/2/02		2							2
TB10-2-02A	L	10/2/02		2							2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 14

Relinquished by: [illegible]	Organization: [illegible]	Date 10/2/02	Time [illegible]	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: [illegible] TAT, [illegible]

Delivery Method: ☐ In Person ☒ Common Carrier [illegible] (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

ARCADIS

BWD

Laboratory Task Order No./P.O. No. ______

CHAIN-OF-CUSTODY RECORD

Project Number/Name N400B48.0006.0004 Grumman / BWD
Project Location Bethpage, NY (BETHPAGE Water District)
Laboratory H2M
Project Manager Carlo San Giovani
Sampler(s)/Affiliation KS / AG&M

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC's (HCl preserved) (40ml VOA)					Remarks	Total
GM-36D2	L	10/2/02		2						2
GM-36D	L	10/2/02		2						2

Sample Matrix: (L = Liquid;) S = Solid; A = Air.

Total No. of Bottles/Containers: 4

Relinquished by: [signature]	Organization: ARCADIS G&M	Date 10/2/02	Time	Seal Intact?
Received by: [signature]	Organization: H2M	Date 10/2/02	Time 1635	(Yes) No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: * Samples split between Bethpage Water District and Northrop Grumman,
Any questions call Dave Stern @ 631-249-7600

Delivery Method: ☒ In Person ☐ Common Carrier ______ (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. ______ **CHAIN-OF-CUSTODY RECORD** Page ___ of ___

Project Number/Name NY001348.0006.00004

Project Location BETHPAGE NY.

Laboratory [illegible] ECOTEST

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation G.W. BH.

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	1 L PLASTIC TOTAL Cl (HNO3)	1 L PLASTIC DISSOLVED Cl (HNO3)				Remarks	Total
GM-15S	L	10-2-02		1	1					2
FB 10-2-02	L	10-2-02		1						1

24 HR RUSH

Sample Matrix: L = Liquid; S = Solid; A = Air.

Total No. of Bottles/Containers 3

Relinquished by: [signature]	Organization: ARCADIS	Date 10/2/02	Time 3:00	Seal Intact?
Received by: [signature]	Organization: ECOTEST	Date 10/ 7/02 (unclear)	Time 400	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:

Delivery Method: ☒ In Person ☐ Common Carrier ______ (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No.

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001348.0006.0004/ Northrop Grumman (Bethpage Water District)

Project Location Bethpage, NY

Laboratory H2M

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation KS / ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC's (40 ml vial) (Chlorinated)						Remarks	Total
GM-35D2	L	10/3/02		2							2

Sample Matrix: (L = Liquid;) S = Solid; A = Air

Total No. of Bottles/Containers 2

Relinquished by: [signature]	Organization: ARCADIS G+M	Date 10/3/02	Time [illegible]	Seal Intact?
Received by: [signature]	Organization:	Date [illegible]	Time [illegible]	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Split Samples from Grumman for Bethpage Water District. Any Questions Call Dave Stern @ 631-249-7600.

Delivery Method: ☒ In Person ☐ Common Carrier ______ SPECIFY ☐ Lab Courier ☐ Other ______ SPECIFY

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. 05

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001348.0006.00004/GRUMMAN

Project Location Bethpage, NY

Laboratory STL

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation KS/AG&M GW,BH/AGM

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC's - NYS method 95-1 (unpreserved) (40ml vials)						Remarks	Total
TB100302	L	10/3/02		2							2
GM-21I	L	10/3/02		2							2
GM-35D2 *	L	10/3/02		2							2
TB 10-3-02A	L	10-3-02		2							2
GM-75D2 *	L	10-3-02		2							2
GM-18D	L	10-3-02		2							2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 12

Relinquished by: HW	Organization: ARCADIS	Date 10/3/02	Time 5:30	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:

* PLEASE BE SURE DATA IS AVAILABLE ON 10-21-02
REPORT TO DAVE STERN

Delivery Method: ☐ In Person ☒ Common Carrier ____ SPECIFY ☐ Lab Courier ☐ Other ____ SPECIFY

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page ____ of ____

Project Number/Name NY001348.0006.00004

Project Location BETHPAGE NY

Laboratory ECOTEST

Project Manager CARLO SALVATO

Sampler(s)/Affiliation G.W. BH

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 1L PLASTIC TOTAL Cr+6 (7196)	1L PLASTIC DISSOLVED Cr+6 (7196)					Remarks	Total
GM-15S	L	10.3.02		1	1						2

24 HR RUSH

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers 2

Relinquished by:		Organization: ARCADIS	Date 10/3/02	Time 12:30	Seal Intact?	
Received by:		Organization: ECOTEST	Date 10/3/02	Time 1250	Yes No N/A	
Relinquished by:		Organization:	Date / /	Time	Seal Intact?	
Received by:		Organization:	Date / /	Time	Yes No N/A	

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☐ Common Carrier _____ SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. ____

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001345.0006 00004 / Grumman

Project Location Bethpage NY

Laboratory STL - Shelton

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation KS/GW/BH (ACM)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOCs - NYS method 95-1 (unpreserved)						Remarks	Total
TB100402	L	10/4/02		2							2
GM-38D2	L	10/4/02		6*							6
GM-38D	L	10/4/02		2							2
REP01	L	10/4/02		2							2
TB 10-4-02A	L	10-4-02		2							2
GM-79I	↓	10-4-02		2							2
GM-79D	↓	10-4-02		2							2

Sample Matrix: (L = Liquid;) S = Solid; A = Air

Total No. of Bottles/Containers: 18

Relinquished by: [signature]	Organization: ARCADIS	Date 10/4/02	Time 5:30	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks:
Please Report to Dave Stacey
* Use GM-38D2 for MS/MSD.

Delivery Method: ☐ In Person ☒ Common Carrier FedEx (SPECIFY) ☐ Lab Courier ☐ Other ____ (SPECIFY)

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name NY001348.0006.00004 / Grumman + Bethpage Water District

Project Location Bethpage, NY

Laboratory HZM

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation KS (AGtM)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ml (VOA's) VOC's (HCl preserved)						Remarks	Total
GM-38D2	L	10/4/02		2							2
GM-38D	L	10/4/02		2							2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers: 4

Relinquished by:	Organization: ARCADIS GEM	Date 10/4/02	Time 1600	Seal Intact?		
Received by:	Organization: HZM	Date 10/4/02	Time 1600	Yes	No	N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?		
Received by:	Organization:	Date / /	Time	Yes	No	N/A

Special Instructions/Remarks:

*Samples are stored as a split between Grumman and BWD.

** Any Questions call Dave Stern @ 631-249-7600

Delivery Method: ☒ In Person ☐ Common Carrier _____ SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. 5

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001347.0006.00004/Grumman
Project Location Bethpage, NY
Laboratory STL - Shelton
Project Manager Carlo San Giovanni
Sampler(s)/Affiliation KS/AGM GW/BH (AGM)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOCs (NYS method)	Cd/Cr Total	Cd/Cr Dissolved				Remarks	Total
TB100702	L	10/7/02		2							2
GM-37D2	L	10/7/02		2							2
GM-37D	L	10/7/02		2							2
GM-18I	L	10/7/02		2							2
TB100702A	L	10/7/02		2							2
FB10-7-02	L	10/7/02		2	1						3
18S	L	10/7/02		2	1	1					4
17SR	L	10/7/02		2	1	1					4
17I	L	10/7/02		2							2
17D	L	10/7/02		2							2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 25

Relinquished by: [signature]	Organization: ARCADIS G&M	Date 10/7/02	Time 1900	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: Report to Dave Stern 2 week TAT
* Sample held 45 minutes in the field

Delivery Method: ☐ In Person ☒ Common Carrier FedEx (SPECIFY) ☐ Lab Courier ☐ Other ________ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page ____ of 1

Project Number/Name: [illegible]

Project Location: [illegible]

Laboratory: H2M

Project Manager: [illegible]

Sampler(s)/Affiliation: [illegible]

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE						Remarks	Total
GM-37D2	L	initial		2							2
GM-37D	L	initial		2							2

Sample Matrix: (L = Liquid; S = Solid; A = Air)

Total No. of Bottles/ Containers: 4

Relinquished by: [signature]	Organization: _____	Date __/__/__	Time _____	Seal Intact? Yes No N/A
Received by: _____	Organization: H2M	Date __/__/__	Time _____	
Relinquished by: _____	Organization: _____	Date __/__/__	Time _____	Seal Intact? Yes No N/A
Received by: _____	Organization: _____	Date __/__/__	Time _____	

Special Instructions/Remarks: [illegible]

Delivery Method: ☒ In Person ☐ Common Carrier _____ (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page ____ of ____

Project Number/Name _____

Project Location _____

Laboratory _____

Project Manager _____

Sampler(s)/Affiliation _____

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE						Remarks	Total
TB100802	L	10/8/02		2							
6M-41D2	L	10/8/02		2							
6M-10D2	L	10/8/02		2							
6M-16I	L	10/8/02		2							
6M-15I	L	10/8/02		2							
6M-15D	L	10/8/02		2							
6M-21D	L	10/8/02		2							
TB IL-8-02A	L	10/8/02		2							

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers

				Seal Intact?
Relinquished by: _____	Organization: _____	Date 10/8/02	Time _____	Yes No N/A
Received by: _____	Organization: _____	Date / /	Time _____	
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?
Received by: _____	Organization: _____	Date / /	Time _____	Yes No N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier Fed Ex ☐ Lab Courier ☐ Other _____

SPECIFY SPECIFY

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. _____ **CHAIN-OF-CUSTODY RECORD** Page 1 of 1

Project Number/Name [illegible]

Project Location [illegible], NY

Laboratory HZM

Project Manager [illegible]

Sampler(s)/Affiliation [illegible]

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE						Remarks	Total
GM-41D2	L	10/[illegible]		2							2
GM-70D2	L	10/[illegible]		2							2

Sample Matrix: (L = Liquid) S = Solid; A = Air

Total No. of Bottles/ Containers 4

				Seal Intact?
Relinquished by: [illegible]	Organization: [illegible]	Date 10/[illegible]	Time [illegible]	
Received by: [illegible]	Organization: [illegible]	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: [illegible]

Delivery Method: ☒ In Person ☐ Common Carrier _____ SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. ______

CHAIN-OF-CUSTODY RECORD

Page ___ of ___

Project Number/Name: NY001348.0006.00004

Project Location: BETHPAGE NY

Laboratory: ECOTEST

Project Manager: CARLO SAN GIOVANNI

Sampler(s)/Affiliation: G.W. B.H.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	500ml Plastic TOTAL CL (Abbot)						Remarks	Total
GM-15I	L	10-8-02		1							1
GM-15D	✓	✓		1							1
GM-15D-2	✓	✓		1							1

1 WK TURNAROUND

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers: 3

Relinquished by: [signature]	Organization: ARCADIS	Date 10/8/02	Time 5:00	Seal Intact?
Received by: [signature]	Organization: ECOTEST	Date 10/8/02	Time 16:43	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: REPORT TO DAVE STERN

Delivery Method: ☒ In Person ☐ Common Carrier ______ (SPECIFY) ☐ Lab Courier ☐ Other ______

ARCADIS

Laboratory Task Order No./P.O. No. ________

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001308.0006.00001/Grumman

Project Location Bethpage, NY

Laboratory STL - Shelton

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation KS /ACM

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOC's - NYS method 95-1 (unpreserved)						Remarks	Total
TB100902	L	10/9/02		2							2
GM-13D	L	10/9/02		2							2
GM-22I	L	10/9/02		2							2
REP100902	L	10/9/02		2							2
GM-32D2	L	10/9/02		2							2
N-10634	L	10/9/02		2							2
[illegible]	L	[illegible]		2							
[illegible]	L	[illegible]		2							
[illegible]	L	[illegible]									
[illegible]	L	[illegible]		2							
[illegible]	L	[illegible]									

Sample Matrix: (L = Liquid) S = Solid; A = Air

Total No. of Bottles/Containers ____

Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Please Report to Dave Stern 2 week TAT.

Delivery Method: ☐ In Person ☒ Common Carrier FedEx (SPECIFY) ☐ Lab Courier ☐ Other ________ (SPECIFY)

AG 05-12/01

ARCADIS GERAGHTY & MILLER

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name _____

Project Location _____

Laboratory _____

Project Manager _____

Sampler(s)/Affiliation _____

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID							Remarks	Total
TR10007	L	10/10/07		2							
FR101007	L	10/10/07		2							
MW-10[illegible]	L	10/10/07		2							
GM-11S	L	10/10/07		2	1						3
GM-7RI	L	10/10/07		2	1						3
GM-21S	L	10/10/07		2							2
TR101007A	L	10/10/07		2							2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers

Relinquished by: _____	Organization: ARCADIS G&M	Date 10/10/07	Time 17:20	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes No N/A	
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?	
Received by: _____	Organization: _____	Date / /	Time _____	Yes No N/A	

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☒ Common Carrier _____ SPECIFY ☐ Lab Courier ☐ Other _____ SPECIFY

AG 05-0597

ARCADIS GERAGHTY & MILLER — Laboratory Task Order No./P.O. No. ______

CHAIN-OF-CUSTODY RECORD

Project Number/Name [illegible]
Project Location [illegible]
Laboratory [illegible]
Project Manager [illegible]
Sampler(s)/Affiliation [illegible]

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: [illegible]	SO4 [illegible]	[illegible]				Remarks	Total
TB101102	L	[illegible]		2							[illegible]
MW-52D	L	[illegible]		6							[illegible]
MW-52I	L	10/[illegible]		2							[illegible]
MW-3R	L	10-11-02		2	1	1					4
MW-16SR	L	"		2	1	1					4
FB10-11-02	L	"		2	1	1					4
TB10-11-02A	L	"		2							2

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers [illegible]

Relinquished by: [illegible]	Organization: [illegible]	Date [illegible]	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: [illegible]

Delivery Method: ☐ In Person ☒ Common Carrier ______ (SPECIFY) ☐ Lab Courier ☐ Other ______ (SPECIFY)

AG 05-0597

ARCADIS GERAGHTY & MILLER

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page _____ of _____

Project Number/Name _____

Project Location _____

Laboratory _____

Project Manager _____

Sampler(s)/Affiliation _____

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE						Remarks	Total

Sample Matrix: (L = Liquid; S = Solid; A = Air

Total No. of Bottles/ Containers

Relinquished by: _____	Organization: _____	Date ___/___/___	Time _____	Seal Intact?
Received by: _____	Organization: _____	Date ___/___/___	Time _____	Yes No N/A
Relinquished by: _____	Organization: _____	Date ___/___/___	Time _____	Seal Intact?
Received by: _____	Organization: _____	Date ___/___/___	Time _____	Yes No N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☐ Common Carrier _____ ☐ Lab Courier ☐ Other _____

SPECIFY SPECIFY

AG 05-0597

ARCADIS

Laboratory Task Order No./P.O. No. _____

CHAIN-OF-CUSTODY RECORD

Page 2 of 2

Project Number/Name _____

Project Location _____

Laboratory _____

Project Manager _____

Sampler(s)/Affiliation _____

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE						Remarks	Total
										Total No. of Bottles/ Containers	

Sample Matrix: L = Liquid; S = Solid; A = Air

Relinquished by: _____	Organization: _____	Date ___/___/___	Time _____	Seal Intact?
Received by: _____	Organization: _____	Date ___/___/___	Time _____	Yes No N/A
Relinquished by: _____	Organization: _____	Date ___/___/___	Time _____	Seal Intact?
Received by: _____	Organization: _____	Date ___/___/___	Time _____	Yes No N/A

Special Instructions/Remarks: _____

Delivery Method: ☐ In Person ☐ Common Carrier _____ (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-12/01

ARCADIS

Laboratory Task Order No./P.O. No. ____________

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY001318.0006.00004

Project Location NETN PAGE NY

Laboratory SEVERN-TRENT Knoxville

Project Manager DAVE STERN

Sampler(s)/Affiliation G.W. BH

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: Summa Canister TO-14						Remarks	Total
GP-1/3 INFLUENT	AIR	10-14-02		1							1
GP 1/3 EFFLUENT	↓	↓		1							1
ONCT INFLUENT	↓	↓		1							1
ONCT EFFLUENT	↓	↓		1							1

Sample Matrix: L = Liquid; S = Solid; A = Air

Total No. of Bottles/Containers 4

Relinquished by: G.W.B.	Organization: ARCADIS	Date 10/15/02	Time 1730	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: REPORT TO DAVE STERN (31) 391-5184

Delivery Method: ☐ In Person ☒ Common Carrier FED EX (SPECIFY) ☐ Lab Courier ☐ Other ________ (SPECIFY)

AG 05 12/01

ARCADIS

Appendix D

Data Validation Memoranda

MEMO

ARCADIS G & M, Inc.
88 Duryea Road
Melville
New York 11747
Tel 631 249-7600
Fax 631 249-7610

ENVIRONMENTAL

To:
David Stern

Copies:

From:
Donna M. Brown

Date:
December 12, 2002

Subject:
Data Validation of Volatile Organic Compound Groundwater Samples Collected for the Third Quarter 2002 Monitoring Program, Northrop Grumman, Bethpage, New York (Project No. NY001321.00001.00004).

DATA VALIDATION

Water samples, field replicates, field blanks, and trip blanks were collected October 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York. The samples were sent to Severn Trent Laboratories (STL) in Shelton, Connecticut for the analysis of volatile organic compounds (VOCs) following purge and trap GC/MS using New York State Department of Environmental Conservation (NYSDEC) CLP Protocols. Sample GM-14 was analyzed according to USEPA Method 624.

Validation of the data was performed following the quality assurance/quality control (QA/QC) criteria set forth in the method, and the document "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" dated October 1999. Sample identification, collection dates, and laboratory-received dates are listed in Table 1. The quality of the data was acceptable with the appropriate qualifications described in this memorandum. Metals and SVOCs data were discussed in a separate memo.

The analytical data for samples were provided by the laboratory in six sample delivery groups (SDG) 202095, 202130, 202152, 202185, 202200, and 202254. The data validation results for these SDGs are discussed separately below.

SDG 202095

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

One initial calibration was performed on September 17, 2002. The compound relative response factors (RRFs) were >0.05 and compound percent relative standard deviation (%RSD) values were <30%.

IV. CONTINUING CALIBRATION

Two continuing calibrations were performed with the samples. The compound RRFs were >0.05. The following percent difference (%D) values were >25:

Calibration Date: 10/4/02

Compound	% D
Chloromethane	64.3
Vinyl chloride	37.7

Associated samples: TB100102, TB100202, TB100202A, FB100202, GM-20D, GM-36D2, GM-15D-2, GM-36D, GM-15S, GM-20I, TB100302, TB100302A, GM-21I, GM-35D-2, and GM-75D-2

Calibration Date: 10/7/02

Compound	% D
Chloromethane	62.6
Acetone	43.4
Vinyl chloride	37.4
Vinyl Acetate	30.4
2-Butanone	29.0
2-Hexanone	32.9

Associated samples: GM-35-D-2(DL), GM-75D-2(DL) and GM-18D.

V. BLANKS

Two method blanks were analyzed with this SDG. No compound or TICs were detected.

Five trip blanks were analyzed with this SDG. The following target compound was detected in the trip blanks:

Trip Blank TB100202

Compound	Concentration in ug/L
Methylene chloride	0.5 J

Associated Samples: GM-36D and GM-36D2.

Trip Blank TB100202A

Compound	Concentration in ug/L
Methylene chloride	0.5 J

Associated Samples: GM-15D-2 and GM-15S.

One field blank was collected and analyzed with the samples. No compounds or TICs were detected.

No qualification of the data was necessary based on blank results.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MATRIX SPIKES/MATRIX SPIKE DUPLICATES/MARTIX SPIKE BLANKS (MS/MSD/MSB) AND LABORATORY CONTROL SAMPLES (LCS)

The MS/MSD/MSB and LCS results were within QC limits.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

Target compounds were reported correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

A TICs was reported correctly.

XII. OVERALL ASSESSMENT OF DATA

Samples GM-35D-2 and GM-75D-2 were analyzed at a secondary dilution due to concentrations of trichloroethene exceeding the calibration range of the instrument. The original analysis was reported except for the trichloroethene results, in which the secondary dilution was reported.

The quality of the data presented in this SDG package was acceptable with the appropriate qualifications described above.

SDG 202130

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

Two initial calibrations were performed on September 17, 2002 and October 9, 2002. All compound RRFs were >0.05 and RSDs were <30%.

IV. CONTINUING CALIBRATION

Three continuing calibrations were performed in this SDG. The compounds had RRFs >0.05. The following %Ds were >25%:

Calibration date: 10/8/02

Compound	%D
2-Butanone	30.7
Acetone	27.6
Chloromethane	45.4
Bromomethane	32.8
Vinyl Acetate	30.5
2-Hexanone	40.1

Associated samples: TB100402, TB100402A, GM-38D, REP01, GM-79I, GM-79D, TB100702 and GM-37D2.

Calibration date: 10/9/02

Compound	%D
Bromomethane	30.1
4-Methyl-2-pentanone	31.0
2-Hexanone	35.5
1,1,2,2-Tetrachloroethane	26.8

Associated samples: TB100702A, FB100702, GM-38D2, GM-37D, GM-18I, 18S and 17I.

Calibration date: 10/10/02

Compound	%D
Acetone	28.5
1,1,1-Trichloroethane	25.4
1,2-Dichloroethane	33.2

Associated samples: 17SR, 17D, GM-71D2, GM-70D2, and TB100802.

The above compounds were qualified as estimated (J) if detected and estimated (UJ) if not detected in the associated samples.

V. BLANKS

Three method blanks were analyzed with the samples in this SDG. The following compound was detected in a method blank:

Method Blank 10542-1MB

Compound	Concentration in ug/L
Acetone	2.73 J

Associated samples: TB100702A, FB100702, GM-38D2, GM-37D, GM-18I, 18S, and 17I.

Five trip blanks were analyzed with this SDG. The following target compounds were detected in the trip blanks:

Trip Blank TB 100402

Compound	Concentration in ug/L
Methylene chloride	0.5 J
Acetone	5 J

Associated sample: GM-38D2, GM-38D, and REP01.

Trip Blank TB100402A

Compound	Concentration in ug/L
Methylene chloride	0.4 J

Associated samples: GM-79I and GM-79D.

Trip Blank TB100702A

Compound	Conc in ug/L
Methylene chloride	0.6 J

Associated samples: 18S, 17SR, 17I and 17D.

One field blank was analyzed with this SDG. The following target compound was detected in the field blank:

Field Blank FB100702

Compound	Conc in ug/L
Methylene chloride	0.4 J

Associated samples: 18S, 17SR, 17I and 17D.

No qualification of the date was necessary based on blank results.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MS/MSD/MSB AND LCS

The %R and RPD were within QC limits in the MS/MSD/MSB and LCS. Qualification of the data was not necessary.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

Target compounds detected in the samples were reported correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

A compound (2-chloroethyl vinyl ether) was detected in TB100802 and reported on the quantitation report. It was not a target compound and was added to the TIC sheet for TB100802. It was not detected in any other samples.

XII. OVERALL ASSESSMENT OF DATA

Sample GM-38D was replicated and labeled REP-01, the replicate results were accepatble.

The quality of the data presented in this SDG package was acceptable with the appropriate qualifications described above.

SDG 202152

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

Two initial calibration was performed on October 9 and 14, 2002. All compound RRFs were >0.05 and %RSD values were <30%.

IV. CONTINUING CALIBRATION

Four continuing calibrations were performed with the samples. The RRFs were >0.05. The following %Ds were >25%:

Calibration Date: 10/10/02

Compound	% D
Acetone	27.0
1,1,1-Trichloroethane	28.5
1,2-Dichloroethane	33.2

Associated sample: TB100902, GM-15D, GM-15I, GM-21D, GM-33D2, and GM-23I.

The compounds were qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples.

V. BLANKS

Four method blanks were analyzed with the samples in this SDG. No compounds or TICs were detected in the method blanks.

Four trip blanks and two field blanks were analyzed with the samples. The following compounds were detected in the blanks:

Trip Blank TB100802A

Compound	Concentration in ug/L
Methylene chloride	1
Acetone	6

Associated samples: GM-15I, GM-15D, and GM-21D.

Trip Blank TB100902A

Compound	Concentration in ug/L
Methylene chloride	0.5 J

Associated samples: 74I, 74D, and 74D2.

Field Blank FB100902

Compound	Concentration in ug/L
Methylene chloride	0.3 J

Associated samples: GM-13D, GM-23I, REP100902, GM-33D2, N-10634, 74I, 74D, and 74D2.

Field Blank FB101002

Compound	Concentration in ug/L
Methylene chloride	0.6 J

Associated samples: N-10627 and GM-78S

Based on blank results methylene chloride was qualified as non-detect (U) in GM-13D, GM-23I and REP100902.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MS/MSD/MSB AND LCS

The MS/MSD/MSB and LCS results were within QC limits.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

Target compounds detected in the samples were reported correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

No TICs were detected in this sample set.

XII. OVERALL ASSESSMENT OF DATA

Samples GM-13D was replicated and labeled REP100902. Carbon disulfide was qualified as estimated (J) in GM-13D and REP100902 based on replicated results.

The quality of the data presented in this SDG package was acceptable with the appropriate qualifications described above.

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

One initial calibration was performed on October 14, 2002. The compound RRFs found to be >0.05 and the compound RSDs were found to be <30%.

IV. CONTINUING CALIBRATION

Three continuing calibrations were performed with the samples. The compounds had RRFs >0.05 and %Ds <25% except:

10/21/02

Compound	Concentration in ug/L
Vinyl acetate	34.0
2-Hexanone	25.8

Associated samples: ONCT2, ONCTINF, and GP1/3 INF.

The associated sample results were qualified as estimated (J) if detected and estimated (UJ) if not detected.

V. BLANKS

Three method blanks were analyzed with this SDG. No compounds or TICs were detected in the method blank.

Five trip blanks and two field blanks were collected along with this sample set. No compounds and TICs were detected in the blanks.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MS/MSD/MSB AND LCS

One MS/MSD RPD were outside QC limits. One LCS %R was above QC limits. Qualification of the data was not necessary.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

All target compounds detected were reported correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

The TICs was reported correctly.

XII. OVERALL ASSESSMENT OF DATA

The data was acceptable with the qualifications listed above.

SDG 202200

Samples HN-29I, HN-29D, and HN-24I were mislabeled by the lab as HW-29I, HW-29D and HW-24I, respectively. The sample ids were corrected.

I. HOLDING TIMES

The samples were analyzed within holding time requirements except for the secondary dilution of ONCT-1, GP-1, and GP-3. The diluted results for ONCT-1, GP-1, and GP-3 were all qualified as estimated (J), if detected and estimated (UJ) if not detected.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

One initial calibration was performed on October 14, 2002. The compound RRFs were >0.05 and the compound RSDs were <30%.

IV. CONTINUING CALIBRATION

Four continuing calibrations were performed with the samples. The compounds had RRFs >0.05 and %Ds <25% except for the following:

Date: 10/21/02

Compound	%D
Vinyl Acetate	34
2-Hexanone	25.8

Associated Samples: HN-29I, HN-29D, TB101502, FB101502, ONCT3, and REP101102.

Date: 10/22/02

Compound	%D
Vinyl Acetate	35.4

Associated Samples: GP-1, GP-3, ONCT1, HN-24I, ONCT EFF, and GP 1/3 EFF.

Date: 10/23/02

Compound	%D
4-Methyl-2-pentanone	27.9
2-Hexanone	36.5
1,1,2,2-Tetrachloroethane	28.6

Associated Samples: GP-1(DL), GP-3(DL), ONCT1(DL), GM-32S, FB101702, and TB101702.

Date: 10/24/02

Compound	%D
Vinyl Acetate	28.6

Associated Samples: MW-52S, GM-73D, and N-10631.

The associated sample results were qualified as estimated (J) if detected and estimated (UJ) if not detected.

V. BLANKS

Four method blanks were analyzed with this SDG. The following TIC was detected in the method blanks:

Method Blank: 10969-1MB

TIC	RT
Unknown	19.54

Associated Samples: MW-52S, GM-73D, and N-10631.

Two trip blanks and two field blanks were analyzed with this SDG. The following compound was detected in the blanks:

Trip Blank: TB101502

Compound	Conc in ug/L
Methylene chloride	0.6 J

Associated samples: HN-29I, HN-29D, and HN-24I.

Trip Blank: TB101702

Compound	Conc in ug/L
Methylene chloride	0.9 J

Associated samples: MW-1GF, MW-2GF, GM-32S, and N10631.

Field Blank: FB101502

Compound	Conc in ug/L
Methylene chloride	0.8 J

Associated samples: HN-29I, HN-29D, and HN-24I.

Field Blank: FB101702

Compound	Conc in ug/L
Methylene chloride	0.6 J

Associated samples: MW-1GF, MW-2GF, GM-32S, and N10631.

The following compounds were qualified as non-detect (U) based on the blank results:

Compound	Sample ID
Methylene chloride	GP-1(DL), GP-3(DL), HN-24I, and MW-52S.

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

The surrogate spike recoveries were within control limits except for ONCT-1, GP-1, and GP-3 in which one was above QC limits. The detects in ONCT-1, GP-1, and GP-3 were qualified as estimated (J).

VII. MS/MSD/MSB AND LCS

The MS/MSD/MSB and LCS results were within QC limits.

VIII. INTERNAL STANDARDS

The internal standard area counts and retention times were within control limits for all samples and blanks except for GP-1 and GP-3 in which 1,4-difluorobenzene above QC limits. The associated dedications in GP-1 and GP-3 were qualified as estimated (J).

IX. TARGET COMPOUND IDENTIFICATION

The compounds were identified correctly, however, vinyl chloride and 1,1-dichloroethane were detected on the quantitation report for GP-3 and were not reported on the Form I. The Form I was corrected to report a detect of 47 ug/L for vinyl chloride and 4 J ug/L 1,1,dichlorethane in GP-3.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

No TICs were detected in the samples.

XII. OVERALL ASSESSMENT OF DATA

Sample ONCT-3 was replicated and labeled REP101102. The results were acceptable.

Samples ONCT-1, GP-1 and GP-3 were analyzed at a secondary dilution due to concentrations of trichloroethene exceeding the calibration range of the instrument.

The original analysis was reported except for trichloroethene results in which the secondary dilution was reported.

The data was acceptable with the qualifications listed above.

SDG 202254

I. HOLDING TIMES

All samples were analyzed within holding time requirements.

II. GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

III. INITIAL CALIBRATION

Two initial calibrations were performed on October 14 and 17, 2002. All compound RRFs were >0.05 and all RSD values were <30%.

IV. CONTINUING CALIBRATION

Three continuing calibrations were performed with the samples. The compounds had RRFs > 0.05 and %Ds <25% except for the following:

Calibration Date: 10/23/02

Compound	%D
4-Methyl-2-Pentanone	27.9
2-Hexanone	36.5
1,1,2,2-Tetrachloroethane	28.6

Associated samples: FB101802, TB101802, and TB101802A.

Calibration Date: 10/24/02

Compound	%D
Vinyl acetate	28.6

Associated sample: REP101802.

The above compounds were qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples.

V. BLANKS

Three method blanks were analyzed with this SDG. The following TIC was detected in a method blank:

Method Blank: 10969-1MB

TIC	RT
Unknown	19.54

Associated samples: FB101802, TB101802, and TB101802A.

Two trip blanks and one field blank were collected with the samples and analyzed in this SDG. The following compounds were detected in the blanks:

Field Blank: FB101802

Compound	Concentration in ug/L
Methylene chloride	0.6 J

Associated samples: MW-52S and GM-73D in SDG 202200 and REP10-18-02

Trip Blank: TB101802

Compound	Concentration in ug/L
Methylene chloride	0.9 J

Associated samples: GM-52 and GM-73D in SDG 202200.

Trip Blank: TB101802A

Compound	Concentration in ug/L
Methylene chloride	0.8 J

Associated samples: REP-10-18-02.

Based on the blank results the following compound was qualified as non-detect (U):

Compound	Sample ID:
Methylene chloride	REP 10-18-02

VI. SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

All surrogate spike recoveries were within control limits for all samples and blanks.

VII. MS/MSD/MSB AND LCS

MS/MSD/MSB analyses were not performed in this SDG. LCS results were within QC limits.

VIII. INTERNAL STANDARDS

All internal standard area counts and retention times were within control limits for all samples and blanks.

IX. TARGET COMPOUND IDENTIFICATION

All compounds were identified correctly.

X. COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

XI. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

TICs were not detected in any samples.

XII. OVERALL ASSESSMENT OF DATA

Sample MW-52S in SDG 202200 was replicated and labeled REP10-18-02. The duplicate results were acceptable.

The data was acceptable with the qualifications listed above.

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the Third Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 202095			
TB100102	202095-001	10/1/2002	10/2/2002
GM-20I	202095-002	10/1/2002	10/2/2002
GM-20D	202095-003	10/1/2002	10/2/2002
TB100202	202095-004	10/2/2002	10/3/2002
GM-36D2	202095-005	10/2/2002	10/3/2002
GM-36D	202095-006	10/2/2002	10/3/2002
GM-15D-2	202095-007	10/2/2002	10/3/2002
GM-15S	202095-008	10/2/2002	10/3/2002
FB100202	202095-009	10/2/2002	10/3/2002
TB100202A	202095-010	10/2/2002	10/3/2002
TB100302	202095-011	10/3/2002	10/4/2002
GM-21I	202095-012	10/3/2002	10/4/2002
GM-35D-2	202095-013	10/3/2002	10/4/2002
TB100302A	202095-014	10/3/2002	10/4/2002
GM-75D-2	202095-015	10/3/2002	10/4/2002
GM-18D	202095-016	10/3/2002	10/4/2002

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the Third Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 202130			
TB100402	202130-001	10/4/2002	10/5/2002
GM-38D2	202130-002	10/4/2002	10/5/2002
GM-38D	202130-003	10/4/2002	10/5/2002
REP01	202130-004	10/4/2002	10/5/2002
TB100402A	202130-005	10/4/2002	10/5/2002
GM-79I	202130-006	10/4/2002	10/5/2002
GM-79D	202130-007	10/4/2002	10/5/2002
TB100702	202130-008	10/7/2002	10/8/2002
GM-37D2	202130-009	10/7/2002	10/8/2002
GM-37D	202130-010	10/7/2002	10/8/2002
GM-18I	202130-011	10/7/2002	10/8/2002
TB100702A	202130-012	10/7/2002	10/8/2002
FB100702	202130-013	10/7/2002	10/8/2002
18S	202130-014	10/7/2002	10/8/2002
17SR	202130-015	10/7/2002	10/8/2002
17I	202130-016	10/7/2002	10/8/2002
17D	202130-017	10/7/2002	10/8/2002
TB100802	202130-018	10/8/2002	10/9/2002
GM-71D2	202130-019	10/8/2002	10/9/2002
GM-70D2	202130-020	10/8/2002	10/9/2002

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the Third Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 202152			
GM-16I	202152-001	10/8/2002	10/9/2002
GM-15I	202152-002	10/8/2002	10/9/2002
GM-15D	202152-003	10/8/2002	10/9/2002
GM-21D	202152-004	10/8/2002	10/9/2002
TB100802A	202152-005	10/8/2002	10/9/2002
TB100902	202152-006	10/9/2002	10/10/2002
GM-13D	202152-007	10/9/2002	10/10/2002
GM-23I	202152-008	10/9/2002	10/10/2002
REP100902	202152-009	10/9/2002	10/10/2002
GM-33D2	202152-010	10/9/2002	10/10/2002
N-10634	202152-011	10/9/2002	10/10/2002
74I	202152-012	10/9/2002	10/10/2002
74D	202152-013	10/9/2002	10/10/2002
74D2	202152-014	10/9/2002	10/10/2002
TB100902A	202152-015	10/9/2002	10/10/2002
FB100902	202152-016	10/9/2002	10/10/2002
TB101002	202152-017	10/10/2002	10/11/2002
FB101002	202152-018	10/10/2002	10/11/2002
N-10627	202152-019	10/10/2002	10/11/2002
GM-78S	202152-020	10/10/2002	10/11/2002

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the Third Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 202185			
GM-78I	202185-001	10/10/2002	10/11/2002
GM-21S	202185-002	10/10/2002	10/11/2002
TB101002A	202185-003	10/10/2002	10/11/2002
TB101102	202185-004	10/11/2002	10/12/2002
MW-52D	202185-005	10/11/2002	10/12/2002
MW-52I	202185-006	10/11/2002	10/12/2002
MW-3R	202185-007	10/11/2002	10/12/2002
MW-16SR	202185-008	10/11/2002	10/12/2002
FB101102	202185-009	10/11/2002	10/12/2002
TB101102A	202185-010	10/11/2002	10/12/2002
FB101402	202185-011	10/14/2002	10/15/2002
TB101402	202185-012	10/14/2002	10/15/2002
HN-40S	202185-013	10/14/2002	10/15/2002
HN-40I	202185-014	10/14/2002	10/15/2002
HN-42S	202185-015	10/14/2002	10/15/2002
HN-42I	202185-016	10/14/2002	10/15/2002
TB101402A	202185-017	10/14/2002	10/15/2002
ONCT2	202185-018	10/14/2002	10/15/2002
GP1/3 INF	202185-019	10/14/2002	10/15/2002
ONCT INF	202185-020	10/14/2002	10/15/2002

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed for the Third Quarter 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York.

ARCADIS G&M, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 202200			
REP101102	202200-001	10/14/2002	10/15/2002
ONCT3	202200-002	10/14/2002	10/15/2002
GP1/3 EFF	202200-003	10/14/2002	10/15/2002
ONCT EFF	202200-004	10/14/2002	10/15/2002
ONCT 1	202200-005	10/14/2002	10/15/2002
GP-1	202200-006	10/14/2002	10/15/2002
GP-3	202200-007	10/14/2002	10/15/2002
HW-29I	202200-008	10/15/2002	10/16/2002
HW-29D	202200-009	10/15/2002	10/16/2002
HW-24I	202200-010	10/15/2002	10/16/2002
TB101502	202200-011	10/15/2002	10/16/2002
FB101502	202200-012	10/15/2002	10/16/2002
MW-1GF	202200-013	10/17/2002	10/18/2002
MW-2GF	202200-014	10/17/2002	10/18/2002
GM-32S	202200-015	10/17/2002	10/18/2002
N-10631	202200-016	10/17/2002	10/18/2002
FB101702	202200-017	10/17/2002	10/18/2002
TB101702	202200-018	10/17/2002	10/18/2002
MW-52S	202200-019	10/18/2002	10/19/2002
GM-73D	202200-020	10/18/2002	10/19/2002
SDG 202254			
FB101802	202254-001	10/18/2002	10/19/2002
TB101802	202254-002	10/18/2002	10/19/2002
TB101802A	202254-003	10/18/2002	10/19/2002
REP101802	202254-004	10/18/2002	10/19/2002
GM-14	202254-005	10/18/2002	10/19/2002

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MEMO

To:
David Stern

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ENVIRONMENTAL

From:
Donna Brown

Date:
12 December 2002

Subject:
Data Validation of Cadmium, and Chromium for Groundwater Samples Collected from the Third Quarter 2002, Off-Site Monitoring Program, Northrop Grumman, Bethpage, New York (Project No. NY1321.1 Task 0004).

Ten groundwater samples and three field blanks were collected during October 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York. The samples were sent to Severn Trent Laboratories (STL) in Shelton, Connecticut for the analysis of total and/or dissolved cadmium and chromium using SW846 methods ICAP 3010A/6010B.

A groundwater sample and field blank were collected on October 18, 2002 in the vicinity of the Northrop Grumman site, Bethpage, New York. The samples were sent to Severn Trent Laboratories (STL) in Shelton, Connecticut for the analysis of semi-volatile organic compounds (SVOCs) following GC/MS using New York State Department of Environmental Conservation (NYSDEC) Protocols with guidance from method 625.

The samples were analyzed for cadmium and chromium, or SVOCs, in sample delivery groups (SDGs) 202130, 202152, 202185, 202200, and 202254. The VOC results in were fully validated and are discussed in a separate memorandum. A list of all samples in each SDG is included in the VOC validation. The metal and SVOC results were reviewed for the following:

- Chain-of-custody form,
- holding times,
- blanks (initial calibration, continuing calibration, preparation, method and/or field),
- and spike sample recovery.

Our ref.:
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A bis(2-ethylhexyl) phthalate was detected in the field blank associated with the SVOC analysis. Based on the blank results, bis(2-ethylhexyl) phthalate was qualified as non-detect (U) in sample GM-14.

The data were complete and acceptable.