2000 Annual Groundwater Monitoring Report

Groundwater Interim Remedial Measure
Northrop Grumman Corporation,
Bethpage, New York

P R E P A R E D F O R

Northrop Grumman Corporation

ARCADIS

David E. Stern
Project Scientist/Hydrogeologist

Carlo San Giovanni
Principal Scientist/Project Manager

Michael F. Wolfert
Project Director

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Prepared for:
Northrop Grumman Corporation

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

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1. Introduction

This groundwater monitoring report was prepared as part of the operation, maintenance, and monitoring (OM&M) requirements for the groundwater Interim Remedial Measure (IRM) at the Northrop Grumman Corporation (Northrop Grumman) Bethpage, New York facility. Both the hydraulic (groundwater elevation measurements) and groundwater quality monitoring described in this report are currently being conducted by Northrop Grumman on a voluntary basis. The purpose of the monitoring is to evaluate the effectiveness of the groundwater IRM at achieving the remedial goal of preventing the off-site migration of volatile organic compound (VOC)-impacted groundwater. Upon execution of a groundwater Record of Decision (ROD) for the Northrop Grumman and Naval Weapons Industrial Reserve Plant (NWIRP) sites and execution of a consent order, an OM&M plan will be prepared and submitted for New York State Department of Environmental Conservation (NYSDEC) review. Following NYSDEC approval of the plan, the specified groundwater monitoring and reporting will be implemented as a required component of the groundwater remedy.

This report discusses short-term changes in groundwater flow and groundwater quality conditions observed during the third quarter of 2000 (i.e., October 2000), longer-term trends (i.e., from the beginning of record through October 2000), and the operation of the IRM system through December 2000. As in previous groundwater monitoring reports, this report also includes findings, conclusions, and recommendations for modifications to the current groundwater monitoring program. 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 and will be incorporated, as appropriate, into the OM&M Plan.

2. Monitoring Program

The third quarter 2000 groundwater monitoring network (hydraulic and groundwater quality) is summarized in Table 1. The Northrop Grumman site, the location of the groundwater IRM, neighboring properties (i.e., the Naval Weapons Industrial Reserve Plant [NWIRP] and Occidental Chemical Corporation/RUCO Polymer Corporation sites), and monitoring well locations are shown on Figure 1.

The hydrogeologic zones monitored 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, provided as Appendix B of the Groundwater Feasibility Study (ARCADIS Geraghty & Miller 1999a).

Damage to control wiring from lightning storms resulted in a shutdown of the IRM system and a one-month delay in monitoring for the first quarter of 2000. To maintain a consistent period between rounds, the third quarter 2000 round was conducted in late September/October 2000. The next monitoring round is planned for January 2001.

2.1 Hydraulic Monitoring

Wells planned for monitoring this round included 45 on-site and off-site monitoring wells, and IRM Wells GP-1, ONCT-1, ONCT-2, and ONCT-3, for a total of 49 wells (see Table 1). Water levels were scheduled to be measured in 15 monitoring wells screened in the shallow zone, 9 monitoring wells screened in the intermediate zone, 10 monitoring wells screened in the deep zone, and 15 wells (including the four IRM wells) screened in the D2 zone. Field conditions prevented measuring two of these wells (see Section 2.4 – Modifications to the Field Program).

Water levels were measured in the wells to determine the hydraulic effects, both horizontally and vertically, of pumping the IRM wells and Well GP-3. The results of the third quarter 2000 hydraulic monitoring round are described in Section 4 (Groundwater Flow) of this report.

2.2 Groundwater Quality Monitoring

During the third quarter of 2000, the following groundwater quality monitoring was conducted:

- On-site groundwater monitoring for VOCs (including the four IRM wells and Well GP-3) to monitor changes and trends in VOC concentrations from operation of the IRM system.

- Off-site groundwater monitoring for VOCs to monitor changes and trends in VOC concentrations from operation of the IRM system and to develop groundwater quality data from outpost wells located downgradient of the Northrop Grumman and NWIRP sites and upgradient of the Bethpage Water District (BWD) Public Supply Wells N-6915 (4-1), N-6916 (4-2), N-8004 (5-1), N-3876 (6-1), and N-8941 (6-2), which are located south of the sites (Figure 1).

- On-site outpost groundwater monitoring for VOCs and semi-volatile organic compounds (SVOCs) was conducted downgradient of the Plant 1 Fuel Depot.

- On- and off-site monitoring for Cadmium (Cd) and Chromium (Cr) in selected monitoring wells in the southwestern portion of the Northrop Grumman site (south of former Plant 2 near the South Recharge Basins), and off-site (southwest of the Northrop Grumman site) to monitor trends in the on/off-site concentrations of Cd/Cr (Figure 1).

- On-site monitoring for vinyl chloride monomer (VCM) was conducted to monitor concentrations and changes in the horizontal and vertical position of the VCM subplume and provide early warning of potential VCM impacts to the groundwater IRM system.

Field conditions encountered prevented sampling two wells; (see Section 2.4 – Modifications to Field Program). Appendix A contains water-level measurement logs, Appendix B contains the sampling methodology, Appendix C contains groundwater sampling logs, Appendix D contains chain-of-custody records, and Appendix E contains data validation memoranda. Section 5 (Groundwater Quality) of this report summarizes the analytical results of groundwater samples collected during the third quarter of 2000.

2.3 Air Monitoring

Air samples were collected in October 2000 to determine VOC concentrations in the effluent air streams for the Plant 5 (GP-1) and Plant 5E (ONCT) systems. In December 2000, samples were collected from the GP-1 influent and effluent air streams of these systems. A discussion of the plan for collecting and evaluating air quality data is provided in Section 3.2.1 (Air Quality). A description of the air sampling methodology is provided in Appendix B.

2.4 Modifications to Field Program

The number of wells monitored and samples collected were modified this round, as follows:

- A water-level probe access port does not exist at IRM Well GP-1; therefore water-levels cannot currently be measured in this well.

- Water-level measurements and groundwater samples cannot currently be obtained from Monitoring Well N-10624 due to silt in the well screen.

- Well GM-10I was sampled this round to evaluate groundwater quality conditions south of the RUCO site in the intermediate zone; the data will be compared to conditions observed in 1998. If no appreciable changes in VOC concentrations are observed, then Well GM-10I will not be included in subsequent monitoring rounds.

- Nine monitoring wells were installed by the US Navy as part of the site-wide monitoring well drilling program that began in March 2000. The following wells have therefore been added to the quarterly groundwater monitoring program: GM-15S, GM-15D, GM-15D2, GM-17I, GM-17D, GM-73D2, GM-74I, GM-74D, and GM-74D2 (see Table 1).

- In addition to weekly sampling for trichloroethene (TCE), sampling for VOCs from Well GP-3 and IRM Wells GP-1, ONCT-1, ONCT-2, and ONCT-3, and from the Plant 5 (GP-1) and Plant 5E (ONCT) systems influent and effluent was added to the quarterly monitoring program.

3. IRM Operational Monitoring

To monitor performance of the groundwater IRM, Northrop Grumman collected water samples for analysis of trichloroethene (TCE) from each IRM extraction well (GP-1, ONCT-1, ONCT-2, and ONCT-3), and from the influent and effluent streams from the two groundwater treatment facilities. Northrop Grumman is conducting this sampling on a voluntary basis for their internal informational use. The water samples were analyzed by Northrop Grumman's internal laboratory and were not subject to US Environmental Protection Agency (USEPA) QC criteria; therefore, the resulting data were not validated. This report section provides a qualitative evaluation of the data collected as part of operational monitoring of the IRM through December 2000. Water samples were also collected by ARACDIS G&M from IRM Wells GP-1, ONCT-1, ONCT-2, and, ONCT-3 and Well GP-3, and from the influent and effluent IRM Plant 5 (GP-1) and Plant 5E (ONCT) systems. Effluent water samples were collected after the air stripper at both facilities and also after the effluent was further treated via the Plant 5 and Plant 5E aeration basins. The water samples after the aeration basins were collected this round to characterize the quality of water discharging to the recharge basins. Samples were submitted for analysis of the full Target Compound List (TCL)

for VOCs. Section 5 (Groundwater Quality) discusses the results of the sampling of the IRM system.

Northrop Grumman maintains logs of the total volume of groundwater pumped from each well on a weekly basis and continually monitors and records the amount of time the IRM wells are operating. These data were used to determine the percentage of time the IRM wells were operating and the average pumping rates for the IRM wells during their period of operation.

Industrial Supply Well GP-3 was operating continuously from July through December 2000 and although not part of the IRM, Northrop Grumman routinely operates Well GP-3: to remove VOCs from groundwater, and to provide hydraulic containment backup for IRM Well GP-1. Data collected through December 2000 indicate that the VOC concentrations in Well GP-3 are greater than the VOC concentrations in IRM Well GP-1. Northrop Grumman plans to continue to voluntarily operate Well GP-3, as it recognizes the benefit of increasing the rate of VOC removal and enhancing the hydraulic containment of the VOC plume in that area of the site.

3.1 IRM Well Operational Data

Northrop Grumman records operational water quality data for the groundwater IRM on a weekly basis. Additionally, ARCADIS G&M has collected hydraulic (pumping depth to water) measurements and instantaneous pumping rates from IRM Wells ONCT-1, ONCT-2, and ONCT-3 during each round of hydraulic measurements (GP-1 cannot currently be measured). Tables 2 and 3 summarize TCE concentrations for the IRM wells and treatment systems, respectively, from July to December 2000. Table 4 summarizes the pumpage from the IRM wells and Well GP-3 and VOC mass removed from the IRM wells and Well GP-3 during the July to December 2000 period and cumulatively since IRM startup in September 1998. Table 5 summarizes the performance data collected from the IRM wells. Figure 2 depicts TCE concentrations versus time in IRM Wells GP-1, ONCT-1, and ONCT-2 (along with Industrial Supply Well GP-3), and Figure 3 depicts TCE concentrations versus time in IRM Well ONCT-3, and Industrial Supply Wells GP-10, and GP-11 (other on-site wells used by Northrop Grumman for non-contact cooling supply).

3.1.1 Water Quality

As shown on Figure 2, IRM Well ONCT-1 continues to show an overall declining trend (best-fit line) in TCE concentrations since the beginning of record. During the

period of record, substantial short-term changes in TCE concentrations have occurred within IRM Well ONCT-1. IRM Well GP-1 also continues to show an overall declining TCE trend for the period of record, with much smaller short-term changes in TCE concentrations than observed in IRM Well ONCT-1. The TCE concentration trend for Well GP-3 (Figure 2) is increasing for the period of record. During the period of record, short-term changes in TCE concentrations occur in this well that are similar to those observed in Well GP-1. Since September 1999, TCE concentrations in Industrial Supply Well GP-3 are generally greater than the levels detected in IRM Well GP-1 (Figure 2), which is located downgradient of Industrial Supply Well GP-3. The TCE trends (best-fit lines) for Wells GP-1 and GP-3 are essentially identical in slope with Well GP-1 decreasing and Well GP-3 increasing.

As shown on Figure 2, the data for IRM Well ONCT-2 continue to show an increasing trend in TCE concentrations over time, while IRM Well ONCT-3 (Figure 3) exhibits fairly stable and low TCE concentrations for the period of record. The trends in TCE concentrations in Industrial Supply Wells GP-10 and GP-11 (Figure 3) are stable at concentrations generally less than 150 ug/L throughout the period of record.

3.1.2 Pumpage

The design pumping rates of IRM 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 total rate of 3,375 gpm. If the wells were pumped continuously at the design rates, this would result in a total of 894 million gallons (MG) being pumped in the third and fourth quarters.

The total pumpage and average pumping rate for each IRM well during the third and fourth quarters were calculated using methods described in previous quarterly reports. Pumpage from Industrial Supply Well GP-3 supplemented the total gallons pumped during the third and fourth quarters (July through December 2000). The number of days operational between July and December 2000 are as follows: GP-1 (179.5 days); GP-3 (179.5 days); ONCT-1 (164.1 days); ONCT-2 (156.3 days); and ONCT-3 (158.1 days). While operating, the average pumping rate for each IRM well was as follows: 783 gpm (GP-1); 996 gpm (ONCT-1); 712 gpm (ONCT-2); and 670 gpm (ONCT-3); Well GP-3 pumped continuously at an average rate of 722 gpm (Table 4). This equates to approximately 937.5 MG pumped in total from July to December, or approximately 105 percent of the total designed pumpage. Since September 1998, a total of 4.8 billion gallons have been pumped by the IRM wells and Well GP-3 and treated.

The brief periods of IRM system downtime from July to December were the result of the performance of routine O&M activities and temporary power outages.

Based on instantaneous pumping rates and drawdowns measured on October 16, 2000, the specific capacities for the IRM wells are as follows: ONCT-1 (41.6 gpm/ft); ONCT-2 (35.8 gpm/ft); and ONCT-3 (35.7 gpm/ft) (Table 5). A water level cannot currently be measured in Well GP-1 and therefore, its specific capacity cannot be calculated. For Wells ONCT-1, ONCT-2, and ONCT-3, specific capacities exceed the minimum required for optimum pump performance (Geraghty & Miller, Inc. 1996).

3.2 Treatment Plant Operational Data

Based on the available data for the period July to December 2000 (samples designated by Northrop Grumman as wastewater recovery plant [WWRP]-5E IN; this plant receives water from wells ONCT-1, ONCT-2 and ONCT-3), influent TCE concentrations to the IRM treatment plant ranged from 524 µg/L to 1,200 µg/L (Table 3). Influent TCE concentrations to the IRM Well GP-1 treatment plant for the same time frame (samples designated as WWRP-5 IN; this plant receives water from IRM Well GP-1 and Industrial Supply Well GP-3), ranged from 438 µg/L to 1,188 µg/L. During the period from July to December 2000, effluent concentrations of TCE from the WWRP-5E and WWRP-5 treatment facilities (samples designated as WWRP-5E OUT and WWRP-5 OUT, respectively) were 4 µg/L or less; this coupled with the water quality data obtained from the aeration basins (see Section 5.1.3 – TVOCs in the D2 Zone) equates to a VOC removal rate of greater than 99.99 percent.

From July to December 2000, a total of 5,967 pounds (lbs) of VOCs were removed from groundwater and treated by the IRM treatment facilities. Since IRM startup in September 1998, a total of 39,214 lbs of VOCs have been removed (Table 4).

3.2.1 Air Quality

Air samples were collected on October 15, 2000, to evaluate VOC concentrations in the effluent air streams for the Plant 5 (GP-1) and Plant 5E (ONCT) systems. On December 15, 2000, samples were collected from the GP-1 influent and effluent air stream to confirm the October 2000 results. Additional air samples are planned for subsequent monitoring rounds and, when sufficient data are collected to develop an accurate representation of short-term and annual air emissions versus NYSDEC standards, the complete data set will be tabulated, evaluated versus NYSDEC Air Guide I standards, and provided in a subsequent quarterly report.

3.3 Precipitation

Precipitation data were factored into evaluating the effects of the operation of the groundwater IRM on groundwater flow (See Section 4 – Groundwater Flow) because Northrop Grumman uses the Plant 5 Recharge Basins and South Recharge Basins for the recharge of stormwater runoff. Precipitation data (rainfall, snow, ice, sleet, and hail) were reported as equivalent inches of rainfall for the 30-day period prior to the October 16, 2000 hydraulic monitoring round; these data are summarized in Table 6. This section discusses the short-term changes in monthly precipitation observed in the third and fourth quarters of 2000 in comparison to long-term trends.

To place the precipitation data in perspective, they were compared to the long-term averages (LTA) for monthly precipitation. The LTA data were compiled from 42 complete years of data collected between 1938 and 1995, and are summarized in Table 6.

Precipitation totals during the months of July (5.42 inch) and September (5.11) of 2000, were greater than their respective LTA's (i.e., wetter months than average), while precipitation totals for August (2.41), October (0.41), November (3.30) and December (3.30), of 2000 were below their respective LTA's (i.e., drier months than average). Monthly precipitation recorded during July through December 2000 on a daily basis is depicted on Figures 4 and 5 (in conjunction with vertical gradient data – for shallow/intermediate well clusters).

4. Groundwater Flow

This report section presents the results of the October 2000 groundwater level measurement round and evaluates the effectiveness of the groundwater IRM at achieving the remedial 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 monitoring reports.

The October 2000 hydraulic measurement round was conducted while the groundwater IRM was operating; the wells measured and water-level data obtained are summarized in Table 7. Using the data collected, maps showing the water table configuration and directions of groundwater flow (i.e., the shallow zone) and the potentiometric surface configuration and groundwater flow directions in the intermediate and D2 zones were prepared. These maps illustrate the effect (i.e., hydraulic containment) of the operation of the groundwater IRM on horizontal groundwater flow patterns. To evaluate the

effect of the groundwater IRM on vertical groundwater flow patterns, vertical hydraulic gradients were calculated using water-level data from shallow/intermediate, intermediate/deep, and deep/D2 monitoring well clusters (Table 8). The vertical gradient data were graphed versus time along with the model-predicted, steady state vertical gradients (Figures 4 through 8) to illustrate the direction and magnitude of the vertical gradients and trends over time.

4.1 Shallow Zone

The configuration of the water table and directions of groundwater flow in the shallow zone on October 16, 2000, are shown on Figure 9. The following text describes the effects of the groundwater IRM treatment plant discharges and stormwater runoff (as recharge to the South Recharge Basins and the Plant 5 Recharge Basins) on shallow groundwater flow during the October 2000 round. This section also describes vertical groundwater gradient measured during October 2000 and compares these gradients to the simulated steady-state vertical gradients predicted by the groundwater flow model (ARCADIS Geraghty & Miller 1999b).

As shown on Figure 9, the configuration of the water-table on October 16, 2000, shows two areas of groundwater mounding situated on the Northrop Grumman site; one mound is centered on the South Recharge Basins and the other is centered on the Plant 5 Recharge Basins.

The maximum elevation of the mounding beneath and around the Plant 5 Basins is greater than 70 ft msl. As a result of the mounding, the horizontal direction of shallow groundwater flow in the vicinity of the Plant 5 Basins is radially to the north, south, west, and east away from the basins. This radial horizontal groundwater flow creates a hydraulic barrier and prevents on-site VOC-impacted groundwater in this area from migrating off-site in this zone. In addition, observed mounding also increases the vertical hydraulic gradient in the vicinity of the basins, resulting in a downward vertical component of groundwater flow from the shallow zone to the intermediate zone. Using water-level data from the October 2000 round, vertical gradients (Table 8 and Figures 4 and 5) were calculated for the shallow-intermediate monitoring well pairs in the area of the Plant 5 Recharge Basins (GM-16SR/16I and GM-17SR/GM-17I). As expected, the vertical gradient in Well Clusters GM-16SR/16I and GM-17SR/GM-17I is oriented downward (1.21×10^{-3} ft/ft and 3.56×10^{-3} ft/ft, respectively). Away from the Plant 5 Recharge Basins in the south-central portion of the Northrop Grumman site, the horizontal direction of shallow groundwater flow is to the southeast.

As shown on Figure 9, the maximum elevation of the mound beneath and around the South Recharge Basins is greater than 66 ft msl, and the mound extends across most of the width of the southern boundary of the site. Similar to that observed at the Plant 5 Basins, 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 an hydraulic barrier and preventing on-site VOC-impacted groundwater in this area from migrating off-site in the shallow zone. Similar to the Plant 5 Basins, the mounding around the South Recharge Basins also increases the vertical gradient in the vicinity of the basins, resulting in a downward vertical groundwater flow component from the shallow zone to the intermediate zone. The vertical gradients for October 2000 calculated from the shallow-intermediate monitoring well clusters near the South Recharge Basins (GM-19S/GM-19I [north of the basins], GM-15S/GM-15I [east of the Basins] and GM-21S/GM-21I [south of the basins] [Table 8 and Figures 4 and 5]) show that the vertical gradients are oriented downward (5.03×10^{-3} ft/ft, 1.19×10^{-3} ft/ft, and 28.39×10^{-3} ft/ft, respectively).

Monitoring well-cluster vertical gradients that are close to groundwater flow model predictions would be a key indicator that the groundwater IRM, through pumpage from the D2 zone and recharge to the shallow zone, has created an effective hydraulic barrier to off-site groundwater flow. As shown on Figures 4 and 5, vertical gradients in the monitoring well clusters located near the basins (GM-16S/GM-16I, GM-19S/GM-19I, and GM-21S/GM-21I) over the period of record, including this quarter, have been consistently oriented downward and are close to or greater than the gradients predicted by the groundwater flow model. The vertical gradient in new Well Clusters GM-15S/GM-15I and GM-17SR/GM-17I are oriented downward and are close to model predictions. These data indicate that the predominant direction of shallow groundwater flow in the vicinity of the basins is vertically downward toward the intermediate zone.

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

4.2 Intermediate Zone

The configuration of the potentiometric surface and groundwater flow directions in the intermediate zone on October 16, 2000 are shown on Figure 10. The following text describes the effect of groundwater IRM treatment plant discharges and stormwater runoff on groundwater flow and compares this flow to model predictions using

methods similar to that described in Section 4.1 (Shallow Zone). Table 8 summarizes vertical gradient calculations for intermediate/deep wells.

As shown on Figure 10, the configuration of the potentiometric surface in the intermediate zone is similar to that observed in the shallow zone, with mounding centered beneath the Plant 5 and South Recharge Basins (maximum water-level elevation at the Plant 5 Basins is greater than 68 ft msl, while the maximum water-level elevation at the South Recharge Basins is greater than 64 ft msl). Similar to that observed in the shallow zone, the mounding centered beneath the Plant 5 Basins is approximately 1,500 ft in width, while the mounding centered beneath the South Basins is approximately 2,500 ft in width. This indicates that IRM system discharge and stormwater runoff (as recharge to these basins) are substantially affecting groundwater flow in the intermediate zone, with the horizontal component of flow nearest the basins oriented radially away from the basins. The resultant vertical gradients in monitoring well clusters nearest the basins are oriented downward and are similar to or greater than model predictions, as follows: Well Clusters GM-15I/GM-15D (east of the South Basins) (8.28×10^{-3} ft/ft); GM-17I/GM-17D (at the Plant 5 Basins) (30.82×10^{-3} ft/ft); GM-20I/GM-20D (13.81×10^{-3} ft/ft) and GM-74I/GM-14D (25.82×10^{-3} ft/ft) (both clusters at the South Basins) (see Figure 6).

Collectively, the 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 VOCs in this 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 groundwater IRM, the analysis of the effectiveness of the groundwater IRM at achieving the remedial goals in this zone is conducted using vertical gradient calculations for deep/D2 monitoring well clusters.

Table 8 summarizes the vertical hydraulic gradients calculated from data collected from well clusters in the deep/D2 zone during the October 16, 2000 round and compares them to model-predicted gradients. Figures 7 and 8 show the calculated vertical gradients versus time for the period of record and model-predicted steady-state gradients.

Figure 7 depicts vertical hydraulic gradients in on-site Well Clusters GM-15D/GM-15D2 and GM-74D/GM-74D2. As expected, the vertical gradients (see Table 8) in Well Clusters GM-15D/GM-15D2 (12.34 x 10^{-3} ft/ft) (east of the South Basins) and GM-74D/GM-74D2 (26.42 x 10^{-3} ft/ft) (at the South Basins) are oriented downward and are close to model predictions.

Table 8 and Figures 7 and 8 depict vertical gradients in off-site deep/D2 well clusters that are generally located between the Northrop Grumman site boundary and the BWD supply wells. Deep/D2, vertical gradients calculated based on October 2000 data, for Well Clusters GM-34D/GM-34D2 (7.51 x 10^{-3} ft/ft); GM-36D/GM-36D2 (6.78 x 10^{-3} ft/ft); GM-37D/GM-37D2 (5.15 x 10^{-3} ft/ft), and GM-38D/GM-38D2 (13.66 x 10^{-3} ft/ft) are oriented downward and are greater than the model-predicted gradients.

In conclusion, vertical hydraulic gradients calculated for October 2000 from deep/D2 monitoring well clusters are oriented downward and are greater than or close to steady-state gradients predicted by the groundwater flow model. Furthermore, vertical gradients in well clusters near the Northrop Grumman site boundary indicate that the mounding of the water table coupled with pumping wells in the D2 zone is forcing on-site groundwater downward toward the pumpage in the D2 zone, and continues to prevent groundwater from flowing off-site in the deep zone.

4.4 D2 Zone

On October 16, 2000, water-levels were measured in on- and off-site D2 monitoring wells and IRM Wells ONCT-1, ONCT-2, and ONCT-3 (GP-1 cannot currently be measured) which are screened in the D2 zone. Figure 11 depicts the potentiometric surface configuration and groundwater flow directions in the D2 zone.

The result of pumping of IRM Wells ONCT-1, ONCT-2, and ONCT-3 is the formation of cones of depression (area of depressed water levels) in the D2 zone centered on each well. As expected, the widest and deepest depression is centered around Well ONCT-1 (pumping at 996 gpm) (water-level elevation of 37.69 ft msl) with similar, slightly narrower cones of depression having formed around Wells ONCT-2 and ONCT-3 (pumping at 712 gpm and 670 gpm, respectively) (water-level elevations of 40.08 ft msl and 40.82 ft msl, respectively). Although Wells GP-1 and GP-3 (pumping at 783 gpm and 722 gpm, respectively) cannot currently be measured, it is reasonable to assume that cones of depression similar in width and depth to that shown around Wells ONCT-2 and ONCT-3 exist around Wells GP-1 and GP-3 and, therefore, that the cumulative zone of capture shown on Figure 11 also extends to the northwest along the

southwestern perimeter of the Northrop Grumman site. Due to the simultaneous pumping of IRM Wells ONCT-1, ONCT-2, and ONCT-3 the individual well cones of depression have merged into a cumulative capture zone that, based on the data collected in October 2000, is approximately 4,000 ft wide and extends along the southern and southwestern boundary of the Northrop Grumman site. At its farthest downgradient extent (south of Well ONCT-1) the zone of capture extends approximately 800 ft south of the Northrop Grumman site boundary. Within the zone of capture (upgradient and up to 800 ft downgradient of the IRM), groundwater flow directions are oriented toward the centers of pumping (i.e., the IRM wells) indicating that groundwater in this area is fully contained, and captured by the IRM system. Beyond the downgradient extent of the zone of capture, 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 the regional groundwater flow.

Collectively, the data from the D2 zone indicate that the pumpage of the IRM wells has created a hydraulic barrier in this zone, thereby preventing the off-site migration of VOCs across the entire southern boundary of the Northrop Grumman site.

4.5 Summary of Groundwater Flow Conditions

Since the first hydraulic measurement round in November 1998, following IRM system startup in September 1998, groundwater in the shallow zone has consistently flowed in a predominantly southeasterly direction across the NWIRP and Northrop Grumman sites. However, closer to the Plant 5 recharge basins and the South Recharge Basins, groundwater mounding (from stormwater runoff and discharge of treated effluent) beneath and around the basins prevents the off-site movement of groundwater in the shallow zone and forces groundwater vertically downward. Throughout the intermediate and deep zones, groundwater near the IRM wells and basins flows in a predominantly vertical direction into the D2 zone. Within the D2 zone, the pumping of the IRM wells controls groundwater movement and eventually groundwater is captured by the IRM wells before it can move off-site. Treated groundwater from the IRM wells is then discharged to the Plant 5 and South Recharge Basins, where it is reintroduced to the groundwater system. Further off-site, groundwater flows until it is influenced by the pumping of nearby public supply wells or continues to flow southeast in the direction of the regional groundwater flow.

In conclusion, the hydraulic data presented in this report indicate that operation of the groundwater IRM has maintained an effective hydraulic barrier throughout the shallow, intermediate, deep, and D2 zones, which prevents the off-site migration of on-

site, contaminated groundwater (i.e., containment of on-site VOC-impacted groundwater).

5. Groundwater Quality

The third quarter 2000 groundwater sampling round was conducted from September 18 to October 16, 2000. This report section describes the results of the third quarter 2000 groundwater monitoring round and long-term trends in groundwater quality.

5.1 Volatile Organic Compounds

The goal of the on-site groundwater pumping and treatment system (IRM) 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 groundwater IRM will cause the plume to bifurcate into an on-site section and an off-site section. As treated water and precipitation continue to recharge the aquifer a clean zone will develop within which VOC impacts will not occur. This clean zone will increase in size as VOC impacted groundwater downgradient (south) and beyond the capture zone of the IRM wells continues to migrate through the aquifer in the regional direction of groundwater flow to the southeast. The continued growth of this clean zone will be dependant on maintaining the hydraulic barrier created by the IRM, and the rate of growth will largely depend on the regional groundwater velocity, which is less than one foot per day.

Based on the above considerations groundwater samples collected from wells immediately south (off-site) of the extraction wells will be the first to show water quality improvement (i.e., a decreasing trend in contaminant concentrations over time although the improvement will be slow due to the natural slow groundwater velocity. Further off site, monitoring wells will take a longer time to show an improvement in groundwater quality as compared to wells immediately south of the extraction wells due to the relatively slow groundwater velocity.

VOC-impacted groundwater that migrated off-site prior to the implementation of the IRM would have to migrate past off-site monitoring wells before the wells would show groundwater quality improvement related to operation of the IRM System. 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 a long term trend associated with IRM operation is revealed.

On-site, depending on well location, water quality in wells may either increase, decrease, or stay the same over the short to mid-term, but over the long term a general decrease in contaminant concentrations will also be observed.

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

Specifically, the following subsections describe the distribution of VOCs in the shallow, intermediate, deep, and D2 zones and compares VOC concentrations to New York State Standards, Criteria, and Guidance Values (SCGs). Each of these subsections concludes with an analysis of TVOC concentration trends observed in selected monitoring wells. The occurrence and distribution of VCM in groundwater is discussed in Section 5.2 (Vinyl Chloride Monomer) of this report.

5.1.1 VOCs in the Shallow and Intermediate Zones

VOC concentrations detected in shallow and intermediate monitoring wells during the baseline (May 1997), the last quarter of 1999 and the first three quarters of 2000 groundwater monitoring rounds are provided in Tables 9 and 10, respectively. The groundwater monitoring data in the shallow and intermediate zones are compared to baseline (1997) conditions (where baseline data exist) because sufficient data does not currently exist to evaluate long-term TVOC trends in shallow and intermediate wells. As new data for wells in these zones are collected, an evaluation of TVOC concentrations over time will be performed, if warranted.

The data from the shallow and intermediate wells sampled this quarter confirms the effectiveness of the hydraulic barrier in preventing off-site movement of VOC-impacted groundwater in the shallow and intermediate zones. Wells with the highest VOC concentrations and the most SCG exceedences are located substantial distances north of the South Recharge Basins and lie within the on-site VOC plume. Wells at and near the southern property boundary in the general area of the hydraulic barrier created by the mounding of the water table generally have low TVOC concentrations with most wells having no SCG exceedences. A detailed discussion of this data follows.

For the third quarter 2000 sampling round, Well FW-03, which is located on the NWIRP site over 4,000 feet north and upgradient of the IRM extraction wells (see Figure 1), had the highest TVOC concentration of the shallow wells sampled. Well FW-03 had a TVOC result of 19 µg/L; with TCE (at 10 µg/L), being detected above

the SCG of 5 µg/L. This result is lower than the previous round. Well GM-16SR, located in the central portion of the Northrop Grumman site just north of Plant 2 and approximately 2,500 ft upgradient of the IRM extraction wells had no detectable TVOC concentrations. This result is similar to the last two rounds when only acetone (a common laboratory contaminant) was detected one time.

Of the nine remaining shallow wells sampled during the third quarter 2000 (see Table 9 and Figure 1), three wells had TCE concentrations above the SCG of 5 µg/L, as follows: GM-15S (7 µg/L); MW-3R (6 µg/L); and GM-18S (6 µg/L). The remaining wells had no detections above SCGs. Well GM-15S was installed in May 2000 along the Northrop Grumman eastern boundary, approximately 800 ft north of IRM Well ONCT-3, and this is the first time it has been sampled. Well MW-3R, located immediately west of the South Recharge Basins, at the southern edge of the site, was not sampled during the baseline round and current TVOC concentrations in this well are very similar to results from the last three sampling rounds for this well. Well GM-18S, which is located at the western edge of the site, immediately south of Plant 2, has a current TVOC concentration that is essentially the same as the last three quarters and during the baseline round. Over the last four sampling rounds, TVOC concentrations in this well have ranged from non-detect to 10 µg/L. Monitoring Well GM-14 is located downgradient of the Plant 1 Fuel Depot. This area is currently undergoing remediation of free-phase petroleum constituents. Well GM-14 is monitored for VOCs and SVOCs; VOCs and SVOCs were not detected above SCGs this round. Wells N-10631 and N-10634, which are located south of the site had no detections of VOCs above SCGs. In Well N-10631, TVOCs have ranged between 0 and 0.5 µg/L the last four quarters which is less than the baseline concentration of 11.7 µg/L. In Well N-10634, TVOCs have been 0 or 0.8 µg/L during three of the last four quarters. The detection of VCM in Well N-10634 this round (0.8 µg/L) does not appear to be significant, given the prior history of no VCM detections in this well and the fact that VCM was not detected in other upgradient shallow wells. This well is scheduled to be sampled again in January 2001.

In the intermediate zone, on the NWIRP site, Wells HN-24I and HN-29I each located approximately 4,000 ft north (upgradient) of the IRM extraction wells, had TVOC concentrations of 247 µg/L and 3.5 µg/L, respectively. SCGs were not exceeded in Well HN-29I. In Well HN-24I, SCGs were exceeded for the following compounds: 1,1-dichloroethene (1,1-DCE), 1,1-dichloroethane (1,1-DCA), 1,2-dichloroethene (1,2-DCE), 1,1,1-trichoroethane (1,1,1-TCA), TCE, and PCE. The compound with the highest concentration was TCE at 180 µg/L. Well MW-52S, located south of the RUCO facility, on the Northrop Grumman Plant 12 property, exhibited the highest

TVOC concentration (2,225 µg/L), with VCM (1,900 µg/L); acetone (300 µg/L); 1,2-DCE (7 µg/L), TCE (6 µg/L); and PCE (12 µg/L) exceeding SCGs. The TVOC concentration detected in MW-52S is substantially lower than the previous round. Well GM-10I (sampled this round only) located south of Well MW-52S, also on the Northrop Grumman Plant 12 property, had a TVOC result of 2.1 µg/L with no exceedences of SCGs. Based on a comparison of this data with the 1998 result for Well MW-10I (8 µg/L), no substantial changes are evident in TVOC concentrations, therefore, Well GM-10I will not be included in subsequent rounds.

Further south on the Northrop Grumman site, the TVOC concentration in Well GM-16I was 27.4 µg/L with a TCE concentration of 19 µg/L exceeding the SCG of 5 µg/L. Well GM-23I, located at the Northrop Grumman Plant 25 property, had a TVOC concentration of 11.4 µg/L, with TCE (7 µg/L) exceeding the SCG value. Wells at the Northrop Grumman southeastern property boundary (GM-15I), southern property boundary (GM-20I, GM-21I, and GM-74I), and at the southwestern property boundary (GM-18I), did not have any SCG exceedences which is consistent with baseline round results for Wells GM-15I, 20I, and 21I (the other wells were not sampling during the baseline round). Wells GM-18I and GM-20I were the only other intermediate wells with any VOC detections (TCE at 0.5 and 0.8 µg/L, respectively).

5.1.2 VOCs in the Deep Zone

The majority of the deep wells currently monitored have substantial historical groundwater data, which in some cases pre-dates the baseline round. Therefore, in addition to comparing the data to SCGs, the complete history of groundwater TVOC data for select wells is also evaluated. The TVOC data from newly installed monitoring wells (GM-15D, GM-17D, and GM-74D) are also discussed.

TVOC concentrations in the deep zone along the site boundary (and immediately south of the site) are substantially lower than detected upgradient of the IRM which is due to operation of the IRM system, which is preventing the off-site migration of VOC-impacted groundwater in the deep zone. Offsite, the data indicate an overall improving trend for water quality in the deep zone. A detailed discussion of this data follows.

VOC concentrations detected in deep monitoring wells during the baseline (May 1997), the last quarter of 1999 and the first three quarters of 2000 groundwater monitoring rounds are provided in Table 11. Figures 12 through 14 depict TVOC concentrations in selected deep monitoring wells versus time from the beginning of record through the third quarter (October) 2000 round. In the October round, TCE;

1,1-DCE; 1,1-DCA; 1,2-DCE; 1,1,1-TCA; PCE; and VCM were the compounds detected in the deep zone exceeding their respective SCGs. TCE was the most frequently detected compound and was detected above the SCG in Well GM-13D (410 µg/L), which is located on the Northrop Grumman site, approximately 2,600 ft north (upgradient) of the IRM extraction wells (Figure 1). TVOC concentrations in Well GM-13D have increased over the period of record (Figure 12). Other VOCs detected above SCGs in Well GM-13D include 1,1-DCE (92 µg/L); 1,1-DCA (58 µg/L); cis/trans-1,2-DCE (230 µg/L); PCE (910 µg/L); and 1,1,1-TCA (99 µg/L). Well HN-29D, which is approximately 1,300 ft north of Well GM-13D, had a TVOC concentration of 2 µg/L (all TCE) this round and has had similar low TVOC levels the previous three sampling rounds. Well MW-52I, located south of the RUCO facility on the Plant 12 property, had the highest TVOC concentration (2,113 µg/L), with VCM (2,000 µg/L), 1,2-DCE (39 µg/L), TCE (40 µg/L), and PCE (34 µg/L) exceeding SCGs. The TVOC concentration was substantially lower in Well 52I compared to the previous round (Figure 12). The TVOC concentration in Well MW-52D (59.5 µg/L) was essentially the same as the previous round, with TCE (38 µg/L) and PCE (13 µg/L) exceeding SCGs (Figure 13).

Along the southern boundary of the Northrop Grumman site, wells exhibited generally low to non-detectable concentrations of VOCs with TCE the only compound exceeding SCGs. Well GM-17D (at the Plant 5 Recharge Basins) exhibited no detectable concentrations of VOCs. Well GM-74D (north of the South Recharge Basins) exhibited a VOC concentration of 67.4 µg/L with TCE (64 µg/L) being the only compound exceeding SCGs (Figure 13). Well GM-20D (south of the South Recharge Basins) exhibited no detectable concentrations of VOCs. Well GM-15D (east of the South Recharge Basins) exhibited a TVOC concentration of 24.4 µg/L, with only TCE (9 µg/L) detected above SCGs.

South of the Northrop Grumman site, TCE concentrations were detected above the SCG in Wells GM-34D (84 µg/L), GM-36D (24 µg/L), and GM-38D (720 µg/L). There were no other VOCs detected above SCGs in these wells. Well GM-37D had 16.4 µg/L of TVOCs with 1,1-DCE (7 µg/L) above its SCG of 5 µg/L; TCE was not detected. TVOC concentrations in Well GM-34D have ranged between 49 µg/L and 114 µg/L; the TVOC concentration appears to be increasing since early 1999 (Figure 13). However, only seven data points are available since early 1999 which is insufficient to confidently establish a trend at this time. TVOC concentrations in Well GM-36D (east of GM-34D) have ranged between 24 µg/L (detected this round) and 247 µg/L. The TVOC concentrations in this well have exhibited significant short-term variations and the TVOC concentration trend is sharply downward through the period

of record with TVOCs less than 100 µg/L since June 1998 (Figure 13). TVOC concentrations in Well GM-37D (southeast of the sites) have ranged between 14 µg/L and 41 µg/L. TVOC concentrations have remained relatively stable at concentrations generally less than 25 µg/L, with the long-term trend essentially flat through the period of record (Figure 13). The area near Well GM-38D (downgradient of GM-36D) historically has been identified as the area exhibiting the highest off-site TVOC concentrations in the deep zone. Historically, TVOC concentrations in Well GM-38D have ranged between 592 µg/L and 1,400 µg/L. From the beginning of record through January 1996, TVOC concentrations exhibited an increasing trend (to a maximum of 1,400 µg/L in January 1996). Groundwater data collected since then has indicated a downward trend in TVOCs, with substantial short-term variations in TVOC concentrations evident throughout the period of record (Figure 14).

5.1.3 VOCs in the D2 Zone

Similar to the deep zone, current data for the D2 zone was compared to the SCGs, while for selected wells, the long-term TVOC trend was also analyzed. Groundwater VOC data from the newly installed D2 monitoring wells (GM-15D2, GM-73D2, and GM-74D2) and water samples from the IRM extraction wells and treatment systems are also discussed. VOC concentrations in D2 wells during the baseline (May 1997) the last quarter of 1999, and the first three quarters of 2000 groundwater monitoring rounds are provided in Table 12.

Taken collectively, the data indicate can overall improving trend for off-site water quality in the D2 zone.

5.1.3.1 IRM System

Water samples were collected from the Plant 5 (GP-1) system influent and effluent and individually from Wells GP-1 and GP-3 and from the effluent water discharging to the Plant 5 Recharge Basins (after the aeration basins). Water samples were collected from the Plant 5E (ONCT) system influent and effluent and individually from Wells ONCT-1, ONCT-2, and ONCT-3 and from the effluent water discharging to the South Recharge Basins (after the aeration basins).

From the Plant 5 (GP-1) system, Well GP-1 had a VOC concentration of 691 µg/L with 1,1-DCE (7 µg/L); 1,2-DCE (total) (11 µg/L); TCE (600 µg/L); and PCE (58 µg/L) exceeding SCGs. Well GP-3 had a TVOC concentration of 1,861 µg/L with VCM (9 µg/L) (see Section 6.2 Vinyl Chloride); 1,1-DCE (12 µg/L); 1,2-DCE (total)

(11 µg/L); TCE (1,700 µg/L); and PCE (80 µg/L) exceeding SCGs. TVOC concentrations in the Plant 5 influent and effluent water (after the air stripper) were 895 µg/L and 4 µg/L, respectively; TCE was the only compound detected in the effluent water. After treatment in the Plant 5 aeration basins, VOCs were not detected in water entering the Plant 5 Recharge Basins (see Table 12).

From the Plant 5E (ONCT) system, Wells ONCT-1, ONCT-2, and ONCT-3 each had TCE concentrations (1,900 µg/L; 200 µg/L; and 16 µg/L, respectively) above SCGs. Other VOCs, including 1,1-DCE; 1,1-DCA; 1,2-DCE (total); and 1,1,1-TCA, were also detected at substantially lower concentrations in Wells ONCT-2 and ONCT-3. The Plant 5E influent and effluent water TVOC concentrations were 1,116 µg/L and 1 µg/L, respectively; TCE was the only compound detected in the effluent water (after the air stripper). After the Plant 5E aeration basins, VOCs were not detected in water entering the South Recharge Basins.

The VOC data from the IRM systems and aeration basins confirm the high efficiency of the overall groundwater treatment system, with greater than 99.99 percent removal of VOCs from extracted groundwater prior to discharge of the water to the Plant 5 and South Recharge Basins.

5.1.3.2 Monitoring Wells

In the October round, TCE; PCE; 1,1-DCE; 1,1-DCA; and 1,2-DCE were the compounds detected exceeding their respective SCGs of 5 µg/L. TCE was the most frequently detected compound and the most frequently detected compound exceeding its SCG of 5 µg/L. TCE was detected above the SCG in Wells GM-15D2 (9 µg/L), GM-33D2 (1,500 µg/L), GM-34D2 (74 µg/L), GM-35D2 (150 µg/L), GM-38D2 (1,100 µg/L and 1,300 µg/L in the replicate), GM-70D2 (140 µg/L) and GM-73D2 (960 µg/L). The other VOC compounds listed above were detected sporadically in D2 monitoring wells at concentrations slightly exceeding standards (Table 12).

Figures 12 and 14 through 16 depict TVOC concentrations versus time in select D2 monitoring wells. TVOC concentrations detected in Monitoring Well GM-33D2, which is located south of IRM Well GP-1 and west of IRM Well ONCT-1, have decreased by an order of magnitude from a maximum concentration of 18,010 µg/L in November 1994 to 1,539 µg/L this round. The rate of decrease in TVOC concentrations has accelerated since September 1998 (Figure 12) when the IRM wells became fully operational. In particular, the pumpage of IRM Well ONCT-1 appears to be largely responsible for the accelerated decrease in TVOC concentrations in Well

GM-33D2, based on its proximity to Well GM-33D2 and the similar TVOC concentrations currently in both wells. At the eastern boundary, Well GM-15D2 (north of Well ONCT-3) had a TVOC concentration of 16.1 µg/L with only TCE (9 µg/L) exceeding the SCG, (Figure 15). Well GM-73D2, located approximately halfway between Wells ONCT-1 and ONCT-2 and north of the South Recharge Basins, had a TVOC concentration of 973 µg/L, with TCE (960 µg/L) and 1,2-DCE (6 µg/L) exceeding SCGs (Figure 12). Further east along the South Recharge Basins, Well GM-74D2 (near ONCT-2) had a TVOC concentration of 6 µg/L with no VOCs exceeding SCGs (Figure 15). The data obtained from the new monitoring wells confirms the previously defined TVOC plume configuration in the D2 zone. Monitoring TVOC concentrations in wells along the site boundary and in downgradient wells immediately south of the site will be a key factor in determining the effectiveness of the IRM system in capturing the TVOC plume.

Off-site, TVOC concentrations in Monitoring Well GM-34D2 (south of Well GM-33D2) have ranged between 38 µg/L and 114 µg/L (detected this round) (Figure 16) and while the TVOC trend in this well appears to be upward only seven data points have been collected since early 1999, which is insufficient to confidently establish a trend at this time. TVOC concentrations in Monitoring Well GM-35D2 (northeast of Well GM-34D2) have ranged between 38 µg/L and 161 µg/L. Prior to March 1998, the TVOC concentration trend had been increasing while since March 1998 the TVOC concentration trend appears to be decreasing through June 2000 (Figure 16). The TVOC concentration value for the third quarter (161 ug/L) does not fit with this most recent trend. TVOC concentrations detected in Monitoring Well GM-70D2 (east of Well GM-35D2) have ranged between 52 and 255 µg/L and have decreased sharply through the period of record (Figure 16). TVOC concentrations detected in Monitoring Well GM-71D2 (east of Well GM-70D2) have ranged between non-detect and 7 µg/L and have remained relatively flat throughout the period of record (Figure 15). TVOC concentrations in Monitoring Well GM-37D2 (east of Well GM-71D2) have ranged between 1 µg/L and 29 µg/L and have been increasing through the period of record (Figure 15). TVOC concentrations in Monitoring Well GM-36D2 (further downgradient from the above-discussed wells) historically have ranged between non-detect and 25 µg/L, and the TVOC concentration trend has remained flat throughout the period of record (Figure 15). The area near Monitoring Well GM-38D2 (further downgradient of Well GM-36D2) historically has been identified as the area exhibiting the highest off-site concentrations of TVOCs in the D2 zone. TVOC concentrations in Monitoring Well GM-38D2 have ranged between 130 and 1,300 µg/L (Figure 14). Prior to September 1997, the TVOC trend was increasing while since September 1997

the TVOC trend is decreasing. However, the last few data points do not fit with this most recent data.

Throughout the period of record, substantial short-term variations in TVOC concentrations in Monitoring Well GM-38D2 have been evident (Figure 14).

Although the most recent data in Wells GM-35D2 and GM-38D2 show an increase in TVOC concentrations, prior rounds of data had indicated a downward trend. Therefore, it is too early to tell if these values indicate the start of an increasing trend or are just a short term variation.

5.2 Vinyl Chloride Monomer

Groundwater monitoring of the VCM subplume emanating from the RUCO Polymer site (near the NWIRP area) is performed on a semi-annual basis (twice yearly). This section discusses the results of the October 2000 round of monitoring and compares the current data with available historical groundwater quality. VCM is a parameter that is monitored in all wells sampled for VOCs and Section 6.1 (Total Volatile Organic Compounds) of this report provides a complete discussion of other VOCs detected in the VCM monitoring well network.

VCM was not detected in the shallow zone except for an estimated value of 0.8 µg/L in Well 10634. Because this well is over 1,000 feet south of the Northrop Grumman site and no other upgradient well had a detection of VCM, this result is likely anomoluus. In the intermediate zone, VCM was detected in Well MW-52S (located in the Plant 12 Area) at 1,900 µg/L; concentrations have decreased substantially in this well since the last round. VCM was not detected in any other intermediate zone well.

In the deep zone, Well MW-52I (located in the Plant 12 Area) had a VCM concentration of 2,000 µg/L. Similar to Well MW-52S, this value is substantially lower than the previous round. It is too early to tell if these concentration changes are the start of a long term trend or just short term fluctuations. VCM was not detected in any other deep well.

In the D2 zone, VCM was detected in Well GP-3 (9 µg/L) above the SCG. Since Well GP-3 is located substantially farther south (downgradient) than the upgradient monitoring well network and it 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.

5.3 Tentatively Identified Compounds

For all groundwater samples collected during this round, in addition to the TCL VOCs, the laboratory was requested to perform an analysis and library search to identify and evaluate whether volatile Tentatively Identified Compounds (TICs) exist in the groundwater samples. TICs detected in groundwater samples collected during the October 2000 round are summarized in Table 13. Freon 113 (1,1,2-trichlorotrifluoroethane) was detected in two samples: GM-16I (7 µg/L) and GM-35D2 (26 µg/L). Based on the occurrence of Freon 113 in groundwater, and its use at the site, this compound will be added to the TCL of VOCs in subsequent rounds. Overall, six TICs were identified at estimated concentrations ranging from 4 µg/L to 58 µg/L. 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 should be used for qualitative purposes only.

5.4 Quality Control Samples - VOCs

Based on the analytical results (Table 14) for the October 2000 round, low levels of VOCs (generally acetone and methylene chloride) were detected. Based on the results of the data validation, these detections are not considered significant.

5.5 Semi-Volatile Organic Compounds

October 2000 round SVOCs groundwater data for the shallow monitoring Well GM-14, located downgradient of the Plant 1 Fuel Depot, are provided in Table 15. The data were compared to New York State SCGs and no SVOCs were detected above SCGs this round and only di-n-butylphthalate was detected in the well at an estimated concentration of 0.1 µg/L.

5.6 Cadmium and Chromium

Groundwater monitoring data from shallow monitoring wells for the last quarter of 1999 and the first three quarters of 2000 for total cadmium (Cd) and total chromium (Cr) are provided in Table 16. The data were compared to New York State SCGs. The cadmium concentration in Monitoring Well MW-3R (south of Plant 2) (22.9 µg/L) exceeded the SCG of 5 µg/L; concentrations have remained relatively unchanged in this well for the last four sampling rounds. Cadmium was not detected in Monitoring Well N-10631 (southwest of Well MW-3R) or in Well 16SR. In summary, no significant changes in cadmium concentrations are evident. The chromium

concentration in Monitoring Well MW-3R (76.5 µg/L) exceeds its SCG of 50 µg/L; concentrations have remained essentially unchanged in this well for the last four sampling rounds. Chromium was not detected in Monitoring Wells GM-16SR and N-10631 this round and represent a significant decrease in chromium concentrations from earlier results.

5.7 Quality Control Samples - Cadmium/Chromium

Cadmium/chromium were not detected in the equipment blank samples collected in the October 2000 round (Table 10).

5.8 Data Validation

ARCADIS G&M performed validation of the groundwater quality data (including TICs) collected from monitoring wells by following the contract laboratory program national functional guidelines for organic and inorganic data review (USEPA 1994). The quality of the data is considered acceptable with the appropriate qualifications indicated on Tables 9 through 16. Data validation memoranda are provided in Appendix E.

6. Summary and Conclusions

6.1 IRM System

1. Overall a total of 937.5 MG were pumped and treated between July and December 2000, which is approximately 105 percent of the total design pumpage. Pumpage of Well GP-3 supplemented the total gallons pumped.

2. Water quality data collected from IRM wells over the period of record indicate that TCE concentrations have been decreasing in IRM Wells GP-1 and ONCT-1; TCE concentrations in Well ONCT-2 are increasing during the period of record, while TCE concentrations in Well ONCT-3 have fluctuated at low concentrations. Well GP-3, although not part of the IRM system, has been pumped to supplement the pumpage from the IRM system. TCE concentrations in Well GP-3 have been increasing for the period of record. From July through December 2000, a total of 5,967 pounds (lbs) of VOCs were removed from the aquifer and treated by the IRM treatment facilities. Since September 1998, a total of 39,214 lbs of VOCs have been removed from the aquifer. Based on samples collected from the IRM wells and IRM system, VOC removal efficiency is greater than 99.99 percent.

6.2 Groundwater Flow

3. Water-level data in the shallow and intermediate zones from October 2000 indicate that operation of the IRM has maintained the groundwater mounding in the Plant 5 Recharge Basins and the South Recharge Basins areas. Overall conditions are consistent with prior rounds of data. Consequently, the hydraulic barrier in the shallow zone has been maintained, and extends to the immediate zone and prevents the off-site migration of shallow and intermediate on-site VOC-impacted groundwater.

4. Downward vertical hydraulic gradients near the Plant 5 Recharge Basins and South Recharge Basins areas remain close to or greater in magnitude than those predicted by the groundwater flow model and result in downward groundwater movement. 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 pumping IRM wells in the D2 zone, which therefore prevents VOC-impacted groundwater from flowing off-site in the intermediate and deep zones.

5. The configuration of the potentiometric surface in the D2 zone generally indicates that the zone of capture due to pumpage of the IRM Wells extends more than 4,000 ft across the entire southern boundary and continues to fully control and contain groundwater on-site and up to approximately 800 ft south of the site.

6.3 Groundwater Quality

6. As expected, the analytical results from shallow and intermediate monitoring wells in areas within the VOC plume on the Northrop Grumman and NWIRP sites upgradient of the IRM system exhibited the highest concentrations of VOCs in these zones. At the southern property boundary and immediately south of it, shallow and intermediate monitoring wells exhibited stable low or non-detectable concentrations of VOCs. These results confirm the effectiveness of the IRM in preventing the off-site migration of VOC-impacted groundwater in the shallow and intermediate zones.

7. Well GM-13D, located within the on-site VOC plume and upgradient of the IRM system has exhibited an increasing trend in VOC concentrations, while Well HN-29D, located on the NWIRP property, has exhibited trace concentrations of VOCs. These data are consistent with the current understanding of the on-site

groundwater plume configuration in the deep zone. Deep wells along the Northrop Grumman southern site perimeter (near the basins) exhibit low to non-detectable VOC concentrations. The pumpage of the IRM wells is the apparent reason for the low to non-detectable VOC concentrations which attest to the effectiveness of the IRM in preventing the off-site migration of VOC-impacted groundwater in the deep zone. Further downgradient of the sites, TVOC concentrations are either stable or are decreasing.

8. Well GM-33D2, located west of IRM Well ONCT-1, has exhibited a decreasing trend in TVOC concentration. The rate of decrease in TVOC concentrations has accelerated since September 1998 when the IRM wells became fully operational. The pumpage of IRM Well ONCT-1 appears to be largely responsible for the accelerated decrease in TVOC concentration, based on its proximity to Well GM-33D2 and the similar TVOC concentrations currently in both wells. Downgradient (off-site), wells have exhibited a downward trend in TVOC concentration, with the exception of Well GM-37D2. TVOC concentrations in Well GM-37D2, however, remain at less then 30 µg/L. In Well GM-38D2, which historically exhibited the highest off-site TVOC concentration in the D2 zone, TVOC concentrations have been decreasing since September 1997.

9. VCM was not detected in the shallow zone. Only VCM was detected in the intermediate and deep zones only at the MW-52 well cluster south (downgradient) of the RUCO site. VCM concentrations in the intermediate and deep zones have substantially decreased since last quarter. However, it is too early to tell if this is the start of a long term trend or merely a short term fluctuation. Well GP-3, screened in the D2 zone, exhibited a VCM concentration above the SCG indicating that the extent of the VCM subplume (horizontal and vertical) is greater than previously defined by RUCO.

10. VOCs and SVOCs were not detected above SCGs downgradient of the Plant 1 Fuel Depot.

11. Chromium was detected above the SCG in Well MW-3R and concentrations have remained relatively unchanged in this well the last four quarters. Chromium was not detected in Wells GM-16SR and N-10631 this round which is a significant decrease from the historical data. Cadmium concentrations in the monitoring well network near former Plant 2 have not substantially changed based on data collected through October 2000.

7. Recommendations

The draft Groundwater Monitoring Plan that provides for installation of new monitoring wells and expansion of the existing well network has been preliminarily approved by the NYSDEC. In addition to the items discussed in the draft monitoring plan, ARCADIS G&M recommends the following:

1. Freon 113 (1,1,2-trichlorotrifluoroethane), currently monitored as a TIC, should be added to the TCL of VOCs monitored quarterly in the TVOC well network.

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Table 1. Groundwater Monitoring Network, Third Quarter 2000, Northrop Grumman Corporation, Bethpage, New York.

Well ID	Casing Diameter (inches)	Total Depth (ft bls)	Screened Interval (ft bls)	Planned Monitoring Activity	Status This Round
Shallow Wells					
MW-3R	2	55	45 - 55	Cd/Cr, TVOC	√
GM-14	4	55	15 - 55	TVOC	√
GM-15S	4	80	70 - 80	Water Levels, TVOC	√
GM-16SR	4	70	60 - 70	Water Levels, Cd/Cr, TVOC	√
GM-17S	4	48	38 - 48	Water Levels	√
GM-17SR	4	70	60 - 70	Water Levels, TVOC, VCM	√
GM-18S	2	67	63 - 67	Water Levels, TVOC, VCM	√
GM-19S	4	53	48 - 53	Water Levels	√
GM-21S	2	67	63 - 67	Water Levels, TVOC	√
GM-23S	4	56	46 - 56	VCM	√
FW-03	2	64	49 - 64	TVOC	√
N-9921	2	62	58 - 62	Water Levels	√
N-10597	2	67	63 - 67	Water Levels	√
N-10600	2	61	57 - 61	Water Levels	√
N-10631	2	67	63 - 67	Water Levels, Cd/Cr, TVOC	√
N-10628	2	67	63 - 67	Water Levels	√
N-10633	2	67	63 - 67	Water Levels	√
N-10634	2	67	63 - 67	Water Levels, TVOC	√
N-10821	2	67	63 - 67	Water Levels	√
Intermediate Wells					
GM-10I	4	120	110 - 120	VCM	√
GM-15I	4	105	95 - 105	Water Levels, TVOC	√
GM-16I	4	145	135 - 145	Water Levels, TVOC	√
GM-17I	4	120	100 - 120	Water Levels, TVOC	√
GM-18I	4	105	95 - 105	Water Levels, TVOC	√
GM-19I	4	140	130 - 140	Water Levels	√
GM-20I	4	105	95 - 105	Water Levels, TVOC	√
GM-21I	4	140	130 - 140	Water Levels, TVOC	√
GM-23I	4	120	110 - 120	VCM	√
MW-52S	2	140	125 - 140	VCM	√
GM-74I	4	114	94 - 114	Water Levels, TVOC	√
HN-24I	4	158	148 - 158	TVOC	√
HN-29I	4	130	120 - 130	TVOC	√
N-10624	2	194	190 - 194	Water Levels, TVOC	Silted well screen; not measured or sampled
Deep Wells					
GM-13D	4	210	200 - 210	Water Levels, TVOC	√
GM-15D	4	342	332 - 342	Water Levels, TVOC	√
GM-17D	4	298	278 - 298	Water Levels, TVOC	√
GM-20D	4	226	216 - 226	Water Levels, TVOC	√
GM-34D	2	319	309 - 319	Water Levels, TVOC	√
GM-36D	4	214	204 - 214	Water Levels, TVOC	√

See notes on last page

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Table 1. Groundwater Monitoring Network, Third Quarter 2000, Northrop Grumman Corporation, Bethpage, New York.

Well ID	Casing Diameter (inches)	Total Depth (ft bls)	Screened Interval (ft bls)	Planned Monitoring Activity	Status This Round
Deep Wells (cont'd)					
GM-37D	4	262	242 - 262	Water Levels, TVOC	√
GM-38D	4	340	320 - 340	Water Levels, TVOC	√
MW-52I	2	235	220 - 235	VCM	√
MW-52D	2	386	371 - 386	VCM	√
GM-74D	4	305	295 - 305	Water Levels, TVOC	√
HN-29D	4	220	210 - 220	TVOC	√
N-10627	4	295	290 - 295	Water Levels, TVOC	√
GP-10	12	373	312 - 373	TCE only	√
Deep2 Wells					
GM-15D2	4	556	536 - 556	Water Levels, TVOC	√
GM-33D2	4	520	500 - 520	Water Levels, TVOC	√
GM-34D2	4	520	510 - 520	Water Levels, TVOC	√
GM-35D2	4	530	510 - 530	Water Levels, TVOC	√
GM-36D2	4	540	520 - 540	Water Levels, TVOC	√
GM-37D2	4	390	370 - 390	Water Levels, TVOC	√
GM-38D2	4	495	475 - 495	Water Levels, TVOC	√
GM-70D2	4	330	310 - 330	Water Levels, TVOC	√
GM-71D2	4	464	444 - 464	Water Levels, TVOC	√
GM-73D2	4	552	532 - 552	Water Levels, TVOC	√
GM-74D2	4	562	542 - 562	Water Levels, TVOC	√
ONCT-1	18/12	563	480 - 563	IRM Operaional Data	√
ONCT-2	18/12	570	466 - 570	IRM Operaional Data	√
ONCT-3	18/12	617	465 - 617	IRM Operaional Data	√
GP-1	12	570	519 - 570	IRM Operaional Data	No access port for water levels.
GP-3	16	543	483 - 543	Water Quality Data	√
GP-11	12	490	429 - 489	TCE only	Well not operating this quarter.

Notes:
1. IRM operational data includes recording water levels, water quality data (TCE on a weekly basis and TVOCs on a quarterly basis), total gallons pumped, pumping rates, time online, and specific capacity.
2. Water quality data includes recording TCE concentrations on a weekly basis and TVOC concentrations on a quarterly basis.
3. Wells sampled as part of monitoring the VCM subplume are analyzed for the full target compound list of VOCs.

TVOC Total Volatile Organic Compounds
Cd/Cr Cadmium/Chromium
TCE Trichloroethene
√ Well condition was acceptable for all monitoring activity this round.

Table 2. Trichloroethene Concentrations in Water Samples Collected from Groundwater IRM Extraction Wells and Industrial Supply Wells, July through December 2000, Northrop Grumman Corporation, Bethpage, New York.

	IRM WELLS				INDUSTRIAL WELLS		
Sample Collection Date	GP-1 (ug/L)	ONCT-1 (ug/L)	ONCT-2 (ug/L)	ONCT-3 (ug/L)	GP-3 (ug/L)	GP-10 (ug/L)	GP-11 (ug/L)
7/11/00	341	1,238	93	9	341	70	NS
7/18/00	388	1,250	90	12	716	73	NS
7/27/00	398	1,150	86	12	710	69	NS
8/1/00	376	1,054	82	13	690	68	NS
8/9/00	400	1,016	91	12	670	68	NS
8/15/00	486	1,814	126	10	615	64	NS
8/22/00	616	1,776	153	14	928	118	NS
9/12/00	1,000	1,767	181	16	1,515	127	NS
9/21/00	787	1,818	151	15	1,278	114	NS
9/28/00	772	2,010	196	17	1,258	130	NS
10/4/00	743	1,854	180	15	1,191	117	NS
10/11/00	686	2,048	199	18	1,389	130	NS
10/18/00	NS	1,656	172	19	NS	NS	NS
10/25/00	578	1,954	199	17	1,102	109	NS
11/1/00	779	1,866	185	16	1,520	120	NS
11/8/00	687	1,928	196	17	1,488	138	NS
11/15/00	420	1,218	120	9	880	86	NS
11/22/00	452	1,022	103	9	850	86	NS
11/28/00	343	1,092	94	8	704	NS	NS
12/4/00	400	732	84	9	936	74	NS
12/12/00	618	1,236	123	11	968	97	NS
12/20/00	400	1,347	135	13	1,003	93	NS
Average Concentration:	556	1,493	138	13	988	98	NS

Note: Water samples were collected and analyzed by Northrop Grumman; results were not validated.

IRM Interim Remedial Measure
ug/L Micrograms per liter
NS Not sampled; well not operating.

Table 3. Trichloroethene Concentrations in Water Samples Collected from the IRM System Influent and Effluent, July through December 2000, Northrop Grumman Corporation, Bethpage, New York.

Sample Collection Date	Influent TCE Concentration (ug/L)	Effluent TCE Concentration (ug/L)
ONCT System (WWRP-5E)		
7/11/00	714	1.0
7/18/00	723	1.2
7/27/00	700	1.1
8/1/00	674	1.0
8/9/00	633	1.1
8/15/00	912	0.6
8/22/00	1,040	1.0
9/12/00	944	0.6
9/21/00	936	3.4
9/28/00	1,111	1.0
10/4/00	863	1.1
10/11/00	1,910	1.5
10/18/00	1,592	2.2
10/25/00	970	1.3
11/1/00	1,140	1.6
11/8/00	912	2.1
11/15/00	594	1.3
11/22/00	664	0
11/28/00	524	0.9
12/4/00	600	0.9
12/12/00	1,135	1.9
12/20/00	1,200	1.6
Average Concentration:	931	1.3

see notes on next page

Table 3. Trichloroethene Concentrations in Water Samples Collected from the IRM System Influent and Effluent, July through December 2000, Northrop Grumman Corporation, Bethpage, New York.

Sample Collection Date	Influent TCE Concentration (ug/L)	Effluent TCE Concentration (ug/L)
GP-1 System (WWRP-5)		
7/11/00	533	2.0
7/18/00	589	1.2
7/27/00	540	1.4
8/1/00	567	1.2
8/9/00	586	1.1
8/15/00	553	1.0
8/22/00	696	0.9
9/12/00	1,188	0.8
9/21/00	914	1.4
9/28/00	982	1.6
10/4/00	1,008	1.5
10/11/00	1,092	2.6
10/18/00	NS	NS
10/25/00	800	2.0
11/1/00	1,119	1.8
11/8/00	1,106	4.0
11/15/00	544	0.6
11/22/00	578	0.0
11/28/00	438	0.9
12/4/00	680	2.6
12/12/00	754	2.4
12/20/00	762	1.8
Average Concentration:	763	1.6

Note: Water samples were collected and analyzed by Northrop Grumman; results were not validated.

IRM Interim Remedial Measure
TCE Trichloroethene
ug/L Micrograms per liter
WWRP Wastewater Recovery Plant
WWRP-5E WWRP 5E system influent and effluent consists of water from IRM Extraction 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 IRM Well GP-1, with intermittent pumpage from Industrial Supply Wells GP-3, GP-10, and GP-11.
NS Not Sampled

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Table 4. Operational Summary of the Groundwater Interim Remedial Measure and Industrial Supply Well GP-3, July to December 2000, Northrop Grumman Corporation, Bethpage, New York.

Well/System Identification	*July to December 2000*				*Project To-Date*	*July to December 2000*			*Project To-Date*
	Average Pumping Rate (gpm)	Total Pumpage (a) (MG)	Design Pumpage (MG)	Percent of Design Pumpage	Cumulative Pumpage (MG)	Average Influent TCE Concentration (ug/L)	Average Influent TVOC Concentration [(b)] (ug/L)	TVOC Mass Removed [(b)] (lbs)	Cumulative TVOC Mass Removed [■] (lbs)
IRM Wells									
GP-1	783	202.4	284.8	--	1,067.7	556	639	1,077	9,993
ONCT-1	996	235.4	265.0	--	1,051.0	1,493	1,508	2,956	23,205
ONCT-2	712	160.6	159.0	--	778.8	138	159	212	827
ONCT-3	670	152.5	185.5	--	766.7	13	27	34	226
Industrial Supply Well									
GP-3	722	186.6	--	--	1,096.6	988	1,086	1,687	4,963
TOTALS:	--	**937.5**	**894.3**	**105%**	**4,760.8**	--	--	**5,967**	**39,214**

Notes:

(a) - Average pumping rate and total pumpage based on Northrop Grumman records of operation from July 1 to December 31, 2000.
- Days wells were operational from July to December are as follows: IRM Well GP-1 (179.5); IRM Well ONCT-1 (164.1); IRM Well ONCT-2 (156.6); IRM Well ONCT-3 (158.1); Supply Well GP-3 (179.5).
- Pumping rates accurate to +/-15% due to limitations in flow metering.

(a) TVOC Concentration obtained from Second/Third Quarter 2000 IRM Groundwater Data.

(b) TVOC concentration and TVOC mass in each well were estimated from October 2000 data which indicated that TCE concentrations were a percentage of the TVOC concentration, as follows: GP-1 (87 percent); ONCT-1 (99 percent); ONCT-2 (87 percent); ONCT-3 (48 percent); and GP-3 (91 percent).

TVOC mass removed since September 1998 to the end of 2000 was based on the TCE/TVOC ratios given above and the following formula:

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

IRM Interim Remedial Measure
gpm gallons per minute
MG Million Gallons
ug/L micrograms per liter
lbs pounds
-- Not Available or Not Applicable
TCE Trichloroethene
TVOC Total Volatile Organic Compound

Table 5. Groundwater IRM Extraction Well Performance Data from January through October 2000, Northrop Grumman Corporation, Bethpage, New York.

IRM Well Identification	Baseline Round Static Depth to Water 5/9/97 (ft bmp)	Last Four Water-Level Measurement Dates	Pumping Depth to Water (ft bmp)	Pumping Rate (gpm)	Drawdown (ft)	Specific Capacity (gpm/ft)
ONCT-1	44.12	January 5, 2000	68.91	1004	24.79	40.5
		March 9, 2000	68.00	885	23.88	37.1
		July 21, 2000	68.44	980	24.32	40.3
		October 16, 2000	66.41	928	22.29	41.6
ONCT-2	50.15	January 5, 2000	69.05	605	18.90	32.0
		March 9, 2000	68.62	615	18.47	33.3
		July 21, 2000	67.82	586	17.67	33.2
		October 16, 2000	69.92	708	19.77	35.8
ONCT-3	49.13	January 5, 2000	68.28	721	19.15	37.7
		March 9, 2000	67.52	650	18.39	35.3
		July 21, 2000	66.53	668	17.40	38.4
		October 16, 2000	67.88	669	18.75	35.7
GP-1	--	January 5, 2000	--	--	--	--
		March 9, 2000	--	800*	--	--
		July 21, 2000	--	800*	--	--
		October 16, 2000	--	783*	--	--

Note: Specific capacity is calculated by dividing the pumping rate (Q) by the drawdown (s).

IRM	Interim Remedial Measure
gpm	gallons per minute
ft bmp	feet below measuring point
--	Data could not be collected
*	Based on pumpage data collected by Northrop Grumman personnel
ft	feet
gpm/ft	gallons per minute per foot of drawdown

Table 6. Precipitation Data for the Third and Fourth Quarters 2000 and Long-Term Averages, Northrop Grumman Corporation, Bethpage, New York.

Date Precipitation Recorded	Rainfall [a] (inches)	Snowfall [a,c] (inches)	Total Precipitation (inches)	Long-Term Average Monthly Precipitation [b,d] (inches)
July 2000				
July 3, 2000	0.16	0.00	---	---
July 10, 2000	0.09	0.00	---	---
July 15, 2000	0.74	0.00	---	---
July 19, 2000	0.11	0.00	---	---
July 26, 2000	3.25	0.00	---	---
July 27, 2000	0.52	0.00	---	---
July 31, 2000	0.55	0.00	5.42	3.80
August 2000				
August 1, 2000	0.32	0.00	---	---
August 2, 2000	0.20	0.00	---	---
August 3, 2000	0.83	0.00	---	---
August 4, 2000	0.08	0.00	---	---
August 7, 2000	0.02	0.00	---	---
August 10, 2000	0.01	0.00	---	---
August 11, 2000	0.02	0.00	---	---
August 12, 2000	0.07	0.00	---	---
August 13, 2000	0.03	0.00	---	---
August 14, 2000	0.40	0.00	---	---
August 15, 2000	0.02	0.00	---	---
August 16, 2000	0.14	0.00	---	---
August 18, 2000	0.08	0.00	---	---
August 23, 2000	0.08	0.00	---	---
August 28, 2000	0.11	0.00	2.41	4.10
September 2000				
September 1, 2000	0.27	0.00	---	---
September 3, 2000	0.78	0.00	---	---
September 4, 2000	0.04	0.00	---	---
September 13, 2000	0.66	0.00	---	---
September 15, 2000	1.29	0.00	---	---
September 19, 2000	1.15	0.00	---	---
September 23, 2000	0.13	0.00	---	---
September 24, 2000	0.03	0.00	---	---
September 25, 2000	0.05	0.00	---	---
September 26, 2000	0.71	0.00	5.11	3.60
October 2000				
October 4, 2000	0.15	0.00	---	---
October 5, 2000	0.03	0.00	---	---
October 16, 2000	0.02	0.00	---	---
October 17, 2000	0.05	0.00	---	---
October 18, 2000	0.16	0.00	0.41	3.20

See notes on last page.

Table 6. Precipitation Data for the Third and Fourth Quarters 2000 and Long-Term Averages, Northrop Grumman Corporation, Bethpage, New York.

Date Precipitation Recorded	Rainfall [a] (inches)	Snowfall [a,c] (inches)	Total Precipitation (inches)	Long-Term Average Monthly Precipitation [b,d] (inches)
November 2000				
November 9, 2000	0.17	0.00	---	---
November 10, 2000	2.88	0.00	---	---
November 11, 2000	0.40	0.00	---	---
November 14, 2000	0.27	0.00	---	---
November 20, 2000	0.05	0.00	---	---
November 26, 2000	1.48	0.00	---	---
November 29, 2000	0.32	0.00	---	---
November 30, 2000	0.06	0.00	3.30	4.10
December 2000				
December 10, 2000	0.03	0.00	---	---
December 14, 2000	1.18	0.00	---	---
December 16, 2000	0.50	0.00	---	---
December 17, 2000	0.49	0.00	---	---
December 20, 2000	0.09	0.00	---	---
December 22, 2000	0.04	0.00	---	---
December 30, 2000	0.97	0.00	3.30	3.70
Precipitation Totals for 30-Day Period Preceding Hydraulic Measurement Round				
October 16, 2000	---	---	2.27	---

a) From National Oceanic and Atmospheric Administration (NOAA), 2000 Mineola, New York Cooperative Station.

b) From National Oceanic and Atmospheric Administration (NOAA),1996 Mineola, New York Cooperative Station.

c) Snowfall (includes snow, ice, sleet, and hail) in inches is converted to equivalent inches of water and then added to rainfall amount to determine total monthly precipitation.

d) Long-term monthly averages compiled from 42 complete years of precipitation data collected between 1938 and 1995 at the Mineola, New York Cooperation Station.

--- Not Applicable

Table 7. Water-Level Measurement Data, October 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

Well Designation	Measuring Point Elevation (ft msl)	Depth to Water October 16,2000 (ft bmp)	Water-Level Elevation October 16,2000 (ft msl)
Shallow Wells			
N-9921	94.23	34.62	59.61
N-10597	109.85	43.95	65.90
N-10600	102.41	41.16	61.25
N-10631	103.47	41.12	62.35
N-10633	103.80	41.64	62.16
N-10634	101.20	42.30	58.90
N-10821	91.58	35.51	56.07
GM-15S	109.35	47.25	62.10
GM-16SR	115.77	49.90	65.87
GM-17SR	115.79	45.86	69.93
GM-18S	107.60	42.93	64.67
GM-19S	109.86	45.45	64.41
GM-21S	105.81	38.70	67.11
GM-79S	100.88	42.21	58.67
Intermediate Wells			
N-10624*	93.61	--	--
GM-15I	109.13	47.06	62.07
GM-16I	115.81	50.05	65.76
GM-17I	115.83	46.06	69.77
GM-18I	109.03	44.50	64.53
GM-19I	109.86	45.90	63.96
GM-20I	103.88	39.70	64.18
GM-21I	105.72	40.60	65.12
GM-74I	107.42	42.25	65.17

See notes on last page

Table 7. Water-Level Measurement Data, October 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

Well Designation	Measuring Point Elevation (ft msl)	Depth to Water October 16,2000 (ft bmp)	Water-Level Elevation October 16,2000 (ft msl)
Deep Wells			
N-10627	93.70	34.71	58.99
GM-13D	113.97	49.00	64.97
GM-15D	109.66	49.39	60.27
GM-17D	115.68	51.40	64.28
GM-20D	103.92	41.41	62.51
GM-34D	71.19	16.49	54.70
GM-36D	91.63	37.08	54.55
GM-37D	97.26	41.22	56.04
GM-38D	91.75	40.03	51.72
GM-74D	107.43	47.45	59.98
Deep2 Wells			
GM-15D2	109.59	51.90	57.69
GM-33D2	106.85	51.29	55.56
GM-34D2	71.19	18.00	53.19
GM-35D2	96.28	41.65	54.63
GM-36D2	91.60	39.26	52.34
GM-37D2	97.17	41.79	55.38
GM-38D2	91.56	41.96	49.60
GM-70D2	99.58	43.20	56.38
GM-71D2	98.45	43.54	54.91
GM-73D2	104.62	48.05	56.57
GM-74D2	107.36	54.04	53.32
IRM Extraction Wells (D2 Wells)			
GP-1 **	--	--	--
ONCT-1	104.10	66.41	37.69
ONCT-2	110.00	69.92	40.08
ONCT-3	108.70	67.88	40.82

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

** Water-levels could not be measured in Well GP-1.

ft msl feet relative to mean sea level

ft bmp below measuring point

Table 9. Concentrations of Volatile Organic Compounds Detected in Shallow Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	10631 N10631 9/26/00	10634 N-10634 11/10/99	10634 N-10634 3/15/00	10634 N-10634 6/26/00
Chloromethane	5		< 10 J	< 5	< 10	< 10
Bromomethane	5		< 10	< 5	< 10	< 10
Vinyl Choride	2		< 0.2 J	< 2	< 1	< 0.3
Chloroethane	5		< 10 J	< 5 J	< 10	< 10
Methylene chloride	5		< 10	< 5	< 10	< 10
Acetone	50		< 10 J	< 10 J	< 10 J	**14 J**
Carbon disulfide	50		< 10	< 10	< 10	< 10 J
1,1-Dichloroethene	5		< 10	< 5	< 10	< 10
1,1-Dichloroethane	5		< 10	< 5	< 10	< 10
1,2-Dichloroethene (total)	5		< 10	< 5	< 10	< 10
Chloroform	7		< 10	< 7	< 10	< 10
1,2-Dichloroethane	5		< 10	< 5	< 10	< 10
2-Butanone	50		< 10	< 10	< 10 J	**4 J**
1,1,1-Trichloroethane	5		< 10	< 5	< 10	< 10
Carbon tetrachloride	5		< 10	< 5	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 5	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 5	< 10	R
Trichloroethene	5		**0.4 J**	< 5	< 10	**2 J**
Dibromochloromethane	5		< 10	< 5	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 5	< 10	< 10
Benzene	0.7		< 10	< 0.7	< 10	< 10
trans-1,3-Dichloropropene	5		< 10	< 5	< 10	< 10
Bromoform	50		< 10	< 10	< 10 J	< 10
4-Methyl-2-pentanone	50		< 10	< 10 J	< 10	< 10
2-Hexanone	50		< 10	< 10 J	< 10	< 10
Tetrachloroethene	5		< 10	< 5	< 10	**1 J**
1,1,2,2-Tetrachloroethane	5		< 10	< 5	< 10	< 10
Toluene	5		< 10	< 5	< 10	**0.5 J**
Chlorobenzene	5		< 10	< 5	< 10	< 10
Ethylbenzene	5		< 10	< 5	< 10	< 10
Styrene	5		< 10	< 5	< 10	< 10
Xylene (total)	5		< 10	< 5	< 10	< 10
Total VOCs			**0.4**	0	0	**21.5**

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
*	Additional sampling round.
	Value exceeds associated Standard, Criteria, and Guidance value.

Table 9. Concentrations of Volatile Organic Compounds Detected in Shallow Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	10634 N10634 9/25/00	FW-03 FW-03 6/28/00	FW-03 FW-03 9/27/00	GM-14 GM-14 11/10/99
Chloromethane	5		< 10 J	< 10	< 10 J	< 0.4
Bromomethane	5		< 10	< 10	< 10	< 0.1 J
Vinyl Choride	2		**0.8 J**	< 0.3	< 0.2 J	< 0.6
Chloroethane	5		< 10 J	< 10 J	< 10 J	< 0.8
Methylene chloride	5		< 10	< 10	< 10	< 0.1
Acetone	50		< 10 J	< 10	< 10 J	< 0.8
Carbon disulfide	50		< 10	< 10 J	< 10	< 0.2
1,1-Dichloroethene	5		< 10	< 10	< 10	< 0.4
1,1-Dichloroethane	5		< 10	**2 J**	**1 J**	< 0.1
1,2-Dichloroethene (total)	5		< 10	< 10	< 10	< 0.8
Chloroform	7		< 10	< 10	< 10	< 0.5
1,2-Dichloroethane	5		< 10	< 10	< 10	< 0.2
2-Butanone	50		< 10 J	< 10	**2 J**	< 0.6
1,1,1-Trichloroethane	5		< 10	**32**	**10**	< 0.8
Carbon tetrachloride	5		< 10	< 10	< 10	< 0.4
Bromodichloromethane	50		< 10	< 10	< 10	< 0.2
1,2-Dichloropropane	5		< 10	< 10	< 10	< 0.2
cis-1,3-Dichloropropene	5		< 10	R	< 10	< 0.2
Trichloroethene	5		< 10	**2 J**	**3 J**	< 0.2
Dibromochloromethane	5		< 10	< 10	< 10	< 0.1
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 0.8
Benzene	0.7		< 10	< 10	< 10	< 0.3
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 0.3
Bromoform	50		< 10	< 10	< 10 J	< 0.1
4-Methyl-2-pentanone	50		< 10 J	< 10	< 10 J	< 0.4
2-Hexanone	50		< 10 J	< 10	< 10 J	< 0.6
Tetrachloroethene	5		< 10	**2 J**	**3 J**	< 0.4
1,1,2,2-Tetrachloroethane	5		< 10 J	< 10	< 10	< 0.2
Toluene	5		< 10	< 10	< 10	< 0.3
Chlorobenzene	5		< 10	< 10	< 10	< 0.2
Ethylbenzene	5		< 10	< 10	< 10	< 0.2
Styrene	5		< 10	< 10	< 10	< 0.2
Xylene (total)	5		< 10	< 10	< 10	< 0.6
Total VOCs			**0.8**	**38**	**19**	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
• Additional sampling round.
Value exceeds associated Standard, Criteria, and Guidance value.

Table 9. Concentrations of Volatile Organic Compounds Detected in Shallow Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-14 GM-14 3/13/00	GM-14 GM-14 6/26/00	GM-14 GM-14 10/2/00	GM-15S GM-15S 9/28/00
Chloromethane	5		< 10	< 10	< 10	< 10 J
Bromomethane	5		< 10	< 10	< 10	< 10
Vinyl Choride	2		< 1	< 0.3	< 0.2	< 0.2 J
Chloroethane	5		< 10	< 10	< 10	< 10 J
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10 J	**8 J**	< 10 J	< 10 J
Carbon disulfide	50		< 10	< 10 J	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	< 10	< 10
1,1-Dichloroethane	5		< 10	< 10	< 10	< 10
1,2-Dichloroethene (total)	5		< 10	< 10	< 10	**1 J**
Chloroform	7		< 10	< 10	< 10	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10	< 10
2-Butanone	50		< 10	< 10	< 10	< 10 J
1,1,1-Trichloroethane	5		< 10	< 10	< 10	< 10
Carbon tetrachloride	5		< 10	< 10	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10 J	R	< 10	< 10
Trichloroethene	5		< 10	**6 J**	< 10	**7 J**
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 10 J	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10 J
4-Methyl-2-pentanone	50		< 10	< 10	< 10	< 10 J
2-Hexanone	50		< 10	< 10	< 10	< 10 J
Tetrachloroethene	5		< 10	**4 J**	< 10	< 10
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10	< 10
Toluene	5		< 10	**2 J**	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	< 10	< 10	< 10
Total VOCs			0	**20**	0	**8**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
* Additional sampling round.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 9. Concentrations of Volatile Organic Compounds Detected in Shallow Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	GM-16S	GM-16SR	GM-16SR	GM-17S
		SAMPLE ID:	GM-16S	MW-16SR	GM-16SR	GM-17S
		DATE:	3/13/00	6/27/00	9/26/00	5/13/97
Chloromethane	5		< 10	< 10	< 10 J	< 10
Bromomethane	5		< 10	< 10	< 10	< 10 J
Vinyl Choride	2		< 1	< 0.3	< 0.2 J	< 10
Chloroethane	5		< 10	< 10	< 10 J	< 10
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10 J	8 J	< 10 J	< 10
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	< 10	< 10
1,1-Dichloroethane	5		< 10	< 10	< 10	< 10
1,2-Dichloroethene (total)	5		< 10	< 10	< 10	< 10
Chloroform	7		< 10	< 10	< 10	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10	< 10
2-Butanone	50		< 10	< 10	< 10	< 10
1,1,1-Trichloroethane	5		< 10	< 10	< 10	< 10
Carbon tetrachloride	5		< 10	< 10	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10 J	R	< 10	< 10
Trichloroethene	5		< 10	< 10	< 10	< 10
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 10 J	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10	< 10 J
2-Hexanone	50		< 10	< 10	< 10	< 10 J
Tetrachloroethene	5		< 10	< 10	< 10	< 10
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10	< 10
Toluene	5		< 10	< 10	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	< 10	< 10	< 10
Total VOCs			0	8	0	0

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
*	Additional sampling round.
	Value exceeds associated Standard, Criteria, and Guidance value.

Table 9. Concentrations of Volatile Organic Compounds Detected in Shallow Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-17S GM-17S 7/6/00	GM-17SR GM-17SR 9/29/00	GM-18S GM-18S 5/13/97	GM-18S GM-18S 11/10/99
Chloromethane	5		< 10	< 10 J	< 10	< 10
Bromomethane	5		< 10	< 10 J	< 10	< 10
Vinyl Choride	2		< 0.3	< 0.2 J	< 10	< 0.3
Chloroethane	5		< 10	< 10 J	< 10	< 10 J
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10	< 10 J	< 10 J	< 10 J
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	1 J	< 10
1,1-Dichloroethane	5		< 10	< 10	< 10	< 10
1,2-Dichloroethene (total)	5		< 10	< 10	< 10	< 10
Chloroform	7		< 10	< 10	< 10	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10 J	< 10
2-Butanone	50		< 10	< 10	< 10	< 10
1,1,1-Trichloroethane	5		< 10	< 10	< 10	< 10
Carbon tetrachloride	5		< 10	< 10	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Trichloroethene	5		< 10	< 10	1 J	< 10
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	0.7 J	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10 J	< 10 J	< 10
2-Hexanone	50		< 10	< 10 J	< 10 J	< 10 J
Tetrachloroethene	5		< 10	< 10	0.8 J	< 10
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10 J	< 10
Toluene	5		< 10	< 10	3 J	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	0.5 J	< 10
Styrene	5		< 10	< 10	0.2 J	< 10
Xylene (total)	5		< 10	< 10	1 J	< 10
Total VOCs			0	0	8.2	0

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
*	Additional sampling round.
	Value exceeds associated Standard, Criteria, and Guidance value.

Table 9. Concentrations of Volatile Organic Compounds Detected in Shallow Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-18S GM-18S 3/15/00	GM-18S GM-18S 6/27/00	GM-18S GM-18S 9/25/00	GM-21S GM-21S 05/14/97
Chloromethane	5		< 10	< 10	< 10 J	< 10
Bromomethane	5		< 10	< 10	< 10	< 10
Vinyl Choride	2		< 1 J	< 0.3	< 0.2 J	< 10
Chloroethane	5		< 10	< 10 J	< 10 J	< 10
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10	< 10	< 10 J	< 10 J
Carbon disulfide	50		< 10	< 10 J	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	< 10	< 10
1,1-Dichloroethane	5		< 10	< 10	< 10	< 10
1,2-Dichloroethene (total)	5		< 10	< 10	< 10	< 10
Chloroform	7		< 10	< 10	< 10	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10	< 10 J
2-Butanone	50		< 10	< 10	< 10	< 10
1,1,1-Trichloroethane	5		< 10	< 10	< 10 J	< 10
Carbon tetrachloride	5		< 10	< 10	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	R	< 10	< 10
Trichloroethene	5		**7 J**	**10**	**6 J**	< 10
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10 J	< 10 J
2-Hexanone	50		< 10	< 10	< 10 J	< 10 J
Tetrachloroethene	5		< 10	< 10	**0.2 J**	< 10
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10 J	< 10 J
Toluene	5		< 10	< 10	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	< 10	< 10	< 10
Total VOCs			**7**	**10**	**6.2**	0

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
*	Additional sampling round.
	Value exceeds associated Standard, Criteria, and Guidance value.

Table 9. Concentrations of Volatile Organic Compounds Detected in Shallow Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-21S MW-21S 12/1/99	GM-21S GM-21S 3/15/00	GM-21S GM-21S 6/26/00	GM-21S GM-21S 9/25/00
Chloromethane	5		< 5	< 10	< 10	< 10 J
Bromomethane	5		< 5	< 10	< 10	< 10
Vinyl Choride	2		< 2	< 1	< 0.3	< 0.2 J
Chloroethane	5		< 5	< 10	< 10	< 10 J
Methylene chloride	5		< 5	< 10	< 10	< 10
Acetone	50		< 10	< 10 J	< 10 J	**3** J
Carbon disulfide	50		< 10	< 10	< 10 J	< 10
1,1-Dichloroethene	5		< 5	< 10	< 10	< 10
1,1-Dichloroethane	5		< 5	< 10	< 10	< 10
1,2-Dichloroethene (total)	5		< 5	< 10	< 10	< 10
Chloroform	7		< 7	< 10	< 10	< 10
1,2-Dichloroethane	5		< 5	< 10	< 10	< 10
2-Butanone	50		**5** J	< 10 J	< 10	< 10 J
1,1,1-Trichloroethane	5		< 5	< 10	< 10	< 10
Carbon tetrachloride	5		< 5	< 10	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 5	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 5	< 10	R	< 10
Trichloroethene	5		< 5	< 10	**3** J	< 10
Dibromochloromethane	5		< 5	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 5	< 10	< 10	< 10
Benzene	0.7		< 0.7	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 5	< 10	< 10	< 10
Bromoform	50		< 10	< 10 J	< 10	< 10
4-Methyl-2-pentanone	50		**1** J	< 10	< 10	< 10 J
2-Hexanone	50		**1** J	< 10	< 10	< 10 J
Tetrachloroethene	5		< 5	< 10	**2** J	< 10
1,1,2,2-Tetrachloroethane	5		< 5	< 10	< 10	< 10 J
Toluene	5		< 5	< 10	**0.6** J	< 10
Chlorobenzene	5		< 5	< 10	< 10	< 10
Ethylbenzene	5		< 5	< 10	< 10	< 10
Styrene	5		**0.2** J	< 10	< 10	< 10
Xylene (total)	5		**0.5** J	< 10	< 10	< 10
Total VOCs			**7.7**	0	**5.6**	**3**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
* Additional sampling round.
Value exceeds associated Standard, Criteria, and Guidance value.

Table 9. Concentrations of Volatile Organic Compounds Detected in Shallow Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-23S GM-23S 3/15/00	GM-23S GM-23S 10/2/00	MW-03R MW-3R 12/1/99	MW-03R MW-3R 3/13/00
Chloromethane	5		< 10 J	< 10 J	< 5	< 10
Bromomethane	5		< 10	< 10	< 5	< 10
Vinyl Choride	2		< 1	< 0.2 J	< 2	< 1
Chloroethane	5		< 10	< 10 J	< 5	< 10
Methylene chloride	5		< 10	< 10	< 5	< 10
Acetone	50		< 10	< 10 J	< 10	< 10 J
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	< 5	< 10
1,1-Dichloroethane	5		< 10	< 10	< 5	< 10
1,2-Dichloroethene (total)	5		< 10	< 10	2 J	< 10
Chloroform	7		< 10	< 10	< 7	< 10
1,2-Dichloroethane	5		< 10	< 10	< 5	< 10
2-Butanone	50		< 10 J	0.8 J	< 10	< 10
1,1,1-Trichloroethane	5		< 10	< 10	< 5	< 10
Carbon tetrachloride	5		< 10	< 10	< 5	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 5	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 5	< 10 J
Trichloroethene	5		< 10	< 10	11	6 J
Dibromochloromethane	5		< 10	< 10	< 5	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 5	< 10
Benzene	0.7		< 10	< 10	< 0.7	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 5	< 10 J
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10 J	< 10	< 10
2-Hexanone	50		< 10	< 10	< 10	< 10
Tetrachloroethene	5		< 10	< 10 J	1 J	< 10
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 5	< 10
Toluene	5		< 10	< 10	< 5	< 10
Chlorobenzene	5		< 10	< 10	< 5	< 10
Ethylbenzene	5		< 10	< 10	< 5	< 10
Styrene	5		< 10	< 10	< 5	< 10
Xylene (total)	5		< 10	< 10	< 5	< 10
Total VOCs			0	0.8	14	6

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
* Additional sampling round.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 9. Concentrations of Volatile Organic Compounds Detected in Shallow Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	MW-03R	MW-03R
		SAMPLE ID:	MW-3R	MW-3R
		DATE:	7/31/00	9/26/00
Chloromethane	5		< 10	< 10 J
Bromomethane	5		< 10	< 10
Vinyl Choride	2		R	< 0.2 J
Chloroethane	5		< 10	< 10 J
Methylene chloride	5		R	< 10
Acetone	50		< 10	< 10 J
Carbon disulfide	50		< 10	< 10
1,1-Dichloroethene	5		R	< 10
1,1-Dichloroethane	5		< 10	< 10
1,2-Dichloroethene (total)	5		**2 J**	**0.9 J**
Chloroform	7		< 10	< 10
1,2-Dichloroethane	5		< 10	< 10
2-Butanone	50		< 10	< 10
1,1,1-Trichloroethane	5		< 10	< 10
Carbon tetrachloride	5		< 10	< 10
Bromodichloromethane	50		< 10	< 10
1,2-Dichloropropane	5		< 10	< 10
cis-1,3-Dichloropropene	5		R	< 10
Trichloroethene	5		**12**	**6 J**
Dibromochloromethane	5		< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10
Benzene	0.7		R	< 10
trans-1,3-Dichloropropene	5		< 10	< 10
Bromoform	50		< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10
2-Hexanone	50		< 10	< 10
Tetrachloroethene	5		**1 J**	**0.5 J**
1,1,2,2-Tetrachloroethane	5		**0.8 J**	< 10
Toluene	5		**0.3 J**	< 10
Chlorobenzene	5		< 10	< 10
Ethylbenzene	5		< 10	< 10
Styrene	5		< 10	< 10
Xylene (total)	5		< 10	< 10
Total VOCs			**16.1**	**7.4**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
* Additional sampling round.
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 10. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-10I GM-10I 12/18/98*		GM-10I MW-10I 9/26/00		GM-15I GM-15I 05/14/97		GM-15I GM-15I 12/7/99	
Chloromethane	5		< 10		< 10	J	< 10		< 10	
Bromomethane	5		< 10		< 10		< 10		< 10	
Vinyl Choride	2		< 10		< 0.2	J	< 10		< 0.3	
Chloroethane	5		< 10		< 10	J	< 10		< 10	
Methylene chloride	5		1	JB	< 10		< 10		< 10	
Acetone	50		3	JB	< 10	J	< 10		< 10	
Carbon disulfide	50		< 10		< 10		< 10		< 10	
1,1-Dichloroethene	5		< 10		< 10		< 10		< 10	
1,1-Dichloroethane	5		< 10		< 10		< 10		0.5	J
1,2-Dichloroethene (total)	5		< 10		< 10		< 10		2	J
Chloroform	7		< 10		< 10		< 10		< 10	
1,2-Dichloroethane	5		< 10		< 10		< 10	J	< 10	
2-Butanone	50		< 10		< 10		< 10		< 10	
1,1,1-Trichloroethane	5		< 10		0.7	J	< 10		< 10	
Carbon tetrachloride	5		< 10		< 10		< 10		< 10	
Bromodichloromethane	50		< 10		< 10		< 10		< 10	
1,2-Dichloropropane	5		< 10		< 10		< 10		< 10	
cis-1,3-Dichloropropene	5		< 10		< 10		< 10		< 10	
Trichloroethene	5		4	J	0.8	J	< 10		< 10	
Dibromochloromethane	5		< 10		< 10		< 10		< 10	
1,1,2-Trichloroethane	5		< 10		< 10		< 10		< 10	
Benzene	0.7		< 10		< 10		< 10		< 10	
trans-1,3-Dichloropropene	5		< 10		< 10		< 10		< 10	
Bromoform	50		< 10		< 10		< 10		< 10	
4-Methyl-2-pentanone	50		< 10		< 10		< 10	J	< 10	
2-Hexanone	50		< 10		< 10		< 10	J	< 10	
Tetrachloroethene	5		< 10		0.6	J	< 10		< 10	
1,1,2,2-Tetrachloroethane	5		< 10		< 10		< 10	J	< 10	
Toluene	5		< 10		< 10		< 10		< 10	
Chlorobenzene	5		< 10		< 10		< 10		< 10	
Ethylbenzene	5		< 10		< 10		< 10		< 10	
Styrene	5		< 10		< 10		< 10		< 10	
Xylene (total)	5		< 10		< 10		< 10		< 10	
Total VOCs			8		2.1		0		2.5	

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
B	Constituent detected in associated blank sample.
*	Additional sampling round.
**	Replicate Sample.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
	Value exceeds associated Standard, Criteria, and Guidance value.

Table 10. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, 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 3/23/00	GM-15I GM-15I 7/11/00	GM-15I GM-15I 9/19/00	GM-16I GM-16I 12/7/99
Chloromethane	5		< 10	< 10	< 10	< 10
Bromomethane	5		< 10 J	< 10 J	< 10	< 10
Vinyl Choride	2		< 1	< 0.3	< 0.3	< 0.3
Chloroethane	5		< 10	< 10	< 10 J	< 10
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10 J	< 10	< 10 J	< 10
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	< 10	< 10
1,1-Dichloroethane	5		< 10	< 10	< 10	**0.3 J**
1,2-Dichloroethene (total)	5		**1 J**	< 10	< 10	**0.7 J**
Chloroform	7		< 10	< 10	**0.2 J**	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10	< 10
2-Butanone	50		< 10	< 10	< 10 J	< 10
1,1,1-Trichloroethane	5		< 10	< 10	< 10	< 10
Carbon tetrachloride	5		< 10	< 10	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Trichloroethene	5		< 10	< 10	< 10	**24**
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10 J	< 10
2-Hexanone	50		< 10	< 10	< 10 J	< 10
Tetrachloroethene	5		< 10	**3 J**	< 10	**2 J**
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10	< 10
Toluene	5		< 10	< 10	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	< 10	< 10	< 10
Total VOCs			**1**	**3**	**0.2**	**27**

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
B	Constituent detected in associated blank sample.
*	Additional sampling round.
**	Replicate Sample.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
	Value exceeds associated Standard, Criteria, and Guidance value.

Table 10. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-16I GM-16I 3/15/00	GM-16I GM-16I 7/17/00	GM-16I GM-16I 9/19/00	GM-17I GM-17I 9/29/00
Chloromethane	5		< 10 J	< 10	< 10	< 10 J
Bromomethane	5		< 10	< 10 J	< 10	< 10 J
Vinyl Choride	2		< 1	< 0.3	< 0.3	< 0.2 J
Chloroethane	5		< 10	< 10	< 10 J	< 10 J
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10	< 10 J	< 10 J	2 J
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	0.9 J	< 10
1,1-Dichloroethane	5		< 10	< 10	0.4 J	< 10
1,2-Dichloroethene (total)	5		< 10	< 10	2 J	< 10
Chloroform	7		< 10	< 10	< 10	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10	< 10
2-Butanone	50		< 10 J	< 10	< 10 J	< 10
1,1,1-Trichloroethane	5		< 10	< 10	0.9 J	< 10
Carbon tetrachloride	5		< 10	< 10 J	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Trichloroethene	5		28	22 J	19	< 10
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	0.2 J	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10 J	< 10 J
2-Hexanone	50		< 10	< 10	< 10 J	< 10 J
Tetrachloroethene	5		1 J	2 J	4 J	< 10
1,1,2,2-Tetrachloroethane	5		< 10	R	< 10	< 10
Toluene	5		< 10	< 10	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	< 10	< 10	< 10
Total VOCs			29	24	27.4	2

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
B	Constituent detected in associated blank sample.
*	Additional sampling round
**	Replicate Sample.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
	Value exceeds associated Standard, Criteria, and Guidance value.

Table 10. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, 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 7/17/00	GM-18I GM-18I 9/21/00	GM-20I GM-20I 5/14/97	GM-20I GM-20I 12/6/99
Chloromethane	5		< 10	< 10	< 10	< 5
Bromomethane	5		< 10	< 10	< 10	< 5
Vinyl Choride	2		< 0.3	< 0.3	< 10	< 2
Chloroethane	5		< 10	< 10 J	< 10	< 5
Methylene chloride	5		< 10	< 10	< 10	< 5
Acetone	50		< 10	< 10 J	< 10	< 15
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	< 10	< 5
1,1-Dichloroethane	5		< 10	< 10	< 10	< 5
1,2-Dichloroethene (total)	5		< 10	< 10	< 10	< 5
Chloroform	7		< 10	< 10	< 10	< 7
1,2-Dichloroethane	5		< 10	< 10	< 10	< 5
2-Butanone	50		< 10	< 10	< 10	< 10
1,1,1-Trichloroethane	5		< 10	< 10 J	< 10	< 5
Carbon tetrachloride	5		< 10	< 10	< 10	< 5
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 5
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 5
Trichloroethene	5		< 10	**0.5 J**	**1**	**1 J**
Dibromochloromethane	5		< 10	< 10	< 10	< 5
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 5
Benzene	0.7		< 10	< 10	< 10	< 0.7
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 5
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10 J	< 10	< 10
2-Hexanone	50		< 10	< 10 J	< 10	< 10
Tetrachloroethene	5		< 10	< 10	< 10	< 5
1,1,2,2-Tetrachloroethane	5		R	< 10	< 10	< 5
Toluene	5		< 10	< 10	< 10	< 5
Chlorobenzene	5		< 10	< 10	< 10	< 5
Ethylbenzene	5		< 10	< 10	< 10	< 5
Styrene	5		< 10	< 10	< 10	< 5
Xylene (total)	5		< 10	< 10	< 10	< 5
Total VOCs			**0**	**0.5**	**1**	**1**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
B Constituent detected in associated blank sample.
* Additional sampling round.
** Replicate Sample.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
Value exceeds associated Standard, Criteria, and Guidance value.

Table 10. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells During the Baseline (May 1997), Last Quarter 1999 and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-20I GM-20I 3/23/00	GM-20I GM-20I 7/11/00	GM-20I GM-20I 9/18/00	GM-21I GM-21I 05/14/97
Chloromethane	5		< 10	< 10	< 10	< 10
Bromomethane	5		< 10 J	< 10 J	< 10	< 10
Vinyl Choride	2		< 1	< 0.3	< 0.3	< 10
Chloroethane	5		< 10	< 10	< 10 J	< 10
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10 J	< 10	< 10 J	< 10 J
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	< 10	< 10
1,1-Dichloroethane	5		< 10	< 10	< 10	< 10
1,2-Dichloroethene (total)	5		< 10	< 10	< 10	< 10
Chloroform	7		< 10	< 10	< 10	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10	< 10 J
2-Butanone	50		< 10	< 10	< 10	< 10
1,1,1-Trichloroethane	5		< 10	< 10	< 10 J	< 10
Carbon tetrachloride	5		< 10	< 10	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Trichloroethene	5		< 10	< 10	0.8 J	< 10
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10 J	< 10 J
2-Hexanone	50		< 10	< 10	< 10 J	< 10 J
Tetrachloroethene	5		6 J	< 10	< 10	< 10
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10	< 10 J
Toluene	5		< 10	< 10	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	< 10	< 10	< 10
Total VOCs			6	0	0.8	0

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
B	Constituent detected in associated blank sample.
*	Additional sampling round.
**	Replicate Sample.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
	Value exceeds associated Standard, Criteria, and Guidance value.

Table 10. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells During the Baseline (May 1997), Last Quarter 1999 and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-21I GM-21I 12/3/99	GM-21I GM-21I 3/17/00	GM-21I GM-21I 7/10/00	GM-21I GM-21I 9/18/00
Chloromethane	5		< 5	< 10 J	< 10	< 10
Bromomethane	5		< 5	< 10	< 10 J	< 10
Vinyl Choride	2		< 2	< 1	< 0.3	< 0.3
Chloroethane	5		< 5	< 10	< 10	< 10 J
Methylene chloride	5		< 5	< 10	< 10	< 10
Acetone	50		< 10	< 10	< 10	< 10 J
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 5	< 10	< 10	< 10
1,1-Dichloroethane	5		< 5	< 10	< 10	< 10
1,2-Dichloroethene (total)	5		< 5	< 10	< 10	< 10
Chloroform	7		< 7	< 10	< 10	< 10
1,2-Dichloroethane	5		< 5	< 10	< 10	< 10
2-Butanone	50		1 J	< 10 J	< 10	< 10
1,1,1-Trichloroethane	5		< 5	< 10	< 10	< 10 J
Carbon tetrachloride	5		< 5	< 10	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 5	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 5	< 10	< 10	< 10
Trichloroethene	5		< 5	< 10	< 10	< 10
Dibromochloromethane	5		< 5	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 5	< 10	< 10	< 10
Benzene	0.7		< 0.7	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 5	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10	< 10 J
2-Hexanone	50		< 10	< 10	< 10	< 10 J
Tetrachloroethene	5		< 5	< 10	< 10	< 10
1,1,2,2-Tetrachloroethane	5		< 5	< 10	< 10	< 10
Toluene	5		< 5	< 10	< 10	< 10
Chlorobenzene	5		< 5	< 10	< 10	< 10
Ethylbenzene	5		< 5	< 10	< 10	< 10
Styrene	5		< 5	< 10	< 10	< 10
Xylene (total)	5		< 5	< 10	< 10	< 10
Total VOCs			1	0	0	0

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
B	Constituent detected in associated blank sample.
*	Additional sampling round.
**	Replicate Sample.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
	Value exceeds associated Standard, Criteria, and Guidance value.

Table 10. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-23I GM-23I 3/15/00	GM-23I GM-23I 10/2/00	GM-23I** REP-2 10/2/00	GM-74I GM74I 10/5/00
Chloromethane	5		< 10 J	< 10 J	< 10 J	< 10 J
Bromomethane	5		< 10	< 10	< 10	< 10
Vinyl Choride	2		< 1	< 0.2 J	< 0.2 J	< 0.2 J
Chloroethane	5		< 10	< 10 J	< 10 J	< 10 J
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10	< 10 J	< 10 J	< 10 J
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	< 10	< 10
1,1-Dichloroethane	5		< 10	< 10	< 10	< 10
1,2-Dichloroethene (total)	5		< 10	**0.8 J**	**1 J**	< 10
Chloroform	7		< 10	< 10	< 10	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10	< 10
2-Butanone	50		< 10 J	< 10 J	< 10	< 10 J
1,1,1-Trichloroethane	5		< 10	**0.6 J**	**0.6 J**	< 10
Carbon tetrachloride	5		< 10	< 10	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Trichloroethene	5		**7 J**	**7 J**	**6 J**	< 10
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10 J	< 10 J	< 10 J
2-Hexanone	50		< 10	< 10 J	< 10	< 10 J
Tetrachloroethene	5		**3 J**	**3 J**	**3 J**	< 10 J
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10	< 10
Toluene	5		< 10	< 10	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	< 10	< 10	< 10
Total VOCs			**10**	**11.4**	**10.6**	**0**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
B Constituent detected in associated blank sample.
* Additional sampling round.
** Replicate Sample.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
Value exceeds associated Standard, Criteria, and Guidance value.

Table 10. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	HN-24I HN24I 12/2/99	HN-24I HN-24I 3/22/00	HN-24I HW24I 6/28/00	HN-24I HW-24I 9/27/00
Chloromethane	5		< 20	< 10	< 10	< 10
Bromomethane	5		< 20	< 10	< 10	< 10
Vinyl Choride	2		< 0.7	< 1	< 0.3	< 0.2
Chloroethane	5		< 20	< 10	< 10 J	< 10
Methylene chloride	5		< 20	< 10	< 10	< 10
Acetone	50		< 20	< 10	< 10	< 10
Carbon disulfide	50		< 20	< 10	< 10 J	< 10
1,1-Dichloroethene	5		**22**	**21**	**16**	**14**
1,1-Dichloroethane	5		**22**	**17**	**11**	**11**
1,2-Dichloroethene (total)	5		**50**	**38**	**24**	**20**
Chloroform	7		**0.9 J**	< 10	< 10	**0.5 J**
1,2-Dichloroethane	5		< 20	< 10	< 10	< 10
2-Butanone	50		< 20	< 10	< 10	< 10 J
1,1,1-Trichloroethane	5		**21**	**19 J**	**15**	**13**
Carbon tetrachloride	5		< 20	< 10 J	< 10	< 10
Bromodichloromethane	50		< 20	< 10	< 10	< 10
1,2-Dichloropropane	5		< 20	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 20	< 10	R	< 10
Trichloroethene	5		**230**	**270 D**	**180**	**180**
Dibromochloromethane	5		< 20	< 10	< 10	< 10
1,1,2-Trichloroethane	5		**1 J**	< 10	< 10	< 10
Benzene	0.7		< 20	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 20	< 10	< 10	< 10
Bromoform	50		< 20	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 20	< 10	< 10	< 10
2-Hexanone	50		< 20	< 10	< 10	< 10
Tetrachloroethene	5		**16 J**	**14**	**9 J**	**8 J**
1,1,2,2-Tetrachloroethane	5		< 20	< 10	< 10	< 10
Toluene	5		< 20	< 10	< 10	< 10
Chlorobenzene	5		< 20	< 10	< 10	< 10
Ethylbenzene	5		< 20	< 10	< 10	< 10
Styrene	5		< 20	< 10	< 10	< 10
Xylene (total)	5		< 20	< 10	< 10	< 10
Total VOCs			**362.9**	**379**	**255**	**246.5**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
B Constituent detected in associated blank sample.
* Additional sampling round.
** Replicate Sample.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
Value exceeds associated Standard, Criteria, and Guidance value.

Table 10. Concentrations of Volatile Organic Compounds Detected in Intermediate Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	HN-29I HW29I 6/28/00	HN-29I HW-29I 9/27/00	MW-52S MW-52S 3/16/00	MW-52S MW-52S 9/25/00
Chloromethane	5		< 10	< 10 J	< 10	< 100 J
Bromomethane	5		< 10	< 10	< 10	< 100 J
Vinyl Choride	2		< 0.3	< 0.2 J	**3100 DJ**	**1900 J**
Chloroethane	5		< 10 J	< 10 J	**4 J**	< 100 J
Methylene chloride	5		< 10	< 10	< 10	< 100
Acetone	50		< 10	< 10 J	< 10	**300 J**
Carbon disulfide	50		< 10 J	< 10	< 10	< 100
1,1-Dichloroethene	5		< 10	< 10	< 10	< 100
1,1-Dichloroethane	5		< 10	**0.8 J**	< 10	< 100
1,2-Dichloroethene (total)	5		< 10	< 10	**22**	**7 J**
Chloroform	7		< 10	< 10	< 10	< 100
1,2-Dichloroethane	5		< 10	< 10	< 10	< 100
2-Butanone	50		< 10	< 10 J	< 10	< 100
1,1,1-Trichloroethane	5		< 10	**0.7 J**	< 10	< 100
Carbon tetrachloride	5		< 10	< 10	< 10	< 100
Bromodichloromethane	50		< 10	< 10	< 10	< 100
1,2-Dichloropropane	5		< 10	< 10	< 10	< 100
cis-1,3-Dichloropropene	5		R	< 10	< 10	< 100
Trichloroethene	5		**2 J**	**2 J**	**17**	**6 J**
Dibromochloromethane	5		< 10	< 10	< 10	< 100
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 100
Benzene	0.7		< 10	< 10	< 10	< 100
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 100
Bromoform	50		< 10	< 10 J	< 10	< 100
4-Methyl-2-pentanone	50		< 10	< 10 J	< 10	< 100
2-Hexanone	50		< 10	< 10 J	< 10	< 100 J
Tetrachloroethene	5		< 10	< 10	**20**	**12 J**
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10	< 100
Toluene	5		< 10	< 10	**1 J**	< 100
Chlorobenzene	5		< 10	< 10	< 10	< 100
Ethylbenzene	5		< 10	< 10	< 10	< 100
Styrene	5		< 10	< 10	< 10	< 100
Xylene (total)	5		< 10	< 10	< 10	< 100
Total VOCs			**2**	**3.5**	**3,164**	**2,225**

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
B	Constituent detected in associated blank sample.
*	Additional sampling round.
**	Replicate Sample.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
	Value exceeds associated Standard, Criteria, and Guidance value.

Table 11. Concentrations of Volatile Organic Compounds Detected in Deep Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	10627 N-10627 12/1/99	10627 N-10627 3/22/00	10627 N-10627 7/5/00	10627 N10627 10/4/00
Chloromethane	5		< 5	< 10	< 10	< 10 J
Bromomethane	5		< 5	< 10	< 10	< 10
Vinyl Choride	2		< 2	< 1	< 0.3	< 0.2 J
Chloroethane	5		< 5	< 10	< 10	< 10 J
Methylene chloride	5		< 5	< 10	< 10	< 10
Acetone	50		< 10	< 10	**5 J**	**9 J**
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 5	< 10	< 10	< 10
1,1-Dichloroethane	5		< 5	< 10	< 10	< 10
1,2-Dichloroethene (total)	5		1 J	< 10	< 10	< 10
Chloroform	7		< 7	< 10	< 10	< 10
1,2-Dichloroethane	5		< 5	< 10	< 10	< 10
2-Butanone	50		< 10	< 10	< 10	< 10 J
1,1,1-Trichloroethane	5		< 5	< 10 J	< 10	< 10
Carbon tetrachloride	5		< 5	< 10 J	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 5	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 5	< 10	< 10	< 10
Trichloroethene	5		**24**	**2 J**	**7 J**	**0.6 J**
Dibromochloromethane	5		< 5	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 5	< 10	< 10	< 10
Benzene	0.7		< 0.7	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 5	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10	< 10 J
2-Hexanone	50		< 10	< 10	< 10	< 10 J
Tetrachloroethene	5		**0.9 J**	< 10	< 10	< 10 J
1,1,2,2-Tetrachloroethane	5		< 5	< 10	< 10	< 10
Toluene	5		< 5	< 10	< 10	< 10
Chlorobenzene	5		< 5	< 10	< 10	< 10
Ethylbenzene	5		< 5	< 10	< 10	< 10
Styrene	5		< 5	< 10	< 10	< 10
Xylene (total)	5		**0.7 J**	< 10	< 10	< 10
Total VOCs			**26.6**	**2**	**12**	**9.6**

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ]	Value exceeds associated Standard, Criteria, and Guidance value.

For RCL VOC-GM

Table 11. Concentrations of Volatile Organic Compounds Detected in Deep Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-13D GM-13D 12/7/99	GM-13D GM-13D 3/23/00	GM-13D GM-13D 7/11/00	GM-13D GM-13D 9/27/00
Chloromethane	5		< 100	< 10	< 100	< 100 J
Bromomethane	5		< 100	< 10 J	< 100 J	< 100
Vinyl Choride	2		< 3	< 1	< 3	< 2 J
Chloroethane	5		< 100	< 10	< 100	< 100 J
Methylene chloride	5		< 100	< 10	< 100	< 100
Acetone	50		< 100	< 10 J	< 100 J	< 100 J
Carbon disulfide	50		< 100	< 10	< 100	< 100
1,1-Dichloroethene	5		94 J	120	140	92 J
1,1-Dichloroethane	5		46 J	58	57 J	58 J
1,2-Dichloroethene (total)	5		220	290	260	230
Chloroform	7		2 J	2 J	< 100	< 100
1,2-Dichloroethane	5		< 100	1 J	< 100	< 100
2-Butanone	50		< 100 J	< 10	< 100	< 100 J
1,1,1-Trichloroethane	5		87 J	110	130	99 J
Carbon tetrachloride	5		< 100	< 10	< 100 J	< 100
Bromodichloromethane	50		< 100	< 10	< 100	< 100
1,2-Dichloropropane	5		< 100	< 10	< 100	< 100
cis-1,3-Dichloropropene	5		< 100	< 10	< 100	< 100
Trichloroethene	5		400	520 D	460	410
Dibromochloromethane	5		< 100	< 10	< 100	< 100
1,1,2-Trichloroethane	5		< 100	< 10	< 100	< 100
Benzene	0.7		1 J	< 10	< 100	< 100
trans-1,3-Dichloropropene	5		< 100	< 10	< 100	< 100
Bromoform	50		< 100	< 10	< 100	< 100 J
4-Methyl-2-pentanone	50		< 100	< 10	< 100	< 100 J
2-Hexanone	50		< 100	< 10	< 100	< 100 J
Tetrachloroethene	5		830	1300 D	1100	910
1,1,2,2-Tetrachloroethane	5		< 100	< 10	< 100	< 100
Toluene	5		2 J	< 10	< 100	< 100
Chlorobenzene	5		< 100	< 10	< 100	< 100
Ethylbenzene	5		< 100	< 10	< 100	< 100
Styrene	5		< 100	< 10	< 100	< 100
Xylene (total)	5		< 100	< 10	< 100	< 100
Total VOCs			1,682	2,401	2,147	1,799

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents refererenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ]	Value exceeds associated Standard, Criteria, and Guidance value.

For RCL VOC-GM

Table 11. Concentrations of Volatile Organic Compounds Detected in Deep Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, 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 9/28/00	GM-17D GM-17D 9/29/00	GM-20D GM-20D 5/14/97	GM-20D GM-20D 12/6/99
Chloromethane	5		< 10 J	< 10 J	< 10	< 5
Bromomethane	5		< 10	< 10 J	< 10	< 5
Vinyl Chorde	2		< 0.2 J	< 0.2 J	< 10	< 2
Chloroethane	5		< 10 J	< 10 J	< 10	< 5
Methylene chloride	5		< 10	< 10	< 10	< 5
Acetone	50		< 10 J	< 10 J	< 10 J	< 10
Carbon disulfide	50		< 10	< 10	< 10	**0.7 J**
1,1-Dichloroethene	5		**2 J**	< 10	< 10	< 5
1,1-Dichloroethane	5		**4 J**	< 10	< 10	< 5
1,2-Dichloroethene (total)	5		**1 J**	< 10	< 10	< 5
Chloroform	7		**0.6 J**	< 10	< 10	< 7
1,2-Dichloroethane	5		**0.8 J**	< 10	< 10 J	< 5
2-Butanone	50		< 10 J	< 10	< 10	< 10
1,1,1-Trichloroethane	5		**2 J**	< 10	< 10	< 5
Carbon tetrachloride	5		< 10	< 10	< 10	< 5
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 5
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 5
Trichloroethene	5		**9 J**	< 10	< 10	< 5
Dibromochloromethane	5		< 10	< 10	< 10	< 5
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 5
Benzene	0.7		< 10	< 10	< 10	< 0.7
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 5
Bromoform	50		< 10 J	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10 J	< 10 J	< 10 J	< 10
2-Hexanone	50		< 10 J	< 10 J	< 10 J	< 10
Tetrachloroethene	5		**5 J**	< 10	< 10	< 5
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10 J	< 5
Toluene	5		< 10	< 10	< 10	< 5
Chlorobenzene	5		< 10	< 10	< 10	< 5
Ethylbenzene	5		< 10	< 10	< 10	< 5
Styrene	5		< 10	< 10	< 10	< 5
Xylene (total)	5		< 10	< 10	< 10	< 5
Total VOCs			**24.4**	0	0	**0.7**

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
	Value exceeds associated Standard, Criteria, and Guidance value.

For RCL VOC-GM

Table 11. Concentrations of Volatile Organic Compounds Detected in Deep Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, 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 3/17/00	GM-20D GM-20D 7/11/00	GM-20D GM-20D 9/18/00	GM-34D GM-34D 11/30/99
Chloromethane	5		< 10 J	< 10	< 10	< 5 J
Bromomethane	5		< 10	< 10 J	< 10	< 5
Vinyl Choride	2		< 1	< 0.3	< 0.3	< 2 J
Chloroethane	5		< 10	< 10	< 10 J	< 5
Methylene chloride	5		< 10	< 10	< 10	< 5 J
Acetone	50		< 10	< 10	< 10 J	< 10 J
Carbon disulfide	50		< 10	< 10	< 10	< 10 J
1,1-Dichloroethene	5		< 10	< 10	< 10	**5**
1,1-Dichloroethane	5		< 10	< 10	< 10	**4 J**
1,2-Dichloroethene (total)	5		< 10	< 10	< 10	**3 J**
Chloroform	7		< 10	< 10	< 10	**0.8 J**
1,2-Dichloroethane	5		< 10	< 10	< 10	< 5
2-Butanone	50		< 10 J	< 10	< 10	< 10
1,1,1-Trichloroethane	5		< 10	< 10	< 10 J	**0.6 J**
Carbon tetrachloride	5		< 10	< 10	< 10	< 5
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 5
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 5
Trichloroethene	5		< 10	< 10	< 10	**72**
Dibromochloromethane	5		< 10	< 10	< 10	< 5
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 5
Benzene	0.7		< 10	< 10	< 10	< **0.7**
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 5
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10 J	< 10
2-Hexanone	50		< 10	< 10	< 10 J	< 10
Tetrachloroethene	5		< 10	< 10	< 10	**3 J**
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10	< 5
Toluene	5		< 10	< 10	< 10	< 5
Chlorobenzene	5		< 10	< 10	< 10	< 5
Ethylbenzene	5		< 10	< 10	< 10	**0.3 J**
Styrene	5		< 10	< 10	< 10	< 5
Xylene (total)	5		< 10	< 10	< 10	**1 J**
Total VOCs			0	0	0	**89.7**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 11. Concentrations of Volatile Organic Compounds Detected in Deep Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-36D GM-36D 3/27/00	GM-36D GM-36D 7/14/00	GM-36D GM-36D 9/20/00	GM-37D GM-37D 05/15/97
Chloromethane	5		< 10	< 10	< 10	< 10
Bromomethane	5		< 10	< 10 J	< 10	< 10
Vinyl Chloride	2		< 1	< 0.3	< 0.3	< 10
Chloroethane	5		< 10	< 10	< 10 J	< 10
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10	< 10 J	< 10 J	< 10
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	< 10	**4 J**
1,1-Dichloroethane	5		< 10	< 10	< 10	**10**
1,2-Dichloroethene (total)	5		< 10	< 10	**0.5 J**	< 10
Chloroform	7		< 10	< 10	< 10	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10	< 10 J
2-Butanone	50		< 10	< 10	< 10 J	< 10
1,1,1-Trichloroethane	5		< 10 J	< 10	< 10	**6 J**
Carbon tetrachloride	5		< 10 J	< 10 J	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Trichloroethene	5		**54**	**24 J**	**24**	**6 J**
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10 J	< 10 J
2-Hexanone	50		< 10	< 10	< 10 J	< 10 J
Tetrachloroethene	5		**2 J**	< 10	**1 J**	**0.6 J**
1,1,2,2-Tetrachloroethane	5		< 10	R	< 10	< 10 J
Toluene	5		< 10	< 10	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	< 10	< 10	< 10
Total VOCs			**56**	**24**	**25.5**	**26.6**

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ]	Value exceeds associated Standard, Criteria, and Guidance value.

For RCL VOC-GM

Table 11. Concentrations of Volatile Organic Compounds Detected in Deep Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, 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 1/6/00	GM-37D GM-37D 3/27/00	GM-37D GM-37D 7/13/00	GM-37D GM-37D 9/21/00
Chloromethane	5		< 10	< 10	< 10	< 10
Bromomethane	5		< 10	< 10	< 10 J	< 10
Vinyl Choride	2		< 0.3	< 1	< 0.3	< 0.3
Chloroethane	5		< 10	< 10	< 10	< 10 J
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10 J	< 10	< 10 J	< 10 J
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		**4 J**	**3 J**	**4 J**	**3 J**
1,1-Dichloroethane	5		**8 J**	**9 J**	**9 J**	**7 J**
1,2-Dichloroethene (total)	5		< 10	< 10	< 10	< 10
Chloroform	7		< 10	< 10	< 10	**0.9 J**
1,2-Dichloroethane	5		< 10	< 10	< 10	< 10
2-Butanone	50		< 10	< 10	< 10	< 10 J
1,1,1-Trichloroethane	5		**4 J**	**4 J**	**6 J**	**4 J**
Carbon tetrachloride	5		< 10	< 10 J	< 10 J	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Trichloroethene	5		**0.5 J**	< 10	< 10	**0.5 J**
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10	< 10 J
2-Hexanone	50		< 10	< 10	< 10	< 10 J
Tetrachloroethene	5		**1 J**	**1 J**	**2 J**	**1 J**
1,1,2,2-Tetrachloroethane	5		< 10	< 10	R	< 10
Toluene	5		< 10	< 10	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	< 10	< 10	< 10
Total VOCs			**17.5**	**17**	**21**	**16.4**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

For RCL VOC-GM

Table 11. Concentrations of Volatile Organic Compounds Detected in Deep Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-38D GM-38D 12/8/99	GM-38D GM-38D 3/28/00	GM-38D GM-38D 7/12/00	GM-38D GM-38D 9/22/00
Chloromethane	5		< 50	< 10	< 50	< 50 J
Bromomethane	5		< 50	< 10	< 50 J	< 50
Vinyl Choride	2		< 20	< 1	< 2	< 1 J
Chloroethane	5		< 50	< 10	< 50	< 50 J
Methylene chloride	5		< 50	< 10	< 50	< 50
Acetone	50		< 100	< 10	< 50	< 50 J
Carbon disulfide	50		< 100	< 10	< 50	R
1,1-Dichloroethene	5		< 50	**6 J**	< 50	**4 J**
1,1-Dichloroethane	5		**3 J**	**3 J**	< 50	< 50
1,2-Dichloroethene (total)	5		< 50	**2 J**	< 50	**2 J**
Chloroform	7		< 70	< 10	< 50	< 50
1,2-Dichloroethane	5		< 50	< 10	< 50	< 50
2-Butanone	50		< 100	< 10	< 50	< 50
1,1,1-Trichloroethane	5		**4 J**	**5 J**	< 50	**4 J**
Carbon tetrachloride	5		< 50	< 10 J	< 50	< 50
Bromodichloromethane	50		< 100	< 10	< 50	< 50
1,2-Dichloropropane	5		< 50	< 10	< 50	< 50
cis-1,3-Dichloropropene	5		< 50	< 10	< 50	< 50
Trichloroethene	5		**930**	**1200 D**	**660 J**	**720**
Dibromochloromethane	5		< 50	< 10	< 50	< 50
1,1,2-Trichloroethane	5		< 50	< 10	< 50	< 50
Benzene	0.7		< 7	< 10	< 50	< 50
trans-1,3-Dichloropropene	5		< 50	< 10	< 50	< 50
Bromoform	50		< 100	< 10	< 50	< 50
4-Methyl-2-pentanone	50		< 100	< 10	< 50	< 50
2-Hexanone	50		< 100	< 10	< 50	< 50
Tetrachloroethene	5		< 50	1 J	< 50	**2 J**
1,1,2,2-Tetrachloroethane	5		< 50	< 10	R	< 50
Toluene	5		3 J	< 10	< 50	R
Chlorobenzene	5		< 50	< 10	< 50	< 50
Ethylbenzene	5		< 50	< 10	< 50	R
Styrene	5		< 50	< 10	< 50	< 50
Xylene (total)	5		< 50	< 10	< 50	< 50
Total VOCs			**940**	**1,217**	**660**	**732**

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ]	Value exceeds associated Standard, Criteria, and Guidance value.

Table 11. Concentrations of Volatile Organic Compounds Detected in Deep Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-74D GM-74D 10/6/00	HN-29D HN29D 12/2/99	HN-29D HN-29D 3/22/00	HN-29D HN-29D 7/6/00
Chloromethane	5		< 10 J	< 10	< 10	< 10
Bromomethane	5		< 10	< 10	< 10	< 10
Vinyl Choride	2		< 0.2 J	< 0.3	< 1	< 0.3
Chloroethane	5		< 10 J	< 10	< 10	< 10
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10 J	< 10	< 10	< 10
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	< 10	< 10
1,1-Dichloroethane	5		< 10	**0.3 J**	< 10	< 10
1,2-Dichloroethene (total)	5		**1 J**	< 10	< 10	< 10
Chloroform	7		< 10	< 10	< 10	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10	< 10
2-Butanone	50		< 10 J	< 10	< 10	< 10
1,1,1-Trichloroethane	5		**0.4 J**	< 10	< 10 J	< 10
Carbon tetrachloride	5		< 10	< 10	< 10 J	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Trichloroethene	5		**64**	**1 J**	< 10	**0.9 J**
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10 J	< 10	< 10	< 10
2-Hexanone	50		< 10 J	< 10	< 10	< 10
Tetrachloroethene	5		**2 J**	< 10	< 10	< 10
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10	< 10
Toluene	5		< 10	< 10	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	< 10	< 10	< 10
Total VOCs			**67.4**	**1.3**	0	**0.9**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

For RCL VOC-GM

Table 11. Concentrations of Volatile Organic Compounds Detected in Deep Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL:	HN-29D	MW-52I	MW-52I	MW-52D
		SAMPLE ID:	HW-29D	MW-52I	MW-52I	MW-52D
		DATE:	9/27/00	3/16/00	9/25/00	3/16/00
Chloromethane	5		< 10	< 10	< 200 J	< 10
Bromomethane	5		< 10	< 10	< 200 J	< 10
Vinyl Choride	2		< 0.2	**3000 DJ**	**2000 J**	< 1
Chloroethane	5		< 10	< 10	< 200 J	< 10
Methylene chloride	5		< 10	< 10	< 200	< 10
Acetone	50		< 10	< 10	< 200 J	< 10
Carbon disulfide	50		< 10	< 10	< 200	< 10
1,1-Dichloroethene	5		< 10	< 10	< 200	< 10
1,1-Dichloroethane	5		< 10	< 10	< 200	**2 J**
1,2-Dichloroethene (total)	5		< 10	**43**	**39 J**	**6 J**
Chloroform	7		< 10	< 10	< 200	< 10
1,2-Dichloroethane	5		< 10	< 10	< 200	< 10
2-Butanone	50		< 10 J	< 10	< 200	< 10
1,1,1-Trichloroethane	5		< 10	< 10	< 200	< 10
Carbon tetrachloride	5		< 10	< 10	< 200	< 10
Bromodichloromethane	50		< 10	< 10	< 200	< 10
1,2-Dichloropropane	5		< 10	< 10	< 200	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 200	< 10
Trichloroethene	5		**1 J**	**47**	**40 J**	**31**
Dibromochloromethane	5		< 10	< 10	< 200	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 200	< 10
Benzene	0.7		< 10	< 10	< 200	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 200	< 10
Bromoform	50		< 10	< 10	< 200	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 200 J	< 10
2-Hexanone	50		< 10	< 10	< 200 J	< 10
Tetrachloroethene	5		< 10	**40**	**34 J**	**9 J**
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 200	< 10
Toluene	5		< 10	< 10	< 200	< 10
Chlorobenzene	5		< 10	< 10	< 200	< 10
Ethylbenzene	5		< 10	< 10	< 200	< 10
Styrene	5		< 10	< 10	< 200	< 10
Xylene (total)	5		**1 J**	< 10	< 200	< 10
Total VOCs			**2**	**3,130**	**2,113**	**48**

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
	Value exceeds associated Standard, Criteria, and Guidance value.

For RCL VOC-GM

Table 11. Concentrations of Volatile Organic Compounds Detected in Deep Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	MW-52D MW-52D 9/26/00	
Chloromethane	5		< 10	J
Bromomethane	5		< 10	
Vinyl Choride	2		< 0.2	J
Chloroethane	5		< 10	J
Methylene chloride	5		< 10	
Acetone	50		< 10	J
Carbon disulfide	50		< 10	
1,1-Dichloroethene	5		**0.6**	**J**
1,1-Dichloroethane	5		**2**	**J**
1,2-Dichloroethene (total)	5		**5**	**J**
Chloroform	7		< 10	
1,2-Dichloroethane	5		< 10	
2-Butanone	50		< 10	
1,1,1-Trichloroethane	5		**0.9**	**J**
Carbon tetrachloride	5		< 10	
Bromodichloromethane	50		< 10	
1,2-Dichloropropane	5		< 10	
cis-1,3-Dichloropropene	5		< 10	
Trichloroethene	5		**38**	
Dibromochloromethane	5		< 10	
1,1,2-Trichloroethane	5		< 10	
Benzene	0.7		< 10	
trans-1,3-Dichloropropene	5		< 10	
Bromoform	50		< 10	
4-Methyl-2-pentanone	50		< 10	
2-Hexanone	50		< 10	
Tetrachloroethene	5		**13**	
1,1,2,2-Tetrachloroethane	5		< 10	
Toluene	5		< 10	
Chlorobenzene	5		< 10	
Ethylbenzene	5		< 10	
Styrene	5		< 10	
Xylene (total)	5		< 10	
Total VOCs			**59.5**	

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
R	Unusable data
D	Detected at secondary dilution.
NYSDEC	New York State Department of Environmental Conservation.
(1)	Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ]	Value exceeds associated Standard, Criteria, and Guidance value.

For RCL VOC-GM

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, 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 10/2/00	GM-33D2 GM-33D2 05/15/97	GM-33D2 GM-33D-2 12/7/99	GM-33D2 GM-33D-2 3/28/00
Chloromethane	5		< 10 J	< 1000 J	< 100	< 10
Bromomethane	5		< 10	< 1000 J	< 100	< 10
Vinyl Choride	2		< 0.2 J	< 1000 J	< 3	< 1
Chloroethane	5		< 10 J	< 1000 J	< 100	< 10
Methylene chloride	5		< 10	< 1000 J	< 100	< 10
Acetone	50		< 10 J	< 1800 J	< 100	< 10
Carbon disulfide	50		< 10	< 1000 J	< 100	< 10
1,1-Dichloroethene	5		**0.9 J**	< 1000 J	< 100	< 10
1,1-Dichloroethane	5		< 10	< 1000 J	< 100	< 10
1,2-Dichloroethene (total)	5		**0.6 J**	< 1000 J	**4 J**	**4 J**
Chloroform	7		< 10	< 1000 J	< 100	< 10
1,2-Dichloroethane	5		< 10	< 1000 J	< 100	< 10
2-Butanone	50		< 10	< 1000 J	< 100	< 10
1,1,1-Trichloroethane	5		**0.6 J**	< 1000 J	< 100	< 10 J
Carbon tetrachloride	5		< 10	< 1000 J	< 100	< 10 J
Bromodichloromethane	50		< 10	< 1000 J	< 100	< 10
1,2-Dichloropropane	5		< 10	< 1000 J	< 100	< 10
cis-1,3-Dichloropropene	5		< 10	< 1000 J	< 100	< 10
Trichloroethene	5		**9 J**	**15,000 J**	**1,900**	**1,800 D**
Dibromochloromethane	5		< 10	< 1000 J	< 100	< 10
1,1,2-Trichloroethane	5		< 10	< 1000 J	< 100	< 10
Benzene	0.7		< 10	< 1000 J	< 100	< 10
trans-1,3-Dichloropropene	5		< 10	< 1000 J	< 100	< 10
Bromoform	50		< 10	< 1000 J	< 100	< 10
4-Methyl-2-pentanone	50		< 10 J	< 1000 J	< 100	< 10
2-Hexanone	50		< 10	< 1000 J	< 100	< 10
Tetrachloroethene	5		**4 J**	< 1000 J	**16 J**	**19**
1,1,2,2-Tetrachloroethane	5		< 10	< 1000 J	< 100	< 10
Toluene	5		< 10	< 1000 J	**2 J**	< 10
Chlorobenzene	5		< 10	< 1000 J	< 100	< 10
Ethylbenzene	5		< 10	< 1000 J	< 100	< 10
Styrene	5		< 10	< 1000 J	< 100	< 10
Xylene (total)	5		< 10	< 1000 J	< 100	< 10
Total VOCs			**16.1**	**15,000**	**1,922**	**1,823**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-33D2 GM-33D-2 7/11/00	GM-33D2 GM33D2 10/3/00	GM-34D2 GM-34D-2 11/30/99	GM-34D2 GM-34D2 3/20/00
Chloromethane	5		< 200	< 100 J	< 5 J	< 10
Bromomethane	5		< 200 J	< 100	< 5	< 10 J
Vinyl Choride	2		< 7	< 2 J	< 2 J	< 1
Chloroethane	5		< 200	< 100 J	< 5	< 10
Methylene chloride	5		< 200	< 100	< 5 J	< 10
Acetone	50		80 J	16 J	< 10 J	< 10 J
Carbon disulfide	50		< 200	< 100	< 10 J	< 10
1,1-Dichloroethene	5		< 200	< 100	8	4 J
1,1-Dichloroethane	5		< 200	< 100	0.8 J	< 10
1,2-Dichloroethene (total)	5		< 200	5 J	2 J	1 J
Chloroform	7		< 200	< 100	0.2 J	< 10
1,2-Dichloroethane	5		< 200	< 100	< 5	< 10
2-Butanone	50		< 200	< 100	< 10	< 10
1,1,1-Trichloroethane	5		< 200	< 100	1 J	< 10
Carbon tetrachloride	5		< 200 J	< 100	< 5	< 10
Bromodichloromethane	50		< 200	< 100	< 10	< 10
1,2-Dichloropropane	5		< 200	< 100	< 5	< 10
cis-1,3-Dichloropropene	5		< 200	< 100	< 5	< 10
Trichloroethene	5		2,400	1,500	53	48
Dibromochloromethane	5		< 200	< 100	< 5	< 10
1,1,2-Trichloroethane	5		< 200	< 100	< 5	< 10
Benzene	0.7		< 200	< 100	< 0.7	< 10
trans-1,3-Dichloropropene	5		< 200	< 100	< 5	< 10
Bromoform	50		< 200	< 100	< 10	< 10
4-Methyl-2-pentanone	50		< 200	< 100 J	< 10	< 10
2-Hexanone	50		< 200	< 100	< 10	< 10
Tetrachloroethene	5		28 J	18 J	6	7 J
1,1,2,2-Tetrachloroethane	5		< 200	< 100	< 5	< 10
Toluene	5		< 200	< 100	< 5	< 10
Chlorobenzene	5		< 200	< 100	< 5	< 10
Ethylbenzene	5		< 200	< 100	0.4 J	< 10
Styrene	5		< 200	< 100	< 5	< 10
Xylene (total)	5		< 200	< 100	1 J	< 10
Total VOCs			2,508	1,539	72.4	60

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-34D2 GM-34D-2 7/5/00	GM-34D2 GM34D2 10/3/00	GM-35D2 GM-35D2 05/16/97	GM-35D2 GM-35D-2 1/6/00
Chloromethane	5		< 10	< 10 J	< 10	< 10
Bromomethane	5		< 10	< 10	< 10	< 10
Vinyl Choride	2		< 0.3	< 0.2 J	< 10	< 0.3
Chloroethane	5		< 10	< 10 J	< 10	< 10
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10	5 J	< 10	2 J
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		8 J	7 J	4 J	5 J
1,1-Dichloroethane	5		0.9 J	0.8 J	< 10	< 10
1,2-Dichloroethene (total)	5		2 J	2 J	< 10	< 10
Chloroform	7		< 10	< 10	< 10	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10 J	< 10
2-Butanone	50		< 10	< 10	< 10	< 10
1,1,1-Trichloroethane	5		2 J	1 J	2 J	< 10
Carbon tetrachloride	5		< 10	< 10	3 J	3 J
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Trichloroethene	5		75	74	85	76
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10 J	< 10 J	< 10
2-Hexanone	50		< 10	< 10	< 10 J	< 10
Tetrachloroethene	5		7 J	8 J	< 10	< 10
1,1,2,2-Tetrachloroethane	5		< 10	< 10	< 10 J	< 10
Toluene	5		< 10	< 10	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	0.4 J	< 10	< 10
Total VOCs			94.9	114.2	94	86

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-35D2 GM-35D-2 3/24/00	GM-35D2 GM-35D-2 7/14/00	GM-35D2 GM-35D-2 9/20/00	GM-36D2 GM-36D-2 12/10/99
Chloromethane	5		< 10	< 10	< 10	< 5
Bromomethane	5		< 10	< 10	< 10	< 5
Vinyl Choride	2		< 1	< 0.3	< 0.3	< 2
Chloroethane	5		< 10	< 10	< 10 J	< 5
Methylene chloride	5		< 10	< 10	< 10	< 5
Acetone	50		< 10	< 10	< 10 J	< 10
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		**4 J**	**4 J**	**3 J**	< 5
1,1-Dichloroethane	5		< 10	< 10	**0.7 J**	< 5
1,2-Dichloroethene (total)	5		< 10	< 10	**2 J**	< 5
Chloroform	7		< 10	< 10	**0.6 J**	< 7
1,2-Dichloroethane	5		< 10	< 10	< 10	< 5
2-Butanone	50		< 10	< 10	< 10 J	< 10
1,1,1-Trichloroethane	5		**2 J**	**2 J**	**2 J**	< 5
Carbon tetrachloride	5		**3 J**	< 10	**2 J**	< 5
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 5
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 5
Trichloroethene	5		**88**	**91 J**	**150**	**3 J**
Dibromochloromethane	5		< 10	< 10	< 10	< 5
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 5
Benzene	0.7		< 10	< 10	< 10	**0.3 J**
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 5
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10 J	< 10
2-Hexanone	50		< 10	< 10	< 10 J	< 10
Tetrachloroethene	5		< 10	< 10	**1 J**	< 5
1,1,2,2-Tetrachloroethane	5		< 10	R	< 10	< 5
Toluene	5		< 10	< 10	< 10	< 5
Chlorobenzene	5		< 10	< 10	< 10	< 5
Ethylbenzene	5		< 10	< 10	< 10	< 5
Styrene	5		< 10	< 10	< 10	< 5
Xylene (total)	5		< 10	< 10	< 10	< 5
Total VOCs			**97**	**97**	**161.3**	**3.3**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, 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-36D-2 3/28/00	GM-36D2 GM-36D-2 7/14/00	GM-36D2 GM-36D-2 9/20/00	GM-37D2 GM-37D-2 1/7/00
Chloromethane	5		< 10	< 10	< 10	< 10
Bromomethane	5		< 10	< 10	< 10	< 10
Vinyl Choride	2		< 1	< 0.3	< 0.3	< 0.3
Chloroethane	5		< 10	< 10	< 10 J	< 10
Methylene chloride	5		< 10	< 10	< 10	< 10
Acetone	50		< 10	< 10	< 10 J	< 10 J
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 10	< 10	**2** J
1,1-Dichloroethane	5		< 10	< 10	< 10	**9** J
1,2-Dichloroethene (total)	5		< 10	< 10	< 10	< 10
Chloroform	7		< 10	< 10	< 10	< 10
1,2-Dichloroethane	5		< 10	< 10	< 10	< 10
2-Butanone	50		< 10	< 10	< 10 J	< 10
1,1,1-Trichloroethane	5		< 10 J	< 10	< 10	**3** J
Carbon tetrachloride	5		< 10 J	< 10	< 10	< 10
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Trichloroethene	5		< 10	< 10	< 10	**2** J
Dibromochloromethane	5		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 10
Benzene	0.7		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10 J	< 10
2-Hexanone	50		< 10	< 10	< 10 J	< 10
Tetrachloroethene	5		< 10	< 10	< 10	< 10
1,1,2,2-Tetrachloroethane	5		< 10	R	< 10	< 10
Toluene	5		< 10	< 10	< 10	< 10
Chlorobenzene	5		< 10	< 10	< 10	< 10
Ethylbenzene	5		< 10	< 10	< 10	< 10
Styrene	5		< 10	< 10	< 10	< 10
Xylene (total)	5		< 10	< 10	< 10	< 10
Total VOCs			0	0	0	**16**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-37D2 GM-37D-2 3/27/00	GM-37D2 GM-37D-2 7/13/00	GM-37D2 GM-37D-2 9/21/00	GM-38D2 GM-38D-2 12/8/99
Chloromethane	5		< 10	< 10	< 10	< 25
Bromomethane	5		< 10	< 10 J	< 10	< 25
Vinyl Choride	2		< 1	< 0.3	< 0.3	< 10
Chloroethane	5		< 10	< 10	< 10 J	< 25
Methylene chloride	5		< 10	< 10	< 10	< 25
Acetone	50		< 10	< 10 J	< 10 J	< 100
Carbon disulfide	50		< 10	< 10	< 10	< 50
1,1-Dichloroethene	5		**2** J	**4** J	**3** J	< 25
1,1-Dichloroethane	5		**11**	**17**	**12**	< 25
1,2-Dichloroethene (total)	5		< 10	< 10	< 10	**6** J
Chloroform	7		**1** J	< 10	**0.7** J	< 35
1,2-Dichloroethane	5		< 10	< 10	< 10	< 25
2-Butanone	50		< 10	< 10	< 10 J	< 100
1,1,1-Trichloroethane	5		**3** J	**6** J	**4** J	< 25
Carbon tetrachloride	5		< 10 J	< 10 J	< 10	< 25
Bromodichloromethane	50		< 10	< 10	< 10	< 50
1,2-Dichloropropane	5		< 10	< 10	< 10	< 25
cis-1,3-Dichloropropene	5		< 10	< 10	< 10	< 25
Trichloroethene	5		**2** J	**2** J	**2** J	**710**
Dibromochloromethane	5		< 10	< 10	< 10	< 25
1,1,2-Trichloroethane	5		< 10	< 10	< 10	< 25
Benzene	0.7		< 10	< 10	< 10	< 4
trans-1,3-Dichloropropene	5		< 10	< 10	< 10	< 25
Bromoform	50		< 10	< 10	< 10	< 50
4-Methyl-2-pentanone	50		< 10	< 10	< 10 J	< 50
2-Hexanone	50		< 10	< 10	< 10 J	< 50
Tetrachloroethene	5		< 10	< 10	**0.5** J	< 25
1,1,2,2-Tetrachloroethane	5		< 10	R	< 10	< 25
Toluene	5		< 10	< 10	< 10	**1** J
Chlorobenzene	5		< 10	< 10	< 10	< 25
Ethylbenzene	5		< 10	< 10	< 10	< 25
Styrene	5		< 10	< 10	< 10	< 25
Xylene (total)	5		< 10	< 10	< 10	< 25
Total VOCs			**19**	**29**	**22.2**	**717**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-38D2 GM-38D-2 3/28/00	GM-38D2 GM-38D-2 7/12/00	GM-38D2 GM-38D-2 9/22/00	GM-38D2** REP-1 9/22/00
Chloromethane	5		< 50	< 50	< 100 J	< 100 J
Bromomethane	5		< 50	< 50 J	< 100	< 100
Vinyl Choride	2		< 6	< 2	< 2 J	< 2 J
Chloroethane	5		< 50	< 50	< 100 J	< 100 J
Methylene chloride	5		< 50	< 50	< 100	< 100
Acetone	50		14 J	< 50	< 100 J	R
Carbon disulfide	50		< 50	< 50	R	R
1,1-Dichloroethene	5		< 50	< 50	R	< 100
1,1-Dichloroethane	5		< 50	< 50	< 100	< 100
1,2-Dichloroethene (total)	5		< 50	6 J	10 J	12 J
Chloroform	7		< 50	< 50	< 100	< 100
1,2-Dichloroethane	5		< 50	< 50	< 100	< 100
2-Butanone	50		< 50	< 50	6 J	< 100
1,1,1-Trichloroethane	5		< 50 J	< 50	< 100	< 100
Carbon tetrachloride	5		< 50 J	< 50	< 100	< 100
Bromodichloromethane	50		< 50	< 50	< 100	< 100
1,2-Dichloropropane	5		< 50	< 50	< 100	< 100
cis-1,3-Dichloropropene	5		< 50	< 50	< 100	< 100
Trichloroethene	5		880	790 J	1,100	1,300
Dibromochloromethane	5		< 50	< 50	< 100	< 100
1,1,2-Trichloroethane	5		< 50	< 50	< 100	< 100
Benzene	0.7		< 50	< 50	< 100	< 100
trans-1,3-Dichloropropene	5		< 50	< 50	< 100	< 100
Bromoform	50		< 50	< 50	< 100	< 100
4-Methyl-2-pentanone	50		< 50	< 50	< 100	< 100
2-Hexanone	50		< 50	< 50	< 100	< 100
Tetrachloroethene	5		< 50	< 50	< 100	< 100
1,1,2,2-Tetrachloroethane	5		< 50	R	< 100	< 100
Toluene	5		< 50	< 50	R	R
Chlorobenzene	5		< 50	< 50	< 100	< 100
Ethylbenzene	5		< 50	< 50	R	R
Styrene	5		< 50	< 50	< 100	< 100
Xylene (total)	5		< 50	< 50	< 100	< 100
Total VOCs			894	796	1,116	1,312

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-70D2 GM-70D2 05/15/97	GM-70D2 GM-70D-2 12/8/99	GM-70D2 GM-70D-2 3/24/00	GM-70D2 GM-70D-2 7/13/00
Chloromethane	5		< 20	< 5	< 10	< 10
Bromomethane	5		< 20	< 5	< 10	< 10 J
Vinyl Choride	2		70 ***	< 2	< 1	< 0.3
Chloroethane	5		< 20	< 5	< 10	< 10
Methylene chloride	5		< 20	< 5	< 10	< 10
Acetone	50		7 J	< 10	< 10	< 10 J
Carbon disulfide	50		< 20	< 10	< 10	< 10
1,1-Dichloroethene	5		3 J	< 5	< 10	< 10
1,1-Dichloroethane	5		< 20	< 5	< 10	< 10
1,2-Dichloroethene (total)	5		3 J	1 J	1 J	1 J
Chloroform	7		10 J	< 7	< 10	< 10
1,2-Dichloroethane	5		< 20 J	< 5	< 10	< 10
2-Butanone	50		< 20	< 10	< 10	< 10
1,1,1-Trichloroethane	5		< 20	< 5	< 10 J	< 10
Carbon tetrachloride	5		< 20	< 5	< 10 J	< 10 J
Bromodichloromethane	50		< 20	< 10	< 10	< 10
1,2-Dichloropropane	5		< 20	< 5	< 10	< 10
cis-1,3-Dichloropropene	5		< 20	< 5	< 10	< 10
Trichloroethene	5		200	48	89	54 J
Dibromochloromethane	5		< 20	< 5	< 10	< 10
1,1,2-Trichloroethane	5		< 20	< 5	< 10	< 10
Benzene	0.7		< 20	< 0.7	< 10	< 10
trans-1,3-Dichloropropene	5		< 20	< 5	< 10	< 10
Bromoform	50		< 20	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 20 J	< 10	< 10	< 10
2-Hexanone	50		< 20 J	< 10	< 10	< 10
Tetrachloroethene	5		10 J	3 J	5 J	3 J
1,1,2,2-Tetrachloroethane	5		< 20	< 5	< 10	R
Toluene	5		< 20	0.3 J	< 10	< 10
Chlorobenzene	5		< 20	< 5	< 10	< 10
Ethylbenzene	5		< 20	< 5	< 10	< 10
Styrene	5		< 20	< 5	< 10	< 10
Xylene (total)	5		< 20	< 5	< 10	< 10
Total VOCs			303	52.3	95	58

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-70D2 GM-70D2 10/11/00	GM-71D2 GM-71D-2 12/10/99	GM-71D2 GM-71D-2 3/24/00	GM-71D2 GM-71D-2 7/12/00
Chloromethane	5		< 10	< 5	< 10	< 10
Bromomethane	5		< 10	< 5	< 10	< 10 J
Vinyl Choride	2		< 0.2	< 2	< 1	< 0.3
Chloroethane	5		< 10	< 5	< 10	< 10
Methylene chloride	5		< 10	< 5	< 10	< 10
Acetone	50		< 10	< 10	< 10	< 10
Carbon disulfide	50		< 10	< 10	< 10	< 10
1,1-Dichloroethene	5		< 10	< 5	< 10	< 10
1,1-Dichloroethane	5		< 10	< 5	< 10	< 10
1,2-Dichloroethene (total)	5		2 J	< 5	< 10	< 10
Chloroform	7		< 10	0.6 J	< 10	< 10
1,2-Dichloroethane	5		< 10	< 5	< 10	< 10
2-Butanone	50		< 10 J	< 10	< 10	< 10
1,1,1-Trichloroethane	5		0.4 J	< 5	< 10 J	< 10
Carbon tetrachloride	5		< 10	1 J	1 J	2 J
Bromodichloromethane	50		< 10	< 10	< 10	< 10
1,2-Dichloropropane	5		< 10	< 5	< 10	< 10
cis-1,3-Dichloropropene	5		< 10	< 5	< 10	< 10
Trichloroethene	5		140	4 J	5 J	5 J
Dibromochloromethane	5		< 10	< 5	< 10	< 10
1,1,2-Trichloroethane	5		< 10	< 5	< 10	< 10
Benzene	0.7		< 10	< 0.7	< 10	< 10
trans-1,3-Dichloropropene	5		< 10	< 5	< 10	< 10
Bromoform	50		< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	50		< 10	< 10	< 10	< 10
2-Hexanone	50		< 10	< 10	< 10	< 10
Tetrachloroethene	5		9 J	< 5	< 10	< 10
1,1,2,2-Tetrachloroethane	5		< 10	< 5	< 10	< 10
Toluene	5		< 10	< 5	< 10	R
Chlorobenzene	5		< 10	< 5	< 10	< 10
Ethylbenzene	5		< 10	< 5	< 10	< 10
Styrene	5		< 10	< 5	< 10	< 10
Xylene (total)	5		< 10	< 5	< 10	< 10
Total VOCs			155.4	5.6	6	7

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GM-71D2 GM-71D-2 9/22/00	GM-73D2 GM73D2 10/4/00	GM-74D2 GM74D2 10/5/00	GP-1 GP-1 10/16/00
Chloromethane	5		< 10 J	< 100 J	< 10 J	< 50
Bromomethane	5		< 10	< 100	< 10	< 50
Vinyl Choride	2		< 0.2 J	< 2 J	< 0.2 J	< 1
Chloroethane	5		< 10 J	< 100 J	< 10 J	< 50
Methylene chloride	5		< 10	< 100	< 10	< 50
Acetone	50		< 10 J	< 100	< 10 J	< 58
Carbon disulfide	50		R	< 100	< 10	< 50
1,1-Dichloroethene	5		R	< 100	< 10	**7 J**
1,1-Dichloroethane	5		< 10	**4 J**	< 10	**2 J**
1,2-Dichloroethene (total)	5		< 10	**6 J**	< 10	**11 J**
Chloroform	7		**0.8 J**	< 100	< 10	< 50
1,2-Dichloroethane	5		< 10	< 100	< 10	< 50
2-Butanone	50		< 10	< 100 J	< 10 J	< 50
1,1,1-Trichloroethane	5		**0.3 J**	**3 J**	< 10	**3 J**
Carbon tetrachloride	5		**2 J**	< 100	< 10	< 50
Bromodichloromethane	50		< 10	< 100	< 10	< 50
1,2-Dichloropropane	5		< 10	< 100	< 10	< 50
cis-1,3-Dichloropropene	5		< 10	< 100	< 10	< 50
Trichloroethene	5		**4 J**	**960 J**	**5 J**	**600**
Dibromochloromethane	5		< 10	< 100	< 10	< 50
1,1,2-Trichloroethane	5		< 10	< 100	< 10	< 50
Benzene	0.7		< 10	< 100	< 10	< 50
trans-1,3-Dichloropropene	5		< 10	< 100	< 10	< 50
Bromoform	50		< 10	< 100	< 10	< 50
4-Methyl-2-pentanone	50		< 10	< 100 J	< 10 J	< 50
2-Hexanone	50		< 10	< 100 J	< 10 J	< 50
Tetrachloroethene	5		< 10	< 100 J	**1 J**	**58**
1,1,2,2-Tetrachloroethane	5		< 10	< 100	< 10	< 50
Toluene	5		R	< 100	< 10	< 50
Chlorobenzene	5		< 10	< 100	< 10	< 50
Ethylbenzene	5		R	< 100	< 10	< 50
Styrene	5		< 10	< 100	< 10	< 50
Xylene (total)	5		< 10	< 100	< 10	< 50
Total VOCs			**7.1**	**973**	**6**	**691**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	GP-3 GP-3 10/16/00	GP-1 SYSTEM GP-1 INFLUENT 10/16/00	GP-1 SYSTEM GP-1 EFFLUENT 10/16/00	GP-1 SYSTEM GP-1 RCB 10/16/00
Chloromethane	5		< 100	< 50	< 10	< 10
Bromomethane	5		< 100	< 50	< 10	< 10
Vinyl Choride	2		9	< 1	< 0.2	< 0.2
Chloroethane	5		< 100	< 50	< 10	< 10
Methylene chloride	5		< 100	< 50	< 10	< 10
Acetone	50		< 100	< 55	< 10	< 10
Carbon disulfide	50		< 100	< 50	< 10	< 10
1,1-Dichloroethene	5		12 J	8 J	< 10	< 10
1,1-Dichloroethane	5		< 100	< 50	< 10	< 10
1,2-Dichloroethene (total)	5		11 J	10 J	< 10	< 10
Chloroform	7		< 100	< 50	< 10	< 10
1,2-Dichloroethane	5		< 100	< 50	< 10	< 10
2-Butanone	50		< 100	< 50	< 10	< 10
1,1,1-Trichloroethane	5		4 J	3 J	< 10	< 10
Carbon tetrachloride	5		< 100	< 50	< 10	< 10
Bromodichloromethane	50		< 100	< 50	< 10	< 10
1,2-Dichloropropane	5		< 100	< 50	< 10	< 10
cis-1,3-Dichloropropene	5		< 100	< 50	< 10	< 10
Trichloroethene	5		1700	800	4 J	< 10
Dibromochloromethane	5		< 100	< 50	< 10	< 10
1,1,2-Trichloroethane	5		< 100	< 50	< 10	< 10
Benzene	0.7		< 100	< 50	< 10	< 10
trans-1,3-Dichloropropene	5		< 100	< 50	< 10	< 10
Bromoform	50		< 100	< 50	< 10	< 10
4-Methyl-2-pentanone	50		< 100	< 50	< 10	< 10
2-Hexanone	50		< 100	< 50	< 10	< 10
Tetrachloroethene	5		80 J	56	< 10	< 10
1,1,2,2-Tetrachloroethane	5		< 100	< 50	< 10	< 10
Toluene	5		< 100	< 50	< 10	< 10
Chlorobenzene	5		< 100	< 50	< 10	< 10
Ethylbenzene	5		< 100	< 50	< 10	< 10
Styrene	5		< 100	< 50	< 10	< 10
Xylene (total)	5		< 100	< 50	< 10	< 10
Total VOCs			1,861	895	4	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, 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 10/16/00	ONCT-2 ONCT-2 10/16/00	ONCT-3 ONCT-3 10/16/00
Chloromethane	5		< 200	< 20	< 10
Bromomethane	5		< 200	< 20	< 10
Vinyl Choride	2		< 4	< 0.4	< 0.2
Chloroethane	5		< 200	< 20	< 10
Methylene chloride	5		< 200	< 20	< 10
Acetone	50		< 200	< 20	< 10
Carbon disulfide	50		< 200	< 20	< 10
1,1-Dichloroethene	5		< 200	**3 J**	**1 J**
1,1-Dichloroethane	5		< 200	**2 J**	**1 J**
1,2-Dichloroethene (total)	5		< 200	**2 J**	**1 J**
Chloroform	7		< 200	< 20	**0.8 J**
1,2-Dichloroethane	5		< 200	< 20	< 10
2-Butanone	50		< 200	< 20	< 10
1,1,1-Trichloroethane	5		< 200	**2 J**	**0.6 J**
Carbon tetrachloride	5		< 200	< 20	< 10
Bromodichloromethane	50		< 200	< 20	< 10
1,2-Dichloropropane	5		< 200	< 20	< 10
cis-1,3-Dichloropropene	5		< 200	< 20	< 10
Trichloroethene	5		**1,900**	**200**	**16**
Dibromochloromethane	5		< 200	< 20	< 10
1,1,2-Trichloroethane	5		< 200	< 20	< 10
Benzene	0.7		< 200	< 20	< 10
trans-1,3-Dichloropropene	5		< 200	< 20	< 10
Bromoform	50		< 200	< 20	< 10
4-Methyl-2-pentanone	50		< 200	< 20	< 10
2-Hexanone	50		< 200	< 20	< 10
Tetrachloroethene	5		**13 J**	**11 J**	**13**
1,1,2,2-Tetrachloroethane	5		< 200	< 20	< 10
Toluene	5		< 200	< 20	< 10
Chlorobenzene	5		< 200	< 20	< 10
Ethylbenzene	5		< 200	< 20	< 10
Styrene	5		< 200	< 20	< 10
Xylene (total)	5		< 200	< 20	< 10
Total VOCs			**1,924**	**221**	**34.4**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 12. Concentrations of Volatile Organic Compounds Detected in D2 Wells During the Baseline (May 1997), Last Quarter 1999, and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards Criteria and Guidance Values[1]	WELL: SAMPLE ID: DATE:	IRM SYSTEM IRM INFLUENT 10/16/00	IRM SYSTEM IRM EFFLUENT 10/16/00	IRM SYSTEM IRM RCB 10/16/00
Chloromethane	5		< 100	< 10	< 10
Bromomethane	5		< 100	< 10	< 10
Vinyl Choride	2		< 2	< 0.2	< 0.2
Chloroethane	5		< 100	< 10	< 10
Methylene chloride	5		< 100	< 10	< 10
Acetone	50		< 100	< 10	< 10
Carbon disulfide	50		< 100	< 10	< 10
1,1-Dichloroethene	5		< 100	< 10	< 10
1,1-Dichloroethane	5		< 100	< 10	< 10
1,2-Dichloroethene (total)	5		< 100	< 10	< 10
Chloroform	7		< 100	< 10	< 10
1,2-Dichloroethane	5		< 100	< 10	< 10
2-Butanone	50		< 100	< 10	< 10
1,1,1-Trichloroethane	5		< 100	< 10	< 10
Carbon tetrachloride	5		< 100	< 10	< 10
Bromodichloromethane	50		< 100	< 10	< 10
1,2-Dichloropropane	5		< 100	< 10	< 10
cis-1,3-Dichloropropene	5		< 100	< 10	< 10
Trichloroethene	5		**1100**	**1** J	< 10
Dibromochloromethane	5		< 100	< 10	< 10
1,1,2-Trichloroethane	5		< 100	< 10	< 10
Benzene	0.7		< 100	< 10	< 10
trans-1,3-Dichloropropene	5		< 100	< 10	< 10
Bromoform	50		< 100	< 10	< 10
4-Methyl-2-pentanone	50		< 100	< 10	< 10
2-Hexanone	50		< 100	< 10	< 10
Tetrachloroethene	5		**16** J	< 10	< 10
1,1,2,2-Tetrachloroethane	5		< 100	< 10	< 10
Toluene	5		< 100	< 10	< 10
Chlorobenzene	5		< 100	< 10	< 10
Ethylbenzene	5		< 100	< 10	< 10
Styrene	5		< 100	< 10	< 10
Xylene (total)	5		< 100	< 10	< 10
Total VOCs			**1,116**	**1**	0

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
R Unusable data
D Detected at secondary dilution.
** Replicate Sample.
*** This concentration is considered anomalous because a June 1997 resampling event and subsequent rounds indicated no vinyl chloride was present.
NYSDEC New York State Department of Environmental Conservation.
(1) Standards, Criteria, and Guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller 1999b).
[ ] Value exceeds associated Standard, Criteria, and Guidance value.

Table 13. Concentrations of Tentatively Identified Compounds (TICs) Detected in Groundwater Samples during the Third Quarter 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

	WELL:	GM-14	GM-15S	GM-15D2	GM-16I	GM-20I	GM-23S	GM-34D
CONSTITUENT:	**SAMPLE ID:**	GM-14	GM-15S	GM-15D2	GM-16I	GM-20I	GM-23S	GM34D
(Units in ug/L)	**DATE:**	10/2/00	9/28/00	10/2/00	9/19/00	9/18/00	10/2/00	10/3/00
Butylated hydroxytoluene		--	--	--	--	6 JN	--	--
Cyclotetrasiloxane, octameth		--	--	16 JN	--	--	--	--
Ethane, 1,2,-dichloro-1,1,2-t		--	--	--	--	--	--	7 JN
Ethane, 1,1,2,-trichloro-1,2,2		--	--	--	7 JN	--	--	--
Propane, 2-methoxy-2-methyl-		--	7 JN	--	--	--	58 JN	--
Unknown		4 J	--	--	--	--	--	--

ug/L Micrograms per liter.
J Estimated value.
-- Not Detected.
N TICs are identified based on a review of mass spectrometry results via a comprehensive library search of all organic compounds; however, calibrations were not run for there constituents, therefore, the results should be used for qualitative purposes only.

Table 13. Concentrations of Tentatively Identified Compounds (TICs) Detected in Groundwater Samples during the Third Quarter 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	WELL: / SAMPLE ID: / DATE:	GM-35D2 / GM-35D2 / 9/20/00	GM-70D2 / GM-70D2 / 10/11/00	GM-71D2 / GM-71D2 / 07/12/00	GM-74D / GM-74D / 10/6/00	GM-74D2 / GM74D2 / 10/5/00	GP-1 / GP-1 / 10/16/00
Butylated hydroxytoluene		--	--	7 JN	--	--	--
Cyclotetrasiloxane, octameth		--	7 JN	--	9 JN	6 JN	28 JN
Ethane, 1,2,-dichloro-1,1,2-t		--	--	--	--	--	--
Ethane, 1,1,2,-trichloro-1,2,2		26 JN	--	--	--	--	--
Propane, 2-methoxy-2-methyl-		--	--	--	--	--	--
Unknown		--	--	--	--	--	--

ug/L Micrograms per liter.
J Estimated value.
-- Not Detected.
N TICs are identified based on a review of mass spectrometry results via a comprehensive library search of all organic compounds; however, calibrations were not run for there constituents, therefore, the results should be used for qualitative purposes only.

Table 14. Concentrations of Volatile Organic Compounds Detected in Blank Samples Collected During the Third Quarter 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE:	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
	SAMPLE ID:	TB091800	TB091900	TB092000	TB092100	TB092200
	DATE:	9/18/00	9/19/00	9/20/00	9/21/00	9/22/00
Chloromethane		< 10	< 10	< 10	< 10	< 10 J
Bromomethane		< 10	< 10	< 10	< 10	< 10
Vinyl Choride		< 0.3	< 0.3	< 0.3	< 0.3	< 0.2 J
Chloroethane		< 10 J	< 10 J	< 10 J	< 10 J	< 10 J
Methylene chloride		**1 J**	**1 J**	**0.9 J**	**1 J**	**1 JB**
Acetone		**4 JB**	< 10 J	< 10 J	**4 JB**	< 10 J
Carbon disulfide		< 10	< 10	< 10	< 10 **J**	R
1,1-Dichloroethene		< 10	< 10	< 10	< 10	R
1,1-Dichloroethane		< 10	< 10	< 10	< 10	< 10
1,2-Dichloroethene (total)		< 10	< 10	< 10	< 10	< 10
Chloroform		< 10	< 10	< 10	< 10	< 10
1,2-Dichloroethane		< 10	< 10	< 10	< 10	< 10
2-Butanone		< 10 J	< 10 J	< 10 J	< 10 J	< 10
1,1,1-Trichloroethane		< 10	< 10	< 10	< 10	< 10
Carbon tetrachloride		< 10	< 10	< 10	< 10	< 10
Bromodichloromethane		< 10	< 10	< 10	< 10	< 10
1,2-Dichloropropane		< 10	< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene		< 10	< 10	< 10	< 10	< 10
Trichloroethene		< 10	< 10	< 10	< 10	< 10
Dibromochloromethane		< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane		< 10	< 10	< 10	< 10	< 10
Benzene		< 10	< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene		< 10	< 10	< 10	< 10	< 10
Bromoform		< 10	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone		< 10	< 10	< 10	< 10	< 10
2-Hexanone		< 10 J	< 10 J	< 10 J	< 10 J	< 10
Tetrachloroethene		< 10 J	< 10 J	< 10 J	< 10 J	< 10
1,1,2,2-Tetrachloroethane		**0.4 JB**	< 10	< 10	< 10	< 10
Toluene		< 10	< 10	< 10	< 10	R
Chlorobenzene		< 10	< 10	< 10	< 10	< 10
Ethylbenzene		< 10	< 10	< 10	< 10	R
Styrene		< 10	< 10	< 10	< 10	< 10
Xylene (total)		< 10	< 10	< 10	< 10	< 10
Vinyl Acetate		< 10 J	< 10 J	< 10 J	< 10 J	< 10
2-Chloroethylvinylether		R	R	R	R	R
Freon 113		--	--	--	--	< 10
Total VOCs		**5.4**	**1**	**0.9**	**5**	**1**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
EQ Equipment
R Unusable data
B Constituent detected in associated blank sample.
-- Not analyzed.

Table 14. Concentrations of Volatile Organic Compounds Detected in Blank Samples Collected During the Third Quarter 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE:	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
	SAMPLE ID:	TB092500-1	TB092500-2	TB092600-1	TB092600-2	TB092700-01
	DATE:	9/25/00	9/25/00	9/26/00	9/26/00	9/27/00
Chloromethane		< 10 J	< 10 J	< 10 J	< 10 J	< 10
Bromomethane		< 10	< 10	< 10	< 10	< 10
Vinyl Chonde		< 0.3 J	< 0.3 J	< 0.2 J	< 0.2 J	< 0.2
Chloroethane		< 10 J	< 10 J	< 10 J	< 10 J	< 10
Methylene chloride		**1 JB**	**1 JB**	**2 JB**	**0.9 JB**	**2 J**
Acetone		< 10 J	< 10 J	< 10 J	< 10 J	< 10
Carbon disulfide		R	R	< 10	< 10	< 10
1,1-Dichloroethene		< 10	< 10	< 10	< 10	< 10
1,1-Dichloroethane		< 10	< 10	< 10	< 10	< 10
1,2-Dichloroethene (total)		< 10	< 10	< 10	< 10	< 10
Chloroform		< 10	< 10	< 10	< 10	< 10
1,2-Dichloroethane		< 10	< 10	< 10	< 10	< 10
2-Butanone		< 10 J	**1 J**	**1 J**	< 10	< 10 J
1,1,1-Trichloroethane		< 10	< 10	< 10	< 10	< 10
Carbon tetrachloride		< 10	< 10	< 10	< 10	< 10
Bromodichloromethane		< 10	< 10	< 10	< 10	< 10
1,2-Dichloropropane		< 10	< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene		< 10	< 10	< 10	< 10	< 10
Trichloroethene		< 10	< 10	< 10	< 10	< 10
Dibromochloromethane		< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane		< 10	< 10	< 10	< 10	< 10
Benzene		< 10	< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene		< 10	< 10	< 10	< 10	< 10
Bromoform		< 10	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone		< 10 J	< 10 J	1 J	< 10	< 10
2-Hexanone		< 10 J	< 10 J	< 10	< 10	< 10
Tetrachloroethene		< 10	< 10	< 10	< 10	< 10
1,1,2,2-Tetrachloroethane		< 10 J	< 10 J	< 10	< 10	< 10
Toluene		< 10	< 10	< 10	< 10	< 10
Chlorobenzene		< 10	< 10	< 10	< 10	< 10
Ethylbenzene		< 10	< 10	< 10	< 10	< 10
Styrene		< 10	< 10	< 10	< 10	< 10
Xylene (total)		< 10	< 10	< 10	< 10	< 10
Vinyl Acetate		< 10 J	< 10 J	< 10	< 10	< 10
2-Chloroethylvinylether		R	R	R	R	R
Freon 113		--	--	< 10	< 10	< 10
Total VOCs		**1**	**2**	**4**	**0.9**	**2**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
EQ Equipment
R Unusable data
B Constituent detected in associated
-- Not analyzed.

Table 14. Concentrations of Volatile Organic Compounds Detected in Blank Samples Collected During the Third Quarter 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE:	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
	SAMPLE ID:	TB092700-02	TB092800	TB092900	TB100200	TB100300
	DATE:	9/27/00	9/28/00	9/29/00	10/2/00	10/3/00
Chloromethane		< 10	< 10 J	< 10 J	< 10 J	< 10 J
Bromomethane		< 10	< 10	< 10	< 10	< 10
Vinyl Choride		< 0.2	< 0.2 J	< 0.2 J	< 0.2 J	< 0.2 J
Chloroethane		< 10	< 10 J	< 10 J	< 10 J	< 10 J
Methylene chloride		**2 J**	**1 JB**	**2 JB**	**3 JB**	**2 JB**
Acetone		**3 JB**	**9 JB**	< 10 J	**8 JB**	< 10 J
Carbon disulfide		< 10	< 10	**0.5 J**	< 10	< 10
1,1-Dichloroethene		< 10	< 10	< 10	< 10	< 10
1,1-Dichloroethane		< 10	< 10	< 10	< 10	< 10
1,2-Dichloroethene (total)		< 10	< 10	< 10	< 10	< 10
Chloroform		< 10	< 10	< 10	< 10	< 10
1,2-Dichloroethane		< 10	< 10	< 10	< 10	< 10
2-Butanone		< 10 J	**4 J**	**4 J**	< 10 J	< 10
1,1,1-Trichloroethane		< 10	< 10	< 10	< 10	< 10
Carbon tetrachloride		< 10	< 10	< 10	< 10	< 10
Bromodichloromethane		< 10	< 10	< 10	< 10	< 10
1,2-Dichloropropane		< 10	< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene		< 10	< 10	< 10	< 10	< 10
Trichloroethene		< 10	< 10	**0.2 J**	< 10	< 10
Dibromochloromethane		< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane		< 10	< 10	< 10	< 10	< 10
Benzene		< 10	< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene		< 10	< 10	< 10	< 10	< 10
Bromoform		< 10	< 10 J	< 10 J	< 10 J	< 10
4-Methyl-2-pentanone		< 10	< 10 J	< 10 J	< 10 J	< 10 J
2-Hexanone		< 10	< 10 J	< 10 J	< 10	< 10
Tetrachloroethene		< 10	< 10	**0.6 J**	< 10 J	< 10 J
1,1,2,2-Tetrachloroethane		< 10	< 10	< 10	< 10	< 10
Toluene		< 10	< 10	< 10	< 10	< 10
Chlorobenzene		< 10	< 10	< 10	< 10	< 10
Ethylbenzene		< 10	< 10	< 10	< 10	< 10
Styrene		< 10	< 10	< 10	< 10	< 10
Xylene (total)		< 10	< 10	< 10	< 10	< 10
Vinyl Acetate		< 10	< 10	< 10	< 10	< 10
2-Chloroethylvinylether		R	R	R	R	R
Freon 113		< 10	< 10	< 10	< 10	< 10
Total VOCs		**5**	**14**	**7.3**	**11**	**2**

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
EQ	Equipment
R	Unusable data
B	Constituent detected in associated
--	Not analyzed.

Table 14. Concentrations of Volatile Organic Compounds Detected in Blank Samples Collected During the Third Quarter 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE:	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK	TRIP BLANK
	SAMPLE ID:	TB100400	TB100500	TB100600	TB 10/11/00	TB101600
	DATE:	10/4/00	10/5/00	10/6/00	10/11/00	10/16/00
Chloromethane		< 10 J	< 10 J	< 10 J	< 10	< 10
Bromomethane		< 10	< 10	< 10	< 10	< 10
Vinyl Choride		< 0.2 J	< 0.2 J	< 0.2 J	< 0.2	< 0.2
Chloroethane		< 10 J	< 10 J	< 10 J	< 10	< 10
Methylene chloride		**1 J**	**1 J**	**1 J**	**2 JB**	**1 JB**
Acetone		< 10 J	< 10 J	< 10 J	< 10	**6 J**
Carbon disulfide		< 10	< 10	< 10	< 10	< 10
1,1-Dichloroethene		< 10	< 10	< 10	< 10	< 10
1,1-Dichloroethane		< 10	< 10	< 10	< 10	< 10
1,2-Dichloroethene (total)		< 10	< 10	< 10	< 10	< 10
Chloroform		< 10	< 10	< 10	< 10	< 10
1,2-Dichloroethane		< 10	< 10	< 10	< 10	< 10
2-Butanone		< 10 J	< 10 J	< 10 J	< 10 J	< 10 J
1,1,1-Trichloroethane		< 10	< 10	< 10	< 10	< 10
Carbon tetrachloride		< 10	< 10	< 10	< 10	< 10
Bromodichloromethane		< 10	< 10	< 10	< 10	< 10
1,2-Dichloropropane		< 10	< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene		< 10	< 10	< 10	< 10	< 10
Trichloroethene		< 10	< 10	< 10	< 10	< 10
Dibromochloromethane		< 10	< 10	< 10	< 10	< 10
1,1,2-Trichloroethane		< 10	< 10	< 10	< 10	< 10
Benzene		< 10	< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene		< 10	< 10	< 10	< 10	< 10
Bromoform		< 10	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone		< 10 J	< 10 J	< 10 J	< 10	< 10
2-Hexanone		< 10 J	< 10 J	< 10 J	< 10	< 10
Tetrachloroethene		< 10 J	< 10 J	< 10 J	< 10	< 10
1,1,2,2-Tetrachloroethane		< 10	< 10	< 10	< 10	< 10
Toluene		< 10	< 10	< 10	< 10	< 10
Chlorobenzene		< 10	< 10	< 10	< 10	< 10
Ethylbenzene		< 10	< 10	< 10	< 10	< 10
Styrene		< 10	< 10	< 10	< 10	< 10
Xylene (total)		< 10	< 10	< 10	< 10	< 10
Vinyl Acetate		< 10 J	< 10 J	< 10 J	< 10	< 10
2-Chloroethylvinylether		R	R	R	R	R
Freon 113		< 10	< 10	< 10	< 10	< 10
Total VOCs		**1**	**1**	**1**	**2**	**7**

VOCs Volatile organic compounds.
ug/L Micrograms per liter.
J Estimated value.
EQ Equipment
R Unusable data
B Constituent detected in associated
-- Not analyzed.

Table 14. Concentrations of Volatile Organic Compounds Detected in Blank Samples Collected During the Third Quarter 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE:	WATER EQ. BLANK			WATER EQ. BLANK			WATER EQ. BLANK			WATER EQ. BLANK		
	SAMPLE ID:	FB092500			FB092600			FB092700			FB092800		
	DATE:	9/25/00			9/26/00			9/27/00			9/28/00		
Chloromethane		<	10	J	<	10	J	<	10	J	<	10	J
Bromomethane		<	10		<	10		<	10		<	10	
Vinyl Choride		<	0.3	J	<	0.2	J	<	0.2	J	<	0.2	J
Chloroethane		<	10	J	<	10	J	<	10	J	<	10	J
Methylene chloride			2	JB		2	JB		2	JB		1	JB
Acetone		<	10	J	<	10	J		2	JB	<	10	J
Carbon disulfide			R		<	10		<	10		<	10	
1,1-Dichloroethene		<	10		<	10		<	10		<	10	
1,1-Dichloroethane		<	10		<	10		<	10		<	10	
1,2-Dichloroethene (total)		<	10		<	10		<	10		<	10	
Chloroform		<	10		<	10		<	10		<	10	
1,2-Dichloroethane		<	10		<	10		<	10		<	10	
2-Butanone		<	10	J	<	10		<	10	J		2	J
1,1,1-Trichloroethane		<	10		<	10		<	10		<	10	
Carbon tetrachloride		<	10		<	10		<	10		<	10	
Bromodichloromethane		<	10		<	10		<	10		<	10	
1,2-Dichloropropane		<	10		<	10		<	10		<	10	
cis-1,3-Dichloropropene		<	10		<	10		<	10		<	10	
Trichloroethene		<	10		<	10		<	10		<	10	
Dibromochloromethane		<	10		<	10		<	10		<	10	
1,1,2-Trichloroethane		<	10		<	10		<	10		<	10	
Benzene			0.7	J	<	10		<	10		<	10	
trans-1,3-Dichloropropene		<	10		<	10		<	10		<	10	
Bromoform		<	10		<	10		<	10	J	<	10	J
4-Methyl-2-pentanone		<	10	J	<	10		<	10	J	<	10	J
2-Hexanone		<	10	J	<	10		<	10	J	<	10	J
Tetrachloroethene		<	10		<	10			0.3	J	<	10	
1,1,2,2-Telrachloroethane		<	10	J	<	10		<	10		<	10	
Toluene			2	J	<	10		<	10		<	10	
Chlorobenzene		<	10		<	10		<	10		<	10	
Ethylbenzene			0.3	J	<	10		<	10		<	10	
Styrene		<	10		<	10		<	10		<	10	
Xylene (total)			2	J	<	10		<	10		<	10	
Vinyl Acetate		<	10	J	<	10		<	10		<	10	
2-Chloroethylvinylether			R			R			R			R	
Freon 113			--		<	10		<	10		<	10	
Total VOCs			7			2			4.3			3	

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
EQ	Equipment
R	Unusable data
B	Constituent detected in associated
--	Not analyzed.

Table 14. Concentrations of Volatile Organic Compounds Detected in Blank Samples Collected During the Third Quarter 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE:	WATER EQ. BLANK	WATER EQ. BLANK	WATER EQ. BLANK	WATER EQ. BLANK
	SAMPLE ID:	FB092900	FB100200	FB100300	FB100400
	DATE:	9/29/00	10/2/00	10/3/00	10/4/00
Chloromethane		< 10 J	< 10 J	< 10 J	< 10 J
Bromomethane		< 10	< 10	< 10	< 10
Vinyl Choride		< 0.2 J	< 0.2 J	< 0.2 J	< 0.2 J
Chloroethane		< 10 J	< 10 J	< 10 J	< 10 J
Methylene chloride		**1 JB**	**2 JB**	**1 JB**	**0.8 J**
Acetone		< 10 J	**6 JB**	< 10 J	< 10 J
Carbon disulfide		< 10	< 10	< 10	< 10
1,1-Dichloroethene		< 10	< 10	< 10	< 10
1,1-Dichloroethane		< 10	< 10	< 10	< 10
1,2-Dichloroethene (total)		< 10	< 10	< 10	< 10
Chloroform		< 10	< 10	< 10	< 10
1,2-Dichloroethane		< 10	< 10	< 10	< 10
2-Butanone		**3 J**	< 10 J	< 10	< 10 J
1,1,1-Trichloroethane		< 10	< 10	< 10	< 10
Carbon tetrachloride		< 10	< 10	< 10	< 10
Bromodichloromethane		< 10	< 10	< 10	< 10
1,2-Dichloropropane		< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene		< 10	< 10	< 10	< 10
Trichloroethene		< 10	< 10	< 10	< 10
Dibromochloromethane		< 10	< 10	< 10	< 10
1,1,2-Trichloroethane		< 10	< 10	< 10	< 10
Benzene		< 10	< 10	< 10	< 10
trans-1,3-Dichloropropene		< 10	< 10	< 10	< 10
Bromoform		< 10 J	< 10 J	< 10	< 10
4-Methyl-2-pentanone		< 10 J	< 10 J	< 10 J	< 10 J
2-Hexanone		< 10 J	< 10	< 10	< 10 J
Tetrachloroethene		< 10	< 10 J	< 10 J	< 10 J
1,1,2,2-Tetrachloroethane		< 10	< 10	< 10	< 10
Toluene		< 10	< 10	< 10	< 10
Chlorobenzene		< 10	< 10	< 10	< 10
Ethylbenzene		< 10	< 10	< 10	< 10
Styrene		< 10	< 10	< 10	< 10
Xylene (total)		< 10	< 10	< 10	< 10
Vinyl Acetate		< 10	< 10	< 10	< 10 J
2-Chloroethylvinylether		R	R	R	R
Freon 113		< 10	< 10	< 10	< 10
Total VOCs		**4**	**8**	1	**0.8**

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
EQ	Equipment
R	Unusable data
B	Constituent detected in associated
--	Not analyzed.

Table 14. Concentrations of Volatile Organic Compounds Detected in Blank Samples Collected During the Third Quarter 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	SITE:	WATER EQ. BLANK		WATER EQ. BLANK	
	SAMPLE ID:	FB100500		FB 10/6/00	
	DATE:	10/5/00		10/6/00	
Chloromethane		< 10	J	< 10	J
Bromomethane		< 10		< 10	
Vinyl Choride		< 0.2	J	< 0.2	J
Chloroethane		< 10	J	< 10	J
Methylene chloride		**3**	**J**	**1**	**J**
Acetone		< 10	J	< 10	J
Carbon disulfide		< 10		< 10	
1,1-Dichloroethene		< 10		< 10	
1,1-Dichloroethane		< 10		< 10	
1,2-Dichloroethene (total)		< 10		< 10	
Chloroform		< 10		< 10	
1,2-Dichloroethane		< 10		< 10	
2-Butanone		< 10	J	< 10	J
1,1,1-Trichloroethane		< 10		< 10	
Carbon tetrachloride		< 10		< 10	
Bromodichloromethane		< 10		< 10	
1,2-Dichloropropane		< 10		< 10	
cis-1,3-Dichloropropene		< 10		< 10	
Trichloroethene		< 10		< 10	
Dibromochloromethane		< 10		< 10	
1,1,2-Trichloroethane		< 10		< 10	
Benzene		< 10		< 10	
trans-1,3-Dichloropropene		< 10		< 10	
Bromoform		< 10		< 10	
4-Methyl-2-pentanone		< 10	J	< 10	J
2-Hexanone		< 10	J	< 10	J
Tetrachloroethene		< 10	J	< 10	J
1,1,2,2-Tetrachloroethane		< 10		< 10	
Toluene		< 10		< 10	
Chlorobenzene		< 10		< 10	
Ethylbenzene		< 10		< 10	
Styrene		< 10		< 10	
Xylene (total)		< 10		< 10	
Vinyl Acetate		< 10	J	< 10	J
2-Chloroethylvinylether		R		R	
Freon 113		< 10		< 10	
Total VOCs		**3**		1	

VOCs	Volatile organic compounds.
ug/L	Micrograms per liter.
J	Estimated value.
EQ	Equipment
R	Unusable data
B	Constituent detected in associated
--	Not analyzed.

Table 15. Concentrations of Semi-Volatile Organic Compounds Detected in Groundwater Samples During the Third Quarter 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards, Criteria and Guidance Values [1]	SITE: SAMPLE ID: DATE:	GM-14 GM-14 10/2/00	WATER EQ. BLANK FB100200 10/2/00
Phenol	1*		< 11	< 11
Bis(2-chloroethyl)ether	1		< 11	< 11
2-Chlorophenol	1*		< 11	< 11
1,3-Dichlorobenzene	3**		< 11	< 11
1,4-Dichlorobenzene	3**		< 11	< 11
1,2-Dichlorobenzene	3**		< 11	< 11
2-Methylphenol	1*		< 11	< 11
Propane, 2,2'-oxybis[1-chloro-	--		< 11	< 11
4-Methylphenol	1*		< 11	< 11
N-Nitroso-di-n-propylamine	--		< 11	< 11
Hexachloroethane	5		< 11	< 11
Nitrobenzene	0.4		< 11	< 11
Isophorone	50		< 11	< 11
2-Nitrophenol	1*		< 11	< 11
2,4-Dimethylphenol	50		< 11	< 11
Bis(2-chloroethoxy)methane	5		< 11	< 11
2,4-Dichlorophenol	5		< 11	< 11
1,2,4-Trichlorobenzene	5		< 11	< 11
Naphthalene	10		< 11	< 11
4-Chloroaniline	5		< 11	< 11
Hexachlorobutadiene	0.5		< 11	< 11
4-Chloro-3-methylphenol	--		< 11	< 11
2-Methylnaphthalene	--		< 11	< 11
Hexachlorocyclopentadiene	5		< 11	< 11
2,4,6-Trichlorophenol	--		< 11	< 11
2,4,5-Trichlorophenol	--		< 26	< 27
2-Chloronaphthalene	10		< 11	< 11
2-Nitroaniline	5		< 26	< 27
Dimethylphthalate	50		< 11	< 11
Acenaphthylene	--		< 11	< 11
2,6-Dinitrotoluene	5		< 11	< 11
3-Nitroaniline	5		< 26	< 27
Acenaphthene	20		< 11	< 11
2,4-Dinitrophenol	1*		< 26	< 27
4-Nitrophenol	--		< 26	< 27
Dibenzofuran	--		< 11	< 11
2,4-Dinitrotoluene	5		< 11	< 11
Diethylphthalate	50		< 11	< 11
CPPE4	--		< 11	< 11
Fluorene	50		< 11	< 11
4-Nitroaniline	5		< 26	< 27
4,6-Dinitro-2-methylphenol	--		< 26	< 27
N-Nitrosodiphenylamine [1]	50		< 11	< 11
Hexachlorobenzene	0.04		< 11	< 11
Pentachlorophenol	1*		< 26	< 27
Phenanthrene	50		< 11	< 11
Anthracene	50		< 11	< 11
Carbazole	--		< 11	< 11

See next page for footnotes.

Table 15. Concentrations of Semi-Volatile Organic Compounds Detected in Groundwater Samples During the Third Quarter 2000 Groundwater Monitoring Round, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards, Criteria and Guidance Values [1]	SITE: SAMPLE ID: DATE:	GM-14 GM-14 10/2/00	WATER EQ. BLANK FB100200 10/2/00
Di-n-butylphthalate	50		0.1 J	< 11
Fluoranthene	50		< 11	< 11
Pyrene	50		< 11	< 11
Butylbenzylphthalate	50		< 11	< 11
3,3'-Dichlorobenzidine	5		< 11	< 11
Benzo(a)anthracene	0.002		< 11	< 11
Chrysene	0.002		< 11	< 11
Bis(2-ethylhexyl)phthalate (BEHP)	5		< 11	0.4 JB
Di-n-octylphthalate	50		< 11	0.2 JB
Benzo(b)fluoranthene	0.002		< 11	< 11
Benzo(k)fluoranthene	0.002		< 11	< 11
Benzo(a)pyrene	ND		< 11	< 11
Indeno(1,2,3-cd)pyrene	0.002		< 11	< 11
Dibenz(a,h)anthracene	--		< 11	< 11
Benzo(g,h,i)perylene	--		< 11	< 11
4-bromophenyl-phenylether	--		< 11	< 11

ug/L Micrograms per liter.
B Detected in an associated blank.
J Estimated value.
-- No standard or guidance value established.
(1) Standards, criteria, and guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller, 1999b).
* Sum of phenolic compounds cannot exceed 1 ug/L.
** Sum of isomers cannot exceed 3 ug/L.

Table 16. Total Cadmium and Chromium Detected in Groundwater Samples Collected During Last Quarter 1999 and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

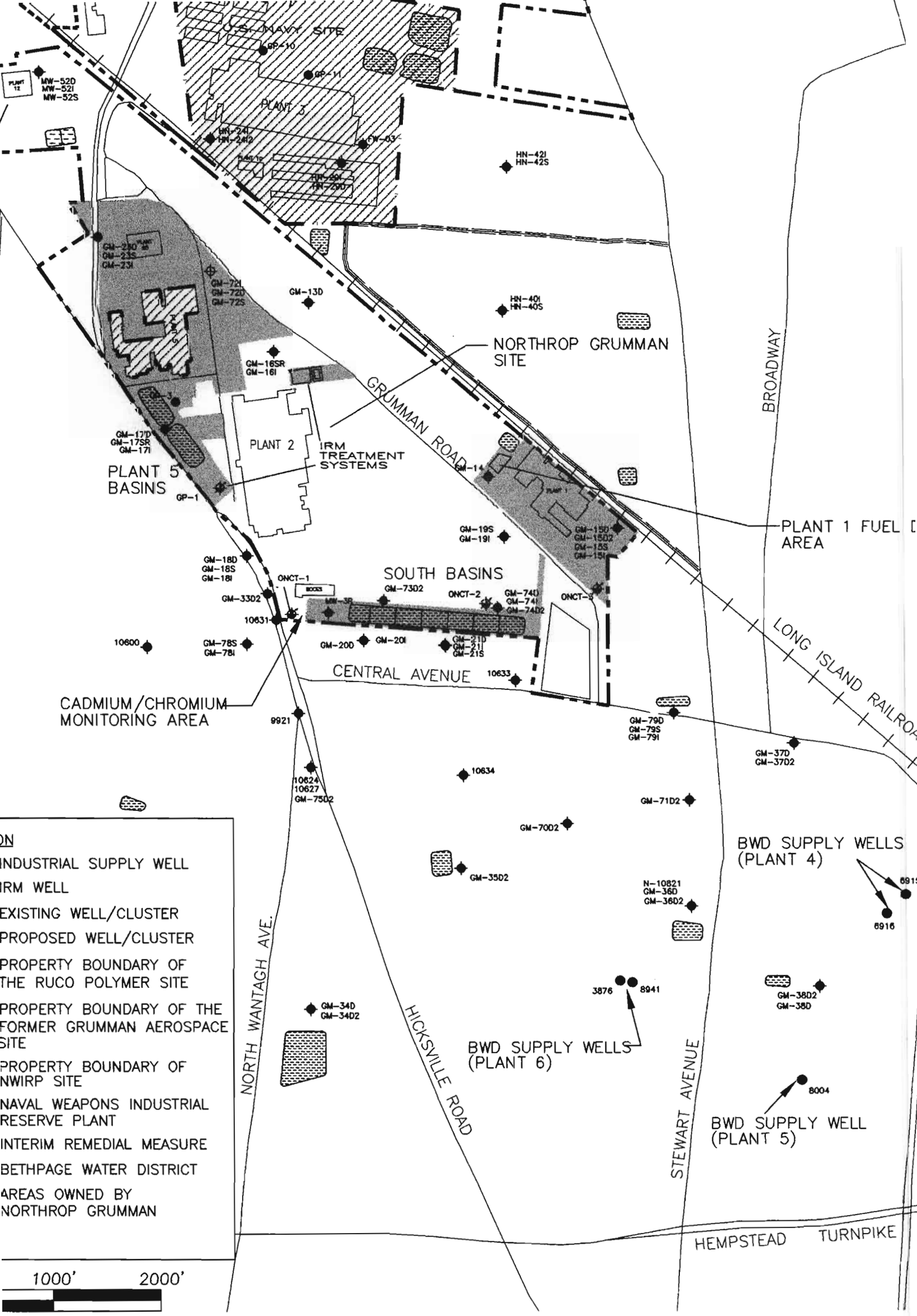
CONSTITUENT: (Units in ug/L)	NYSDEC Standards, Criteria, and Guidance Values [1]	SITE:	10631	10631	10631	10631	GM-16S	GM-16SR	GM-16S
		SAMPLE ID:	MW-10631	N-10631	N-10631	N10631	GM-16S	MW-16SR	GM-16SR
		DATE:	12/1/99	3/13/00	6/27/00	9/26/00	3/15/00	6/27/00	9/26/00
Cadmium	5		**2.2 B**	**2.6**	**1.5 B**	<0.5	**0.7**	<0.2	<0.5
Chromium	50		**50.1**	**38**	**27.1**	<1	**4.6**	<0.83	<2.1

(1)	Standards, criteria, and guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller, 2000).
ug/L	Micrograms per liter.
B	Detected between the IDL and CRDL.
IDL	Instrument detection limit.
CRDL	Contract required detection limit.
J	Estimated value.
NYSDEC	New York State Department of Environmental Conservation.
EQ	Equipment.
	Value exceeds associated SCG value.
*	Replicate sample.

Table 16. Total Cadmium and Chromium Detected in Groundwater Samples Collected During Last Quarter 1999 and First Three Quarters 2000 Groundwater Monitoring Rounds, Northrop Grumman Corporation, Bethpage, New York.

CONSTITUENT: (Units in ug/L)	NYSDEC Standards, Criteria, and Guidance Values [1]	SITE: / SAMPLE ID: / DATE:	MW-03R MW-3R 12/1/99	MW-03R MW-3R 3/13/00	MW-03R MW-3R 6/27/00	MW-03R MW-3R 9/26/00	MW-03R* REP-1 9/26/00	EQ. BLANK FB092600 9/26/00
Cadmium	5		**26.9**	**28**	**28.9**	**22.9J**	**2.2BJ**	<0.5
Chromium	50		**67.9**	**81**	**75.8**	**76.5J**	**38.6J**	<1

(1)	Standards, criteria, and guidance values based on documents referenced in the Groundwater Feasibility Study Report (ARCADIS Geraghty & Miller, 2000).
ug/L	Micrograms per liter.
B	Detected between the IDL and CRDL.
IDL	Instrument detection limit.
CRDL	Contract required detection limit.
J	Estimated value.
NYSDEC	New York State Department of Environmental Conservation.
EQ	Equipment.
	Value exceeds associated SCG value.
*	Replicate sample.



ON

- INDUSTRIAL SUPPLY WELL
- IRM WELL
- EXISTING WELL/CLUSTER
- PROPOSED WELL/CLUSTER
- PROPERTY BOUNDARY OF THE RUCO POLYMER SITE
- PROPERTY BOUNDARY OF THE FORMER GRUMMAN AEROSPACE SITE
- PROPERTY BOUNDARY OF NWIRP SITE
- NAVAL WEAPONS INDUSTRIAL RESERVE PLANT
- INTERIM REMEDIAL MEASURE
- BETHPAGE WATER DISTRICT
- AREAS OWNED BY NORTHROP GRUMMAN

1000' 2000'

ALE: 1" = 1000'

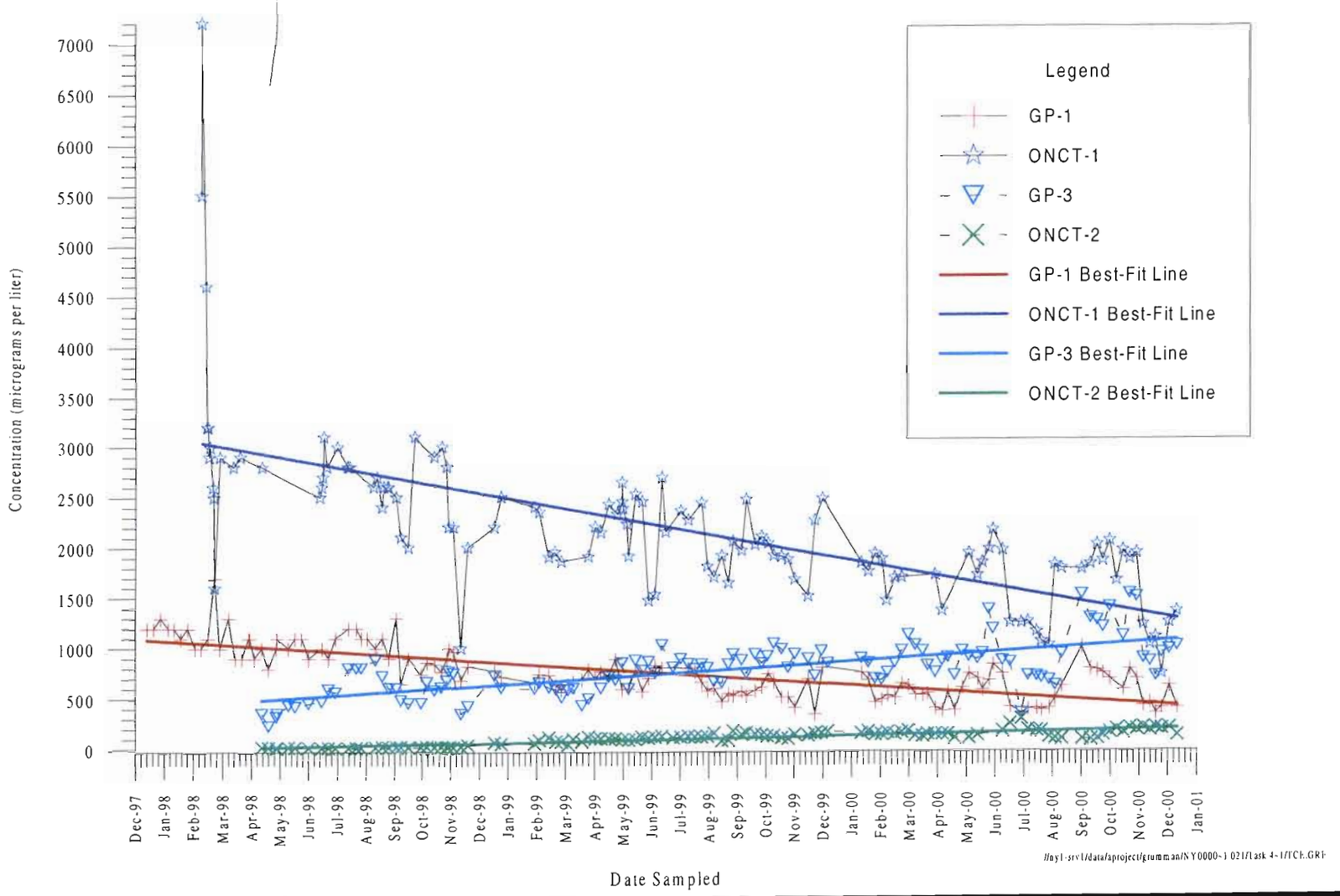
ARCADIS GERAGHTY & MILLER

NORTHROP GRUMMAN CORPORATION

BETHPAGE, NEW YORK

SITE PLAN AND IRM AND WELL LOCATIONS

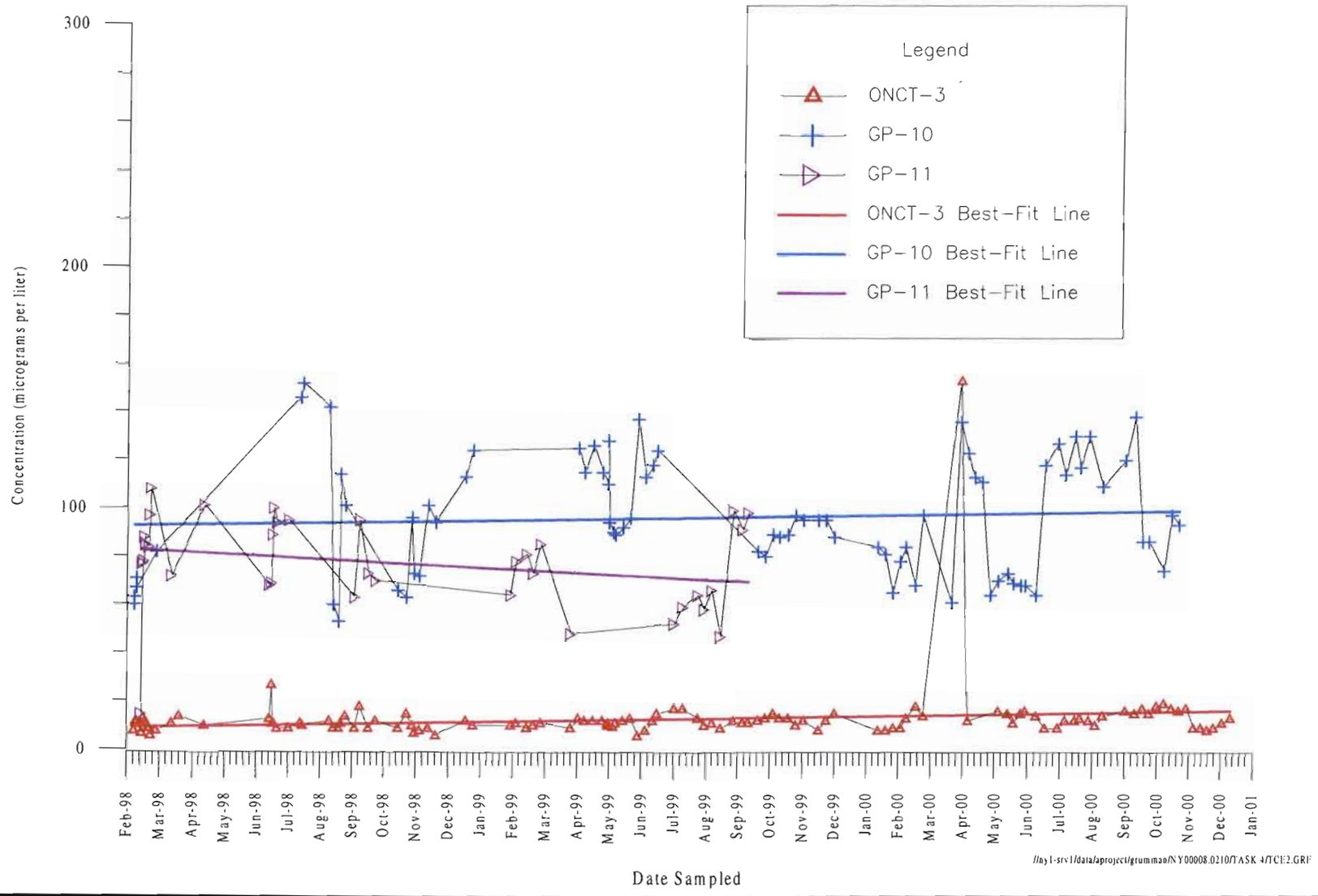
DRAWN	DATE	PROJECT MANAGER
A.G.	2/27/01	CSG
		LEAD DESIGN PROF.
		PROJECT NUMBER
		NY008.0210



ARCADIS GERAGHTY&MILLER

Trichloroethene Concentrations
In IRM Wells GP-1, ONCT-1, and ONCT-2 and Supply Well GP-3
Northrop Grumman Corporation, Bethpage, New York

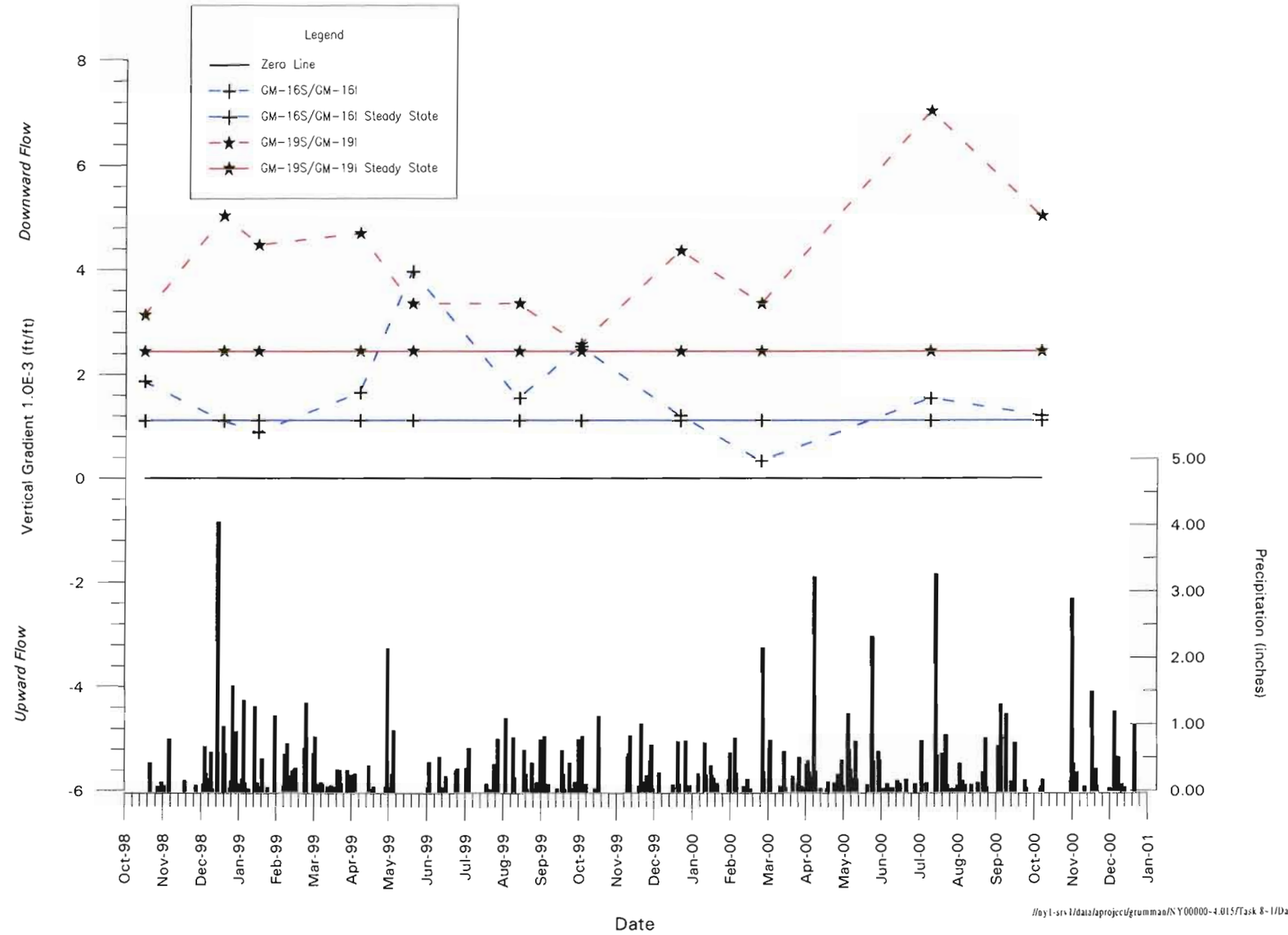
FIGURE
2



ARCADIS GERAGHTY & MILLER

Trichloroethene Concentrations in IRM Well ONCT-3 and Supply Wells GP-10 and GP-11 Northrop Grumman Corporation, Bethpage, New York

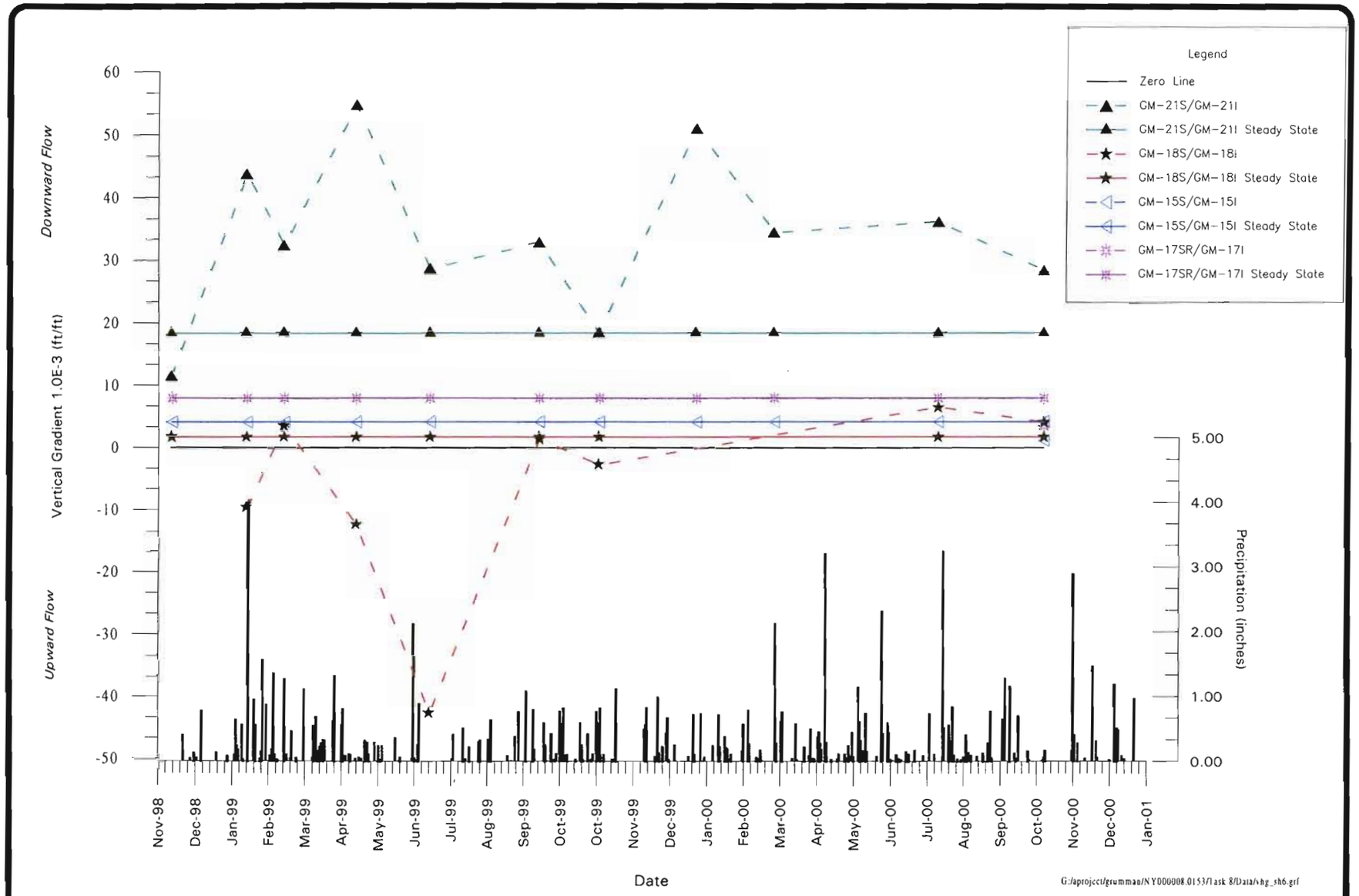
FIGURE 3



ARCADIS GERAGHTY & MILLER

Comparsion of Vertical Gradients in Shallow/Intermediate Well Clusters to Model-Predicted Steady State Gradients and Precipitation Data through the Third Quarter 2000
Northrop Grumman Corporation
Bethpage, New York

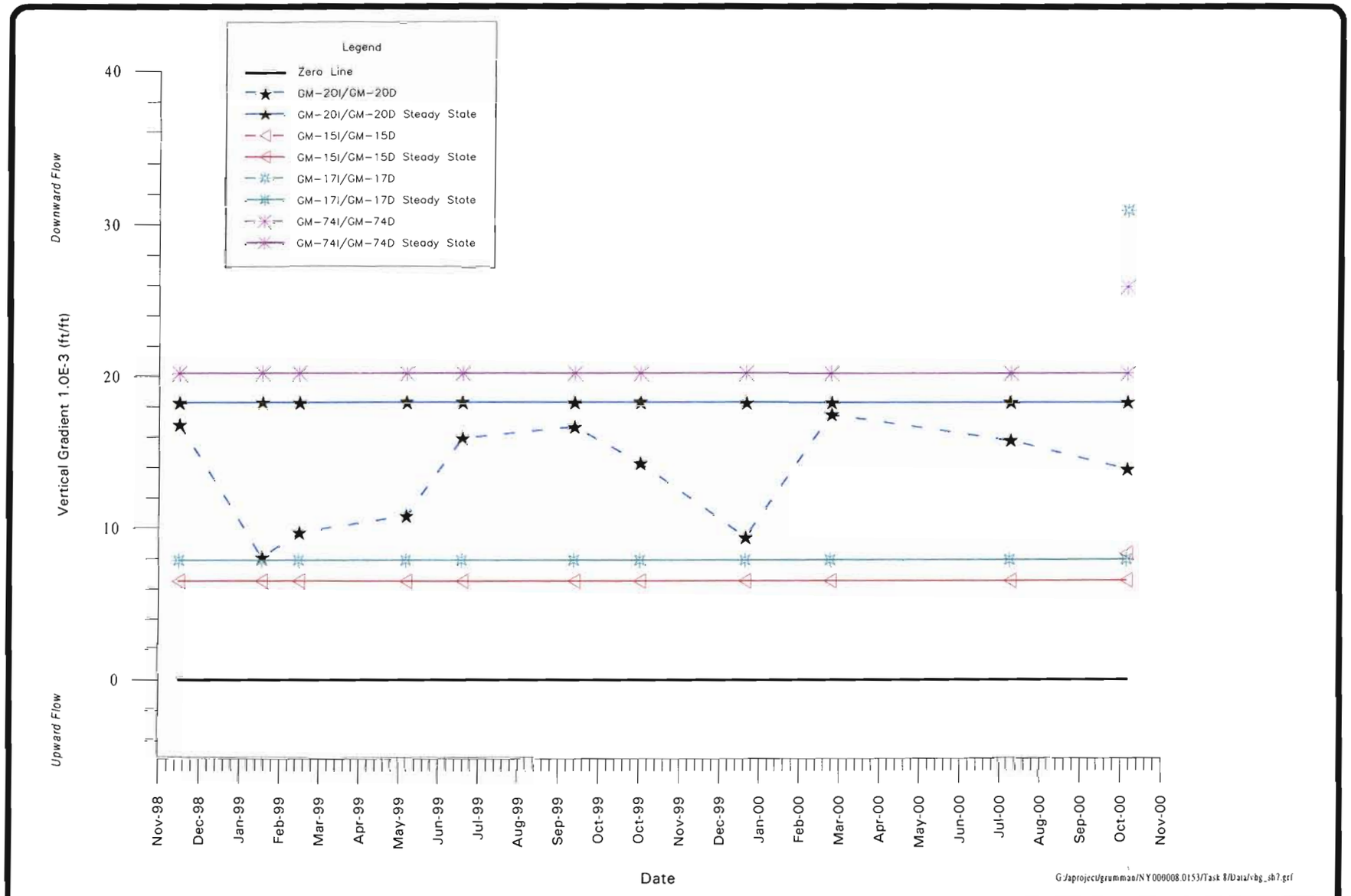
FIGURE 4



ARCADIS GERAGHTY & MILLER

Comparsion of Vertical Gradients in Shallow/Intermediate Well Clusters to Model-Predicted Steady State Gradients and Precipitation Data through the Third Quarter 2000
Northrop Grumman Corporation
Bethpage, New York

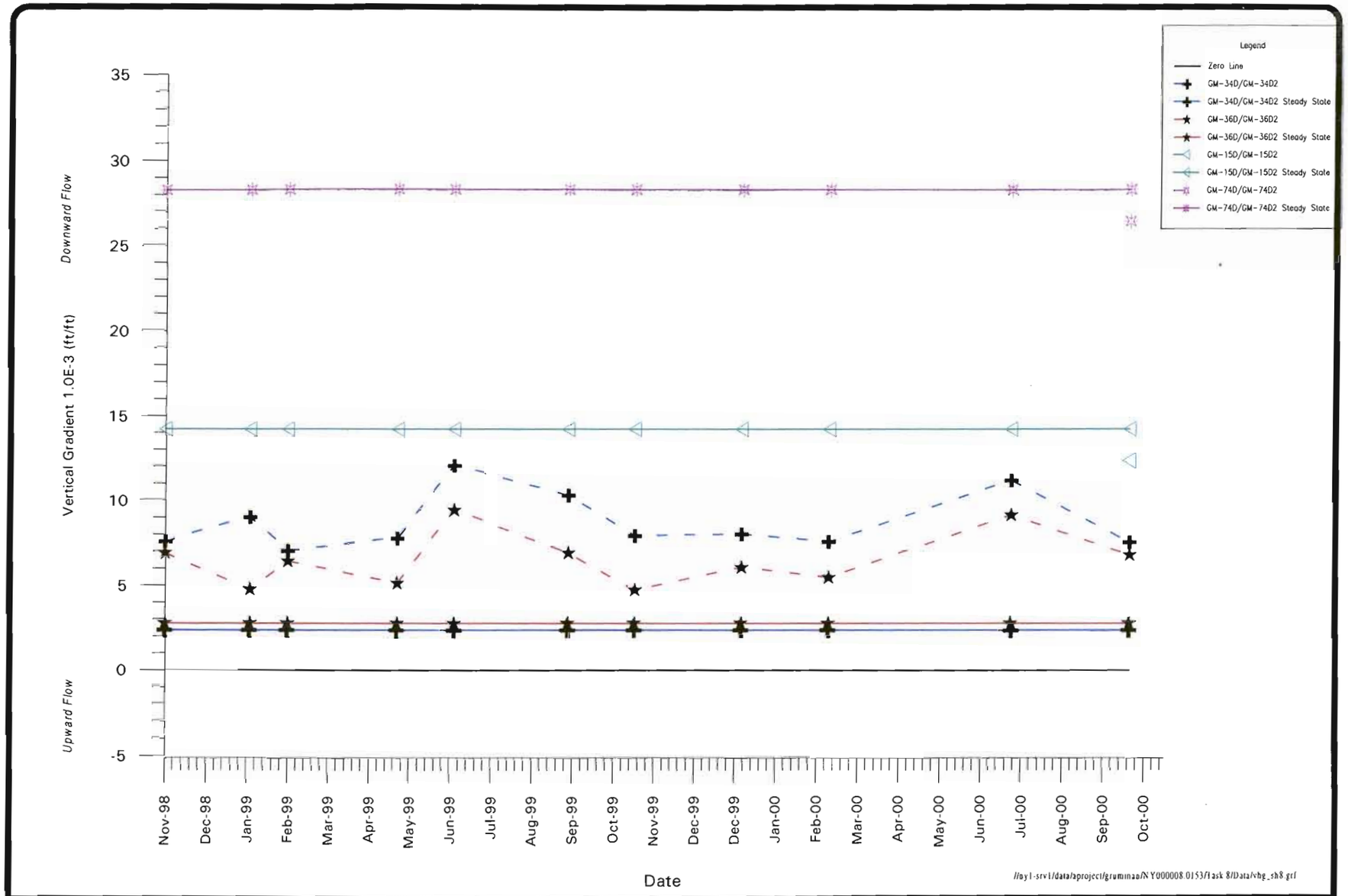
FIGURE 5



ARCADIS GERAGHTY & MILLER

Comparsion of Vertical Gradients in Intermediate/Deep Well Clusters to the Model-Predicted Steady State Gradients through the Third Quarter 2000
Northrop Grumman Corporation
Bethpage, New York

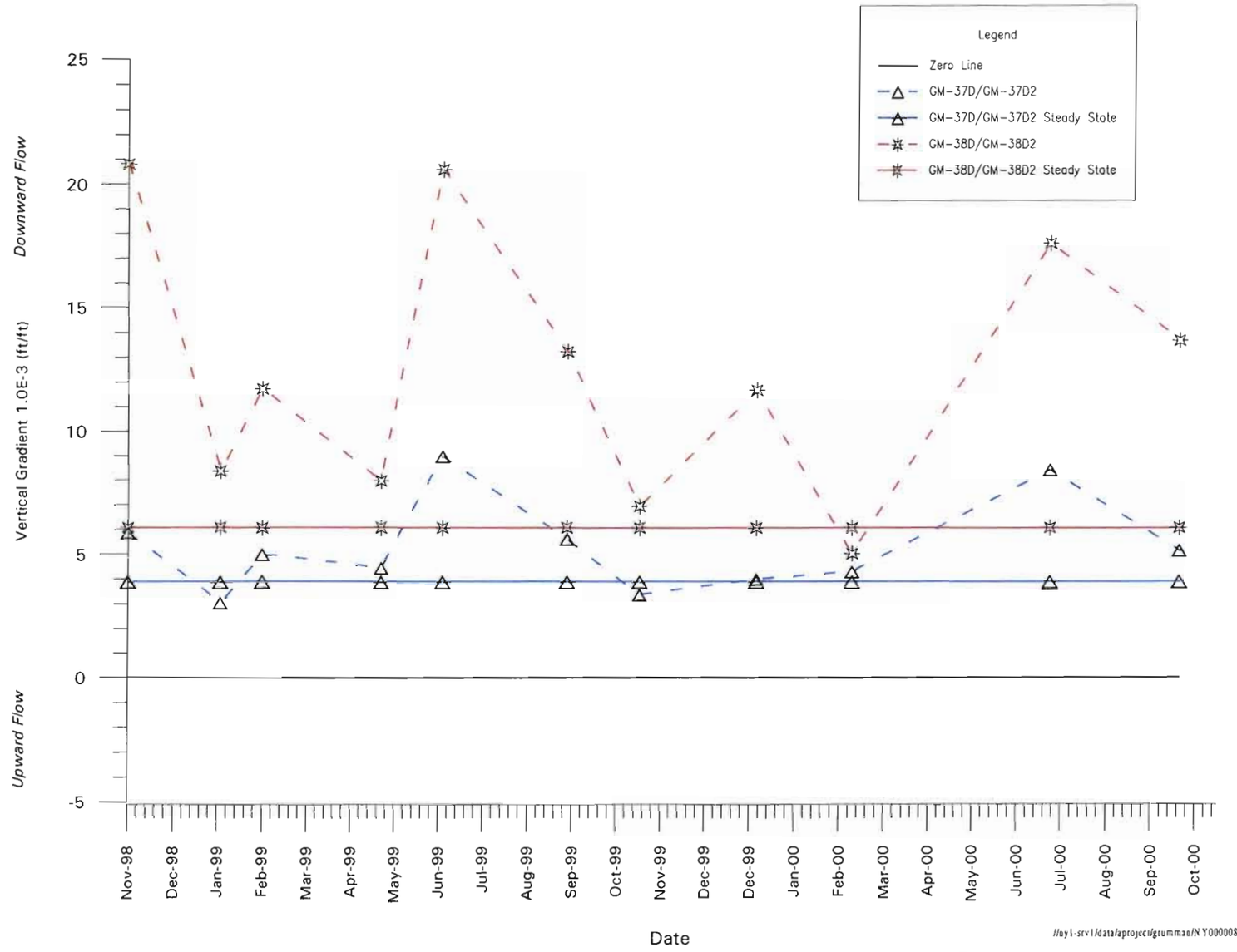
FIGURE 6



ARCADIS GERAGHTY & MILLER

Comparsion of Vertical Gradients in Deep/Deep2 Well Clusters to Model-Predicted Steady State Gradients through the Third Quarter 2000
Northrop Grumman Corporation
Bethpage, New York

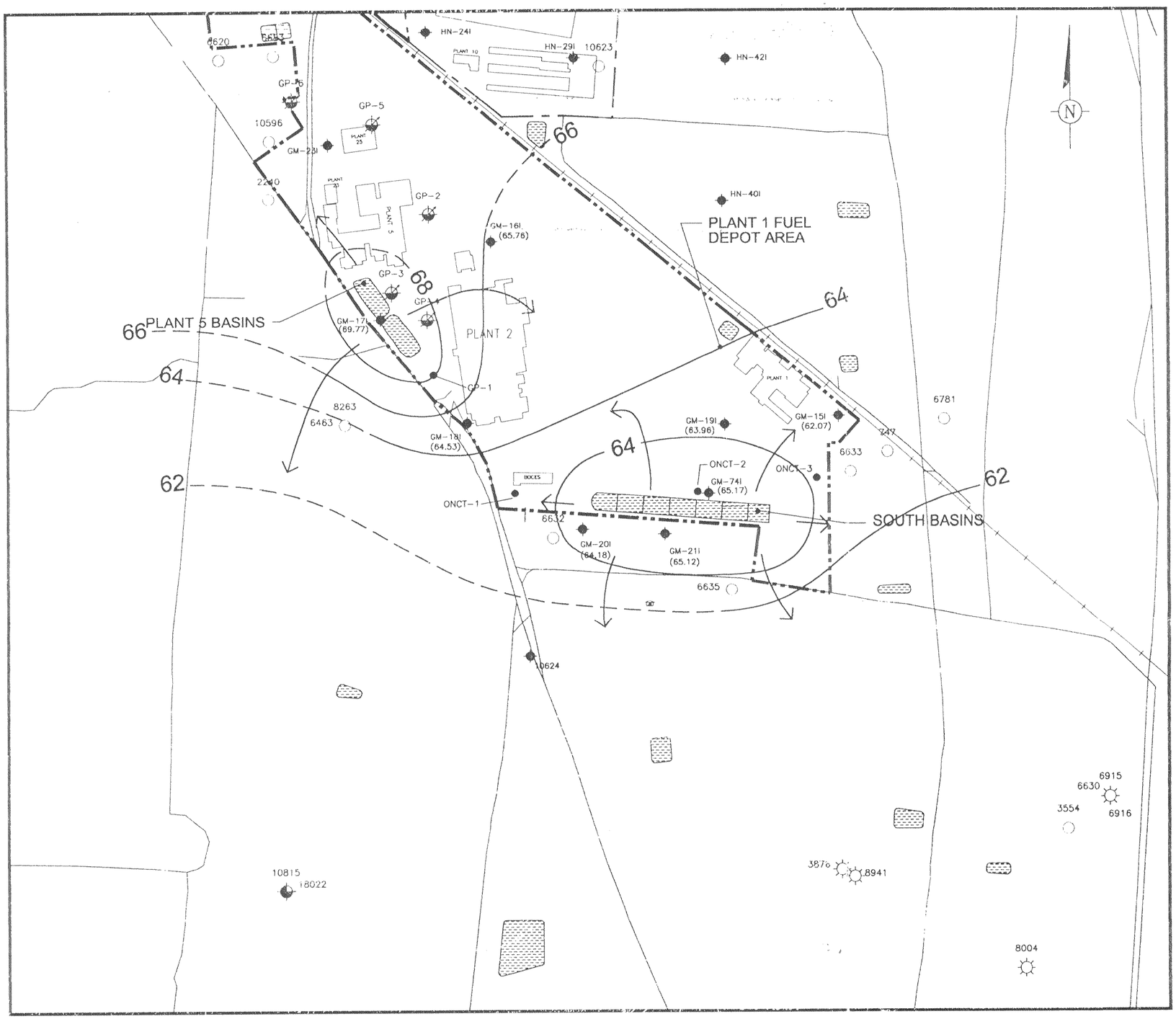
FIGURE
7



ARCADIS GERAGHTY & MILLER

Comparsion of Vertical Gradients in Deep/Deep2 Well Clusters to Model-Predicted Steady State Gradients through the Third Quarter 2000
Northrop Grumman Corporation
Bethpage, New York

FIGURE
8



EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- PROPERTY BOUNDARY OF THE U.S. NAVY SITE
- RECHARGE BASIN
- GM-15I (62.07) — LOCATION AND DESIGNATION OF INTERMEDIATE MONITORING WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- 3876 — LOCATION AND DESIGNATION OF BETHPAGE WATER DISTRICT PUBLIC SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- 9667 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-16 — LOCATION AND DESIGNATION OF GRUMMAN INDUSTRIAL SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- ONCT-1 — LOCATION AND DESIGNATION OF ON-SITE IRM EXTRACTION WELL (SHOWN FOR REFERENCE ONLY)
- HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- LINE OF EQUAL WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE APPROXIMATE)
- IRM — INTERIM REMEDIAL MEASURE

NOTES:

1. WELL INVENTORY REVISED BETWEEN AUGUST 4 AND AUGUST 23, 1995; WELL DATA OBTAINED FROM UNITED STATES GEOLOGICAL SURVEY, NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS, NASSAU COUNTY DEPARTMENT OF HEALTH, AND THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.
2. IRM WELLS ONCT-1, ONCT-2, ONCT-3, AND GP-1 ARE SCREENED IN THE D2 ZONE.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.

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

NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

POTENTIOMETRIC SURFACE CONFIGURATION AND GROUNDWATER FLOW DIRECTIONS IN THE INTERMEDIATE ZONE
OCTOBER 16, 2000

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	4/26/01	CSG	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY0008.210	10

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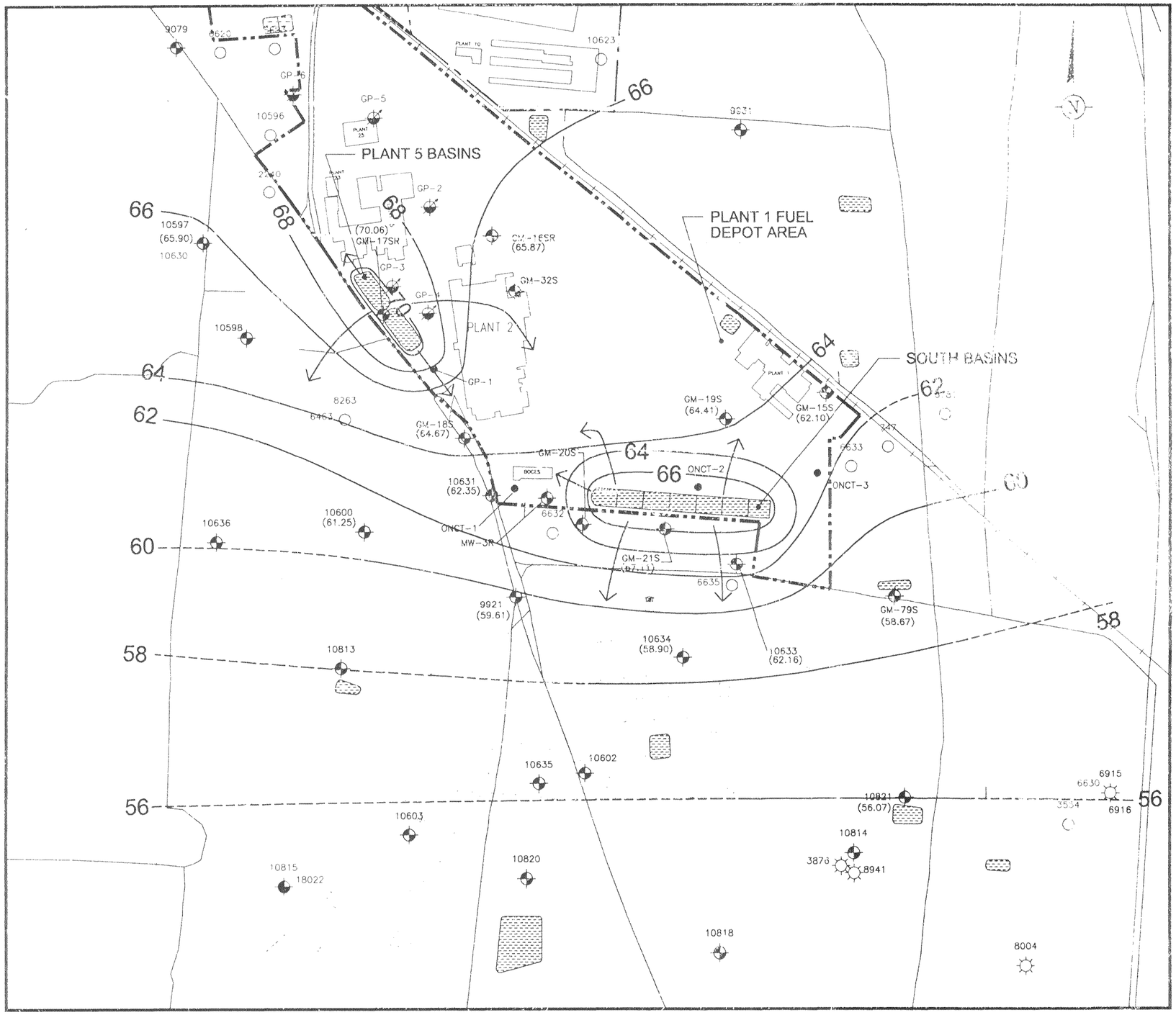

EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- PROPERTY BOUNDARY OF THE U.S. NAVY SITE
- RECHARGE BASIN
- GM-19S (64.41) — LOCATION AND DESIGNATION OF SHALLOW MONITORING WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- 3876 — LOCATION AND DESIGNATION OF BETHPAGE WATER DISTRICT PUBLIC SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- 9667 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-15 — LOCATION AND DESIGNATION OF GRUMMAN INDUSTRIAL SUPPLY WELL (SHOWN FOR REFERENCE ONLY)
- ONCT-1 — LOCATION AND DESIGNATION OF ON-SITE IRM EXTRACTION WELL (SHOWN FOR REFERENCE ONLY)
- HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- LINE OF EQUAL WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (DASHED WHERE APPROXIMATE)
- IRM — INTERIM REMEDIAL MEASURE

NOTES:

1. WELL INVENTORY REVISED BETWEEN AUGUST 4 AND AUGUST 23, 1995; WELL DATA OBTAINED FROM UNITED STATES GEOLOGICAL SURVEY, NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS, NASSAU COUNTY DEPARTMENT OF HEALTH, AND THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.
2. IRM WELLS ONCT-1, ONCT-2, ONCT-3, AND GP-1 ARE SCREENED IN THE D2 ZONE.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.

0 800 FT

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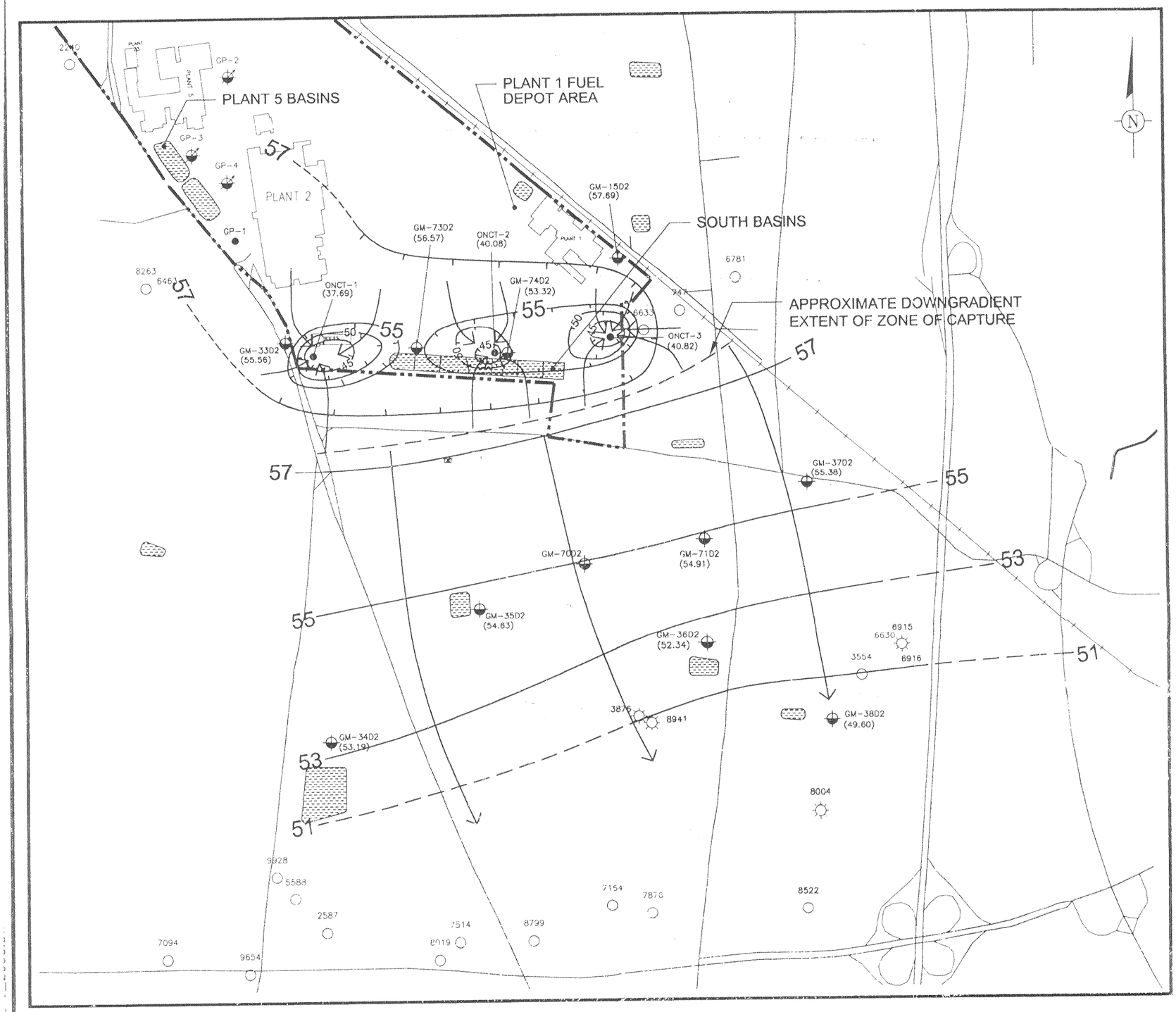
ARCADIS GERAGHTY & MILLER
88 Duryea Road
Melville, New York 11747
Tel: 516/249-7600 Fax: 516/249-7610

NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

WATER-TABLE CONFIGURATION AND GROUNDWATER FLOW DIRECTIONS IN THE SHALLOW ZONE
OCTOBER 16, 2000

DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	4/26/01	CSG	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY0008.210	9



0 800 FT

EXPLANATION

- PROPERTY BOUNDARY OF FORMER GRUMMAN AEROSPACE CORPORATION
- RECHARGE BASIN
- GM-36D2 (52.34) — LOCATION AND DESIGNATION OF D2 (VERY DEEP) MONITORING WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL.
- 3876 — LOCATION AND DESIGNATION OF BETHPAGE WATER DISTRICT PUBLIC SUPPLY WELL
- 9667 — LOCATION AND DESIGNATION OF ADDITIONAL WELL
- GP-16 — LOCATION AND DESIGNATION OF GRUMMAN PRODUCTION WELL
- ONCT-3 (40.82) — LOCATION AND DESIGNATION OF ON-SITE IRM EXTRACTION WELL AND WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL
- HORIZONTAL COMPONENT OF GROUNDWATER FLOW
- IRM — INTERIM REMEDIAL MEASURE
- LINE OF EQUAL WATER-LEVEL ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (FT. MSL) (DASHED WHERE APPROXIMATE)
- LINE OF EQUAL WATER LEVEL ELEVATION DENOTING A DECREASE IN POTENTIOMETRIC SURFACE ELEVATION IN FT. MSL.

NOTES:

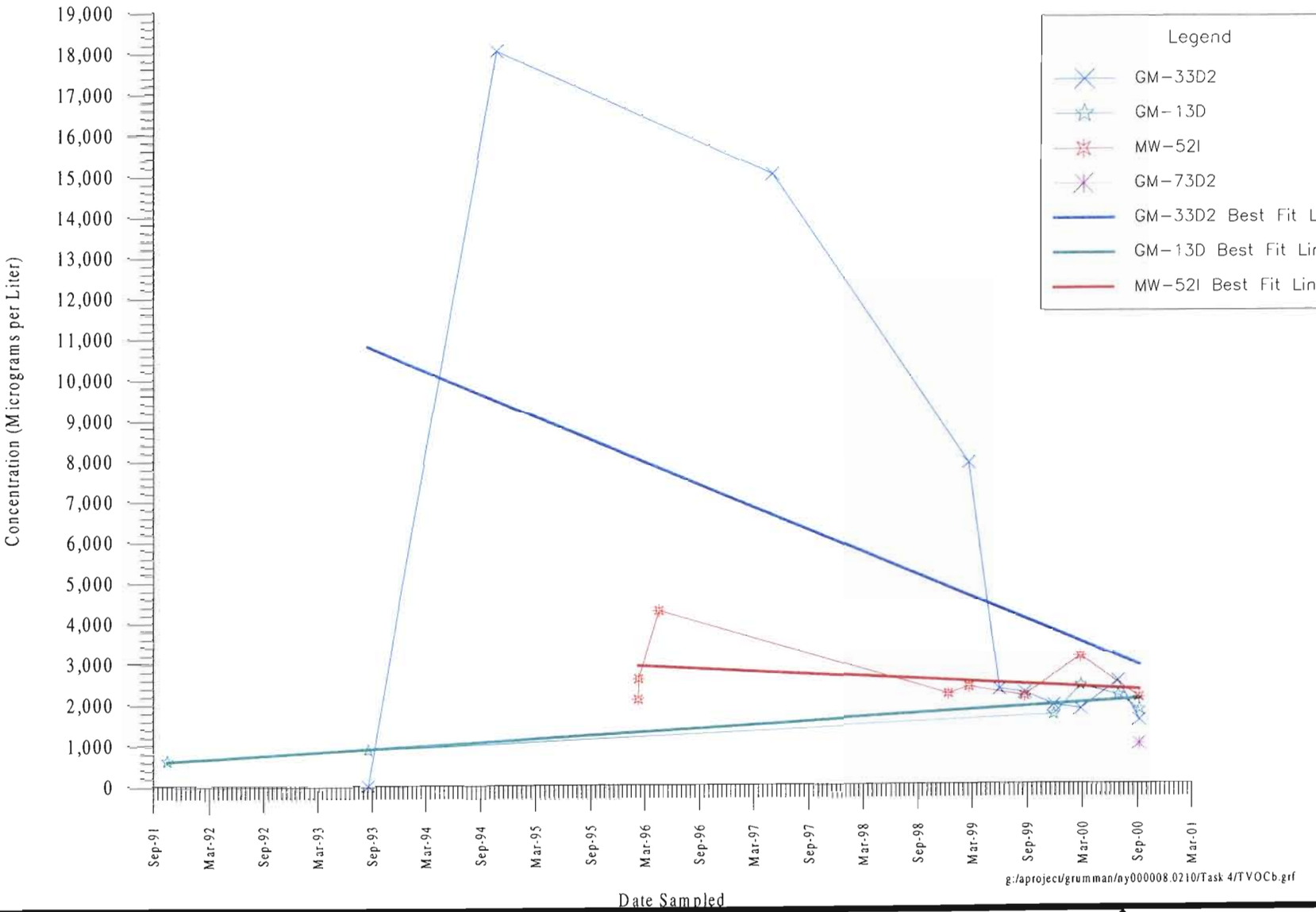
1. WELL INVENTORY REVISED BETWEEN AUGUST 4 AND AUGUST 23, 1995; WELL DATA OBTAINED FROM UNITED STATES GEOLOGICAL SURVEY, NASSAU COUNTY DEPARTMENT OF PUBLIC WORKS, NASSAU COUNTY DEPARTMENT OF HEALTH, AND THE NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION.
2. IRM WELLS ONCT-1, ONCT-2, AND ONCT-3 ARE SCREENED IN THE D2 ZONE AND WERE PUMPING AT 1,004 GPM, 605 GPM, AND 721 GPM, RESPECTIVELY AT THE TIME OF MEASUREMENT. A WATER LEVEL AND PUMPING RATE COULD NOT BE OBTAINED FROM IRM WELL GP-1, WHICH IS ALSO SCREENED IN THE D2 ZONE.
3. BWD WELL 3876 IS SCREENED IN THE DEEP ZONE.
4. BWD WELLS 6915, 6916, 8004, AND 8941 ARE SCREENED IN THE D2 ZONE.

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

NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

POTENTIOMETRIC SURFACE CONFIGURATION AND GROUNDWATER FLOW DIRECTIONS IN THE D2 ZONE
OCTOBER 16, 2000

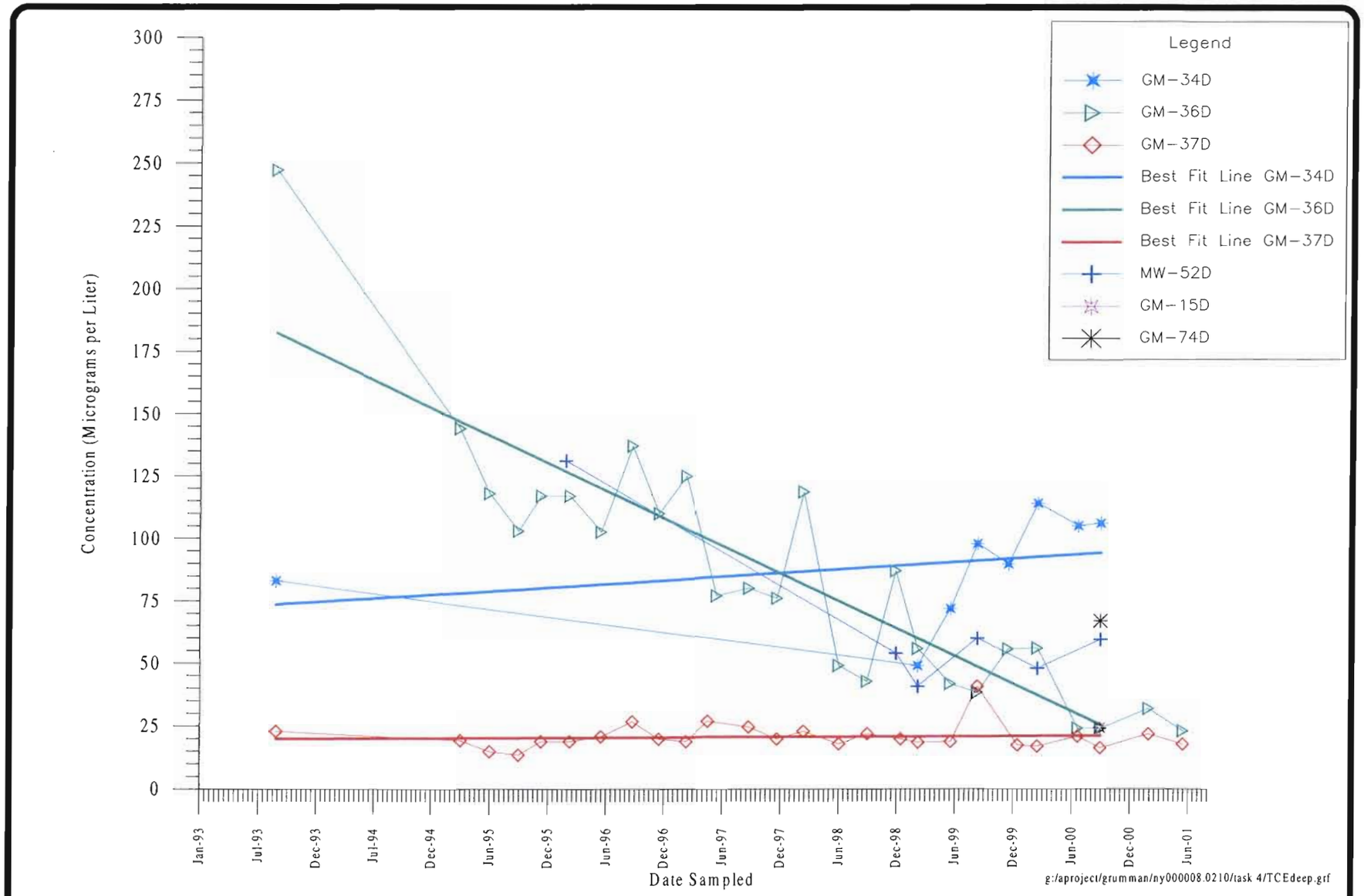
DRAWN	DATE	PROJECT MANAGER	DEPARTMENT MANAGER
AG	4/26/01	CGS	MW
		LEAD DESIGN PROF.	CHECKED
			DES
		PROJECT NUMBER	DRAWING NUMBER
		NY0008.210	11



ARCADIS GERAGHTY & MILLER

Total Volatile Organic Compound Concentrations in
Selected Deep and D2 Monitoring Wells
Northrop Grumman Corporation, Bethpage, New York

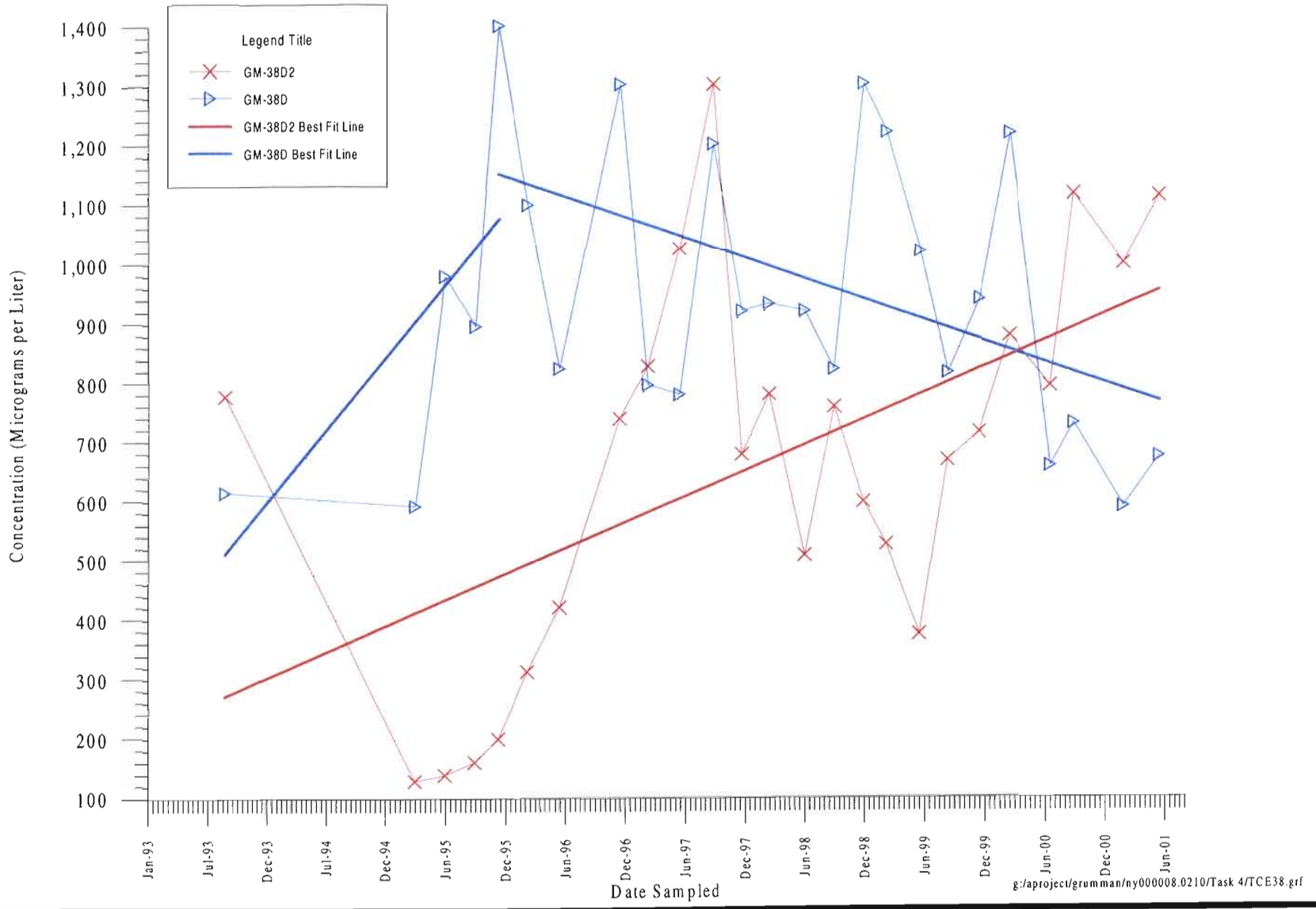
FIGURE
12



ARCADIS GERAGHTY & MILLER

Total Volatile Organic Compound Concentrations in Selected Deep Monitoring Wells
Northrop Grumman Corporation, Bethpage, New York

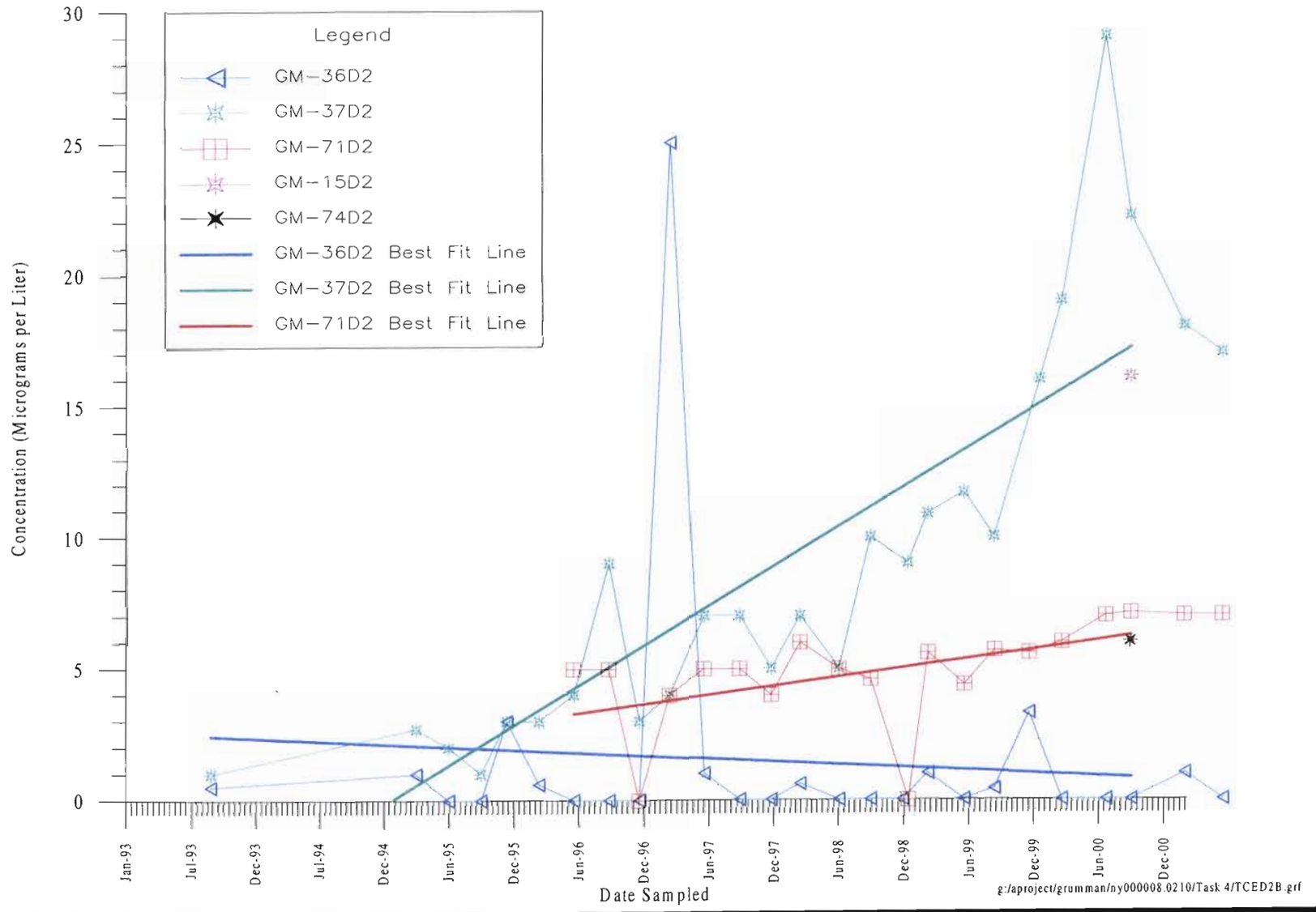
FIGURE 13



ARCADIS GERAGHTY & MILLER

Total Volatile Organic Compound Concentrations in Selected Deep and D2 Monitoring Wells
Northrop Grumman Corporation, Bethpage, New York

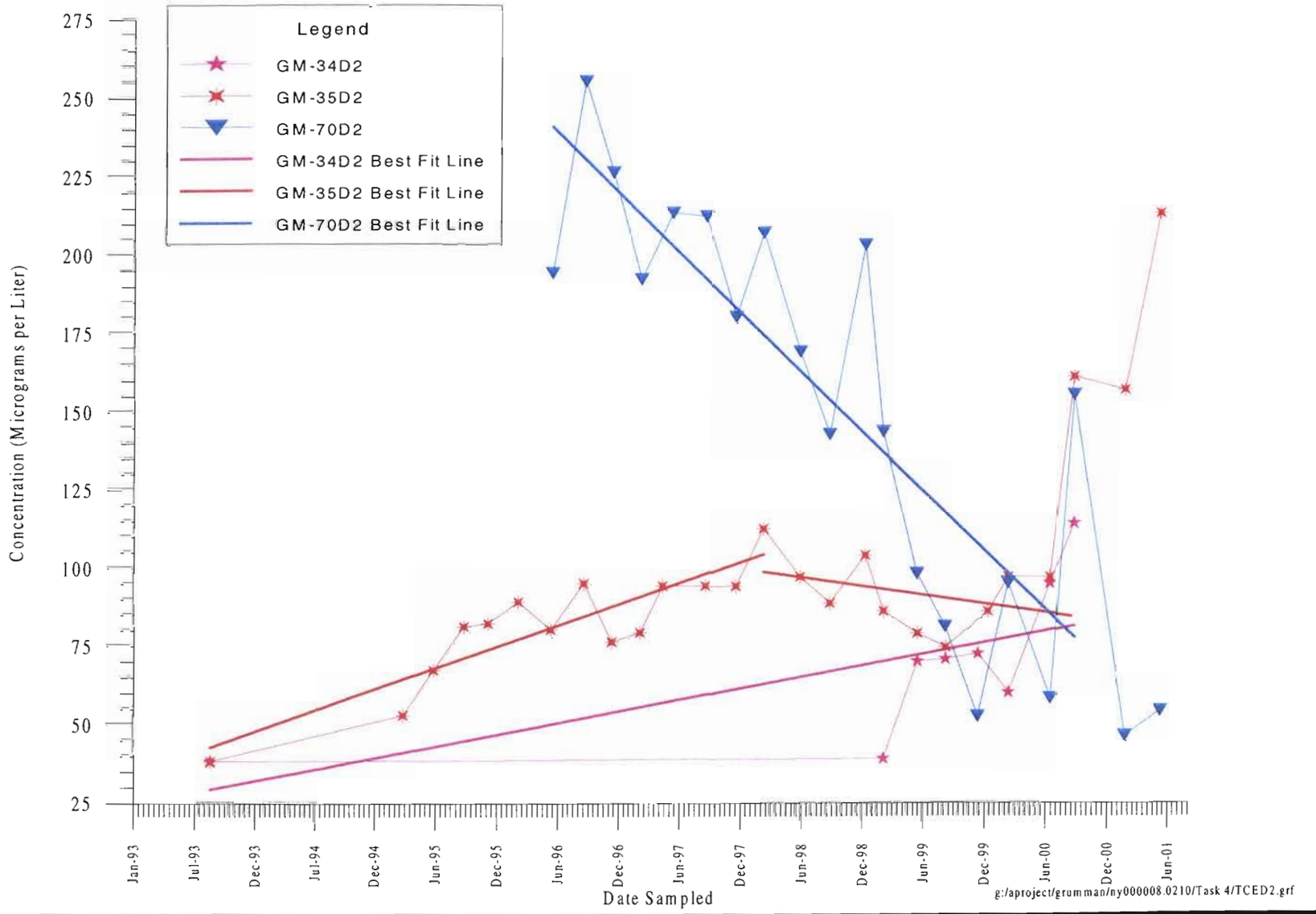
FIGURE
14



ARCADIS GERAGHTY & MILLER

Total Volatile Organic Compound Concentrations in Selected D2 Monitoring Wells
Northrop Grumman Corporation, Bethpage, New York

FIGURE
15



ARCADIS GERAGHTY & MILLER

Total Volatile Organic Compound Concentrations in Selected D2 Monitoring Wells
Northrop Grumman Corporation, Bethpage, New York

FIGURE
16

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Appendix A

Water-Level Measurement Logs

ARCADIS GERAGHTY & MILLER

Water Level/Pumping Test Record

Page ____ of ____

Project NY000000802.10 0002 Well ____ Site ____

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

Static Water Level ____ Measured With ____ Date/Time 10-16-00

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)
	DNG3			67.88							669 gpm
	GM-13D			49.00							
	DNG1			66.41							927.6gpm
? GM74I	GM74I			42.25							EAST
GM74D	GM74D			47.45							MID
? GM74D2	GM74D2			54.04							WEST
	DNG2			69.92							708.6gpm
	73D2			48.05							
→	GM16S			49.86							
GM	16I			50.05							
GM	16SR			49.90							
	15S			47.25							
	15I			47.06							
	15D2			51.90							
	15D			49.39							
	18I			44.50							
	18S			42.93							
	17SR			45.86							
	17I			46.06							
	17D			51.40							
→	17S			45.60							
N-	10600			41.16							
N-	9921			34.62							
N-	10627			34.71							
	35D2			41.65							
N-	10624			42.30							

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 NYDEC00880210 00002 Well ____ Site ____

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

Static Water Level ____ Measured With ____ Date/Time 10-16-00

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)
	10631			41.12							
	33D2			51.29							
	20D			41.91							
	20T			39.70							
	21S			38.70							
	21I			40.60							
	10633			41.64							
GM	21D2			43.54							
GM	20D2			43.20							
	10821			35.51							
	36D			37.08							
	36D2			39.26							
	38D2			41.96							
	32D			40.03							
	37D			41.22							
	37D2			41.79							
	10628			42.21							
	34D2			18.00							
	34D			16.49							
	10597			43.95							
GM	19S			~~45.35~~ 45.45							
GM	19I			45.90							

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

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Appendix B

Field and Data Validation Methodologies

Field Methodologies

This section generally describes the methodologies used by field personnel to collect hydraulic and groundwater quality data, as well as the Quality Control/Quality Assurance (QA/QC) sampling and data validation methods used. Detailed descriptions of field measurement and sampling methods are provided in the 1999 annual groundwater monitoring report (ARCADIS Geraghty & Miller, Inc. 2000). Deviations from established methods are described in Section 2.4 (Modifications to the Field Program).

B.1 Groundwater-Level Measurements

Water-level measurements were made using methods consistent with prior rounds of hydraulic measurements (ARCADIS Geraghty & Miller 2000). Water-level measurement logs for the third quarter 2000 are provided in Appendix A.

B.2 Groundwater Sampling

Sampling methods used to collect groundwater quality samples are summarized below. Consistent with New York State Department of Environmental Conservation (NYSDEC) approved procedures used during the Northrop Grumman Remedial Investigation (RI) and prior rounds of groundwater monitoring (ARCADIS Geraghty & Miller 2000), monitoring wells equipped with dedicated equipment were purged and sampled using existing dedicated bladder pumps. Intermediate, deep, and deep2 (D2) monitoring wells were purged using the bladder pumps in conjunction with dedicated inflatable packers. Except for shallow wells, three well volumes of water below the packer were evacuated prior to sampling all wells. Shallow monitoring wells that were equipped with dedicated bladder pumps did not have packers installed, therefore, the three standing well volumes that were evacuated prior to sampling were calculated based on the full well depth below the static water level. Field parameters (pH, specific conductance, and temperature) were measured after each well volume evacuated. Field parameter readings, well evacuation methods, and sample collection methods are provided in Appendix C.

Consistent with prior rounds of groundwater monitoring (ARCADIS Geraghty & Miller 2000), monitoring wells not equipped with dedicated equipment were purged using either a variable speed, 2-inch diameter submersible pump or a temporary bladder pump. Shallow wells were purged using a submersible pump following the three standing well volumes and field parameter stabilization technique discussed above.

Intermediate, deep, and D2 monitoring wells were purged using temporary bladder pumps following United States Environmental Protection Agency (USEPA) Micropurge/low-flow protocols (USEPA 1998). In addition to the three field parameters mentioned above, dissolved oxygen and oxidation-reduction potential were also measured using the low-flow sampling. Field parameter readings, well evacuation methods, and sample collection methods are provided in Appendix C.

Water samples from the Interim Remedial Measures (IRM) Wells (GP-1, ONCT-1, ONCT-2, and ONCT-3), Industrial Supply Well GP-3, and the IRM Plant 5 (GP-1) and Plant 5E (ONCT) treatment systems influent and effluent were collected as direct grab samples and analyzed for VOCs.

After collection, all samples were placed on ice and shipped overnight following chain of custody protocols to Severn Trent Laboratories (STL) in Shelton, Connecticut for analysis. Groundwater samples submitted for analysis of VOCs were analyzed for the Target Compound List (TCL) VOCs using NYSDEC Analytical Services Protocol (ASP) Method 95-1. Groundwater samples collected from Well GM-14, downgradient of the Plant 1 Fuel Depot were analyzed for VOCs and SVOCs using USEPA Methods 624 and 625, respectively. Groundwater samples submitted for analysis of Cd/Cr were analyzed using modified USEPA SW-846 ICAP Methods 3010/6010. Chain-of-custody records are provided in Appendix D.

B.3 Air Sampling

Air samples from the IRM Plant 5 (GP-1) and Plant 5E (ONCT) systems influent (pre-vapor-phase granular-activated carbon [VPGAC]) and effluent (post-VPGAC) were collected as in-line direct grab samples; Tedlar bags were used to obtain the air samples. Samples were shipped overnight under chain-of-custody protocols to STL in Pensacola, Florida for analysis of VOCs using USEPA Method TO-14A.

B.4 Quality Assurance/Quality Control

QA/QC measures are briefly discussed below. A complete description QA/QC measures is provided in the 1999 annual report (ARCADIS Geraghty & Miller, Inc. 2000).

B.4.1 Field

As part of field QA/QC protocols, non-dedicated sampling equipment (bladder pump and submersible pump) was decontaminated between wells using methods consistent with prior rounds. To demonstrate adequate decontamination and sample handling protocols, the appropriate QC samples (field and trip blanks) were prepared consistent with prior rounds (ARCADIS Geraghty & Miller 2000). Blind replicate samples and matrix spike/matrix spike duplicate (MS/MSD) samples were collected from Wells GM-23I and GM-38D2. The filled sample bottles were placed in ice-filled insulated coolers and shipped under chain-of-custody protocols overnight for laboratory analysis. Groundwater sampling logs and chain-of-custody records are provided in Appendices C and D, respectively.

B.4.2 Data Validation

Data validation was performed by ARCADIS G&M, Inc. by following the contract laboratory program national functional guidelines for organic data review set forth in the October 1999 guidance document (USEPA 1999). Inorganic data was validated using the February 1994 guidance document (USEPA 1994).

ARCADIS

Appendix C

Groundwater Sampling Logs

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman | Project No.: NY000080270.00002 | Page 1 of ____

Site Location: Bethpage, N.Y. | Date: 9/26/00

Site/Well No.: MW-3R | Replicate No.: ____ | Code No.: ____

Weather: Overcast ~50's | Sampling Time: Begin 10:00 End ____

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point	____	Color				
MP Elevation (ft)	____	Odor				
Land Surface Elevation (ft)	____	Appearance				
Sounded Well Depth (ft bmp)	55.00	pH (s.u.)	3.00	3.11	3.07	3.15
Depth to Water (ft bmp)	37.27	Conductivity (mS/cm)				
Water-Level Elevation (ft)	____	~~(umhos/cm)~~ us/cm	107.8	102.5	99.1	97.9
Water Column in Well (ft)	17.73	Turbidity (NTU)			25.0	13.2
Casing Diameter/Type	2 (0.16)	Temperature (~~°C~~) °F	58.4	58.5	58.3	58.4
Gallons in Well	2.84	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	8.51	Salinity (%)				
		Sampling Method				
Sample Pump Intake Setting (ft bmp)	____	Remarks				

Purge Time: begin 10:45 end ____

Pumping Rate (gpm): Q = 1 T = 9 1V = 3

Evacuation Method: ____

T1 = 10:48 T2 = 10:51 T3 = 10:54 T4 = 10:57 T5 = 11:00 T6 = 11:

Constituents Sampled	Container Description	Number	Preservative
4V			
pH 3.03	SFF C.O.C.		
Cond 97.6			
Temp 58.3			
Turb 8.8			

Sampling Personnel: GW/ML

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.: NY000080710.00002 | Page: 1 of ____

Site Location: Bethpage, N.Y. | Date: 9/26/00

Site/Well No.: GM-10I | Replicate No.: ____ | Code No.: ____

Weather: ____ | Sampling Time: Begin ____ End ____

Evacuation Data		Field Parameters	I	1V	2V	3V
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	120	pH (s.u.)	9.57	7.90	7.10	6.98
Depth to Water (ft bmp)		Conductivity (mS/cm)				
Water-Level Elevation (ft)		(µmhos/cm)	250	140	125	115
Water Column in Well (ft)		Turbidity (NTU)				
Casing Diameter/Type	4"	Temperature (°C)	13.1	13.9	13.9	13.8
Gallons in Well		Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling		Salinity (%)				
~~Sample Pump Intake Setting (ft bmp)~~ packer pressure	70 psi	Sampling Method				
		Remarks				
Purge Time	begin ____ end ____					
Pumping Rate (gpm)						
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: FW | ML

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.	NY000008021Q.00002	Page	1 of
Site Location	Bethpage, N.Y.			Date	9/27/00
Site/Well No.	GM-13D	Replicate No.		Code No.	
Weather	Clear ~70°	Sampling Time:	Begin 0915	End	

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	210.00	* pH (s.u.)	—	3.45	3.43	3.52
Depth to Water (ft bmp)	199.00	Conductivity ~~(mS/cm)~~ us/a	—	239	234	317
Water-Level Elevation (ft)		(µmhos/cm)				
Water Column in Well (ft)	11.00	Turbidity (NTU)				
Casing Diameter/Type	4 (0.65)	Temperature (°C)	—	66	63.3	63.5
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)~~	110 psi	Sampling Method				
Purge Time begin ____ end ____		Remarks	Dedicated Bladder Pump			
Pumping Rate (gpm)						
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: S. Healy G. Williams

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: 14000007.0216 | Project No.: 60002 | Page: 1 of ____

Site Location: ____ | Date: ____

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

Weather: ____ | Sampling Time: Begin 1240 | End ____

Evacuation Data		Field Parameters	I	10	20	30
Measuring Point		Color		Colorless		
MP Elevation (ft)		Odor		None		
Land Surface Elevation (ft)		Appearance		Clear		
Sounded Well Depth (ft bmp)	55.3	pH (s.u.)	6.98	7.47	7.55	7.6
Depth to Water (ft bmp)	44.64	Conductivity (mS/cm)	80	80	80	80
Water-Level Elevation (ft)		(µmhos/cm)				
Water Column in Well (ft)	10.66	Turbidity (NTU)				
Casing Diameter/Type	4" (.65)	Temperature (°F)	69.5	72.9	73.4	75.
Gallons in Well	6.9	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	21 gal	Salinity (%)				
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 1258 end ____	Remarks	1258	105	112	119
Pumping Rate (gpm)	Q = 1 gpm					
Evacuation Method	T = 21 min V = 7 min					

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: M E SH

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. Grumman | Project No. NY000008.0210.00002 | Page 1 of ____

Site Location: Bethpage N.Y. | Date: 9/28/00

Site/Well No.: CM 155 | Replicate No.: ____ | Code No.: ____

Weather: Sunny 70° | Sampling Time: Begin ____ End ____

Evacuation Data		Field Parameters	I	1U	2U	3
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance	>40			
Sounded Well Depth (ft bmp)	79.5	pH (s.u.)	~~5.38~~	6.65	6.16	6.1
Depth to Water (ft bmp)	46.85	Conductivity (mS/cm)	140	120	115	12
Water-Level Elevation (ft)		(µmhos/cm)				
Water Column in Well (ft)	32.65	Turbidity (NTU)				
Casing Diameter/Type	4 (.65)	Temperature (°C)	17.7	18.3	18.7	
Gallons in Well	21.22	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	63	~~Salinity (%)~~ Time	12[38]	12[48]	12[58]	1 (10)
Sample Pump Intake Setting (ft bmp)		Sampling Method				
Purge Time	begin 12[38] end ____	Remarks				
Pumping Rate (gpm)	2 gpm T=32min					
Evacuation Method	1U = 10min 2 min ex en JV					

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: G. Willens S. Healy

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.: NY000080210 T3 | Page: 1 of ____

Site Location: Bethpage, NY | Date: 9/19/00

Site/Well No.: GM-15I | Replicate No.: ____ | Code No.: ____

Weather: Overcast 70s | Sampling Time: Begin 10:20 End 12:00

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	105.00
Depth to Water (ft bmp)	94.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	11.00
Casing Diameter/Type	4 (0.865)
Gallons in Well	7.15
Gallons Pumped/Bailed Prior to Sampling	22
~~Sample Pump Intake~~ Packer Setting (ft bmp) / Pressure	80 psi
Purge Time	begin 10:25 end 11:54
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	5.6	5.4	5.3	4.85
Conductivity (mS/cm)				
~~(umhos/cm)~~ mS/cm (x 100)	2.88	2.93	3.04	~~3.1~~ 3.0
Turbidity (NTU)				
Temperature (°C)	68.2	68.4	69.0	68.9
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: Dedicated Bladder Pump

Remarks: 5 gal pails: 11 1/2

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: MLIME

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	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY000090210 Task: 00002 Well ID: 15D
Date: 9/28/00 Sampled By: GW/SH/ME
Sampling Time: _____ Recorded By: SH
Weather: Sunny, ~70° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: 342 Total Volume Purged: _____
Depth to Water: 49.0 Pump Intake Depth _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: SEE C.O.C.
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate ml./min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units	Conductivity (µmhos/cm)	Temp (°C) F	Depth to Water	Diss. Oxygen	Comments
1 45				225	6.23	145	77.7	49.03	6.4	
1 50				255	5.60	130	73.8	49.00	4.9	
1 55				270	5.59	125	71.2	—	4.2	
2 00				220	5.58	125	71.1	49.00	3.7	
2 05				225	5.94	135	70.6	—	3.3	
2 10				215	6.04	135	74.4	—	2.9	
2 15				200	6.03	140	76.5	—	2.5	
2 20				195	5.95	140	75.3	49.00	2.4	
2 25				200	5.85	140	76.8	—	2.3	
2 30				215	5.76	130	78.3	—	2.3	
2 35				215	5.73	125	77.4	—	2.3	
2 40				220	5.69	130	18°C	—	1.1	
2 45				220	5.68	130	18°C	—	1.2	

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

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: 114000008.0210 Task: 00002 Well ID: 15D2
Date: 10/2/00 Sampled By: ME SH
Sampling Time: 10^00 Recorded By: SH
Weather: Sunny 70° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow
Casing Diameter: 4" Purge Rate: 450 mL/min
Total Depth: 556 Total Volume Purged:
Depth to Water: 51.58' Pump Intake Depth: 72'
Water Column: Pump on: 10^10 Off:
Gallons/Foot: Parameters Sampled: SEE C.O.C.
Gallons In Well:

FIELD PARAMETER MEASUREMENTS

Time	Rate (mL/min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units)	Conductivity (µmhos/cm)	Temp (°C)(F)	Depth to Water	Diss. Oxygen	Comments
10^10				230	8.29	75	73.3	51.58	6.4	
10^15				240	7.12	65	73.5	—	6.3	
10^20				255	6.47	65	74.5	51.67	5.8	(16.5°C)
10^25				265	6.34	65	74.3	—	4.5	(16.1°C)
10^30				270	6.40	60	73.3	51.68	4.4	
10^35				270	6.50	60	74.1	—	4.8	(16.0°C)
10^40				275	6.68	60	73.6	—	5.1	(16.0°C)
10^45				250	6.71	60	72.9	—	5.3	(16.0°C)
10^50				210	6.84	60	74.7	51.64	5.0	
10^55				205	6.92	60	74.9	—	5.1	(15.9°C)
11^00				205	6.95	60	75.1	—	4.9	(16.1°C)
11^05				220	6.98	60	75.4	51.58	5.0	(16.1°C)
11^10				225	7.00	60	76.4	-	5.2	

• C Temp

1 To C160 Verify others meter

Well Secure: Purge Water Disposal:
Color: Turbidity(qualitative):
Odor: Other (OVA, HNU,etc.):

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop Grumman | Project No.: NY000008020.00002 | Page 1 of ____

Site Location: Bethpage, N.Y. | Date: 9/26/00

Site/Well No.: Gm-16 SR | Replicate No.: ____ | Code No.: ____

Weather: Overcast 50's | Sampling Time: Begin ____ End ____

Evacuation Data		Field Parameters	I	IV	2V	3V
Measuring Point		Color				
MP Elevation (ft)		Odor				
Land Surface Elevation (ft)		Appearance				
Sounded Well Depth (ft bmp)	49.55	pH (s.u.)	2.91	3.02	2.98	2.90
Depth to Water (ft bmp)	70	Conductivity (mS/cm)				
Water-Level Elevation (ft)		us/cm ~~(µmhos/cm)~~	120.7	118.8	117.6	118.3
Water Column in Well (ft)	20.45	Turbidity (NTU)	—	17.53	15.79	4.69
Casing Diameter/Type	4 (0.65)	Temperature (°C) °F	58.9	59.4	59.7	60.0
Gallons in Well	13.29	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	39.00	Salinity (%)				
Sample Pump Intake Setting (ft bmp)		Sampling Method				
		Remarks				

Purge Time: begin 12:15 end ____

Pumping Rate (gpm): Q=3 T=13 V=4m

Evacuation Method: ____

TI = 12:15

TR = 12:19

T2 = 12:23

T3 = 12:27

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: GW/ML

Well Casing Volumes

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

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project	Northrup Grumman	Project No.	NY000090210.00003	Page	1 of
Site Location	Bethpage, NY			Date	9/19/00
Site/Well No.	GM-16I	Replicate No.		Code No.	
Weather	Overcast 70s	Sampling Time:	Begin 1:15	End	

Evacuation Data

Measuring Point	
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~~ Packer pressure Setting (ft bmp)	90 PSI
Purge Time	begin 1:25 end
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	6.59	7.65	7.8	7.99
Conductivity (mS/cm) ~~(umhos/cm)~~ uS/cm (x 100)	3.27	3.24	3.12	3.09
Turbidity (NTU)				
Temperature (°C)	68.5	67.6	66.9	66.5
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: Dedicated Bladder Pump

Remarks: 5 gal pails IIII ½

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: ML/MG

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. | Page 1 of

Site Location: Grumman Bethpage NY | Date

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

Weather: Sunny 60° | Sampling Time: Begin | End

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	70
Depth to Water (ft bmp)	45.85
Water-Level Elevation (ft)	
Water Column in Well (ft)	24.15'
Casing Diameter/Type	4" PVC
Gallons in Well	15.7
Gallons Pumped/Bailed Prior to Sampling	47.1
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 10:05 end
Pumping Rate (gpm)	2 GPM
Evacuation Method	

Field Parameters

Field Parameters	I	1	2	3
Color				
Odor				
Appearance				
pH (s.u.)	7.94	7.80	6.85	6.98
Conductivity (mS/cm)	110	105	130	110
(µmhos/cm)				
Turbidity (NTU)				
Temperature (°C) (°F)	73°	66.0	64.8	63.8
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

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: NY000008.0210 Task: 00002 Well ID: GM-17I
Date: 9/29/00 Sampled By: FR SH
Sampling Time: _____ Recorded By: SH FR
Weather: Sunny 65° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow
Casing Diameter: 4" Purge Rate: 500 ml/min
Total Depth: 120 Total Volume Purged: 9 gallons
Depth to Water: 46.09 Pump Intake Depth: _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: SEE C.O.C.
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 35				245	7.4	100	19.0	46.09	6.9	
11 40				245	6.79	110	19.1	—	6.5	
11 45				240	6.58	110	19.8	—	6.1	
11 50				236	6.48	105	19.8	46.09	6.2	
11 55				230	6.38	105	19.8	—	6.1	
12 00				220	6.48	105	19.9	—	6.3	
12 05				210	6.47	105	20.1	—	6.4	
12 10				210	6.47	110	20.0	46.11	6.3	
12 15				205	6.49	105	20.2	—	6.4	
12 20				205	6.51	105	20.2	—	6.4	
12 25				200	6.50	110	20.2	46.12	6.3	
12 30				200	6.48	110	20.2	—	6.4	
12 35				200	6.47	110	20.2	—	6.4	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____
Odor: _____ Other (OVA, HNU,etc.): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY000008.0210 Task: 00002 Well ID: 17D
Date: 9/29/00 Sampled By: FR SH
Sampling Time: _____ Recorded By: FR SH
Weather: Sunny 65° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow
Casing Diameter: 4" Purge Rate: _____
Total Depth: 298 Total Volume Purged: 6 gal
Depth to Water: 50.15 Pump Intake Depth: _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: SEE C.O.C.
Gallons in Well: _____

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
2^05	450			265	6.71	90	21.5	51.45	8.8	
2^10	↓			255	6.12	85	21.0	52.15	8.6	
2^15				250	6.03	85	21.0	—	8.4	
2^20				250	6.03	85	19.0	—	8.5	
2^25				240	6.00	80	19.1	—	8.6	
2^30				235	5.95	80	18.8	51.15	8.3	
2^35				235	5.95	85	18.7	—	8.8	
2^40				240	5.96	85	18.8	—	8.4	
2^45				240	6.00	85	18.8	51.13	8.5	
2^50				240	5.99	85	18.9	51.13	8.7	
2^55				240	6.00	85	19.0	—	8.7	
3^00				240	6.01	85	19.0	—	8.6	
3^05				240	6.00	85	18.8		8.8	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____
Odor: _____ Other (OVA, HNU,etc.): _____

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop-Grumman Project No.: NY000380210-00002 Page 1 of ___

Site Location: Bethpage, NY Date: 9/25/00

Site/Well No.: GM-18S Replicate No.: ___ Code No.: ___

Weather: overcast 60s Sampling Time: Begin ___ End ___

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	42.91
Depth to Water (ft bmp)	67
Water-Level Elevation (ft)	
Water Column in Well (ft)	24.09
Casing Diameter/Type	2(0.16)
Gallons in Well	3.85
Gallons Pumped/Bailed Prior to Sampling	~~15.4~~ 11.55
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 3:55 end ___
Pumping Rate (gpm)	Q = 1/2 T = 22 V = 7
Evacuation Method	

I: 3:55
1V: 4:02
2V: 4:09
3V: 4:15

Field Parameters

	I	1V	2V	3V
Color	Colorless			
Odor	slight odor			
Appearance				
pH (s.u.)	4.91	4.74	4.64	4.65
Conductivity μ (mS/cm) (μmhos/cm)	88.7	126.2	120.7	116.8
Turbidity (NTU)				
Temperature (~~°C~~) °F	62.1	62.4	62.1	62.1
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: C. Williams / M. Lacey

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.: NY000180210 TZ | Page 1 of ____

Site Location: Bethpage, NY | Date: 9/21/00

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

Weather: Sunny 70s | Sampling Time: Begin 4:40 | End ____

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	105'
Depth to ~~Water~~ Packer (ft bmp)	94'
Water-Level Elevation (ft)	
Water Column in Well (ft)	11'
Casing Diameter/Type	
Gallons in Well	7.15
Gallons Pumped/Bailed Prior to Sampling	22 gallons
~~Sample Pump Intake~~ Packer pressure Setting (ft bmp)	70 PSI
Purge Time	begin 4:45 end ____
Pumping Rate (gpm)	
Evacuation Method	Dedicated Bladder Pump

Field Parameters	I	1✓	2✓	3✓
Color				
Odor				
Appearance				
pH (s.u.)	5.05	5.35	5.38	6.05
Conductivity (mS/cm)				
~~(umhos/cm)~~ mS/cm (x100)	1.05	0.97	.97	0.97
Turbidity (NTU)				
Temperature (°C)	68.2	66.9	65.9	65.8
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks	Sand Pails: II			

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

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. NY000008 0210.00003 Page 1 of ____

Site Location: Bethpage, NY Date: 9/18/00

Site/Well No.: MW-GM-20D Replicate No. ____ Code No. ____

Weather: Sunny 70s° Sampling Time: Begin 11:40 End 1:30

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	826.00
Depth to Water (ft bmp)	215.00
Water-Level Elevation (ft)	—
Water Column in Well (ft)	1100
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	105 psi
Purge Time	begin 11:45 end 1:30
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Field Parameters	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	8.87	7.31	7.22	6.71
Conductivity (mS/cm)				
~~(umhos/cm)~~ uS/cm (x100)	1.12	.97	1.11	1.06
Turbidity (NTU)				
Temperature (°C)	78.9	74.5	79.9	80.7
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: Dedicated Bladder Pump

Remarks:

5gal pails 1111 1/2

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: ML/ME

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.	NY000 00 80210 T3	Page	1 of
Site Location	Bethpage, N.Y.			Date	9/18/00
Site/Well No.	MW - GM 20 I	Replicate No.		Code No.	
Weather	Sunny, ~70°	Sampling Time: Begin		End	1:20

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	105.00
Depth to ~~Water~~ Packer (ft bmp)	94.00
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~~ Packer Pressure Setting (ft bmp)	
Purge Time	begin 1000 end 1115
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	11.37	11.10	11.07	10.75
Conductivity (mS/cm)				
~~(umhos/cm)~~ uS/cm (x 100)	5.13	3.10	2.69	2.49
Turbidity (NTU)				
Temperature (°C)	64.6	65.3	68.3	73.3
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				

Remarks: Dedicated Bladder Pump

DTW -

Purge - 4 1/2 5 gal pails -

5 gal pails 1111 1/2

Constituents Sampled	Container Description	Number	Preservative
SEE COC			

Sampling Personnel: ML / ME

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.: NY000080210.0002 | Page 1 of ____

Site Location: Bethpage, NY | Date: 9/25/00

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

Weather: Over | Sampling Time: Begin 2:55 End ____

Evacuation Data

Measuring Point	____
MP Elevation (ft)	____
Land Surface Elevation (ft)	____
Sounded Well Depth (ft bmp)	~~67.25~~ 67.25
Depth to Water (ft bmp)	37.55
Water-Level Elevation (ft)	____
Water Column in Well (ft)	29.7
Casing Diameter/Type	2 (0.16)
Gallons in Well	4.75
Gallons Pumped/Bailed Prior to Sampling	14.25
Sample Pump Intake Setting (ft bmp)	____
Purge Time	begin 3:03 end ____
Pumping Rate (gpm)	Q=1 T=14 IV=5
Evacuation Method	____

I=3:03
IV=3:08
2V=3:13
3V=3:17

Field Parameters

	I	IV	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	4.49	4.10	3.97	3.98
Conductivity (mS/cm)				
(~~µmhos/cm~~) µS/cm	94.7	96.1	96.6	96.8
Turbidity (NTU)				
Temperature (°C/°F)	63.8	64.6	64.9	64.5

Dissolved Oxygen (mg/L): ____

Salinity (%): ____

Sampling Method: ____

Remarks: ____

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: G. Williams

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: Northrup-Grumman | Project No.: NY000080210 I3 | Page: 1 of ____

Site Location: Bethpage, NY | Date: 9/18/00

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

Weather: Sunny 70s | Sampling Time: Begin 2:00 End 3:50

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	140.00
Depth to Water (ft bmp)	129.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	11.00
Casing Diameter/Type	4 (0.65)
Gallons in Well	7.15
Gallons Pumped/Bailed Prior to Sampling	22
~~Sample Pump Intake~~ Setting (ft bmp)	Packer Pressure 90 PSI
Purge Time	begin 2:10 end 3:45
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

	1	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	10.3	10.22	10.21	10.10
Conductivity (mS/cm)				
~~(umhos/cm)~~ in S/cm (X100)	1.75	1.48	1.41	1.38
Turbidity (NTU)				
Temperature (°C)	76.6	70.2	67.8	67.6
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: Dedicated Bladder Pump

Remarks: 5 gal pails 1 1/2

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: ME/ML

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. Grumman | Project No.: NY 000008.0210.00003 | Page: 1 of ____

Site Location: Bethpage | Date: 10/2/00

Site/Well No.: GM 23S | Replicate No.: ____ | Code No.: ____

Weather: ____ | Sampling Time: Begin 4:30 | End: ____

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	55.80
Depth to Water (ft bmp)	54.19
Water-Level Elevation (ft)	
Water Column in Well (ft)	1.61
Casing Diameter/Type	4" (.65)
Gallons in Well	1.04
Gallons Pumped/Bailed Prior to Sampling	3
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 4:35 end ____
Pumping Rate (gpm)	
Evacuation Method	Bailer

Field Parameters

	1 0	2 0	3 V
Color		Yellow, Tint	
Odor		None	
Appearance			
pH (s.u.)	8.10	7.73	7.99
Conductivity (mS/cm)	9		
(µmhos/cm)	90	100	105
Turbidity (NTU)			
Temperature (°C)	25 (76.1°F)	25	25
Dissolved Oxygen (mg/L)			
Salinity (%)			
Sampling Method			
Remarks			

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: SH/ME

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: NY000008.0210.
Project No.: .00003
Page 1 of

Site Location: Bethpage
Date: 10/2/00

Site/Well No.: 23I
Replicate No.: Rep-2
Code No.:

Weather:
Sampling Time: Begin 3[45]
End:

Evacuation Data	
Measuring Point	
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 (.65)
Gallons in Well	7.15
Gallons Pumped/Bailed Prior to Sampling	22
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin 4[8] end
Pumping Rate (gpm)	
Evacuation Method	Dedicated Bladder

Field Parameters	I	1V	2V	3V
Color	colorless			
Odor		None		
Appearance		clear		
pH (s.u.)	7.52	7.70	8.29	7.
Conductivity (mS/cm)	~~45~~			
(µmhos/cm)	150	45	45	4
Turbidity (NTU)				
Temperature (°C)	22.5	24	25.5	24
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

DTW - 53.64

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: ME/SH

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

Rep-2

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
Low-Flow Groundwater Sampling Log

Project Number: NY000008.0210 Task: 00003 Well ID: GM-33D-2
Date: 10/3/06 Sampled By: ME/SA
Sampling Time: _____ Recorded By: SA
Weather: Sunny 70° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Dedicated Low Flow / Bladder
Casing Diameter: 4" Purge Rate: 450 ML/MN
Total Depth: _____ Total Volume Purged: 5 gallons
Depth to Water: 51.70 Pump Intake Depth: _____
Water Column: _____ Pump on: 340 Off: _____
Gallons/Foot: _____ Parameters Sampled: TVOC
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
345	450			200	7.78	80	16.8	51.7	6.5	
350	↓			215	7.70	80	17.0	—	5.6	
355				225	7.72	80	17.0	51.7	5.7	
400				235	7.71	80	17.0	—	6.4	
405				245	7.83	80	17.0	—	6.6	
410				250	7.81	78	17.0	—	6.6	
415				255	7.81	78	17.0	51.75	6.9	
420				260	7.82	75	17.2	—	7.5	
425				260	7.76	80	17.2	—	8.1	
430				265	7.79	80	17.2	51.75	7.7	
435				260	7.83	80	17.0	—	8.1	
440				260	7.80	80	17.0	—	8.1	
445				260	7.92	78	17.0	51.75	7.2	
450				255	7.94	80	17.0	—	7.8	

Well Secure: Yes Purge Water Disposal: NC. Sewer
Color: Colorless Turbidity(qualitative): —
Odor: None Other (OVA, HNU,etc.): —

Do not use Packer

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY000008.0210 Task: 00003 Well ID: GM 34D
Date: 10/3/00 Sampled By: SH ME
Sampling Time: _____ Recorded By: SH
Weather: Sunny 65° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: Low Flow / Bladder
Casing Diameter: 2" Purge Rate: 450 ml/min
Total Depth: 319 Total Volume Purged: 6 gal
Depth to Water: 16.38 Pump Intake Depth: _____
Water Column: _____ Pump on: 10^10 Off: _____
Gallons/Foot: _____ Parameters Sampled: SEE C.O.C.
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
10^10				155	9.40	125	16.5	16.38	2.6	
10^15				150	9.51	175	16.8	16.40	1.7	
10^20				5	9.65	170	18.5	—	1.0	
10^25			below	-40	10.14	160	18.0	—	.7	
10^30			"	"	10.34	160	17.5	16.40	.6	
10^35			"	"	10.12	180	17.5	—	.5	
10^40			"	"	9.78	190	18.0	—	.5	
10^45			"	"	9.54	185	18.0	—	.3	
10^50			"	"	9.34	160	18.2	16.45	.3	
10^55				-80	9.10	160	18.5	—	.5	
11^00				-55	8.89	155	19.0	—	.5	
11^05				-50	8.84	155	19.0	—	.5	
11^10				-40	8.80	155	18.5	16.35	.5	
11^15				-40	8.82	155	18.5	—	.5	

Well Secure: ✓ Purge Water Disposal: 55 gal drum - NYC Sewer
Color: Colorless Turbidity(qualitative): Clear
Odor: Odorless Other (OVA, HNU,etc.): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: 114000008.0010 Task: 00003 Well ID: GM 34D2
Date: 10/3/00 Sampled By: SH ME
Sampling Time: _____ Recorded By: SH
Weather: Sunny 70° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: Steel Purge Method: Low flow / Bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: 520 Total Volume Purged: 7 gal
Depth to Water: 18.19 Pump Intake Depth: _____
Water Column: _____ Pump on: 12:15 Off: _____
Gallons/Foot: _____ Parameters Sampled: VOCs
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				-35	5.90	70	17.0	18.19	1.5	
12:30				-40	5.88	65	16.5	18.19	.7	
12:35				-50	6.85	70	17.5	—	.3	
12:40				-55	5.95	80	18.0	—	.3	
12:45				-55	5.87	80	17.0	—	.3	
12:50				-55	5.76	85	17.0	18.25	.3	
12:55				-40	5.63	90	17.8	—	.4	
1:00				-25	5.53	100	17.5	—	.5	
1:05				-10	5.36	110	18.8	18.22	.7	
1:10				5	5.36	110	18.0	—	1.2	
1:15				20	5.22	105	18.0	—	1.6	
1:20		[illegible]		25	5.25	100	17.5	—	2.0	
1:25				35	5.20	95	18.0	18.20	2.6	
1:30				45	5.22	90	18.0	—	3.1	
1:35				55	5.20	80	18.0	—	3.3	
1:40				60	5.18	80	18.0	—	3.4	
1:45										
1:50										
1:55										

Well Secure: ✓
Color: Colorless
Odor: None

Purge Water Disposal: 55 gal Drum → NYC Sewer
Turbidity(qualitative): Clear
Other (OVA, HNU,etc.): —

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrup-Grumman | Project No.: NY000080210.0003 | Page 1 of ____

Site Location: Bethpage, NY | Date: 9/19/00

Site/Well No.: GM-35D2 | Replicate No.: ____ | Code No.: ____

Weather: Sunny 70s | Sampling Time: Begin 9:36 | End 12:15

Evacuation Data

Measuring Point	
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~~ Packer Pressure Setting (ft bmp)	225 PSI
Purge Time	begin 9:40 end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	8.5	6.25	5.33	5.08
Conductivity (mS/cm)				
~~(umhos/cm)~~ mS/cm (X1000)	1.05	1.18	1.21	1.23
Turbidity (NTU)				
Temperature (°C)	66	75.2	79.2	80.3
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: Dedicated Bladder Pump

Remarks: 5 Gal pails: IIII IIII

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: ML/ME

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	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: ~~KCH~~ Northrop-Grumman Project No.: M0000050210.0003 Page: 1 of ____

Site Location: Bethpage, NY Date: 9/20/00

Site/Well No.: GM 36D Replicate No.: ____ Code No.: ____

Weather: Sunny 80s Sampling Time: Begin 2:45 End 4:15

Evacuation Data

Measuring Point	
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 Setting (ft bmp)~~ Packer Pressure	110 PSI
Purge Time	begin 2:55 end 4:00
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	4.87	5.36	5.48	5.48
Conductivity (mS/cm)				
~~(µmhos/cm)~~ mS/cm (x100)	1.03	1.04	1.05	1.04
Turbidity (NTU)				
Temperature (°C)	70.9	68.1	68.3	68.3
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: Dedicated Bladder Pump

Remarks: 5 gal pails: NN

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: ME/MC

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	Millisiemens 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	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop-Grumman Project No.: NY001.0080210 T3 Page 1 of ___

Site Location: Bethpage, NY Date: 4-20-00

Site/Well No.: GM 36 D-2 Replicate No.: ___ Code No.: ___

Weather: Sunny 80s Sampling Time: Begin 12:50 End ___

Evacuation Data

Measuring Point	
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	14.3
Gallons Pumped/Bailed Prior to Sampling	43.00
~~Sample Pump Intake~~ Packer Pressure Setting ~~(ft bmp)~~	235
Purge Time	begin 1:00 end ___
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	8.76	11.5	10.23	9.69
Conductivity (mS/cm)				
~~(µmhos/cm)~~ mS/cm (x100)	1.12	6.31	1.47	6.19
Turbidity (NTU)				
Temperature (°C)	71.1	69.5	68.9	68.6
Dissolved Oxygen (mg/L)				
Salinity (%)				

Sampling Method: Dedicated Bladder Pump

Remarks: 5gal pails ~~||||~~ ||||

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: ME/ML

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. NY000580210.T3 | Page 1 of ____

Site Location: Bethpage, NM | Date 7/21/00

Site/Well No. GM-37D | Replicate No. ____ | Code No. ____

Weather: Overcast 70s | Sampling Time: Begin 9:30 | End 12:20

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	262.00
Depth to Water (ft bmp)	240.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	22.0
Casing Diameter/Type	4" (0.65)
Gallons in Well	14.30
Gallons Pumped/Bailed Prior to Sampling	45.00
~~Sample Pump Intake Setting (ft bmp)~~ Packer Pressure	110 PSI
Purge Time	begin 9:35 end 12:15
Pumping Rate (gpm)	
Evacuation Method	Dedicated Bladder Pump

Field Parameters

	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	5.67	4.7	4.65	4.8
Conductivity (mS/cm)				
~~(µmhos/cm)~~ mS/cm (x100)	2.07	2.02	2.00	2.02
Turbidity (NTU)				
Temperature (°C)	66.4	65.9	65.6	65.3
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

Remarks: 5 gal pails: IIII III

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: ME/ML

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.: N40000080210 0003 Page 1 of ____

Site Location: ~~GM-37D-2~~ Bethpage, NY Date: 9/21/00

Site/Well No.: GM-37D-2 Replicate No.: ____ Code No.: ____

Weather: ____ Sampling Time: Begin 12:20 End 3:40

Evacuation Data

Measuring Point	____
MP Elevation (ft)	____
Land Surface Elevation (ft)	____
Sounded Well Depth (ft bmp)	398.00
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 ____ end ____
Pumping Rate (gpm)	____
Evacuation Method	Dedicated Bladder Pump

Field Parameters

Field Parameters	I	IV	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	4.83	5.12	4.90	4.88
Conductivity (mS/cm)				
~~(umhos/cm)~~ uS/cm (x100)	2.04	2.37	2.34	2.35
Turbidity (NTU)				
Temperature (°C)	66	66.7	66.6	66.4
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

Remarks: 5 gal pails: III III

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: ME/ML

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	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop - Grumman | Project No.: NY000085210.0002 | Page: 1 of ____

Site Location: ~~[redacted]~~ Bethpage, NY | Date: 9/22/05

Site/Well No.: GM-38D | Replicate No.: MS/MSD | Code No.: ____

Weather: Sunny 70s | Sampling Time: Begin 11 | End ____

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	340.00
Depth to Water (ft bmp)	317.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	23.00
Casing Diameter/Type	4 (0.65)
Gallons in Well	14.95
Gallons Pumped/Bailed Prior to Sampling	45.00
Sample Pump Intake Setting (ft bmp)	Packer Pressure 145 PSI
Purge Time	begin 11:05 end ____
Pumping Rate (gpm)	
Evacuation Method	Dedicated Bladder Pump

Field Parameters

	I	1 V	2 V	3 V
Color				
Odor				
Appearance				
pH (s.u.)	5.86	5.32	5.20	5.73
Conductivity (mS/cm)				
~~(µmhos/cm)~~ µS/cm (X100)	0.93	0.97	1.35	0.97
Turbidity (NTU)				
Temperature (°C)	62.0	62.1	61.4	61.3
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

MS/MSD

Equal parts: NL 1161

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: NL/ME

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	Milligrams per liter	NR	Not Recorded	VOC	Volatile Organic Compounds

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrop-Grumman | Project No.: N10000080210.00002 | Page 1 of ___

Site Location: Bethpage, NY | Date: 9/22/00

Site/Well No.: GM-38D-2 | Replicate No.: Rep-1 | Code No.: ___

Weather: Clear 70s | Sampling Time: Begin 9:05 | End 11

Evacuation Data	
Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	495.00
Depth to ~~Water~~ Packer (ft bmp)	472.00
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	45.0
~~Sample Pump Intake~~ Packer Setting ~~(ft bmp)~~ Pressure	220 PSI
Purge Time	begin 9:16 end 10:55
Pumping Rate (gpm)	
Evacuation Method	Dedicated Bladder Pump

Field Parameters	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	4.75	4.98	4.91	4.90
Conductivity (mS/cm)				
~~(µmhos/cm)~~ uS/cm (x100)	0.85	0.81	0.82	0.82
Turbidity (NTU)				
Temperature (°C)	58.2	60.5	60.1	59.9
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				

Remarks: Collected 1st Blind Replicate

5gal pails: ~~IIII~~ IIII

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: ME/MC

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: NY000008.0210 Task: 00003 Well ID: HN52S

Date: 9/25/00 Sampled By: GW SH

Sampling Time: ______ Recorded By: SH

Weather: Sunny, Windy 70° Coded Replicate No.: ______

WELL IMFORMATION

Casing Material: ______ Purge Method: Bladder Pump / Low Flow

Casing Diameter: 2" Purge Rate: ______

Total Depth: 140' Total Volume Purged: 6.5 gal

Depth to Water: 58.25 Pump Intake Depth: ______

Water Column: ______ Pump on: ______ Off: ______

Gallons/Foot: ______ Parameters Sampled: SEE C.O.C

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 08				69	7.12	85	16.9	58.25	2.1	
1 10				7	6.84	115	17.1	58.20	.6	
1 15				-17	6.77	110	16.4	–	.5	
1 20				-18	6.75	110	15.9	58.0	.6	
1 20				-23	6.71	110	15.9	58.0	.6	
1 30				-39	6.65	115	15.8	–	.5	
1 35				-52	6.64	115	15.7	58.0	.5	
1 40				-57	6.62	110	15.6	–	.5	
1 45				-65	6.61	110	15.7	–	.5	
1 50				-64	6.61	110	15.8	58.0	.5	
1 55				-180	6.60	115	15.9	–	.5	
2 00				-222	6.57	115	15.8	–	.5	
2 05				-515	6.55	115	15.8	58.0	.5	
2 10				-678	6.48	115	15.7		.5	
2 15			(-680)	140	6.53	115	15.9	58.2	.5	New Met[illegible]
2 20										
2 25										

Well Secure: ______ Purge Water Disposal: ______

Color: ______ Turbidity(qualitative): ______

Odor: ______ Other (OVA, HNU,etc.): ______

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY000008.0210 Task: 0000 Well ID: 52I
Date: 9/25/00 Sampled By: SK GW
Sampling Time: _____ Recorded By: SK
Weather: Cloudy, 65° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: Bladder Pump / Low Flow
Casing Diameter: _____ Purge Rate: _____
Total Depth: _____ Total Volume Purged: 7 gal
Depth to Water: 57.7 Pump Intake Depth: _____
Water Column: _____ Pump on: _____ Off: _____
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
350				340	6.59	115	15.6	57.7	2.7	
355				310	6.29	110	15.4	57.65	1.1	
400				270	6.75	100	15.2	-	.8	
405				295	5.34	95	15.2	57.7	.7	
410				305	5.08	95	15.2	-	.6	
415				310	5.07	95	15.2	57.7	.6	
420				315	5.05	95	15.2	-	.6	
425				315	5.01	95	15.1	-	.6	
430				315	5.07	95	15.1	57.65	.6	
435				315	5.04	95	15.1	-	.5	
440				315	5.08	95	15.1	57.67	.6	
445				320	5.04	95	15.1	-	.6	
450				320	5.01	95	15.1		.6	

Well Secure: _____ Purge Water Disposal: _____
Color: _____ Turbidity(qualitative): _____
Odor: _____ Other (OVA, HNU,etc.): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY000008.0010 Task: 00003 Well ID: 52D
Date: 9/26/00 Sampled By: ME SH
Sampling Time: _____ Recorded By: SH
Weather: Cold, Rainy Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: Bladder Pump / Low Flow
Casing Diameter: 2" Purge Rate: _____
Total Depth: 386 Total Volume Purged: _____
Depth to Water: 59.75 Pump Intake Depth: _____
Water Column: _____ Pump on: 1040 Off: _____
Gallons/Foot: _____ Parameters Sampled: VOCs
Gallons in Well: _____

FIELD PARAMETER MEASUREMENTS

Time	Rate (est) (mL/min)	Gallons Purged	Turbidity (NTUs)	REDOX (mV)	pH (SI Units)	Conductivity (µmhos/cm)	Temp (°C)	Depth to Water	Diss. Oxygen	Comments
1040	500			240	6.58	190	15.0	59.75	3.3	
1045	↓			135	6.63	175	14.9	59.65	1.9	
1050				80	6.61	170	14.8	–	1.0	
1055				145	6.99	160	14.8	59.60	.8	
1100				175	6.94	160	14.8	–	.8	
1105				236	6.07	170	14.8	59.60	2.0	
1110				280	5.58	180	14.8	–	3.3	
1115				185	5.35	180	14.7	59.60	3.9	
1120				195	5.29	180	14.7	–	4.0	
1125				200	5.29	170	14.7	–	4.0	
1130				205	5.29	180	14.7	59.60	4.0	
1135				210	5.30	175	14.7	–	4.0	
1140				215	5.32	175	14.7	–	4.2	
1145				220	5.31	175	14.7	59.6	4.1	

Well Secure: ✓ Purge Water Disposal: _____
Color: Colorless Turbidity(qualitative): _____
Odor: None Other (OVA, HNU,etc.): _____

Needed to Pull tubing & Fix DO Meter

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: N. Grumman | Project No. 14000008.0210.00002 | Page 1 of

Site Location: Bethpage NY | Date: 10/18/00

Site/Well No.: GM-70A/2V | Replicate No. | Code No.

Weather: Sunny, 55° | Sampling Time: Begin 1030 | End 1230

Evacuation Data		Field Parameters	I	10	20	30
Measuring Point		Color			Colorless	
MP Elevation (ft)		Odor			None	
Land Surface Elevation (ft)		Appearance			Clear	
Sounded Well Depth (ft bmp)	330.00	pH (s.u.)	6.99	5.50	5.20	4.88
Packer Depth to Water (ft bmp)	308.00	Conductivity (mS/cm)	75	75	70	68
Water-Level Elevation (ft)		(µmhos/cm)				
Water Column in Well (ft)	22.00	Turbidity (NTU)				
Casing Diameter/Type	4(6.5)	Temperature (°C)	16.0	17.0	16.5	17.0
Gallons in Well	14.30	Dissolved Oxygen (mg/L)				
Gallons Pumped/Bailed Prior to Sampling	43.00	Salinity (%)				
Packer Press. Sample Pump Intake Setting (ft bmp)	150	Sampling Method	Dedicated Bladder			
Purge Time	begin 1040 end 1215	Remarks	DTW 42.90			
Pumping Rate (gpm)						
Evacuation Method						

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C			

Sampling Personnel: G. Williams S. Hooley

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: Northrop-Grumman | Project No.: [illegible]80210.0002 | Page: 1 of ____

Site Location: Bethpage, NY | Date: ____

Site/Well No.: GM-71D-2 | Replicate No.: ____ | Code No.: ____

Weather: Sunny 80s | Sampling Time: Begin 2:15 | End: ____

Evacuation Data

Measuring Point	TOC
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	464.00
Depth to Water (ft bmp)	442.00
Water-Level Elevation (ft)	
Water Column in Well (ft)	22.0
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)~~	Packer Pressure 230 PSI
Purge Time	begin 2:20 end ____
Pumping Rate (gpm)	
Evacuation Method	Bladder Pump

Field Parameters

	I	1 V	2 V	3 V
Color				
Odor				
Appearance				
pH (s.u.)	6.03	6.04	5.99	5.99
Conductivity (mS/cm)				
~~(umhos/cm)~~ mS/cm (X1000)	0.92	0.91	0.93	0.8
Turbidity (NTU)				
Temperature (°C)	68.0	72.0	74.3	70.9
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

5gal pails: III

Constituents Sampled	Container Description	Number	Preservative
See COC			

Sampling Personnel: ME/ML

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

GM-7302 (MW)

Project Number: N4000002.0210 Task: 00003 Well ID: GM-70D2

Date: 10/4/00 Sampled By: ME SH

Sampling Time: _____ Recorded By: SH

Weather: Overcast Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow

Casing Diameter: 4" Purge Rate: 450

Total Depth: 552 Total Volume Purged: 7 gallons

Depth to Water: 47.68 Pump Intake Depth: 751

Water Column: _____ Pump on: _____ Off: _____

Gallons/Foot: _____ Parameters Sampled: SEE C.O.C

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	450			235	5.45	100	18	47.68	4.3	
12 30	↓			245	5.36	100	17.7	–	3.8	
12 35				250	4.29	100	20.0	–	3.4	
12 40				260	4.10	100	16.5	47.70	3.2	
12 45				260	3.98	100	17.5	47.70	3.1	
12 50				260	3.93	105	17.5	–	2.0	
12 55	↓			250	3.93	120	18.0	–	3.0	
100				240	4.01	130	18.2	47.55	2.8	
105				235	4.00	130	18.2	–	2.8	
110				230	3.95	130	18.2	–	2.6	
115				230	3.97	130	18.0	47.60	2.7	
120				225	3.96	130	18.0	–	2.7	
125				225	3.94	130	18.0	47.58	2.8	

Well Secure: Yes Purge Water Disposal: N.C. Sewer

Color: Colorless Turbidity(qualitative): Turbid

Odor: None Other (OVA, HNU,etc.): _____

* PH Meter Not Reading Correctly Does show stabilization

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY000007.0210 Task: 00003 Well ID: GM 74I
Date: 10/5/00 Sampled By: SH
Sampling Time: _____ Recorded By: SH
Weather: Cloudy 65° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: Low Flow
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: 114 Total Volume Purged: 6 gal
Depth to Water: 41.56 Pump Intake Depth: 70'
Water Column: _____ Pump on: 11:35 Off: _____
Gallons/Foot: _____ Parameters Sampled: SEE C.O.C.
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	450			225	5.82	75	18.5	41.56	9.2	
11:50	↓			215	5.37	80	18.5	41.65	6.7	
11:55				200	4.84	80	18.0	—	6.3	
12:00				200	4.54	80	18.0	—	6.0	
12:05				200	4.28	80	18.0	41.66	6.3	
12:10				200	4.16	80	18.5	—	6.3	
12:15				200	4.11	80	18.5	—	6.3	
12:20				200	4.10	80	18.5	—	6.1	
12:25	↓			200	4.08	80	18.5	41.60	6.1	
12:30				200	3.97	80	18.5	—	6.3	
12:35				200	3.96	80	18.5	—	6.5	
12:40				200	3.96	80	18.5	—	6.5	
12:48				200	3.95	80	18.5		6.5	

Well Secure: Yes Purge Water Disposal: M.C. Sewer
Color: Colorless Turbidity(qualitative): Clear
Odor: None Other (OVA, HNU,etc.): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY000008.0210 Task: 00003 Well ID: GM 74D
Date: 10/6/00 Sampled By: SH / ME
Sampling Time: _____ Recorded By: SH
Weather: Overcast 65° Coded Replicate No.: COLLECT MS/MSD

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow / Non Dedicated Bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: 305 Total Volume Purged: _____
Depth to Water: 46' Pump Intake Depth: 100'
Water Column: _____ Pump on: 907 Off: _____
Gallons/Foot: _____ Parameters Sampled: SEE C.O.C
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
915	450			240	5.60	95	20	46.0	5.3	
920	↓			255	4.51	65	19.5	–	3.8	
925				265	4.33	55	19.5	46.0	2.5	
930				270	4.29	50	19.5	–	1.7	
935				250	4.25	65	19.5	–	2.7	
940				215	4.10	70	19.2	–	3.4	
945				210	3.98	70	19.2	46.0	4.6	
950	↓			215	3.96	70	19.2	–	4.1	
955				220	3.93	70	19.0	–	3.7	
1000				220	3.90	70	19.0	–	3.6	
1005				225	3.91	70	19.0	–	4.0	
1010				230	3.88	70	19.0	46.0	3.7	
1015				230	3.89	70	19.0	–	3.6	

Well Secure: Yes Purge Water Disposal: N.C. Sewer
Color: _____ Turbidity(qualitative): _____
Odor: None Other (OVA, HNU,etc.): _____

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: N4000008.0010 Task: 00003 Well ID: GM74Dz
Date: 10/5/00 Sampled By: SH/ME
Sampling Time: 25° Recorded By: SH
Weather: Cloudy 60° Coded Replicate No.:

WELL IMFORMATION

Casing Material: PVC Purge Method: Low Flow / Non-Ded Bladder
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: 562 Total Volume Purged:
Depth to Water: 48 Pump Intake Depth: 77
Water Column: Pump on: Off:
Gallons/Foot: Parameters Sampled: SEE C.O.C.
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	450			210	7.42	60	18.7	48.0	9.1	
3 45				220	3.99	50	19.1	—	9.3	
3 50				230	3.69	45	18.8	47.95	5.5	
3 55				240	3.48	45	18.5	—	5.0	
4 00				245	3.55	45	19.5	—	4.6	
4 05				255	3.58	40	18.0	—	4.3	
4 10	↓			255	3.60	40	18.5	47.90	4.1	
4 15				255	3.51	35	18.3	—	4.0	
4 20				240	3.59	40	18.3	—	4.2	
4 25				200	3.58	50	18.0	—	4.1	
4 30				175	3.58	60	18.0	47.95	4.3	
4 35				170	3.63	60	18.0	—	4.3	
4 40				175	3.65	55	18.3	—	4.8	
4 48				175	3.72	55	18.0	—	4.7	

Well Secure: ✓ Purge Water Disposal:
Color: Black Tint Turbidity(qualitative): High Turbidity
Odor: None Other (OVA, HNU,etc.): Dark Color

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY000080020 Task: 00002 Well ID: HN 24I
Date: 9/27/00 Sampled By: GW/SH/ML
Sampling Time: _____ Recorded By: _____
Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: LOW FLOW SAMPLING
Casing Diameter: 4" Purge Rate: 350 ml/min
Total Depth: _____ Total Volume Purged: _____
Depth to Water: _____ Pump Intake Depth _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: SEE C.O.C.
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 30				150	8.05	225	17.2	58.95	4.6	
3 35				160	7.74	230	18.6	—	3.8	
3 40				165	7.52	235	19.4	58.98	3.6	
3 45				165	7.35	240	20.1	58.97	3.5	
3 50				170	7.25	243	20.7	58.98	3.6	
3 55				170	7.24	245	20.5	58.97	3.2	
4 00				170	7.24	245	20.6	58.96	3.7	
4 05				170	7.22	245	20.8	58.95	3.5	
4 10				170	7.20	245	21.1	58.94	3.5	
4 15				170	7.18	245	21.0	58.95	3.5	
4 20				170	7.23	248	21.0	58.96	3.5	
4 25				170	7.13	248	21.7	58.97	3.5	
4 30				175	7.09	250	21.6	58.97	3.5	
4 35				180	6.90	230	19.6	58.97	3.7	
4 40				178	6.70	220	17.9	58.97	4.0	
4 45				175	6.58	220	18.1	58.95	3.8	
4 50				165	6.55	215	18.3	58.97	3.6	

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

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: NORTHROP-GRUMMAN Project No.: NY000008021.0002 Page: 1 of ____

Site Location: BETHPAGE NY Date: 9-27-00

Site/Well No.: MW-03 Replicate No.: ____ Code No.: ____

Weather: CLEAR 75° Sampling Time: Begin 11:00 End: ____

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	64.00
Depth to Water (ft bmp)	58.58
Water-Level Elevation (ft)	
Water Column in Well (ft)	5.42
Casing Diameter/Type	2(0.16)
Gallons in Well	.867
Gallons Pumped/Bailed Prior to Sampling	2.60
Sample Pump Intake Setting (ft bmp)	
Purge Time	begin ____ end ____
Pumping Rate (gpm)	
Evacuation Method	

Field Parameters

Field Parameters	I	1J	2J	3J
Color				
Odor				
Appearance				
pH (s.u.)	3.29	3.29	4.21	3.77
Conductivity (mS/cm)				
~~(umhos/cm)~~ mS/cm	216	202	200	183
Turbidity (NTU)				
Temperature (°C)	62.1	61.6	61.3	60.6

Dissolved Oxygen (mg/L): ____

Salinity (%): ____

Sampling Method: ____

Remarks: ____

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

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

ftbmp	*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: NY000000B0210 Task: 0002 Well ID: HN29-I
Date: 9/27/00 Sampled By: GW/SH/ML
Sampling Time: _____ Recorded By: _____
Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: LOW FLOW SAMPLING
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: _____ Total Volume Purged: _____
Depth to Water: _____ Pump Intake Depth _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: SEE C.O.C.
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
1240				15	11.40	250	17.7	49.67	7.7	
1245				-5	11.48	235	18.4	51.80	7.3	
1250				-10	11.59	215	18.2	51.95	7.1	
1255				-10	11.54	280	18.3	52.00	7.0	
100				-10	11.54	295	18.4	52.02	7.0	
105				-10	11.55	295	18.5	52.03	7.1	
110				-10	11.54	290	18.5	52.00	7.0	
115				-10	11.55	290	18.6	52.02	6.9	
120				-10	11.56	285	18.8	51.90	6.7	
125				-10	11.51	295	19.2	51.85	6.6	
130				-5	11.49	298	19.1	51.4	6.4	
135				-5	11.49	296	18.9	51.75	6.4	
140				-5	11.48	290	19.0	51.73	6.4	
145				-5	11.43	282	18.9	51.73	6.3	
150				-5	11.44	280	19.0	51.73	6.2	
155				-5	11.42	280	19.3	51.69	6.3	
200				-0	11.41	275	19.4	51.56	6.2	
205				-0	11.37	273	19.8	51.45	6.2	
210				-0	11.35	270	19.9	51.39	6.0	
215				-0	11.34	270	20.1	51.18	6.0	
220				-0	11.31	270	20.5	51.03	6.0	
225				-0	11.29	270	21.1	51.00	5.8	
230				5	11.25	270	21.1	50.98	5.8	
Well Secure:						Purge Water Disposal:				
235				5	11.25	268	21.1	50.90	5.8	
Color:						Turbidity(qualitative):				
240				5	11.23	260	20.7	51.3	5.8	
245										
250										
255										
300										

G:\APROJECT\Lockheed Martin\Great Neck\NY001227.0002\Data\GWsmpfrm.xls- Sheet1

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY000000802.0 Task: 00007 Well ID: HN 29D
Date: 9/27/00 Sampled By: GW/SH/mc
Sampling Time: _____ Recorded By: _____
Weather: _____ Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: _____ Purge Method: LOW FLOW
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: 220 Total Volume Purged: _____
Depth to Water: _____ Pump Intake Depth _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: SEE C.O.C.
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 35				165	7.38	115	17.7	50.5	8.2	
10 40				130	7.60	105	17.1	50.5	7.3	
10 45				105	9.25	105	16.8	—	7.9	
10 50				130	8.51	100	17.2	50.5	7.6	
10 55				145	8.11	100	17.5	—	7.8	
11 00				145	8.08	100	17.6	—	7.9	
11 05				150	7.95	100	17.6	50.5	7.7	
11 10				155	7.77	100	17.7	—	7.2	
11 15				155	7.68	100	17.3	—	7.8	
11 20				155	7.63	100	17.9	50.5	7.2	
11 25				160	7.42	100	18.0	—	7.7	
11 30				165	7.23	100	18.2	—	7.3	
11 35				165	7.07	100	18.1	50.5	7.4	
11 40				165	7.07	100	18.2	—	7.3	

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

ARCADIS GERAGHTY & MILLER
Low-Flow Groundwater Sampling Log

Project Number: NY000008.0210 Task: 00003 Well ID: N-10627
Date: 10/4/06 Sampled By: ME/SH
Sampling Time: _____ Recorded By: SH
Weather: Sunny 70° Coded Replicate No.: _____

WELL IMFORMATION

Casing Material: steel Purge Method: Low Flow / Bladder Pump
Casing Diameter: 4" Purge Rate: 450 ml/min
Total Depth: 295 Total Volume Purged: 6 gal
Depth to Water: _____ Pump Intake Depth: _____
Water Column: _____ Pump on: _____ Off: _____
Gallons/Foot: _____ Parameters Sampled: SEE C.O.C.
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
310	450			10	4.31	65	19.0	34.7	2.9	
315	↓			-80	4.09	55	19.0	—	1.0	
320				Or	3.91	45	18.5	36.0	.5	
325				Or	3.84	30	18.2	36.2	.3	
330				Or	3.78	20	18.5	—	.3	
335				Or	3.70	20	18.8	36.0	.3	
340				Or	3.76	18	18.8	—	.3	
345				Or	3.73	18	18.5	35.98	.2	
350				Or	3.68	18	18.5	—	.2	
355				Or	3.62	18	18.5	35.98	.13	
400				Or	3.58	15	18.5	—	.13	
405				Or	3.54	15	18.5	35.98	.3	
410				Or	3.56	15	17.5	—	.2	

Well Secure: Yes Purge Water Disposal: N.C. Sewer
Color: ~~Colorless~~ Dark Yellow Turbidity(qualitative): Clear
Odor: None Other (OVA, HNU,etc.): _____

* Pit Meter Not Reading Correctly Or - Below -80

ARCADIS GERAGHTY & MILLER

Water Sampling Log

Project: Northrup-Grumman | Project No.: NY000000210.00002 | Page: 1 of ____

Site Location: Bethpage, NY | Date: 9/26/00

Site/Well No.: NI0631 | Replicate No.: REP-1 (metals) | Code No.: ____

Weather: Rainy 50's | Sampling Time: Begin ____ End ____

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	
Depth to Water (ft bmp)	67.00
Water-Level Elevation (ft)	46.02
Water Column in Well (ft)	
Casing Diameter/Type	~~4"0.65~~ 2(0.16)
Gallons in Well	3.2
Gallons Pumped/Bailed Prior to Sampling	10
Sample Pump Intake Setting (ft bmp)	
11:19 Purge Time	begin 1:12 end ____
1:19 Pumping Rate (gpm)	Q=1 T=10 V=3gal
Evacuation Method	

Field Parameters

	I	1V	2V	3V
Color				
Odor				
Appearance				
pH (s.u.)	4.45	5.30	4.75	4.46
Conductivity (mS/cm)				
~~(umhos/cm)~~ mS/cm	40.1	74.0	98.3	102.3
Turbidity (NTU)	—	36.8	37.1	29.3
Temperature (°C) °F	59.9	61.0	60.8	60.0
Dissolved Oxygen (mg/L)				
Salinity (%)				
Sampling Method				
Remarks				

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: GW/AL

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.: NY000080210.0002 Page 1 of ____

Site Location: BETHPAGE NY Date: 9-25-00

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

Weather: CLEAR 65° Sampling Time: Begin 2:00 End ____

Evacuation Data

Measuring Point	
MP Elevation (ft)	
Land Surface Elevation (ft)	
Sounded Well Depth (ft bmp)	67.80
Depth to Water (ft bmp)	42.03
Water-Level Elevation (ft)	
Water Column in Well (ft)	25.77
Casing Diameter/Type	2" (0.16)
Gallons in Well	4.12
Gallons Pumped/Bailed Prior to Sampling	12.36
2:05 / 2:10 / 2:13 / 2:17 Sample Pump Intake Setting (ft bmp) / Purge Time	begin 2:05 end ____
Pumping Rate (gpm)	Q=1 T=12 V=4
Evacuation Method	

Field Parameters

Field Parameters	I	2 V	3 V	3 4
Color				COLORLESS
Odor				NONE
Appearance				CLEAR
pH (s.u.)	4.53	4.51	4.44	4.42
Conductivity (mS/cm)	128.9	115.4	116.5	113.5
(µmhos/cm)				
Turbidity (NTU)				
Temperature (°C)	66.8	61.5	60.8	60.4
Dissolved Oxygen (mg/L)				

Salinity (%): ____

Sampling Method: ____

Remarks: ____

Constituents Sampled	Container Description	Number	Preservative
SEE C.O.C.			

Sampling Personnel: ____

Well Casing Volumes

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

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

ARCADIS

Appendix D

Chains Of Custody

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name _____

Project Location _____

Laboratory _____

Project Manager _____

Sampler(s)/Affiliation _____

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

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

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

Special Instructions/Remarks: _____

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name N1000280210.00003

Project Location [illegible], NY

Laboratory STL Severn Trent Lab. (Canton)

Project Manager Carla Sangiovanni / Dave Stern

Sampler(s)/Affiliation M. Lucey / M. Cushman

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40mL VOC TCL (w/HCl)						Remarks	Total
GM-15I	L	9/11/00		2							2
GM-16I	↓	↓		2							2
TB-9-11-00	↓	↓		2							2

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

Total No. of Bottles/ Containers: 6

					Seal Intact?
Relinquished by: Marlena Lacing	Organization: Arcadis Geraghty & Miller	Date 9/11/00	Time 5:30		
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: Reports: Dave Stern 631-311-5201

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY000080210.0000 3

Project Location Bethpage, NY

Laboratory Severn Trent Laboratories

Project Manager [illegible] / Dave Stern

Sampler(s)/Affiliation M. Lacey, M. Engelmann

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml Vial VOC TCL (W/W)						Remarks	Total
GM-35D-2	L	9/20/00		2							2
GM-36D-2	↓	↓		2							2
GM-36D	↓	↓		~~2~~ 1						[illegible]	~~2~~ 1
TB-9-20-00	↓	↓		2						[illegible]	2

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

Total No. of Bottles/Containers ~~8~~ 7

Relinquished by: Marlene Lacey	Organization: Arcadis Geraghty & Miller	Date 9/20/00	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: Reports to Dave Stern [illegible]

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 NY000080.0002
Project Location Bethpage, NY
Laboratory H2M Labs Inc. - Melville N.Y.
Project Manager David Stern (631) 391-5284
Sampler(s)/Affiliation [illegible] / [illegible] Arcadis Geraghty & Miller

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	8260 VOCs [illegible] (ANALYSIS / METHOD / SIZE)						Remarks	Total
GM 39 D-2	L	9-26-00		2						[illegible]	2
GM 36 D 2	↓	↓		2						[illegible]	2
GM 36 D	↓	↓	→	2						[illegible]	2

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

Total No. of Bottles/Containers 6

Relinquished by: [illegible signature]	Organization: ARCADIS Geraghty & Miller	Date 9/28/00	Time 11:45	Seal Intact?
Received by: [illegible signature]	Organization: H2M Labs	Date 9/28/00	Time 11:45	(Yes) No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:
Please call with questions to David Stern (631) 391-5284 / Report to David Stern

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY [illegible]3

Project Location Bethpage, NY

Laboratory STL [illegible]

Project Manager [illegible] / [illegible] Stern

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

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	[illegible] VOC [illegible]						Remarks	Total
GM 37D	L	7-21-[illegible]		2							
GM-37D-2	↓	↓		2							2
[illegible] blank [illegible]				2							2
GM 15-I				2							

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

Total No. of Bottles/Containers: [illegible]

Relinquished by: [illegible]	Organization: [illegible]	Date [illegible]	Time [illegible]	Seal Intact?
Received by: [illegible]	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: Reports to Dave Stern 631-391-5[illegible]

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name [illegible]

Project Location [illegible], NY

Laboratory H2M [illegible] NY

Project Manager [illegible] 631 391-52[illegible]

Sampler(s)/Affiliation M. Engel[illegible] M. Lacey Arcadis Geraghty & Miller

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40ml VOA Vial [illegible]						Remarks	Total
GM 37D	L	9-21-00		2						[illegible]	2
GM-37D-2	L	9-21-00		2						[illegible]	2

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

Total No. of Bottles/Containers: 4

Relinquished by: [signature]	Organization: Arcadis Geraghty & Miller	Date 9/21/00	Time 15:[illegible]	Seal Intact?
Received by: [signature]	Organization: H2M Labs	Date 9/21/00	Time 15:[illegible]	Yes No N/A
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks:

Please call with questions to Dave [illegible] 631-391-5234 / Report to [illegible]

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 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
	L			6							6
				2							2
				2							2
				2							2

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

Total No. of Bottles/ Containers: 14

Relinquished by: _____	Organization: _____	Date 1/22/10	Time 1750	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: _____

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name ____

Project Location ____

Laboratory ____

Project Manager ____

Sampler(s)/Affiliation ____

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

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

Total No. of Bottles/Containers [illegible]

Relinquished by: [illegible]	Organization: [illegible]	Date [illegible]	Time [illegible]	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)

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page ____ of ____

Project Number/Name NY000080210.0002/0003

Project Location [illegible] NY

Laboratory SEVERN TRENT SHELTON

Project Manager [illegible]

Sampler(s)/Affiliation G. W ML, HME

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	[illegible] VOC [illegible]						Remarks	Total
W 10634	L	9.25.00		2							
GM-21S	↓	↓		2							
GM-18S	↓	↓		2							2
MW-52S	↓	↓		2							2
MW-52I	↓	↓		2							2
FB 9.25.00	↓	↓		2							2
TB 9.25-1	↓	↓		2							2
TB 9.25-2	↓	↓		2							2

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

Total No. of Bottles/Containers 16

Relinquished by: [illegible]	Organization: ARCADIS G&M	Date 9/25/00	Time ____	Seal Intact?
Received by: ____	Organization: ____	Date __/__/__	Time ____	Yes No N/A
Relinquished by: ____	Organization: ____	Date __/__/__	Time ____	Seal Intact?
Received by: ____	Organization: ____	Date __/__/__	Time ____	Yes No N/A

Special Instructions/Remarks: [illegible]

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name [illegible]

Project Location [illegible] NY

Laboratory [illegible] Laboratories)

Project Manager [illegible] Stern

Sampler(s)/Affiliation G. Williams / M. Lacey

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40ml VOA vial	[illegible] 250ml [illegible]					Remarks	Total
MW-3R	L	11/26/00		2	1						3
GM-16SR	↓	↓		2	1						3
[illegible] 31	↓	↓		2	1						3
RTP-1	↓	↓			1						1
FB [illegible]	↓	↓		[illegible]	1						3
TB [illegible]-00-01	↓	↓		2						Trip Blank	2
TB-9-26-00-02	↓	↓		2						Trip Blank	2
MW-52D	↓	↓		2							2
MW-10I	↓	↓		2							2

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

Total No. of Bottles/Containers [illegible]

Relinquished by: SHAWN HEALY	Organization: [illegible] Geraghty & Miller	Date [illegible]	Time 18[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:

Reports to David Stern 631-391-5284

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

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page ___ of ___

Project Number/Name N1000008.0210 0000L

Project Location BETHPAGE NY

Laboratory SEVERN TRENT SHELTON

Project Manager CARLO SAN GIOVANNI

Sampler(s)/Affiliation GW, SH, ML

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	LOW LEVEL VOC						Remarks	Total
FW-03	L	9-27-00		2							
HW-29I	↓	↓		2							2
HW-29D				2							2
HW-24I				2							2
GM-13D				2							2
FB 9-27-00				2							2
TB 9-27-01				2							2
TB 9-27-2	↓	↓		2							2

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

Total No. of Bottles/Containers 16

Relinquished by: [signature]	Organization: ARCADIS G&M	Date 9/27/00	Time 5:00	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: RESULTS TO DAVE STERN

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 NY000960210.0002
Project Location [illegible] N.Y.
Laboratory [illegible] CT
Project Manager [illegible]
Sampler(s)/Affiliation [illegible]

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 ml vial VOC						Remarks	Total
Trip Blank 9/28/00	L	9/28/00		2							2
Field Blank 9/28/00	↓	↓		↓							↓
GW-15D	↓	↓		↓							↓
GW-15S	↓	↓		↓							↓

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

Total No. of Bottles/Containers 8

Relinquished by: [signature]	Organization: ARCADIS G+M	Date 9/28/00	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 Dave Steyn (631) 391-5284

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 NY000030010.0002/00002

Project Location Tallmey, N.Y.

Laboratory (STL) Severn Trent Laboratories

Project Manager Carl Sc[illegible] / Dave Stein

Sampler(s)/Affiliation FR / SU / [illegible]

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40 ml voa vial	VCM					Remarks	Total
GM-17D	L	9/27/00		2	X						2
GM-17I	↓	↓		↓							2
TRIP BLANK 9/27/00	↓	↓		↓							2
GM-17SR	↓	↓		↓	X					VCM Analysis	2
FB 09/27/00	↓	↓		↓							2

GM-17SR gets VCM analysis also

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

Total No. of Bottles/Containers 10

Relinquished by: [illegible signature]	Organization: ARCADIS Geraghty & Miller	Date 9/27/00	Time 18:00	Seal Intact?
Received by: FedEx	Organization:	Date / /	Time	Yes No N/A (Yes circled)
Relinquished by:	Organization:	Date / /	Time	Seal Intact?
Received by:	Organization:	Date / /	Time	Yes No N/A

Special Instructions/Remarks: Report / Questions Dave Stein @ (631) 391-5284

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

AG 05-0597

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY000080210.00002/00003
Project Location Bethpage, New York
Laboratory (STL) Severn Trent Laboratories
Project Manager Carl Sanfilippo / David Stern
Sampler(s)/Affiliation SY/ARF

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40ml VOA vial, VOCs	1 Liter amber					Remarks	Total
Trip Blank 10/2/00	L	10/2/00		2						[illegible]	2
REP-2	↓	↓		2							2
GM-23I	↓	↓		2	——	——	——	——	——	→ VCM only	2
GM-23S	↓	↓		2	——	——	——	——	——	→ VCM only	2
GM-14	↓	↓		2	2	* Analyze EPA method 602/...				[illegible]	4
FC 10/2/00	↓	↓		2						[illegible]	2
GM-15DR	↓	↓		2							2
FC 10/2/00	↓	↓		2	2					[illegible]	4

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

Total No. of Bottles/Containers 20

Relinquished by: [signature]	Organization: ARCADIS Geraghty & Miller	Date 10/2/00	Time [illegible]	Seal Intact? Yes No N/A (Yes circled)
Received by: FedEx	Organization:	Date / /	Time	
Relinquished by:	Organization:	Date / /	Time	Seal Intact? Yes No N/A
Received by:	Organization:	Date / /	Time	

Special Instructions/Remarks: Reports/Questions to David Stern @ (631) 391-5284

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

AG 05-0597

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

CHAIN-OF-CUSTODY RECORD

Project Number/Name NY000068.0210.0000Z

Project Location Bethpage, NY

Laboratory (STL) Severn Trent Laboratories

Project Manager Carlo San Giovanni / David Stern

Sampler(s)/Affiliation SH / ME

ANALYSIS / METHOD / SIZE

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	40 ml VOA VOCs ASP 95-1						Remarks	Total
FB 10/3/00	L	10/3/00								Field Blank	2
TB 10/3/00	↓	↓								Trip Blank	2
GM 33D2	↓	↓									2
GM 34D	↓	↓									2
GM 34D2	↓	↓									2

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

Total No. of Bottles/ Containers 10

Relinquished by: Shawn Hopkey / Mike Hagelmer	Organization: Arcadis G+M	Date 10/3/00	Time 1830	Seal Intact?
Received by: FedEx	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/questions to David Stern (631) 391-5284

Delivery Method: ☐ In Person ☒ Common Carrier FedEx (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 [illegible]

Project Location [illegible]

Laboratory [illegible]

Project Manager [illegible]

Sampler(s)/Affiliation [illegible]

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE						Remarks	Total
N-10627	L	10/4/00		2							2
CM-7002											2
TB 10/4/00											2
FR 10/4/00											2

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

Total No. of Bottles/ Containers: 8

				Seal Intact?
Relinquished by: [illegible]	Organization: Arcadis Geraghty & Miller	Date 10/4/00	Time _____	
Received by: _____	Organization: _____	Date / /	Time _____	Yes No N/A
Relinquished by: _____	Organization: _____	Date / /	Time _____	Seal Intact?
Received by: _____	Organization: _____	Date / /	Time _____	Yes No N/A

Special Instructions/Remarks: [illegible]

Delivery Method: ☐ In Person ☒ Common Carrier [illegible] ☐ Lab Courier ☐ Other _____

SPECIFY

SPECIFY

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY002002021.0003

Project Location Buffalo, New York

Laboratory (STL) Severn Trent Laboratory

Project Manager Carlo San Giovanni / David Stern

Sampler(s)/Affiliation SH/MF

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE: 40 mL VOA VIAL UNP VOCs ASP-95.1						Remarks	Total
GM-74D2	L	10/5/00		2							2
GM-74I	↓	↓		↓							2
TB 10/5/00	↓	↓		↓						TRIP BLANK	2
FB 10/5/00	↓	↓		↓						FIELD BLANK	2

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

Total No. of Bottles/ Containers: 5

Relinquished by: [signature]	Organization: ARCADIS G&M	Date 10/5/00	Time 1830	Seal Intact?	
Received by: FEDEX	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:

REPORTS / QUESTIONS TO DAVID STERN (631) 391-5284

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

AG 05-0592

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name [illegible]

Project Location Tarrytown, New York

Laboratory [illegible]

Project Manager [illegible]

Sampler(s)/Affiliation [illegible]

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE						Remarks	Total
[illegible]	L	[illegible]									
[illegible]											
[illegible]											
[illegible]											
[illegible]											

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

Total No. of Bottles/ Containers

					Seal Intact?
Relinquished by: [illegible]	Organization: ARCADIS G&M	Date 10/6/00	Time [illegible]		
Received by: FedEx	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 FedEx (SPECIFY) ☐ Lab Courier ☐ Other _____ (SPECIFY)

AG 05-0597

ARCADIS GERAGHTY & MILLER

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

CHAIN-OF-CUSTODY RECORD

Page 1 of 1

Project Number/Name NY

Project Location N

Laboratory TCL

Project Manager

Sampler(s)/Affiliation

Sample ID/Location	Matrix	Date/Time Sampled	Lab ID	ANALYSIS / METHOD / SIZE						Remarks	Total
GMT-02	L	10/11/00									2
TB 10/11/00	L	10/11/00									2

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

Total No. of Bottles/ Containers 4

Relinquished by:	Organization:	Date 10/11/00	Time 1615	Seal Intact?	
Received by: FEDEX	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/Questions to David St

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

SPECIFY SPECIFY

AG 05-0597

H2M LABS, INC.

575 Broad Hollow Rd, Melville, NY 11747-5076
Tel: (516) 694-3040 Fax: (516) 420-8436

4099

EXTERNAL CHAIN OF CUSTODY

CLIENT: [illegible]

H2M SDG NO:

PROJECT NAME/NUMBER: NORTH ROF-GROUNDWATER

SAMPLERS: (signature)/Client: [illegible] — H2M LABS GTM

DELIVERABLES:

TURNAROUND TIME:

NOTES:

Project Contact:

Phone Number:

DATE	TIME	MATRIX	FIELD I.D.	Total No. of Containers	Sample Container Description	ANALYSIS REQUESTED: ORGANIC VOA	ORGANIC BNA	ORGANIC Pest/PCB	INORG. Metal	INORG. CN	LAB I.D. NO.	REMARKS:
10/14/20		L	GM-700-2	2	2 VOAs (HCl)	2						

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
[illegible] — H2M	10/14/20	1412	[illegible]	10/14/20	1412
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

LABORATORY USE ONLY

Discrepancies Between Sample Labels and COC Record? Y or N

Explain: _____

Samples were:
1. Shipped___ or Hand Delivered___ Airbill# _____
2. Ambient or chilled
3. Received in good condition: Y or N
4. Properly preserved: Y or N
5. Samples returned to lab ___ Hrs from collection

COC Tape was:
1. Present on outer package: Y or N
2. Unbroken on outer package: Y or N
3. COC record present & complete upon sample receipt: Y or N

WHITE COPY - ORIGINAL YELLOW COPY - CLIENT PINK COPY - LABORATORY

ARCADIS

Appendix E

Data Validation Memoranda

MEMO

ARCADIS Geraghty & Miller, 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 and Francis K. Rossi

Date:
15 January 2001

Subject:
Data Validation of Volatile Organic Compound Groundwater Samples Collected for the Third Quarter 2000 Monitoring Program, Northrop Grumman, Bethpage, New York (Project No. NY00008.0210.00004).

DATA VALIDATION

Fifty eight (58) samples, two (2) field replicates, ten (10) field blanks, and twenty (20) trip blanks were collected from September 18, through October 16, 2000 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) 10/95 Method NYDEC 95-1.

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 semi-VOCs data were discussed in a separate memo.

The laboratory provided four data packages. The analytical data was provided by the laboratory in the sample delivery groups (SDG 7000-2088A, 7000-2088B, 7000-2114A, 7000-2176A, 7000-2209A and 7000-2209B). The data validation results for these SDGs are discussed separately below.

HOLDING TIMES

The samples were analyzed within New York holding time requirements.

GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

INITIAL CALIBRATION

Two initial calibrations were performed. The compounds relative response factors (RRFs) were found to be greater than 0.05, and percent relative standard deviations (%RSDs), except for the following:

Calibration Date: 9/14/00

Compound	% RSD	RRF
2-Chloroethylvinylether	--	0.041

Associated samples: GM-20I, GM-20D, GM-21I, GM-15I, GM-16I, GM-35D-2, GM-36D-2, GM-36D, GM-18I, TB091800, TB091900, TB092000, TB092100, GM-37D, and GM-37D-2.

Calibration Date: 9/25/00

Compound	% RSD	RRF
2-Chloroethylvinylether	48.2	0.014
Chloromethane	36.8	--
Vinyl chloride	31.9	--
Chloroethane	30.5	--
Acetone	36.2	--

Associated samples: MW-52S, MW-52I, TB092500-1, TB092500-2, and FB092500.

Chloromethane, vinyl chloride, chloroethane, and acetone results were qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples. 2-Chloroethylvinylether results were qualified as estimated (J) if detected and unusable (R) if not detected in the associated samples.

CONTINUING CALIBRATION

Three continuing calibrations were performed. The compounds had RRFs greater than 0.05 and percent differences (%D) less than 25%, except for the following:

Calibration Date: 09/29/00

Compound	% D	RRF
Chloromethane	-36.9	--
Vinyl chloride	-33.1	--
Acetone	-55.0	--
2-Butanone	-26.7	--
4-Methyl-2-pentanone	-32.4	--
2-Hexanone	-34.1	--
1,1,2,2-Tetrachloroethane	-25.8	--
2-Chloroethylvinylether	-78.6	0.003
Vinyl acetate	-28.2	--

Associated samples: FB092500, TB092500-1, and TB092500-2.

Calibration Date: 10/02/00

Compound	% D	RRF
Chloromethane	-25.8	--
Bromomethane	-25.7	--
Acetone	-57.8	--
4-Methyl-2-pentanone	-31.9	--
2-Hexanone	-26.8	--
2-Chloroethylvinylether	-78.6	0.003

Associated samples: MW-52S and MW-52I.

Calibration Date: 09/22/00

Compound	% D	RRF
Chloroethane	29.1	--
Acetone	-36.4	--
2-Butanone	-32.6	--
4-Methyl-2-pentanone	-29.2	--
2-Hexanone	-29.4	--
2-Chloroethylvinylether	-58.5	0.017
Vinyl acetate	-42.7	--

Associated samples: GM-20I, GM-20D, GM-21I, GM-15I, GM-16I, GM-35D-2, GM-36D-2, GM-36D, GM-18I, TB091800, TB091900, TB092000, TB092100, GM-37D, and GM-37D-2.

Chloromethane, vinyl chloride, acetone, 2-butanone, 4-methyl-2-pentanone, 2-hexanone, 1,1,2,2-tetrachloroethane, bromomethane, chloroethane, and vinyl acetate results were qualified as estimated (J) if detected and estimated (UJ) if not detected in the associated samples. 2-Chloroethylvinylether

results were qualified as estimated (J) if detected and unusable (R) if not detected in the associated samples.

BLANKS

Three method blanks (VBLKMB, VBLKKU, VBLKKV) were analyzed with this SDG. Methylene chloride was detected in VBLKKU and VBLKKV and acetone and 1,1,2.2-tetrachloroethane in VBLKMB.

Six trip blanks and one field blank were collected along with this sample set. Methylene chloride was detected in all the trip blanks and the field blank, acetone in TB091800 and TB092100, 1,1,2.2-tetrachloroethane in TB091800, 2-butanone in TB092500-2, and benzene, toluene, ethylbenzene, and xylenes in FB092500.

Based on blank results, results were qualified as non-detect (U), for the samples listed below.

Compound	Sample ID's
Methylene Chloride	GM-20I, GM-20D, GM-21I, GM-15I, GM-16I, GM-35D-2, GM-36D-2, GM-36D, GM-37D, GM-37D-2, GM-18I, MW-52S, and MW-52I.
Acetone	GM-21I, GM-35D-2, GM-36D-2, and GM-36D.
2-Butanone	MW-52S.

SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

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

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

One matrix spike/matrix spike duplicate/matrix spike blank (MS/MSD/MSB) was analyzed with this sample set. Sample MW-52S was used for the MS/MSD/MSB. Spike percent recoveries (%R) and relative percent differences (RPD's) were within control limits. Qualification of data based on the MS/MSD/MSB results was not necessary.

LABORATORY CONTROL SAMPLES

Laboratory control sample percent recovery criteria were not meet for the following compounds: carbon disulfide was below limits and acetone was above limits, associated with TB092500-1, TB092500-2, and FB092500 and acetone, methylene chloride, chloroform, and trichloroethene were above limits, associated with MW-52S and MW-52I. Based on laboratory control sample results, acetone, methylene chloride, chloroform, and trichloroethene were qualified as estimated (J) if detected. Carbon disulfide results were qualified as unusable (R) if not detected, and estimated (J) if detected

INTERNAL STANDARDS

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

TARGET COMPOUND IDENTIFICATION

Target compounds detected in the samples were reported correctly.

COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

Tentatively identified compounds were reported correctly.

SYSTEM PERFORMANCE

The performance of the instruments during analysis is considered acceptable.

OVERALL ASSESSMENT OF DATA

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

HOLDING TIMES

The samples were analyzed within New York holding time requirements.

GC/MS INSTRUMENT PERFORMANCE CHECK

The GC/MS instrument tunes were within criteria.

INITIAL CALIBRATION

Two initial calibrations were performed. The compounds RRFs were found to be >0.05 and %RSD was found to be < 30%, except for the following:

Calibration Date: 9/14/00

Compound	% RSD	RRF
2-Chloroethylvinylether	--	0.041

Associated samples: HW-29D, HW-24I, TB092700-1, and TB092700-2.

Calibration Date: 9/25/00

Compound	% RSD	RRF
2-Chloroethylvinylether	48.2	0.014
Chloromethane	36.8	--
Vinyl chloride	31.9	--
Chloroethane	30.5	--
Acetone	36.2	--

Associated samples: N10634, GM-21S, GM-18S, FW-03, HW-29I, GM-13D, GM-15D, GM-15S, TB092800, FB092800, and FB092700.

Chloromethane, vinyl chloride, chloroethane, and acetone results were qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples. 2-Chloroethylvinylether results were qualified as estimated (J) if detected and unusable (R) if not detected in the associated samples.

CONTINUING CALIBRATION

Three continuing calibrations were performed. The compounds had RRFs greater than 0.05 and %Ds less than 25%, except for the following:

Calibration Date: 09/29/00

Compound	% D	RRF
Chloromethane	-36.9	--
Vinyl chloride	-33.1	--
Acetone	-55.0	--
2-Butanone	-26.7	--
4-Methyl-2-pentanone	-32.4	--
2-Hexanone	-34.1	--
1,1,2,2-Tetrachloroethane	-25.8	--
2-Chloroethylvinylether	-78.6	0.003
Vinyl acetate	-28.2	--

Associated samples: N10634, GM-21S, and GM-18S.

Calibration Date: 10/3/00

Compound	% D	RRF
Acetone	-57.4	--
2-Butanone	-56.3	--
Bromoform	-28.5	--
4-methyl-2-pentanone	-35.2	--
2-Hexanone	-35.0	--
2-chloroethylvinylether	-42.8	0.008

Associated samples: FW-03, HW-29I, GM-13D, GM-15D, GM-15S, FB092700, FB092800, and TB092800.

Calibration Date: 9/30/00

Compound	% D	RRF
2-Butanone	-28.0	--
2-chloroethylvinylether	-61.0	0.012

Associated samples: HW-29D, HW-24I, TB092700-1, and TB092700-2.

Chloromethane, vinyl chloride, acetone, 2-butanone, 4-methyl-2-pentanone, bromoform, 2-hexanone, 1,1,2,2-tetrachloroethane, vinyl acetate, and 2-butanone results were qualified as estimated (J) if detected and estimated (UJ) if not detected in the associated sample. 2-Chloroethylvinylether results were qualified as estimated (J) if detected and unusable (R) if not detected in the associated sample.

BLANKS

Three method blanks (VBLKKU, VBLKKW, VBLKMJ) were analyzed with this SDG. Methylene chloride was detected in VBLKKU and VBLKKW and acetone in VBLKKW and VBLKMJ.

Three trip blanks and two field blanks were associated with the samples analyzed in this SDG. Methylene chloride was detected in all the trip blanks and field blanks, acetone in TB092700, FB092700, and TB092800, 2-butanone in TB092800 and FB092800, and tetrachloroethene in FB092700. One field and trip blank results (TB092500 and FB092500) were reported in SDG 7000-2088A.

Based on the blank results the following compounds were qualified as non-detect (U).

Compound	Sample ID's
Methylene chloride	N10634, GM-21S, GM-18S, FW-03, HW-29I, HW-29D, HW-24I, GM-13D, GM-15D, and GM-15S.
Acetone	HW-29I, HW-29D, and HW-24I.
Tetrachloroethene	HW-29I.
2-Butanone	GM-15D.

SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

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

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

A MS/MSD was analyzed with this sample set. Sample MW-52S was used for the MS/MSD. The quantitation reports appear in SDG 7000-2088A. Spike %Rs and RPDs were within control limits. Qualification of data based on the MS/MSD results was not necessary.

LABORATORY CONTROL SAMPLES

Laboratory control sample percent recovery criteria were not met for the following compounds: Cis-1,3-dichloropropene, 2-butanone, chloroform and trichloroethene in K1792D and acetone in K1761D were above limits. Carbon disulfide in K1761D was below limits. Based on laboratory control sample results, cis-1,3-dichloropropene, 2-butanone, chloroform, and trichloroethene, were qualified as estimated (J) if detected in N10634, GM-21S, and GM-18S. Acetone and carbon disulfide were qualified as estimated (J) if detected and carbon disulfide as not usable (R) if not detected in FW-03, HW-29I, GM-13D, FB092700, FB092800, GM-15D, GM-15S, and TB092800.

INTERNAL STANDARDS

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

TARGET COMPOUND IDENTIFICATION

Target compounds detected in the samples were reported correctly.

COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

Tentatively identified compounds were reported correctly.

SYSTEM PERFORMANCE

The performance of the instruments during analysis is considered acceptable.

OVERALL ASSESSMENT OF DATA

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

SDG 7000-2114A

HOLDING TIMES

The samples were analyzed within New York holding time requirements.

GC/MS INSTRUMENT PERFORMANCE CHECK

All GC/MS instrument tunes were within criteria.

INITIAL CALIBRATION

One initial calibration was performed for this sample set. All relative response factors (RRF's) were found to be greater than 0.05, and percent relative standard deviations (%RSD) were found to be less than 30% for all compounds except for the following:

Calibration Date: 9/25/00

Compound	% RSD	RRF
2-Chloroethylvinylether	48.2	0.014
Chloromethane	36.8	--
Vinyl chloride	31.9	--
Chloroethane	30.5	--
Acetone	36.2	--

Associated samples: All samples.

Chloromethane, vinyl chloride, chloroethane, and acetone results were qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples. 2-Chloroethylvinylether results were qualified as estimated (J) if detected and unusable (R) if undetected in the associated samples.

CONTINUING CALIBRATION

One continuing calibration was performed with this SDG. All compounds had relative response factors (RRFs) greater than 0.05 and percent differences (%D) less than 25%, except for the following:

Calibration Date: 09/27/00

Compound	% D	RRF
Acetone	-35.0	--
2-Chloroethylvinylether	--	0.012

Associated sample: All samples.

Acetone results were qualified as estimated (J) if detected and estimated (UJ) if not detected in the associated samples. 2-Chloroethylvinylether results were qualified as estimated (J) if detected, and unusable (R) if not detected.

BLANKS

One method blank (VBLKKS) and one trip blank (TB092200) were analyzed with this SDG. Methylene chloride was detected in both blanks.

Based on the blank results the following compounds were qualified as non-detect (U).

Compound	Sample ID's
Methylene chloride	GM-38D, GM-38D-2, GM-71D-2, Rep-1

SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

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

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Sample GM-38D was used for the MS/MSD/MSB. Spike %Rs and RPDs were within control limits for the MS/MSD, with the exception of trichloroethene. No results were qualified based on the MS/MSD/MSB.

LABORATORY CONTROL SAMPLES

Laboratory control sample percent recovery criteria were not meet for the following compounds: carbon disulfide, 1,1-dichloroethene, toluene, and ethylbenzene were below QC limits. Results were qualified as unusable (R) if not detected, and estimated (J) if detected

INTERNAL STANDARDS

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

TARGET COMPOUND IDENTIFICATION

Target compounds detected in the samples were reported correctly.

COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

Tentatively identified compounds were reported correctly.

SYSTEM PERFORMANCE

The performance of the instruments during analysis is considered acceptable.

OVERALL ASSESSMENT OF DATA

One field replicate was collected with this sample set. Sample GM-38D-2 was replicated and labeled REP-1. The replicate data was considered acceptable and qualification of the data was not necessary.

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

SDG 7000-2176A

HOLDING TIMES

The samples were analyzed within New York holding time requirements.

GC/MS INSTRUMENT PERFORMANCE CHECK

The GC/MS instrument tunes were within criteria.

INITIAL CALIBRATION

Two initial calibrations were performed for this sample set. The RRF's were found to be greater than 0.05, and %RSD were found to be less than 30% for the following compounds:

Calibration Date: 9/25/00

Compound	% RSD	RRF
2-Chloroethylvinylether	48.2	0.014
Chloromethane	36.8	--
Vinyl chloride	31.9	--
Chloroethane	30.5	--
Acetone	36.2	--

Associated samples: MW-3R, GM-16SR, N10631, MW-52D, MW-10I, TB100200, GM-23I, FB100200, Rep-2, GM-23S, GM-15D2, TB092600-1, TB092600-2, and FB092600.

Calibration Date: 9/19/00

Compound	% RSD	RRF
2-chloroethylvinylether	53.0	0.004

Associated samples: GM-14

Chloromethane, vinyl chloride, chloroethane, and acetone results were qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples. 2-Chloroethylvinylether

results were qualified as estimated (J) if detected and unusable (R) if undetected in the associated samples.

CONTINUING CALIBRATION

Four continuing calibrations were performed. The compounds had RRFs greater than 0.05 and %Ds less than 25%, except for the following:

Calibration Date: 09/28/00

Compound	RRF
2-chloroethylvinylether	0.011

Associated samples: MW-3R, GM-16SR, N10631, MW-52D, MW-10I, TB092600-1, TB092600-2, and FB092600.

Calibration Date: 10/4/00

Compound	% D	RRF
Acetone	-41.0	--
2-Butanone	-53.2	--
4-Methyl-2-pentanone	-28.2	--
Tetrachloroethene	25.9	--
Bromoform	-29.4	--
2-chloroethylvinylether	-42.8	0.008

Associated samples: TB100200, GM-23I, and FB100200.

Calibration Date: 10/5/00

Compound	% D	RRF
Chloromethane	-25.5	--
Acetone	-55.8	--
4-Methyl-2-pentanone	-32.4	--
Tetrachloroethene	28.8	--
2-Chloroethylvinylether	-50.0	0.007

Associated samples: Rep-2, GM-23S, and GM-15D2.

Calibration Date: 10/9/00

Compound	% D
Acetone	34.1

Associated samples: GM-14

Acetone, 2-butanone, 4-methyl-2pentanone, tetrachloroethene, and bromoform, results were qualified as estimated (J) if detected and estimated (UJ) if not detected in the associated samples. 2-

Chloroethylvinylether results were qualified as estimated (J) if detected and unusable (R) if not detected in the associated samples.

BLANKS

Four method blanks (VBLKKT, VBLKXX, VBLKKY, VBLKND) were analyzed with this SDG. Methylene chloride was detected in VBLKKT and VBLKKY and acetone in VBLKXX.

Three trip blanks and two field blanks were analyzed with this SDG. Methylene chloride was detected in all the trip and field blanks, acetone in TB100200 and FB100200, and 2-butanone and 4-methyl-2-pentanone in TB092600.

Based on the blank results the following compounds were qualified as non-detect (U).

Compound	Sample ID's
Methylene chloride	MW-3R, GM-16SR, MW-52D, Rep-2, GM-23I, GM-23S, and GM-15D2.

SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

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

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

A batch specific sample was used for the MS/MSD/MSB. Spike percent recoveries (%R) and relative percent differences (RPD's) were within control limits for the MS/MSD, except for one percent recovery. Qualification of the data was not necessary based on MS/MSD results.

LABORATORY CONTROL SAMPLES

Laboratory control sample percent recovery criteria were not met for acetone, which was above quality control limits. Based on laboratory control sample results, acetone was qualified as estimated (J) if detected in TB100200, FB100200, GM-23I, GM-23S, GM-15D2, and REP-2.

INTERNAL STANDARDS

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

TARGET COMPOUND IDENTIFICATION

Target compounds detected in the samples were reported correctly.

COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

Tentatively identified compounds were reported correctly.

SYSTEM PERFORMANCE

The performance of the instruments during analysis is considered acceptable.

OVERALL ASSESSMENT OF DATA

One field replicate was collected with this sample set. Sample GM-23I was replicated and labeled REP-2. The replicate data was considered acceptable and qualification of the data was not necessary.

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

SDG 7000-2209A

HOLDING TIMES

The samples were analyzed within New York holding time requirements. Sample GM73D2 was mislabeled as GM73DZ. The form I was corrected to show the proper id.

GC/MS INSTRUMENT PERFORMANCE CHECK

The GC/MS instrument tunes were within criteria.

INITIAL CALIBRATION

One initial calibration was performed for this sample set. The RRF's were found to be greater than 0.05, and %RSD were found to be less than 30% except for the following compounds:

Calibration Date: 9/25/00

Compound	% RSD	RRF
2-Chloroethylvinylether	48.2	0.014
Chloromethane	36.8	--
Vinyl chloride	31.9	--
Acetone	36.2	--
Chloroethane	30.5	--

Associated samples: All samples

Chloromethane, chloroethane, vinyl chloride, and acetone results were qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples. 2-chloroethylvinylether results were qualified as estimated (J) if detected and unusable (R) if undetected in the associated samples.

CONTINUING CALIBRATION

Five continuing calibrations were performed with this SDG. All compounds had RRFs greater than 0.05 and percent differences (%D) less than 25%, except for the following:

Calibration Date: 10/2/00

Compound	% D	RRF
2-Chloroethylvinylether	-78.6	0.003
Chloromethane	-25.8	--
Bromomethane	-25.7	--
Acetone	-57.8	--
4-Methyl-2-Pentanone	-31.9	--
2-Hexanone	-26.8	--

Associated samples: GM-17D, GM-17I, and GM-17SR.

Calibration Date: 10/3/00

Compound	% D	RRF
Acetone	-57.4	--
2-Butanone	-56.3	--
Bromoform	-28.5	--
4-Methyl-2-pentanone	-35.2	--
2-Hexanone	-35.0	--
2-Chloroethylvinylether	-42.8	0.008

Associated samples: TB092900 and FB092900.

Calibration Date: 10/5/00

Compound	% D	RRF
Chloromethane	-25.5	--
Acetone	-55.8	--
4-Methyl-2-pentanone	-32.4	--
Tetrachloroethene	28.8	--
2-chloroethylvinylether	-50.0	0.007

Associated samples: FB100300, TB100300, GM33D2, GM34D, and GM34D2.

Calibration Date: 10/9/00

Compound	% D	RRF
Chloromethane	-34.3	--
Vinyl chloride	-29.9	--
Acetone	-60.2	--
2-Butanone	-32.1	--
4-Methyl-2-Pentanone	-39.0	--
2-Hexanone	-32.5	--
2-chloroethylvinylether	-85.7	0.002
Vinyl acetate	-27.9	--
Tetrachloroethene	29.2	--

Associated samples: N10627, TB100400, FB100400, GM74I, TB100500, and FB100500.

Calibration Date: 10/10/00

Compound	% D	RRF
Chloromethane	-32.2	--
Vinyl chloride	-27.3	--
Acetone	-47.4	--
2-Butanone	-59.5	--
4-Methyl-2-Pentanone	-32.4	--
2-Hexanone	-31.7	--
Tetrachloroethene	31.2	--
2-Chloroethylvinylether	-85.7	0.002
Vinyl acetate	-27.9	--

Associated samples: GM74D2 and GM73D2.

Chloromethane, vinyl chloride, acetone, 2-butanone, 4-methyl-2-pentanone, 2-hexanone, tetrachloroethene, vinyl acetate, bromomethane, and bromoform, results were qualified as estimated (J) if detected and estimated (UJ) if not detected in the associated samples. 2-Chloroethylvinylether results were qualified as estimated (J) if detected and unusable (R) if not detected in the associated samples.

BLANKS

Five method blanks (VBLKKV, VBLKKW, VBLKKY, VBLKKZ, VBLKK1) were analyzed with this SDG. Methylene chloride was detected in VBLKKV, VBLKKW, VBLKKY, and VBLKK1, acetone in VBLKKW, and 2-butanone in VBLKKZ and VBLKK1.

Four trip blanks and four field blanks were analyzed with this SDG. Methylene chloride was detected in all the trip and field blanks, 2-butanone in TB092900 and FB092900, and carbon disulfide, trichloroethene, and tetrachloroethane, in TB092900.

Based on the method, trip and field blank results the following compounds were qualified as non-detect (U).

Compound	Sample ID's
Methylene chloride	GM17D, GM17I, GM17SR, GM33D2, GM34D, GM34D2, N10627, GM73D2, GM74D2, and GM74I.

SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

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

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

A batch specific sample was used for the MS/MSD/MSB. Spike %R and RPD's were within control limits for the MS/MSD. Qualification of the data was not necessary based on MS/MSD results.

LABORATORY CONTROL SAMPLES

Five laboratory control samples were run with this SDG. Based on laboratory control sample results, acetone was qualified as estimated (J) if detected, in all samples. Chloroform and trichloroethene were qualified as estimated (J) if detected in samples GM17D, GM17I, GM17SR, GM73D2, GM-74D2, TB100400, TB100500, FB100400, FB100500, N10627, and GM74I. 1,2-Dichloroethane, 2-butanone, cis-1,3-dichloropropene, and chlorobenzene were qualified as estimated (J) if detected in samples GM73D2 and GM74D2. Methylene chloride was qualified as estimated (J) if detected in samples GM17D, GM17I, and GM17SR.

INTERNAL STANDARDS

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

TARGET COMPOUND IDENTIFICATION

Target compounds detected in the samples were reported correctly.

COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

Tentatively identified compounds were reported correctly.

SYSTEM PERFORMANCE

The performance of the instruments during analysis is considered acceptable.

OVERALL ASSESSMENT OF DATA

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

SDG 7000-2209B

HOLDING TIMES

The samples were analyzed within New York holding time requirements.

GC/MS INSTRUMENT PERFORMANCE CHECK

The GC/MS instrument tunes were within criteria.

INITIAL CALIBRATION

Two initial calibrations were performed for this sample set. All relative response factors (RRF's) were found to be greater than 0.05, and percent relative standard deviations (%RSD) were found to be less than 30% for all compounds except for the following:

Calibration Date: 9/25/00

Compound	% RSD	RRF
2-Chloroethylvinylether	48.2	0.014
Chloromethane	36.8	--
Vinyl chloride	31.9	--
Acetone	36.2	--
Chloroethane	30.5	--

Associated samples: All samples

Chloromethane, chloroethane, vinyl chloride, and acetone results were qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples. 2-chloroethylvinylether results were qualified as estimated (J) if detected and unusable (R) if undetected in the associated samples.

CONTINUING CALIBRATION

Four continuing calibrations were performed with this SDG. All compounds had RRFs greater than 0.05 and percent differences (%D) less than 25%, except for the following:

Calibration Date: 10/9/00

Compound	% D	RRF
Chloromethane	-34.3	--
Vinyl chloride	-29.9	--
Acetone	-60.2	--
2-Butanone	-32.1	--
4-Methyl-2-Pentanone	-39.0	--
2-Hexanone	-32.5	--
Tetrachloroethene	29.2	--
2-chloroethylvinylether	-85.7	0.002
Vinyl acetate	-27.9	--

Associated samples: TB10/6/00, FB10/6/00, and GM-74D.

Calibration Date: 10/17/00

Compound	% D	RRF
2-Butanone	40.9	--
2-chloroethylvinylether	--	0.000

Associated samples: GM-70D2, TB10/11/00, and TB101600.

Calibration Date: 10/18/00

Compound	RRF

2-chloroethylvinylether	Not reported (0.000)

Associated samples: GP-1, GP-3, ONCT-1, IRM Effluent, GP-1 Effluent, and GP-1 RCB.

Calibration Date: 10/19/00

Compound	% D	RRF
2-chloroethylvinylether	--	0.000

Associated samples: ONCT-2, ONCT-3, IRM Influent, GP-1 Influent, and IRM RCB.

Chloromethane, vinyl chloride, acetone, 2-butanone, 2-hexanaone, 4-methyl-2-pentanone, tetrachloroethene, dichlorofluoromethane, and vinyl acetate results were qualified as estimated (J) if detected, and estimated (UJ) if not detected in the associated samples. 2-Chloroethylvinylether results were qualified as estimated (J) if detected and unusable (R) if not detected in the associated samples.

BLANKS

Five method blanks (VBLKKZ, VBLKKC, VBLKKE, and VBLKKF) were analyzed with this SDG. Methylene chloride was detected in VBLKKC, VBLKKE, and VBLKKF, and 2-butanone in VBLKKZ. A butylated hydroxytoluene was detected in VBLKKE and was qualified as not usable (R) in IRM Effluent.

Three trip blanks and one field blank were analyzed with this SDG. Methylene chloride was detected in all the trip and field blanks and acetone in TB101600.

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

Compound	Sample ID's
Methylene Chloride	GM-74D, GM-70D2, GP-1, GP-3, ONCT-1 ONCT-2, ONCT-3, IRM Influent, GP-1 Influent GP-1 Effluent, IRM RCB, and GP-1 RCB.
Acetone	GP-1, ONCT-2, IRM Influent, and GP-1 Influent.

SYSTEM MONITORING COMPOUNDS (SURROGATE SPIKES)

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

MATRIX SPIKES/MATRIX SPIKE DUPLICATES

Sample GM-74D was used for the MS/MSD/MSB. Spike %R and RPD's were within control limits for the MS/MSD, except for one RPD. All %R were within quality control limits for the MSB. Qualification of the data was not necessary based on MS/MSD results.

LABORATORY CONTROL SAMPLES

A laboratory control sample was run with this SDG. Based on laboratory control sample results, acetone, chloroform and trichloroethene were qualified as estimated (J) if detected, in all samples.

INTERNAL STANDARDS

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

TARGET COMPOUND IDENTIFICATION

Target compounds detected in the samples were reported correctly.

COMPOUND QUANTITATION AND REPORTED CONTRACT REQUIRED QUANTITATION LIMITS (CRQLs)

All compound detection limits were met.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

Tentatively identified compounds were reported correctly.

SYSTEM PERFORMANCE

The performance of the instruments during analysis is considered acceptable.

OVERALL ASSESSMENT OF DATA

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

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed Under STL Sample Delivery Group Numbers 7000-2088A, 7000-2088B, 7000-2114A, 7000-2176A, 7000-2209A and 7000-2209B.

ARCADIS Geraghty and Miller, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 7000-2088A			
GM-20I	002088A-01	9/18/00	9/19/00
GM-20D	002088A-02	9/18/00	9/19/00
GM-21I	002088A-03	9/18/00	9/19/00
TB091800	002088A-04	9/18/00	9/19/00
GM-15I	002088A-05	9/19/00	9/20/00
GM-16I	002088A-06	9/19/00	9/20/00
TB091900	002088A-07	9/19/00	9/20/00
GM-35D-2	002088A-08	9/20/00	9/21/00
GM-36D-2	002088A-09	9/20/00	9/21/00
GM-36D	002088A-10	9/20/00	9/21/00
TB092000	002088A-11	9/20/00	9/21/00
GM-37D	002088A-12	9/21/00	9/22/00
GM-37D-2	002088A-13	9/21/00	9/22/00
TB092100	002088A-14	9/21/00	9/22/00
GM-18I	002088A-15	9/21/00	9/22/00
MW-52S	002088A-16	9/25/00	9/26/00
MW-52I	002088A-17	9/25/00	9/26/00
FB092500	002088A-18	9/25/00	9/26/00
TB092500-1	002088A-19	9/25/00	9/26/00
TB092500-2	002088A-20	9/25/00	9/26/00

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed Under STL Sample Delivery Group Numbers 7000-2088A, 7000-2088B, 7000-2114A, 7000-2176A, 7000-2209A and 7000-2209B.

ARCADIS Geraghty and Miller, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 7000-2088B			
N10634	002088B-01	9/25/00	9/26/00
GM-21S	002088B-02	9/25/00	9/26/00
GM-18S	002088B-03	9/25/00	9/26/00
FW-03	002088B-04	9/27/00	9/28/00
HW-29I	002088B-05	9/27/00	9/28/00
HW-29D	002088B-06	9/27/00	9/28/00
HW-24I	002088B-07	9/27/00	9/28/00
GM-13D	002088B-08	9/27/00	9/28/00
FB092700	002088B-09	9/27/00	9/28/00
TB092700-01	002088B-10	9/27/00	9/28/00
TB092700-02	002088B-11	9/27/00	9/28/00
TB092800	002088B-12	9/28/00	9/29/00
FB09280	002088B-13	9/28/00	9/29/00
GM-15D	002088B-14	9/28/00	9/29/00
GM-15S	002088B-15	9/28/00	9/29/00
SDG 7000-2114A			
GM-38D	002114A-01	9/22/00	9/23/00
GM-38D-2	02114A-02	9/22/00	9/23/00
TB092200	02114A-03	9/22/00	9/23/00
GM-71D-2	02114A-04	9/22/00	9/23/00
REP-1	02114A-05	9/22/00	9/23/00

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed Under STL Sample Delivery Group Numbers 7000-2088A, 7000-2088B, 7000-2114A, 7000-2176A, 7000-2209A and 7000-2209B.

ARCADIS Geraghty and Miller, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 7000-2176A			
MW-3R	002176A-01	9/26/00	9/27/00
GM-16SR	002176A-02	9/26/00	9/27/00
N10631	002176A-03	9/26/00	9/27/00
FB092600	002176A-05	9/26/00	9/27/00
TB092600-1	002176A-06	9/26/00	9/27/00
TB092600-2	002176A-07	9/26/00	9/27/00
MW-52D	002176A-08	9/26/00	9/27/00
MW-10I	002176A-09	9/26/00	09/27/00
TB100200	002176A-10	10/02/00	10/03/00
REP-2	002176A-11	10/02/00	10/03/00
GM-23I	002176A-12	10/02/00	10/03/00
GM-23S	002176A-13	10/02/00	10/03/00
GM-14	002176A-14	10/02/00	10/03/00
FB100200	002176A-15	10/02/00	10/03/00
GM-15D2	002176A-16	10/02/00	10/03/00
SDG 7000-2209A			
GM-17D	002209A-01	9/29/00	9/30/00
GM-17I	002209A-02	9/29/00	9/30/00
TB092900	002209A-03	9/29/00	9/30/00

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed Under STL Sample Delivery Group Numbers 7000-2088A, 7000-2088B, 7000-2114A, 7000-2176A, 7000-2209A and 7000-2209B.

ARCADIS Geraghty and Miller, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 7000-2209A - **continued**			
GM-17SR	002209A-04	9/29/00	9/30/00
FB092900	002209A-05	9/29/00	9/30/00
FB100300	002209A-06	10/03/00	10/04/00
TB100300	002209A-07	10/03/00	10/04/00
GM33D2	002209A-08	10/03/00	10/04/00
GM34D	002209A-09	10/03/00	10/04/00
GM34D2	002209A-10	10/03/00	10/04/00
N10627	002209A-11	10/04/00	10/05/00
GM73D2	002209A-12	10/04/00	10/05/00
TB100400	002209A-13	10/04/00	10/05/00
FB100400	002209A-14	10/04/00	10/05/00
GM74D2	002209A-15	10/05/00	10/06/00
GM74I	002209A-16	10/05/00	10/06/00
TB100500	002209A-17	10/05/00	10/06/00
FB100500	002209A-18	10/05/00	10/06/00
SDG 7000-2209B			
TB 10/6/00	002209B-01	10/06/00	10/07/00
FB 10/6/00	002209B-02	10/06/00	10/07/00
GM-74D	002209B-03	10/06/00	10/07/00
GM-70D	002209B-04	10/11/00	10/12/00
TB 10/11/00	002209B-05	10/11/00	10/12/00

Table 1. Sample Identification, Collection Dates, and Laboratory Received Dates for Samples Analyzed Under STL Sample Delivery Group Numbers 7000-2088A, 7000-2088B, 7000-2114A, 7000-2176A, 7000-2209A and 7000-2209B.

ARCADIS Geraghty and Miller, Inc. ID	Laboratory ID	Date Collected	Date Received
SDG 7000-2209B - continued			
TB101600	002209B-06	10/16/00	10/17/00
GP-1	002209B-07	10/16/00	10/17/00
GP-3	002209B-08	10/16/00	10/17/00
ONCT-1	002209B-09	10/16/00	10/17/00
ONCT-2	002209B-10	10/16/00	10/17/00
ONCT-3	002209B-11	10/16/00	10/17/00
IRM INFLUENT	002209B-12	10/16/00	10/17/00
IRM EFFLUENT	002209B-13	10/16/00	10/17/00
GP-1 INFLUENT	002209B-14	10/16/00	10/17/00
GP-1 EFFLUENT	002209B-15	10/16/00	10/17/00
IRM RCB	002209B-16	10/16/00	10/17/00
GP-1 RCB	002209B-17	10/16/00	10/17/00