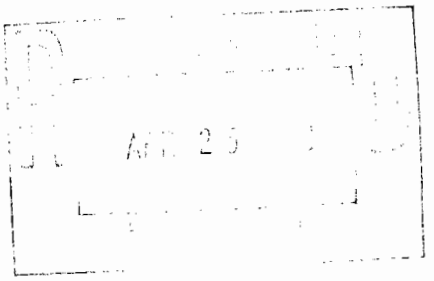

Third Quarter 2002
Groundwater Monitoring Report

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

ARCADIS

Infrastructure, buildings, environment, communications

PREPARED FOR

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Report

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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 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.

This report describes groundwater flow conditions and groundwater quality observed during the Third 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 September 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 Third 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 [OCC]/RUCO Polymer Corporation sites), and 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 in 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 Third Quarter 2002 monitoring round.

2.1 Hydraulic Monitoring

On October 14, 2002, the Third 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 extraction wells (hereinafter referred to as the remedial wells) and Industrial Well GP-3. The results of the Third Quarter 2002 hydraulic monitoring round are described in Section 4 (Groundwater Flow) of this report.

2.2 Groundwater Quality Monitoring

Between October 1 and October 18, 2002, the Third Quarter 2002 groundwater quality monitoring round was conducted by ARCADIS. As part of this round, groundwater samples were collected to evaluate the effectiveness of the OU2 groundwater remedy. The complete list of goals for 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 Third Quarter of 2002.

2.3 Modifications to Field Program

Modifications to the Third 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:

- ARCADIS installed dedicated bladder pumps in thirteen wells (GM-15D, GM-15D2, GM-17I, GM-17D, GM-18D, GM-21D, GM-73D2, GM-74I, GM-74D, GM-74D2, GM-75D2, GM-79I, and GM-79D). These wells were sampled using the dedicated pumps this round.

- Due to property redevelopment activities, water-level measurements and groundwater samples could not be collected from Wells GM-34D and GM-34D2 this round.

- Wells GM-23S and FW-03 were dry this round, therefore water-level measurements and groundwater samples could not be collected.

- 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 Industrial 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.

- Monitoring Wells GM-39D, GM-39D2, and GM-73D, were drilled and installed by the U.S. Navy as part of the OU2 hydraulic effectiveness evaluation. ARCADIS collected water-level measurements and groundwater samples as part of this hydraulic effectiveness evaluation, and the results are also provided in this report. The complete set of data from the hydraulic effectiveness evaluation will also be presented and evaluated in a separate report to NYSDEC. The aforementioned wells have all been incorporated into the quarterly Groundwater Monitoring Program.

- RUCO conducted pilot-scale pneumatic testing in monitoring wells located at Plant 12 (MW-52 well cluster), which substantially affected the TVOC concentrations detected this round. This is discussed further in Section 5 of this report.

3. OU2 Operational Performance Monitoring

OU2 operational performance monitoring activities are conducted by both NGC and ARCADIS personnel, and include: (1) hydraulic measurements (depth to groundwater and treatment system pumpage), (2) groundwater sampling/analysis, and (3) remedial system influent/effluent water. 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 Third 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. Additionally, 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 data for the OU2 remedial wells and Industrial Well GP-3 are provided in Table 3 and are discussed in Section 3.1 of this report.

As part of the Third Quarter 2002 performance monitoring activities, ARCADIS collected water samples 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 (see Section 5 [Groundwater Quality] of this report). In addition, ARCADIS collected instantaneous pumping rates (Table 4) from the OU2 remedial wells; and hydraulic measurements (Table 5). These data are discussed in Section 3.1 of report.

3.1 Pumpage

As summarized in Table 3, the total pumpage and average pumping rates for the OU2 remedial wells, during the Third Quarter 2002, were calculated using methods described in previous quarterly reports (ARCADIS G&M, Inc. 2003). The design pumping rates (i.e., the 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 80-day period (i.e., July 5 to September 23, 2002) that constituted the Third Quarter 2002 monitoring period, the result would be a total of 413.1 million gallons (MG) pumped.

The number of days each OU2 remedial well was operational out of the possible 80 days and their average pumping rates, when operational, are provided in Table 3. These periods of operation and average pumping rates equate to approximately 501.9 MG pumped by the OU2 remedial wells for the period of record this quarter, or approximately 121 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 464 gpm. This equates to approximately 60.8 MG pumped in addition to the quantity pumped by the OU2 remedial wells. As shown on Table 3, the actual Third Quarter 2002 pumpage rates for the ONCT remedial wells and Remedial Well GP-1 exceeded the design pumping rates.

Table 4 summarizes the performance data collected from the OU2 remedial wells for the Second and Third Quarters of 2002. Based on instantaneous pumping rate and drawdown measurements made during the Third Quarter 2002, the specific capacities of the OU2 Wells GP-1, ONCT-2, and ONCT-3 are similar to results from the Second Quarter 2002, while the specific capacity for Well ONCT-1 was slightly lower than the previous round. A depth to groundwater cannot be obtained for Industrial Well GP-3 because records of depth and submergence of the airline in Well GP-3 are not available. Therefore, the specific capacity could not be calculated for well GP-3. Specific capacities calculated for Remedial Wells GP-1, ONCT-1, ONCT-2 and ONCT-3, for the Third 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), the TCE removal efficiencies for both of the OU2 groundwater treatment systems are greater than 99.9 percent (Table 2). Based on the results of the influent and effluent TVOC samples (Table 10) collected by ARCADIS, TVOC removal efficiencies for the ONCT and GP-1 systems are both greater than 99.9 percent. Based on both data sets, the two OU2 groundwater remedy treatment systems 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 2,438 pounds (lbs) of VOCs were removed from groundwater and treated by the OU2 groundwater remedy treatment systems in the Third Quarter 2002 (Table 3).

4. Groundwater Flow

This section presents the results of the depth to groundwater measurements made during the Third 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 Third Quarter 2002 depth to groundwater measurement round was conducted on October 14, 2002 while the OU2 groundwater remedy was operating above its design total pumping rate (3,957 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 the groundwater flow conditions (horizontal and vertical) in each aquifer horizon described above.

4.1 Shallow Zone

Figure 2 shows the water-table configuration and horizontal groundwater flow directions in the shallow zone during the Third 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. This section also describes 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 October 14, 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 and GM-17SR/GM-17I exhibited a downward vertical gradient, with Wells 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 64 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, GM-17SR/GM-17I, and GM-78S/GM-78I are also oriented downward and are close to model predictions. These data indicate that in the vicinity of the Plant 5 and 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 near the Plant 5 and South Basins 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 Third Quarter of 2002 was conducted using the same methods described in Section 4.2 above for the 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 Third 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-73D/GM-73D2 and 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 Third 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 October 14, 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) have 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 Third Quarter 2002 groundwater sampling round was conducted between October 1 and October 18, 2002. The following subsections of this report describe and discuss the conceptual effect of the OU2 groundwater remedy on the VOC plume, distribution of VOCs in the shallow, intermediate, deep, and D2 zones, and comparison between the VOC concentrations detected 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 (below SCGs). 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 1 foot per day (ft/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 describe the on- and off-site detections of VOCs in groundwater samples collected during the Third Quarter 2002.

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 13 shallow wells sampled this quarter, eleven wells exhibited no exceedences of SCGs with either no VOC detections or TVOC concentrations less than 2 micrograms per liter (ug/L) and two wells (GM-32S and GM-78S) exhibited TCE at concentrations exceeding SCGs (Table 7). Well GM-32S, which exhibited the highest TVOC concentration this round, is located approximately 1,900 ft north and upgradient of the OU2 remedial wells (Figure 1) with a TVOC concentration higher than last round. TVOC concentrations for other shallow wells have remained essentially the same or have decreased in comparison to 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 (below SCGs), 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 15 intermediate wells sampled this quarter, six wells (Wells GM-15I, GM-16I, GM-18I, HN-24I, HN-40I, and MW-52S) had exceedences of the SCGs, with TCE exceeding the SCG in all six wells. Other VOCs detected exceeding SCGs in Well MW-52S included PCE, VCM (see Section 5.2), and Freon 113. Other VOCs detected exceeding SCGs in Well HN-24I include 1,1-DCE; 1,1,1-TCA; and Freon 113. Of these six wells, Wells MW-52S and HN-24I had the highest TVOC concentrations (726 ug/L and 374 ug/L, respectively). Wells MW-52S and HN-24I are located approximately 5,400 feet and 4,400 feet, respectively, north and upgradient of the ONCT remedial wells. For the nine wells with no SCG exceedences, TVOC concentrations ranged from non-detect to 5 ug/L with wells in the South Recharge Basins/southern NGC property boundary area (i.e., GM-17I, GM-20I, GM-21I, GM-74I, GM-78I, and GM-79I) exhibiting TVOC concentrations of 1 ug/L or less (except for Well GM-78I which had a TVOC concentration of 5 ug/L), which attests to the effectiveness of the hydraulic barrier in preventing VOC-impacted groundwater from migrating off-site in the intermediate zone.

A total of 12 of the 15 intermediate wells sampled this quarter exhibited similar TVOC concentrations in comparison to the last round. Wells GM-18I, HN-24I, and MW-52S showed increased TVOC concentrations in comparison to 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 17 deep monitoring wells sampled this round, six wells exhibited no exceedences of SCGs, with five of these wells exhibiting TVOC concentrations of 3 ug/L or less. The other eleven wells each exhibited at least one constituent that exceeded SCGs. Eight of the eleven 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 (1,441 ug/L) and the most SCG exceedences and is located approximately 2,850 feet upgradient of the ONCT remedial wells. Wells GM-15D, GM-39D, GM- 73D, and GM-74D, exhibited TVOC concentrations ranging from 12 ug/L to 510 ug/L. These wells are located slightly upgradient and near the ONCT remedial wells (Figure 1). 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 6 ug/L (GM-18D exhibited a TCE concentration [6 ug/L] above the SCG this round) 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 Wells GM-18D, GM-38D, and MW-52D, which showed an increase in TVOC concentrations. Well MW-52I showed a substantial decrease in TVOC concentration (3,540 ug/L to 85 ug/L), which is likely attributable to implementation of the pilot scale pneumatic testing program implemented by Oxy in the interim period between the first and third quarters of 2002. Overall, TCE was the predominant compound detected in the deep zone wells except for Wells GM-13D, MW-52I and MW-52D where PCE, VCM, and 2-butanone, respectively were the predominant compounds 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 Wells ONCT-2 and GP-3, and remained

essentially the same in Wells ONCT-1, ONCT-3, and GP-1. 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 13 ug/L (Well GM-74D2) to 212 ug/L (Well ONCT-2). On the western portion of the NGC site, TVOC concentrations ranged from 110 ug/L (Well GM-39D2) to 2,669 ug/L (Well GP-3). All wells exhibited 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 ug/L in early 1999 to 252 ug/L in the Third Quarter 2002 round. This represents more than a 97 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 5 ug/L (Well GM-36D2) to 1,566 ug/L (Well GM-75D2), with five of the eight wells having one or more exceedences of SCGs. TVOC concentrations in wells exhibiting SCG exceedences are generally lower 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 Third 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 or intermediate zone this round (Tables 7 and 8, respectively), with the exception of intermediate zone Well MW-52S (670 ug/L), located immediately downgradient of the RUCO site and approximately 5,400 ft upgradient of the ONCT remedial wells. Well MW-52S has historically exhibited VCM concentrations exceeding the SCG; the VCM concentration in this well this round has significantly increased in comparison to the previous round. VCM was detected in the deep zone in Well MW-52I, which is located in the same well cluster as MW-52S. This well historically had exhibited the highest VCM concentrations. However the VCM concentration in Well MW-52I this round (44 ug/L) has substantially decreased in comparison to the previous round. This is likely attributable to the use of these wells for injection of high volumes of air and other gases into the formation in a pilot-scale demonstration of in-situ biospaging technology. This was performed by RUCO in the period between the First and Third Quarters of 2002. In the D2 zone, VCM was detected in Well GP-3 above the SCG at an average concentration of 21.5 ug/L (concentrations ranged from non-detect to 44.4 ug/L) based on the weekly sampling performed by NGC, and was detected at 47 ug/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-18 well clusters) no substantial changes in the position of the VCM subplume were evident. However, ARCADIS is aware that OCC is planning near-term groundwater data collection efforts south of the RUCO site to better define the horizontal and vertical extent of VCM in groundwater.

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 Third 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 Third Quarter 2002 round, low levels of VOCs (e.g., TCE, PCE, acetone, 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 Third 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 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 10631 exhibited a substantial decrease and was below the SCG.

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 80 days of the Third Quarter 2002, the OU2 groundwater remedy pumped and treated 501.9 MG of water, which is approximately 121 percent of the total design pumpage. Well GP-3 supplemented the total pumpage by an approximate additional 60.8 MG.

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 Third Quarter 2002, approximately 2,438 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 Third 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 Third 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 Third 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 Third Quarter 2002, VCM was detected only in Wells MW-52S, (intermediate zone) MW-52I (deep zone) (VCM monitoring well cluster located nearest to the RUCO property), and Well GP-3. The MW-52 wells historically have exhibited persistent concentrations of VCM exceeding the SCG and are located more than 4,000 ft north of Remedial Well GP-1. Well GP-3 (north of Well GP-1) exhibited VCM concentrations exceeding the SCG in the D2 zone in the Third Quarter 2002; these 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. Well GM-32S exhibited a Cr concentration that exceeded the SCG this round. 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,Third Quarter 2002, Northrop Grumman Corporation, Bethpage, New York. [1]

		OU2 REMEDIAL WELLS				INDUSTRIAL WELL	
	Well ID:	GP-1		ONCT-1	ONCT-2	ONCT-3	GP-3	
Sample	Units:	(ug/L)		(ug/L)	(ug/L)	(ug/L)	(ug/L)	
Collection Date:	Constituent:	VCM	TCE	TCE	TCE	TCE	VCM	TCE
7/5/2002		NA	322	502	126	14	NA	1,921
7/15/2002		<0.5	NA	640	90	13	20.1	NA
7/19/2002		<0.5	233	599	82	23	25.0	1,589
7/29/2002		<0.5	376	565	116	14	14.4	1,900
8/5/2002		<0.5	410	525	136	14	13.8	1,987
8/12/2002		<0.5	182	365	114	12	25.8	1,648
8/19/2002		<0.5	330	554	120	11	20.6	1,002
8/25/2002		<0.5	227	455	75	9	<0.5	1,146
9/3/2002		<0.5	430	674	123	14	19.6	1,245
9/9/2002		<0.5	650	706	268	18	44.4	2,127
9/16/2002		<0.5	354	807	535	18	27.4	1,818
9/23/2002		<0.5	387	910	477	18	25.6	1,934
Average Concentration:		**<0.5**	**355**	**609**	**189**	**15**	**21.5**	**1,665**

Note:

(1) Water samples were collected and analyzed for by Northrop Grumman; 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

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, Third 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)	
	Constituent:	TCE	TCE	VCM	TCE	VCM	TCE
7/5/2002		178	<0.5	NA	583	NA	<0.5
7/15/2002		120	<0.5	<0.5	NA	NA	NA
7/19/2002		124	<0.5	<0.5	532	NA	<0.5
7/29/2002		184	<0.5	0.7	606	NA	<0.5
8/5/2002		178	<0.5	0.6	625	NA	<0.5
8/12/2002		134	<0.5	<0.5	638	NA	<0.5
8/19/2002		122	<0.5	1.2	384	NA	<0.5
8/25/2002		244	<0.5	32.0	401	NA	<0.5
9/3/2002		272	<0.5	1.3	365	NA	<0.5
9/9/2002		439	<0.5	9.4	976	NA	<0.5
9/16/2002		720	<0.5	0.7	842	NA	<0.5
9/23/2002		685	<0.5	0.9	802	NA	<0.5
Average Concentration: [2]		**283**	**<0.5**	**4.3**	**614**	**NA**	**<0.5**

GP-1 system average TCE removal efficiency: **>99.99%**

ONCT system average TCE removal efficiency: **>99.99%**

Notes:

(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. Operational Summary of the OU2 Remedial Wells and Industrial Well GP-3, Third Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

Well Identification	Design Pumping Rate (gpm)	Average Actual Pumping Rate [a] (gpm)	Actual Total Pumpage [a] (MG)	Third Qtr. 2002 Design Total Pumpage (MG)	Percent of Design Pumpage	Average TCE Concentration [b] (ug/L)	Average TVOC Concentration [b] (ug/L)	TVOC Mass Removed [c] (lbs)
OU2 Wells								
GP-1	1,075	1,281	151.1	131.6	115%	355	428	538
ONCT-1	1,000	1,173	161.2	122.4	132%	609	621	834
ONCT-2	600	700	87.9	73.4	120%	189	200	146
ONCT-3	700	803	101.7	85.7	119%	15	26	22
Industrial Well								
GP-3	--	464	60.8	--	--	1,665	1,771	896
OU2 Wells TOTALS:	**3,375**	**3,957**	**501.9**	**413.1**	**121%**	**--**	**--**	**2,438** [d]

Notes:

[a] - Average actual -pumping rates were calculated based on Northrop Grumman records of total pumpage and hours of operation from July 5, 2002 to September 23, 2002 (80 Days)
-The number of days operational for the OU2 wells during the Third Quarter 2002 are as follows: GP-1 (80 days) , ONCT-1 (72 days), ONCT-2 (71 days), and ONCT-3 (70 days) , Well GP-3 was 100 percent operational during the Third Quarter of 2002.
- 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 estimated based on Third Quarter 2002 average influent TCE concentration (collected by NGC) and Third Quarter 2002 groundwater monitoring data (collected by ARCADIS) which indicated that TCE concentrations were a percentage of the TVOC concentration, as follows: GP-1 (83 percent), ONCT-1 (98 percent), ONCT-2 (94 percent), ONCT-3 (58 percent), and GP-3 (94 percent).

[c] - TVOC mass removed during the Third Quarter 2002 was based on the TCE/TVOC ratios given above and the following formula:

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

[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 Compounds
L/gal	Liters per gallon
g/ug	grams per microgram
lb/g	pounds per gram
NGC	Northrop Grumman Corporation

Table 4. OU2 Remedial Well Performance Data, Second and Third Quarters of 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	July 8, 2002	74.25	1150	30.13	38.2
		November 22, 2002	75.35	870.4	31.23	27.9
ONCT-2	50.15	July 8, 2002	70.66	714	20.51	34.8
		November 22, 2002	69.36	725.4	19.21	37.8
ONCT-3	49.13	July 8, 2002	71.37	591	22.24	26.6
		November 22, 2002	71.12	568.8	22.99	24.7
GP-1	55.75	July 8, 2002	95.00	1120	39.25	28.5
		November 22, 2002	97.00	1100	41.25	26.7

(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

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

Well Identification	Depth to Water October 14, 2002 (ft bmp)	Water-Level Elevation October 14, 2002 (ft msl)
Shallow Wells		
FW-03	NM[1)]	NM[1)]
N-9921	39.48	54.75
N-10597	49.27	60.58
N-10600	46.52	55.89
N-10631	45.71	57.76
N-10633	44.82	58.98
N-10634	NM[1)]	NM[1)]
N-10821	41.17	50.41
GM-15S	51.82	57.62
GM-16SR	55.69	60.17
GM-17SR	55.24	60.55
GM-18S	49.02	58.58
GM-19S	49.20	60.66
GM-21S	40.35	65.46
GM-78S	48.26	56.68
GM-79S (N-10628)	46.52	54.36
HN-40S	56.64	59.71
HN-42S	59.19	61.13
Intermediate Wells		
N-10624	NM[2)]	NM[2)]
GM-15I	51.60	57.65
GM-16I	55.68	60.13
GM-17I	55.33	60.50
GM-18I	50.22	58.81
GM-19I	49.63	60.23
GM-20I	41.58	62.30
GM-21I	42.64	63.08
GM-74I	44.75	62.67
GM-78I	48.60	56.46
GM-79I	47.18	53.70
HN-24I	63.54	62.26
HN-29I	54.50	61.92
HN-40I	56.45	59.46
HN-42I	58.43	61.18

See notes on last page

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

Well Identification	Depth to Water October 14, 2002 (ft bmp)	Water-Level Elevation October 14, 2002 (ft msl)
Deep Wells		
N-10627	39.22	54.48
GM-13D	53.92	60.05
GM-15D	54.17	55.67
GM-17D	55.45	60.23
GM-18D	52.63	56.25
GM-20D	44.26	59.66
GM-21D	49.34	56.32
GM-34D	NM[3)]	NM[3)]
GM-36D	41.92	49.71
GM-37D	46.24	51.02
GM-38D	44.79	46.96
GM-39D	NM[4)]	NM[4)]
GM-73D	50.82	54.05
GM-74D	51.66	55.77
GM-79D	48.46	52.79
Deep2 Wells		
GM-15D2	56.73	53.05
GM-33D2	56.60	50.25
GM-34D2	NM[1)]	NM[1)]
GM-35D2	46.26	50.02
GM-36D2	43.77	47.83
GM-37D2	46.67	50.50
GM-38D2	45.98	45.58
GM-39D2	NM[3)]	NM[3)]
GM-70D2	47.78	51.80
GM-71D2	48.19	50.26
GM-73D2	52.90	51.72
GM-74D2	58.19	49.17
GM-75D2	42.20	51.43
GP-1[5)]	96.00	20.78
ONCT-1	73.97	30.13
ONCT-2	70.75	39.25
ONCT-3	72.18	36.52

1) Wells FW-03, 10634, GM-34D, GM-34D2 were 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) Wells GM-39D and GM-39D2 were not installed as of the October 2002 hydraulic measurement round.
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 feet below measuring point
NM Not Measured

Table 6. Comparison of Third 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)	10/14/2002 Water-Level Elevation (ft msl)	10/14/2002 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	57.62			
GM-15I	109.13	9.29	57.65	-1.19	4.20	-5.38
GM-16SR	115.77	66.77	60.17			
GM-16I	115.81	-24.19	60.13	0.44	1.11	-0.67
GM-17SR	115.79	50.79	60.55			
GM-17I	115.83	5.83	60.50	1.11	4.50	-3.39
GM-18S	107.60	42.60	58.58			
GM-18I	109.03	9.03	58.81	-6.85	1.78	-8.63
GM-19S	109.86	64.36	60.66			
GM-19I	109.86	-25.14	60.23	4.80	2.44	2.36
GM-21S	105.81	40.81	65.46			
GM-21I	105.72	-29.28	63.08	33.96	18.44	15.51
GM-78S	104.94	39.94	56.68			
GM-78I	105.06	5.56	56.46	6.40	8.73	-2.33
GM-79S	100.88	35.88	54.36			
GM-79I	101.09	-73.91	53.70	6.01	0.91	5.10
Intermediate-Deep Wells						
GM-15I	109.29	9.29	57.65			
GM-15D	109.66	-227.34	55.67	8.37	6.52	1.85
GM-17I	115.83	5.83	60.50			
GM-17D	115.68	-172.32	60.23	1.52	7.86	-6.35
GM-18I	109.03	9.03	58.81			
GM-18D	108.88	-186.12	56.25	13.12	7.74	5.38
GM-20I	103.88	3.88	62.30			
GM-20D	103.92	-117.08	59.66	21.83	18.22	3.60
GM-21I	105.72	-29.28	63.08			
GM-21D	105.66	-177.34	56.32	45.66	43.97	1.69
GM-74I	107.42	8.42	62.67			
GM-74D	107.43	-192.57	55.77	34.33	20.17	14.16
GM-79I	101.09	-73.91	53.70			
GM-79D	101.25	-183.75	52.79	8.28	15.48	-7.19
Deep-Deep 2 Wells						
GM-18D	108.88	-186.12	56.25			
GM-33D2	106.85	-403.15	50.25	27.65	12.30	15.34
GM-15D	109.66	-227.34	55.67			
GM-15D2	109.59	-436.41	53.05	12.53	14.19	-1.65

see footnotes on last page

Table 6. Comparison of Third 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)	10/14/2002 Water-Level Elevation (ft msl)	10/14/2002 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	NM			
GM-34D2	71.19	-443.81	NM	NM	2.33	NM
GM-36D	91.63	-117.37	49.71			
GM-36D2	91.60	-443.40	47.83	5.77	2.75	3.02
GM-37D	97.26	-154.74	51.02			
GM-37D2	97.17	-282.83	50.50	4.06	3.88	0.18
GM-38D	91.75	-238.25	46.96			
GM-38D2	91.56	-393.44	45.58	8.89	6.08	2.81
GM-73D	104.87	-301.13	54.05			
GM-73D2	104.62	-437.38	51.72	4.06	20.00	-15.94
GM-74D	107.43	-192.57	55.77			
GM-74D2	107.36	-444.64	49.17	26.18	28.26	-2.07
N-10627	93.70	-198.80	54.48			
GM-75D2	93.63	-421.37	51.43	13.70	2.25	11.46

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
NM	Not measured; wells inaccessible this round.

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

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	10631 N-10631 06/14/02	10631 N-10631 10/17/02	10634 N-10634 06/19/02	10634 N-10634 10/09/02	GM-14 GM-14 07/10/02	GM-14 GM-14 10/18/02
Chloromethane	5		<5 J	<5	<5	<5	<10 J	<10
Bromomethane	5		<5	<5	<5	<5	<10	<10
Vinyl Chloride	2		<2	<2	<2	<2	<10 J	<10
Chloroethane	5		<5 J	<5	<5	<5	<10 J	<10
Methylene chloride	5		<5 J	<5	<5	<5	<5	<5
Acetone	50		<10 J	<10	<10 J	<10	**10 J**	<10
Carbon disulfide	50		<5	<5	<5	<5	<10	<10
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 J	<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		**2 J**	**2 J**	<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	<5	<5
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 R	<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 J	<5	<5	<10	<10
Freon-113 *	5		<5	<5	<5	<5	NA	--
Total VOCs			**2**	**2**	0	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.
[ ] 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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-15S GM-15S 07/10/02	GM-15S GM-15S 10/02/02	GM-16SR GM-16SR 07/08/02	GM-16SR GM-16SR 10/11/02	GM-17SR GM-17SR 06/18/02	GM-17SR GM-17SR 10/07/02
Chloromethane	5		<5	<5 J	<5	<5	<5	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2 J	<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	<10	<10	<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		**0.5 J**	<5	**1 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 J
2-Butanone	50		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<5 J
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		**11**	**3 J**	**6**	<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		<5	<5	**3 J**	<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			**11.5**	**3**	**10**	0	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.
R Unusable value
NE No SCG established
Bold value indicates a detection.

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

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	GM-18S	GM-18S	GM-21S	GM-21S	GM-32S	GM-32S
		SAMPLE ID:	GM-18S	GM-18S	GM-21S	GM-21S	GM-32S	GM-32S
		DATE:	06/14/02	10/07/02	06/17/02	10/10/02	07/08/02	10/17/02
Chloromethane	5		<5 J	<5	<5 J	<5	<5	<5
Bromomethane	5		<5	<5 J	<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 J	<5	<5 J	<5	<5	<5
Acetone	50		<10 J	<10	<10 J	<10	<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	**1 J**	**1 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 J	<10	<10 J	<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		**2 J**	**0.5 J**	<5	<5	**86**	**110**
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 J	<10	<10	<10	<10 J
2-Hexanone	50		<10	<10 J	<10	<10	<10	<10 J
Tetrachloroethene	5		<5	<5	<5	<5	**2 J**	**1 J**
1,1,2,2-Tetrachloroethane	5		<5	<5 J	<5	<5	<5	<5 J
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			**2**	**0.5**	0	0	**89**	**112**

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.
R Unusable value
NE No SCG established
Bold value indicates a detection.

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

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-78S GM-78S 06/18/02	GM-78S GM-78S 10/10/02	HN-40S HN-40S 06/13/02	HN-40S HN-40S 10/14/02	HN-42S HN-42S 06/13/02	HN-42S HN-42S 10/14/02
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		**0.8 J**	<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	<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		**8**	**6**	<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	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	<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			**8.8**	**6**	0	0	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.
R Unusable value
NE No SCG established
Bold value indicates a detection.

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

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	MW-03R MW-3R 06/14/02	MW-03R MW-3R 10/11/02
Chloromethane	5		<5 J	<5
Bromomethane	5		<5	<5
Vinyl Chloride	2		<2	<2
Chloroethane	5		<5 J	<5
Methylene chloride	5		<5 J	<5
Acetone	50		<10 J	<10
Carbon disulfide	50		<5	<5
1,1-Dichloroethene	5		<5	<5
1,1-Dichloroethane	5		<5	<5
cis-1,2-Dichloroethene	5		<5	<5
trans-1,2-Dichloroethene	5		<5	<5
Chloroform	7		<5	<5
1,2-Dichloroethane	5		<5	<5
2-Butanone	50		<10 J	<10
1,1,1-Trichloroethane	5		<5	<5
Carbon tetrachloride	5		<5	<5
Bromodichloromethane	50		<5	<5
1,2-Dichloropropane	5		<5	<5
cis-1,3-Dichloropropene	5		<5	<5
Trichloroethene	5		**2 J**	**1 J**
Dibromochloromethane	5		<5	<5
1,1,2-Trichloroethane	5		<5	<5
Benzene	0.7		<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5
Bromoform	50		<5	<5
4-Methyl-2-pentanone	50		<10	<10
2-Hexanone	50		<10	<10
Tetrachloroethene	5		<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5
Toluene	5		<5	<5
Chlorobenzene	5		<5	<5
Ethylbenzene	5		<5	<5
Styrene	5		<5	<5
Xylene (total)	5		<5	<5
Vinyl Acetate	NE		<5	<5
Freon-113 *	5		<5	<5
Total VOCs			**2**	**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 (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.
R Unusable value
NE No SCG established
Bold value indicates a detection.

Table 8. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells, Second and Third Quarters of 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 07/10/02	GM-15I GM-15I 10/08/02	GM-16I GM-16I 07/08/02	GM-16I GM-16I 10/08/02	GM-17I GM-17I 06/18/02	GM-17I GM-17I 10/07/02
Chloromethane	5		<5	<5	<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	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		<10	<10 J	<10	<10	<10 J	<10
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	**1 J**	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	<5	**3 J**	**1 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 J	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5 J	<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		**6**	**8**	**17**	**13**	<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 J
Tetrachloroethene	5		<5	<5	**3 J**	**2 J**	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<5 J
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	**0.6 J**	**1 J**	<5	<5
Total VOCs			**6**	**8**	**24.6**	**17**	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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-18I GM-18I 06/21/02	GM-18I GM-18I 10/07/02	GM-20I GM-20I 06/25/02	GM-20I GM-20I 10/01/02	GM-21I GM-21I 06/17/02	GM-21I GM-21I 10/03/02
Chloromethane	5		<5	<5	<5 J	<5 J	<5 J	<5 J
Bromomethane	5		<5	<5 J	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2 J	<2	<2 J
Chloroethane	5		<5	<5	<5	<5	<5 J	<5
Methylene chloride	5		<5	<5	<5	<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	**1 J**	<5	<5	<5	<5
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<5	**2 J**	<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	<10 J	<10
1,1,1-Trichloroethane	5		<5	**3 J**	<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	**7**	**0.9 J**	**0.7 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 J	<10 J	<10	<10	<10
2-Hexanone	50		<10	<10 J	<10	<10	<10	<10
Tetrachloroethene	5		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5 J	<5	<5	<5	<5
Toluene	5		<5	<5	<5	<5	**0.3 J**	<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	**13**	**0.9**	**0.7**	**0.3**	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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	GM-23I	GM-23I	GM-74I	GM-74I	GM-78I	GM-78I
		SAMPLE ID:	GM-23I	GM-23I	GM-74I	GM-74I	GM-78I	GM-78I
		DATE:	04/12/02	10/09/02	06/19/02	10/09/02	06/18/02	10/10/02
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 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	<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 J	<5	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5 J	<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		**3 J**	**1 J**	<5	<5	**4 J**	**5 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	<10	<10	<10	<10	<10
2-Hexanone	50		<10	<10	<10	<10	<10	<10
Tetrachloroethene	5		**2 J**	**0.7 J**	<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
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			**5**	**1.7**	0	0	**4**	**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.
[ ] 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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	GM-79I	GM-79I	HN-24I	HN-24I	HN-29I	HN-29I
		SAMPLE ID:	GM-79I	GM-79I	HN-24I	HN-24I	HN-29I	HN-29I
		DATE:	07/12/02	10/04/02	07/09/02	10/15/02	07/09/02	10/15/02
Chloromethane	5		<5	<5 J	<5	<10	<5	<5
Bromomethane	5		<5	<5 J	<5	<10	<5	<5
Vinyl Chloride	2		<2	<2	<2	<4	<2	<2
Chloroethane	5		<5	<5	<5	<10	<5	<5
Methylene chloride	5		<5	<5	<5	<10	<5	<5
Acetone	50		<10	<10 J	<10	<20	<10	<10
Carbon disulfide	50		<5	<5	<5	<10	<5	<5
1,1-Dichloroethene	5		<5	<5	**8**	**15**	<5	<5
1,1-Dichloroethane	5		<5	<5	**2 J**	<10	**0.6 J**	<5
cis-1,2-Dichloroethene	5		<5	<5	**3 J**	<10	<5	<5
trans-1,2-Dichloroethene	5		<5	<5	<5	<10	<5	<5
Chloroform	7		<5	<5	<5	<10	<5	<5
1,2-Dichloroethane	5		<5	<5	<5	<10	<5	<5
2-Butanone	50		<10	<10 J	<10	<20	<10	<10
1,1,1-Trichloroethane	5		<5	<5	**6**	**13**	<5	<5
Carbon tetrachloride	5		<5	<5	<5	<10	<5	<5
Bromodichloromethane	50		<5	<5	<5	<10	<5	<5
1,2-Dichloropropane	5		<5	<5	<5	<10	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<5	<10	<5	<5
Trichloroethene	5		**1 J**	**1 J**	**160**	**290**	**1 J**	<5
Dibromochloromethane	5		<5	<5	<5	<10	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<5	<10	<5	<5
Benzene	0.7		<0.7	<0.7	<0.7	<1	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<5	<10	<5	<5
Bromoform	50		<5	<5	<5	<10	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<10	<20	<10	<10
2-Hexanone	50		<10	<10 J	<10	<20	<10	<10 J
Tetrachloroethene	5		<5	<5	**3 J**	**5 J**	**0.5 J**	<5
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<10	<5	<5
Toluene	5		<5	<5	<5	<10	<5	<5
Chlorobenzene	5		<5	<5	<5	<10	<5	<5
Ethylbenzene	5		<5	<5	<5	<10	<5	<5
Styrene	5		<5	<5	<5	<10	<5	<5
Xylene (total)	5		<5	<5	<5	<10	<5	<5
Vinyl Acetate	NE		<5	<5 J	<5	<10 J	<5	<5 J
Freon-113 *	5		<5	<5	**8**	**51**	<5	<5
Total VOCs			**1**	**1**	**190**	**374**	**2.1**	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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	HN-40I HN-40I 06/13/02	HN-40I HN-40I 10/14/02	HN-42I HN-42I 06/13/02	HN-42I HN-42I 10/14/02	MW-52S MW-52S 04/15/02	MW-52S MW-52S 10/18/02
Chloromethane	5		<5 J	<5	<5 J	<5	<5	<25
Bromomethane	5		<5	<5	<5	<5	<5 J	<25
Vinyl Chloride	2		<2	<2	<2	<2	**85**	**670**
Chloroethane	5		<5 J	<5	<5 J	<5	<5 J	<25
Methylene chloride	5		<5 J	<5	<5 J	<5	<5	<25
Acetone	50		<10 J	<10	<10 J	<10	<10 J	<50
Carbon disulfide	50		<5	<5	<5	<5	<5	<25
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	<25
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	<25
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	**7**	<25
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<5	<25
Chloroform	7		<5	<5	<5	<5	<5	<25
1,2-Dichloroethane	5		<5	<5	<5	<5	<5	<25
2-Butanone	50		<10 J	<10	<10 J	<10	<10 J	<50
1,1,1-Trichloroethane	5		<5	<5	<5	<5	<5	<25
Carbon tetrachloride	5		<5	<5	<5	<5	<5	<25
Bromodichloromethane	50		<5	<5	<5	<5	<5	<25
1,2-Dichloropropane	5		<5	<5	<5	<5	<5	<25
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<25
Trichloroethene	5		**6**	**7**	<5	<5	**20**	**9 J**
Dibromochloromethane	5		<5	<5	<5	<5	<5	<25
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<5	<25
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<0.7	<4
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<5	<25
Bromoform	50		<5	<5	<5	<5	<5	<25
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<10	<50
2-Hexanone	50		<10	<10	<10	<10	<10	<50
Tetrachloroethene	5		**2 J**	**2 J**	<5	<5	**44**	**37**
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<5	<25
Toluene	5		<5	<5	<5	<5	<5	<25
Chlorobenzene	5		<5	<5	<5	<5	<5	<25
Ethylbenzene	5		<5	<5	<5	<5	<5	<25
Styrene	5		<5	<5	<5	<5	<5	<25
Xylene (total)	5		<5	<5	<5	<5	<5	<25
Vinyl Acetate	NE		<5	<5	<5	<5	<5	<25 J
Freon-113 *	5		<5	<5	<5	<5	**2 J**	**10 J**
Total VOCs			**8**	**9**	0	0	**158**	**726**

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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: MW-52S SAMPLE ID: REP101802 DATE: 10/18/02
Chloromethane	5	<25
Bromomethane	5	<25
Vinyl Chloride	2	**690**
Chloroethane	5	<25
Methylene chloride	5	<25
Acetone	50	<50
Carbon disulfide	50	<25
1,1-Dichloroethene	5	<25
1,1-Dichloroethane	5	<25
cis-1,2-Dichloroethene	5	<25
trans-1,2-Dichloroethene	5	<25
Chloroform	7	<25
1,2-Dichloroethane	5	<25
2-Butanone	50	<50
1,1,1-Trichloroethane	5	<25
Carbon tetrachloride	5	<25
Bromodichloromethane	50	<25
1,2-Dichloropropane	5	<25
cis-1,3-Dichloropropene	5	<25
Trichloroethene	5	**9 J**
Dibromochloromethane	5	<25
1,1,2-Trichloroethane	5	<25
Benzene	0.7	<4
trans-1,3-Dichloropropene	5	<25
Bromoform	50	<25
4-Methyl-2-pentanone	50	<50
2-Hexanone	50	<50
Tetrachloroethene	5	**33**
1,1,2,2-Tetrachloroethane	5	<25
Toluene	5	<25
Chlorobenzene	5	<25
Ethylbenzene	5	<25
Styrene	5	<25
Xylene (total)	5	<25
Vinyl Acetate	NE	<25 J
Freon-113 *	5	**12 J**
Total VOCs		**744**

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

CONSTITUENT (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	10627 10627 07/11/02	10627 N-10627 10/10/02	GM-13D GM-13D 07/08/02	GM-13D GM-13D 10/09/02	GM-13D REP100902 10/09/02	GM-15D GM-15D 07/10/02
Chloromethane	5		<5	<5	<50	<25	<25	<5
Bromomethane	5		<5	<5	<50	<25	<25	<5
Vinyl Chloride	2		<2	<2	<20	<10	<10	<2
Chloroethane	5		<5	<5	<50	<25	<25	<5
Methylene chloride	5		<5	<5	<50	<25	<25	<5
Acetone	50		<10	<10	<100	<50	<50	<10
Carbon disulfide	50		<5	<5	<50	**31 J**	<25 J	<5
1,1-Dichloroethene	5		<5	<5	**110**	**100**	**93**	**3 J**
1,1-Dichloroethane	5		<5	<5	**54**	**54**	**53**	7
cis-1,2-Dichloroethene	5		<5	<5	**170**	**170**	**170**	**0.9 J**
trans-1,2-Dichloroethene	5		<5	<5	<50	<25	<25	<5
Chloroform	7		<5	<5	<50	<25	<25	**0.5 J**
1,2-Dichloroethane	5		<5	<5	<50	<25	<25	<5
2-Butanone	50		<10	<10	<100	<50	<50	<10
1,1,1-Trichloroethane	5		<5	<5	**110**	**98**	**96**	**2 J**
Carbon tetrachloride	5		<5	<5	<50	<25	<25	<5
Bromodichloromethane	50		<5	<5	<50	<25	<25	<5
1,2-Dichloropropane	5		<5	<5	<50	<25	<25	<5
cis-1,3-Dichloropropene	5		<5	<5	<50	<25	<25	<5
Trichloroethene	5		**4 J**	**2 J**	**300**	**250**	**240**	**8**
Dibromochloromethane	5		<5	<5	<50	<25	<25	<5
1,1,2-Trichloroethane	5		<5	<5	<50	<25	<25	<5
Benzene	0.7		<0.7	<0.7	<7	<4	<4	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<50	<25	<25	<5
Bromoform	50		<5	<5	<50	<25	<25	<5
4-Methyl-2-pentanone	50		<10	<10	<100	<50	<50	<10
2-Hexanone	50		<10	<10	<100	<50	<50	<10
Tetrachloroethene	5		<5	<5	**810**	**720**	**680**	**5 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<50	<25	<25	<5
Toluene	5		<5	<5	<50	<25	<25	<5
Chlorobenzene	5		<5	<5	<50	<25	<25	<5
Ethylbenzene	5		<5	<5	<50	<25	<25	<5
Styrene	5		<5	<5	<50	<25	<25	<5
Xylene (total)	5		<5	<5	<50	<25	<25	<5
Vinyl Acetate	NE		<5	<5	<50	<25	<25	<5
Freon-113 *	5		<5	<5	**14 J**	**18 J**	**16 J**	**0.5 J**
Total VOCs			**4**	**2**	**1,568**	**1,441**	**1,348**	**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, Second and Third 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-15D GM-15D 10/08/02	GM-17D GM-17D 06/18/02	GM-17D GM-17D 10/07/02	GM-18D GM-18D 06/21/02	GM-18D GM-18D 10/03/02	GM-20D GM-20D 06/25/02
Chloromethane	5		<5	<5	<5	<5	<5 J	<5 J
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2	<2	<2	<2	<2 J	<2
Chloroethane	5		<5	<5	<5	<5	<5	<5
Methylene chloride	5		<5	<5	<5	<5	<5	<5
Acetone	50		<10 J	<10 J	<10 J	<10 J	<10 J	<10 J
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		**4 J**	<5	<5	<5	<5	<5
1,1-Dichloroethane	5		**8**	<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		**0.5 J**	<5	<5	<5	<5	<5
1,2-Dichloroethane	5		<5 J	<5	<5 J	<5	<5	<5
2-Butanone	50		<10	<10	<10	<10	<10 J	<10 J
1,1,1-Trichloroethane	5		**3 J**	<5	<5 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**	<5	<5	**3 J**	**6**	<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 J	<10
Tetrachloroethene	5		**8**	<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 J	<5
Freon-113 *	5		<5	<5	<5	<5	<5	<5
Total VOCs			**32.5**	0	0	**3**	**6**	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, Second and Third 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-20D GM-20D 10/01/02	GM-21D GM-21D 06/17/02	GM-21D GM-21D 10/08/02	GM-36D GM-36D 07/09/02	GM-36D GM-36D 10/02/02	GM-37D GM 37D 07/02/02
Chloromethane	5		<5 J	<5 J	<5	<5	<5 J	<5
Bromomethane	5		<5	<5	<5	<5	<5	<5
Vinyl Chloride	2		<2 J	<2	<2	<2	<2 J	<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 J	<10	<10	<10
Carbon disulfide	50		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<5	<5	<5	**3 J**
1,1-Dichloroethane	5		<5	<5	<5	<5	<5	**5 J**
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	**1 J**
1,2-Dichloroethane	5		<5	<5	<5 J	<5	<5	<5
2-Butanone	50		<10	<10 J	<10	<10	<10	<10
1,1,1-Trichloroethane	5		<5	<5	<5 J	<5	<5	**3 J**
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**	**3 J**	**17**	**24**	<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	<5	**0.6 J**	**1 J**	**1 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	**2**	**3**	**17.6**	**25**	**13**

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, Second and Third 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 10/07/02	GM-38D GM 38D 07/01/02	GM-38D GM-38D 10/04/02	GM-38D REP01 10/04/02	GM-39D GM-39D 11/26/02	GM-73D GM-73D 10/18/02
Chloromethane	5		<5	<50	<25 J	<25 J	<5 J	<25
Bromomethane	5		<5 J	<50	<25 J	<25 J	<5 J	<25
Vinyl Chloride	2		<2	<20	<10	<10	<2 J	<10
Chloroethane	5		<5	<50	<25	<25	<5 J	<25
Methylene chloride	5		<5	<50	<25	<25	<5 J	<25
Acetone	50		<10	<100	<50 J	<50 J	<10 J	<50
Carbon disulfide	50		<5	<50	<25	<25	<5 J	<25
1,1-Dichloroethene	5		**3 J**	**6 J**	<25	<25	<5 J	<25
1,1-Dichloroethane	5		**4 J**	<50	<25	<25	<5 J	<25
cis-1,2-Dichloroethene	5		<5	<50	<25	<25	<5 J	<25
trans-1,2-Dichloroethene	5		<5	<50	<25	<25	<5 J	<25
Chloroform	7		<5	<50	<25	<25	<5 J	<25
1,2-Dichloroethane	5		<5	<50	<25	<25	<5 J	<25
2-Butanone	50		<10	<100	<50 J	<50 J	<10 J	<50
1,1,1-Trichloroethane	5		<5	<50	<25	<25	<5 J	<25
Carbon tetrachloride	5		<5	<50	<25	<25	<5 J	<25
Bromodichloromethane	50		<5	<50	<25	<25	<5 J	<25
1,2-Dichloropropane	5		<5	<50	<25	<25	<5 J	<25
cis-1,3-Dichloropropene	5		<5	<50	<25	<25	<5 J	<25
Trichloroethene	5		**0.5 J**	**720**	**830**	**870**	**23 J**	**780**
Dibromochloromethane	5		<5	<50	<25	<25	<5 J	<25
1,1,2-Trichloroethane	5		<5	<50	<25	<25	<5 J	<25
Benzene	0.7		<0.7	<7	<4	<4	<0.7 J	<4
trans-1,3-Dichloropropene	5		<5	<50	<25	<25	<5 J	<25
Bromoform	50		<5	<50	<25	<25	<5 J	<25
4-Methyl-2-pentanone	50		<10 J	<100	<50	<50	<10 J	<50
2-Hexanone	50		<10 J	<100	<50 J	<50 J	<10 J	<50
Tetrachloroethene	5		<5	<50	<25	<25	<5 J	<25
1,1,2,2-Tetrachloroethane	5		<5 J	<50	<25	<25	<5 J	<25
Toluene	5		<5	<50	<25	<25	<5 J	<25
Chlorobenzene	5		<5	<50	<25	<25	<5 J	<25
Ethylbenzene	5		<5	<50	<25	<25	<5 J	<25
Styrene	5		<5	<50	<25	<25	<5 J	<25
Xylene (total)	5		<5	<50	<25	<25	<5 J	<25
Vinyl Acetate	NE		<5	<50	<25 J	<25 J	<5 J	<25 J
Freon-113 *	5		<5	<50	<25	<25	<5 J	<25
Total VOCs			**7.5**	**726**	**830**	**870**	**23**	**780**

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, Second and Third 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-73D GM-73D 11/25/02	GM-73D REP-1 11/25/02	GM-74D GM-74D 06/19/02	GM-74D GM-74D 10/09/02	GM-79D GM 79D 07/11/02	GM-79D GM-79D 10/04/02
Chloromethane	5		<25 J	<25 J	<5	<5	<5	<5 J
Bromomethane	5		<25 J	<25 J	**7**	<5	<5	<5 J
Vinyl Chloride	2		<10 J	<10 J	<2	<2	<2	<2
Chloroethane	5		<25 J	<25 J	<5	<5	<5	<5
Methylene chloride	5		<25 J	<25 J	<5	<5	<5	<5
Acetone	50		<50 J	<50 J	<10 J	<10	<10	<10 J
Carbon disulfide	50		<25 J	<25 J	<5	<5	<5	<5
1,1-Dichloroethene	5		<25 J	<25 J	<5	<5	**1 J**	<5
1,1-Dichloroethane	5		<25 J	<25 J	<5	<5	<5	<5
cis-1,2-Dichloroethene	5		<25 J	<25 J	<5	<5	**1 J**	**1 J**
trans-1,2-Dichloroethene	5		<25 J	<25 J	<5	<5	<5	<5
Chloroform	7		<25 J	<25 J	<5	<5	<5	<5
1,2-Dichloroethane	5		<25 J	<25 J	<5	<5	<5	<5
2-Butanone	50		<50 J	<50 J	<10	<10	<10	<10 J
1,1,1-Trichloroethane	5		<25 J	<25 J	<5	<5	<5	<5
Carbon tetrachloride	5		<25 J	<25 J	<5	<5	<5	<5
Bromodichloromethane	50		<25 J	<25 J	<5	<5	<5	<5
1,2-Dichloropropane	5		<25 J	<25 J	<5	<5	<5	<5
cis-1,3-Dichloropropene	5		<25 J	<25 J	<5	<5	<5	<5
Trichloroethene	5		**510 J**	**490 J**	**15**	**10**	**91**	**96**
Dibromochloromethane	5		<25 J	<25 J	<5	<5	<5	<5
1,1,2-Trichloroethane	5		<25 J	<25 J	<5	<5	<5	<5
Benzene	0.7		<4 J	<4 J	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<25 J	<25 J	<5	<5	<5	<5
Bromoform	50		<25 J	<25 J	<5	<5	<5	<5
4-Methyl-2-pentanone	50		<50 J	<50 J	<10	<10	<10	<10
2-Hexanone	50		<50 J	<50 J	<10	<10	<10	<10 J
Tetrachloroethene	5		<25 J	<25 J	**2 J**	**2 J**	**1 J**	**1 J**
1,1,2,2-Tetrachloroethane	5		<25 J	<25 J	<5	<5	<5	<5
Toluene	5		<25 J	<25 J	**0.3 J**	<5	<5	<5
Chlorobenzene	5		<25 J	<25 J	<5	<5	<5	<5
Ethylbenzene	5		<25 J	<25 J	<5	<5	<5	<5
Styrene	5		<25 J	<25 J	<5	<5	<5	<5
Xylene (total)	5		<25 J	<25 J	<5	<5	<5	<5
Vinyl Acetate	NE		<25 J	<25 J	<5	<5	<5	<5 J
Freon-113 *	5		<25 J	<25 J	**0.4 J**	<5	**1 J**	<5
Total VOCs			**510**	**490**	**24.7**	**12**	**95**	**98**

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, Second and Third 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-29D HN-29D 07/09/02	HN-29D HN-29D 10/15/02	MW-52I MW-52I 04/15/02	MW-52I MW-52I 10/11/02	MW-52D MW-52D 04/15/02	MW-52D MW-52D 10/11/02
Chloromethane	5		<5	<5	<100	<5	<5	<5
Bromomethane	5		<5	<5	<100 J	<5	<5 J	<5
Vinyl Chloride	2		<2	<2	**3100**	**44**	<2	<2
Chloroethane	5		<5	<5	<100 J	<5	<5 J	<5
Methylene chloride	5		<5	<5	<100	<5	<5	<5
Acetone	50		<10	<10	<200 J	<10	<10 J	**26**
Carbon disulfide	50		<5	<5	<100	<5	<5	<5
1,1-Dichloroethene	5		<5	<5	<100	<5	**0.9 J**	<5
1,1-Dichloroethane	5		<5	<5	<100	<5	**1 J**	<5
cis-1,2-Dichloroethene	5		<5	<5	**50 J**	**9**	**7**	**6**
trans-1,2-Dichloroethene	5		<5	<5	<100	<5	<5	<5
Chloroform	7		<5	<5	<100	<5	<5	<5
1,2-Dichloroethane	5		<5	<5	<100	<5	<5	<5
2-Butanone	50		<10	<10	**320 J**	<10	<19 J	**100**
1,1,1-Trichloroethane	5		<5	<5	<100	<5	<5	<5
Carbon tetrachloride	5		<5	<5	<100	<5	<5	<5
Bromodichloromethane	50		<5	<5	<100	<5	<5	<5
1,2-Dichloropropane	5		<5	<5	<100	<5	<5	<5
cis-1,3-Dichloropropene	5		<5	<5	<100	<5	<5	<5
Trichloroethene	5		**1 J**	**1 J**	<100	**22**	**38**	**27**
Dibromochloromethane	5		<5	<5	<100	<5	<5	<5
1,1,2-Trichloroethane	5		<5	<5	<100	<5	<5	<5
Benzene	0.7		<0.7	<0.7	<14	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<100	<5	<5	<5
Bromoform	50		<5	<5	<100	<5	<5	<5
4-Methyl-2-pentanone	50		<10	<10	<200	<10	<10	<10
2-Hexanone	50		<10	<10 J	<200 J	<10	<10	<10
Tetrachloroethene	5		**0.3 J**	<5	**70 J**	**10**	**29**	**11**
1,1,2,2-Tetrachloroethane	5		<5	<5	<100	<5	<5	<5
Toluene	5		<5	<5	<100	<5	**1 J**	<5
Chlorobenzene	5		<5	<5	<100	<5	<5	<5
Ethylbenzene	5		<5	<5	<100	<5	<5	<5
Styrene	5		<5	<5	<100	<5	<5	<5
Xylene (total)	5		<5	<5	<100	<5	<5	<5
Vinyl Acetate	NE		<5	<5 J	<100	<5	<5	<5
Freon-113 *	5		<5	<5	<100	<5	<5	<5
Total VOCs			**1.3**	1	**3,540**	**85**	**95.9**	**170**

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, Second and Third Quarters of 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 07/10/02	GM-15D2 GM-15D-2 10/02/02	GM-33D2 GM-33D2 06/20/02	GM-33D2 GM-33D2 10/09/02	GM-35D2 GM 35D2 07/08/02	GM-35D2 GM-35D-2 10/03/02
Chloromethane	5		<5	<5 J	<10 J	<10	<20	<5 J
Bromomethane	5		<5	<5	<10	<10	<20	<5
Vinyl Chloride	2		<2	<2 J	<4	<4	<8	<2 J
Chloroethane	5		<5	<5	<10	<10	<20	<5
Methylene chloride	5		<5	<5	<10	<10	<20	<5
Acetone	50		<10	<10	<20 J	<20 J	<40	<10
Carbon disulfide	50		<5	<5	<10	<10	<20	<5
1,1-Dichloroethene	5		**0.8 J**	<5	<10	<10	<20	**1 J**
1,1-Dichloroethane	5		<5	<5	<10	<10	<20	<5
cis-1,2-Dichloroethene	5		**0.4 J**	<5	**1 J**	**2 J**	**5 J**	**4 J**
trans-1,2-Dichloroethene	5		<5	<5	<10	<10	<20	<5
Chloroform	7		<5	<5	<10	<10	<20	**0.5 J**
1,2-Dichloroethane	5		<5	<5	<10	<10 J	<20	<5
2-Butanone	50		<10	<10	<20	<20	<40	<10
1,1,1-Trichloroethane	5		<5	<5	<10	<10 J	<20	**0.7 J**
Carbon tetrachloride	5		<5	<5	<10	<10	<20	**0.4 J**
Bromodichloromethane	50		<5	<5	<10	<10	<20	<5
1,2-Dichloropropane	5		<5	<5	<10	<10	<20	<5
cis-1,3-Dichloropropene	5		<5	<5	<10	<10	<20	<5
Trichloroethene	5		**12**	**16**	**120**	**240**	**430**	**430 D**
Dibromochloromethane	5		<5	<5	<10	<10	<20	<5
1,1,2-Trichloroethane	5		<5	<5	<10	<10	<20	<5
Benzene	0.7		<0.7	<0.7	<1	<1	<3	<0.7
trans-1,3-Dichloropropene	5		<5	<5	<10	<10	<20	<5
Bromoform	50		<5	<5	<10	<10	<20	<5
4-Methyl-2-pentanone	50		<10	<10	<20	<20	<40	<10
2-Hexanone	50		<10	<10	<20	<20	<40	<10
Tetrachloroethene	5		**9**	**20**	**5 J**	**10 J**	**5 J**	**6**
1,1,2,2-Tetrachloroethane	5		<5	<5	<10	<10	<20	<5
Toluene	5		<5	<5	<10	<10	<20	<5
Chlorobenzene	5		<5	<5	<10	<10	<20	<5
Ethylbenzene	5		<5	<5	<10	<10	<20	<5
Styrene	5		<5	<5	<10	<10	<20	<5
Xylene (total)	5		<5	<5	<10	<10	<20	<5
Vinyl Acetate	NE		<5	<5	<10	<10	<20	<5
Freon-113 *	5		**0.9 J**	<5	**2 J**	<10	**11 J**	12
Total VOCs			**23.1**	**36**	**128**	**252**	**451**	**454.6**

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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-36D2 GM-36D2 07/09/02	GM-36D2 GM-36D2 10/02/02	GM-37D2 GM 37D2 07/02/02	GM-37D2 GM-37D2 10/07/02	GM-38D2 GM 38D2 07/01/02	GM-38D2 GM-38D2 10/04/02
Chloromethane	5		<5	<5 J	<5	<5 J	<50	<100
Bromomethane	5		<5 J	<5	<5	<5 J	<50	<100 J
Vinyl Chloride	2		<2	<2 J	<2	<2	<20	<40
Chloroethane	5		<5	<5	<5	<5	<50	<100
Methylene chloride	5		<5	<5	<5	<5	<50	<100
Acetone	50		<10	<10	<10	<10 J	<100	<200
Carbon disulfide	50		<5	**5 J**	<5	<5	<50	<100
1,1-Dichloroethene	5		<5	<5	**3 J**	**2 J**	<50	<100
1,1-Dichloroethane	5		<5	<5	**10**	**9**	<50	<100
cis-1,2-Dichloroethene	5		<5	<5	<5	<5	**12 J**	<100
trans-1,2-Dichloroethene	5		<5	<5	<5	<5	<50	<100
Chloroform	7		<5	<5	**0.9 J**	**1 J**	<50	<100
1,2-Dichloroethane	5		<5	<5	<5	<5	<50	<100
2-Butanone	50		<10	<10	<10	<10 J	<100	<200
1,1,1-Trichloroethane	5		<5	<5	**3 J**	<5	<50	<100
Carbon tetrachloride	5		<5	<5	<5	<5	<50	<100
Bromodichloromethane	50		<5	<5	<5	<5	<50	<100
1,2-Dichloropropane	5		<5	<5	<5	<5	<50	<100
cis-1,3-Dichloropropene	5		<5	<5	<5	<5	<50	<100
Trichloroethene	5		<5	<5	<5	**4 J**	**2000**	**1500**
Dibromochloromethane	5		<5	<5	<5	<5	<50	<100
1,1,2-Trichloroethane	5		<5	<5	<5	<5	<50	<100
Benzene	0.7		<0.7	<0.7	<0.7	<0.7	<7	<14
trans-1,3-Dichloropropene	5		<5	<5	<5	<5	<50	<100
Bromoform	50		<5	<5	<5	<5	<50	<100
4-Methyl-2-pentanone	50		<10	<10	<10	<10	<100	<200 J
2-Hexanone	50		<10	<10	<10	<10 J	<100	<200 J
Tetrachloroethene	5		<5	<5	**0.4 J**	<5	<50	<100
1,1,2,2-Tetrachloroethane	5		<5	<5	<5	<5	<50	<100 J
Toluene	5		<5	<5	<5	<5	<50	<100
Chlorobenzene	5		<5	<5	<5	<5	<50	<100
Ethylbenzene	5		<5	<5	<5	<5	<50	<100
Styrene	5		<5	<5	<5	<5	<50	<100
Xylene (total)	5		<5	<5	<5	<5	<50	<100
Vinyl Acetate	NE		<5	<5	<5	<5 J	<50	<100
Freon-113 *	5		<5	<5	<5	<5	<50	<100
Total VOCs			0	**5**	**17.3**	**16**	**2,012**	**1,500**

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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-39D2 GM-39D2 11/25/02	GM-70D2 GM-70D2 06/26/02	GM-70D2 GM-70D2 10/08/02	GM-71D2 GM-71D2 06/26/02	GM-71D2 GM-71D2 10/08/02	GM-73D2 GM-73D2 06/19/02
Chloromethane	5		<5 J	<5 J	<5	<5 J	<5	<25
Bromomethane	5		<5 J	<5	<5	<5	<5	<25
Vinyl Chloride	2		<2 J	<2	<2	<2	<2	<10
Chloroethane	5		<5 J	<5	<5	<5	<5	<25
Methylene chloride	5		<5 J	<5	<5	<5	<5	<25
Acetone	50		<10 J	<10 J	<10 J	<10 J	<10 J	<50 J
Carbon disulfide	50		<5 J	<5	<5	<5	<5	<25
1,1-Dichloroethene	5		<5 J	<5	<5	<5	<5	<25
1,1-Dichloroethane	5		<5 J	<5	<5	**0.7 J**	<5	<25
cis-1,2-Dichloroethene	5		<5 J	**2 J**	**1 J**	<5	<5	**3 J**
trans-1,2-Dichloroethene	5		<5 J	<5	<5	<5	<5	<25
Chloroform	7		<5 J	<5	<5	**1 J**	**1 J**	<25
1,2-Dichloroethane	5		<5 J	<5	<5 J	<5	<5 J	<25
2-Butanone	50		<10 J	<10 J	<10	<10 J	<10	<50
1,1,1-Trichloroethane	5		<5 J	<5	<5 J	<5	**0.4 J**	<25
Carbon tetrachloride	5		<5 J	<5	<5	**1 J**	**2 J**	<25
Bromodichloromethane	50		<5 J	<5	<5	<5	<5	<25
1,2-Dichloropropane	5		<5 J	<5	<5	<5	<5	<25
cis-1,3-Dichloropropene	5		<5 J	<5	<5	<5	<5	<25
Trichloroethene	5		**110 J**	**100**	**63**	**4 J**	**4 J**	**840**
Dibromochloromethane	5		<5 J	<5	<5	<5	<5	<25
1,1,2-Trichloroethane	5		<5 J	<5	<5	<5	<5	<25
Benzene	0.7		<0.7 J	<0.7	<0.7	<0.7	<0.7	<4
trans-1,3-Dichloropropene	5		<5 J	<5	<5	<5	<5	<25
Bromoform	50		<5 J	<5	<5	<5	<5	<25
4-Methyl-2-pentanone	50		<10 J	<10 J	<10	<10 J	<10	<50
2-Hexanone	50		<10 J	<10	<10	<10	<10	<50
Tetrachloroethene	5		<5 J	**5 J**	**2 J**	<5	<5	<25
1,1,2,2-Tetrachloroethane	5		<5 J	<5	<5	<5	<5	<25
Toluene	5		<5 J	**0.8 J**	<5	<5	<5	<25
Chlorobenzene	5		<5 J	<5	<5	<5	<5	<25
Ethylbenzene	5		<5 J	<5	<5	<5	<5	<25
Styrene	5		<5 J	<5	<5	<5	<5	<25
Xylene (total)	5		<5 J	<5	<5	<5	<5	<25
Vinyl Acetate	NE		<5 J	<5	<5	<5	<5	<25
Freon-113 *	5		<5 J	**0.8 J**	<5	<5	<5	<25
Total VOCs			**110**	**109**	**66**	**6.7**	**7.4**	**843**

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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	GM-73D2 GM-73D2 11/22/02	GM-74D2 GM-74D2 06/19/02	GM-74D2 GM-74D2 10/09/02	GM-75D2 GM 75D2 07/11/02	GM-75D2 GM-75D-2 10/03/02
Chloromethane	5		<50 J	<5	<5	<50	<5 J
Bromomethane	5		<50 J	<5	<5	<50	<5
Vinyl Chloride	2		<20 J	<2	<2	<20	<2 J
Chloroethane	5		<50 J	<5	<5	<50	<5
Methylene chloride	5		<50 J	<5	<5	<50	<5
Acetone	50		<100 J	<10 J	<10	<100	<10
Carbon disulfide	50		<50 J	<5	<5	<50	<5
1,1-Dichloroethene	5		<50 J	<5	<5	**39 J**	**36**
1,1-Dichloroethane	5		<50 J	<5	<5	<50	**5**
cis-1,2-Dichloroethene	5		<50 J	<5	<5	<50	**3 J**
trans-1,2-Dichloroethene	5		<50 J	<5	<5	<50	<5
Chloroform	7		<50 J	<5	<5	<50	**0.4 J**
1,2-Dichloroethane	5		<50 J	<5	<5	<50	<5
2-Butanone	50		<100 J	<10	<10	<100	<10
1,1,1-Trichloroethane	5		<50 J	<5	<5	<50	**11**
Carbon tetrachloride	5		<50 J	<5	<5	<50	<5
Bromodichloromethane	50		<50 J	<5	<5	<50	<5
1,2-Dichloropropane	5		<50 J	<5	<5	<50	<5
cis-1,3-Dichloropropene	5		<50 J	<5	<5	<50	<5
Trichloroethene	5		**1200 J**	**4 J**	**8**	**1400**	**1500 D**
Dibromochloromethane	5		<50 J	<5	<5	<50	<5
1,1,2-Trichloroethane	5		<50 J	<5	<5	<50	<5
Benzene	0.7		<7 J	<0.7	<0.7	<7	<0.7
trans-1,3-Dichloropropene	5		<50 J	<5	<5	<50	<5
Bromoform	50		<50 J	<5	<5	<50	<5
4-Methyl-2-pentanone	50		<100 J	<10	<10	<100	<10
2-Hexanone	50		<100 J	<10	<10	<100	<10
Tetrachloroethene	5		**4 J**	**1 J**	**5 J**	<50	**11**
1,1,2,2-Tetrachloroethane	5		<50 J	<5	<5	<50	<5
Toluene	5		<50 J	<5	<5	<50	<5
Chlorobenzene	5		<50 J	<5	<5	<50	<5
Ethylbenzene	5		<50 J	<5	<5	<50	<5
Styrene	5		<50 J	<5	<5	<50	<5
Xylene (total)	5		<50 J	<5	<5	<50	<5
Vinyl Acetate	NE		<50 J	<5	<5	<50	<5
Freon-113 *	5		<50 J	<5	<5	<50	<5
Total VOCs			**1,204**	**5**	**13**	**1,439**	**1,566**

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, Second and Third Quarters of 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-1 GP-1 10/14/02	GP-3 GP-3 07/08/02	GP-3 GP-3 10/14/02
Chloromethane	5		<25	<5	<50	<5
Bromomethane	5		<25	<5	<50	<5
Vinyl Chloride	2		<10	<2	**57**	**47 J**
Chloroethane	5		<25	<5	<50	<5
Methylene chloride	5		<25	<5	<50	<5
Acetone	50		<50	<10	<100	<10
Carbon disulfide	50		<25	<5	<50	<5
1,1-Dichloroethene	5		**6 J**	**6 J**	**18 J**	**15 J**
1,1-Dichloroethane	5		<25	<5	<50	**4 J**
cis-1,2-Dichloroethene	5		**9 J**	**11 J**	**10 J**	**10 J**
trans-1,2-Dichloroethene	5		<25	<5	<50	<5
Chloroform	7		<25	<5	<50	<5
1,2-Dichloroethane	5		<25	<5	<50	<5
2-Butanone	50		<50	<10	<100	<10
1,1,1-Trichloroethane	5		<25	<5	<50	**5 J**
Carbon tetrachloride	5		<25	<5	<50	<5
Bromodichloromethane	50		<25	<5	<50	<5
1,2-Dichloropropane	5		<25	<5	<50	<5
cis-1,3-Dichloropropene	5		<25	<5	<50	<5
Trichloroethene	5		**510**	**560 DJ**	**1800 D**	**2500 DJ**
Dibromochloromethane	5		<25	<5	<50	<5
1,1,2-Trichloroethane	5		<25	<5	<50	<5
Benzene	0.7		<4	<0.7	<7	<0.7
trans-1,3-Dichloropropene	5		<25	<5	<50	<5
Bromoform	50		<25	<5	<50	<5
4-Methyl-2-pentanone	50		<50	<10	<100	<10
2-Hexanone	50		<50	<10	<100	<10
Tetrachloroethene	5		**80**	**85 J**	**88**	**60 J**
1,1,2,2-Tetrachloroethane	5		<25	<5	<50	<5
Toluene	5		<25	<5	<50	<5
Chlorobenzene	5		<25	<5	<50	<5
Ethylbenzene	5		<25	<5	<50	<5
Styrene	5		<25	<5	<50	<5
Xylene (total)	5		<25	<5	<50	<5
Vinyl Acetate	NE		<25	<5 J	<50	<5 J
Freon-113 *	5		**10 J**	**11 J**	**36 J**	**28 J**
Total VOCs			**615**	**673**	**2,009**	**2,669**

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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GP-1/3 INFLUENT GP 1/3 INF 07/08/02	GP-1/3 INFLUENT GP1/3 INF 10/14/02	GP-1/3 EFFLUENT GP 1/3 EFF 07/08/02	GP-1/3 EFFLUENT GP1/3 EFF 10/14/02
Chloromethane	5		<50	<50	<5	<5
Bromomethane	5		<50	<50	<5	<5
Vinyl Chloride	2		**16 J**	<20	<2	<2
Chloroethane	5		<50	<50	<5	<5
Methylene chloride	5		<50	**5 J**	<5	<5
Acetone	50		<100	<100	<10	<10
Carbon disulfide	50		<50	<50	<5	<5
1,1-Dichloroethene	5		**10 J**	<50	<5	<5
1,1-Dichloroethane	5		<50	<50	<5	<5
cis-1,2-Dichloroethene	5		**10 J**	**11 J**	<5	<5
trans-1,2-Dichloroethene	5		<50	<50	<5	<5
Chloroform	7		<50	<50	<5	<5
1,2-Dichloroethane	5		<50	<50	<5	<5
2-Butanone	50		**25 JB**	<100	<10	<10
1,1,1-Trichloroethane	5		<50	<50	<5	<5
Carbon tetrachloride	5		<50	<50	<5	<5
Bromodichloromethane	50		<50	<50	<5	<5
1,2-Dichloropropane	5		<50	<50	<5	<5
cis-1,3-Dichloropropene	5		<50	<50	<5	<5
Trichloroethene	5		**1400**	**1400**	<5	<5
Dibromochloromethane	5		<50	<50	<5	<5
1,1,2-Trichloroethane	5		<50	<50	<5	<5
Benzene	0.7		<7	<7	<0.7	<0.7
trans-1,3-Dichloropropene	5		<50	<50	<5	<5
Bromoform	50		<50	<50	<5	<5
4-Methyl-2-pentanone	50		<100	<100	<10	<10
2-Hexanone	50		<100	<100 J	<10	<10
Tetrachloroethene	5		**98**	**80**	<5	<5
1,1,2,2-Tetrachloroethane	5		<50	<50	<5	<5
Toluene	5		<50	<50	<5	<5
Chlorobenzene	5		<50	<50	<5	<5
Ethylbenzene	5		<50	<50	<5	<5
Styrene	5		<50	<50	<5	<5
Xylene (total)	5		<50	<50	<5	<5
Vinyl Acetate	NE		<50	<50 J	<5	<5 J
Freon-113 *	5		**18 J**	**12 J**	<5	<5
Total VOCs			**1,577**	**1,508**	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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: / SAMPLE ID: / DATE:	ONCT-1 ONCT-1 07/08/02	ONCT-1 ONCT 1 10/14/02	ONCT-2 ONCT-2 07/08/02	ONCT-2 ONCT2 10/14/02	ONCT-3 ONCT-3 07/08/02
Chloromethane	5		<50	<5	<10	<10	<5
Bromomethane	5		<50	<5	<10	<10	<5
Vinyl Chloride	2		<20	<2	<4	<4	<2
Chloroethane	5		<50	<5	<10	<10	<5
Methylene chloride	5		<50	<5	<10	**1 J**	<5
Acetone	50		<100	<10	<20	<20	<10
Carbon disulfide	50		<50	<5	<10	<10	<5
1,1-Dichloroethene	5		<50	**3 J**	**4 J**	**3 J**	**1 J**
1,1-Dichloroethane	5		<50	<5	**2 J**	<10	**1 J**
cis-1,2-Dichloroethene	5		**4 J**	**4 J**	**1 J**	<10	**6**
trans-1,2-Dichloroethene	5		<50	<5	<10	<10	<5
Chloroform	7		<50	<5	<10	<10	**1 J**
1,2-Dichloroethane	5		<50	<5	<10	<10	<5
2-Butanone	50		<100	<10	<20	<20	<10
1,1,1-Trichloroethane	5		<50	<5	<10	<10	**0.6 J**
Carbon tetrachloride	5		<50	<5	<10	<10	<5
Bromodichloromethane	50		<50	<5	<10	<10	<5
1,2-Dichloropropane	5		<50	<5	<10	<10	<5
cis-1,3-Dichloropropene	5		<50	<5	<10	<10	<5
Trichloroethene	5		**1500**	**1200 DJ**	**180**	**200**	**23**
Dibromochloromethane	5		<50	<5	<10	<10	<5
1,1,2-Trichloroethane	5		<50	<5	<10	<10	<5
Benzene	0.7		<7	<0.7	<1	<1	<0.7
trans-1,3-Dichloropropene	5		<50	<5	<10	<10	<5
Bromoform	50		<50	<5	<10	<10	<5
4-Methyl-2-pentanone	50		<100	<10	<20	<20	<10
2-Hexanone	50		<100	<10	<20	<20 J	<10
Tetrachloroethene	5		**14 J**	**11 J**	**9 J**	**8 J**	**9**
1,1,2,2-Tetrachloroethane	5		<50	<5	<10	<10	<5
Toluene	5		<50	<5	<10	<10	<5
Chlorobenzene	5		<50	<5	<10	<10	<5
Ethylbenzene	5		<50	<5	<10	<10	<5
Styrene	5		<50	<5	<10	<10	<5
Xylene (total)	5		<50	<5	<10	<10	<5
Vinyl Acetate	NE		<50	<5 J	<10	<10 J	<5
Freon-113 *	5		**8 J**	**7 J**	**1 J**	<10	**0.6 J**
Total VOCs			**1,526**	**1,225**	**197**	**212**	**42.2**

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, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	ONCT-3 ONCT3 10/14/02	ONCT-3 REP101102 10/14/02	ONCT INFLUENT ONCT INF 07/08/02	ONCT INFLUENT ONCT INF 10/14/02
Chloromethane	5		<5	<5	<25	<25
Bromomethane	5		<5	<5	<25	<25
Vinyl Chloride	2		<2	<2	<10	<10
Chloroethane	5		<5	<5	<25	<25
Methylene chloride	5		<5	<5	<25	**5 J**
Acetone	50		<10	<10	<50	<50
Carbon disulfide	50		<5	<5	<25	<25
1,1-Dichloroethene	5		<5	<5	<25	<25
1,1-Dichloroethane	5		<5	<5	<25	<25
cis-1,2-Dichloroethene	5		**8**	**9**	**4 J**	<25
trans-1,2-Dichloroethene	5		<5	<5	<25	<25
Chloroform	7		**1 J**	1 **J**	<25	<25
1,2-Dichloroethane	5		<5	<5	<25	<25
2-Butanone	50		<10	<10	<50	<50
1,1,1-Trichloroethane	5		<5	<5	<25	<25
Carbon tetrachloride	5		<5	<5	<25	<25
Bromodichloromethane	50		<5	<5	<25	<25
1,2-Dichloropropane	5		<5	<5	<25	<25
cis-1,3-Dichloropropene	5		<5	<5	<25	<25
Trichloroethene	5		**26**	**29**	**710**	**600**
Dibromochloromethane	5		<5	<5	<25	<25
1,1,2-Trichloroethane	5		<5	<5	<25	<25
Benzene	0.7		<0.7	<0.7	<4	<4
trans-1,3-Dichloropropene	5		<5	<5	<25	<25
Bromoform	50		<5	<5	<25	<25
4-Methyl-2-pentanone	50		<10	<10	<50	<50
2-Hexanone	50		<10 J	<10 J	<50	<50 J
Tetrachloroethene	5		**10**	**10**	**9 J**	**9 J**
1,1,2,2-Tetrachloroethane	5		<5	<5	<25	<25
Toluene	5		<5	<5	<25	<25
Chlorobenzene	5		<5	<5	<25	<25
Ethylbenzene	5		<5	<5	<25	<25
Styrene	5		<5	<5	<25	<25
Xylene (total)	5		<5	<5	<25	<25
Vinyl Acetate	NE		<5 J	<5 J	<25	<25 J
Freon-113 *	5		<5	<5	**4 J**	<25
Total VOCs			**45**	**49**	**727**	**614**

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, Second and Third Quarters of 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 ONCT EFF 07/08/02	ONCT EFFLUENT ONCT EFF 10/14/02
Chloromethane	5		<5	<5
Bromomethane	5		<5	<5
Vinyl Chloride	2		<2	<2
Chloroethane	5		<5	<5
Methylene chloride	5		<5	<5
Acetone	50		<10	<10
Carbon disulfide	50		<5	<5
1,1-Dichloroethene	5		<5	<5
1,1-Dichloroethane	5		<5	<5
cis-1,2-Dichloroethene	5		<5	<5
trans-1,2-Dichloroethene	5		<5	<5
Chloroform	7		<5	<5
1,2-Dichloroethane	5		<5	<5
2-Butanone	50		<10	<10
1,1,1-Trichloroethane	5		<5	<5
Carbon tetrachloride	5		<5	<5
Bromodichloromethane	50		<5	<5
1,2-Dichloropropane	5		<5	<5
cis-1,3-Dichloropropene	5		<5	<5
Trichloroethene	5		<5	<5
Dibromochloromethane	5		<5	<5
1,1,2-Trichloroethane	5		<5	<5
Benzene	0.7		<0.7	<0.7
trans-1,3-Dichloropropene	5		<5	<5
Bromoform	50		<5	<5
4-Methyl-2-pentanone	50		<10	<10
2-Hexanone	50		<10	<10
Tetrachloroethene	5		<5	<5
1,1,2,2-Tetrachloroethane	5		<5	<5
Toluene	5		<5	<5
Chlorobenzene	5		<5	<5
Ethylbenzene	5		<5	<5
Styrene	5		<5	<5
Xylene (total)	5		<5	<5
Vinyl Acetate	NE		<5	<5 J
Freon-113 *	5		<5	<5
Total VOCs			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 11. Concentrations of Tentatively Identified Compounds (TICs) Detected in Groundwater and Blank Samples, Third Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

WELL/BLANK SAMPLE IDENTIFICATION	SAMPLE ID	DATE	Tentatively Identified Compounds (Units in ug/L) 2-Chloroethylvinylether	Unknown
TRIP BLANK	TB100802	10/08/02	61 J	--
GM-36D2	GM-36D2	10/02/02	--	58 J
MW-52D	MW-52D	10/11/02	--	36 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
J Estimated value

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

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	TRIP BLANK TB100102 10/01/02	TRIP BLANK TB100202 10/02/02	TRIP BLANK TB100202A 10/02/02	TRIP BLANK TB100302 10/03/02	TRIP BLANK TB100302A 10/03/02	TRIP BLANK TB100402 10/04/02
Chloromethane		<5 J	<5 J	<5 J	<5 J	<5 J	<5 J
Bromomethane		<5	<5	<5	<5	<5	<5 J
Vinyl Chloride		<2 J	<2 J	<2 J	<2 J	<2 J	<2
Chloroethane		<5	<5	<5	<5	<5	<5
Methylene chloride		<5	**0.5 J**	**0.5 J**	<5	<5	**0.5 J**
Acetone		<10	<10	<10	<10	<10	**5 J**
Carbon disulfide		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10	<10	<10 J
1,1,1-Trichloroethane		<5	<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10	<10 J
Tetrachloroethene		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5	<5 J
Freon-113 *		<5	<5	<5	<5	<5	<5
Total VOCs		0	**0.5**	**0.5**	0	0	**5.5**

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, Third 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
	SAMPLE ID:	TB100402A	TB100702	TB100702A	TB100802A	TB100802	TB100902
	DATE:	10/04/02	10/07/02	10/07/02	10/08/02	10/08/02	10/09/02
Chloromethane		<5 J	<5 J	<5	<5	<5	<5
Bromomethane		<5 J	<5 J	<5 J	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5	<5
Methylene chloride		**0.4 J**	<5	**0.6 J**	**1 J**	<5	<5
Acetone		<10 J	<10 J	<10	**6 J**	<10 J	<10 J
Carbon disulfide		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5 J	<5 J
2-Butanone		<10 J	<10 J	<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5	<5 J	<5 J
Carbon tetrachloride		<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10 J	<10	<10	<10
2-Hexanone		<10 J	<10 J	<10 J	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5 J	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5 J	<5 J	<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5	<5
Total VOCs		**0.4**	0	**0.6**	7	0	0

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, Third Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	TRIP BLANK TB100902A 10/09/02	TRIP BLANK TB101002A 10/10/02	TRIP BLANK TB101002 10/10/02	TRIP BLANK TB101102 10/11/02	TRIP BLANK TB101102A 10/11/02	TRIP BLANK TB101402 10/14/02
Chloromethane		<5	<5	<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5	<5	<5
Methylene chloride		**0.5 J**	<5	<5	<5	<5	<5
Acetone		<10	<10	<10	<10	<10	<10
Carbon disulfide		<5	<5	<5	<5	<5	<5
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5
Chloroform		<5	<5	<5	<5	<5	<5
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5
2-Butanone		<10	<10	<10	<10	<10	<10
1,1,1-Trichloroethane		<5	<5	<5	<5	<5	<5
Carbon tetrachloride		<5	<5	<5	<5	<5	<5
Bromodichloromethane		<5	<5	<5	<5	<5	<5
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Trichloroethene		<5	<5	<5	<5	<5	<5
Dibromochloromethane		<5	<5	<5	<5	<5	<5
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5
Bromoform		<5	<5	<5	<5	<5	<5
4-Methyl-2-pentanone		<10	<10	<10	<10	<10	<10
2-Hexanone		<10	<10	<10	<10	<10	<10
Tetrachloroethene		<5	<5	<5	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5	<5	<5	<5	<5	<5
Toluene		<5	<5	<5	<5	<5	<5
Chlorobenzene		<5	<5	<5	<5	<5	<5
Ethylbenzene		<5	<5	<5	<5	<5	<5
Styrene		<5	<5	<5	<5	<5	<5
Xylene (total)		<5	<5	<5	<5	<5	<5
Vinyl Acetate		<5	<5	<5	<5	<5	<5
Freon-113 *		<5	<5	<5	<5	<5	<5
Total VOCs		**0.5**	0	0	0	0	0

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, Third Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	TRIP BLANK TB101402A 10/14/02	TRIP BLANK TB101502 10/15/02	TRIP BLANK TB101702 10/17/02	TRIP BLANK TB101802A 10/18/02	TRIP BLANK TB101802 10/18/02	TRIP BLANK TB112202 11/22/02
Chloromethane		<5	<5	<5	<5	<5	<5 J
Bromomethane		<5	<5	<5	<5	<5	<5 J
Vinyl Chloride		<2	<2	<2	<2	<2	<2 J
Chloroethane		<5	<5	<5	<5	<5	<5 J
Methylene chloride		<5	**0.6 J**	**0.9 J**	**0.8 J**	**0.9 J**	**1 J**
Acetone		<10	<10	<10	<10	<10	<10 J
Carbon disulfide		<5	<5	<5	<5	<5	<5 J
1,1-Dichloroethene		<5	<5	<5	<5	<5	<5 J
1,1-Dichloroethane		<5	<5	<5	<5	<5	<5 J
cis-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5 J
trans-1,2-Dichloroethene		<5	<5	<5	<5	<5	<5 J
Chloroform		<5	<5	<5	<5	<5	<5 J
1,2-Dichloroethane		<5	<5	<5	<5	<5	<5 J
2-Butanone		<10	<10	<10	<10	<10	<10 J
1,1,1-Trichloroethane		<5	<5	<5	<5	<5	<5 J
Carbon tetrachloride		<5	<5	<5	<5	<5	<5 J
Bromodichloromethane		<5	<5	<5	<5	<5	<5 J
1,2-Dichloropropane		<5	<5	<5	<5	<5	<5 J
cis-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5 J
Trichloroethene		<5	<5	<5	<5	<5	**0.6 J**
Dibromochloromethane		<5	<5	<5	<5	<5	<5 J
1,1,2-Trichloroethane		<5	<5	<5	<5	<5	<5 J
Benzene		<0.7	<0.7	<0.7	<0.7	<0.7	<0.7 J
trans-1,3-Dichloropropene		<5	<5	<5	<5	<5	<5 J
Bromoform		<5	<5	<5	<5	<5	<5 J
4-Methyl-2-pentanone		<10	<10	<10 J	<10 J	<10 J	<10 J
2-Hexanone		<10	<10 J	<10 J	<10 J	<10 J	<10 J
Tetrachloroethene		<5	<5	<5	<5	<5	<5 J
1,1,2,2-Tetrachloroethane		<5	<5	<5 J	<5 J	<5 J	<5 J
Toluene		<5	<5	<5	<5	<5	<5 J
Chlorobenzene		<5	<5	<5	<5	<5	<5 J
Ethylbenzene		<5	<5	<5	<5	<5	<5 J
Styrene		<5	<5	<5	<5	<5	<5 J
Xylene (total)		<5	<5	<5	<5	<5	<5 J
Vinyl Acetate		<5	<5 J	<5	<5	<5	<5 J
Freon-113 *		<5	<5	<5	<5	<5	<5 J
Total VOCs		0	**0.6**	**0.9**	**0.8**	**0.9**	**1.6**

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, Third Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	TRIP BLANK TB112502 11/25/02	TRIP BLANK TB112602 11/26/02	WATER EQ. BLANK FB100202 10/02/02	WATER EQ. BLANK FB100702 10/07/02	WATER EQ. BLANK FB100902 10/09/02
Chloromethane		<5 J	<5 J	<5 J	<5	<5
Bromomethane		<5 J	<5 J	<5	<5 J	<5
Vinyl Chloride		<2 J	<2 J	<2 J	<2	<2
Chloroethane		<5 J	<5 J	<5	<5	<5
Methylene chloride		**0.4 J**	**0.5 J**	<5	**0.4 J**	**0.3 J**
Acetone		<10 J	<10 J	<10	<10	<10
Carbon disulfide		<5 J	<5 J	<5	<5	<5
1,1-Dichloroethene		<5 J	<5 J	<5	<5	<5
1,1-Dichloroethane		<5 J	<5 J	<5	<5	<5
cis-1,2-Dichloroethene		<5 J	<5 J	<5	<5	<5
trans-1,2-Dichloroethene		<5 J	<5 J	<5	<5	<5
Chloroform		<5 J	<5 J	<5	<5	<5
1,2-Dichloroethane		<5 J	<5 J	<5	<5	<5
2-Butanone		<10 J	<10 J	<10	<10	<10
1,1,1-Trichloroethane		<5 J	<5 J	<5	<5	<5
Carbon tetrachloride		<5 J	<5 J	<5	<5	<5
Bromodichloromethane		<5 J	<5 J	<5	<5	<5
1,2-Dichloropropane		<5 J	<5 J	<5	<5	<5
cis-1,3-Dichloropropene		<5 J	<5 J	<5	<5	<5
Trichloroethene		<5 J	<5 J	<5	<5	<5
Dibromochloromethane		<5 J	<5 J	<5	<5	<5
1,1,2-Trichloroethane		<5 J	<5 J	<5	<5	<5
Benzene		<0.7 J	<0.7 J	<0.7	<0.7	<0.7
trans-1,3-Dichloropropene		<5 J	<5 J	<5	<5	<5
Bromoform		<5 J	<5 J	<5	<5	<5
4-Methyl-2-pentanone		<10 J	<10 J	<10	<10 J	<10
2-Hexanone		<10 J	<10 J	<10	<10 J	<10
Tetrachloroethene		<5 J	<5 J	<5	<5	<5
1,1,2,2-Tetrachloroethane		<5 J	<5 J	<5	<5 J	<5
Toluene		<5 J	<5 J	<5	<5	<5
Chlorobenzene		<5 J	<5 J	<5	<5	<5
Ethylbenzene		<5 J	<5 J	<5	<5	<5
Styrene		<5 J	<5 J	<5	<5	<5
Xylene (total)		<5 J	<5 J	<5	<5	<5
Vinyl Acetate		<5 J	<5 J	<5	<5	<5
Freon-113 *		<5 J	<5 J	<5	<5	<5
Total VOCs		**0.4**	**0.5**	0	**0.4**	**0.3**

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, Third Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	WATER EQ. BLANK FB101002 10/10/02	WATER EQ. BLANK FB101102 10/11/02	WATER EQ. BLANK FB101402 10/14/02	WATER EQ. BLANK FB101502 10/15/02
Chloromethane		<5	<5	<5	<5
Bromomethane		<5	<5	<5	<5
Vinyl Chloride		<2	<2	<2	<2
Chloroethane		<5	<5	<5	<5
Methylene chloride		**0.6 J**	<5	<5	**0.8 J**
Acetone		<10	<10	<10	<10
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	<10	<10
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 J
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 J
Freon-113 *		<5	<5	<5	<5
Total VOCs		**0.6**	0	0	**0.8**

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, Third Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	WATER EQ. BLANK FB101702 10/17/02	WATER EQ. BLANK FB101802 10/18/02	WATER EQ. BLANK FB112502 11/25/02	WATER EQ. BLANK FB112602 11/26/02
Chloromethane		<5	<5	<5 J	<5 J
Bromomethane		<5	<5	<5 J	<5 J
Vinyl Chloride		<2	<2	<2 J	<2 J
Chloroethane		<5	<5	<5 J	<5 J
Methylene chloride		**0.6 J**	**0.6 J**	**0.3 J**	**0.8 J**
Acetone		<10	<10	<10 J	**20 J**
Carbon disulfide		<5	<5	<5 J	<5 J
1,1-Dichloroethene		<5	<5	<5 J	<5 J
1,1-Dichloroethane		<5	<5	<5 J	<5 J
cis-1,2-Dichloroethene		<5	<5	<5 J	<5 J
trans-1,2-Dichloroethene		<5	<5	<5 J	<5 J
Chloroform		<5	<5	<5 J	<5 J
1,2-Dichloroethane		<5	<5	<5 J	<5 J
2-Butanone		<10	<10	<10 J	<10 J
1,1,1-Trichloroethane		<5	<5	<5 J	<5 J
Carbon tetrachloride		<5	<5	<5 J	<5 J
Bromodichloromethane		<5	<5	<5 J	<5 J
1,2-Dichloropropane		<5	<5	<5 J	<5 J
cis-1,3-Dichloropropene		<5	<5	<5 J	<5 J
Trichloroethene		<5	<5	<5 J	**0.4 J**
Dibromochloromethane		<5	<5	<5 J	<5 J
1,1,2-Trichloroethane		<5	<5	<5 J	<5 J
Benzene		<0.7	<0.7	<0.7 J	<0.7 J
trans-1,3-Dichloropropene		<5	<5	<5 J	<5 J
Bromoform		<5	<5	<5 J	<5 J
4-Methyl-2-pentanone		<10 J	<10 J	<10 J	<10 J
2-Hexanone		<10 J	<10 J	<10 J	<10 J
Tetrachloroethene		<5	<5	**0.6 J**	<5 J
1,1,2,2-Tetrachloroethane		<5 J	<5 J	<5 J	<5 J
Toluene		<5	<5	<5 J	<5 J
Chlorobenzene		<5	<5	<5 J	<5 J
Ethylbenzene		<5	<5	<5 J	<5 J
Styrene		<5	<5	<5 J	<5 J
Xylene (total)		<5	<5	<5 J	<5 J
Vinyl Acetate		<5	<5	<5 J	<5 J
Freon-113 *		<5	<5	<5 J	<5 J
Total VOCs		**0.6**	**0.6**	**0.9**	**21.2**

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 in Groundwater and Blank Samples, Third Quarter 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	GM-14 / GM-14 / 10/18/2002	WATER EQ. BLANK / FB101802 / 10/18/2002
Phenol		<10	<10
Bis(2-chloroethyl)ether		<10	<10
2-Chlorophenol		<10	<10
1,3-Dichlorobenzene		<10	<10
1,4-Dichlorobenzene		<10	<10
1,2-Dichlorobenzene		<10	<10
2-Methylphenol		<10	<10
Propane, 2,2'-oxybis[1-chloro-		<10	<10
4-Methylphenol		<10	<10
N-Nitroso-di-n-propylamine		<10	<10
Hexachloroethane		<10	<10
Nitrobenzene		<10	<10
Isophorone		<10	<10
2-Nitrophenol		<10	<10
2,4-Dimethylphenol		<10	<10
Bis(2-chloroethoxy)methane		<10	<10
2,4-Dichlorophenol		<10	<10
1,2,4-Trichlorobenzene		<10	<10
Naphthalene		<10	<10
4-Chloroaniline		<10	<10
Hexachlorobutadiene		<10	<10
4-Chloro-3-methylphenol		<10	<10
2-Methylnaphthalene		<10	<10
Hexachlorocyclopentadiene		<10	<10
2,4,6-Trichlorophenol		<10	<10
2,4,5-Trichlorophenol		<50	<50
2-Chloronaphthalene		<10	<10
2-Nitroaniline		<50	<50
Dimethylphthalate		<10	<10
Acenaphthylene		<10	<10
2,6-Dinitrotoluene		<10	<10
3-Nitroaniline		<50	<50
Acenaphthene		<10	<10
2,4-Dinitrophenol		<50	<50
4-Nitrophenol		<50	<50
Dibenzofuran		<10	<10
2,4-Dinitrotoluene		<10	<10
Diethylphthalate		<10	<10
CPPE4		<10	<10
Fluorene		<10	<10
4-Nitroaniline		<50	<50
4,6-Dinitro-2-methylphenol		<50	<50
N-Nitrosodiphenylamine (1)		<10	<10
Benzene, 1-bromo-4-phenoxy-		<10	<10
Hexachlorobenzene		<10	<10
Pentachlorophenol		<50	<50
Phenanthrene		<10	<10
Anthracene		<10	<10
Carbazole		<10	<10
Di-n-butylphthalate		<10	<10

See next page for footnotes.

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

CONSTITUENT: (Units in ug/L)	SAMPLE TYPE: / SAMPLE ID: / DATE:	GM-14 / GM-14 / 10/18/2002	WATER EQ. BLANK / FB101802 / 10/18/2002
Fluoranthene		<10	<10
Pyrene		<10	<10
Butylbenzylphthalate		<10	<10
3,3'-Dichlorobenzidine		<20	<20
Benzo(a)anthracene		<10	<10
Chrysene		<10	<10
Bis(2-ethylhexyl)phthalate (BEHP)		<10	4 J
Di-n-octylphthalate		<10	<10
Benzo(b)fluoranthene		<10	<10
Benzo(k)fluoranthene		<10	<10
Benzo(a)pyrene		<10	<10
Indeno(1,2,3-cd)pyrene		<10	<10
Dibenz(a,h)anthracene		<10	<10
Benzo(g,h,i)perylene		<10	<10
Benzoic acid		<50	<50
Benzyl alcohol		<10	<10
Sum of Constituents		0	0

ug/L Micrograms per liter.
J Estimated value.

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

CONSTITUENT (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID: / DATE:	10631 N-10631 06/14/02	10631 N-10631 10/17/02	GM-16SR GM-16SR 07/08/02	GM-16SR GM-16SR 10/11/02	GM-17SR GM-17SR 06/18/02	GM-17SR GM-17SR 10/07/02	GM-18S GM-18S 06/14/02	GM-18S GM-18S 10/07/02	GM-32S GM-32S 07/08/02	GM-32S GM-32S 10/17/02
Cadmium, Total	5		**3 B**	**1.8 B**	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Cadmium, Dissolved	5		**1.9 B**	**1.4 B**	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3
Chromium, Total	50		**50.5**	**4.6 B**	<1.5	<1.5	**1.8 B**	<1.5	**24.3**	**4.9 B**	**125**	**134**
Chromium, Dissolved	50		**21.5**	**2 B**	<1.5	<1.5	<1.5	<1.5	<1.5	<1.5	**125**	**130**

(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 and Blank Samples, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID: / DATE:	GM-78S GM-78S 06/18/02	GM-78S GM-78S 10/10/02	GM-78I GM-78I 06/18/02	GM-78I GM-78I 10/10/02	MW-1GF MW-1GF 07/08/02	MW-01GF MW-1GF 10/17/02	MW-2GF MW-2GF 07/08/02	MW-02GF MW-2GF 10/17/02	MW-3R MW-3R 06/14/02	MW-03R MW-3R 10/11/02
Cadmium, Total	5		<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	**30.1**	**26.7**
Cadmium, Dissolved	5		--	--	--	--	<1.3	<1.3	<1.3	<1.3	**26.9**	**29.1**
Chromium, Total	50		**2.7 B**	<1.5	**8.7 B**	<1.5	**2.8 B**	<1.5	**38**	**36.3**	**49.7**	**37.8**
Chromium, Dissolved	50		--	--	--	--	<1.5	<1.5	**32.1**	**36.4**	**39.4**	**40.1**

(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 and Blank Samples, Second and Third Quarters of 2002, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT (Units in ug/L)	NYSDEC SCGs [1]	WELL: / SAMPLE ID:	WATER EQ. BLANK FB100702	WATER EQ. BLANK FB101102	WATER EQ. BLANK FB101702
		DATE:	10/07/02	10/11/02	10/17/02
Cadmium, Total	5		<1.3	<1.3	<1.3
Cadmium, Dissolved	5		--	--	--
Chromium, Total	50		<1.5	<1.5	<1.5
Chromium, Dissolved	50		--	--	--

(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

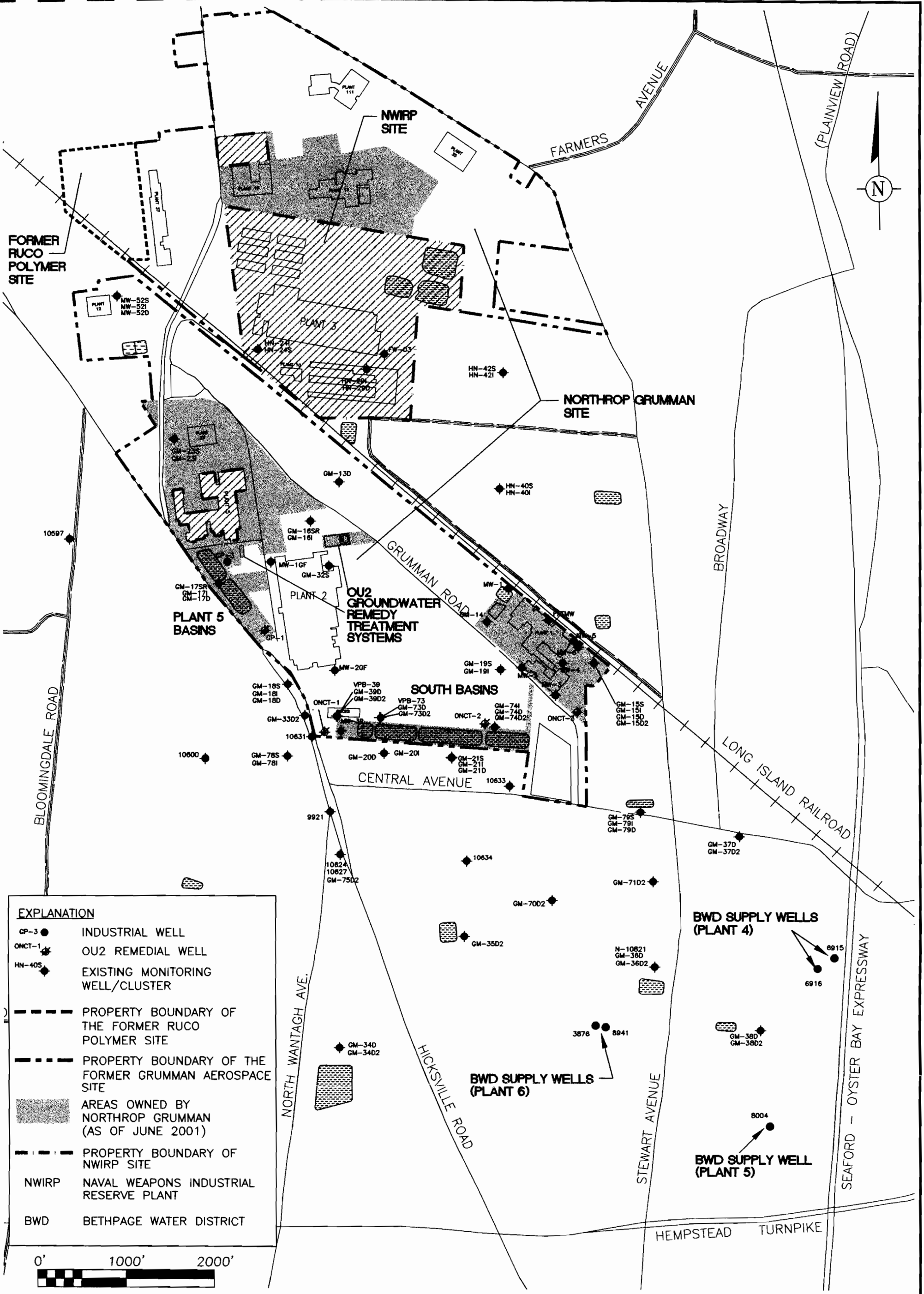
NYSDEC New York State Department of Environmental Conservation

EQ Equipment

Value exceeds associated SCG value.

Bold Constituent detected above IDL.

-- Not analyzed.



ARCADIS G&M
88 DUREA ROAD
MELVILLE, NEW YORK 11747
TEL: 516/249-7600 FAX: 516/249-7610

NORTHROP GRUMMAN CORPORATION

BETHPAGE, NEW YORK

LOCATION OF OU2 GROUNDWATER REMEDY AND WELLS

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

PLOT: G:\DRAWING\NORTHROP GRUMMAN\CADD\OU2SYS_LOCATION_REV5.DWG, DATE: 04/08/2003 01:51:10PM, LAYOUT NAME: REMEDIAL

ARCADIS

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)
HN 24S				55.43							
HN 29D				54.66							
HN 29I				54.50							
CM 21D				49.34							.11 higher
CM 21I				42.04							
CM 24S				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				52.64							
CM 40I				56.48							
CM 19S				49.02							
CM 17SR				55.24							
CM 17I				55.33							.10 higher
CM 17D				65.44							.10 higher
1059				49.27							
6992				39.48							
1062				39.22							
75D-2				47.20							.17 HEXAVALENT
CM 35-02				46.26							
10636				46.52							
71D2				48.19							
1082				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 NY001348.0006.0004 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)
OWC-2											
OWC-1				73.97							
GP-1				96.00		96.20					
GP-3				/							
~~OWC-3~~											
~~OWC-5~~											
OWC 3				72.18							591.68m
GM-13D											
GM 7411				44.75							.10 higher
GM 74D				51.66							.10 higher
GM 7402				58.19							.11 higher
OWC 2				70.75							
GM 7302				52.00							
GM 73D				50.92							
MW 3R				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				55.69							
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				46.46							.12 higher
79I				47.18							.10 higher
79S				460.52							
16633				44.82							
~~78S~~				46.49							
78S				48.26							
78I				48.60							
18D				52.63							all higher
18I				50.22							
23S				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) x1000	Temp °F (°C)	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	5.16	2.03	61.8	-	0.48	
1030				245	5.14	2.03	61.9	-	0.44	
1035				249	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: NC Sewer

Color: Colorless Turbidity(qualitative): Clear

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N-Grumman | Project No.: NY003349.0006.0004 | Page: 1 of ____

Site Location: Bethpage | Date: 10.14.02

Site/Well No.: GM 14 | Replicate No.: ____ | Code No.: ____

Weather: Clear 55° | Sampling Time: Begin ____ End ____

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point		Color				Colorless
MP Elevation (ft)		Odor				None
Land Surface Elevation (ft)		Appearance				Clear
Sounded Well Depth (ft bmp)	55.0	pH (s.u.)	5.54	5.28	5.17	5.16
Depth to Water (ft bmp)	49.23	Conductivity ~~(mS/cm)~~ (µmhos/cm)	83	231	228	170
Water-Level Elevation (ft)		Turbidity (NTU)				
Water Column in Well (ft)	5.77	Temperature (°C)	16.3	15.9	15.9	15.8
Casing Diameter/Type	4/0.65	Dissolved Oxygen (mg/L)				
Gallons in Well	3.75	Time ~~Salinity (%)~~	1:28	1:30	1:33	1:36
Gallons Pumped/Bailed Prior to Sampling	11.25	Sampling Method				
Sample Pump Intake Setting (ft bmp)	54	Remarks				
Purge Time	begin ____ end ____					
Pumping Rate (gpm)	Q=1.5 T=8 W=2.5					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel ____

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

mp	below measuring point	ml	milliliter	NTU	Nephelometric Turbidity Units
	Degrees Celsius	mS/cm	Milisiemens per centimeter	PVC	Polyvinyl chloride
	feet	msl	mean sea-level	s.u.	Standard units
m	Gallons per minute	N/A	Not Applicable	umhos/cm	Micromhos per centimeter
/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-15S
Date: 10-7-02 Sampled By: G.W.B.C.
Sampling Time: Recorded By:
Weather: Coded Replicate No.:

WELL INFORMATION

Casing Material: Purge Method: Redi-Flo Pump
Casing Diameter: Purge Rate: 2 GPM
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 (umhos/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			
3:03	2V					5.3	220	17.9			
3:09	3V			27		6.3	222	17.5			

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

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NH00134.0006 Task: 0004 Well ID: GM 1BI
Date: 10.8.02 Sampled By: RW 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: 51.78 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	51.78	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	5.11	217.0	17.9		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				309	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: 10-8-02 Sampled By: CW BH
Sampling Time: _____ Recorded By: BH
Weather: Sunny 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: 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	315	5.22	107.1	18.1	54.50	3.0	
12:10				329	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			31.4	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	278	4.85	188.5	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: NP001348.0006 Task: 0004 Well ID: GM 15D2
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: 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	5.39	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	17.2		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	309	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	322	4.99	91.0	17.6		5.0	

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman | Project No. N4001343.0006.00004 | 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	2U	2U	3U
Color		light Brown color		
Odor		odorless		
Appearance	slightly cloudy			
pH (s.u.)	6.31	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: 53.35'

5 Gallon Pails: IIII 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

Water Sampling Log

Project NY001348.0006.0004 | Project No. | Page 1 of

Site Location Bethpage NY | Date 10-07-04

Site/Well No. CM 17 SR | Replicate No. | Code No.

Weather | Sampling Time: Begin | End

Evacuation Data		Field Parameters	I	1J	2J	3J
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	70.00	pH (s.u.)	5.77	6.15	6.16	6.10
Depth to Water (ft bmp)	55.96	Conductivity (mS/cm)	114.9	115.3	60.2	115.1
Water-Level Elevation (ft)		(µmhos/cm)				
Water Column in Well (ft)	14.04	Turbidity (NTU)	261	14.6	15.3	14.4
Casing Diameter/Type	4 (0.65)	Temperature (°C)	22.1	23.3	23.4	23.5
Gallons in Well	9.12	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	28.00	~~Salinity (%)~~	1:25	1:30	1:35	1:41
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 1:25 end	Remarks				
Pumping Rate (gpm)	Q=1.5 T=18 D=5.5					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel

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: NY00BM8.0006 Task: 00004 Well ID: 17-I
Date: 10-07-02 Sampled By: GW BH
Sampling Time: _____ Recorded By: BH
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	2.0	
2:20				288	6.03	64.3	22.1		2.3	
2:25				287	6.01	76.5	22.2	56.14	2.2	
2:30				284	6.06	77.6	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): Clear ~~<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	8.0	
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	57.73	6.8	
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				319	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	20.8		8.0	
12:45				318	5.21	92.9	20.9		7.8	
##										

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

6.00
18.5
C. 1720

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N. GRUMMAN | Project No. NY00349.0006.0001 | Page 1 of ____

Site Location: BETHPAGE NY | Date 10-7-02

Site/Well No. GM-18S | Replicate No. ____ | Code No. ____

Weather: CLEAR 75° | Sampling Time: Begin ____ End ____

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	67.00
Depth to Water (ft bmp)	49.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	18.00
Casing Diameter/Type	2" (0.16)
Gallons in Well	2.88
Gallons Pumped/Bailed Prior to Sampling	9
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	6.06	6.29	6.33	6.35
Conductivity (mS/cm)	1426	154.5	1539	1531
(µmhos/cm)				
Turbidity (NTU)		33.2	19.6	18
Temperature (°C)	18.5	18.4	18.5	18.2
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method ____

Remarks ____

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel ____

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 #: NY001348.0006.00004 Project (Name) 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) x1000	1.19	1.33	1.31	1.32
Water Column in Well (ft)	11.00'	Turbidity (NTU)				<50
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
CHEM 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		7.9	
3:45				268	5.32	66.4	19.4		7.8	
3:50				270	5.36	65.9	19.2		7.0	
3:55				280	5.22	67.9	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	73.0	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			16.3	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 Static 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 (%)				
~~Packer Pressure~~ ~~Sample Pump Intake Setting (ft bmp)~~	105 PSI	~~Sampling Method~~ Time	1500	1535	1600	
Purge Time	begin 1500 end 1655	Remarks Static DTW = 44.82'				
Pumping Rate (gpm)	1V = 1.5 5 Gallon Buckets	5 Gall Pails: |||| 1/2				
Evacuation Method	Dedicated Bladder Pump					

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Sampling Personnel: KS

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 GERAGHTY & MILLER

Water Sampling Log

Project NAS N-GRUMMAN Project No. NY001348.0006.0004 Page 1 of

Site Location BETHPAGE NY Date 10-10-02

Site/Well No. GM-21S Replicate No. Code No.

Weather OVERCAST 62° Sampling Time: Begin End

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	67.00
Depth to Water (ft bmp)	41.50
Water-Level Elevation (ft)	
Water Column in Well (ft)	25.50
Casing Diameter/Type	2" (0.16)
Gallons in Well	4
Gallons Pumped/Bailed Prior to Sampling	12
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 11:55 end
Pumping Rate (gpm)	Q=1 T=12 IV=4
Evacuation Method	

Field Parameters

	I	IV	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	7.25	7.55	7.22	7.05
Conductivity (mS/cm)				
(µmhos/cm)	111.6	97.3	114.3	112.7
Turbidity (NTU)				
Temperature (°C)	18.8	19.2	19.4	19.3
Dissolved Oxygen (mg/L)				
Salinity (%)	11:55	11:59	12:03	12:07
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel

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, 80° | 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
Packer Pressure / Sample Pump Intake Setting (ft bmp)	90 PSI
Purge Time	begin 1010 end 1150
Pumping Rate (gpm)	
Evacuation Method	Dedicated Waterra Pump.

Field Parameters

	I	IV	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	9.18	9.97	9.94	9.99
Conductivity ~~(mS/cm)~~	1.21	1.23	1.27	1.29
(µmhos/cm) x 1000				
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 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: 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	5.84	109.3	19.0		2.9	
2:50				307	5.67	100.1	19.0		3.0	
2:55				330	4.93	83.9	19.3		4.0	
3:00				331	4.86	82.6	19.2		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	4.95	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		6.0	
4:05			115	342	4.83	93.5	17.2		6.0	

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: Cloud, 65° | Sampling Time: Begin 1130 End 1315

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	120.00
Depth to Water (ft bmp)	109.00
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)~~ Packer Pressure	70 PSI
Purge Time	begin 1140 end 1315
Pumping Rate (gpm)	
Evacuation Method	Dedicated Bladder Pump

Field Parameters

	I	1U	2U	3U
Color				
Odor				
Appearance				
pH (s.u.)	5.06	5.34	4.87	5.12
Conductivity ~~(mS/cm)~~ (µmhos/cm) x1000	0.92	0.81	0.81	0.82
Turbidity (NTU)				<50
Temperature ~~(°C)~~ °F	62.7	60.9	60.6	60.7
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	1145	1210	1240	1310

Remarks: DTW: 57.37'

5 GALLON PAILS: III 1/2

Constituents Sampled	Container Description	Number	Preservative
Chem Cor			

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) x100	Temp (°C)(°F)	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	68.6	57.32'	7.28	
1415				264	5.94	0.79	68.2	-	7.70	
1420				262	5.72	0.79	68.3	-	7.57	
1425				269	5.64	0.79	62.9	57.32'	6.86	
1430				271	4.78	0.79	62.9	-	9.61	
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	Northrop Grumman	Project No.	30001348.0006.00004	Page	1 of 1
Site Location	Bethpage, NY			Date	10/3/02
Site/Well No.	6M-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)	225 PSI (Fixed Pressure)
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) X1000	1.24	1.22	1.20	1.19
Turbidity (NTU)				450
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: IIII IIII

Samples Split w/ BWA (112.m)

Constituents Sampled	Container Description	Number	Preservative
VOCs 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.	NY001348.0006.0000	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	
Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	214.00
Depth to Water (ft bmp)	202.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	12.00
Casing Diameter/Type	4" (0.65)
Gallons in Well	7.80
Gallons Pumped/Bailed Prior to Sampling	24
~~Sample Pump Intake~~ Packer Pressure Setting (ft bmp)	110 PSI
Purge Time	begin 1235 end 1445
Pumping Rate (gpm)	
Evacuation Method	Dedicated Bladder Pump

Field Parameters	I	1V	2V	3V
Color	Colorless			
Odor	odorless			
Appearance	Clear			
pH (s.u.)	8.41	8.17	6.00	6.26
Conductivity ~~(mS/cm)~~ (µmhos/cm) X100	0.88	0.89	0.88	0.91
Turbidity (NTU)				<50
Temperature ~~(°C)~~ °F	66.1	66.9	68.0	67.9
Dissolved Oxygen (mg/L)				
Salinity (%)				
~~Sampling Method~~ Time	1235	1315	1355	1435

Remarks: DTW: 42.49'

5 Gallon Pails: ||||

Samples Split w/ BWD (KZM)

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	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	Northrup 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 Prior to Sampling	43.00
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	I	1V	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)	[illegible]			<50
Temperature (°F)	67.9	65.6	67.1	67.1
Dissolved Oxygen (mg/L)				
Salinity (%)				
Time ~~Sampling Method~~	1035	1115	1145	

Remarks: DTW: 45.53'

Sample Pair: ~~IIII~~ IIII

Samples split w/ BWD (H2M)

Constituents Sampled	Container Description	Number	Preservative
Clleck IOC			

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. NY001348.0006.00002 | 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		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)	262.00'	pH (s.u.)	4.10	4.32	4.32	4.16
Depth to Water (ft bmp)	240.00'	Conductivity (mS/cm) (µmhos/cm) x1000	1.04	1.86	1.88	1.89
Water-Level Elevation (ft)		Turbidity (NTU)				<50
Water Column in Well (ft)	22.00'	Temperature °C °F	61.5	60.9	61.9	64.4
Casing Diameter/Type	4" (0.65)	Dissolved Oxygen (mg/L)				
Gallons in Well	14.30	Salinity (%)				
Gallons Pumped/Bailed Prior to Sampling	45.00	Sampling Time / ~~Method~~	0830	0920	1010	
~~Sample Pump Intake Setting (ft bmp)~~ (Packer Pressure)	110 PSI	Remarks	DTW: 46.58'			
Purge Time	begin 0820 end 1105					
Pumping Rate (gpm)		5 Gallon pails: |||			
Evacuation Method	Dedicated Bladder Pump	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.	NY001345.0006.00002	Page	1 of 1
Site Location	Bethpage, NY			Date	10/7/02
Site/Well No.	GM-37D2	Replicate No.		Code No.	
Weather	cloudy, [illegible], 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	1V	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	4.50	4.60	4.50	4.43
Conductivity ~~(mS/cm)~~ ~~(umhos/cm)~~ [illegible]	2.01	2.00	2.05	2.09
Turbidity (NTU)				<50
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'

Seal... [illegible]: ~~||||~~ ||||

Samples split w/ H2M for BWD

Constituents Sampled	Container Description	Number	Preservative
Check LOC			

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

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

Site/Well No.: GM-38D | Replicate No.: Repo1 | Code No.:

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

Evacuation Data		Field Parameters	I	2U	2U	3U
Measuring Point	Toc	Color		colorless		
MP Elevation (ft)		Odor		odorless		
Land Surface Elevation (ft)		Appearance		clear		
Sounded Well Depth (ft bmp)	340.00'	pH (s.u.)	5.09	5.08	5.27	5.18
Depth to Water (ft bmp)	317.00'	Conductivity ~~(mS/cm)~~ (µmhos/cm) x1000	0.88	0.92	0.91	0.92
Water-Level Elevation (ft)		Turbidity (NTU)				<50
Water Column in Well (ft)	23.00'	Temperature ~~(°C)~~ °F	59.9	59.8	60.4	60.6
Casing Diameter/Type	4" / 0.65	Dissolved Oxygen (mg/L)				
Gallons in Well	14.95	Salinity (%)				
Gallons Pumped/Bailed Prior to Sampling	45.00	~~Sampling Method~~ Time	1205	1240	1325	1410
~~Packer Pressure~~ ~~Sample Pump Intake~~ Setting (ft bmp)	145 PSI	Remarks	DTW: 45.41'			
Purge Time	begin 1203 end 1415					
Pumping Rate (gpm)		5 GALLON PAILS: IIII IIII				
Evacuation Method	Dedicated bladder pump	Samples split w/ ARS (Hzm)				

Constituents Sampled	Container Description	Number	Preservative
Check COC			
Sampled used as a replicate (Repo1)			

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.	NY000398.0006.00001	Page	1 of 1
Site Location	Bethpage, NY			Date	10/4/02
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) x100	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 (H2M)			

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

Sampling Personnel KB

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.	NY001348.0006.00004	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~~ Pump Pressure Setting (ft bmp)	145 PSI
Purge Time	begin 1045 end 1225
Pumping Rate (gpm)	
Evacuation Method	Dedicated bladder Pump

Field Parameters

	I	1½	3	3½
Color				colorless
Odor				odorless
Appearance				clear
pH (s.u.)	5.96	5.18	6.04	6.05
Conductivity ~~(mS/cm)~~ (µmhos/cm)	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 (%)				
~~Sampling Method~~ Time	1045	1114	1145	1215

Remarks: DTW: 48.31'

5 Gallon Pails: IIII

Samples split w/ H2M (BWD)

Constituents Sampled	Container Description	Number	Preservative
Check COC			

Set control pressure back to ~~40~~ 50 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	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. NY 001348.0006.0002 | 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)~~ Bailer Pressure	230 PSI
Purge Time	begin 0955 end 1020
Pumping Rate (gpm)	
Evacuation Method	Dedicated bladder pump

Field Parameters

	I	IV	2V	3V
Color			colorless	
Odor			odorless	
Appearance			clear	
pH (s.u.)	5.31	5.02	5.02	4.85
Conductivity ~~(mS/cm)~~ (µmhos/cm) X 1000	0.87	0.95	0.95	0.94
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

Sampler Split w/ Hazen (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	59.0	19.7	45.40	7.0	
10:25				302	5.74	59.3	19.8		6.0	
10:30				304	5.71	59.3	19.8		7.0	
10:35				307	5.59	109.9	20.2		6.0	
10:40				309	5.54	109.1	20.2		7.0	
10:45				308	5.51	109.0	20.2		7.0	
10:50				308	5.51	109.0	20.2		7.0	
10:55				311	5.52	109.0	20.2		7.0	
11:00				309	5.52	109.1	20.2		7.0	
11:05				309	5.52	109.9	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: 10.4.02 Sampled By: GW 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	87.1	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	
					8					

Well Secure: _____ Purge Water Disposal: _____

Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY008134.0006 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	55.0	18.7		3.4	
1:40				311	5.23	59.4	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	69.3	18.5	58.65	2.5	
2:00				264	5.10	67.2	18.5		2.7	
2:05				274	4.90	62.3	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	3.9	

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

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: M00348.0004 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/min			268	5.70	179.5	18.7	42.69	3.5	
1:30				290	4.91	187.1	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	183.1	17.6		4.8	
2:00				209	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. ATTENTION GRUMMAN 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 ✓	2 ✓	3 ✓
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~~) (µmhos/cm) x 1000	3.55	3.66	3.61	3.59
Water-Level Elevation (ft)		Turbidity (NTU)				<50
Water Column in Well (ft)	21.42'	Temperature (~~°C~~) °F	62.4	63.1	62.2	62.2
Casing Diameter/Type	4" (0.65)	Dissolved Oxygen (mg/L)				
Gallons in Well		Salinity (%)				
Gallons Pumped/Bailed Prior to Sampling	42	~~Sampling Method~~ Time	1:28	1:35	1:42	1:49
Sample Pump Intake Setting (ft bmp)		Remarks	DTW: 48.58'			
Purge Time	begin ____ end ____					
Pumping Rate (gpm)	Q=2 gpm T=21 MIN V=14 GALLONS (7 mL)					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
CHCCl3			

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 (µmhos/cm) x100	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 BK

Sampling Time: _____ Recorded By: GW

Weather: OVERCAST BREEZY 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 mL/min			264	4.89	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: M00134B.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: 29.0 Total Volume Purged: 7.0L

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-24I

Date: 10/15/02 Sampled By: DP/GW

Sampling Time: 2:15 Recorded By: DP

Weather: 50° 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: 63.42 Pump Intake Depth

Water Column: Pump on: 2:40 Off: 3:55

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
2:45	450			219	3.67	253	15.0	63.42	5.8	
2:50				248	3.65	249	15.1	–	5.6	
2:55				258	3.67	247	15.1	–	5.4	
3:00				261	3.76	244	14.9	63.45	5.4	
3:05				261	3.79	243	15.2	–	5.4	
3:10				261	3.81	243	15.3	–	5.4	
3:15								–		
3:20								–		
3:25								–		
3:30								–		
3:35				262	3.74	238	15.2	63.45	5.4	
3:40				262	3.68	235	15.2	–	5.4	
3:45			<50	262	3.71	235	15.3		5.4	

Well Secure: YES

COLORLESS

ODORLESS

Purge Water Disposal: NC SEWER

Turbidity(qualitative): CLEAR

ARCADIS GERAGHTY & MILLER

Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: 00004 Well ID: MW-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-DEDICADED BLADDER

Casing Diameter: 4" Purge Rate: 450 ML/MIN

Total Depth: [illegible] 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	[illegible]	5.56
12:20				148	5.93	1.13	16.0	—	[illegible]	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	5.56	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

Low-Flow Groundwater Sampling Log

Project Number: NY001348.0006 Task: .0004 Well ID: 29-I

Date: 10/15/02 Sampled By: RM

Sampling Time: _____ Recorded By: RM

Weather: Sunny/Clear Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: _____

Casing Diameter: 4" Purge Rate: _____

Total Depth: _____ Total Volume Purged: _____

Depth to Water: 58.45 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
12:25				201	6.22	112.9	15.8	58.45	6.6	
12:30				179	6.71	133.3	15.8		6.4	
12:35				147	6.91	104.1	16.3		6.0	
12:40				146	6.93	102.3	16.3		6.0	
12:45				143	7.0	98.2	16.7		6.0	
12:50				139	7.01	97.6	16.5	*	6.6	
12:55				134	6.98	96.8	16.9		6.0	
13:00				133	6.98	97.3	17.0		6.0	
13:05				132	6.95	96.1	17.2		6.0	
13:10				130	6.93	96.2	17.3		5.8	
13:15				128	6.90	95.8	17.2	56.09	5.8	
13:20				129	6.65	95.2	17.2		5.8	
13:25			21.9	129	6.61	93.8	17.2		5.8	

* M-Scope needed new batteries

Well Secure: _____ Purge Water Disposal: _____

Color: _____ Turbidity(qualitative): _____

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: GRUMMAN | Project No. N4001348.0006.4 | 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	~~0.14~~	1.53	1.51
Turbidity (NTU)		62.4		<200
Temperature ~~°C~~ °F	61.4	~~16~~	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: 18 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	8.02	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. HN423 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: N6001348.0006 Task: 00004 Well ID: MW421

Date: 14 OCT 02 Sampled By: MS RS

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	3.85	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	3.59	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	3.37	17.7	–	3.83	
1320				22	4.03	2.91	17.6	–	4.39	
1325	↓		[illegible]	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

S:\PROJECT\Lockheed Martin\Great Neck\WY001227.0002\Data\GWsamplrs.xls- Sheet1

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project NN0013478.0006.0004 Project No. N-Grumman Page 1 of

Site Location Date 10-17-02

Site/Well No. MW 1 GF Replicate No. Code No.

Weather Clear Sunny Sampling Time: Begin End

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point		Color				Clear
MP Elevation (ft)		Odor				No odor
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	57.50	pH (s.u.)	5.81	5.70	5.60	5.55
Depth to Water (ft bmp)	52.88	Conductivity (mS/cm)	1969	167	172	180
Water-Level Elevation (ft)		(µmhos/cm)				
Water Column in Well (ft)	4.62	Turbidity (NTU)	>200	>200	166	414
Casing Diameter/Type	4" (.65)	Temperature (°C)	12.6	17.5	17.7	17.8
Gallons in Well		Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	9 gallons	~~Salinity (%)~~ Time	12:21	12:23	12:25	12:28
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 1221 end	Remarks				
Pumping Rate (gpm)	Q=1.5 T=6 1V=2					
Evacuation Method						

Constituents Sampled				Container Description		Number	Preservative
	pH	Cond	TEMP	DUP	TIME		
4V	5.53	187	17.7		12:31		
5V					12:34		
6V					12:37		

Sampling Personnel

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

btp	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 N-Cromwell Project No. NY001348.0006.0004 Page 1 of ____

Site Location ____ Date 10.17.02

Site/Well No. MW 2 GF Replicate No. ____ Code No. ____

Weather Partly Sunny Sampling Time: Begin ____ End ____

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	59.00
Depth to Water (ft bmp)	51.66
Water-Level Elevation (ft)	
Water Column in Well (ft)	7.34
Casing Diameter/Type	4" (.65)
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	14.3 gallons
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 3:55 end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters	I	II	III	IIIV
Color				colorless
Odor				No odor
Appearance				clear
pH (s.u.)	5.75	6.38	6.93	6.49
Conductivity (mS/cm)	155.0	162.2	170.4	168.7
(µmhos/cm)				
Turbidity (NTU)	>200	>200	70	40
Temperature (°C)	15.3	15.3	15.9	15.9
Dissolved Oxygen (mg/L)				
~~Salinity (%)~~ Time	3:55	4:00	4:05	4:10
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel ____

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 _____ Project No. _____ Page 1 of _____

Site Location _____ Date 10-11-12

Site/Well No. MW 3R Replicate No. _____ Code No. _____

Weather Rain + Clouds Sampling Time: Begin _____ End _____

Evacuation Data		Field Parameters	I	II	III	IV
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	55.1	pH (s.u.)	5.87	5.72	5.76	5.69
Depth to Water (ft bmp)	41.86	Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	133.4	116.1	135.7	134.1
Water Column in Well (ft)	13.14	Turbidity (NTU)	>~~1000~~	7200	520	19.4
Casing Diameter/Type	2" (0.16)	Temperature (°C)	13.5	13.6	13.8	~~13.9~~ 13.7
Gallons in Well	2.10	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	6.5	~~Salinity (‰)~~ Barometric Pressure	12.10	12.18	12.20	12.24
Sample Pump Intake Setting (ft bmp)		Sampling Method				
		Remarks				
Purge Time	begin _____ end _____					
Pumping Rate (gpm)	Q=.5 14 10=25					
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel _____

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: N-Crummay Project No. NY001348.0006.0004 Page 1 of ___

Site Location: ___ Date: 10.17.9

Site/Well No.: MW 32S Replicate No.: ___ Code No.: ___

Weather: Clear Sunny Sampling Time: Begin ___ End ___

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	51.00
Depth to Water (ft bmp)	49.20
Water-Level Elevation (ft)	
Water Column in Well (ft)	1.8
Casing Diameter/Type	4" (.65) (1.17) x 3
Gallons in Well	
Gallons Pumped/Bailed Prior to Sampling	3.5 gallons
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ___ end ___
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

	I	1V	2V	3V
Color				colorless
Odor				No odor
Appearance				clear
pH (s.u.)	5.77	5.81	5.89	6.03
Conductivity (mS/cm)	186	176	181	177
(µmhos/cm)				
Turbidity (NTU)	>200	>200	>200	>200
Temperature (°C)	16.2	16.2	16.4	16.6
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks	1:25	1:27	1:29	1:31

Constituents Sampled	pH	Cond.	Container Description Temp	Time	Number Turbidity	Preservative
4V	6.05	179	17.0	1:33	>200	
5V	6.10	175	17.3	1:35	65	
6V	6.12	164	17.0	1:37	24	

Sampling Personnel ___

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 Level/Pumping Test Record

Page ____ of ____

Project NY001348.0006.0004 Well MW52S Site ____

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

Static Water Level ____ Measured With ____ Date/Time ____

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)	Head (ft) pH	Wet (ft) Cond	Depth to Water (ft) Temp	s (ft) DO	Dew. 1) Corr. (ft) ORP	Art. 2) s' (ft)		Q (gpm)	Mano-meter (in)	Remarks 3)
3:10		6.01	177	15.4	1.0	131					
3:15		6.02	173	15.3	.9	115					
3:20		6.08	163	15.7	.8	82					
3:25		6.08	196	15.8	.6	79					
3:30		6.05	186	16.1	.6	75					
3:35		6.05	185	16.2	.6	74					
3:40		6.07	181	16.4	.6	75					
3:45		6.03	178	16.5	.6	92					
3:50		6.0	177	16.7	.6	97					
3:55		6.04	173	16.9	.6	99					

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

Withdrawal

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	↓		<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: 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: 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: 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 or °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 Purge Water Disposal: NE Sewer

Color: COLORLESS Turbidity(qualitative): CLEAR

ODORLESS

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project N-Grumman Project No. NY001348.0006.00004 Page 1 of ____

Site Location ____ Date 10-17-02

Site/Well No. N 10631 Replicate No. ____ Code No. ____

Weather Overcast/Partly Sunny Sampling Time: Begin ____ End ____

Evacuation Data		Field Parameters	I	IV	2V	3 V
Measuring Point		Color				Colorless
MP Elevation (ft)		Odor				No odor
Land Surface Elevation (ft)		Appearance				clear
Sounded Well Depth (ft bmp)	67.00	pH (s.u.)	5.65	5.67	5.81	5.80
Depth to Water (ft bmp)	45.50	Conductivity (mS/cm)	509	135.1	144	138.8
Water-Level Elevation (ft)		(µmhos/cm)				
Water Column in Well (ft)	21.5	Turbidity (NTU)	~~150~~	75	38	25
Casing Diameter/Type	2" (.16)	Temperature (°C)	15.6	15.8	16.4	16.0
Gallons in Well		Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	10 gal (3.4 L/gal)	~~Salinity (%)~~ TIME	3:11	3:14	3:17	3:20
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin ____ end ____	Remarks				
Pumping Rate (gpm)	Q=1 T 10gal					
Evacuation Method	1V 3min					

Constituents Sampled	Container Description	Number	Preservative

Sampling Personnel ____

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

Site Location: BOMPAGE 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	7.02	6.96	6.96
Depth to Water (ft bmp)	46.80'	Conductivity ~~(mS/cm)~~ (µmhos/cm)	0.97	0.98	0.97	0.97
Water-Level Elevation (ft)						
Water Column in Well (ft)	20.20'	Turbidity (NTU)				>100
Casing Diameter/Type	2" (.16)	Temperature ~~(°C)~~ °F	58.8	57.9	57.4	57.2
Gallons in Well	3.35	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	10	Salinity (%)				
Sample Pump Intake Setting (ft bmp)	65'	~~Sampling Method~~ Time	1556	1558	1600	1601
Purge Time	begin 1350 end 1604	Remarks				
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.			
1-¼" = 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

Appendix C

Chain Of Custody Records

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001343.0006.00004/[illegible]

Project Location [illegible], NY

Laboratory STL

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation KS/ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOCs 8260						Remarks	Total
T2100102	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 signature]	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 Dave Sterm

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 Brummitts / NY001395.0006.00004

Project Location ______, NY

Laboratory STL - Shelton

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation KS / ARCADIS

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOCs - NYSDEC (Company list)						Remarks	Total
TZ100202	L	10/1/02		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
FB10-2-02	L	10/1/02		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: [signature]	Organization: ARCADIS G&M	Date 10/2/02	Time 1400	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, Please Report to Dave Stern

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

LWI

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

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

Project Location Bethpage, NY

Laboratory H2M

Project Manager Carlo San Giovani

Sampler(s)/Affiliation KS / AGM

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOC's (HCL preserved) (40 ml 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 (L circled)

Total No. of Bottles/Containers: 4

Relinquished by: Kris Scott	Organization: ARCADIS GM	Date 10/2/02	Time	Seal Intact?
Received by: [illegible]	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

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name 400[illegible].0006.0004 (Grumman / BWD)

Project Location [illegible], NY (Bethpage Water District)

Laboratory H2M

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation [illegible] / ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOC's (full list)						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:	Organization:	Date / /	Time	Yes (circled) 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)

ARCADIS

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

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

Project Number/Name NY001348.0006.00004

Project Location BETHPAGE NY

Laboratory [redacted] ECOTEST

Project Manager CARLO SAN GIOVANNI

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

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	1L PLASTIC TOTAL Cr (HNO3)	1L PLASTIC DISSOLVED Cr (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? Yes No N/A
Received by: [signature]	Organization: ECOTEST	Date 10/2/02	Time 4:10	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks:

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

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 [redacted] ECOTEST
Project Manager CARLO SAN GIOVANNI
Sampler(s)/Affiliation G.W. BH.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 1L PLASTIC TOTAL Cl (HNO3)	1L 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: [illegible]	Organization: [illegible]	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:

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

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name LVC01343.0006.0004 / NORTHROP GRUMMAN (BETHPAGE WATER DISTRICT)

Project Location Bethpage, NY

Laboratory HZM

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation KS / ARCADIS

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

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

Total No. of Bottles/ Containers: 2

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS GEM	Date 10/3/02	Time 1605		
Received by: [signature]	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: Split Samples from Grumman for Bethpage Water District.

Any questions Call Dave Stern @ 631-249-7600.

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

ARCADIS

Laboratory Task Order No./P.O. No. 95-1

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/AGM, 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
TB00302	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: AHW	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)

ARCADIS

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

Project Number/Name NY 001348.0006.00004

Project Location BETHPAGE NY

Laboratory ECOTEST

Project Manager CARLO SALVATORE

Sampler(s)/Affiliation G.W. BH

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: IL PLASTIC TOTAL CR+6 (CWD)	IL PLASTIC DISSOLVED CR+6 (CWD)	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

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 10/3/02	Time 12:30		
Received by: [signature]	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)

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name: NY001345.0006 [illegible] / BWD

Project Location: [illegible], NY

Laboratory: H2M

Project Manager: Carlo San Giovanni

Sampler(s)/Affiliation: BS / ARCADIS

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOCs						Remarks	Total
GM-71D2	L	10/8/02		2							2
GM-70D2	L	10/8/02		2							2

ANALYSIS / METHOD / SIZE

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

Total No. of Bottles/Containers: 4

Relinquished by: [signature]	Organization: ARCADIS - GM	Date 10/8/02	Time 1600	Seal Intact?
Received by: [signature]	Organization: H2M	Date 10/8/02	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: [illegible handwritten remarks] ... Water District (BWD). Any questions call [illegible] 631-249-7600.

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

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY001248.0006.00004
Project Location PETTIPACE NY
Laboratory ECOTEST
Project Manager CARLO SAN GIUVANNI
Sampler(s)/Affiliation G.W. B.H.

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	500ml Plastic TOTAL Cr (Abub)						Remarks	Total
GM-15I	L	10.7.02		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 10/7/02	Time 5:00	Seal Intact?
Received by: [signature]	Organization: ECOTEST	Date [illegible]	Time 10:43	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 ______ (SPECIFY)

ARCADIS

Laboratory Task Order No./P.O. No. —

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001346.0006.00004 / Grumman
Project Location Bethpage NY
Laboratory STL - Shelton
Project Manager Carlo San Giovanni
Sampler(s)/Affiliation AS/ /EH (ACM)

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOCs: NYSMETHOD 95-1 (short list) (Cancer)						Remarks	Total
TB100802	L	10/3/02		2							2
GM-71D2	L	10/3/02		2							2
GM-70D2	L	10/8/02		2							2
GM-16I	L	10/8/02		2							2
GM-15I	L	10/7/02		2							2
GM-15D	↓	↓		2							2
GM-21D	↓	↓		2							2
TB10-8-02A	↓	↓		2							2

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

Total No. of Bottles/ Containers 16

Relinquished by: [signature]	Organization: ARCADIS	Date 10/8/02	Time [illegible]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 Report to Dave Stern, 2 week TAT

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

ARCADIS

CHAIN-OF-CUSTODY RECORD

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

Project Number/Name NY000348.0006.00001 / Grumman

Project Location Bethpage, NY

Laboratory STL - Shelton

Project Manager Carlo San Giovani

Sampler(s)/Affiliation KS / ACM

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: [illegible] 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-33D2	L	10/9/02		2							2
N-10634	L	10/9/02		2							2
[illegible]	L	[illegible]		2							[illegible]
[illegible]D	L	[illegible]		2							[illegible]
[illegible]D2	L	[illegible]		[illegible]							[illegible]
T[illegible]	L	[illegible]		2							[illegible]
[illegible]	L	[illegible]		[illegible]							[illegible]

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

Total No. of Bottles/Containers ____

Relinquished by: [illegible]	Organization: [illegible]	Date 10/9/02	Time 1720	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 FED EX (SPECIFY) ☐ Lab Courier ☐ Other ____ (SPECIFY)

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

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
TB01102	L	10/11/02		2							2
MW-52D	L	10/11/02		6							6
MW-52I	L	10/11/02		2							2
MW-32	L	10-11-02		2	1	1					4
MW-16SR	L	"		2	1	1					4
FB 10-11-02	L	"		2	1	1					4
TB 10-11-02 A	L	"		2							2

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

Total No. of Bottles/ Containers 24

Relinquished by: _____	Organization: _____	Date 10/11/02	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 FED EX ☐ Lab Courier ☐ Other _____

SPECIFY SPECIFY

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001???.0006.00001 / [illegible]

Project Location [illegible], NY

Laboratory STL - Shelton

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation [illegible]

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC	ANALYSIS / METHOD / SIZE: [illegible]					Remarks	Total
TB101007	L	10/10/07		2							2
FB101007	L	10/10/07		2							2
N-10677	L	10/10/07		2							2
GM-73S	L	10/10/07		2	1						3
GM-73I	L	10/10/07		2	1						3
GM-21S	L	10/10/07		2							2
TB101007A	L	10/10/07		2							2

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

Total No. of Bottles/Containers: 16

Relinquished by: [signature]	Organization: ARCADIS G&M	Date 10/10/07	Time 1730	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: [illegible] TAT

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 (AECOM)

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: [signature]	Organization: ARCADIS GJM	Date 10/4/02	Time 1600	Seal Intact?	
Received by: [signature]	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. ______

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001393.0006.00004/Gr[illegible]

Project Location [illegible], NY

Laboratory STL

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation KS / ACEM

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOCs [illegible]						Remarks	Total
TZ100102	L	10/1/02		2							2
GM-20I	L	10/1/02		2							2
GM-20D	L	10/1/02		2							2

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

Total No. of Bottles/ Containers 6

Relinquished by: [signature]	Organization: Arcadis [illegible]	Date 10/1/02	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 Carrie Steen

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

ARCADIS

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

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

Project Number/Name: [illegible] / NY[illegible]1345.0006.00004

Project Location: Ithaca, NY

Laboratory: STL - Shelton

Project Manager: Carlo San Giovanni

Sampler(s)/Affiliation: KS / ACM

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOCs - NYSMCL (40ml vials)						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
FB 10-2-02	L	10/2/02		2							2
TB 10-2-02A	L	10/2/02		2							2

Total No. of Bottles/Containers: 14

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

Relinquished by / Received by	Organization	Date	Time	Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS G&M	Date 10/2/02	Time 1400	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, Please Report to Dave Stern

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 / BWD (Bethpage Water District)
Project Location: Bethpage, NY
Laboratory: H2M
Project Manager: Carlo San Giovani
Sampler(s)/Affiliation: KS / AGM

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOC's (HCl preserved) (40 ml 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: Kris Scott Organization: ARCADIS GM Date 10/2/02 Time
Received by: [illegible] Organization: H2M Date 10/2/02 Time 1635
Seal Intact? Yes No N/A (Yes circled)

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

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

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

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name: 400BTS.0006.0004 Grumman / BWD (Bethpage Water District)

Project Location: Bethpage, NY

Laboratory: H2M

Project Manager: Carlo San Giovanni

Sampler(s)/Affiliation: KS / AGM

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOCs (full [illegible]) (Amber 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 GM	Date 10/7/02	Time	Seal Intact? Yes (circled) No N/A
Received by: [signature]	Organization: [illegible]	Date [illegible]	Time [illegible]	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: * Samples split through 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)

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 [redacted] ECOTEST
Project Manager CARLO SAN GIOVANNI
Sampler(s)/Affiliation G.W. BH.

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	1L PLASTIC TOTAL Cl (HNO3)	1L 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 10/2/02	Time 4:00	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)

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name N4001348.0006.00004

Project Location BETHPAGE NY.

Laboratory [redacted] ECOTEST

Project Manager CARLO SAN GIOVANNI

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

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 1L PLASTIC TOTAL Cl (HNO3)	1L 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:	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)

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 / AG&M

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC's (HCL preserved) (40 ml vial)						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 1605	Seal Intact? Yes No N/A
Received by: [signature]	Organization:	Date [illegible]	Time [illegible]	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

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)

ARCADIS

Laboratory Task Order No./P.O. No. 95-1

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001348.0006.00004/GRUMMAN

Project Location Bethpage, NY

Laboratory STL

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation KS/AFM
GW,BH/AGM

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: VOC's (40 CFR 136)	VOC's - NYS METHOD (UNPRESERVED)					Remarks	Total
TB00302	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

					Seal Intact?
Relinquished by: AHW	Organization: ARCADIS	Date 10/3/02	Time 5:30		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:

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

Delivery Method: ☐ In Person ☑ Common Carrier FedEx ☐ Lab Courier ☐ Other

SPECIFY SPECIFY

ARCADIS

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

Project Number/Name NY 001348.0026.00004

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 (CLP)	1L PLASTIC DISSOLVED CR+6 (CLP)	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

					Seal Intact?
Relinquished by: [signature]	Organization: ARCADIS	Date 10/3/02	Time 12:30		
Received by: [signature]	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 [illegible]/BVD

Project Location [illegible], NY

Laboratory H2M

Project Manager [illegible]

Sampler(s)/Affiliation BS / [illegible]

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOCs [illegible]						Remarks	Total
GM-71D2	L	10/8/02		2							2
GM-70D2	L	10/8/02		2							2

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

Total No. of Bottles/Containers 4

Relinquished by: [illegible]	Organization: ARCADIS [illegible]	Date 10/8/02	Time 1600	Seal Intact?
Received by: [illegible]	Organization: H2M	Date 10/8/02	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: [illegible] (BVD). Any questions call [illegible] 631-249-7600.

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

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page ___ of ___

Project Number/Name NY001248.0006.00004

Project Location PETTIPAGE NY

Laboratory ECOTEST

Project Manager CARLO SAN GIOVANNI

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

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 500ml Plastic TOTAL CL (Albany)						Remarks	Total
GM-15I	L	10-8-02		1							1
GM-15D	↓	↓		1							1
GM-15D-2	↓	↓		1							1

1 WK TURNAROUND

Total No. of Bottles/Containers: 3

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

Relinquished by: [signature]	Organization: ARCADIS	Date 10/8/02	Time 5:00	Seal Intact? Yes No N/A
Received by: [signature]	Organization: ECOTEST	Date 10/9/02	Time 10:47	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: REPORT TO DAVE STERN

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

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY001343.0006.00004 / Grumman
Project Location Bethpage NY
Laboratory STL - Shelton
Project Manager Carlo San Giovanni
Sampler(s)/Affiliation KS/GW/EH (ACM)

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOC's - NYS Method 95-1 (Unpreserved) (40ml vial)						Remarks	Total
TZ100802	L	10/8/02		2							2
GM-71D2	L	10/8/02		2							2
GM-70D2	L	10/8/02		2							2
GM-16I	L	10/8/02		2							2
GM-15I	L	10/8/02		2							2
GM-15D	↓	↓		2							2
GM-21D				2							2
TB10-8-02A	↓	↓		2							2

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

Total No. of Bottles/Containers 16

Relinquished by: [signature]	Organization: ARCADIS	Date 10/8/02	Time [illegible]: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 Report to Dave Stern, 2 week TAT

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

Page 1 of 1

Project Number/Name NY001318.0006.00001 / Grumman

Project Location Bethpage, NY

Laboratory STL – Shelton

Project Manager Carlo San Giovani

Sampler(s)/Affiliation KS / ACM

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: TCL VOA's – NYS method 95-1 (unpreserved)	TCL VOA's – NYS method 95-1 (HCl preserved)					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
RePI00902	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]
[illegible]	L	[illegible]		2							[illegible]
[illegible]	L	[illegible]		[illegible]							[illegible]
[illegible]	L	[illegible]		2							[illegible]
[illegible]	L	[illegible]		[illegible]							[illegible]

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

Total No. of Bottles/ Containers

Relinquished by: [signature]	Organization: [illegible]	Date 10/10/02	Time 17:20	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 Stern, 2 week TAT.

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

ARCADIS GERAGHTY & MILLER

Laboratory Task Order No./P.O. No. —

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001342.0006.00004 / Brummitt

Project Location [illegible], NY

Laboratory STL - [illegible]

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation KS / DF / GW / BH (AGM)

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOCs [illegible]	500ml [illegible]	500ml [illegible]				Remarks	Total
TB101102	L	10/11/02		2							2
MW-52D	L	10/11/02		6							6
MW-52I	L	10/11/02		2							2
MW-32	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 24

Relinquished by: [illegible]	Organization: ARCADIS G&M	Date 10/11/02	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: Report to [illegible] 2 week T.A.T.

[illegible] MW-52D [illegible] MS/MSD

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

ARCADIS GERAGHTY & MILLER

Laboratory Task Order No./P.O. No. →

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY001245.0006.00004/Grumman

Project Location Bethpage, NY

Laboratory STL - Shelton

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation [illegible] (ARCADIS)

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOCs NYSDEC ASP	[illegible]					Remarks	Total
TB101002	L	10/10/02		2							2
FB101002	L	10/10/02		2							2
N-10627	L	10/10/02		2							2
GM-78S	L	10/10/02		2	1						3
GM-78I	L	10/10/02		2	1						3
GM-21S	L	10/10/02		2							2
TB101002A	L	10/10/02		2							2

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

Total No. of Bottles/Containers: 16

Relinquished by: [signature]	Organization: ARCADIS G&M	Date 10/10/02	Time 1730	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 Stern, 3 week TAT

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

ARCADIS

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

CHAIN-OF-CUSTODY RECORD

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

Project Location Bethpage, NY

Laboratory H2M

Project Manager Carlo San Giovanni

Sampler(s)/Affiliation KS (AGM)

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	VOC's (40 ml VOAs) (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: [signature]	Organization: ARCADIS GLM	Date 10/4/02	Time 1600	Seal Intact? Yes No N/A
Received by: [signature]	Organization: H2M	Date 10/4/02	Time 1600	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: *Samples are provided 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)

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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Fax 631 249-7610

MEMO

To:
David Stern

Copies:

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.