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PLANT 3 DRYWELLS 20-08 AND 34-07 EXPOSURE ASSESSMENT

Northrop Grumman Corporation
Bethpage Plant 3 Facility
Bethpage, New York

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Prepared for:

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EXECUTIVE SUMMARY

Roux Associates, Inc. (Roux Associates) has performed investigations and prepared this exposure assessment for the Northrop Grumman Corporation (NGC) Plant 3 (Plant 3) Drywells 20-08 and 34-07 located in Bethpage, New York (Site). Total polychlorinated biphenyls (PCBs), measured as Aroclor formulations, were identified as the Chemicals of Potential Concern (COPCs) at the Site since concentrations of PCBs exceeded both the New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) and the United States Environmental Protection Agency (USEPA) Risk Based Concentrations (RBCs) in a few designated soil depths. It must be noted however, that an incomplete pathway for exposure currently exists for soils below typical construction depths (greater than 14 feet) and that there will also be an incomplete pathway for exposure to surface soils (less than 14 feet) once the asphalt surfaces in the drywell areas are restored. Consequently, the lack of a pathway for exposure to PCBs results in a risk of zero regardless of the PCB concentrations.

Not withstanding the fact that there are no pathways for exposure to PCBs at the Site, conservative reasonable maximum exposure (RME) scenarios were considered to evaluate exposure to soils where there were exceedances of State and Federal criteria for PCBs, specifically at Drywell 34-07. The calculations were performed as an additional measure even though the existence of a complete pathway for exposure is currently, and in the future, highly unlikely. The calculated risk based on the RME scenarios was not in excess of risk typically assigned to industrial exposures.

The results of our investigations also show that groundwater is not significantly impacted by the PCBs contained in the soils. Only 1 of 4 wells contained detectable PCBs. Their presence in the one well is likely due to association with fine particulate matter since the concentration of PCBs was at or in excess of the solubility range of some of the individual congeners that would typically constitute the detected Aroclor formulation. There is also a lack of a transport pathway of PCBs to the well that contained the PCBs since there were no PCBs detected in a well located hydraulically up-gradient, with both wells hydraulically down-gradient of the drywell that would

be the source of any PCBs. From a human health perspective, there is an incomplete pathway for exposure to the groundwater. The Site groundwater is controlled by an existing on-site containment and treatment system, and this restricted use of the medium results in a risk of zero.

Based on the absence of feasible pathways for exposure to soils and groundwater, and the minimal risk associated with hypothetical exposure scenarios, there is not likely to be excessive risk associated with exposure to total PCBs measured within these soils. It follows that further remediation of soils in the areas of Drywells 20-08 and 34-07 is not warranted.

1.0 INTRODUCTION

Roux Associates, Inc. (Roux Associates) has prepared this exposure assessment for the Northrop Grumman Corporation (NGC) Plant 3 (Plant 3) Drywells 20-08 and 34-07 located in Bethpage, New York (Site). The purpose of the exposure assessment was to:

- identify potential receptors;
- determine viable exposure pathways; and
- evaluate the potential exposure levels for each receptor.

This exposure assessment was prepared based on guidelines provided by the United States Environmental Protection Agency (USEPA) in, "Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A) Interim Final" (RAGS) (USEPA, 1989). Data used in the calculations was obtained from, "Plant 3 Drywells 20-08 and 34-07 Site Characterization Report," (SCR). This SCR presented the Site characterization component of the investigative/remedial work performed at the former NGC Plant 3 Facility in Bethpage, New York (Site) from August 1999 through April 2000 at the Plant 3 Drywells 20-08 and 34-07. This component was performed in accordance with a Site Characterization Program (SCP) that was approved by the New York State Department of Environmental Conservation (NYSDEC), and was implemented in accordance with the following:

- Plant 3 Drywells 20-08 and 34-07 Soil Remediation Engineering Services Final Work Plan (Characterization Work Plan, Roux Associates, October 1999);
- Plant 3 Drywells 20-08 and 34-07 Soil Investigation Supplemental Field Characterization Final Work Plan (Supplemental Characterization Work Plan, Roux Associates, November 1999); and
- Status Letter Report Summarizing Ongoing Investigations and Proposed Scope of Work for the Delineation of PCB Contamination (Status Summary Letter Report, Roux Associates, March 2000).

At the NGC Site, the only chemicals of potential concern are PCBs analyzed as Aroclor mixtures. Furthermore, only one impacted media (i.e., soils) and limited exposure pathways consistent with the future Nassau County Reuse Plan for the property (i.e., commercial/industrial use) were identified, therefore the steps and procedures described in RAGS (1989) have been

modified. Typically, the RAGS provides extensive guidance associated with baseline risk assessment, while this investigation principally incorporates the exposure assessment component of the baseline risk assessment.

The remaining sections of this exposure assessment report include:

- Section 2.0 - Background;
- Section 3.0 - Scope of the Exposure Assessment;
- Section 4.0 - Identification of Chemicals of Potential Concern;
- Section 5.0 - Exposure Pathways Assessment
- Section 6.0 – Risk Calculation;
- Section 7.0 - Conclusions; and
- Section 8.0 - References.

2.0 BACKGROUND

The former NGC Plant 3 Facility is located on South Oyster Bay Road in Bethpage, New York. The Site is located in a fully developed industrial/commercial area, with much of the site covered by concrete and gravel. The Site is generally surrounded by residential communities and contains no contiguous ecological habitats. Plant 3 was a government owned, contractor operated (GOCO) facility that NGC elected to return to the United States Navy. Plant 3 is part of the 105 Acre Naval Weapons Industrial Reserve GOCO property in Bethpage, New York. The facility was transferred back to the Navy in the fall of 1998 after extensive environmental remediation and building restoration activities were performed. The Site is currently owned and maintained by the Navy. Nassau County has developed a Reuse Plan for the property, which includes the redevelopment of the facility for industrial/ commercial land use. Although NGC has undertaken the investigation/remediation services that result from the investigation and conceptual design process of which this report is a part [described in the Characterization Work Plan (CWP)], the Navy has agreed to perform the design, operation and monitoring of the remedial action, if required in the vicinity of the Plant 3 Drywells 20-08 and 34-07.

The material below and around the Plant 3 Drywells 20-08 and 34-07 has been identified to contain PCBs, and has partially been remediated under the Nassau County Department of Health (NCDOH) Underground Injection Control (UIC) program. Closure of these drywells is required in accordance with the United Stated Environmental Protection Agency (USEPA) UIC program currently administrated by the NCDOH. Previously, these drywells functioned as a component of the Site's storm-water drainage system. The drywells functioned as catch basins, with some stormwater infiltration capability, and were also interconnected to other catch basins, which ultimately discharged into the Navy recharge basins within the Site. Consequently, contamination of the material within each drywell and beyond the horizontal and vertical limits of each former drywell may have resulted from PCB containing materials released during ongoing Site maintenance activities.

Previously, NGC conducted a Phase I and Phase II Environmental Site Assessment (ESA) of the Plant 3 facility, in which the results identified that the material within Drywells 20-08 and 34-07

required remediation. In June 1998, the material in and below Drywells 20-08 and 34-07 was excavated to depths feasible using a conventional shoring system. Upon the completion of these excavations, the USEPA, however, requested that NGC perform an additional investigation to further delineate PCBs in adjacent soil above NYSDEC RSCOs and to characterize groundwater quality in the vicinity of each drywell at the Site.

As requested by the USEPA, NGC performed this additional investigation for soil and groundwater. This additional investigation was performed as part of the NYSDEC-approved SCP, and was undertaken to define the horizontal and vertical extent of PCB concentrations in soil that exceed the NYSDEC RSCOs and to characterize groundwater quality in the vicinity of each drywell. In accordance with the CWP, Soil Borings SB-1 through SB-4 and Monitoring Wells MW-1 through MW-4 were sampled. The results of this sampling event indicated:

- that there was a significant decrease in the concentration of PCBs in soil with depth and distance away from the drywell areas; and
- that the PCBs in soil have not significantly impacted groundwater.

Despite the decrease in PCB concentrations, the analytical data also indicated that these concentrations in soil exceeded the NYSDEC RSCOs. Therefore, subsequent sampling events, performed as part of the SCP, were undertaken to further define the horizontal and vertical extent of PCB concentrations in soil that exceed the NYSDEC RSCOs. In accordance with the Supplemental Characterization Work Plan and the Status Summary Letter Report, Soil Borings SB-5 through SB-17 were sampled and analyzed. Details regarding the scope of work for the SCP are given in the Site Characterization Report. The analytical results for soil are provided in Appendix A. The site plan and soil boring locations plans are provided in Appendix B.

Based on the information obtained during the initial and supplemental field investigations as part of the SCP in the vicinity of Drywells 20-08 and 34-07, the lateral and vertical extent of PCBs in the soil have been delineated and the groundwater quality has been characterized.

3.0 SCOPE OF THE EXPOSURE ASSESSMENT

The scope of this exposure assessment is to evaluate the potential impact to human health of the residual PCBs remaining in the former drywell areas. The scope of work included the following:

- identification of chemicals of potential concern, including a statistical evaluation of the analytical data and comparisons of data to regulatory criteria;
- exposure pathways assessment to identify potential receptors and exposure scenarios; and
- risk calculation.

As stated in Section 2.0, PCBs in soil were detected at certain soil borings at the Site, however concentrations were highest at depths generally in excess of 14 feet at both drywell locations. The soil quality beneath the former drywells also indicates concentrations of PCBs at depth, generally in the range of 10 to 35 feet. Presently the area in the vicinity of Drywell 20-08 is covered with gravel and/or concrete, thus limiting human contact with the soil. Although the area in the vicinity of Drywell 34-07 is not capped at this time, the area will be capped with asphalt pavement or concrete once all investigation and related engineering activities have been completed. Even though pathways for exposure to the soil are limited, a risk evaluation was performed at the NGC Plant 3 drywells to assess the potential threat to human health and the environment from the detected PCBs.

4.0 IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN (COPC)

As part of the site characterization program, a total of 363 soil samples were collected from 17 soil borings at the two drywells and analyzed for PCBs as Aroclor formulations using United States Environmental Protection Agency (USEPA) Method 8082. The reporting of the analytical data followed NYSDEC Analytical Services Protocol (ASP) Category B reporting requirements. Severn Trent Laboratories (STL) of Newburgh NY and Mitkem Corporation (Mitkem) of Warwick RI performed the laboratory analyses. The soil borings encompassed a range of depths, generally from surface level down to 68 feet below ground. Additional soil quality data (27 samples) from beneath each drywell was obtained from a previous report, "Drywell and Miscellaneous Remediation at the 105 Acre Navy Site" (H2M Group, September 1999). Based on a review of the potential exposure scenarios and the analytical results, samples were grouped into distinct intervals.

Surface soils were defined as soils collected from the surface to 2 feet below land surface (bls) and were considered as a separate unit to define potential occupational exposure. Surface soil collection at the Site during the site characterization program was limited since the intent of the delineation program was to characterize PCB concentrations with depth. Moreover, surface soils were originally excavated during the removal of the drywells as part of previous remediation efforts.

The entire vertical profile of each soil boring was also separated into three horizons. The upper horizon was considered to be from ground surface to 14 feet. This horizon was selected as the most likely interval for potential industrial or construction exposure. An intermediate zone was identified from 14 to 40 feet (bls), and a deep zone making up the final grouping was defined from 40 to 68 feet where applicable. The two drywell sites were statistically analyzed as separate units to represent the overall local soil quality.

A statistical evaluation was performed to summarize the analytical data at the NGC site, and is discussed below.

4.1 Statistical Evaluation

To evaluate the soil-quality data from each drywell, the following steps were performed:

- surface soil-quality analytical data were summarized;
- the soil-quality analytical data were divided into three horizons (upper, intermediate and deep) and summarized for each horizon;
- the data qualifiers were evaluated;
- one-half the sample quantitation limit (SQL) was substituted for non-detects; one-half of the maximum SQL for a given Aroclor formulation measured in each sample was used as a surrogate for total PCB non-detection;
- the data distribution within an interval (normal or lognormal) was evaluated; and
- a statistical summary was prepared that included the minimum concentration, maximum concentration, average concentration, and the 95 percent upper confidence limit (UCL) of the mean.

To perform the statistical evaluation, the data were sorted into the defined sample depth intervals for each drywell. Within each horizon, any replicate samples were first averaged to give a mean value for that sample and then used in calculating the summary statistics for the defined sample interval.

A series of EXCEL® spreadsheet calculations were run on each interval that:

- evaluated the data qualifiers and noted the number of times an Aroclor was detected;
- determined whether the data were normally or logarithmically distributed;
- determined the maximum and minimum concentration; and
- calculated the average, standard deviation and 95 percent UCL.

If the data qualifier was a "U" (which means in that particular sample the Aroclor was undetected at the SQL), then one-half of the SQL was used as the concentration. In addition, although the 'J' qualifier indicated an estimated concentration and the 'P' qualifier indicated a difference in excess of 25% between the dual column gas chromatographic quantitation, any samples with these qualifiers were used "as is".

After the evaluation of the qualifiers, the frequency of detection of each Aroclor individual formulation was determined in all soil samples. If an Aroclor formulation was not detected at all, nor detected at a specified depth interval, no statistical evaluation was performed. The final step in the evaluation was to tabulate the maximum and to calculate the average (normal or logarithmic mean), standard deviation and UCL. Maximum values were recorded as the maximum concentration detected within a given interval.

4.2 NYSDEC Recommended Soil Cleanup Objectives (RSCOs)

The maximum concentrations of total PCBs detected were first compared to the New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) provided in Technical and Administrative Guidance Memorandum (TAGM) No. 4046. The NYSDEC is the ultimate governing agency regarding this Site and as such, the screening procedures and evaluation of the analytical data are focused on State issued criteria. The TAGM provides generic soil cleanup objectives which, when attained, will eliminate all significant threats to human health and/or the environment. For total PCBs, the TAGM provides that if the criteria for carcinogens and or non-carcinogens are below the background values for the PCBs, the background value could be used as a cleanup objective. No site-specific background concentrations were established for soil at this Site; therefore the background levels for total PCBs provided in the TAGM were used.

It is important to note that the RSCOs are designed to be protective of residential exposure scenarios and for groundwater that is a potential source of drinking water. Neither of these scenarios is applicable to the Site due to the current and future land use options. Therefore, the use of the RSCOs at the Site can be considered conservative since the area is to remain as an industrial/commercial property.

As part of an initial screening of the analytical data, the maximum concentration of total PCBs (determined as the sum of all detected Aroclor formulations) at a given soil interval was compared to the respective RSCOs. If the maximum concentration of total PCBs detected in a given depth interval did not exceed the RSCOs, the data were not evaluated any further. If the maximum concentration of total PCBs detected did exceed the RSCOs, then the data were

compared to USEPA Region III Risk Based Concentrations (RBCs) and considered further in the exposure assessment.

4.3 USEPA Region III Risk Based Concentrations

The RAGS provides a screening procedure, based on concentration and toxicity, to identify chemicals of potential concern that are likely to contribute significantly to risks calculated for exposure scenarios involving a particular medium.

USEPA Region III has maintained a table of risk-based concentrations for over 550 chemicals for both residential and industrial exposure scenarios (USEPA, 2000). The RBCs are chemical concentrations that correspond to a lifetime cancer risk of 10^{-6} for carcinogens or a hazard quotient of 1 for non-carcinogens. The exposure scenarios (residential and industrial) developed to estimate the RBCs use very conservative health protective exposure assumptions to define the RBCs for chemicals in soil. The toxicity constants (carcinogenic slope factors and reference doses) derived from IRIS, HEAST, EPA-NCEA Superfund Health Risk Technical Support Center and other EPA sources are combined with standard exposure scenarios to calculate RBCs.

The RBCs are considered appropriate for screening at the drywell locations because the following conditions are met:

- only a single medium impacted (i.e., soil) at the NGC Site;
- there is no volatilization from the soil at the NGC Site;
- the exposure scenarios used in the RBC table are conservative for the NGC Site (i.e., exposure duration);
- the fixed risk levels used in the RBC table are considered conservative and health protective for the NGC Site (i.e., industrial/construction exposure); and
- there is no risk to ecological receptors at the Site since there are no ecological receptors.

4.4 Statistical Results

As stated above, soil samples were analyzed for Aroclor formulations and their frequency of detection are given in Table 1. It is important to note that not one of the soil samples had more than one Aroclor mixture detected per sample, therefore total PCBs reported here is synonymous

with a detection of a single Aroclor formulation. Of a total of 184 samples collected at Drywell 20-08, 73.6% contained measurable PCBs in the form of either Aroclor 1016 (3.3%), Aroclor 1242 (26.1%) and Aroclor 1248 (44.5%). The majority of Aroclor detections were located in the intermediate (14 to 40 ft bls) and deep (40 to 68 ft bls) intervals (Table 1).

The distribution of Aroclor detections at Drywell 34-07 was similar to that of Drywell 20-08, that is, primarily Aroclor 1242 (27.5%) and Aroclor 1248 (56.4%), but with a slightly higher frequency of samples containing measurable PCBs (90.2%). Aroclor 1016 was detected only in the soil directly beneath both of the former drywells at depths below 29 feet (H2M Group, September 1999). Aroclor 1254 was detected at low levels (0.067 ppm) in one soil boring sample in Drywell 20-08 at 48 to 50 ft bls. Based on the non-detection of Aroclors 1221, 1232, and 1260 and the lack of historical use of these formulations at the Site, these Aroclors were not considered further in this exposure assessment. As stated earlier, the TAGM provides screening for total PCBs and not for individual Aroclor formulations. With regard to this data set, total PCBs for any sample collected at a given depth interval is essentially the detection of an individual Aroclor formulation, which in this case was primarily Aroclor 1242 or Aroclor 1248, both constituting 94.8% and 92.9% of all Aroclor detections at DryWell 20-08 and DryWell 34-07, respectively.

None of the maximum total PCB concentrations detected exceeded the NYSDEC RSCOs for total PCBs detected in the surface (0 to 2 feet) and the upper horizon (0 to 14 feet) at Drywell 20-08 (Table 2). At both the intermediate zone (14 to 40 feet) and deep horizon (40 to 68 feet), the maximum concentration of PCBs detected was in excess of NYSDEC RSCOs at Drywell 20-08. The maximum PCB concentration determined within each soil horizon at Drywell 34-07 was in excess of the NYSDEC RSCOs (Table 3).

Since there were exceedances of the NYSDEC RSCOs at some of the depth intervals at each drywell location, the total PCBs were compared to the USEPA Region III RBC for total PCBs. Comparison to the total PCB RBC rather than individual Aroclor formulations is considered appropriate at the Site since:

- Historical usage of the types of Aroclors indicates that the total of the Aroclors determined by USEPA method 8082 is representative of the actual total PCBs in a soil sample;
- Most of the detected formulations were either Aroclor 1242 or Aroclor 1248; the RBCs for both of these are identical and is also the same for total PCBs; and
- The RBCs are not applicable for screening the soils greater than 14 feet, thus, there is no pathway for exposure to either the Aroclor 1016 (greater than 29 ft bls) or Aroclor 1254 (48 to 50 ft bls) and hence the effects from exposure to these formulations need not be considered.

4.5 Summary of Chemicals of Potential Concern

Based on the initial screening mechanisms provided (i.e., frequency of detections, RSCOs, and RBCs), total PCBs are identified as chemicals of potential concern at certain depth intervals at both locations. At Drywell 20-08 there was no exceedance of the screening criteria in the surface soils (0 to 2 feet) and upper horizon soils (0 to 14 feet). Therefore, no further exposure evaluation is necessary for this drywell location at these depth intervals.

5.0 EXPOSURE PATHWAYS ASSESSMENT

An exposure pathways assessment was performed to determine the potential exposure pathways for human receptors to the soils surrounding the former drywells. The potential exposure pathways considered were direct contact with the soil, airborne inhalation of soil (fugitive dust), and ingestion of soil and groundwater.

5.1 Soil

A potential exists for exposure to surface soils under certain scenarios based on the future use of the Site as an industrial or commercial property. Receptors (employees or temporary workers) at the Site could contact surface soil (0 to 2 feet) during routine maintenance activities resulting in incidental ingestion, dermal absorption, and inhalation of dust particulates. Construction workers could come into contact with soils from 0 to 14 feet during intrusive activities such as the installation of footings and foundations.

The majority of soils containing measurable PCBs are greater than 14 feet below surface and centrally located within the NGC property. Based on depth and locality of much of the PCBs, neither the current nor future occupants of the Site nor the surrounding community will come into direct contact with these deeper soils. PCBs have an extremely low water solubility and a high adsorptive capacity for soil thus limiting their horizontal and vertical mobility, even through infiltration of soils by groundwater and precipitation. The absence of PCBs in three of four groundwater samples collected from monitoring wells located near and hydraulically down-gradient of each drywell location is evidence of the limited mobility of the PCBs at the Site. Furthermore there is no opportunity to inhale fugitive dust at these soil depths since there is no potential for dust generation under present Site conditions. Based upon the above assessment, the ingestive, inhalation, and dermal exposure pathways to the soils in both the intermediate (14 to 40 ft bls) and deep (40 to 68 ft bls) horizons are eliminated from further consideration.

5.2 Ground Water

As discussed in the Site Characterization Report, groundwater is not significantly impacted by PCBs. All five unfiltered groundwater samples yielded detectable PCBs, with concentrations

ranging from 1.4 µg/L to 12 µg/L. Upon filtration, three of the five water samples had no detectable PCBs, while the two separately collected samples collected from MW-2 contained PCBs (2.1 µg/L, 10/14/99; 1.5 µg/L, 1/6/00). It is highly likely that the PCBs detected in the MW-2 filtered waters are still associated with fine particulate matter and not in the dissolved phase for the following reasons:

- A groundwater transport pathway is not evident at MW-2 (screened at 65 to 75 ft bls) since the filtered groundwater sample from MW-1 (screened at 55 to 65 feet bls), located hydraulically upgradient of MW-2 but downgradient of the Drywell 20-08 (Appendix B, Figure B-1), contained no detectable PCBs;
- The observed concentrations in the filtered water samples are within the solubility range of some of the lower molecular weight PCBs, but not the higher molecular weight PCBs that would constitute a significant percent of an Aroclor 1242 and Aroclor 1248 (Paya-Perez et al, 1991; Ballschmitt et al, 1989), such as the hexachloro- (1.1 ppb), heptachloro- (0.47 ppb) and octachlorobiphenyls (0.2-0.3 ppb); and
- If any leaching did occur to groundwater, it would consist of the low molecular weight components and effectively resemble an Aroclor 1221, Aroclor 1232, or Aroclor 1016, and would have been identified as such;

It should be noted that groundwater contamination at the Site is currently being addressed by an on-site containment and treatment system. Furthermore, the future use of this Site as an industrial or commercial property within Nassau County will restrict groundwater usage, specifically, any groundwater usage would be only with the approval of the NYSDEC, thus eliminating the pathway altogether.

5.3 Exposure Pathways Summary

The results of the exposure pathways assessment indicated a total absence of exposure pathways from the intermediate (14 to 40 feet) and deep soils (40 to 68 feet) at the Site and through exposure to groundwater at both drywell locations. The absence of a pathway from both the groundwater and the soils in excess of 14 feet support a conclusion that remediation is not warranted with respect to these soil horizons at both drywell locations. A potential pathway exists for exposure to the surface soils (0 to 2 feet) and subsurface soils (0 to 14 feet) under certain conditions at Drywell 34-07, therefore a conservative hypothetical exposure scenario was developed to evaluate risk to human health from exposure to these soils.

6.0 RISK CALCULATION

Based on the results determined from the chemicals of potential concern (Section 4.0) and the exposure pathways assessment (Section 5.0), a risk calculation was deemed necessary only for the surface soil (0 to 2 feet) and upper horizon soil (0 to 14 feet) at Drywell 34-07. Soil quality data collected from Drywell 20-08 did not indicate any concentration of PCBs in excess of the RSCOs or RBCs at the surface and upper horizon soils and therefore was not considered for the risk calculation.

Since the total PCBs measured in the two horizons at Drywell 34-07 is exclusively either Aroclor 1242 or Aroclor 1248, only carcinogenic effects are considered in this risk calculation. According to the USEPA (2000) there is no reference dose (RFD) for either of these two Aroclor formulations, nor is there a reference dose for total PCBs. It should be noted that Aroclor 1016 and Aroclor 1254 both possess non-carcinogenic effects, however, they were only detected in the intermediate and deep horizons (see Table 1), therefore these effects are not considered due to the existence of an incomplete pathway for exposure (see Section 5.0).

Extremely conservative assumptions were used in development of two specific exposure scenarios, developed as a reasonable maximum exposure (RME) scenario. The first scenario is an occupational exposure scenario that includes employees who would have the potential for extended annual exposure (100 days per year) and working lifetime exposure (25 years) (USEPA, 1997) to the immediate surface soil (0 to 2 feet). The second scenario is a short-term construction exposure scenario and involves a temporary exposure (60 days per year, for one year) (USEPA, 1997) involved with intrusive activities that result in exposure to the upper horizon soils (0 to 14 feet). In each scenario, an incremental lifetime cancer risk (ILCR) for each route of exposure was estimated. Specific model assumptions and equations used are provided in Tables 4 and 5. In addition, exposure factor justifications and references are provided for each scenario in Tables 6 and 7.

The calculated risk of 2.6E-6 associated with the occupational exposure (0 to 2 feet interval) for total PCBs was below the common risk typically assigned to industrial scenarios (1.0E-5)

(Table 4). The calculated risk of 4.8E-6 associated with the construction exposure scenario (0 to 14 feet interval) for total PCBs was also below the common risk typically assigned to construction scenarios (1.0E-5) (Table 5).

These results indicate that there is not likely to be excessive risk associated with exposure to total PCBs measured within these soils and considered under the defined maximum exposure scenarios.

7.0 CONCLUSIONS

Although PCBs were detected in soils associated with the former drywell locations, the screening process described in this exposure assessment demonstrated that none of the total PCB concentrations detected within the surface soil (0 to 2 feet) and upper horizon soil (0 to 14 feet) at Drywell 20-08 exceeded the NYSDEC standard for surface and subsurface soils or the industrial RBCs. PCB concentrations at Drywell 34-07 were in excess of both the NYSDEC RSCOs and RBCs at each interval. However, the exposure pathways assessment demonstrated that potential exposure scenarios exist for only the surface soils (0 to 2 feet) and possibly the upper horizon soil (0 to 14 feet). Exposure scenarios were considered for potential exposure to these soils and the resultant risk calculations did not identify any excessive risk associated from exposure to these soils.

It should be noted that the overall nature of the exposure scenarios is extremely conservative and do not take into account several factors that would likely further reduce the risk by two or three orders of magnitude. First, the delineated drywell areas represent a small fraction of the total property area. It is highly unlikely that a human receptor described by the occupational exposure scenario will be located directly over or upon the region where the PCBs have been detected for a continuous period of time. Second, the duration of exposure is also conservative and health protective, that is, the actual time for annual exposure of 100 days and daily exposure of two hours allows for over four months of outdoor exposure that might never be approached based on temperature, precipitation events, etc. Even with these very conservative scenarios, the risk associated with exposure to the soils is still de minimis. Following the completion of investigation and engineering activities, each drywell area is to be capped, thus entirely removing the exposure pathway and resulting in a risk of zero. Potential also exists for the development of the area, such as future construction of a building or paving the location for parking purposes, again resulting in an incomplete exposure pathway and no risk.

The overall conclusion of this exposure assessment is that under current conditions, the Plant 3 Site poses no potential risks to persons using the Site for commercial or industrial activities. These results also should apply to future conditions in accordance with the future Nassau County Reuse Plan. Therefore, we believe that the data and results of this risk evaluation indicate that

further remediation of soils in the areas of Drywells 20-08 and 34-07 is not warranted. Since no further remediation is required, a Focused Feasibility Study (FFS) is not warranted at this time.

Respectfully Submitted,

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Table 1. Frequency of Detected Aroclor Formulations in Soil Samples Collected from Drywells 20-08 and 34-07. Northrop Grumman Corporation, Plant 3, Bethpage, New York.

		Dry Well 20-08		Dry Well 34-07	
		detect/samples (a) (n=186)	frequency (%)	detect/samples (a) (n=204)	frequency (%)
Aroclor 1016	Surface (0-2 ft)	0/1	0.0	0/3	0.0
	Upper (0-14 ft)	0/31	0.0	0/32	0.0
	Intermediate (14-40 ft)	4/90	4.4	5/105	4.8
	Deep (40-68 ft)	2/65	3.1	8/67	11.9
Aroclor 1221	Surface (0-2 ft)	0/1	0.0	0/3	0.0
	Upper (0-14 ft)	0/31	0.0	0/32	0.0
	Intermediate (14-40 ft)	0/90	0.0	0/105	0.0
	Deep (40-68 ft)	0/65	0.0	0/67	0.0
Aroclor 1232	Surface (0-2 ft)	0/1	0.0	0/3	0.0
	Upper (0-14 ft)	0/31	0.0	0/32	0.0
	Intermediate (14-40 ft)	0/90	0.0	0/105	0.0
	Deep (40-68 ft)	0/65	0.0	0/67	0.0
Aroclor 1242	Surface (0-2 ft)	0/1	0.0	0/3	0.0
	Upper (0-14 ft)	5/31	16.1	8/32	25.0
	Intermediate (14-40 ft)	21/90	23.3	23/105	21.9
	Deep (40-68 ft)	22/65	33.8	25/67	37.3
Aroclor 1248	Surface (0-2 ft)	1/1	100.0	3/3	100.0
	Upper (0-14 ft)	12/31	38.7	22/32	68.8
	Intermediate (14-40 ft)	44/90	48.9	61/105	58.1
	Deep (40-68 ft)	26/65	40.0	32/67	47.8
Aroclor 1254	Surface (0-2 ft)	0/1	0.0	0/3	0.0
	Upper (0-14 ft)	0/31	0.0	0/32	0.0
	Intermediate (14-40 ft)	0/90	0.0	0/105	0.0
	Deep (40-68 ft)	1/65	1.5	0/67	0.0
Aroclor 1260	Surface (0-2 ft)	0/1	0.0	0/3	0.0
	Upper (0-14 ft)	0/31	0.0	0/32	0.0
	Intermediate (14-40 ft)	0/90	0.0	0/105	0.0
	Deep (40-68 ft)	0/65	0.0	0/67	0.0

Notes:

(a) Number of detections and samples collected listed here will not equal actual totals (n) since there is overlap among designated intervals (i.e., surface and upper horizon).

n - total number of samples analyzed

Table 2. Summary Statistics for Total PCBs Found in Plant 3 Drywell 20-08.
Northrop Grumman Corporation, Plant 3, Bethpage, New York.

Interval	Frequency of Detection (a)	Minimum (ug/kg)	Maximum (ug/kg)	Mean (ug/kg)	Stdev (ug/kg)	UCL(b) (ug/kg)	NYSDEC RSCOs(c) (ug/kg)	USEPA RBC(d) (ug/kg)
Surface (0 - 2 ft)	1/1	na	6.7E+1	na	na	6.7E+1	1.0E+3	2.9E+3
Upper (0 - 14 ft)	17/31	1.9E+1	8.8E+2	1.2E+2	1.6E+2	3.6E+2	1.0E+4	2.9E+3
Intermediate (14 - 40 ft)	69/90	1.1E+1	**4.5E+7**	8.3E+5	4.7E+6	8.6E+6	1.0E+4	na
Deep (40 - 68 ft)	51/65	2.3E+1	**1.3E+6**	3.6E+4	2.0E+5	2.0E+5	1.0E+4	na

Notes:

(a) Number of detections and samples collected listed here will not equal actual totals (n) since there is overlap among designated intervals (i.e., surface and upper horizons).

(b) 95% Upper Confidence Limit of a lognormal mean. Where UCL in not calculated or in excess of maximum, the maximum is used. Bold font indicates maximum is in excess of the state regulatory standard.

(c) New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum (TAGM) revised January 24, 1994 for surface and subsurface soils.

(d) United States Environmental Protection Agency (USEPA, 2000) Region III Risk-Based Concentration (RBC) for carcinogenic effects for industrial exposure.

Stdev - Standard deviation

na - Not applicable

Table 3. Summary Statistics for Total PCBs Found in Plant 3 Drywell 34-07.
Northrop Grumman Corporation, Plant 3, Bethpage, New York.

Interval	Frequency of Detection (a)	Minimum (ug/kg)	Maximum (ug/kg)	Mean (ug/kg)	Stdev (ug/kg)	UCL(b) (ug/kg)	NYSDEC RSCOs(c) (ug/kg)	USEPA RBC(d) (ug/kg)
Surface (0 - 2 ft)	3/3	1.5E+3	**3.5E+3**	2.8E+3	1.0E+3	3.5E+3	1.0E+3	2.9E+3
Upper (0 - 14 ft)	30/32	4.3E+1	**1.1E+5**	1.9E+4	2.6E+4	1.1E+5	1.0E+4	2.9E+3
Intermediate (14 - 40 ft)	89/105	4.3E+1	**2.5E+7**	9.1E+6	3.0E+6	2.5E+7	1.0E+4	na
Deep (40 - 68 ft)	65/67	3.0E+1	**6.7E+5**	2.0E+4	1.0E+5	7.2E+4	1.0E+4	na

Notes:

(a) Number of detections and samples collected listed here will not equal actual totals (n) since there is overlap among designated intervals (i.e., surface and upper horizons).

(b) 95% Upper Confidence Limit of a lognormal mean. Where UCL in not calculated or in excess of maximum, the maximum is used. Bold font indicates maximum is in excess of the state regulatory standard.

(c) New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum (TAGM) revised January 24, 1994 for surface and subsurface soils.

(d) United States Environmental Protection Agency (USEPA, 2000) Region III Risk-Based Concentration (RBC) for carcinogenic effects for industrial exposure.

Stdev - Standard deviation

na - Not applicable

Table 4: Estimated Incremental Lifetime Cancer Risks (ILCR) for Exposure to Carcinogenic Chemicals Identified in Soil at Dry Well 34-07 Northrop Grumman Corporation, Plant 3, Bethpage New York. Reasonable Maximum Exposure (RME) -- Occupational Scenario.

Constituent	Soil Concentration (mg/kg) (SC) (a)	Estimated Lifetime Average Daily Intakes (mg/kg) by pathway: Dermal Absorption (DA) (b)	Ingestion (IG) (c)	Inhalation (IH) (d)	Slope Factor (CPF_IG) (mg/kg/day) (e)	Slope Factor (CPF_IH) (mg/kg/day) (e)	Incremental Lifetime Cancer Risk (ILCR) by Exposure Route: Dermal Absorption (ILCRDA) (f)	Ingestion (ILCRIG) (g)	Inhalation (ILCRIH) (h)	Sum of Estimated Potential ILCRs (All Relevant Exposure Routes) (ILCRT) (i)
Total PCB	3.5E+0	8.2E-7	4.9E-7	4.6E-10	2.0E+0	2.0E+0	1.6E-6	9.8E-7	9.2E-10	2.6E-6

Assumptions Used for Estimating Daily Intake (j):	ASSUMPTION	REFERENCE
Soil adherence (mg/cm^2) (A) =	1.0	USEPA, 1992
Skin absorption factor-PCBs (unitless) (AF) =	0.06	USEPA, 1992
Body weight (kg) (BW) =	70	USEPA, 1989
Contact area-soil (CAS) =	0.15	USEPA, 1997; Professional judgement
Exposed days a year (days/year) (DE) =	100	Professional Judgement
Total days in year (days/year) (DY) =	365	Number of days in a year
Exposure years (years) (EY) =	25	USEPA, 1991
Conversion factor (kg/mg) (F) =	1.0E-6	Unit conversion factor
GI absorption factor - PCBs-soil (unitless) (GIS) =	1	MA DEP, 1992
Exposed hours-inhalation (hours/day) (HH) =	2	Professional judgement
Height (cm) (HT) =	175	AIHC, 1994
Soil Ingestion rate (mg soil/day) (IR) =	100	USEPA, 1991
Lifetime (years) (LT) =	70	USEPA, 1989
Respirable dust fraction (unitless) (PF) =	0.5	Gordon et al., 1991; Raabe, 1982
Particulate dust matter ($\mu g/m^3$) (PM) =	54	USEPA, 1998
Respiratory rate (m^3/hour) (RV) =	1.74	USEPA, 1997
Body surface area (cm^2) (SA) =	1.9E+4	DuBois and DuBois, 1916; USEPA, 1997
Conversion Factor ($mg/\mu g$) (X) =	1.0E-3	Unit conversion factor

Notes and Equations Used for Estimating Intakes:

(a) Maximum concentration (in mg/kg) of constituents detected in 0-2 ft. interval of soil at the Site (SC). Maximum concentration was used since 95%UCL exceeded maximum. Surface soil samples are limited in number (n=3) and may not adequately characterize region, however since soil was previously excavated these data could represent residuals.

(b) Estimated lifetime daily intake via dermal absorption (DA) DA = (SC * SA * CAS * A * F * AF * DE * EY)/(LT * DY * BW)

(c) Estimated lifetime daily intake via ingestion (IG) IG = (SC * IR * F * GIS * DE * EY)/(LT * DY * BW)

(d) Estimated lifetime daily intake via inhalation (IH) IH = (SC * F * PM * X * RV * HH * PF * DE * EY)/(LT* DY * BW)

(e) Carcinogenic Potency Factors (CPFs) were obtained from IRIS (USEPA, 2000).

(f) Incremental lifetime cancer risk (ILCR) for lifetime average daily intake from dermal exposure (ILCRDA). ILCRDA = DA * CPF_IG.

(g) Incremental lifetime cancer risk (ILCR) for lifetime average daily intake from ingestion (ILCRIG). ILCRIG = DA * CPF_IG.

(h) Incremental lifetime cancer risk (ILCR) for lifetime average daily intake from inhalation (ILCRIH). ILCRIH = DA * CPF_IH.

(i) Incremental lifetime cancer risk (ILCR) for all exposure routes summed (ILCRT). ILCRT = ILCRDA + ILCRIG + ILCRIH

(j) See Table 6 for exposure factor justifications.

Table 5: Estimated Incremental Lifetime Cancer Risks (ILCR) for Exposure to Carcinogenic Chemicals Identified in Soil at Dry Well 34-07 Northrop Grumman Corporation, Plant 3, Bethpage New York. Reasonable Maximum Exposure (RME) -- Construction Scenario.

Constituent	Soil Concentration (mg/kg) (SC) (a)	Estimated Lifetime Average Daily Intakes (mg/kg) by pathway: Dermal Absorption (DA) (b)	Ingestion (IG) (c)	Inhalation (IH) (d)	Slope Factor (CPF_IG) (mg/kg/day) (e)	Slope Factor (CPF_IH) (mg/kg/day) (f)	Incremental Lifetime Cancer Risk (ILCR) by Exposure Route: Dermal Absorption (ILCRDA) (g)	Ingestion (ILCRIG) (h)	Inhalation (ILCRIH) (i)	Sum of Estimated Potential ILCRs (All Relevant Exposure Routes) (ILCRT)
Total PCB	1.1E+2	6.2E-7	1.8E-6	5.0E-9	2.0E+0	2.0E+0	1.2E-6	3.5E-6	1.0E-8	4.8E-6

Assumptions Used for Estimating Daily Intake (j):	ASSUMPTION	REFERENCE
Soil adherence (mg/cm^2) (A) =	1.0	USEPA, 1992
Skin absorption factor-PCBs (unitless) (AF) =	0.06	USEPA, 1992
Body weight (kg) (BW) =	70	USEPA, 1989
Contact area-soil (CAS) =	0.15	USEPA, 1997; Professional judgement
Exposed days a year (days/year) (DE) =	60	Professional judgement
Total days in year (days/year) (DY) =	365	Number of days in a year
Exposure years (years) (EY) =	1	Professional judgement
Conversion factor (kg/mg) (F) =	1.0E-6	Unit conversion factor
Soil Ingestion rate (mg soil/day) (IR) =	480	USEPA, 1991
GI absorption factor - PCBs-soil (unitless) (GIS) =	1	MA DEP, 1992
Exposed hours-inhalation (hours/day) (HH) =	8	Professional judgement
Height (cm) (HT) =	175	AIHC, 1994
Lifetime (years) (LT) =	70	USEPA, 1989
Respirable dust fraction (unitless) (PF) =	0.5	Gordon et al., 1991; Raabe, 1982
Particulate dust matter ($\mu g/m^3$) (PM) =	150	NYDOH (1994). NYDEC (1989)
Respiratory rate (m^3/hour) (RV) =	2.28	USEPA, 1997
Body surface area (cm^2) (SA) =	1.9E+4	DuBois and DuBois, 1916; USEPA, 1997
Conversion Factor (mg/μg) (X) =	1.0E-3	Unit conversion factor

Notes and Equations Used for Estimating Intakes:

(a) Maximum concentration (in mg/kg) of constituents detected in 0-14 ft. interval of soil at the Site (SC). Maximum concentration was used since 95%UCL exceeded maximum.

(b) Estimated lifetime daily intake via dermal absorption (DA) DA = (SC * SA * CAS * A * F * AF * DE * EY)/(LT * DY * BW)

(c) Estimated lifetime daily intake via ingestion (IG) IG = (SC * IR * F * GIS * DE * EY)/(LT * DY * BW)

(d) Estimated lifetime daily intake via inhalation (IH) IH = (SC * F * PM * X * RV * HH * PF * DE * EY)/(LT* DY * BW)

(e) Carcinogenic Potency Factors (CPFs) were obtained from IRIS (USEPA, 2000).

(f) Incremental lifetime cancer risk (ILCR) for lifetime average daily intake from dermal exposure (ILCRDA). ILCRDA = DA * CPF_IG.

(g) Incremental lifetime cancer risk (ILCR) for lifetime average daily intake from ingestion (ILCRIG). ILCRIG = DA * CPF_IG.

(h) Incremental lifetime cancer risk (ILCR) for lifetime average daily intake from inhalation (ILCRIH). ILCRIH = DA * CPF_IH.

(i) Incremental lifetime cancer risk (ILCR) for all exposure routes summed (ILCRT). ILCRT = ILCRDA + ILCRIG + ILCRIH

(j) See Table 7 for exposure factor justifications.

Table 6: Reasonable Maximum Exposure (RME) Factors and Justification For Drywell Area 34-07 -- Occupational Scenario (0-2 feet). Northrop Grumman Corporation, Plant 3, Bethpage, New York.

Factor	Units	Value	Justification
A	mg/cm^2	1.0	USEPA (1992) recommends a range of 0.2 mg/cm^2 to 1.0 mg/cm^2 to represent soil adherence to exposed skin.
AF	unitless	0.06	Assumes that 6 percent of the PCBs present in soil is absorbed across the skin, based on USEPA (1992) for upper limit of tetrachlorobiphenyl absorption (0.6 to 6%).
BW	Kg	70	Standard adult body weight recommended by USEPA (1989).
CAS	unitless	0.15	Soil contact is assumed to be limited to hands, forearms and part of the head which account for approximately 15 percent of total body surface area in an adult (USEPA, 1997).
DE	days/year	100	Assuming 50 working weeks a year, the RME scenario assumes 2 days each week are spent at the dry well location.
EY	years	25	Recommended default value for industrial exposures (USEPA, 1991).
GIS	unitless	1.0	Assumes complete (100 percent) absorption of ingested chemicals present in soils across the gastrointestinal tract.
HH	hours/day	2	Employees work 8 hours per day. Professional judgement was used to estimate the number of hours an employee could spend at the dry well.
HT	cm	175	Equivalent to a 5'9" adult; uses data provided in AIHC (1994).
IR	mg/day	100	The standard default soil ingestion rate for occupational exposure recommended by the USEPA (1991) is 50 mg/day. A value of 100 was chosen as a maximum ingestion rate for this scenario.
LT	years	70	Standard assumption for lifetime (USEPA, 1989).
PF	unitless	0.5	Deposition of particulate matter in the lung is dependent on both particle size and breathing pattern (Raabe, 1982; Gordon and Amdur, 1991). The USEPA (1986) reviewed and summarized pulmonary deposition data from nine human inhalation studies. The pulmonary retention factor of 50 percent (0.5) used in the risk assessment is a conservative assumption for inhalation exposure based on the USEPA (1986) report.
PM	$\mu g/m^3$	54	The weighted annual mean particulate matter less than 10 microns [µm] (PM_{10}) value for Metropolitan, NY is 27 $\mu g/m^3$ (USEPA, 1998). The area also has areas of sand and exposed soil. A value of 54 $\mu g/m^3$ was used to account for dust generated in areas lacking ground cover.
RV	m^3/hour	1.74	Inhalation rates are those for general construction workers (USEPA, 1997). The inhalation rate is for carrying materials.

Table 7: Reasonable Maximum Exposure (RME) Factors and Justification For Drywell Area 34-07 -- Construction Scenario (0-14 feet). Northrop Grumman Corporation, Plant 3, Bethpage, New York.

Factor	Units	Value	Justification
A	mg/cm^2	1.0	USEPA (1992) recommends a range of 0.2 mg/cm^2 to 1.0 mg/cm^2 to represent soil adherence to exposed skin.
AF	unitless	0.06	Assumes that 6 percent of the PCBs present in soil is absorbed across the skin, based on USEPA (1992) for upper limit of tetrachlorobiphenyl absorption (0.6 to 6%).
BW	Kg	70	Standard adult body weight recommended by USEPA (1989).
CAS	unitless	0.15	Soil contact is assumed to be limited to hands, forearms and part of the head which account for approximately 15 percent of total body surface area in an adult (USEPA, 1997).
DE	days/year	60	Construction activities involving soil contact by the same personnel are assumed to be limited. Value selected was based on best professional judgement.
EY	years	1	Construction activities are typically complete within one year.
GIS	unitless	1.0	Assumes complete (100 percent) absorption of ingested chemicals present in soils across the gastrointestinal tract.
HH	hours/day	8	Assumes worker spends full 8 hour-working day at the site.
HT	cm	175	Equivalent to a 5'9" adult; uses data provided in AIHC (1994).
IR	mg/day	480	The standard default soil ingestion rate for construction exposure recommended by the USEPA (1991) is 480 mg/day.
LT	years	70	Standard assumption for lifetime (USEPA, 1989).
PF	unitless	0.5	Deposition of particulate matter in the lung is dependent on both particle size and breathing pattern (Raabe, 1982; Gordon and Amdur, 1991). The USEPA (1986) reviewed and summarized pulmonary deposition data from nine human inhalation studies. The pulmonary retention factor of 50 percent (0.5) used in the risk assessment is a conservative assumption for inhalation exposure based on the USEPA (1986) report.
PM	$\mu g/m^3$	150	Particulate matter less than 10 microns [µm] (PM_{10}) value of 150 $\mu g/m^3$ is the NYDOH (1994) and NYDEC (1989) community protection level for nuisance dust. This value was selected to account for dusts generated during construction activities. Any amount exceeding this value during activity is subject to dust suppression.
RV	m^3/hour	2.28	Inhalation rates are based on those for carpenters (USEPA, 1997), specifically for workers carrying materials.

APPENDIX A

Summary of Polychlorinated Biphenyls Detected in Soil

Table A1. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-1. Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment Northrop Grumman Corporation, Plant 3, Bethpage, NY

	Sample Designation:	SB-1	SB-1	SB-1	SB-1	SB-1	SB-1	SB-1
	Sample Interval:	4-6	6-8	8-10	10-12	12-14	14-16	16-18
	Sample Date:	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999
Parameter (Concentrations in µg/kg)	**NYSDEC Soil Cleanup Objectives[1] (µg/kg)**							
Aroclor-1016	NS	.5U	.6U	.6U	.5U	.5U	.5U	.5U
Aroclor-1221	NS	.5U	.6U	.6U	.5U	.5U	.5U	.5U
Aroclor-1232	NS	.5U	.6U	.6U	.5U	.5U	.5U	.5U
Aroclor-1242	NS	.5U	.6U	.6U	.5U	.5U	.5U	.5U
Aroclor-1248	NS	19J	.6U	.6U	.5U	.5U	11J	16J
Aroclor-1254	NS	1U	1.2U	1.1U	1U	1U	1U	1U
Aroclor-1260	NS	1U	1.2U	1.1U	1U	1U	1U	1U
Total PCBs (subsurface):	10,000	19J	0	0	0	0	11J	16J

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A1. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-1. Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	Sample Designation: SB-1 Sample Interval: 18-20 Sample Date: 8/17/1999	SB-1 20-22 8/17/1999	SB-1 22-24 8/17/1999	SB-1/DL 22-24 8/17/1999	SB-1/DL 24-26 8/17/1999	SB-1/DL 26-28 8/17/1999	SB-1/DL 28-30 8/17/1999
Aroclor-1016	NS	.5U	.6U	.5U	350U	40000000U	7500U	88000U
Aroclor-1221	NS	.5U	.6U	.5U	350U	40000000U	7500U	88000U
Aroclor-1232	NS	.5U	.6U	.5U	350U	40000000U	7500U	88000U
Aroclor-1242	NS	0.5	.6U	2900E	3100D	45000000DP	5500000D	610000DP
Aroclor-1248	NS	41	.6U	.5U	350U	40000000U	7500U	88000U
Aroclor-1254	NS	1U	1.1U	1U	710U	81000000U	15000U	180000U
Aroclor-1260	NS	1U	1.1U	1U	710U	81000000U	15000U	180000U
Total PCBs (subsurface):	10,000	41	0	2900E	3100D	**45000000DP**	**5500000D**	**610000DP**

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A1. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-1. Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment Northrop Grumman Corporation, Plant 3, Bethpage, NY

	Sample Designation:	SB-1/DL	SB-1/DL	SB-1DUP/DL	SB-1/DL	SB-1	SB-1	SB-1/DL
	Sample Interval:	30-32	32-34	32-34	34-36	36-38	38-40	40-42
	Sample Date:	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999
Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)							
Aroclor-1016	NS	18000U	8800U	35000U	350U	180U	180U	1800U
Aroclor-1221	NS	18000U	8800U	35000U	350U	180U	180U	1800U
Aroclor-1232	NS	18000U	8800U	35000U	350U	180U	180U	1800U
Aroclor-1242	NS	95000DP	42000DP	130000DP	2200D	1300P	810P	14000D
Aroclor-1248	NS	18000U	8800U	35000U	350U	180U	180U	1800U
Aroclor-1254	NS	35000U	18000U	70000U	700U	350U	350U	3600U
Aroclor-1260	NS	35000U	18000U	70000U	700U	350U	350U	3600U
Total PCBs (subsurface):	10,000	**95000DP**	**42000DP**	**130000DP**	2200D	1300P	810P	**14000D**

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A1. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-1. Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment Northrop Grumman Corporation, Plant 3, Bethpage, NY

	Sample Designation:	SB-1/DL	SB-1/DL	SB-1	SB-1	SB-1	SB-1	SB-1
	Sample Interval:	42-44	44-46	46-48	48-50	50-52	52-54	54-56
	Sample Date:	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999
Parameter (Concentrations in µg/kg)	**NYSDEC Soil Cleanup Objectives[1] (µg/kg)**							
Aroclor-1016	NS	91000U	1800U	180U	700U	400U	180U	390U
Aroclor-1221	NS	91000U	1800U	180U	700U	400U	180U	390U
Aroclor-1232	NS	91000U	1800U	180U	700U	400U	180U	390U
Aroclor-1242	NS	720000DP	97000DP	860	6400	790	740	1300
Aroclor-1248	NS	91000U	1800U	180U	700U	400U	180U	390U
Aroclor-1254	NS	180000U	35000U	350U	1400U	800U	350U	770U
Aroclor-1260	NS	180000U	35000U	350U	1400U	800U	350U	770U
Total PCBs (subsurface):	10,000	**720000DP**	**97000DP**	860	6400	790	740	1300

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A1. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-1. Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment Northrop Grumman Corporation, Plant 3, Bethpage, NY

	Sample Designation:	SB-1	SB-1	SB-1	SB-1	SB-1DUP	SB-1	SB-1/DL
	Sample Interval:	56-58	58-60	60-62	62-64	62-64	64-66	66-68
	Sample Date:	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999	8/17/1999
Parameter (Concentrations in µg/kg)	**NYSDEC Soil Cleanup Objectives[(1)] (µg/kg)**							
Aroclor-1016	NS	190U	190U	1900U	190U	380U	380U	200U
Aroclor-1221	NS	190U	190U	1900U	190U	380U	380U	200U
Aroclor-1232	NS	190U	190U	1900U	190U	380U	380U	200U
Aroclor-1242	NS	320	1500P	8900P	920P	2100P	1000P	930D
Aroclor-1248	NS	190U	190U	1900U	190U	380U	380U	200U
Aroclor-1254	NS	380U	380U	3900U	390U	770U	760U	390U
Aroclor-1260	NS	380U	380U	3900U	390U	770U	760U	390U
Total PCBs (subsurface):	10,000	320	1500P	8900P	920P	2100P	1000P	930D

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A2. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-2
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-2 4-6 8/17/1999	SB-2 6-8 8/17/1999	SB-2 8-10 8/17/1999	SB-2 10-12 8/17/1999	SB-2 12-14 8/17/1999	SB-2 DUP 14-16 8/17/1999	SB-2 16-18 8/17/1999
Aroclor-1016	NS	18U	18U	17U	17U	17U	19U	19U
Aroclor-1221	NS	18U	18U	17U	17U	17U	19U	19U
Aroclor-1232	NS	18U	18U	17U	17U	17U	19U	19U
Aroclor-1242	NS	130	37	40	31J	30J	19U	19U
Aroclor-1248	NS	18U	18U	17U	17U	17U	19U	19U
Aroclor-1254	NS	35U	36U	34U	35U	34U	38U	39U
Aroclor-1260	NS	35U	36U	34U	35U	34U	38U	39U
Total PCBs (subsurface):	10,000	130	37	40	31J	30J	0	0

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A2. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-2
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-2 18-20 8/17/1999	SB-2 20-22 8/17/1999	SB-2 24-26 8/17/1999	SB-2 26-28 8/17/1999	SB-2 28-30 8/17/1999	SB-2 30-32 8/17/1999	SB-2 32-34 8/17/1999
Aroclor-1016	NS	17U	18U	17U	17U	17U	17U	18U
Aroclor-1221	NS	17U	18U	17U	17U	17U	17U	18U
Aroclor-1232	NS	17U	18U	17U	17U	17U	17U	18U
Aroclor-1242	NS	41	45	63	17J	61	42	23
Aroclor-1248	NS	17U	18U	17U	17U	17U	17U	18U
Aroclor-1254	NS	34U	35U	34U	35U	34U	35U	35U
Aroclor-1260	NS	34U	35U	34U	35U	34U	35U	35U
Total PCBs (subsurface):	10,000	41	45	63	17J	61	42	23

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

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B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

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D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

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DUP - This suffix indicates a duplicate sample

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Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A2. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-2
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-2 50-52 8/17/1999	SB-2 52-54 8/17/1999	SB-2 54-56 8/17/1999	SB-2 56-58 8/17/1999	SB-2 58-60 8/17/1999	SB-2 60-62 8/17/1999	SB-2 62-64 8/17/1999	SB-2 64-66 8/17/1999
Aroclor-1016	NS	18U	17U	18U	18U	19U	19U	19U	19U
Aroclor-1221	NS	18U	17U	18U	18U	19U	19U	19U	19U
Aroclor-1232	NS	18U	17U	18U	18U	19U	19U	19U	19U
Aroclor-1242	NS	47	37	27	34	40	34	19U	19U
Aroclor-1248	NS	18U	17U	18U	18U	19U	19U	19U	19U
Aroclor-1254	NS	35U	35U	36U	36U	38U	38U	38U	38U
Aroclor-1260	NS	35U	35U	36U	36U	38U	38U	38U	38U
Total PCBs (subsurface):	10,000	47	37	27	34	40	34	0	0

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

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E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A3. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-3
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-3/DL 4-6 8/18/1999	SB-3/DL 6-8 8/18/1999	SB-3/DL 8-10 8/18/1999	SB-3/DL 12-14 8/18/1999	SB-3/DL 14-16 8/18/1999	SB-3/DL 18-20 8/18/1999	SB-3/DL 20-22 8/18/1999
Aroclor-1016	NS	14000U	8600U	15000U	7100U	3400U	860U	860U
Aroclor-1221	NS	14000U	8600U	15000U	7100U	3400U	860U	860U
Aroclor-1232	NS	14000U	8600U	15000U	7100U	3400U	860U	860U
Aroclor-1242	NS	110000D	67000DP	72000D	38000DP	27000D	6600D	4900DP
Aroclor-1248	NS	14000U	8600U	15000U	7100U	3400U	860U	860U
Aroclor-1254	NS	28000U	17000U	31000U	14000U	6800U	1700U	1700U
Aroclor-1260	NS	28000U	17000U	31000U	14000U	6800U	1700U	1700U
Total PCBs (subsurface):	10,000	**110000D**	**67000DP**	**72000D**	**38000DP**	**27000D**	6600D	4900DP

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

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D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

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DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A3. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-3
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-3/DL 22-24 8/18/1999	SB-3/DL 24-25 8/18/1999	SB-3 26-28 8/18/1999	SB-3/DL 28-30 8/18/1999	SB-3 30-32 8/18/1999	SB-3/DUP 30/32 8/18/1999	SB-3/DL 30-32 8/18/1999
Aroclor-1016	NS	1900U	200U	19U	890U	20U	18U	370U
Aroclor-1221	NS	1900U	200U	19U	890U	20U	18U	370U
Aroclor-1232	NS	1900U	200U	19U	890U	20U	18U	370U
Aroclor-1242	NS	14000D	480D	78	2400D	89P	140E	710D
Aroclor-1248	NS	1900U	200U	19U	890U	20U	18U	370U
Aroclor-1254	NS	3800U	390U	38U	1800U	41U	37U	740U
Aroclor-1260	NS	3800U	390U	38U	1800U	41U	37U	740U
Total PCBs (subsurface):	10,000	**14000D**	480D	78	2400D	89P	140E	710D

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

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P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A3. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-3
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-3/DL 32-34 8/18/1999	SB-3 34-36 8/18/1999	SB-3 36-38 8/18/1999	SB-3 38-40 8/18/1999	SB-3 40-42 8/18/1999	SB-3 42-44 8/18/1999	SB-3 44-46 8/18/1999
Aroclor-1016	NS	360U	21U	18U	180U	180U	37U	18U
Aroclor-1221	NS	360U	21U	18U	180U	180U	37U	18U
Aroclor-1232	NS	360U	21U	18U	180U	180U	37U	18U
Aroclor-1242	NS	680D	21U	69	760	370	120	70
Aroclor-1248	NS	360U	21U	18U	180U	180U	37U	18U
Aroclor-1254	NS	720U	42U	35U	360U	350U	74U	36U
Aroclor-1260	NS	720U	42U	35U	360U	350U	74U	36U
Total PCBs (subsurface):	10,000	680D	0	69	760	370	120	70

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A3. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-3
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-3 62-64 8/18/1999	SB-3 64-66 8/18/1999
Aroclor-1016	NS	19U	19U
Aroclor-1221	NS	19U	19U
Aroclor-1232	NS	19U	19U
Aroclor-1242	NS	75	64
Aroclor-1248	NS	19U	19U
Aroclor-1254	NS	38U	39U
Aroclor-1260	NS	38U	39U
Total PCBs (subsurface):	10,000	75	64

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

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D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A4: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-4
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-4 4-6 8/20/1999	SB-4 8-10 8/20/1999	SB-4/DL 10-12 8/20/1999	SB-4 12-14 8/20/1999	SB-4 14-16 8/20/1999	SB-4 DUP 14-16 8/20/1999	SB-4 16-18 8/20/1999
Aroclor-1016	NS	18U	17U	35U	37U	34U	40U	37U
Aroclor-1221	NS	18U	17U	35U	37U	34U	40U	37U
Aroclor-1232	NS	18U	17U	35U	37U	34U	40U	37U
Aroclor-1242	NS	150	140	180D	58P	91P	64	110P
Aroclor-1248	NS	18U	17U	35U	37U	34U	40U	37U
Aroclor-1254	NS	35U	34U	69U	75U	69U	79U	74U
Aroclor-1260	NS	35U	34U	69U	75U	69U	79U	74U
Total PCBs (subsurface):	10,000	150	140	180D	58P	91P	64	110P

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A4. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-4
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-4 18-20 8/20/1999	SB-4 20-22 8/20/1999	SB-4 22-24 8/20/1999	SB-4 24-26 8/20/1999	SB-4 26-28 8/20/1999	SB-4/DL 28-30 8/20/1999	SB-4/DL 30-32 8/20/1999
Aroclor-1016	NS	69U	70U	70U	190U	180000U	720000U	720000U
Aroclor-1221	NS	69U	70U	70U	190U	180000U	720000U	720000U
Aroclor-1232	NS	69U	70U	70U	190U	180000U	720000U	720000U
Aroclor-1242	NS	160P	140P	200P	770P	180000U	5000000D	2600000D
Aroclor-1248	NS	69U	70U	70U	190U	1400000	720000U	720000U
Aroclor-1254	NS	140U	140U	140U	390U	360000U	1400000U	1400000U
Aroclor-1260	NS	140U	140U	140U	390U	360000U	1400000U	1400000U
Total PCBs (subsurface):	10,000	160P	140P	200P	770P	**1400000**	**5000000D**	**2600000D**

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A4: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-4
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-4 32-34 8/20/1999	SB-4 34-36 8/20/1999	SB-4 36-38 8/20/1999	SB-4 38-40 8/20/1999	SB-4 40-42 8/20/1999	SB-4 42-44 8/20/1999	SB-4 44-46 8/20/1999
Aroclor-1016	NS	7100U	890U	8700U	180000U	18000U	94000U	1800U
Aroclor-1221	NS	7100U	890U	8700U	180000U	18000U	94000U	1800U
Aroclor-1232	NS	7100U	890U	8700U	180000U	18000U	94000U	1800U
Aroclor-1242	NS	42000	40000	42000	440000	100000	670000	14000
Aroclor-1248	NS	7100U	890U	8700U	180000U	18000U	94000U	1800U
Aroclor-1254	NS	14000U	1800U	17000U	350000U	35000U	190000U	3600U
Aroclor-1260	NS	14000U	1800U	17000U	350000U	35000U	190000U	3600U
Total PCBs (subsurface):	10,000	**42000**	**40000**	**42000**	**440000**	**100000**	**670000**	**14000**

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

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E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A4. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-4
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-4 46-48 8/20/1999	SB-4 48-50 8/20/1999	SB-4 50-52 8/20/1999	SB-4 52-54 8/20/1999	SB-4 54-56 8/20/1999	SB-4 58-60 8/20/1999	SB-4 60-62 8/20/1999
Aroclor-1016	NS	98U	110U	1800U	7500U	900U	100U	210U
Aroclor-1221	NS	98U	110U	1800U	7500U	900U	100U	210U
Aroclor-1232	NS	98U	110U	1800U	7500U	900U	100U	210U
Aroclor-1242	NS	540	260	4700	17000	2100	320	670
Aroclor-1248	NS	98U	110U	1800U	7500U	900U	100U	210U
Aroclor-1254	NS	200U	210U	3600U	15000U	1800U	200U	430U
Aroclor-1260	NS	200U	210U	3600U	15000U	1800U	200U	430U
Total PCBs (subsurface):	10,000	540	260	4700	**17000**	2100	320	670

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A4. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-4
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-4 62-64 8/20/1999	SB-4 DUP 62-64 8/20/1999	SB-4 64-66 8/20/1999	SB-4 66-68 8/20/1999
Aroclor-1016	NS	200U	410U	2100U	81U
Aroclor-1221	NS	200U	410U	2100U	81U
Aroclor-1232	NS	200U	410U	2100U	81U
Aroclor-1242	NS	490	1700	5600	130
Aroclor-1248	NS	200U	410U	2100U	81U
Aroclor-1254	NS	400U	830U	4300U	160U
Aroclor-1260	NS	400U	830U	4300U	160U
Total PCBs (subsurface):	10,000	490	1700	5600	130

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A5. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-5
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-5 4-6 11/23/1999	SB-5 6-8 11/23/1999	SB-5 8-10 11/23/1999	SB-5 10-12 11/23/1999	SB-5 12-14 11/23/1999	SB-5 14-16 11/23/1999	SB-5 16-18 11/23/1999
Aroclor-1016	NS	38U	38U	34U	33U	33U	34U	34U
Aroclor-1221	NS	38U	38U	34U	33U	33U	34U	34U
Aroclor-1232	NS	38U	38U	34U	33U	33U	34U	34U
Aroclor-1242	NS	38U	38U	34U	33U	33U	34U	34U
Aroclor-1248	NS	38U	38U	34U	33U	33U	34U	34U
Aroclor-1254	NS	38U	38U	34U	33U	33U	34U	34U
Aroclor-1260	NS	38U	38U	34U	33U	33U	34U	34U
Total PCBs (subsurface):	10,000	0	0	0	0	0	0	0

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A5. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-5
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-5 18-20 11/23/1999	SB-5 20-22 11/23/1999	SB-5 22-24 11/23/1999	SB-5/DL 24-26 11/23/1999	SB-5/DL 26-28 11/23/1999	SB-5/DL 28-30 11/23/1999	SB-5/DL 30-32 11/23/1999
Aroclor-1016	NS	33U	34U	34U	39000U	360U	34000U	3400U
Aroclor-1221	NS	33U	34U	34U	39000U	360U	34000U	3400U
Aroclor-1232	NS	33U	34U	34U	39000U	360U	34000U	3400U
Aroclor-1242	NS	33U	34U	34U	39000U	360U	34000U	3400U
Aroclor-1248	NS	33U	34U	34U	1700000D	10000D	310000D	89000D
Aroclor-1254	NS	33U	34U	34U	39000U	360U	34000U	3400U
Aroclor-1260	NS	33U	34U	34U	39000U	360U	34000U	3400U
Total PCBs (subsurface):	10,000	0	0	0	**1700000D**	**10000D**	**310000D**	**89000D**

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A5: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-5
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-5 32-34 11/23/1999	SB-5/DL 34-36 11/23/1999	SB-5 36-38 11/23/1999	SB-5 38-40 11/23/1999	SB-5 40-42 11/23/1999	SB-5 42-44 11/23/1999	SB-5 44-46 11/23/1999
Aroclor-1016	NS	33U	340U	34U	35U	35U	33U	35U
Aroclor-1221	NS	33U	340U	34U	35U	35U	33U	35U
Aroclor-1232	NS	33U	340U	34U	35U	35U	33U	35U
Aroclor-1242	NS	33U	340U	34U	35U	35U	33U	35U
Aroclor-1248	NS	1500	10000D	350	780	880	450	190
Aroclor-1254	NS	33U	340U	34U	35U	35U	33U	35U
Aroclor-1260	NS	33U	340U	34U	35U	35U	33U	35U
Total PCBs (subsurface):	10,000	1500	**10000D**	350	780	880	450	190

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A5: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-5
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-5/DUP 44-46 11/23/1999	SB-5 46-48 11/23/1999	SB-5 48-50 11/23/1999	SB-5 50-52 11/23/1999	SB-5 52-54 11/23/1999
Aroclor-1016	NS	35U	34U	34U	33U	37U
Aroclor-1221	NS	35U	34U	34U	33U	37U
Aroclor-1232	NS	35U	34U	34U	33U	37U
Aroclor-1242	NS	35U	34U	34U	33U	37U
Aroclor-1248	NS	180	1000	290	1600	230
Aroclor-1254	NS	35U	34U	34U	33U	37U
Aroclor-1260	NS	35U	34U	34U	33U	37U
Total PCBs (subsurface):	10,000	180	1000	290	1600	230

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

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E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A6. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-6
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	Sample Designation: SB-6 Sample Interval: 4-6 Sample Date: 11/25/1999	SB-6 6-8 11/25/1999	SB-6 8-10 11/25/1999	SB-6 10-12 11/25/1999	SB-6 12-14 11/25/1999	SB-6 14-16 11/25/1999	SB-6 16-18 11/25/1999
Aroclor-1016	NS	39U	34U	34U	34U	33U	34U	33U
Aroclor-1221	NS	39U	34U	34U	34U	33U	34U	33U
Aroclor-1232	NS	39U	34U	34U	34U	33U	34U	33U
Aroclor-1242	NS	39U	34U	34U	34U	33U	34U	43P
Aroclor-1248	NS	39U	34U	34U	34U	33U	34U	33U
Aroclor-1254	NS	39U	34U	34U	34U	33U	34U	33U
Aroclor-1260	NS	39U	34U	34U	34U	33U	34U	33U
Total PCBs (subsurface):	10,000	0	0	0	0	0	0	43

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A6. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-6
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-6 18-20 11/25/1999	SB-6 20-22 11/25/1999	SB-6 22-24 11/25/1999	SB-6/DL 24-26 11/25/1999	SB-6 26-28 11/25/1999	SB-6/DL 28-30 11/25/1999	SB-6/DL 30-32 11/25/1999
Aroclor-1016	NS	33U	34U	33U	810U	41U	350U	1700U
Aroclor-1221	NS	33U	34U	33U	810U	41U	350U	1700U
Aroclor-1232	NS	33U	34U	33U	810U	41U	350U	1700U
Aroclor-1242	NS	33U	34U	33U	810U	41U	350U	1700U
Aroclor-1248	NS	33U	34U	33U	20000D	1100	5200D	20000D
Aroclor-1254	NS	33U	34U	33U	810U	41U	350U	1700U
Aroclor-1260	NS	33U	34U	33U	810U	41U	350U	1700U
Total PCBs (subsurface):	10,000	0	0	0	**20000D**	1100	5200D	**20000D**

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

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P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A6. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-6
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

	Sample Designation:	SB-6/DL	SB-6	SB-6/DUP	SB-6	SB-6	SB-6	SB-6
	Sample Interval:	32-34	34-36	34-36	36-38	38-40	40-42	42-44
	Sample Date:	11/25/1999	11/25/1999	11/25/1999	11/25/1999	11/25/1999	11/25/1999	11/25/1999
Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)							
Aroclor-1016	NS	170U	34U	33U	34U	35U	35U	35U
Aroclor-1221	NS	170U	34U	33U	34U	35U	35U	35U
Aroclor-1232	NS	170U	34U	33U	34U	35U	35U	35U
Aroclor-1242	NS	170U	34U	49P	34U	35U	35U	35U
Aroclor-1248	NS	1600D	130	33U	540	35U	440	300
Aroclor-1254	NS	170U	34U	33U	34U	35U	35U	35U
Aroclor-1260	NS	170U	34U	33U	34U	35U	35U	35U
Total PCBs (subsurface):	10,000	1600D	130	49	540	0	440	300

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

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Table A6. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-6
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-6 44-46 11/25/1999	SB-6 46-48 11/25/1999	SB-6 48-50 11/25/1999	SB-6 50-52 11/25/1999	SB-6 52-54 11/25/1999
Aroclor-1016	NS	33U	34U	34U	36U	38U
Aroclor-1221	NS	33U	34U	34U	36U	38U
Aroclor-1232	NS	33U	34U	34U	36U	38U
Aroclor-1242	NS	33U	34U	34U	36U	38U
Aroclor-1248	NS	540	91	34U	77P	38U
Aroclor-1254	NS	33U	34U	63P	36U	38U
Aroclor-1260	NS	33U	34U	34U	36U	38U
Total PCBs (subsurface):	10,000	540	91	63P	77P	0

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A7. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-7
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-7 6-8 11/29/1999	SB-7 8-10 11/29/1999	SB-7 10-12 11/29/1999	SB-7 12-14 11/29/1999	SB-7 14-16 11/29/1999	SB-7 16-18 11/29/1999	SB-7 18-20 11/29/1999
Sample Designation:								
Sample Interval:								
Sample Date:								
Aroclor-1016	NS	33U	34U	34U	34U	34U	33U	35U
Aroclor-1221	NS	33U	34U	34U	34U	34U	33U	35U
Aroclor-1232	NS	33U	34U	34U	34U	34U	33U	35U
Aroclor-1242	NS	33U	34U	34U	34U	34U	33U	35U
Aroclor-1248	NS	160	98	37	49	200	33U	590
Aroclor-1254	NS	33U	34U	34U	34U	34U	33U	35U
Aroclor-1260	NS	33U	34U	34U	34U	34U	33U	35U
Total PCBs (subsurface):	10,000	160	98	37	49	200	0	590

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A7. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-7
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-7 20-22 11/29/1999	SB-7/DL 22-24 11/29/1999	SB-7/DL 24-26 11/29/1999	SB-7/DL 26-28 11/29/1999	SB-7/DL 28-30 11/29/1999	SB-7/DL 30-32 11/29/1999	SB-7/DL 32-34 11/29/1999	SB-7 34-36 11/29/1999
Aroclor-1016	NS	33U	340U	34000U	340U	34000U	3500U	340U	35U
Aroclor-1221	NS	33U	340U	34000U	340U	34000U	3500U	340U	35U
Aroclor-1232	NS	33U	340U	34000U	340U	34000U	3500U	340U	35U
Aroclor-1242	NS	33U	340U	34000U	340U	34000U	3500U	340U	35U
Aroclor-1248	NS	250	2500D	770000D	4000D	650000D	94000D	4200D	130
Aroclor-1254	NS	33U	340U	34000U	340U	34000U	3500U	340U	35U
Aroclor-1260	NS	33U	340U	34000U	340U	34000U	3500U	340U	35U
Total PCBs (subsurface):	10,000	250	2500D	**770000**	4000	**650000D**	**94000D**	4200D	130

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A7. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-7
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-7 36-38 11/29/1999	SB-7/DUP 36-38 11/29/1999	SB-7 38-40 11/29/1999	SB-7 40-42 11/29/1999	SB-7 42-44 11/29/1999	SB-7 44-46 11/29/1999	SB-7 46-48 11/29/1999
Aroclor-1016	NS	35U	35U	36U	38U	36U	36U	36U
Aroclor-1221	NS	35U	35U	36U	38U	36U	36U	36U
Aroclor-1232	NS	35U	35U	36U	38U	36U	36U	36U
Aroclor-1242	NS	35U	35U	36U	38U	36U	36U	36U
Aroclor-1248	NS	130	160	77	80	280	1400	140
Aroclor-1254	NS	35U	35U	36U	38U	36U	36U	36U
Aroclor-1260	NS	35U	35U	36U	38U	36U	36U	36U
Total PCBs (subsurface):	10,000	130	160	77	80	280	1400	140

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A7. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-7
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

	Sample Designation:	SB-7	SB-7	SB-7
	Sample Interval:	48-50	50-52	52-54
	Sample Date:	11/29/1999	11/29/1999	11/29/1999
Parameter (Concentrations in µg/kg)	**NYSDEC Soil Cleanup Objectives[1] (µg/kg)**			
Aroclor-1016	NS	35U	35U	37U
Aroclor-1221	NS	35U	35U	37U
Aroclor-1232	NS	35U	35U	37U
Aroclor-1242	NS	35U	35U	37U
Aroclor-1248	NS	220	330	140
Aroclor-1254	NS	35U	35U	37U
Aroclor-1260	NS	35U	35U	37U
Total PCBs (subsurface):	10,000	220	330	140

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A8. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-8
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-8 0-2 11/30/1999	SB-8 2-4 11/30/1999	SB-8 4-6 11/30/1999	SB-8/DUP 4-6 11/30/1999	SB-8 6-8 11/30/1999	SB-8 8-10 11/30/1999	SB-8 10-12 11/30/1999
Aroclor-1016	NS	33U	33U	34U	34U	34U	34U	34U
Aroclor-1221	NS	33U	33U	34U	34U	34U	34U	34U
Aroclor-1232	NS	33U	33U	34U	34U	34U	34U	34U
Aroclor-1242	NS	33U	33U	34U	34U	34U	34U	34U
Aroclor-1248	NS	64	77	130	65P	170	880	160
Aroclor-1254	NS	33U	33U	34U	34U	34U	34U	34U
Aroclor-1260	NS	33U	33U	34U	34U	34U	34U	34U
Total PCBs (subsurface):	10,000	64	77	130	65	170	880	160

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A8: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-8
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-8 12-14 11/30/1999	SB-8 14-16 11/30/1999	SB-8 16-18 11/30/1999	SB-8 18-20 11/30/1999	SB-8 20-22 11/30/1999	SB-8 22-24 11/30/1999	SB-8 24-26 11/30/1999
Aroclor-1016	NS	34U	34U	34U	34U	34U	35U	37U
Aroclor-1221	NS	34U	34U	34U	34U	34U	35U	37U
Aroclor-1232	NS	34U	34U	34U	34U	34U	35U	37U
Aroclor-1242	NS	34U	34U	34U	34U	34U	35U	37U
Aroclor-1248	NS	46	120	60	52P	37P	170	94P
Aroclor-1254	NS	34U	34U	34U	34U	34U	35U	37U
Aroclor-1260	NS	34U	34U	34U	34U	34U	35U	37U
Total PCBs (subsurface):	10,000	46	120	60	52P	37P	170	94P

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A8: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-8
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-8 26-28 11/30/1999	SB-8 28-30 11/30/1999	SB-8 30-32 11/30/1999	SB-8 32-34 11/30/1999	SB-8 34-36 11/30/1999	SB-8 36-38 11/30/1999	SB-8 38-40 11/30/1999
Aroclor-1016	NS	34U	35U	34U	36U	35U	34U	36U
Aroclor-1221	NS	34U	35U	34U	36U	35U	34U	36U
Aroclor-1232	NS	34U	35U	34U	36U	35U	34U	36U
Aroclor-1242	NS	34U	35U	34U	36U	35U	34U	36U
Aroclor-1248	NS	92	66	90	160	35U	40	50
Aroclor-1254	NS	34U	35U	34U	36U	35U	34U	36U
Aroclor-1260	NS	34U	35U	34U	36U	35U	34U	36U
Total PCBs (subsurface):	10,000	92	66	90	160	0	40	50

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

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D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

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P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A8: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-8
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-8 40-42 11/30/1999	SB-8 42-44 11/30/1999	SB-8/DL 44-46 11/30/1999	SB-8 30-32 11/30/1999	SB-8/DL 46-48 11/30/1999	SB-8/DL 48-50 11/30/1999	SB-8/DL 50-52 11/30/1999	SB-8/DL 52-54 11/30/1999
Aroclor-1016	NS	38U	36U	36000U	34U	350U	340U	34000U	36000U
Aroclor-1221	NS	38U	36U	36000U	34U	350U	340U	34000U	36000U
Aroclor-1232	NS	38U	36U	36000U	34U	350U	340U	34000U	36000U
Aroclor-1242	NS	38U	36U	36000U	34U	350U	340U	34000U	36000U
Aroclor-1248	NS	130	390	410000D	90	2600D	4200D	1300000D	470000D
Aroclor-1254	NS	38U	36U	36000U	34U	350U	340U	34000U	36000U
Aroclor-1260	NS	38U	36U	36000U	34U	350U	340U	34000U	36000U
Total PCBs (subsurface):	10,000	130	390	**410000D**	90	2600D	4200D	**1300000D**	**470000D**

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A9. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-9
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-9 6-8 11/30/1999	SB-9 8-10 11/30/1999	SB-9 10-12 11/30/1999	SB-9 12-14 11/30/1999	SB-9 14-16 11/30/1999	SB-9/DUP 14-16 11/30/1999	SB-9 16-18 11/30/1999
Sample Designation:		**SB-9**	**SB-9**	**SB-9**	**SB-9**	**SB-9**	**SB-9/DUP**	**SB-9**
Sample Interval:		**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**14-16**	**16-18**
Sample Date:		**11/30/1999**	**11/30/1999**	**11/30/1999**	**11/30/1999**	**11/30/1999**	**11/30/1999**	**11/30/1999**
Aroclor-1016	NS	33U	34U	34U	34U	34U	34U	34U
Aroclor-1221	NS	33U	34U	34U	34U	34U	34U	34U
Aroclor-1232	NS	33U	34U	34U	34U	34U	34U	34U
Aroclor-1242	NS	33U	34U	34U	34U	34U	34U	34U
Aroclor-1248	NS	1200	980	930	1100	680	750	350
Aroclor-1254	NS	33U	34U	34U	34U	34U	34U	34U
Aroclor-1260	NS	33U	34U	34U	34U	34U	34U	34U
Total PCBs (subsurface):	10,000	1200	980	930	1100	680	750	350

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A9. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-9
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-9 18-20 11/30/1999	SB-9/DL 20-22 11/30/1999	SB-9 22-24 11/30/1999	SB-9/DL 24-26 11/30/1999	SB-9 34-36 11/30/1999	SB-9 36-38 11/30/1999	SB-9 38-40 11/30/1999	SB-9 40-42 11/30/1999
Aroclor-1016	NS	34U	350U	34U	34000U	36U	34U	36U	37U
Aroclor-1221	NS	34U	350U	34U	34000U	36U	34U	36U	37U
Aroclor-1232	NS	34U	350U	34U	34000U	36U	34U	36U	37U
Aroclor-1242	NS	34U	350U	34U	34000U	36U	34U	36U	37U
Aroclor-1248	NS	310	5600D	1300	1100000D	560	260	100P	210
Aroclor-1254	NS	34U	350U	34U	34000U	36U	34U	36U	37U
Aroclor-1260	NS	34U	350U	34U	34000U	36U	34U	36U	37U
Total PCBs (subsurface):	10,000	310	5600D	1300	**1100000D**	560	260	100P	210

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A9: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-9
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-9 42-44 11/30/1999	SB-9 44-46 11/30/1999	SB-9 46-48 11/30/1999	SB-9 48-50 11/30/1999	SB-9 50-52 11/30/1999	SB-9 52-54 11/30/1999	SB-9 54-56 11/30/1999
Aroclor-1016	NS	36U	36U	34U	34U	35U	35U	37U
Aroclor-1221	NS	36U	36U	34U	34U	35U	35U	37U
Aroclor-1232	NS	36U	36U	34U	34U	35U	35U	37U
Aroclor-1242	NS	36U	36U	34U	34U	35U	35U	37U
Aroclor-1248	NS	37	89	60	150	45	240	54
Aroclor-1254	NS	36U	36U	34U	34U	35U	35U	37U
Aroclor-1260	NS	36U	36U	34U	34U	35U	35U	37U
Total PCBs (subsurface):	10,000	37	89	60	150	45	240	54

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A10. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-10
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-10/DL 0-2 12/1/1999	SB-10 2-4 12/1/1999	SB-10/DL 4-6 12/1/1999	SB-10/DL 8-10 12/1/1999	SB-10/DL 10-12 12/1/1999	SB-10/DL 12-14 12/1/1999	SB-10/DUP/DL 12-14 12/2/1999
Aroclor-1016	NS	330U	34U	330U	340U	34U	3500U	3400U
Aroclor-1221	NS	330U	34U	330U	340U	34U	3500U	3400U
Aroclor-1232	NS	330U	34U	330U	340U	34U	3500U	3400U
Aroclor-1242	NS	330U	34U	330U	340U	34U	3500U	3400U
Aroclor-1248	NS	3000D	710	14000D	8200D	360D	61000D	43000D
Aroclor-1254	NS	330U	34U	330U	340U	34U	3500U	3400U
Aroclor-1260	NS	330U	34U	330U	340U	34U	3500U	3400U
Total PCBs (subsurface):	10,000	3000D	710	**14000D**	8200D	360D	**61000D**	**43000D**

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A10. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-10
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-10/DL 14-16 12/1/1999	SB-10/DL 16-18 12/1/1999	SB-10/DL 18-20 12/1/1999	SB-10/DL 20-22 12/1/1999	SB-10/DL 22-24 12/1/1999	SB-10/DL 24-26 12/1/1999	SB-10/DL 26-28 12/1/1999	SB-10/DL 28-30 12/1/1999
Aroclor-1016	NS	34000U	340000U	340000U	34000U	34000	36000U	350U	360000U
Aroclor-1221	NS	34000U	340000U	340000U	34000U	34000	36000U	350U	360000U
Aroclor-1232	NS	34000U	340000U	340000U	34000U	34000	36000U	350U	360000U
Aroclor-1242	NS	34000U	340000U	340000U	34000U	34000	36000U	350U	360000U
Aroclor-1248	NS	1600000D	2600000D	4300000D	1300000D	810000D	1100000	9700D	4600000D
Aroclor-1254	NS	34000U	340000U	340000U	34000U	34000	36000U	350U	360000U
Aroclor-1260	NS	34000U	340000U	340000U	34000U	34000	36000U	350U	360000U
Total PCBs (subsurface):	10,000	**1600000D**	**2600000D**	**4300000D**	**1300000D**	**810000D**	**1100000**	9700D	**4600000D**

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A10. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-10
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-10/DL 30-32 12/1/1999	SB-10 32-34 12/1/1999	SB-10 34-36 12/1/1999	SB-10 36-38 12/1/1999	SB-10/DL 38-40 12/1/1999	SB-10/DL 40-42 12/2/1999	SB-10/DL 42-44 12/2/1999	SB-10/DL 44-46 12/2/1999
Aroclor-1016	NS	350U	34U	35U	34U	35000U	360U	350U	340U
Aroclor-1221	NS	350U	34U	35U	34U	35000U	360U	350U	340U
Aroclor-1232	NS	350U	34U	35U	34U	35000U	360U	350U	340U
Aroclor-1242	NS	350U	34U	35U	34U	35000U	360U	350U	340U
Aroclor-1248	NS	3400D	580	630	420	1100000D	8300D	4100D	4400D
Aroclor-1254	NS	350U	34U	35U	34U	35000U	360U	350U	340U
Aroclor-1260	NS	350U	34U	35U	34U	35000U	360U	350U	340U
Total PCBs (subsurface):	10,000	3400D	580	630	420	**1100000D**	8300D	4100D	4400D

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A10. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-10
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-10 46-48 12/2/1999	SB-10 48-50 12/2/1999	SB-10 50-52 12/2/1999	SB-10 52-54 12/2/1999	SB-10 54-56 12/2/1999
Aroclor-1016	NS	34U	35U	36U	36U	36U
Aroclor-1221	NS	34U	35U	36U	36U	36U
Aroclor-1232	NS	34U	35U	36U	36U	36U
Aroclor-1242	NS	34U	35U	36U	36U	36U
Aroclor-1248	NS	1500	580	730	1200	550
Aroclor-1254	NS	34U	35U	36U	36U	36U
Aroclor-1260	NS	34U	35U	36U	36U	36U
Total PCBs (subsurface):	10,000	1500	580	730	1200	550

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A11. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-11
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-11 0-2 12/2/1999	SB-11 2-4 12/2/1999	SB-11 4-6 12/2/1999	SB-11 6-8 12/2/1999	SB-11 8-10 12/2/1999	SB-11 10-12 12/2/1999	SB-11 12-14 12/2/1999	SB-11/DUP 12-14 12/5/1999
Aroclor-1016	NS	35U	34U	34U	34U	34U	34U	34U	34U
Aroclor-1221	NS	35U	34U	34U	34U	34U	34U	34U	34U
Aroclor-1232	NS	35U	34U	34U	34U	34U	34U	34U	34U
Aroclor-1242	NS	35U	34U	34U	34U	34U	34U	34U	34U
Aroclor-1248	NS	1500	200	72	320	34U	34U	64	57
Aroclor-1254	NS	35U	34U	34U	34U	34U	34U	34U	34U
Aroclor-1260	NS	35U	34U	34U	34U	34U	34U	34U	34U
Total PCBs (subsurface):	10,000	1500	200	72	320	0	0	64	57

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A11. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-11
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-11 14-16 12/2/1999	SB-11 16-18 12/2/1999	SB-11 18-20 12/2/1999	SB-11 20-22 12/2/1999	SB-11 22-24 12/2/1999	SB-11/DL 24-26 12/2/1999	SB-11 26-28 12/2/1999	SB-11 28-30 12/2/1999
Aroclor-1016	NS	34U	33U	33U	34U	34U	3600U	33U	36U
Aroclor-1221	NS	34U	33U	33U	34U	34U	3600U	33U	36U
Aroclor-1232	NS	34U	33U	33U	34U	34U	3600U	33U	36U
Aroclor-1242	NS	34U	33U	33U	34U	34U	3600U	33U	36U
Aroclor-1248	NS	160	90	68	180	280	86000D	370	200
Aroclor-1254	NS	34U	33U	33U	34U	34U	3600U	33U	36U
Aroclor-1260	NS	34U	33U	33U	34U	34U	3600U	33U	36U
Total PCBs (subsurface):	10,000	160	90	68	180	280	**86000D**	370	200

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A11: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-11
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-11 30-32 12/2/1999	SB-11 32-34 12/2/1999	SB-11 34-36 12/2/1999	SB-11 36-38 12/2/1999	SB-11 38-40 12/2/1999	SB-11 40-42 12/2/1999	SB-11 42-44 12/2/1999	SB-11 44-46 12/2/1999
Aroclor-1016	NS	36U	35U	35U	34U	35U	36U	35U	36U
Aroclor-1221	NS	36U	35U	35U	34U	35U	36U	35U	36U
Aroclor-1232	NS	36U	35U	35U	34U	35U	36U	35U	36U
Aroclor-1242	NS	36U	35U	35U	34U	35U	36U	35U	36U
Aroclor-1248	NS	280	260	140	73	67	210	66	56
Aroclor-1254	NS	36U	35U	35U	34U	35U	36U	35U	36U
Aroclor-1260	NS	36U	35U	35U	34U	35U	36U	35U	36U
Total PCBs (subsurface):	10,000	280	260	140	73	67	210	66	56

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A11. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-11
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-11 46-48 12/2/1999	SB-11 48-50 12/2/1999	SB-11 50-52 12/5/1999	SB-11 52-54 12/5/1999	SB-11 54-56 12/5/1999
Aroclor-1016	NS	35U	34U	35U	36U	37U
Aroclor-1221	NS	35U	34U	35U	36U	37U
Aroclor-1232	NS	35U	34U	35U	36U	37U
Aroclor-1242	NS	35U	34U	35U	36U	37U
Aroclor-1248	NS	100	51	140	91	100
Aroclor-1254	NS	35U	34U	35U	36U	37U
Aroclor-1260	NS	35U	34U	35U	36U	37U
Total PCBs (subsurface):	10,000	100	51	140	91	100

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A12: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-12
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-12 0-2 12/5/1999	SB-12 2-4 12/5/1999	SB-12 4-6 12/5/1999	SB-12 6-8 12/5/1999	SB-12 8-10 12/5/1999	SB-12 10-12 12/5/1999	SB-12 12-14 12/5/1999	SB-12 14-16 12/5/1999
Aroclor-1016	NS	340U	34U	34U	33U	34U	34U	34U	34U
Aroclor-1221	NS	340U	34U	34U	33U	34U	34U	34U	34U
Aroclor-1232	NS	340U	34U	34U	33U	34U	34U	34U	34U
Aroclor-1242	NS	340U	34U	34U	33U	34U	34U	34U	34U
Aroclor-1248	NS	3500	400	770	43	230	74	47	95
Aroclor-1254	NS	340U	34U	34U	33U	34U	34U	34U	34U
Aroclor-1260	NS	340U	34U	34U	33U	34U	34U	34U	34U
Total PCBs (subsurface):	10,000	3500	400	770	43	230	74	47	95

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A12. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-12
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-12 16-18 12/5/1999	SB-12 18-20 12/5/1999	SB-12/DL 20-22 12/5/1999	SB-12/DL 22-24 12/5/1999	SB-12/DL 24-26 12/5/1999	SB-12/DL 26-28 12/5/1999	SB-12/DL 28-30 12/5/1999	SB-12/DL 30-32 12/5/1999
Aroclor-1016	NS	34U	33U	1700U	670U	3600U	350000U	360000U	750U
Aroclor-1221	NS	34U	33U	1700U	670U	3600U	350000U	360000U	750U
Aroclor-1232	NS	34U	33U	1700U	670U	3600U	350000U	360000U	750U
Aroclor-1242	NS	34U	33U	1700U	670U	3600U	350000U	360000U	750U
Aroclor-1248	NS	51P	33U	23000D	10000D	110000D	9400000D	7700000D	17000D
Aroclor-1254	NS	34U	33U	1700U	670U	3600U	350000U	360000U	750U
Aroclor-1260	NS	34U	33U	1700U	670U	3600U	350000U	360000U	750U
Total PCBs (subsurface):	10,000	51P	0	**23000D**	**10000D**	**110000D**	**9400000D**	**7700000D**	**17000D**

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A12. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-12
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	Sample Designation: SB-12/DL	SB-12/DL	SB-12	SB-12	SB-12/DL	SB-12	SB-12/DUP
		Sample Interval: 32-34	34-36	36-38	38-40	40-42	42-44	42-44
		Sample Date: 12/5/1999	12/5/1999	12/5/1999	12/5/1999	12/5/1999	12/5/1999	12/5/1999
Aroclor-1016	NS	350U	360U	35U	40U	360U	35U	35U
Aroclor-1221	NS	350U	360U	35U	40U	360U	35U	35U
Aroclor-1232	NS	350U	360U	35U	40U	360U	35U	35U
Aroclor-1242	NS	350U	360U	35U	40U	360U	35U	35U
Aroclor-1248	NS	4400D	2700D	280	740	20000D	330	390
Aroclor-1254	NS	350U	360U	35U	40U	360U	35U	35U
Aroclor-1260	NS	350U	360U	35U	40U	360U	35U	35U
Total PCBs (subsurface):	10,000	4400D	2700D	280	740	**20000D**	330	390

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A12. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-12
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	Sample Designation: / Sample Interval: / Sample Date: NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-12 44-46 12/5/1999	SB-12 46-48 12/5/1999	SB-12/DL 48-50 12/5/1999	SB-12 50-52 12/5/1999	SB-12 52-54 12/5/1999	SB-12 54-56 12/5/1999
Aroclor-1016	NS	36U	35U	350U	35U	36U	38U
Aroclor-1221	NS	36U	35U	350U	35U	36U	38U
Aroclor-1232	NS	36U	35U	350U	35U	36U	38U
Aroclor-1242	NS	36U	35U	350U	35U	36U	38U
Aroclor-1248	NS	570	440	4100D	490	470	520
Aroclor-1254	NS	36U	35U	350U	35U	36U	38U
Aroclor-1260	NS	36U	35U	350U	35U	36U	38U
Total PCBs (subsurface):	10,000	570	440	4100D	490	470	520

Notes:

(1) - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A13. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-13
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-13 44-46 4/18/2000	SB-13 46-48 4/18/2000	SB-13 48-50 4/18/2000	SB-13 50-52 4/18/2000	SB-13 52-54 4/18/2000
Aroclor-1016	NS	35U	37U	37U	36U	37U
Aroclor-1221	NS	35U	37U	37U	36U	37U
Aroclor-1232	NS	35U	37U	37U	36U	37U
Aroclor-1242	NS	35U	37U	37U	36U	37U
Aroclor-1248	NS	35U	37U	53P	83P	37U
Aroclor-1254	NS	35U	37U	37U	36U	37U
Aroclor-1260	NS	35U	37U	37U	36U	37U
Total PCBs (subsurface):	10,000	0	0	53P	83P	0

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A14. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-14
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-14 24-26 4/18/2000	SB-14 26-28 4/18/2000	SB-14 28-30 4/18/2000	SB-14 30-32 4/18/2000	SB-14 32-34 4/18/2000	SB-14 34-36 4/18/2000
Aroclor-1016	NS	40U	35U	34U	35U	34U	35U
Aroclor-1221	NS	40U	35U	34U	35U	34U	35U
Aroclor-1232	NS	40U	35U	34U	35U	34U	35U
Aroclor-1242	NS	40U	35U	34U	35U	34U	35U
Aroclor-1248	NS	95	63P	34U	35U	34U	35U
Aroclor-1254	NS	40U	35U	34U	35U	34U	35U
Aroclor-1260	NS	40U	35U	34U	35U	34U	35U
Total PCBs (subsurface):	10,000	95	63P	0	0	0	0

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A15: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-15
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	Sample Designation: SB-15 Sample Interval: 24-26 Sample Date: 4/19/2000	SB-15 26-28 4/19/2000	SB-15 28-30 4/19/2000	SB-15 30-32 4/19/2000
Aroclor-1016	NS	35U	37U	35U	36U
Aroclor-1221	NS	35U	37U	35U	36U
Aroclor-1232	NS	35U	37U	35U	36U
Aroclor-1242	NS	35U	37U	35U	36U
Aroclor-1248	NS	52	43	35U	36U
Aroclor-1254	NS	35U	37U	35U	36U
Aroclor-1260	NS	35U	37U	35U	36U
Total PCBs (subsurface):	10,000	52	43	0	0

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A16. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-16
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)								
Sample Designation:		**SB-16**	**SB-16**	**SB-16**	**SB-16**	**SB-16**	**SB-16**	**SB-16**	**SB-16**
Sample Interval:		**14-16**	**16-18**	**18-20**	**20-22**	**22-24**	**24-26**	**26-28**	**28-30**
Sample Date:		**4/19/2000**	**4/19/2000**	**4/19/2000**	**4/19/2000**	**4/19/2000**	**4/19/2000**	**4/19/2000**	**4/19/2000**
Aroclor-1016	NS	35U	34U	35U	34U	35U	34U	36U	34U
Aroclor-1221	NS	35U	34U	35U	34U	35U	34U	36U	34U
Aroclor-1232	NS	35U	34U	35U	34U	35U	34U	36U	34U
Aroclor-1242	NS	35U	34U	35U	34U	35U	34U	36U	34U
Aroclor-1248	NS	35U	34U	35U	34U	35U	34U	36U	34U
Aroclor-1254	NS	35U	34U	35U	34U	35U	34U	36U	34U
Aroclor-1260	NS	35U	34U	35U	34U	35U	34U	36U	34U
Total PCBs (subsurface):	10,000	0	0	0	0	0	0	0	0

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A16. Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-16
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	SB-16 30-32 4/19/2000	SB-16 32-34 4/19/2000	SB-16 34-36 4/19/2000	SB-16 36-38 4/19/2000	SB-16 38-40 4/19/2000	SB-16 40-42 4/19/2000	SB-16 42-44 4/19/2000
Aroclor-1016	NS	36U	34U	34U	34U	35U	35U	34U
Aroclor-1221	NS	36U	34U	34U	34U	35U	35U	34U
Aroclor-1232	NS	36U	34U	34U	34U	35U	35U	34U
Aroclor-1242	NS	36U	34U	34U	34U	35U	35U	34U
Aroclor-1248	NS	36U	51	34U	62	35U	35U	34U
Aroclor-1254	NS	36U	34U	34U	34U	35U	35U	34U
Aroclor-1260	NS	36U	34U	34U	34U	35U	35U	34U
Total PCBs (subsurface):	10,000	0	51	0	62	0	0	0

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

Table A17: Summary of Polychlorinated Biphenyls Detected in Soil Boring SB-17
Plant 3 Dry Wells 20-08 and 34-07 Exposure Assessment
Northrop Grumman Corporation, Plant 3, Bethpage, NY

Parameter (Concentrations in µg/kg)	NYSDEC Soil Cleanup Objectives[1] (µg/kg)	Sample Designation: SB-17 Sample Interval: 24-26 Sample Date: 4/24/2000	SB-17 26-28 4/24/2000	SB-17 28-30 4/24/2000	SB-17 30-32 4/24/2000	SB-17 32-34 4/24/2000
Aroclor-1016	NS	34U	34U	33U	35U	34U
Aroclor-1221	NS	34U	34U	33U	35U	34U
Aroclor-1232	NS	34U	34U	33U	35U	34U
Aroclor-1242	NS	34U	34U	33U	35U	34U
Aroclor-1248	NS	160	170	53P	35U	49P
Aroclor-1254	NS	34U	34U	33U	35U	34U
Aroclor-1260	NS	34U	34U	33U	35U	34U
Total PCBs (subsurface):	10,000	160	170	53P	0	49P

Notes:

[1] - New York State Department of Environmental Conservation (NYSDEC) Recommended Soil Cleanup Objectives (RSCOs) Technical and Administrative Guidance Memorandum revised January 24, 1994.

µg/kg - Micrograms per kilogram

ft bls - Feet below land surface

NS - No standard

U - This qualifier indicates compound analyzed for but not detected

J - This qualifier indicates an estimated value

B - This qualifier indicates that the analyte was found in both the sample and its associated laboratory blank

E - This qualifier indicates compounds whose concentrations exceed the calibration range of the instrument

D - This qualifier indicates all compounds identified in an analysis at a secondary dilution factor

DL - This suffix indicates a diluted sample and is appended to the sample number on the result form

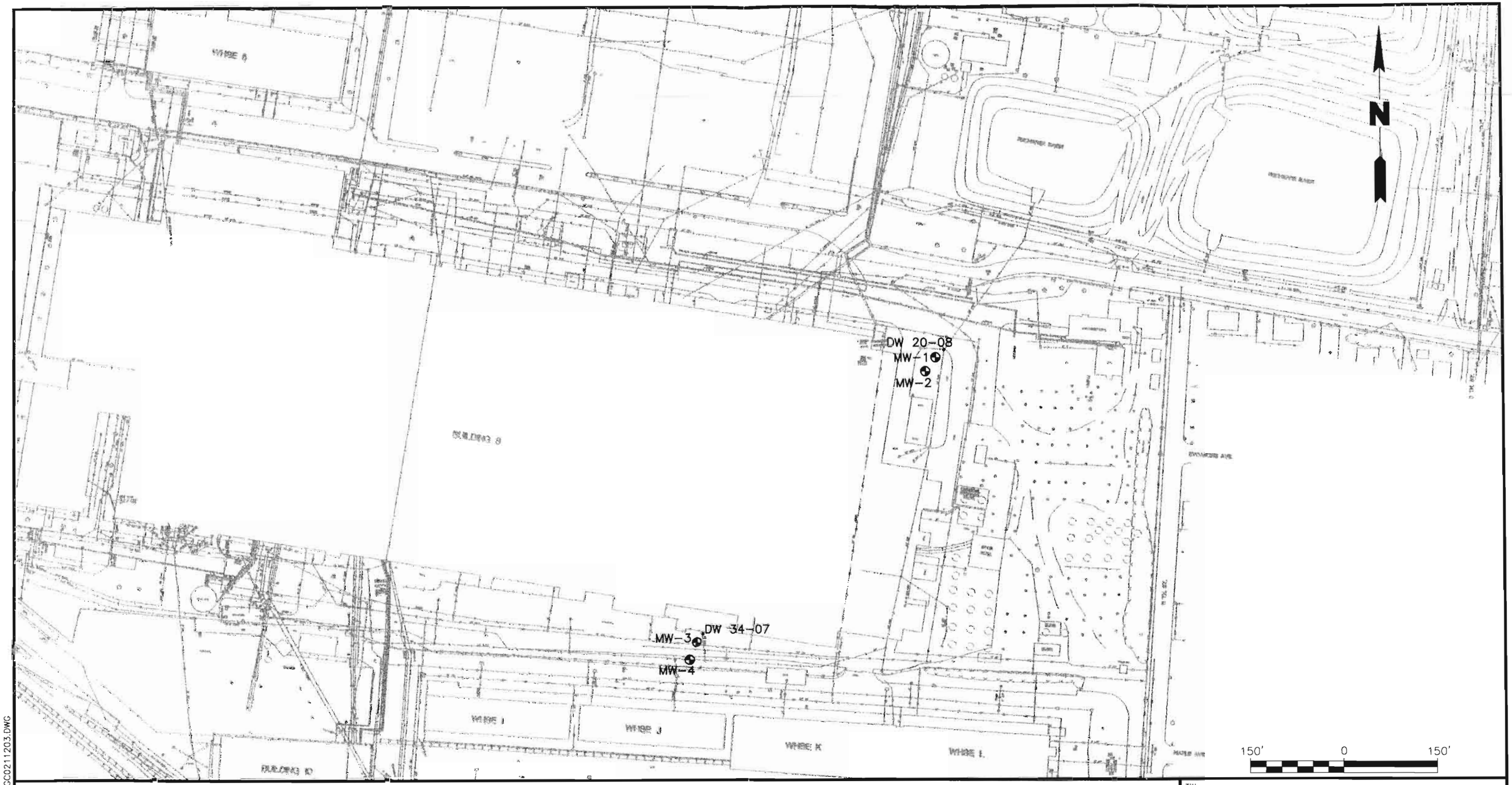
DUP - This suffix indicates a duplicate sample

P - This flag is used when there is greater than 25% difference for detected concentration between the two GC columns

Bold - Data highlighted in bold represents results detected above the NYSDEC Recommended Soil Cleanup Objectives

APPENDIX B

Site Plan and Soil Boring Location Plans



LEGEND

DW 20-08 . APPROXIMATE LOCATION AND DESIGNATION OF NAVAL PROPERTY DRY WELL

MW-1 APPROXIMATE LOCATION AND DESIGNATION OF MONITORING WELL

Title:

SITE PLAN

PLANT 3 DRY WELLS 20-08 AND 34-07
EXPOSURE ASSESSMENT

Prepared For: NORTHROP GRUMMAN CORPORATION
SOUTH OYSTER BAY ROAD
BETHPAGE, NEW YORK

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: N.G.	Date: 03APR00	FIGURE
Prepared by: G.M./R.K.	Scale: AS SHOWN	B1
Project Mgr: B.F.	Office: NY	
File No: NGC0211203	Project: 70902Y	

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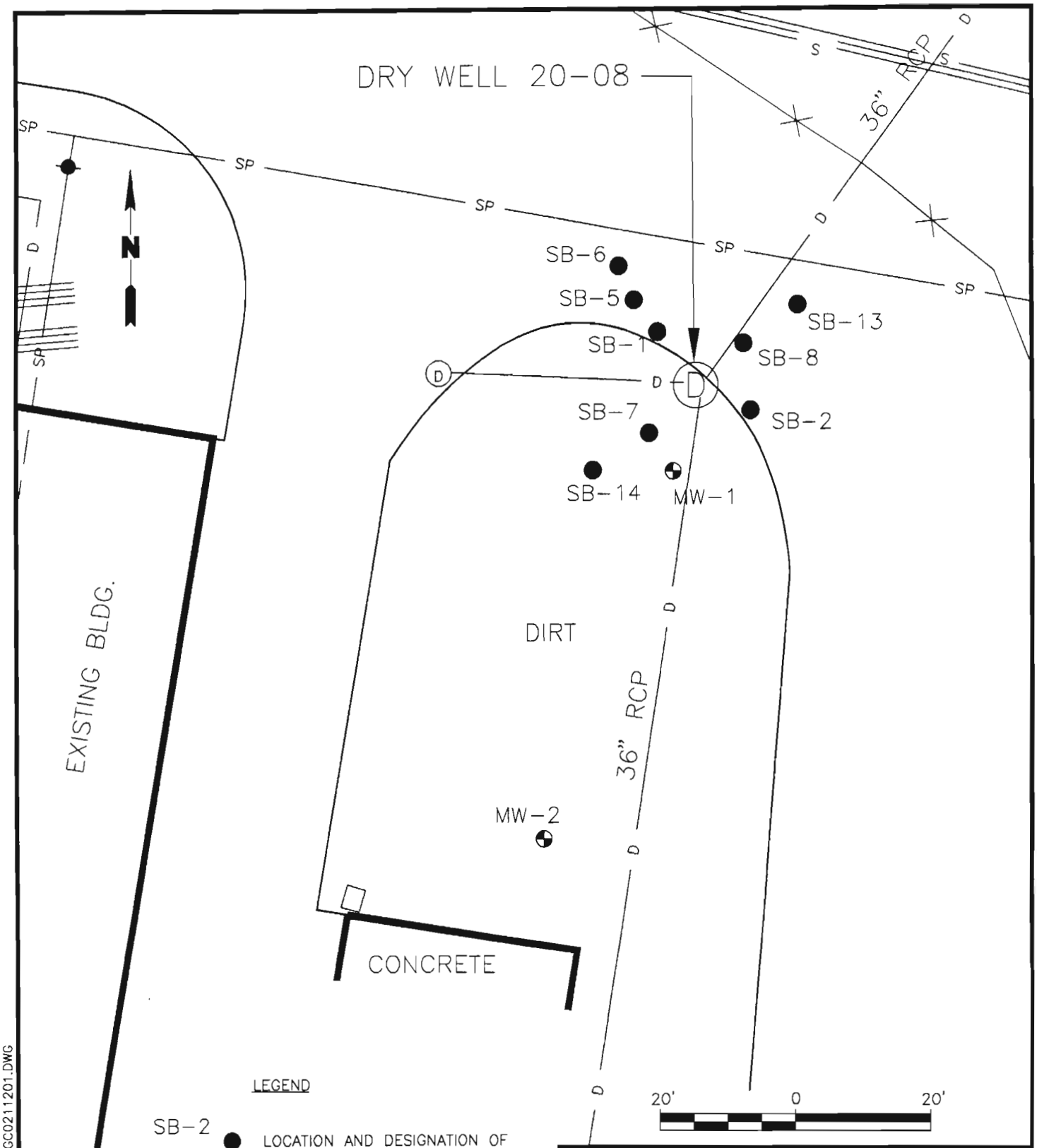

LEGEND

SB-2 ●	LOCATION AND DESIGNATION OF SOIL BORING
MW-1 ⊕	LOCATION AND DESIGNATION OF MONITORING WELL
—— SP ——	SEWER PIPE
—— D ——	DRAIN LINE
×——×	FENCE
(D)	DRY WELL

Title:

DRY WELL 20-08 SOIL BORING LOCATION PLAN

PLANT 3 DRY WELLS 20-08 AND 34-07
EXPOSURE ASSESSMENT

Prepared For: NORTHROP GRUMMAN CORPORATION
SOUTH OYSTER BAY ROAD
BETHPAGE, NEW YORK

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: O.R.	Date: 03APR00	FIGURE	
Prepared by: G.M.	Scale: AS SHOWN		B2
Project Mgr: W.F.	Office: NY		
File No: NGC0211201	Project: 70902Y		

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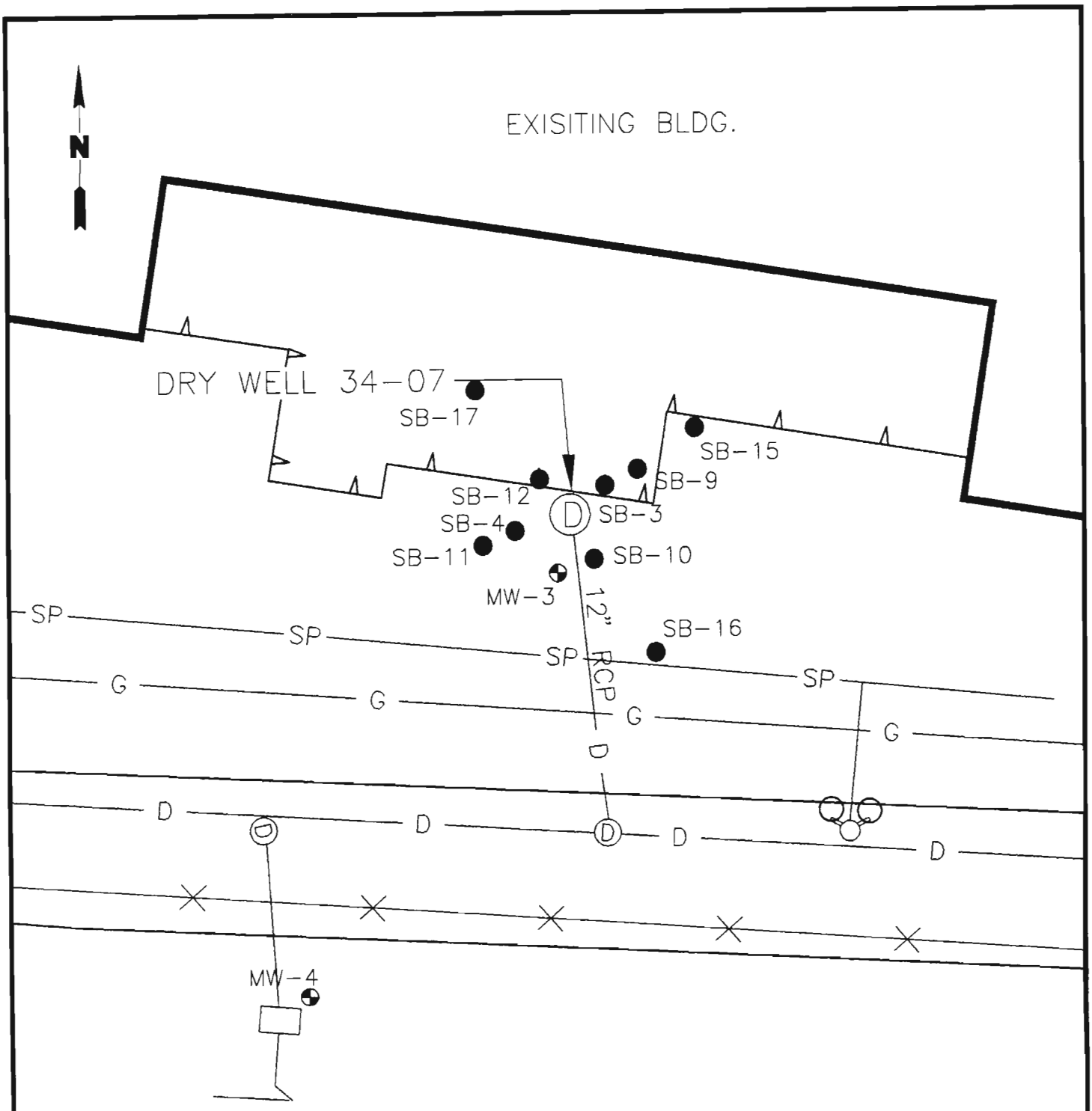

LEGEND

SB-3 ●	LOCATION AND DESIGNATION OF SOIL BORING
MW-3 ⊕	LOCATION AND DESIGNATION OF MONITORING WELL
⩚⩚	LOADING DOCK
SP	SEWER PIPE
G	GAS LINE
D	DRAIN LINE
×—×—×	FENCE
(D)	DRY WELL

20' 0 20'

Title:

DRY WELL 34-07 SOIL BORING LOCATION PLAN

PLANT 3 DRY WELLS 20-08 AND 34-07
EXPOSURE ASSESSMENT

Prepared For: NORTHROP GRUMMAN CORPORATION
SOUTH OYSTER BAY ROAD
BETHPAGE, NEW YORK

ROUX ASSOCIATES, INC.
Environmental Consulting & Management

Compiled by: O.R.	Date: 03APR00	FIGURE
Prepared by: G.M.	Scale: AS SHOWN	B3
Project Mgr: W.F.	Office: NY	
File No: NGCD211202	Project: 70902Y	

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