

**Final  
Phase II Environmental  
Baseline Survey**

of  
**Naval Weapons Industrial Reserve Plant  
Bethpage, New York**

130003 B



**Engineering Field Activity Northeast  
Naval Facilities Engineering Command  
Contract No. N62472-90-D-1298  
Contract Task Order 0283**

**December 1999**

**Revision 1, May 2002**



**TETRA TECH NUS, INC.**

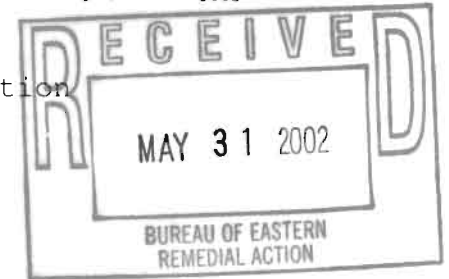


**DEPARTMENT OF THE NAVY**

ENGINEERING FIELD ACTIVITY, NORTHEAST  
NAVAL FACILITIES ENGINEERING COMMAND  
10 INDUSTRIAL HIGHWAY  
MAIL STOP, #82  
LESTER, PA 19113-2090

IN REPLY REFER TO  
5090  
Code EV21/JLC

**30 MAY 2002**



Mr. Steve Scharf  
New York State Department of Environmental Conservation  
Division of Environmental Remediation  
625 Broadway  
Albany, New York 12233-7015

Dear Mr. Scharf:

Subj: PHASE II ENVIRONMENTAL BASELINE SURVEY (REVISION I) FOR THE  
FORMER NAVAL WEAPONS INDUSTRIAL RESERVE PLANT (NWIRP)  
BETHPAGE, NEW YORK

The Navy is forwarding a revision to the Final Phase II Environmental Baseline Survey (EBS) Report for the NWIRP Bethpage facility. The Navy previously submitted a final version of this report in December 1999, however, as a result of a meeting held in Albany, New York on April 11, 2001, the Navy agreed to revise the Final Phase II EBS Report in order to incorporate the current status of various remedial actions being implemented by the Navy to address both soil and groundwater contamination.

Specific changes that resulted in a major alteration to the report included the removal of Section 7.0, which focuses on the Navy's Plant 5 facility. The main focus of an EBS is to determine the environmental condition of real property for a parcel of land that is to be transferred out of federal ownership. However, the property beneath Plant 5 is owned by the Northrop Grumman Corporation and not the federal government, therefore, it's inclusion in the Revised Final Phase II EBS has been determined to be inappropriate. In addition, Section 8.0 has been rewritten to update the status of the Navy's implementation of various components associated with the remediation of groundwater.

In response to a request made by the New York State Department of Health (NYSDOH) during the April 11<sup>th</sup> meeting, the tables in Section 9.0 have been enhanced to provide more information regarding each Area of Concern (AOC) along with recommendations for additional actions, if appropriate. Accordingly, two figures have been added to Section 10.0 that now show the location of each AOC where residual compounds remain. Table 9-1 was revised to acknowledge that all remedial actions associated with IR Sites 2 and 3 have been completed in accordance with the requirements of the Navy's July 1995 Record of Decision for Operable Unit 1 - Soils.

The updated information provided in this Revised-Final Phase II EBS Report has been incorporated into a Draft-Final version of the Navy's Finding of Suitability to Transfer (FOST) for the main 105-acre Parcel that was previously submitted to NYSDEC and NYSDOH in a letter dated 20 February 2002.

If you have any questions or would like to discuss the enclosed document further, please give me a call at (610) 595-0567, extension 163.

Sincerely,



JAMES L. COLTER  
Remedial Project Manager  
By direction of the  
Commanding Officer

Enclosure: (1) Final Phase II EBS dated December 1999 (Revision I dated May 2002)

Distribution:

NAVAIR, Joe Kaminski  
NYSDEC (Albany), Henry Wilkie  
NYSDEC (Stony Brook), Stan Farkas  
NYSDOH, Bill Gilday  
USEPA Region II, Dale Carpenter  
USEPA Region II, Carla Struble  
Northrop Grumman, Larry Leskovian  
Northrop Grumman, John Cofman  
Nassau County DPW, Tim Kelly  
Nassau County DOH, Bruce Mackay  
Nassau County DOH, John Lovejoy  
Town of Oyster Bay, Hon. John Venditto  
Town of Oyster Bay DPW, Tom Clark  
J.A. Jones, Al Taormina  
Information Repository, Bethpage Library  
Community Co-Chair, Jim McBride  
Community RAB Member, Hon. Ed Mangano  
Community RAB Member, Linda Mangano  
Community RAB Member, Ed Resch  
Community RAB Member, Charles Bevilacqua  
Community RAB Member, Roy Tringali  
Community RAB Member, Rosemary Styne

**FINAL  
PHASE II  
ENVIRONMENTAL BASELINE SURVEY  
FOR  
NAVAL WEAPONS INDUSTRIAL RESERVE PLANT  
BETHPAGE, NEW YORK**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT**

**Submitted to:  
Engineering Field Activity Northeast  
Environmental Branch Code EV2  
Naval Facilities Engineering Command  
10 Industrial Highway, Mail Stop No. 82  
Lester, Pennsylvania 19113-2090**

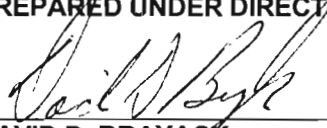
**Submitted by:  
Tetra Tech NUS, Inc.  
600 Clark Avenue, Suite 3  
King of Prussia, PA 19406-1433**

**Contract No. N62472-90-D-1298  
Contract Task Order 0283**

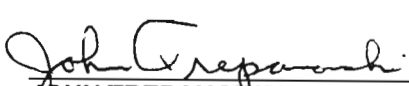
**December 1999**

**Revision 1, May 2002**

**PREPARED UNDER DIRECTION OF:**

  
\_\_\_\_\_  
**DAVID D. BRAYACK  
PROJECT MANAGER  
TETRA TECH NUS, INC.  
PITTSBURGH, PENNSYLVANIA**

**APPROVED BY:**

  
\_\_\_\_\_  
**JOHN TREPANOWSKI  
PROGRAM MANAGER  
TETRA TECH NUS, INC.  
KING OF PRUSSIA, PENNSYLVANIA**



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## ACRONYMS

AOC	Area of Concern
bgs	below ground surface
CaPAHs	carcinogenic polycyclic aromatic hydrocarbons
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
EBS	Environmental Baseline Survey
EIS	Environmental Impact Statement
ERM	Environmental Resources Management
HPB	Historical Paint Booth
IAS	Initial Assessment Study
IR	Installation Restoration
IRM	Interim Remedial Measure
IWTF	Industrial Waste Water Treatment Facility
NACIP	Navy Assessment and Control of Installation Pollutants
NCDH	Nassau County Department of Health
NWIRP Bethpage	Naval Weapons Industrial Reserve Plant at Bethpage
NYSDEC	New York State Department of Environmental Conservation
PCB	Polychlorinated Biphenyl
PCE	Perchloroethylene
PRAP	Preferred Remedial Action Plan
RCRA	Resource Conservation
RI	Remedial Investigation
RI	Remedial Investigation
ROD	Record of Decision
SI	Site Investigation
SPDES	State Pollutant Discharge Elimination System
STARS	Spill Technology and Remediation Series
SVOC	Semivolatile Organic Compound
TAGM	Technical Assistance Guidance Memorandum
TCE	Trichloroethylene
TCLP	Toxic Characteristic Leachate Procedure
TPHs	Total Petroleum Hydrocarbons
UIC	Underground Injection Control
USEPA	U.S. Environmental Protection Agency
UST	Underground Storage Tanks

VOC  
VCM

Volatile Organic Compounds  
Vinyl Chloride Monomer

## EXECUTIVE SUMMARY

The following Phase II Environmental Baseline Survey (EBS) report documents the environmental condition of real property at the Naval Weapons Industrial Reserve Plant at Bethpage, New York (NWIRP Bethpage) as of January 2002. It updates a Phase I EBS report which was prepared by the Navy for NWIRP Bethpage in January 1998. The Phase I EBS, which was completed in January 1998, identified areas of real property on NWIRP Bethpage with potential environmental concerns that could limit their suitability for transfer in compliance with Section 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The Navy is in the process of closing NWIRP Bethpage and proposes to transfer real property on the installation out of Government ownership to Nassau County, New York for industrial redevelopment.

Most of the information presented in the Phase II EBS is drawn from a series of environmental investigation reports prepared for NWIRP Bethpage by the Northrop Grumman Corporation, which has leased the property and operated its facilities for the Navy since the installation was initially established. These reports include a series of Phase I environmental site assessment reports prepared by Northrop Grumman for specific areas of the base to determine which areas on the property require environmental remediation prior to return to the Navy. The material reviewed in the Phase II EBS also include reports on industrial discharges prepared by Northrop Grumman to support compliance with underground injection control (UIC) regulations and correspondence between Northrop Grumman and environmental regulatory agencies.

The scope of the Phase II EBS includes all of the Navy-owned 105-acre parcel that encompasses NWIRP Bethpage Plants 03, 10, and 17. The scope also includes a 4.5-acre parcel owned by the Navy that encompasses Plant 20, a vehicle maintenance facility. Additionally, the scope includes those structures within Northrop Grumman's Plan 05 that are owned by the Navy. These Navy-owned structures occupy land owned by Northrop Grumman, thus the exterior areas between structures within Plant 05 are not within the scope. No property owned by Northrop Grumman at Bethpage is addressed in this document.

The documents reviewed to prepare the Phase II EBS indicate that most areas of real property on NWIRP Bethpage are presently suitable for transfer in compliance with CERCLA 120(h) without further environmental action. A few areas of real property appear to still require additional environmental investigation and/or remediation before becoming suitable for transfer under CERCLA 120(h). The Navy will retain this property.

## 1.0 INTRODUCTION

This Phase II Environmental Baseline Survey (EBS) was prepared by the Navy to document the environmental condition of real property on the Naval Weapons Industrial Reserve Plant at Bethpage (NWIRP Bethpage) in Nassau County, New York. It updates information presented in a Phase I EBS completed by the Navy for NWIRP Bethpage in January 1998 (CF Braun, 1998). The Phase I EBS documented the environmental condition of each area of real property on NWIRP Bethpage based on a records review, a series of interviews, and a visual site inspection conducted in May 1997. Each area was classified into one of the seven environmental-condition-of-property ratings shown in Table 1-1.

The Phase II EBS is intended to resolve potential environmental concerns identified for those areas of real property rated in Category 7 in the Phase I EBS, viz. those areas identified as requiring further investigation before their environmental condition could be determined. The Phase II EBS reports information available to the Navy as of January 2002. Information from ongoing environmental activities by the Navy and Northrop Grumman not available as of that time is not reported herein but will be used by the Navy to assess the suitability of property on the installation for future transfer decisions.

NWIRP Bethpage is part of a larger complex of manufacturing and administration facilities operated by Northrop Grumman in Bethpage, New York. Northrop Grumman has leased NWIRP Bethpage from the Navy since the 1940s and has constructed affiliated facilities on adjoining land that it owns independently from the Navy. The area covered by the Phase II EBS includes all of the Navy-owned 105-acre parcel that encompasses Plants 03, 10, and 17 and the Navy-owned 4.5-acre parcel that encompasses Plant 20. The 105-acre parcel also includes the Industrial Waste Water Treatment Facility (IWTF) for Plant 03 and a series of recharge basins. The Phase II EBS also addresses those buildings owned by the Navy within Northrop Grumman's Plant 05. No plants or other real property owned by Northrop Grumman are included.

### 1.1 PURPOSE

The EBS process is intended to support compliance with Section 120(h) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended (42 USC 9620h). Section 120(h) requires Federal agencies to disclose information regarding the storage, release, or disposal of hazardous substances or petroleum products on real property before transfer or lease. The Phase II EBS report summarizes environmental information available for each area of real property on NWIRP Bethpage. It indicates what further environmental action will have to be performed, and what information will have to be disclosed to property recipients, and when the property is leased or transferred from the Federal Government under CERCLA 120(h).

## **1.2 CERCLA 120(H) BACKGROUND**

Each contract or deed entered into for the transfer (or lease) of property from the Federal Government must contain appropriate notifications regarding the presence of hazardous substances, covenants regarding remedial action, and clauses for government access to the property, as required by CERCLA 120(h)(3) and (4). According to CERCLA 120(h)(4), the identification of any property as "uncontaminated" requires state concurrence. Any ongoing remedies that will not reach final cleanup standards before property transfer (or lease) require a demonstration to the U.S. Environmental Protection Agency (USEPA) that the remedies are operating properly and successfully, as required by CERCLA 120(h)(3).

## **1.3 PROPERTY DESCRIPTION**

NWIRP Bethpage comprises approximately 109.5 acres of land and several buildings owned by the Navy within a roughly 605-acre manufacturing and administrative complex owned and operated by Northrop Grumman (formerly the Grumman Aerospace Corporation). Established in 1933, the mission of the Northrop Grumman Bethpage complex has included research prototyping, testing, design engineering, fabrication, and primary assembly of various military aircraft. Most of the Navy buildings were constructed during World War II and subsequently leased to Northrop Grumman. Northrop Grumman has managed and operated NWIRP Bethpage as part of its overall Bethpage complex throughout the lease period (NEESA, 1986).

Operations throughout the Northrop Grumman Bethpage complex, including NWIRP Bethpage, have been conducted in clusters of affiliated buildings and other facilities termed "plants." NWIRP Bethpage (Figure 1-1) includes the following plants:

- A main 105-acre parcel of land containing a 707,303-square foot aircraft manufacturing building and support facilities (Plant 3), a series of warehouses (Plant 17), and a 24,311-square foot quality control laboratory and support facilities (Plant 10). The parcel is bounded to the south by the Long Island Railroad, to the west by a tract of Northrop Grumman-owned ballfields, to the north by Northrop Grumman-owned Plants 14 and 15, and to the east by former Northrop Grumman-owned Plant 24 and a private residential neighborhood.
- A separate 4.5-acre parcel of land containing a vehicle service garage and support facilities (Plant 20). This parcel is located on the east side of South Oyster Bay Road, approximately 500 feet north of the main 105-acre parcel (Plant 03).

- A research and engineering building plus support facilities (Plant 05) located in that part of the Northrop Grumman complex south of the Long Island Railroad. Although these buildings are owned by the Navy, they occupy land owned by Northrop Grumman.

The 650-acre Northrop Grumman Bethpage complex is an industrial and administrative campus that, in addition to its Navy mission and related manufacturing and development activities, formerly served as the corporate headquarters of the Northrop Grumman Aerospace Corporation (before the merger that created Northrop Grumman). The campus is bisected by the Long Island Railroad into two tracts: a northern tract containing the two Navy-owned land parcels, several Northrop Grumman-owned plants on privately owned land, and the former corporate offices; and a southern tract that formerly contained a small airfield with a roughly 6,000-foot paved runway, Plant 05, and several additional Northrop Grumman plants. No land within the southern tract is owned by the Navy; although the Navy does own several of the buildings at Plant 05.

Since 1996 Northrop Grumman has sold several company-owned areas within its Bethpage campus to various private interests. For example, former Plant 35 was sold to Briarcliff College and former Plant 111 was sold to Cablevision. Much other Northrop Grumman-owned property is available for sale. Several blocks of land within the former airfield have already been sold by Northrop Grumman to private interests for residential and industrial development, and a road was recently constructed across the airfield to facilitate development of remaining areas. No Navy-owned property within the campus has yet been sold, transferred, or leased to parties other than Northrop Grumman.

The complex is completely surrounded by dense suburban development. It is bounded to the north by Stewart Avenue, to the west by South Oyster Bay Road, and to the south by State Highway 107 (Hicksville-Massapequa Road). Land north and east of the complex is zoned residential for lots of under 10,000-square feet (Town of Oyster Bay, 1993) and comprises neighborhoods of single family homes dating mostly from the 1950s. Land west and south of the complex is zoned light industrial and comprises a dense mixture of small commercial and light industrial establishments. Some of the light industrial development west of South Oyster Bay Road is (or was formerly) owned by Northrop Grumman.

The environmental setting for NWIRP Bethpage is discussed in detail in Section 2 of the Phase I EBS (CF Braun, 1998). That description addressed climate and meteorology, topography, geology, hydrogeology, soils, surface water hydrology, and vegetation and ecology. Hazardous substance and waste management practices of NWIRP Bethpage are described in Section 3 of the Phase I EBS.

#### **1.4 PAST AND PRESENT USES OF THE PROPERTY**

The Navy has used the entire property addressed in this Phase II EBS for industrial purposes since initial development in 1941. Structures include manufacturing facilities such as Buildings 03-01 and 10-01;

industrial support facilities such as warehouses (Plant 17) and an industrial wastewater treatment plant (Building 03-34); grounds maintenance facilities such as Building 03-13; and administrative buildings such as Building 03-01 (Building 03-40).

A series of water pumphouses are located in various places around the property and have been used to distribute groundwater to manufacturing facilities for industrial use. A group of recharge basins is located in the northeastern corner of the Navy-owned property. These basins used to receive stormwater runoff and washdown water collected from floor drains in developed areas of the property. The recharge basins are permitted as Outfall 004 under a State Pollutant Discharge Elimination System (SPDES) issued by the New York State Department of Environmental Conservation (NYSDEC). Northrop Grumman has recently capped with concrete the floor drains that formerly discharged to the recharge basins.

Before 1941 the land had been in agricultural use and supported cropland, forest, and pastures. The only feature surviving from before initial industrial development is a small private cemetery located northeast of the main aircraft manufacturing building (Building 03-01).

## **1.5 PROPOSED PROPERTY REUSE**

The legislation authorizing the transfer of NWIRP Bethpage (PL105-95, Section 2852) designates Nassau County, New York as the recipient. The county has not yet identified specific reuses of the property, but it is expected that the entire property will remain in either light or heavy industrial use. Residential or recreational use is not anticipated. The Navy plans to ensure that the property is cleaned up as necessary to safely accommodate industrial, but not necessarily residential, reuses. A draft environmental impact statement (EIS) was issued, and the required public hearing was held on November 18, 1999.

## **1.6 REPORT ORGANIZATION**

Section 1 of the Phase II EBS report is this introduction. Section 2 summarizes the methodology used to prepare the Phase II EBS. Because the methodology exclusively involved summarizing data from reports and correspondence generated since completion of the Phase I EBS, Section 2 summarizes the principal reports and correspondence sources used. Section 3 summarizes information collected since the Phase I EBS for each area of real property within Plant 03 of NWIRP Bethpage. Sections 4, 5, 6, and 7 summarize information collected since the Phase I EBS for each area of real property within Plants 10, 17, 20, and 05, respectively.

Section 8 summarizes available information concerning the groundwater underlying NWIRP Bethpage (assessed as a single unit, separate from the overlying land surface). The groundwater under all of NWIRP Bethpage and surrounding area is being investigated separately from other environmental



investigation processes at NWIRP Bethpage, as part of a feasibility study being jointly prepared by the Navy and Northrop Grumman. The analyses presented in Chapters 3 through 7 thus consider the environmental condition and potential for reuse of surface areas only, without consideration of groundwater conditions. Section 8 also addresses the potential for activities on adjacent properties to affect the environmental condition of NWIRP Bethpage.

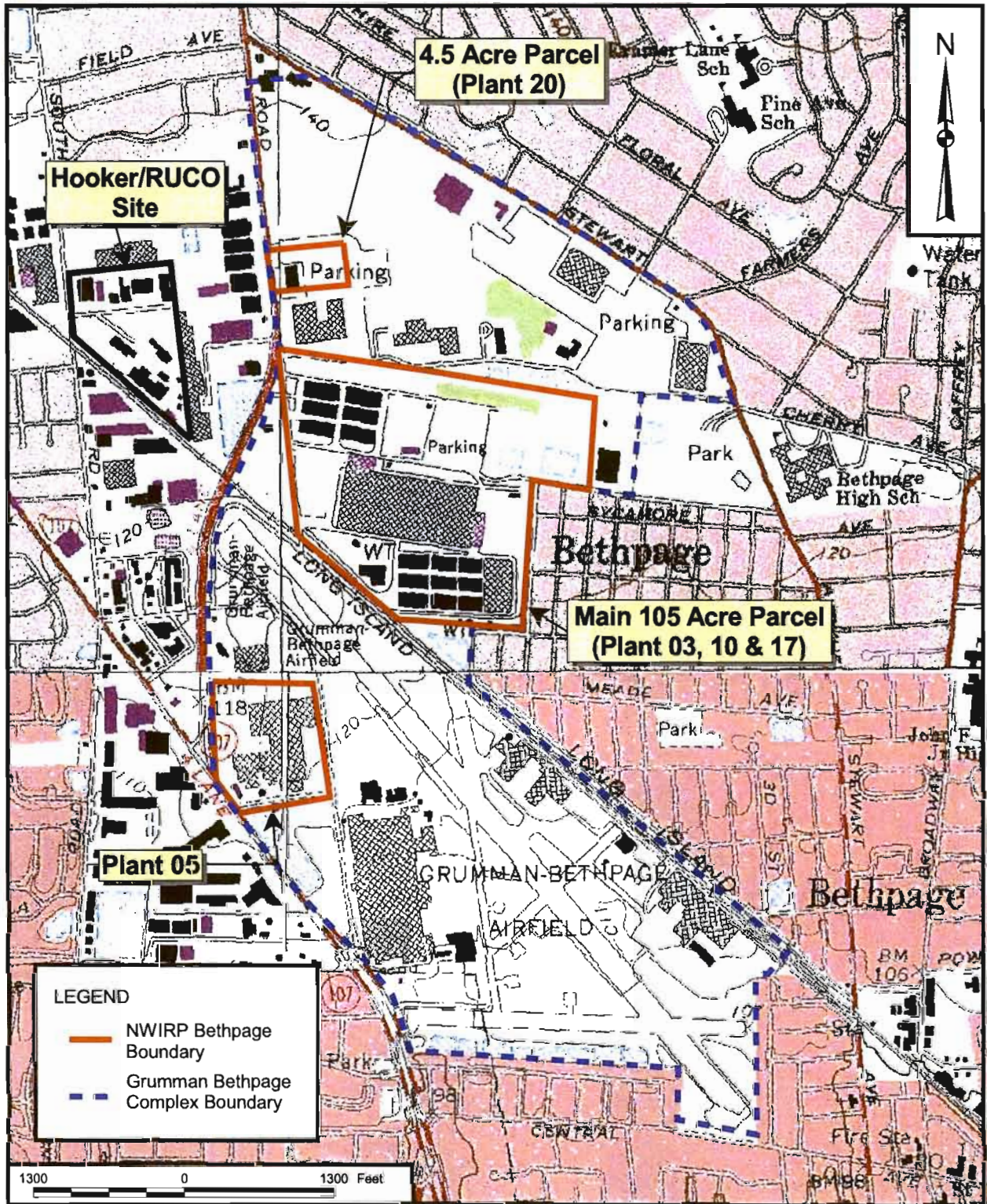
Section 9 summarizes each area of concern (AOC) identified by the Phase I environmental site assessments (ESAs) prepared by Northrop Grumman and how those AOCs were subsequently investigated by the Phase II ESAs. Because the research and visual site inspections for the Phase I ESAs were performed earlier than for the EBS, several AOCs were identified that do not correspond to potential environmental concerns raised by the Phase I EBS. The text of Section 9 demonstrates how environmental issues raised external to the EBS process were investigated and resolved.


Section 10 is a summary of the Phase II EBS, Section 11 is a list of references used in the Phase II EBS, and Section 12 is a list of preparers for the Phase II EBS.

**TABLE 1-1**

**ENVIRONMENTAL CATEGORIES USED TO RATE REAL PROPERTY  
NWIRP, BETHPAGE, NEW YORK**

<b>Rating Category</b>	<b>Map Color</b>	<b>Description</b>
1	White	Areas Where No Storage, Release, Disposal, or Migration of Hazardous Substances or Petroleum Products Has Occurred
2	Blue	Areas Where Only Storage of Hazardous Substances or Petroleum Products Has Occurred
3	Light Green	Areas of Contamination Below Action Levels
4	Dark Green	Areas of Known Contamination Where Remedial or Removal Actions Have Been Taken
5	Yellow	Areas of Known Contamination Where Remedial or Removal Actions Are Underway
6	Red	Areas of Known Contamination Where No Remedial or Removal Actions Have Been Initiated
7	Gray	Areas Requiring Further Investigation



DRAWN BY J. LAMEY		DATE 5/24/02		 Tetra Tech NUS, Inc.	CONTRACT NUMBER N7576		OWNER NO. —		
CHECKED BY —		DATE —			APPROVED BY —		DATE —		
COST/SCHEDULE-AREA —		DATE —			APPROVED BY —		DATE —		
SCALE AS NOTED		SITE LOCATION MAP PHASE II EBS NWIRP BETHPAGE, NEW YORK				DRAWING NO. FIGURE 1-1		REV 0	

P:\GIS\BETHPAGE\_NWIRP\APR\BETHPAGE.APR SITE LOCATION MAP 5/24/02 JAL

## 2.0 PHASE II EBS METHODOLOGY

As noted above, the Phase II EBS resolves issues of potential environmental concern raised in the Phase I EBS by summarizing relevant data collected from various environmental reports and correspondence. Because Northrop Grumman hired consultants to perform a series of detailed environmental investigations throughout NWIRP Bethpage, the Navy could prepare the Phase II EBS without additional sampling or field investigation activities.

The data sources reviewed and used to prepare the Phase II EBS can be classified into four broad categories, as follows:

- Documents prepared before Phase I EBS under the Navy's Installation Restoration (IR) Program. These documents are described briefly below in Section 2.1.
- Phase I ESAs prepared by Northrop Grumman and prepared concurrently to the Phase I EBS. Phase I ESAs are environmental investigation reports designed to identify recognized environmental concerns for real property based on site inspections, interviews, and record reviews. They are procedurally similar to EBSs and thus served as useful EBS reference documents. The Phase I ESAs available for NWIRP Bethpage are summarized below in Section 2.1.
- Phase II ESAs and other environmental investigation reports prepared by Northrop Grumman subsequent to the Phase I EBS. Phase II ESAs report the results of sampling and other activities performed to better characterize recognized environmental concerns identified in Phase I ESAs. They thus also served as useful EBS reference documents. These documents are summarized in Section 2.2.
- Correspondence. Correspondence included letters from Northrop Grumman to the regulatory agencies reporting the results of environmental investigations and letters from Northrop Grumman to the regulatory agencies reporting that specific environmental remediation activities had been completed. Copies of correspondence reviewed as part of the Phase II EBS are provided in Appendix A. Copies of Navy and Northrop Grumman response to NYSDEC comments on the Draft Phase II EBS dated March 1999 are provided in Appendix B.

The Phase II EBS relies on the accuracy of the information presented in the reports, correspondence, and other cited data sources.

- Phase II Environmental Site Assessment for Plant 20 Transportation Maintenance Facility (Radian, 1997i).
- Phase II Site Assessment – Plant 05 (Dvirka and Bartilucci, 1998c).

For each AOC, Northrop Grumman collected soil samples at appropriate locations and depths for analysis for those constituents identified as being of concern in the Phase I ESAs. The analytical results for each constituent were compared against corresponding soil cleanup guidance levels developed by NYSDEC in a technical assistance guidance memorandum (TAGM) (NYSDEC, 1994). If exceedances were noted in the primary round of sampling, Northrop Grumman performed additional sampling to characterize and delineate the contamination. If no exceedances were noted in the primary sampling round or if exceedances were noted in the primary round but not in the subsequent samples then Northrop Grumman concluded that no further action was necessary. Otherwise, Northrop Grumman proceeded to perform appropriate remediation.

Total petroleum hydrocarbons (TPHs) were identified as a constituent class of concern at several AOCs. No TAGM guidance levels are available for TPHs as a whole. If TPHs were detected in primary samples, then secondary sampling was conducted and results for individual organic constituents were compared with guidance levels established by NYSDEC in its Spill Technology and Remediation Series (STARS) Memorandum (NYSDEC, 1992). The STARS Memorandum provides specific guidance regarding known spills and releases of petroleum products.

If exceedances of TAGM and/or STARS guidance values were noted for one or more individual SVOCs, then the concentrations of total carcinogenic polycyclic aromatic hydrocarbons (CaPAHs) in the samples were compared with a TAGM criterion of 10,000 µg/kg. If the concentration fell below this benchmark, then Northrop Grumman concluded that no further action was necessary. Otherwise, Northrop Grumman proceeded with appropriate remediation.

Northrop Grumman's next action for the recharge basins was to hire another consultant, Environmental Resources Management (ERM) Inc., to prepare a new Phase I ESA document to address ongoing issues pertaining to the recharge basins (ERM, 1998a). ERM then prepared a Phase II ESA that reported data from sampling performed in response to issues raised in the revised Phase I ESA (ERM, 1998b).

Environmental concerns raised over uncertain destinations of floor drains are resolved using data in a series of floor drain traces reported in a Drainage Discharge Determination Report prepared by Northrop Grumman for all areas on the 105-acre parcel (H2M, 1998). A similar study was completed by Northrop Grumman for Plant 05 in March 1999. This study revealed several floor drains requiring closure under

Underground Injection Control (UIC) regulations under the jurisdiction of the USEPA and administered by the Nassau County Department of Health (NCDH).

The Phase II EBS also summarizes information from correspondence between Northrop Grumman and environmental regulatory agencies such as NYSDEC and the NCDH. The correspondence, copied in Appendix A, was primarily used to track how Northrop Grumman followed up on recommendations for remedial action made by its Phase II ESAs, its Drainage Discharge Determination Report, and requests by agencies reviewing its reports.



### 3.0 ENVIRONMENTAL INFORMATION SUMMARY FOR PLANT 03

Most of Plant 03, including Building 03-01 and immediately surrounding areas, was addressed in a Phase I ESA and corresponding Phase II ESA completed by Radian for Northrop Grumman in April 1997 and August 1998, respectively (Radian 1997a and 1998a). Some areas northeast of Building 03-01 including the Salvage Storage Area, the permitted Drum Storage Pad (Building 03-37), and Industrial Waste Treatment Facility (Building 03-34) were addressed in separate Phase I and II ESAs completed by Radian for Northrop Grumman in March and September 1997, respectively (Radian 1997b and g). The recharge basins in the northeastern corner of the 105-acre parcel were addressed in separate Phase I and Phase II ESAs completed by ERM for Northrop Grumman in March and April of 1998, respectively. Although Radian had also prepared a Phase I ESA for the recharge basins in 1997 for Northrop Grumman the updated 1998 document supercedes the previous one.

Northrop Grumman also hired a consultant, H2M Group, to prepare a Drainage Discharge Determination for each sink, floor drain, clean out, or other drainage feature in Plant 03 (H2M, 1998). The destinations for each drainage feature were determined using as-built drawings, smoke or dye traces, or other procedures. Northrop Grumman then conducted sampling and other investigations as necessary to determine whether drainage features to uncontrolled destinations had resulted in environmental contamination. Northrop Grumman has performed, or is performing, remediation as necessary to comply with UIC regulations.

The sections to follow summarize the conclusions presented for each area of Plant 03 in the Navy's Phase I EBS and discuss how Northrop Grumman investigated each of those areas in its Phase II ESAs. The sections indicate what conclusions Northrop Grumman drew from its investigations and how those investigations were reported to NYSDEC and other regulatory agencies.

#### 3.1 BUILDING 03-01: WESTERN PART

The Navy's Phase I EBS divided the interior of Building 03-01 into the shop areas shown in Figure 3-1. Each area is discussed individually below. Section 3.1 discusses those areas to the west of an interior brick firewall connecting all of the columns numbered 16, and Section 3.2 discusses those areas to the east of the firewall.

##### 3.1.1 Plant 03 Cafeteria

Phase I EBS Conclusions: The Plant 03 Cafeteria was rated by the Navy in Category 7 because of severely corroded concrete at the former location of a kitchen freezer.



Activity Since Phase I EBS: An elevator in the cafeteria area was identified by Northrop Grumman's Phase I ESA as AOC 37. Soil samples were collected at 2-foot intervals to a depth of 4 feet from under the elevator and analyzed for TPH and PCBs as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. TPH was quantified at a maximum of 7.5 milligrams per kilogram (mg/kg). No exceedances of TAGM criteria were noted for PCBs. Based on the low concentration of TPH, no analysis for STARS constituents was performed. Northrop Grumman concluded that no further action was necessary for AOC 37.

Soils were also sampled from under a Kitchen Valve Box and a Cafeteria Valve Box in this area and analyzed for metals, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). This sampling was conducted independent of the Phase II ESA and was not affiliated with any designated AOC. No exceedances of TAGM criteria were noted. This information was provided to NCDH in a letter dated June 17, 1998.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA and the other results summarized above, the rating is changed to Category 3. The Plant 03 Cafeteria is suitable for transfer without further environmental action. The Federal Government will have to provide the recipient with the results of Northrop Grumman's investigation of AOC 37 and the valve boxes.

### **3.1.2 Heat Treat Area A**

Phase I EBS Conclusions: Heat Treat Area A was rated by the Navy in Category 7 because of the uncertain condition of the concrete bottom of an oil sump located outside of the west wall and the concrete flooring under Tank 971, which was used to clean aircraft parts.

Activity Since Phase I EBS: The oil sump and heat treat process pit (including Tank 971) were identified by Northrop Grumman's Phase I ESA as AOC 4. Concrete and soil samples were collected at 2-foot intervals to a depth of 4 feet below the heat treat process pit and analyzed for metals, polychlorinated biphenyls (PCBs), and TPH as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. The sample locations included soil under the bottom of the oil sump (sample location 03-04-02). No exceedances of TAGM criteria were noted for metals or PCBs. But soil samples from under the sump exhibited TPH concentrations ranging from 14 to 27 mg/kg.

In response to the TPH concentrations, Northrop Grumman collected additional soil samples from under the sump and for analysis for metals, PCBs, and STARS constituents. Again, no exceedances of TAGM criteria were found for the metals or PCBs. The only exceedance of STARS guidance values was for benzo(a)pyrene (70 µg/kg vs a guidance value of 61 µg/kg). However, the total concentration of CaPAHs was less than 10,000 µg/kg. Northrop Grumman concluded that no further action was necessary for

AOC 4. Northrop Grumman reported these results to NYSDEC in a letter dated October 27, 1997. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's conclusions for AOC 4.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA, the rating for Heat Treat Area A is changed to Category 3. Heat Treat Area A is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials formerly handled in Heat Treat Area A and provide the recipient with the results of Northrop Grumman's investigation of AOC 4.

### **3.1.3      Hydraulic Press Area**

Phase I EBS Conclusions: The Hydraulic Press Area was rated by the Navy in Category 7 because of a former exterior drywell shown at the present location of this area in an old drawing and because oily residue prevented a visual inspection of the condition of several equipment pits.

Activity Since Phase I EBS: The drywell was identified by Northrop Grumman's Phase I EBS as Drywell 25, one of several former drywell locations collectively identified by Grumman as AOC 20. Soil samples were collected from the drywell at depths of 10 to 12 feet and 12 to 14 feet below floor level and analyzed for metals and TPHs as part of Northrop Grumman's Phase II ESA. Additional delineation sampling was conducted at dry wells 20-03, 20-04, 20-06, 20-07, 20-08, 20-13, 20-14, 20-22, 20-27, and 20-25. The samples from these locations were analyzed for STARS Table II, PCBs, VOCs, and TPH. Sample locations are shown on Drawing 1 of the Phase II ESA. A slight exceedance of TAGM criteria for selenium was detected in one of the samples. Northrop Grumman concluded that, based on the low magnitude of the exceedance (4.4 mg/kg vs. a guidance value of 3.9 mg/kg) that no further investigation is necessary. Based on the low level of TPH detected in the samples, no analysis for STARS constituents was performed. These findings were reported to NYSDEC in a letter dated March 23, 1998.

The equipment pits in the Hydraulic Press Area (Pits 1 through 5) were identified by Northrop Grumman's Phase I ESA as part of AOC 21 (collectively assigned by Northrop Grumman to all of the machine pits in Building 03-01). Soil samples were collected at 2-foot intervals to a depth of 4 feet below each pit for analysis for TPHs, metals, VOCs, and PCBs as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. TPH was detected in the soil samples, but following the sampling methodology agreed on with NYSDEC for equipment pits in Building 03-01, no subsequent analysis for STARS constituents was performed. Silver was quantified at 3.9 mg/kg in a soil sample (sample 21-03) from under Pit 4. But based on the low magnitude of this quantity, no delineation sampling was performed. No other exceedances of TAGM criteria were noted. Northrop Grumman concluded in the Phase II ESA that no further action was necessary for any of these pits. These findings

were reported to NYSDEC in letters dated October 30, 1997 and March 23, 1998. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's conclusions for AOC 21 and Drywell 25.

Pit 1, a freezer pit and also part of AOC 21, was also addressed in a separate letter to NYSDEC dated December 22, 1997. That letter reported that Northrop Grumman removed the upper layer of concrete from Pit 1 and found propylene glycol (a coolant) as free product on the bottom layer of concrete. Northrop Grumman removed it and steam cleaned the remaining concrete layer.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA, the rating for the Hydraulic Press Area is changed to Category 3. The Hydraulic Press Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials formerly handled in Hydraulic Press Area and provide the recipient with the results of Northrop Grumman's investigation of Drywell 25, the equipment pits, and the freezer pit. The recipient will also have to be notified concerning the former presence of propylene glycol in the pit before steam cleaning.

#### **3.1.4 Heat Treat Area B**

Phase I EBS Conclusions: Heat Treat Area B was rated by the Navy in Category 7 because the condition of several sumps in the heat treat process tank pits in this area could not be visually evaluated because of standing liquids. The rating also reflected uncertainty over the destination of a floor drain in a trench in the pit under Tank 1273.

Activity Since Phase I EBS: The pit and sump under Tank 1272 (a PCE/TCE degreaser) and the pit under Tank 1251 (a vapor degreaser tank) were identified by Northrop Grumman's Phase I EBS as AOC 5. Soil samples were collected at various intervals below the pits for both tanks for analysis for VOCs (principally TCE) and TPHs as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. No VOCs or TPHs were detected in the samples from under the pit for Tank 1251. However, TPH was quantified in a range from 3.8 to 12 mg/kg in samples from under the pit for Tank 1272. In response, additional samples were collected and analyzed for STARS constituents. No exceedances of STARS guidance values were noted. Northrop Grumman's Phase II ESA also reported that no exceedances of TAGM criteria were found in soil samples collected from under an area of glycol quench tanks or from under two sumps on the east side of Heat Treat Area B.

The destination for every floor drain in Building 03-01 was investigated by Northrop Grumman as part of a comprehensive Drainage Discharge Determination completed in February 1998 (H2M, 1998). The trench drain under Tank 1273 was reported to discharge to a concrete ejector pit near Column D0.3. This pit was reported to be in good structural condition and did not require further action.

Northrop Grumman's Phase I ESA also identified a paint booth in the northeast corner of Heat Treat Area B as part of AOC 1 (Paint Booth 1) and the former locations of two exterior drywells as part of AOC 20 (Drywells 23 and 24). Soil samples were collected at 2-foot intervals to a depth of 4 feet from under the former paint booth location and analyzed for metals, VOCs, and SVOCs as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. Slight exceedances of TAGM criteria were noted for copper, chromium, and zinc, but Northrop Grumman concluded that the distribution of these exceedances in subsequently collected delineation samples did not indicate a potential for contamination from the paint booth. No exceedances of TAGM criteria were noted for VOCs. Exceedances of TAGM criteria were noted for several individual SVOCs, but the concentration of total CaPAHs was less than 10,000 µg/kg. Thus, Northrop Grumman concluded that no further action was necessary. Northrop Grumman reported these findings to NYSDEC in a letter dated March 23, 1998. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's conclusions for Drywells 23 and 24.

Northrop Grumman analyzed soil samples from the drywells for metals, TPHs, VOCs, and SVOCs. Sample locations are shown on Drawing 1 of the Phase II ESA. Zinc was detected in excess of TAGM criteria in samples from both drywells, but Northrop Grumman did not view that finding with concern because zinc is not regulated by the State of New York as a hazardous constituent. No exceedances of TAGM criteria were noted for VOCs or other metals. No exceedances of TAGM criteria for SVOCs were noted in the samples from Drywell 23. However, exceedances of TAGM criteria were noted for several SVOCs in samples from Drywell 24, and the concentration of total CaPAHs exceeded 10,000 µg/kg. Northrop Grumman concluded that excavation of the drywell would be necessary. A letter dated May 21, 1998 to NYSDEC stated that Northrop Grumman excavated approximately 16 feet of soil from under the former location of Drywell 24 and endpoint soil sample data were satisfactory.

Final Conclusions: Based on the successful remediation of contaminated soil under the former location of Drywell 24, the rating for Heat Treat Area B is changed to Category 4. Heat Treat Area B is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials formerly handled in Heat Treat Area B and provide the recipient with the results of Northrop Grumman's investigation of AOC 5, Paint Booth 1, and Drywells 23 and 24. It will also have to notify the recipient of the completed excavation of contaminated soils from Drywell 24.

### **3.1.5 Arts and Engraving Area**

Phase I EBS Conclusions: The Arts and Engraving Area was rated by the Navy in Category 2. The report noted several process tanks used to store small quantities of hazardous chemicals associated with printed circuit boards and arts and engraving operations. Although small spills may have taken place, the

report concluded that no available evidence of floor deterioration existed that could have allowed the spilled chemicals to contaminate the underlying soil or groundwater.

Activity Since Phase I EBS: In contrast to the Navy's Phase I EBS, Northrop Grumman's Phase I ESA concluded that the use of several chemical solvents in the Arts and Engraving Area represented a potential environmental concern and identified the area as AOC 15. Soil samples were collected at 2-foot intervals to a depth of 4 feet below selected floor locations in this area and analyzed for metals and VOCs as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. The only exceedance of TAGM criteria was for chromium, which was detected at a concentration of 273 mg/kg (TAGM criterion of 50 mg/kg) in a soil sample from under the floor near Column J4. But the sample was reanalyzed and found to have chromium at a concentration of only 4.3 mg/kg. Thus, Northrop Grumman concluded that no further action was necessary for AOC 15. Northrop Grumman reported these findings to NYSDEC in a letter dated March 23, 1998. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's conclusions for AOC 15.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA, the rating for the Arts and Engraving Area is changed to Category 3. The Arts and Engraving Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient concerning materials formerly handled in the Arts and Engraving Area and provide the recipient with the Northrop Grumman's results of the investigation of AOC 15.

### **3.1.6      Heat Oven Area**

Phase I EBS Conclusions: No potential environmental concerns were identified by the Navy for this area. Available evidence suggested that only dry manufacturing activities were conducted in this area. The area was rated in Category 1.

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA identified a former waste accumulation area near Column C7 as part of AOC 33, which collectively addresses former waste accumulation areas throughout Building 03-01. Soil samples were collected at 2-foot intervals to a depth of 4 feet below this location and analyzed for metals, VOCs, SVOCs, and TPH as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. TPH was not detected, and no exceedances of TAGM criteria were noted for VOCs, SVOCs, or metals. Northrop Grumman concluded that no further action was necessary for that location.

Northrop Grumman also sampled soils beneath the floor near Column F3 as part of an effort in the Phase II ESA to sample several representative random locations beneath the overall floor of Building 03-01. These random sample locations were collectively designated as AOC 36, although none

corresponded to specific areas of concern. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the floor near Column F3 and analyzed the samples for metals, VOCs, SVOCs, TPH, PCBs, and cyanide. Sample locations are shown on Drawing 1 of the Phase II ESA. TPH was not detected in the samples. A slight zinc exceedance (60.9 mg/kg vs. a TAGM criterion of 50 mg/kg) was found. Several additional samples were subsequently collected and analyzed for zinc, and the highest concentration found was 56.8 mg/kg. No exceedances of TAGM criteria were noted for the other analytes. Based on the low level of the zinc detections and, despite exceeding TAGM criteria, Northrop Grumman concluded in the Phase II ESA that no further action was necessary. These results were reported to NYSDEC in a letter dated March 23, 1998. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's conclusions for AOC 36.

Note that the excavation to remediate the process tank pit in the Old Alodine Room (see Section 3.1.8) extended into a area of approximately 400 square feet at Column D7. This excavation was directly associated with the remediation of the alodine pit and is reflected in the Category 4 rating for the Old Alodine/Plating/Paint Booth Area.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA, the rating for the Heat Oven Area is changed to Category 3. As noted above, the 400-square foot excavated area at Column D7 directly associated with remediation of part of the Old Alodine/Plating/Paint Booth Area and is reflected in the rating for that area and not the rating for the Heat Oven Area. The Heat Oven Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the former waste accumulation area and provide the recipient with the results of Northrop Grumman's investigation of AOCs 33 and 36.

### **3.1.7 Facilities Maintenance Area**

Phase I EBS Conclusions: The Facilities Maintenance Area was rated by the Navy in Category 7 because of the lack of documentation on a 4,000-gallon TCE process tank (Tank 11) and 1,500-gallon coolant sump (Tank 322). The rating also reflected an undocumented underground storage tank (UST) in the lawn on the south side of the building, just exterior to the Facilities Maintenance Area.

Activity Since Phase I EBS: Northrop Grumman's Phase II ESA identified the former TCE process tank (Tank 11) and its associated coolant sump (Tank 322) as part of AOC 32, which collectively addresses several PCE and TCE storage tanks within and surrounding Building 03-01. Soil samples were collected at various depths beneath the tanks and analyzed for VOCs, including PCE and TCE, as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. No exceedances of TAGM criteria were found, and Northrop Grumman concluded that no further action was necessary.

Northrop Grumman's Phase II ESA also identified three USTs in the area immediately south of Building 03-01 at the Facilities Maintenance Area as part of AOC 22. Soil samples were collected from below the former UST locations and analyzed for TPHs and VOCs. Sample locations are shown on Drawing 1 of the Phase II ESA. TPH concentrations in the samples ranged between 73 and 11,000 mg/kg. Additional samples were collected and analyzed for STARS constituents, and exceedances of STARS guidance values were found for several constituents. Additionally, the concentration of total CaPAHs exceeded 10,000 µg/kg in one sample. Since this area was a result of former operation, Northrop Grumman requested that the Navy continue with investigating and remediating (if required) this area under the IR Program. The Navy agreed and subsequent investigations by the Navy demonstrated that significant contamination was not present close to the ground surface although petroleum contamination remained at depth. These results have been forwarded to NYSDEC and this property is being retained by the Navy.

Northrop Grumman's Phase I EBS also identified the small drum storage room in the western part of the Facilities Maintenance Area (southwest of Column M12) as AOC 24. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the floor of this room and below an exterior area just outside the south wall of this room as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. The samples were analyzed for metals, TPHs, VOCs, SVOCs, and PCBs. The only exceedance of TAGM criteria was a slight exceedance for zinc. Because of TPH detections in some samples, Northrop Grumman collected additional samples for STARS constituent analysis. No exceedances of STARS guidance values were found in soil samples collected from interior locations, but STARS exceedances for several constituents were found in exterior samples. Additionally, the concentration of total CaPAHs in certain exterior samples exceeded 10,000 µg/kg. These findings were reported to NYSDEC in a letter dated March 23, 1998. Northrop Grumman subsequently completed excavation of soil from under this area to address NYSDEC concerns. The excavated area which measured approximately 500 square feet, was located entirely outside of the building. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's remediation of AOC 24 and stated that no further action is necessary.

Northrop Grumman also investigated two additional areas. These areas included a sump pit located near Column L13 that accepted effluent from an oil/water separator before discharging to the sewer system (identified in the Phase I ESA as AOC 38) and a water blowdown pit near Column N15 (identified in the Phase I ESA as AOC 39). Soil samples were collected from beneath each location and analyzed for metals, PCBs, TPHs, and STARS constituents (AOC 38) or metals and STARS constituents (AOC 39). Sample locations are shown on Drawing 1 of the Phase II ESA. No exceedances of TAGM criteria or STARS guidance values were found, and Northrop Grumman concluded that no further action was

necessary for either AOC. Northrop Grumman reported these findings to NYSDEC in a letter dated February 10, 1998. The NYSDEC-DSHW issued a letter dated February 24, 1998 approving the excavation as complete for AOCs 38 and 29.

In response to UIC concerns identified in the Drainage Discharge Determination report completed in February 1998, Northrop Grumman recently completed excavations of contaminated soil beneath two floor drains associated with Air Compressors #1 and #3, respectively. A letter dated June 8, 1998 to NCDH stated that Northrop Grumman excavated to a depth of 4 feet below grade under the floor drain associated with Compressor #3 and reported no exceedances in endpoint samples. A letter dated May 21, 1998 to NCDH stated that Northrop Grumman excavated approximately 0.02 cubic yards of soil from under Compressor Drain #1 and that endpoint samples were satisfactory. Based on the endpoint sample results, Northrop Grumman concluded that no further excavation was necessary at Air Compressors #1 and #3. NCDH concurred with Northrop Grumman's conclusion of no further excavation in letters dated June 1, 1998 and June 15, 1998, respectively.

An overlooked slop sink drain near Column NN03 was identified in September 1998 as requiring remediation to comply with UIC regulations. Soil under this drain underwent three rounds of remediation for mercury contamination to a depth of 25 feet. A letter dated June 29, 1999 from D. Courtney of the USEPA to J. Cofmon of Northrop Grumman states that the slop sink drain has been remediated and closed to the satisfaction of the USEPA.

Final Conclusions: The rating for the interior of the Facilities Maintenance Area is changed to Category 4 and is suitable for transfer without further action. The government will have to notify the recipient as to the materials known to have been handled in this area and provide the results of Northrop Grumman's investigation of AOCs 22, 24, 32, and 38 and of the remediation of AOC 24, the drywells, and the closure of the slop sink drain.

### **3.1.8 Old Alodine/Plating/Paint Booth Area**

Phase I EBS Conclusions: Each of these three closely positioned manufacturing process areas were rated by the Navy in Category 7. For the old alodine area, the rating reflected the severely corroded concrete in the alodine process tank pit. For the plating room, the rating was based on visual observation of severely corroded concrete in the tank housing the plating process tanks. For the paint booth room, the rating reflected observed floor fractures and the fact that trenches and sumps associated with the paint booths contained dark liquids and thus could not be inspected for cracks or corrosion. A floor drain in the paint booth room with an uncertain destination was also identified as a potential environmental concern.



Activity Since Phase I EBS: The process tank pit in the old alodine room was identified by Northrop Grumman's Phase I EBS as AOC 3. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the pit and analyzed for metals as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. Substantial chromium exceedances were noted, and concentrations as high as 15,000 mg/kg were found in subsequent samples collected to delineate the contamination. Based on these results, Northrop Grumman concluded that soils under the pit would have to be excavated to a depth of approximately 30 feet. A letter dated February 2, 1998 from Northrop Grumman to NYSDEC stated that approximately 2,700 cubic yards of chromium-affected soil was excavated to a depth of approximately 29 feet below the pit. Although some of the endpoint soil samples contained chromium exceedances, toxic characteristic leachate procedure (TCLP) extraction data suggested that chromium does not leach at levels exceeding regulatory limits from the soil remaining at the edge's excavation. The NYSDEC issued a letter dated February 24, 1998 specifically approving of the filling of the excavated pit, formally closing out the remediation.

Northrop Grumman has properly disposed of the contaminated concrete and soil removed from this area, and the excavation hole has been filled with clean soil and covered with new concrete. The new concrete will minimize the potential for any further migration of chromium from this area. Northrop Grumman noted in the Phase II ESA that any additional excavation in this area could jeopardize the structural integrity of adjoining walls.

The plating process tank pit was identified by Northrop Grumman's Phase I ESA as AOC 2. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the pit and analyzed for metals, VOCs, and cyanide as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. Several exceedances of TAGM criteria were found for metals. No exceedances of TAGM criteria were noted for the other constituents. Based on the results of subsequent sampling to delineate the metal contamination, Northrop Grumman concluded that soils would have to be excavated to a depth ranging from 8 to 14 feet. A letter dated April 29, 1998 from Northrop Grumman to NYSDEC stated that contaminated concrete and soil was excavated to a depth of approximately 14 feet below the pit. The only exceedance of TAGM criteria in endpoint samples was a minor chromium exceedance in one sidewall soil sample, which was concluded not to represent a significant risk. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's remediation of AOC 2 and stated that no further action was necessary.

Northrop Grumman's Phase I ESA identified all known paint booth locations throughout Building 03-01 collectively as AOC 1. The paint booth locations in the subject room were designated as Paint Booths 2, 3, 4, 5, 6, 7, and 8. Soil samples were collected from under each former paint booth location and analyzed for metals, VOCs, and SVOCs as part of Northrop Grumman's Phase II ESA. Sample locations

are shown on Drawing 1 of the Phase II ESA. No exceedances of applicable NYSDEC criteria were noted for any analytes in samples collected from under the locations of Paint Booths 2, 3, and 4. Although exceedances of the TAGM criterion for benzo(a)pyrene were noted in soil samples collected from under the location of Paint Booth 7, the concentration of total CaPAHs was less than 10,000 µg/kg. A slight exceedance of the TAGM criterion for selenium from Paint Booth 7 was also noted. But Northrop Grumman concluded in the Phase II ESA that no further action was necessary regarding Paint Booth 7 or Paint Booths 2, 3, and 4.

However, several exceedances of TAGM criteria were noted for soil samples collected under the former locations of Paint Booths 5, 6, and 8; and Northrop Grumman concluded that shallow soils would have to be excavated from under the floor at these locations. A letter dated April 1, 1998 from Northrop Grumman to NYSDEC stated that approximately 4 feet of soil was excavated from under the former locations of Paint Booths 5 and 6. Another letter dated May 21, 1998 from Northrop Grumman to NYSDEC stated that soil was excavated to a depth of approximately 6 feet below the former location of Paint Booth 8. Minor exceedances of TAGM criteria were noted in endpoint soil samples but do not represent a potential risk. A letter dated May 13, 1998 from NYSDEC accepted Northrop Grumman's remediation of Paint Booths 5 and 6, and a letter dated June 23, 1998 accepted Northrop Grumman's remediation of Paint Booth 8. The letters indicated that no further action was needed for these locations.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA and the remedial actions completed by Northrop Grumman, the rating for the Old Alodine/Plating/Paint Booth Area is changed to Category 4. No sampling was performed to address the floor cracks in the paint booth room. However, the soil sampling conducted under the former paint booth locations, including the endpoint soil sampling conducted following the remedial soil excavations at several of the paint booth locations, would be expected to detect any additional significant plumes of contamination originating from the floor cracks in this small room.

The Old Alodine/Plating/Paint Booth Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials handled in each room in this area and provide the recipient with the results of Northrop Grumman's investigation of AOC 2, AOC 3, and Paint Booths 2 through 8 (part of AOC 1). It will also have to notify the recipient concerning the remedial actions performed by Northrop Grumman in this area.

### **3.1.9 Machining Area West of Wall 16**

Phase I EBS Conclusions: This machining area was rated by the Navy in Category 7 because of the possibility of unidentified historical pits that may have accumulated oil from the floor. Existing pits were in good structural condition and did not represent potential environmental concerns.

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA included all machining pits in this area (including Pits 6, 6A, 7, 8, 9, and 10) as part of AOC 21, which collectively includes all machining pits of concern in Building 03-01. Soil samples were collected at 2-foot intervals to a depth of 4 feet below each pit for analysis for TPHs, metals, VOCs, and PCBs as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. TPH was not detected in the samples collected to evaluate Pits 7, 8, or 9. TPH was detected at low concentrations in soil samples collected to evaluate Pits 6, 6A, and 10. Based upon an agreed-upon sampling methodology approved by NYSDEC, no analysis for STARS constituents was performed. No exceedances of TAGM criteria were noted for the other analytes. Northrop Grumman concluded that no further action was necessary for any pits in this area. The findings were reported to NYSDEC in letters dated August 29 and October 30, 1997. NYSDEC-DSHM approved no further action for the machining pits in letters dated October 16, 1997, October 27, 1997, November 25, 1997, December 24, 1997, February 24, 1998, and June 23, 1998.

The machine shop floors in Building 03-01, including those west of Wall 16, were collectively identified by Northrop Grumman's Phase I ESA as AOC 16. They were investigated collectively by Northrop Grumman following methodology in a letter from NYSDEC dated July 24, 1997. Constituents investigated included TPHs, metals, VOCs, and PCBs. Sample locations are shown on Drawing 1 of the Phase II ESA. TPH was detected in soil samples collected from under nine areas of machine shop floor in Building 03-01, but no exceedances of STARS guidance values were found in that soil sample from AOC 16 with the highest TPH concentration. Based on that finding, the Phase II ESA concluded that none of the machine shop floors represented a potential concern with respect to organic constituents. A slight chromium exceedance was detected in one sample but no further action was recommended based on subsequent delineation sampling results. A zinc exceedance as high as 308 mg/kg was detected in one of the samples, but Northrop Grumman concluded that no further action was necessary because zinc is not regulated as a hazardous substance by New York State. No exceedances of TAGM criteria were noted for the other analytes. Northrop Grumman concluded in the Phase II ESA that no further action was necessary regarding the floors in this area.

Northrop Grumman's Phase I ESA also identified the historical locations of two paint booths formerly located in part of this area as part of AOC 1. One location is near Column H14 and the other is near Column H15. Soil samples were collected at 2-foot intervals to a depth of 4 feet below each paint booth for analysis for metals, VOCs, and SVOCs. Sample locations are shown on Drawing 1 of the Phase II ESA. No exceedances of TAGM criteria were noted, and Northrop Grumman concluded that no further action was necessary for either location.

Northrop Grumman's Phase I ESA identified the former location of a router room, in the northern part of the Heat Oven Area, as AOC 18 because of possible releases of solvents and petroleum products to the floor during routing operations and because of old drawings that showed a former degreasing pit and tank in this area. Soil samples were collected at 2-foot intervals to a depth of 4 feet beneath the former location of a TCE vapor degreaser and analyzed for VOCs as part of Northrop Grumman's Phase II ESA. Soil samples were also collected at 2-foot intervals from 10 to 14 feet beneath the former location of a degreaser pit and analyzed for VOCs and TPH. Sample locations are shown on Drawing 1 of the Phase II ESA. TPH was not detected in the samples, and no exceedances of TAGM criteria were noted for VOCs. Northrop Grumman concluded that no further action was necessary for AOC 18.

Final Conclusions: Based on Navy review of the findings of Northrop Grumman's Phase II ESA, the rating for the Machining Area West of Wall 16 is changed to Category 3. The sampling of four existing pit locations, scattered widely over the entire area, provides a reasonably reliable inspection for possible plumes originating from undocumented, unmapped pit locations. Any significant plumes would probably have been detected in these samples.

The Machining Area West of Wall 16 is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in the area and provide the recipient with the results of Northrop Grumman's investigation of AOC 16, AOC 18, and Pits 6 through 10 (part of AOC 21).

### **3.2 BUILDING 03-01: EASTERN PART**

As noted in Section 3.1, the Navy's Phase I EBS divided the interior of Building 03-01 into the areas shown in Figure 3-1. Section 3.1 (above) discusses those areas to the west of the firewall connecting all of the columns numbered 16, and the following section (Section 3.2) discusses those areas to the east of the firewall.

#### **3.2.1 Shipping and Receiving Area**

Phase I EBS Conclusions: The Shipping and Receiving Area was rated by the Navy in Category 7 because of cracks observed in the floor of a room formerly used to store polyethylene glycol.

Activity Since Phase I EBS: The former use of polyethylene glycol in this area was not identified as a potential environmental concern by Northrop Grumman, which did not analyze any soil samples from the area for glycols. However, the Navy, upon further consideration of the minor character of the floor cracks, has subsequently concluded that soil sampling under the cracks to analyze for glycols was not necessary.

Northrop Grumman did collect, as part of the Phase II ESA, soil samples at 2-foot intervals to a depth of 4 feet under a location in this area near Column NN25 and analyzed the samples for metals, VOCs, TPHs, and PCBs. This sample location was collected as one of several locations in machine shops (or ancillary to machine shops) as part of the investigation of AOC 16 (stained floors in machine shops) (see Drawing 1 of the Phase II ESA). The only exceedance noted was for zinc (594 mg/kg versus a TAGM guidance value of 50 mg/kg), and Northrop Grumman concluded that no further investigation was necessary because zinc is not regulated as a hazardous substance by New York State.

A drywell located at the edge of the loading dock for this area was identified as a concern by the Drainage Discharge Report and was remediated under the County UIC Program. A letter dated June 25, 1998 to NCDH stated that the drywell, labeled as Drywell 34-07, was excavated from 10 to 28 feet below grade. Although PCBs were detected in endpoint samples, the letter stated that the remaining PCBs do not pose a significant risk to human health or the environment. However, the U.S. Environmental Protection Agency (USEPA) subsequently sent a letter dated August 4, 1998 that expressed concern over the remaining PCB contamination in the drywell and requested additional remediation. Northrop Grumman plans to transfer the proposed remediation to the Navy's IR program.

Final Conclusions: The rating for the Shipping and Receiving Area is changed to Category 3 in response to Northrop Grumman's soil sample results. This area is suitable for transfer without further environmental action. The government will have to notify the recipient about the investigation of AOC 16, as it pertains to this area.

The exterior area containing Drywell 34-07 has been rated in Category 5 and will not be suitable for transfer until issues pertaining to the drywell are resolved to the satisfaction of USEPA, in compliance with UIC regulations. The Federal Government will have to notify the recipient about the materials known to have been stored and handled in the area (including polyethylene glycol) and will have to provide the recipient with the results of Northrop Grumman's investigation of and the drywell. It will also have to notify the recipient about whatever remediation is ultimately performed at the drywell.

### **3.2.2 Alodine/Sulfuric Acid Anodize Area**

Phase I EBS Conclusions: The Alodine/Sulfuric Acid Anodize Area was rated in Category 2. Although this area contains a process tank pit, it was of relatively new construction (mid 1980s) and displayed no cracks or concrete corrosion. No pathways were apparent by which hazardous liquids spilled into the pit could have contacted underlying soils.

Activity Since Phase I EBS: In contrast to the Navy's Phase I EBS, Northrop Grumman's Phase I ESA identified the process pit as an AOC (AOC 11). Concrete and soil samples were collected from the pit

and analyzed for metals as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. Slight exceedances of TAGM criteria for beryllium and zinc were detected in the concrete sample, and a minor exceedance of TAGM criteria for zinc was detected in the underlying soil samples. But Northrop Grumman concluded that no further action was necessary because the zinc levels were within the range of Eastern United States background levels. Northrop Grumman reported these findings to NYSDEC in a letter dated August 14, 1997, and NYSDEC granted approval to fill the pit in a letter dated August 22, 1997. The pit has since been filled with clean soil and covered by fresh concrete.

Northrop Grumman's Phase I ESA also identified an area immediately north of the pit (between Columns MM32 and MM34) as one of 27 waste accumulation areas (collectively identified as AOC 33). Soil samples were collected at 2-foot intervals to a depth of 4 feet below this area (Waste Accumulation Area 25) for analysis for VOCs, metals, SVOCs, and TPHs as part of Northrop Grumman's Phase II ESA. TPH was detected at concentrations of 15 and 24 mg/kg, and exceedances of TAGM criteria were found for several SVOCs (chrysene, benzo(a)pyrene, and benzo(a)anthracene). But the total concentration of CaPAHs in each delineation sample was less than 10,000 µg/kg. No exceedances were noted for other constituents. Northrop Grumman thus concluded that no further action was necessary. These findings were reported to NYSDEC in a letter dated March 23, 1998. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's conclusions for AOC 33 and Waste Accumulation Area 25.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA, the rating for the Alodine/Sulfuric Acid Anodize Area is changed to Category 3. The Navy's conclusion of no potential environmental concern in this area, as drawn by the Phase I EBS, has been verified by Northrop Grumman's findings in the Phase II ESA. Although analytes were less than action levels, a rating of Category 3 is more appropriate than Category 2. The Alodine/Sulfuric Acid Anodize Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in the area and provide the recipient with the results of Northrop Grumman's investigation of AOCs 11 and 33-25.

### **3.2.3 Former Autoclave Area**

Phase I EBS Conclusions: The Former Autoclave Area was rated in Category 7 because of floor cracks and a history of storing drums of hazardous substances in this area. An exterior secondary containment system, located south of the Former Autoclave Area, that housed waste holding tanks associated with the Alodine/Sulfuric Acid Anodize process system was rated in Category 3.

Activity Since Phase I EBS: The Former Autoclave Area was identified by Northrop Grumman's Phase I ESA as AOC 34. The primary rationale for the classification was the use in the autoclaves of a PCB-

containing oil as a heat transfer fluid. Soil samples were collected at 2-foot intervals to a depth of 4 feet below this area and analyzed for PCBs and TPHs as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. Several concrete samples from this area exhibited PCB concentrations up to 2,100 mg/kg, and Northrop Grumman concluded that concrete from this area would have to be excavated for offsite disposal. Northrop Grumman subsequently excavated and disposed of the contaminated concrete. NYSDEC issued a letter dated June 23, 1998 that accepted Northrop Grumman's remediation of AOC 34 and stated that no further action was necessary.

Northrop Grumman investigated the exterior waste holding tanks in the Phase II ESA as part of AOC 11. Northrop Grumman collected concrete and soil samples at 2-foot intervals to a depth of 4 feet from the bottom of the secondary containment structure for analysis for metals. Sample locations are shown on Drawing 1 of the Phase II ESA. Slight exceedances of TAGM criteria for beryllium, nickel, and zinc were noted in the concrete sample, and a slight exceedance of the TAGM criterion for zinc was noted in the underlying soil samples. Although the zinc detections were within the range of Eastern United States background levels, Northrop Grumman concluded that no further action was necessary. These findings were reported by Northrop Grumman to NYSDEC in a letter dated August 14, 1997. NYSDEC granted approval to demolish and fill the secondary containment structure in a letter dated August 22, 1997. Northrop Grumman has subsequently completed that action.

Final Conclusions: Based on Navy review of Northrop Grumman's Phase II ESA and the other investigations and remedial action performed by Northrop Grumman, as summarized above, the rating for the Former Autoclave Area is changed to Category 4. The rating reflects the successful removal of contaminated concrete. The rating for the exterior waste holding tanks remains Category 3. Both areas are suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in those areas and provide the recipient with the results of Northrop Grumman's investigation of AOCs 34 and 11.

#### **3.2.4 Honeycomb Pretreatment Area**

Phase I EBS Conclusions: The Honeycomb Pretreatment Area, which ceased operations in 1983 and was empty when inspected in May 1997 for the Phase I EBS, was rated in Category 7 because soil gas data showed potential subsurface soil contamination in documents produced under the Navy's IR Program.

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA identified the Honeycomb Pretreatment Area as AOC 13, based on concerns over the data generated under the IR Program. Soil samples were collected at various depths beneath this area and analyzed for metals and VOCs as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. Exceedances

of TAGM criteria for chromium were identified. Exceedances were noted as deep as 8 feet below the floor samples collected to delineate the plume. Northrop Grumman concluded that soils would have to be excavated to a depth of 12 feet. A letter dated April 14, 1998 to NYSDEC stated that Northrop Grumman excavated approximately 12 feet of soil from this area and endpoint soil samples were satisfactory. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's remediation of AOC 13 and stated that no further action was necessary.

Final Conclusions: Based on Navy review of Northrop Grumman's Phase II ESA and other investigations and remedial actions performed by Northrop Grumman, as summarized above, the rating for the Honeycomb Pretreatment Area is changed to Category 4. The rating reflects the successful excavation of contaminated soils from under the area. The Honeycomb Pretreatment Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in this area when the Honeycomb Pretreatment System was still active and provide the recipient with the results of Northrop Grumman's investigation of AOC 13. The Federal Government will also have to give the recipient the results of the Navy's investigation of this area completed under the IR Program.

### **3.2.5 Chromic Acid Anodize Area**

Phase I EBS Conclusions: The Chromic Acid Anodize Area was rated in Category 7 because cracks, stains, and concrete corrosion were observed in a pit containing the chromic acid anodize process tanks and a pit housing an associated ion exchange system.

Activity Since Phase I EBS: The process tank pit and the secondary containment structure that housed the associated exterior waste holding tanks were identified by Northrop Grumman's Phase I ESA as AOC 10. Soil and concrete samples were collected from the bottom of the pit and analyzed for metals as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. Chromium concentrations exceeding TAGM criteria were found in the concrete samples, but no exceedances were found in the soil samples. Because the concrete appeared not to be releasing chromium to the underlying soil, Northrop Grumman concluded that excavation of the soil was not necessary. These findings were reported by Northrop Grumman to NYSDEC in a letter dated November 25, 1998. Northrop Grumman has filled the pit with clean soil.

Regarding the exterior waste holding tanks (Tanks 1150, 1151, and 1152), also part of AOC 10, concrete and soil samples were collected at 2-foot intervals to a depth of 4 feet from under the secondary containment structure and analyzed for metals. Sample locations are shown on Drawing 1 of the Phase II ESA. Exceedances of TAGM criteria were detected for beryllium, nickel, and zinc in the concrete sample, but only one exceedance, zinc, was detected in the underlying soil samples. Although the zinc



exceedance was within the range of Eastern United States background levels, Northrop Grumman concluded that soil excavation was not necessary.

Northrop Grumman's Phase I ESA identified the exterior PCE/TCE waste holding tanks (Tanks 1271 and 1207) as AOC 32. Soil samples were collected at 2-foot intervals to a depth of 4 feet from under the secondary containment structure and analyzed for VOCs as part of Northrop Grumman's Phase II ESA. No exceedances of TAGM criteria were found. These findings were reported by Northrop Grumman to NYSDEC in a letter dated August 14, 1997, which requested approval to demolish the subject's secondary containment structures. Northrop Grumman has removed the structures.

To investigate the former location of the ion exchange system, also part of AOC 10, Northrop Grumman collected concrete and soil samples from the ion exchange pit for analysis for metals and STARS constituents. Sample locations are shown on Drawing 1 of the Phase II ESA. No exceedances of STARS guidance values were noted. A slight exceedance of zinc was noted in the concrete sample, and a slight exceedance of beryllium was noted in one of the soil samples (collected from 0 to 2-foot interval below ground surface [bgs]). Although both concentrations were within the range of Eastern United States background levels, Northrop Grumman concluded that no further action was necessary. These findings were reported by Northrop Grumman to NYSDEC in a letter dated October 27, 1997.

In response to UIC concerns identified in the Drainage Discharge Determination report completed in February 1998, Northrop Grumman excavated soil to a depth of 5 feet under a grease trap near Column GG42. A letter to NCDH dated May 21, 1998 stated that slight exceedances of TAGM criteria for certain SVOCs were noted in endpoint soil samples, but requested concurrence that no further excavation was necessary. The letter stated that additional excavation at this location could undermine the structural integrity of the building. NCDH concurred with Northrop Grumman's decision of no further excavation in a letter dated June 1, 1998 from NCDH to Northrop Grumman.

Final Conclusions: Based on Navy review of Northrop Grumman's Phase II ESA and other investigations and remedial actions performed by Northrop Grumman, as summarized above, the rating for the Chromic Acid Anodize Area is changed to Category 4. This rating reflects the successful excavation of contaminated soil from under the grease trap near Column GG42. Analytical data collected by Northrop Grumman from soil samples collected under the chromic acid anodize process pit, ion exchange system pit, and secondary containment structures for exterior tanks as part of the Phase II ESA indicate that no further action was necessary for those locations. The Chromic Acid Anodize Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in the area and provide the recipient with the results of Northrop

Grumman's investigation of AOC 10. The Federal Government will also have to notify the recipient about the investigation and remediation of the grease trap performed in compliance with UIC regulations.

### **3.2.6 Southcentral Machining Area**

Phase I EBS Conclusions: The Southcentral Machining Area was rated in Category 7 because of the possibility of contamination of underlying soils from oil accumulating in machine pits. Two pits, Pits 16 and 18, were singled out for concern as they each contained an oil accumulation that prevented observation of their structural integrity. A third pit (Pit 17) was observed but not identified as a potential environmental concern. A historical paint booth (HPB) location near Column LL3 was also identified as a potential environmental concern.

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA identified all machining equipment pits in Building 03-01 collectively as AOC 21. Pits 16 and 18 were addressed in a sampling program conducted as part of the Phase II ESA and reported to NYSDEC in a letter dated October 30, 1997. Under that program, Northrop Grumman collected soil samples at 2-foot intervals to a depth of 4 feet below 19 pits in Building 03-01, including Pits 16 and 18. Sample locations are shown on Drawing 1 of the Phase II ESA. The samples were analyzed for metals, VOCs, PCBs, and TPHs as part of Northrop Grumman's Phase II ESA. Following a sampling methodology agreed on by NYSDEC for all of the pits in Building 03-01, samples associated with pits with the highest TPH concentrations were subsequently analyzed for STARS constituents. No STARS exceedances were noted for the latter; thus it was concluded that the STARS constituent concentrations from other samples from pits also did not contain exceedances. Slight exceedances of TAGM criteria for metals were detected in some samples, but subsequent delineation samples suggested that further action was not necessary. No exceedances of TAGM criteria were noted for the other analytes. Northrop Grumman's letter concluded that no further action was necessary. NYSDEC-DSHM approved no further action for machine pits 16 and 18 in letters dated November 25, 1997 and December 24, 1997, respectively.

The machine shop floors in Building 03-01 (AOC 16), including that of the Southcentral Machining Area, were investigated collectively following methodology approved by NYSDEC in a letter to Grumman dated July 24, 1997. Constituents analyzed included metals, VOCs, TPHs, and PCBs as part of Northrop Grumman's Phase II ESA. No exceedances of TAGM criteria were noted for VOCs or PCBs. TPH was detected in soil samples collected by Northrop Grumman from under nine areas of machine shop floor in Building 03-01. The sample with the highest TPH detection was analyzed for STARS constituents, and no exceedances of STARS guidance criteria were found. Based on that result, Northrop Grumman concluded that none of the machine shop floors represented a potential concern with respect to organic constituents. A slight exceedance of the TAGM criterion for chromium was detected in one sample, but Northrop Grumman concluded that no further action was necessary based on subsequent delineation

sampling results. A zinc detection as high as 308 mg/kg, in excess of the TAGM criterion, was found in one of the samples, but Northrop Grumman concluded that no further action was necessary because zinc is not regulated as a hazardous substance by the State of New York.

Five former paint booth locations in the Southcentral Machining Area were identified by Northrop Grumman's Phase I ESA as part of AOC 1, collectively assigned to all paint booth locations in Building 03-01. Soil samples were collected at 2-foot intervals to a depth of 4 feet below each paint booth location and analyzed for metals, VOCs, and SVOCs as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. The historical paint booth location mentioned in the Phase I EBS was designated as HPB 4 (AOC 1-20). TCE was quantified at 250,000 µg/kg and arsenic was quantified at 14.3 mg/kg, both exceeding applicable TAGM criteria. Based on the results of subsequent delineation sampling, Northrop Grumman concluded that soil would have to be excavated to a depth of 8 feet. A letter dated May 21, 1998 to NYSDEC stated that Northrop Grumman excavated soil to approximately 10 feet and endpoint samples were satisfactory. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's remediation and stated that no further action was necessary.

Another paint booth location in this area, located near Column JJ23, was designated by Northrop Grumman's Phase I ESA as PB 9 (AOC 1-9). Minor exceedances of TAGM criteria for arsenic and selenium were detected in soil samples collected by Northrop Grumman from this location as part of the Phase II ESA. But no further action was recommended based on subsequent delineation sample data. Zinc was identified in certain soil samples at concentrations as high as 87.8 mg/kg, but no further investigation was recommended because zinc is not regulated as a hazardous constituent by New York State. These findings were reported to NYSDEC in a letter dated March 23, 1998. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's conclusions for AOC 1, PB 9.

Three other historical paint booth locations were identified in this area. These locations include HPB 4, near Column GG14 (AOC 1-21); HPB 6, near Column HH14 (AOC 1-22); and HPB 7, near Column HH23 (AOC 1-23). No exceedances of TAGM criteria were noted for soil samples collected from under these locations, and Northrop Grumman concluded that no further action was necessary.

Northrop Grumman's Phase I ESA identified two drywells in the Southcentral Machining Area, one located near Column GG2 and the other near Column GG7, as AOC 19. Soil samples were collected from the drywells at the 8 to 10-foot and 10 to 12-foot depth intervals and analyzed for metals, VOCs, and TPHs as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. Exceedances of TAGM criteria for TCE and several metals were found in soil sampled from the drywell near Column GG2. Northrop Grumman thus concluded that the drywell structure at that

location would have to be excavated. No exceedances of TAGM criteria were found in samples from the other drywell (near Column GG7), and Northrop Grumman concluded that drywell did not require excavation. A letter dated April 28, 1998 from Northrop Grumman to NYSDEC stated that the drywell near Column GG2 was excavated to a depth of 22 feet. That letter also reported the analytical findings for the drywell (near Column GG7) that was not excavated.

In response to UIC concerns identified in the Drainage Discharge Determination report, Northrop Grumman excavated approximately 0.04 cubic yards of soil from under Steam Pit Drain (located between Columns JJ9 to HH10) and approximately 96 cubic yards of soil from under the drywell (between Columns JJ1 to HH2). A letter dated May 21, 1998 from Northrop Grumman to NCDH stated that no exceedances were detected in endpoint soil samples.

Final Conclusions: Based on Navy review of the Northrop Grumman's Phase II ESA and other investigations and remedial actions conducted by Northrop Grumman, as summarized above, the rating for the Southcentral Machining Area is changed to Category 4. It reflects Northrop Grumman's successful remediation of HPB 4 (AOC 1-20) and of various other drains and drywells at various locations. Analytical data collected by Northrop Grumman from other locations in the area, including soil samples from under machining equipment pits and the shop floor, suggest that no further action was necessary. It is noted that the area excavated to remediate HPB 4 extended into part of the Facilities Maintenance Area in the vicinity of Columns MM2 and MM3. The Facilities Maintenance Area is also rated in Category 4.

The Southcentral Machining Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in the area. It will also have to provide the recipient with the results of Northrop Grumman's investigation of the paint booths (part of AOC 1), Pits 16 through 18 (part of AOC 21), AOC 16, and the drywells addressed as AOC 19. It will also have to notify the recipient as to the investigation and remediation of the steam pit drain and drywell performed in compliance with UIC regulations.

### **3.2.7 Magneform Area**

Phase I EBS Conclusions: The Magneform Area was rated in Category 7 because it was formerly part of the Southcentral Machining Area.

Activity Since Phase I EBS: Most potential concerns associated with the Southcentral Machining Area have been addressed in the subsequent investigations of that area described earlier (in Section 3.2.6). In response to UIC concerns identified in the Drainage Discharge Determination report completed in February 1998, approximately 0.07 cubic yard of soil was excavated from under a floor drain between

Columns KK1 and JJ2, within the Magneform Area. A letter dated May 21, 1998 to NCDH stated that no exceedances were noted in endpoint soil samples.

Final Conclusions: Based on Navy review of Northrop Grumman's investigation of the Southcentral Machining Area, the rating for the Magneform Area has been changed to Category 4. The rating reflects the successful remediation of contaminated soil from under the floor drain. The Magneform Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient as to the former association of this area with the Southcentral Machining Area and the environmental history and investigation of the latter. The Federal Government will also have to notify the recipient as to the investigation and remediation of the floor drain and drywell performed in compliance with UIC regulations.

### **3.2.8 Identification, Packaging, and Paint Booth Area**

Phase I EBS Conclusions: The Identification, Packaging, and Paint Booth Area was rated in Category 7 because of standing colored water in floor trenches associated with the paint booths.

Activity Since Phase I EBS: The paint booths throughout Building 03-01 were collectively identified by Northrop Grumman's Phase I ESA as AOC 1. The paint booths in this area were investigated in the Phase II ESA as AOCs 1-10 through 1-16. Soil samples were collected by Northrop Grumman at 2-foot intervals to a depth of 4 feet below each location and analyzed for metals, VOCs, and SVOCs as part of the Phase II ESA. Sample locations are shown on Drawing 1 of the Phase II ESA. No exceedances for any constituents of interest were found for samples collected for AOCs 1-11, 1-13, and 1-15; exceedances only for zinc (which is not regulated as a hazardous substance by the State of New York) were found in the samples collected for AOCs 1-10 and 1-12. No further action was recommended for these locations. Exceedances for other metals were detected in the initial soil samples collected for AOCs 1-14 and 1-16, but no further action was recommended based on the results of subsequent delineation sampling. Findings were reported to NYSDEC in letters dated December 22, 1997 and March 23, 1998.

The Kolene (molten salt used for paint stripping) pit in this area was identified by Northrop Grumman's Phase I ESA as part of AOC 1. Concrete and soil samples (at 2-foot intervals to a depth of 4 feet) were collected from the pit and analyzed for metals. Exceedances of TAGM criteria for arsenic, chromium, nickel, and zinc were noted in the concrete, but the only TAGM exceedance in the soil samples was for zinc. Because the zinc levels in the soil samples were within the range of Eastern United States background levels, Northrop Grumman concluded that no further action was necessary. These findings were reported by Northrop Grumman to NYSDEC in a letter dated August 14, 1997. NYSDEC granted

approval to fill the pit in a letter dated August 22, 1997, and Northrop Grumman has filled the pit with clean soil and covered with new concrete.

Northrop Grumman's Phase I ESA also identified a historical paint booth location in this area (HPB8) as part of AOC 1. From the early years of operation this paint booth was located at the same location as PB16. Soil samples were collected at 2-foot intervals to a depth of 4 feet below this location and analyzed for metals, VOCs, and SVOCs as part of Northrop Grumman's Phase II ESA. No exceedances of TAGM criteria were noted, and Northrop Grumman concluded that no further action was necessary.

Northrop Grumman's Phase I ESA also identified a former waste accumulation area between Columns JJ26 and JJ27 as part of AOC 33 (Former Waste Accumulation Area 19) or AOC 33-19. Soil samples were collected at 2-foot intervals to a depth of 4 feet below this location and analyzed for VOCs, metals, SVOCs, and TPHs as part of Northrop Grumman's Phase II ESA. No exceedances of TAGM criteria for metals were noted. However, TPH was quantified as high as 56 mg/kg, and several SVOCs exceeded TAGM criteria. These SVOCs included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and chrysene. Additionally, the concentration of total CaPAHs exceeded 10,000 µg/kg. Soil samples subsequently collected to delineate the plume of contamination showed that the concentration of total CaPAHs exceeded 10,000 µg/kg to as deep as 8 feet below this area. Northrop Grumman thus concluded that soils to this depth would require excavation and disposal. A letter dated April 14, 1998 from Northrop Grumman to NYSDEC stated that soil was excavated from this area to a depth of approximately 10 feet and endpoint samples were satisfactory.

Northrop Grumman completed two rounds of soil excavation under the drain at Column JJ27 in 1999 and received written approval of the remediation in a letter from the U.S. Environmental Protection Agency dated June 29, 1999.

A letter dated May 27, 1998 to NCDH stated that approximately 0.04 cubic yards of soil were excavated from under a steam pit drain at Column KK37 as part of UIC program compliance. No exceedances were noted in endpoint soil samples. Another letter dated August 26, 1998 to NCDH stated that a steam pit drain at Column JJ27 was similarly remediated. However, a condensate pit drain at Column JJ27 in this area was subsequently discovered and determined to require remediation because of silver contamination in exceedance of TAGM and eastern USA background standards. Northrop Grumman has completed two rounds of remediation for silver contamination in soil under the drain. A letter dated June 29, 1999 from D. Courtney of the USEPA to J. Cofman of Northrop Grumman states that the USEPA has approved the remediation of the steam pit drain.

Final Conclusions: Based on Navy review of Northrop Grumman's Phase I ESA and other investigations and remedial actions performed by Northrop Gruman, as summarized above, the rating for the Identification, Packaging, and Paint Booth Area is changed to Category 4. This area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in the area and provide the recipient with the results of Northrop Grumman's investigation of the paint booths (AOCs 1-10 through 1-16), the Kolene Pit (part of AOC 1), and the former waste accumulation area (AOC 33-19). The Federal Government will also have to notify the recipient of remediation and closure activities performed in compliance with UIC regulations.

### **3.2.9 Northcentral Machining Area**

Phase I EBS Conclusions: The Northcentral Machining Area was rated in Category 7 because of the possibility of contamination of underlying soils from oil accumulating in machine pits. Of the machine pits in this area, Pits 11, 14, and 15 were specifically identified as being of concern because standing liquids prevented visual observation of the pit bottoms. The other machine pits in this area, Pits 12, 12A, 12B, and 13 were not identified as potential environmental concerns.

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA identified all machining equipment pits in Building 03-01 collectively as AOC 21. Of the pits in the Northcentral Machining Area, all but Pits 12 and 13 were addressed in a sampling program conducted as part of the Phase II ESA and reported to NYSDEC in a letter dated October 30, 1997. Under that program, soil samples were collected at 2-foot intervals to a depth of 4 feet from below 19 pits in Building 03-01 (including those noted above) for analysis for metals, VOCs, PCBs, and TPHs as part of Northrop Grumman's Phase II ESA. Analysis for STARS constituents was performed for samples from those pits with the highest TPH detections. No exceedances of STARS guidance values were noted for the latter; thus Northrop Grumman concluded that STARS constituent concentrations from samples with lower TPH detections also do not represent exceedances. No exceedances of TAGM criteria were noted for VOCs or PCBs. Slight exceedances of TAGM criteria for certain metals were detected in some samples, but subsequent sampling suggested that further action was not necessary. An earlier letter dated August 29, 1997 from Northrop Grumman to NYSDEC presented similar conclusions for Pit 12B.

However, Pit 14 was investigated further. A letter dated March 23, 1998 from Northrop Grumman to NYSDEC stated that slight exceedances for chromium and selenium were detected in soil samples collected from under Pit 14. Additionally, TPH was detected at 6 mg/kg. Northrop Grumman concluded that no further action was necessary based on delineation sample data. The March 23 letter also noted that Northrop Grumman received a letter dated December 24, 1997 from NYSDEC approving the filling of Pit 14. Northrop Grumman has filled all pits in this area with clean soil and fresh concrete.

The machine shop floors in Building 03-01 (AOC 16), including that of the Northcentral Machining Area, were investigated collectively by Northrop Grumman following methodology approved by NYSDEC in a letter to Grumman dated July 24, 1997. Constituents of concern included metals, VOCs, TPH, and PCBs. No exceedances of TAGM criteria were noted for VOCs or PCBs. TPH was detected in soil samples collected from under nine areas of machine shop floor in Building 03-01, but no exceedances of individual STARS constituents were detected in the sample with the highest TPH concentration. Based on these results, Northrop Grumman concluded that none of the machine shop floors represented a potential concern with respect to organic constituents. A slight exceedance of the TAGM criterion for chromium was detected in one sample; but Northrop Grumman concluded that no further action was necessary based on subsequent delineation sampling results. A zinc exceedance as high as 308 mg/kg was detected in one of the samples, but Northrop Grumman concluded that no further action was necessary because zinc is not regulated as a hazardous substance by NYSDEC. No other exceedances were noted.

In addition to the pits, Northrop Grumman's Phase I ESA identified two historical paint booth locations (HPBs 3 and 10) and a transfer pit as potential environmental concerns. The former locations were investigated as part of AOC 1, assigned collectively to all paint booth locations in Building 03-01. Soil samples were collected at 2-foot intervals to a depth of 4 feet below each location and analyzed for metals, VOCs, and SVOCs as part of Northrop Grumman's Phase II ESA. No exceedances of TAGM criteria were noted for VOCs or SVOCs. Minor exceedances of TAGM criteria for zinc were found in soil samples collected from under the historical paint booth locations, but Northrop Grumman concluded that no further action was necessary based on the results of subsequent delineation data. Slight exceedances of TAGM criteria (for selenium and zinc) were found in soil samples collected from under the transfer pit, but Northrop Grumman concluded that no further action was necessary. These findings were reported to NYSDEC in a letter dated March 23, 1998. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's conclusions for these locations.

Northrop Grumman's Phase I ESA identified three former waste accumulation areas on the machine shop floor as part of AOC 33 (AOCs 33-9, 33-11, and 33-12). Northrop Grumman's Phase II ESA reported several organic and/or metal exceedances of TAGM criteria in soils sampled from under each of these areas and recommended excavation and disposal of the affected soils. A letter dated May 13, 1998 from Northrop Grumman to NYSDEC stated that from 8 to 12 feet of soil were excavated from under these areas. Although slight exceedances for individual SVOCs existed in some endpoint soil samples, the total risk posed by the remaining soils was reported to be insignificant. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's remediation of these three areas and stated that no further action was necessary.



In response to UIC concerns identified in the Drainage Discharge Determination report, soil was excavated to a depth of 5 feet under a grease trap at Column AA4 and to a depth of approximately 22 feet below a former drywell location between Columns AA1 and AA2. A letter dated May 21, 1998 to NCDH stated that although minor SVOC exceedances existed in endpoint soil samples collected after excavation of soil at the grease trap, further excavation was not necessary and could undermine the structural integrity of the building. A letter dated April 28, 1998 to NYSDEC stated that slight SVOC exceedances existed in some endpoint samples collected after excavation at the former drywell (designated as part of AOC 19) but concluded that no further action was necessary.

Although not identified by the Drainage Discharge Report, a steam pit drain located near Column DD10 was excavated to a depth of 4 feet in compliance with UIC regulations and reported to NCDH in a letter dated August 26, 1998. In a letter dated December 17, 1998, Northrop Grumman received approval from the USEPA for no further action and backfill activities at the steam pit drain near Column DD10.

Final Conclusions: Based on Navy review of Northrop Grumman's Phase II ESA and the other investigation and remediation activities completed by Northrop Grumman, as summarized above, the rating for the Northcentral Machining Area is changed to Category 4. The rating reflects on the successful remediation of soils at the waste accumulation areas, grease trap, drywell, and steam pit drain. Other environmental concerns associated with this area have been adequately addressed by investigations conducted by Northrop Grumman since the Phase I EBS.

The Northcentral Machining Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in the area and provide the recipient with the results of Northrop Grumman's investigation of Pits 11 through 15 (part of AOC 21), AOC 16, the two paint booth locations (part of AOC 1), and the three waste accumulation areas (part of AOC 33). The Federal Government will also have to notify the recipient as to the remediation of the waste accumulation areas and as to the investigation and remediation of the grease trap and drywell (part of AOC 19) performed in compliance with UIC regulations.

### **3.2.10 First Aid/Northcentral Office Area**

Phase I ESA Conclusions: This cluster of offices, which included a small first aid clinic and other miscellaneous office space on the northcentral side of Building 03-01, was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: Other than cleaning out remaining furnishings and debris, no investigation or other environmental activity has happened in this area since the Phase I EBS.

Final Conclusions: The rating for the First Aid/Northcentral Office Area remains in Category 1. Building 03-01 is suitable for transfer without further environmental action regarding the First Aid/Northcentral Office Area.

### **3.2.11 Shot Peen/Old Chem Mill Area**

Phase I EBS Conclusions: This area was rated in Category 7 because of the lack of documentation on the integrity of the old chem mill process tank pit before closure and filling to establish the more recent shot peen operation. The shot peen operation itself was not an issue of potential environmental concern.

Activity Since Phase I EBS: The former location of the old chem mill process tank pit, as well as several associated exterior process tanks located immediately north of this part of the building, were identified by Northrop Grumman's Phase I ESA as AOC 14. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the location of the former process tank pit as part of Northrop Grumman's Phase II ESA. Soil samples collected from under the former chem mill transfer tank locations were analyzed for metals, and the soil samples collected from under the former TCE degreaser tank locations in the old chem mill process area were analyzed for VOCs. Sample locations are shown on Drawing 1 of the Phase II ESA. The samples exhibited no exceedances of TAGM criteria, and Northrop Grumman concluded that no further action was necessary. Soil samples were also collected from a location under the pit as part of the investigation of AOC 21, collectively assigned to all of the floor pits in Building 03-01, and analyzed for TPH. TPH was detected at 5.2 mg/kg, but following an agreed-upon method of analysis with NYSDEC, further analysis for STARS constituents was not conducted, and Northrop Grumman concluded that no further action was necessary.

Soil samples were also collected at 2-foot intervals to a depth of 4 feet below waste transfer Tanks 83 and 84 (located outside of the north building wall between Column Rows 38 and 42) and below hydrofluoric acid storage Tanks 1049 and 1050 (located outside and just east of the former Shot Peen area) and analyzed for metals. Both locations were also investigated under AOC 14. Slight exceedances of TAGM criteria for chromium and mercury were found in soil samples collected from under the former location of Tanks 83 and 84; and chromium, zinc, copper, and lead exceedances were found in soil samples collected from under the former location of Tanks 1049 and 1050. Northrop Grumman concluded that it would be necessary to excavate shallow soils from under both locations. A letter dated April 28, 1998 from Northrop Grumman to NYSDEC stated that soil was excavated to a depth of between 6 and 10 feet below both tanks. Slight metal exceedances were noted in endpoint samples but Northrop Grumman concluded that these exceedances did not represent a significant environmental risk. A letter issued by NYSDEC on May 13, 1998 accepted Northrop Grumman's remediation of AOC 14 and stated that no further action was necessary.

Northrop Grumman has discovered PCB contamination in a drywell outside of this part of the building (Drywell 20-08). In a letter to NYSDEC dated September 14, 1998, Northrop Grumman described remediating soils under the drywell to a depth of 30 feet. However, PCB contamination remained in the endpoint samples and further remediation is thus necessary.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA and the remedial actions completed by Northrop Grumman, the rating for the Shot Peen/Old Chem Mill Area is changed to Category 4. The rating is based on the successful remediation of the soil under the former locations of several associated exterior process tanks. This area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in the area and provide the recipient with the results of Northrop Grumman's investigation of AOCs 14 and 21. The Federal Government will also have to notify the recipient of the remediation of contaminated soil from under the exterior process waste tanks.

The exterior area containing Drywell 20-08 has to be rated in Category 5 until the PCB contamination is adequately addressed. Because the drywell is outside of the building and not intimately associated with interior operations, it does not affect the suitability of interior areas for transfer.

### **3.2.12 Flow Coat/Chem Mill Etch Area**

Phase I EBS Conclusions: The Flow Coat/Chem Mill Etch Area was rated in Category 3 based on information in an early letter available to the preparers of the Phase I EBS. This letter, which was dated August 14, 1997 to NYSDEC, stated that soil samples were collected from the flow coat process pit (analyzed as part of AOC 07) and analyzed for VOCs. No exceedances were noted. It also stated that concrete and soil samples were collected from the chem mill etch process pit (AOC 8) and analyzed for metals. Minor exceedances of TAGM criteria for zinc, arsenic, and beryllium were noted, but all fell within the range of Eastern United States background levels. The Phase II ESA presented the same conclusions. Based on these data, the letter concluded that no further action was necessary. NYSDEC granted approval to fill the pits in a letter dated August 22, 1997.

Activity Since Phase I EBS: Northrop Grumman excavated soil below an area immediately west of the Chem Mill Etch pit to a depth of 30 feet to remediate PCB contamination. The pits were then filled with clean soil and covered with new concrete. This activity was associated with remediation of AOC 34, described in connection with the Former Autoclave Area (Section 3.2.3). The excavated area extended into part of the Identification, Packaging, and Paint Booth Area at Column KK41.

Final Conclusions: The rating for the Flow Coat/Chem Mill Etch Area is changed to Category 4. The area is suitable for transfer without further environmental action. The Federal Government will have to notify

the recipient about the materials known to have been handled in the area and provide the recipient with the results of Northrop Grumman's investigation of AOCs 7, 8, and 34. It will also have to indicate that PCB-contaminated soils were successfully excavated from under a portion of the floor for disposal.

### **3.2.13 Sulfuric Acid Anodize Area**

Phase I EBS Conclusions: The Sulfuric Acid Anodize Area was rated in Category 7 because of visibly corroded concrete in the containment pit for the sulfuric acid anodize process tanks. Additionally, a trench in the pit was filled with an unknown liquid that prevented inspection of the trench for cracks or other visible structural deformities.

Activity Since Phase I EBS: The sulfuric acid anodize process tank pit was identified by Northrop Grumman's Phase I ESA as AOC 9. Soil samples were collected at 2-foot intervals to a depth of 4 feet from various locations under this area and analyzed for metals (and VOCs in one location) as part of Northrop Grumman's Phase II ESA. Samples collected from under the western part of the pit exhibited exceedances of TAGM criteria for chromium (as high as 1,690 mg/kg), zinc (as high as 120 mg/kg), and silver (as high as 12.1 mg/kg). Subsequent samples collected to delineate the plume showed that these exceedances did not extend deeper than 4 feet. Soil samples from under the eastern part of the pit exhibited exceedances for chromium (407 mg/kg) and zinc (151 mg/kg), to a depth of 6 feet below the pit.

A letter dated January 30, 1998 from Northrop Grumman to NYSDEC stated that contaminated concrete and soil was excavated to a depth of 4 feet from under the western portion of the pit. Exceedances of TAGM criteria for chromium, copper, and zinc were noted in sidewall endpoint soil samples, and thus additional excavation was performed. The final round of endpoint sampling was satisfactory. A subsequent letter dated April 28, 1998 from Northrop Grumman to NYSDEC stated that soil was excavated as necessary below the remaining (eastern) portion of the sulfuric acid anodize process tank pit, and endpoint soil samples were satisfactory. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's remediation of AOC 9 and stated that no further action was necessary.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA and the remedial actions completed by Northrop Grumman, the rating for the Sulfuric Acid Anodize Area is changed to Category 4. The rating reflects the successful remediation of soil under the sulfuric acid anodize process tank pit (which included the trench identified as a concern in the Phase I EBS). The Sulfuric Acid Anodize Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient as to the hazardous materials and petroleum products stored and handled in the area, as documented in the Phase I EBS and ESA, and as to the constituents detected in the Phase II ESA by the investigation of AOC 9. The Federal Government will also have to notify the recipient as to the remediation of contaminated soils from under the process pit.

### **3.2.14 Northeastern Machining Area**

Phase I EBS Conclusions: The Northeastern Machining Area was rated in Category 7 because of the possibility of contamination of underlying soils from oil accumulating in machine pits. Of the pits in this area, Pits 19 through 26 were specifically identified as concerns because standing liquids prevented visual observation of the pit bottoms. Another pit in this area, Pit 27, was not identified as a potential environmental concern.

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA identified all machining equipment pits in Building 03-01 collectively as AOC 21. All pits in the Northeastern Machining Area except Pits 21 and 27 were addressed in a sampling program conducted as part of the Phase II ESA and reported to NYSDEC in a letter dated October 30, 1997. Under that program, soil samples were collected at 2-foot intervals to a depth of 4 feet below 19 pits in Building 03-01, including those noted above. Sample locations are shown on Drawing 1 of the Phase II ESA. The samples were analyzed for metals, VOCs, PCBs, and TPHs as part of Northrop Grumman's Phase II ESA. No exceedances of TAGM criteria were noted for VOCs or PCBs. Analysis for STARS constituents was performed for samples from those pits with the highest TPH concentrations. Because no exceedances of STARS guidance values were noted for the latter, Northrop Grumman concluded that the STARS constituent concentrations from samples with lower TPH detections also do not exceed the corresponding guidance values. Slight exceedances of TAGM criteria for some metals were detected in some samples, but subsequent sampling lead Northrop Grumman to conclude that no further action was necessary.

In response to UIC concerns identified in the Drainage Discharge Determination report, soil was excavated to a depth of 12 feet under Pit 21 by Northrop Grumman, and the action was reported to NCDH in a letter dated May 21, 1998. Endpoint soil sampling was found to be satisfactory. A slight exceedance of the TAGM criterion for TCE was noted in one endpoint sample of floor material but Northrop Grumman concluded that no further action was necessary.

The machine shop floors in Building 03-01 (AOC 16), including that of the Northeastern Machining Area, were investigated collectively following methodology approved by NYSDEC in a letter to Northrop Grumman dated July 24, 1997. Constituents subjected to analysis included metals, VOCs, TPHs, and PCBs. No exceedances of TAGM criteria were noted for VOCs or PCBs. TPH was detected in soil samples collected from under nine areas of machine shop floor in Building 03-01, but no exceedances of STARS guidance values were found in the sample with the highest TPH concentration. Based on that result, Northrop Grumman concluded that machine shop floors represented a potential concern with respect to organic constituents. A slight exceedance of the TAGM criterion for chromium was found in one sample, but Northrop Grumman concluded that no further action was recommended based on the

analytical results of subsequent soil sampling. Zinc exceeded TAGM criteria in one sample, but Northrop Grumman concluded that no further action was necessary because zinc is not regulated as a hazardous substance by NYSDEC.

In addition to the pits and machine shop floor, Northrop Grumman's Phase I ESA also identified a former paint waste holding tank (Tank 794) located between Columns AA29 and AA31 as a potential environmental concern and investigated it as part of AOC 1 (AOC 1-29). Soil samples were collected at 2-foot intervals to a depth of 4 feet below that location and analyzed for metals, VOCs, and SVOCs as part of Northrop Grumman's Phase II ESA. No exceedances of TAGM criteria were found for metals or VOCs. Exceedances of TAGM criteria were noted for several SVOCs. Northrop Grumman concluded that it would be necessary to excavate soil to a depth of 4 feet from below the former location of the tank. The excavation was located immediately exterior to the wall of Building 03-01, between Columns AA29 and AA31. A letter dated March 24, 1998 from Northrop Grumman to NYSDEC stated that soil was excavated to a depth of approximately 4 feet and no endpoint exceedances were noted. A letter issued by NYSDEC on May 13, 1998 accepted Northrop Grumman's remediation of this location and stated that no further action was necessary.

The Phase I ESA also identified a historical paint booth location near Column DD33 as part of AOC 1 (AOC 1-25). Soils at that location were investigated for metals, VOCs, and SVOCs in the same manner as other paint booths. No exceedances of TAGM criteria were noted, and Northrop Grumman concluded that no further action was necessary.

Investigations conducted by Northrop Grumman also identified a need for remediation of soils under a grease trap near Columns AA30 and AA31 and at steam pit drains at Columns DD26 and DD36. A letter dated May 21, 1998 from Northrop Grumman to NCDH stated that soil was excavated to a depth of 5 feet under the grease trap, and approximately 0.08 cubic yard of soil were excavated from under the steam pit drains. Endpoint soil samples were satisfactory.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA and other investigation and remedial actions performed by Northrop Grumman, the rating for the Northeastern Machining Area is changed to Category 4. The rating reflects the successful remediation of soils from under Pit 21, the grease trap, and former location of the paint waste holding tank. Other environmental concerns associated with this area have been adequately addressed by investigations conducted since the Phase I EBS.

The Northeastern Machining Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in

the area and provide the recipient with the results of Northrop Grumman's investigation of Pits 21 through 27, the location of the former paint waste holding tank (part of AOC 1), and AOC 16. The Federal Government will also have to notify the recipient of the investigation and remediation of the grease trap performed in compliance with UIC regulations.

### **3.2.15     Chem Mill Clean Area**

Phase I EBS Conclusions: The Chem Mill Clean Area was rated in Category 5 because of an exterior soil remediation action that was in progress at the time of the site inspection (May 1997). The containment pit that houses the chem mill process tanks was also identified as a potential environmental concern because of observed concrete corrosion.

Activity Since Phase I EBS: The chem mill clean process pit was identified by Northrop Grumman's Phase I ESA as AOC 6. Soils were collected at 2-foot intervals to a depth of 4 feet below the pit and investigated for metals as part of Northrop Grumman's Phase II ESA. The only exceedance of TAGM criteria that was found was for zinc, which is not regulated as a hazardous substance by the State of New York. Northrop Grumman thus concluded that no further action was necessary. Northrop Grumman has filled the pit with clean soil and fresh concrete.

However, Northrop Grumman also collected soil samples in an exterior area outside of the north wall of the Chem Mill Clean Area (designated as part of AOC 6) for analysis for metals. Exceedances of the TAGM criterion for chromium were found at a depth of 10 feet below grade. Northrop Grumman's Phase II ESA concluded that this soil would have to be excavated for disposal. A letter dated May 13, 1998 from Northrop Grumman to NYSDEC stated that 4 to 12 feet of soil were excavated from an area immediately outside of the exterior wall, between Columns FF45 and FF46, adjacent to the process pit. Although a slight chromium exceedance was detected in one endpoint sample, no exceedance existed for hexavalent chromium. Northrop Grumman thus concluded that the total risk posed by the chromium in the remaining soil was minimal. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's remediation of AOC 6 and stated that no further action was necessary.

Several exterior paint waste holding tanks located just outside of the Chem Mill Clean Area were also identified in Northrop Grumman's Phase I ESA as part of AOC 1 (AOC 1-30). The tanks were removed, and soil samples were collected at 2-foot intervals to a depth of 4 feet below that location and analyzed for metals as part of Northrop Grumman's Phase II ESA. Exceedances of TAGM criteria were found for arsenic, and Northrop Grumman concluded that it would be necessary to excavate soil from this location for disposal. A letter dated March 24, 1998 from Northrop Grumman to NYSDEC stated that the soil was excavated to a depth of approximately 6 feet. Minor exceedances of TAGM criteria for certain SVOCs and zinc were noted in endpoint soil samples but concluded not to represent a potential risk. A letter

issued by NYSDEC on May 13, 1998 accepted Northrop Grumman's remediation of this area and stated that no further action was necessary.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA and the remedial actions completed by Northrop Grumman, the rating for the Chem Mill Clean Area is changed to Category 4. This rating reflects the successful remediation of exterior soil outside the north wall of this area and under the exterior paint waste holding tanks adjacent to this area. The Chem Mill Clean Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been used in this area and provide the recipient with the results of Northrop Grumman's investigation of AOC 6 and the exterior paint waste holding tanks (part of AOC 1). The Federal Government will also have to notify the recipient as to the remediation of the contaminated soil at the former location of the exterior paint waste holding tanks.

### **3.2.16     Zyglo Area**

Phase I EBS Conclusions: The Zyglo (Penetrant Inspection) Area was rated in Category 7 because accumulated liquid in the tank containment pit prevented a visual inspection for cracks and corrosion.

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA identified the containment pit and associated waste holding tanks (see Section 3.2.17) as AOC 12. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the pit and analyzed for metals, VOCs, and SVOCs as part of Northrop Grumman's Phase II ESA. No exceedances of TAGM criteria for metals or VOCs were noted. Slight exceedances of TAGM criteria for benzo(a)pyrene and phenol were found. But Northrop Grumman concluded that no further action was necessary because of the low magnitude of the exceedances and subsequent sampling to delineate a plume showed that the contamination was spatially isolated. But based on samples collected as part of the investigation of a former waste accumulation area location (designated as AOC 33-09) that was located directly adjacent to the containment pit, Northrop Grumman concluded that containment was necessary. The investigation of AOC 33-09 addressed VOCs and SVOCs. The NYSDEC DSHW letter to Northrop Grumman dated June 28, 1998 approved the remediation of AOC 33-09. The pit was subsequently investigated as AOC 33-09, and an area immediately to the west was found to require remediation. Underlying soil was excavated to a depth of 12 feet by Northrop Grumman (Taormina, 1999).

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA and the remedial actions completed by Northrop Grumman, the rating for the Zyglo Area is changed to Category 4. The Zyglo Area is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the hazardous materials known to have been handled in that area and provide the recipient with the results of Northrop Grumman's investigation of AOCs 12 and 33-09. It will



also have to notify the recipient of the remediation completed by Northrop Grumman. It is noted that portions of the area remediated in connection with the Zyglo Area extended into the Northcentral Machining Area, which is also rated Category 4.

### **3.2.17 Waste Holding Tanks East of Hydraulic Press Area**

Phase I EBS Conclusions: Tanks 1092 and 1993 were underground tanks that, as of the May 1997 inspection for the Phase I EBS, lacked tightness test documentation and required investigation. The tanks were subsequently removed in June 1997, and soil samples analyzed during the removal showed only low contaminant concentrations that did not require further action. The former location of the tanks, immediately exterior to the east wall of the Hydraulic Press Area, was thus rated in the final draft of the Phase I EBS as Category 3.

Activity Since Phase I EBS: Underground Tanks 1092 and 1093, associated with the Zyglo (Penetrant Inspection) process, were identified in Northrop Grumman's Phase I ESA as part of AOC 12 but were not sampled because they were removed in May 1997. Three aboveground tanks (Tanks 793, 815, and 1113), formerly used as waste holding tanks for liquid wastes generated by operations at the Old Alodine process pit, were also located in the same area as Tanks 1092 and 1093 at one time. These tanks had been removed long before the EBS. Investigated as part of AOC 3 (the Old Alodine Area), Northrop Grumman concluded that no further action was necessary. A letter dated October 27, 1997 to the NYSDEC stated that concrete and underlying soil samples were collected from the secondary containment system that formerly surrounded these tanks and analyzed for metals and SVOCs. Slight exceedances of TAGM criteria for zinc and chromium were noted in the concrete samples, and a slight exceedance of the TAGM criterion for zinc was noted in one of the soil samples. But Northrop Grumman did not recommend further action because both concentrations were within the range of Eastern United States background levels.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA, the rating for the former location of these exterior waste tanks remains Category 3. This location is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient as to the materials formerly stored in the tanks and provide the recipient with the results of Northrop Grumman's investigation of the tank location.

### **3.2.18 Exterior Areas Close to Building 03-01**

Phase I EBS Conclusions: The following locations were rated as Category 1 by the Phase I EBS:

- A location approximately 120 feet southwest of the southwest corner of Building 03-01 (AOC 20-22AA).
- A location approximately 30 feet south of the southeast corner of the Plant 03 Cafeteria (AOC 20-05).
- A location approximately 90 feet south of exterior wall location NN3 at the Facilities Maintenance Area (AOC 20-15).
- A location approximately 100 feet north of exterior wall location AA13 (AOC 20-07).

Activity Since Phase I EBS: As part of Northrop Grumman's Phase I ESA for Plant 03, a total of 29 exterior dry wells associated with Building 03-01 were identified and investigated during field activities. Based on the results of these investigations, miscellaneous minor exceedances of the TAGM # 4046 criteria for several metals were noted in some of the samples, and TPH as diesel was detected in certain samples. Based on delineation sampling results, Northrop Grumman recommended no further action for 21 individual dry wells under AOC 20. However, samples collected from dry well 20-08 exhibited elevated levels of PCBs. Consequently, Northrop Grumman concluded that remediation would be necessary. In 1998, PCB contaminated soils were removed to approximately 30 feet below ground surface. Endpoint sample analysis found evidence of PCB contamination. Northrop Grumman's conclusions and recommendations for AOC 20 was conveyed to NYSDEC in a letter dated March 23, 1998. Drawing 1 of Northrop Grumman's Phase II ESA shows dry well locations sampled under AOC 20.

The Navy subsequently investigated dry well 20-15 for RCRA metals in response to TAGM #4046 criteria exceedances observed during the Phase I EBS. The investigation for dry well 20-15 is also complete and was addressed by the Navy in a document entitled "Former Dry Well Investigation South of Plant No. 3 Area Of Concern (AOC) 20 (TtNUS January, 2000).

Final Conclusions: The AOC 20 investigation is considered complete based on Navy analysis of Northrop Grumman's Phase II ESA and information gathered during subsequent Navy investigations. In addition, no further action is recommended for all dry wells considered part of AOC 20, with the exception of dry well 20-08, which is being retained by the Navy for remediation under it's IR Program.

### **3.3 AREA NORTH OF BUILDING 03-01**

The following small buildings, which are located immediately north of Building 03-01, are also addressed in the same Phase I ESA and corresponding Phase II ESA completed by Radian for Plant 03 in April 1997 and August 1998, respectively (Radian 1997a and 1998a). Areas within Plant 03, but not immediately associated with Building 03-01, are shown in Figure 3-2.

### **3.3.1 Buildings 03-02, 03-04, 03-09, and 03-11: Well Houses No. 8, 10, 11, and 14**

Phase I ESA Conclusions: These small well house buildings, which were used to pump industrial water to Building 03-01, were rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at any of these buildings since the Phase I EBS.

Final Conclusions: The rating for these well house buildings remains Category 1. They are suitable for transfer without further environmental action.

### **3.3.2 Building 03-03: Well House No. 9**

Phase I ESA Conclusions: Unlike the other well house buildings associated with Building 03-01, which are electrically powered, this well house is powered by diesel fuel stored in an associated UST (Tank 03-03-1) and was rated in Category 2 because of the storage of diesel fuel. However, no potential environmental concerns were identified for either the building or UST. The UST is scheduled for removal in 1999 (Taormina, 1999).

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at this building since the Phase I EBS.

Final Conclusions: The rating for the former location of this building remains Category 2. It is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the record of diesel fuel storage in Tank 03-03-1.

### **3.3.3 Building 03-39: Methanol Storage Building**

Phase I ESA Conclusions: This small building, which sheltered an aboveground tank that stored methanol in a concrete secondary containment structure, was rated Category 2. The rating reflects the storage of methanol. No potential environmental concerns were identified for either the building or methanol storage tank. The building was razed in 1998 (Taormina, 1999).

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at this building since the Phase I EBS.

Final Conclusions: The rating for the former location of this building remains Category 2. It is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the record of methanol storage at the site.

### **3.3.4 Building 03-41: Storage Shed**

Phase I ESA Conclusions: The location of this small storage building, which was formerly used to store scrap metal and was razed before May 1997, was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA identified Building 03-41 as AOC 27 because of a concrete trench that contained an oily sludge when it was inspected for that document. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the trench and analyzed for TPHs as part of Northrop Grumman's Phase II ESA. TPH was quantified as high as 2,100 mg/kg. Subsequent delineation sampling revealed that the total concentration of CaPAHs exceeded 10,000 µg/kg to a depth of 14 feet below grade. The report thus recommended excavation and disposal of soils from under the shed. A letter dated April 28, 1998 from Northrop Grumman to NYSDEC stated that soil was excavated to a depth of approximately 16 feet at the shed. Slight exceedances for certain individual SVOCs were noted in endpoint samples, but the total concentration of CaPAHs in those samples was less than 10,000 µg/kg. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's conclusions for AOC 27 and stated that no further action was necessary.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA, the rating for the former location of Building 03-41 is changed to Category 4. The rating reflects the successful remediation of underlying soils. The building is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the former accumulation of the oily sludge and provide the recipient with the results of Northrop Grumman's investigation of AOC 27. The Federal Government will also have to notify the recipient about the completed remediation of contaminated soils from below the trench.

### **3.3.5 Building 03-52: Wellwater Treatment Building**

Phase I ESA Conclusions: This small well house building, which was used to pump industrial water to Building 03-01, was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at this building since the Phase I EBS.

Final Conclusions: The rating for this building remains Category 1. It is suitable for transfer without further environmental action.

### **3.4 AREA EAST OF BUILDING 03-01**

This area encompasses lands and buildings between Building 03-01 and the eastern perimeter of the Navy-owned 105-acre parcel. Areas within Plant 03, but not immediately associated with Building 03-01, are shown in Figure 3-2. Much of this area is also addressed in the same Phase I ESA and corresponding Phase II ESA completed by Radian for Plant 03 in April 1997 and August 1998, respectively (Radian 1997a and 1998a). A large portion of this area encompasses two former drum marshalling areas and a former leachfield that are being addressed as Site 1 under the Navy's IR Program. IR Program Site 1 was investigated in a Remedial Investigation completed in 1992 (HNUS, 1992b), and a remedial action was selected in a Feasibility Study completed in 1994 (HNUS, 1994).

#### **3.4.1 Former Drum Marshalling Areas/Plant 03 Leachfield**

Phase I EBS Conclusions: This broad area of open land east of Building 03-01 includes the sites of two former pads used for the collection and storage of drummed liquid chemical waste generated in Building 03-01 that were used before construction of the permitted drum storage pad (Building 03-37) in 1983. It also included a series of settling tanks and leachpools that serviced sanitary waste from Building 03-01 before connection to the county sewer system. Soil and groundwater contamination in this area by halogenated and nonhalogenated solvents, metals, PCBs, and pesticides had already been documented under the Navy's IR Program before the Phase I EBS. At the time of the Phase I EBS, a pilot level air sparging program was underway to treat contamination in a portion of this area.

Activity Since Phase I EBS: The pilot program has been completed, and the Navy is presently implementing a larger-scale air sparging program to complete the remediation of this area.

Final Conclusions: This area (designated as Site 1 under the IR Program) remains rated in Category 5 until the ongoing remediation activities are completed. This area will not be suitable for transfer until the area is successfully remediated. This area is being retained by the Navy.

#### **3.4.2 Building 03-13: Sanitation Office**

Phase I EBS Conclusions: Building 03-13 was rated in Category 7 because it was not possible to visually inspect the integrity of a cluster of settling tanks located immediately south of the building. Additionally, records were not available documenting the completion of soil remediation activities at the former location

of a UST (Tank 03-13-15) associated with the building. The Phase I EBS stated that the former location of Tank 03-13-15 was south of the building, but actually it was north of the building.

Activity Since Phase I EBS: The settling tanks are part of the former leachfield east of Building 03-01 that is being investigated as part of the Former Drum Marshalling Areas #1 and #2 under the Navy's IR Program.

The area immediately north of Building 03-13, where UST 03-13-15 and two other USTs were formerly located, was identified by Northrop Grumman's Phase I ESA as part of AOC 22, collectively assigned to all potential concerns involving USTs at Plant 03. Soil samples were collected from under the former tank locations and analyzed for TPH and VOCs as part of Northrop Grumman's Phase II ESA. Although no VOC exceedances were noted, TPH was detected at concentrations as high as 17 mg/kg. Samples were subsequently analyzed for STARS constituents; although exceedances of STARS guidance values were found for five individual SVOCs, the total concentration of CaPAHs was less than 10,000 µg/kg. Thus, Northrop Grumman concluded that the SVOCs did not pose a significant environmental risk and further action was not necessary. Based on February 1998 monitoring well results, NYSDEC-Spill Prevention and Response acknowledged the completion of investigation/remediation activities associated with Spill #91-00555. A letter dated April 6, 1998 requests monitoring well abandonment.

The interior of Building 03-13 was identified in Northrop Grumman's Phase I ESA as AOC 25, based on the observation that small quantities of oil, pesticides, and paints were stored in the garage area on the east end of the building. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the floor in a representative location in the eastern part of the building and analyzed for TPHs, pesticides, and VOCs as part of Northrop Grumman's Phase II ESA. Although no exceedances of TAGM criteria were noted for pesticides or VOCs, TPH was quantified as high as 16 mg/kg. In response to the TPH detection, additional soil samples were collected from under the floor and analyzed for STARS constituents. No exceedances of STARS guidance values were found. Northrop Grumman thus concluded that no further action was necessary.

Final Conclusions: Based on Navy analysis of the findings of Northrop Grumman's Phase II ESA, the rating for Building 03-13 and the land area immediately north is changed to Category 3. The settling tanks to the south are best considered to be part of the Plant 03 Leachfield (see Section 3.4.1, above) and thus are now rated in Category 5. As noted in Section 3.4.1, this area remains under investigation as part of the Navy's IR Program, and will be retained by the Navy.

Except for the settling tanks to the south, Building 03-13 is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials

known to have been handled at the building and provide the recipient with the results of Northrop Grumman's investigation of AOC 25.

### **3.4.3 Building 03-14: Facility Maintenance Storage**

Phase I ESA Conclusions: This small storage building was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: The building has been razed. Northrop Grumman's Phase I ESA identified the site of Building 03-14 as the former location of a sludge drying bed, labeled as AOC 35. Soil samples were collected at 2-foot intervals to a depth of 4 feet from two locations at the suspected former sludge drying bed location and analyzed for metals, VOCs, SVOCs, TPHs, PCBs, and cyanide as part of Northrop Grumman's Phase II ESA. Although no exceedances of TAGM criteria were found for VOCs, SVOCs, or PCBs, exceedances of TAGM criteria were noted for cadmium and copper. Subsequent samples collected to delineate the plume also revealed exceedances for arsenic, mercury, chromium, and zinc. TPH was detected at concentrations as high as 120 mg/kg. Subsequent samples collected to investigate and delineate the TPH contamination revealed exceedances of STARS guidance values for several constituents. Northrop Grumman concluded that further investigation and possible remediation would be necessary and recommended that these efforts be performed as part of the Navy's IR program.

Final Conclusions: The rating for the former site of Building 03-14 is changed to Category 5 because of contamination from a sludge drying bed that occupied this area before the building and other adjoining storage sheds were constructed. The site will not be suitable for transfer until a program for remediation has been developed and approved by NYSDEC and implemented successfully. This area is being retained by the Navy for further investigation.

### **3.4.4 Building 03-15: Facility Maintenance Garage**

Phase I EBS Conclusions: Building 03-15 was rated in Category 7 because cracks were observed in the concrete floor of the garage area and were thought to represent a potential pathway for migration of fuels and lubricants to underlying soil. Additionally, the floor was observed to be flush with the exterior soil at the garage door, providing another potential pathway by which fuels and lubricants carried by rinse water could contaminate soils.

Activity Since Phase I EBS: Building 03-15 was razed shortly after the visual site inspection was completed for the Phase I EBS in May 1997. The surface soils in the area of the building were regraded. Because Northrop Grumman did not identify Building 03-15 as an AOC in its Phase I ESA, it did not sample soils under the floor cracks or at the door before removing the building and regrading the surface.

These demolition activities were completed before the draft Phase I EBS could be prepared. When questioned about the need for sampling soils at the former site, Northrop Grumman responded that any soil sampling at the former site would be inconclusive because the surface soils had been regraded (Leskovjan, 1998).

The former site was, however, investigated in Northrop Grumman's Phase II ESA as part of AOC 35, which addresses a former sludge drying bed documented to have been present in this area before this and several adjacent storage sheds were constructed. As noted in Section 3.4.3 for the former site of Building 03-14, exceedances for several metals and STARS constituents were found in soil samples collected from this area when investigating the former sludge drying beds. Northrop Grumman recommended that this area be included in the Navy's IR Program.

Final Conclusions: The rating for the former site of Building 03-15 is changed to Category 5 because of contamination from a sludge drying bed that occupied this area before the building and other adjoining storage sheds were constructed. The site will not be suitable for transfer until a program for remediation has been developed and approved by NYSDEC and implemented successfully. This area is being retained by the Navy for further investigation.

#### **3.4.5 Buildings 03-31 and 03-32: Bottle Gas Storage**

Phase I EBS Conclusions: These two small interconnected metal sheds were rated in Category 7 because of a floor level hole in the metal siding and a dark colored liquid of unknown composition was observed in floor trenches. The wall hole may have provided a pathway to exterior soils for various industrial chemicals and cleaning solutions stored in the building, and the liquid in the trench prevented visual examination for cracks or other structural deterioration. The Building 03-32 portion of this double building was razed in 1998 (Taormina, 1999).

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA identified Buildings 03-31 and 03-32 as AOC 26 because of the potential for leaks from drums of PCE and nitric acid that have been stored in the building. The Phase I ESA notes that leaks from this drum would have entered the floor trench and sump. Soil samples were collected at 2-foot intervals to a depth of 4 feet from two locations at the building and analyzed for metals, TPHs, VOCs, and SVOCs as part of Northrop Grumman's Phase II ESA. No exceedances of TAGM criteria were noted for metals, VOCs, or SVOCs. Silver was quantitated at concentrations of 5.0 and 9.6 mg/kg in two samples, slightly exceeding site background values, but Northrop Grumman did not conclude that concentrations required further action. TPH was quantified in the samples as high as 6.4 mg/kg, and additional samples were collected for analysis for STARS constituents. No exceedances of STARS guidance values were found. Thus, Northrop Grumman concluded that no further action was necessary.



Final Conclusions: Based on Navy review of the information available for these sheds including Northrop Grumman's Phase II ESA, their rating would be changed to Category 3 and they would be suitable for transfer without further environmental action. However, the sheds are located above the former Plant 03 Leachfield (see Section 3.4.1) and thus must be rated in Category 5. As noted in Section 3.4.1, this area remains under investigation as part of the Navy's IR Program and is being retained by the Navy. Unless moved to another location, the sheds will not be suitable for transfer until the former leachfield is successfully remediated.

#### **3.4.6 Building 03-33: Transportation Building**

Phase I EBS Conclusions: This relatively new garage facility, constructed in 1983 and lacking any visible floor cracks or records of spills as of the May 1997 visual site inspection, was rated in Category 1.

Activity Since Phase I EBS: A drywell on the west side of the building was determined to violate UIC regulations (H2M, 1998). A letter dated June 2, 1998 to NCDH stated that approximately 32 cubic yards of soil were excavated at the drywell and endpoint sample data showed no exceedances.

Final Conclusions: Based on the information available for Building 03-33, its rating would be changed to Category 4 and it would be suitable for transfer without further environmental action. However, the building is located above the former Plant 03 Leachfield (see Section 3.4.1) and thus must be rated in Category 5. As noted in Section 3.4.1, this area remains under investigation as part of the Navy's IR Program and is being retained by the Navy. The building will thus not be suitable for transfer until the former leachfield is successfully remediated.

#### **3.4.7 Building 03-38: Storage Building**

Phase I EBS Conclusions: This small metal storage building was rated in Category 7 because of a standing liquid of unknown composition observed in two concrete floor sumps. This liquid prevented visual examination of the sumps for possible cracks or other deterioration that could have provided a pathway for contamination of underlying soils.

Activity Since Phase I EBS: Northrop Grumman used this building as a 90-day central accumulation area, termed the Mini Drum Marshalling Area, for receiving regulatory waste generated by the cleanup of Building 03-01. Northrop Grumman has closed this central accumulation area pursuant to the requirements in its Part 373 Permit from NYSDEC (Leskovjan, 1998). A letter dated March 10, 1999 from NYSDEC to Northrop Grumman states that the area is officially closed.

Final Conclusions: The rating for Building 03-38 is changed to Category 5/Yellow because it is located above the former Plant 03 Leachfield (see Section 3.4.1). As noted in Section 3.4.1, this area remains under investigation as part of the Navy's IR Program and is being retained by the Navy. Unless moved to another location, the shed will not be suitable for transfer until the former leachfield is successfully remediated. Recipients of the building will have to be notified both of the remediation of the leachfield and of the materials that have been stored and handled in the Mini Drum Marshalling Area, as documented in the Part 373 Permit.

#### **3.4.8 Buildings 03-17 and 03-44: Equipment Repair Shop**

Phase I EBS Conclusions: Building 03-17 was rated in Category 7 because the destination of a floor drain in the building was uncertain. Pesticides, including MCP, 2,4-D, dicamba, betasan, amitrol, prometon, orthane, malathion, captan, and barbaryl, that had been stored in the building could have entered the floor drain. The Phase I EBS addressed joint buildings 03-17 and 03-44 as a single building labeled as Building 03-17. The building was razed in 1998 (Taormina, 1999).

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA identified the pesticide storage area and floor drain as AOC 28. Soil samples were collected at 2-foot intervals to a depth of 4 feet from below the pesticide storage area and analyzed for pesticides and TPHs as part of Northrop Grumman's Phase II ESA. Although no exceedances for pesticides were noted, TPH was quantified at 11.0 mg/kg in the samples. However, no STARS exceedances were found in subsequent delineation samples. No further action was recommended.

A drywell associated with a small storage building (Building 03-44) that formerly stood immediately to the north was determined to violate UIC regulations by the Drainage Discharge Determination report. A letter dated May 14, 1998 to NCDH stated that approximately 17 cubic yards of soil were excavated at the drywell, and no exceedances were noted in endpoint sampling.

Final Conclusions: Based on the information available specifically for these two connected sheds, their rating would be changed to Category 4 and they would be suitable for transfer without further environmental action. However, they are located above the former Plant 03 Leachfield (see Section 3.4.1) and thus must be rated in Category 5. As noted in Section 3.4.1, this area remains under investigation as part of the Navy's IR Program and is being retained by the Navy. Unless moved to another location, the sheds will not be suitable for transfer until the former leachfield is successfully remediated.

### **3.4.9 Building 03-45: Storage Shed**

Phase I EBS Conclusions: Building 03-45 was rated in Category 7 because it was in poor structural condition. A sign posted in the building read "Pesticide Storage Area," suggesting that pesticides were once stored in the building. If so, pesticide material reaching the plywood floor could have migrated out of deteriorated areas in the floor and wall to floor joints and reached exterior soils.

Activity Since Phase I EBS: Building 03-45, along with the other small storage buildings east of Building 03-13, have been razed in anticipation of closing Plant 03. The former location of this building and adjoining Building 03-51 (also razed) was identified as AOC 30 in the Phase I ESA because of the potential for leaks of oil and pesticides through the plywood floors of the sheds. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the former location of this building and analyzed for VOCs, pesticides, and TPHs. Although no VOC or pesticide exceedances were noted, TPHs were quantified as high as 37 mg/kg. Subsequent delineation sampling revealed STARS exceedances for benzo(a)pyrene and dibenzo(a,h)anthracene, but these were not concluded to represent a concern because the concentration of total CaPAHs in the samples was less than 10,000 µg/kg. However, the delineation sampling did reveal several exceedances of TAGM criteria for several metals, and the Phase II ESA thus recommended further investigation and possible remediation of the site of Building 03-45 as part of the Navy's IR Program.

Final Conclusions: Based on the findings of the Phase II ESA, the rating for Building 03-45 is changed to Category 5. This rating reflects the presence of metals in exceedance of screening criteria (TAGM #4046) and recommendation in the Phase II ESA that the site be further investigated and possibly remediated as part of the Navy's IR Program. The rating also reflects the former presence of a sludge drying bed (AOC 35) at this location before this and the other storage sheds to the north were constructed. Therefore, this area is being retained by the Navy for further investigation. The property will not be suitable for transfer until the former leachfield is successfully remediated. The Federal Government will have to notify the recipient about the materials known to have been stored in this building, as documented in the Phase I EBS and Phase I ESA, materials detected as part of the Phase II ESA, and progress of the remedial action.

### **3.4.10 Building 03-51: Storage Shed**

Phase I EBS Conclusions: Building 03-51 was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: This building, along with the other small storage buildings east of Building 03-13, have been razed in anticipation of closing Plant 03. The former location of this building and

adjoining Building 03-51 (also razed) was identified as AOC 30 in the Phase I ESA because of the potential for leaks of oil and pesticides through the plywood floors of the sheds. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the former location of Building 03-51 and analyzed for pesticides and TPHs. No pesticide exceedances were detected, but TPH was quantified as high as 7.2 mg/kg. Subsequent delineation sampling revealed a STARS exceedance for benzo(a)pyrene but not a total CaPAH concentration exceeding 10,000 µg/kg. However, as also noted for Building 03-45, the delineation samples were analyzed for metals and several exceedances of TAGM criteria were noted. Thus, as for the site of Building 03-45, the Phase II ESA recommended further investigation and possible remediation of the site of Building 03-51 as part of the Navy's IR Program.

Final Conclusions: Based on the findings of the Phase II ESA, the rating for Building 03-51 is changed to Category 5. This rating reflects the presence of metals in exceedance of screening criteria (TAGM #4046) and recommendation in the Phase II ESA that the site be further investigated and possibly remediated as part of the Navy's IR Program. The rating also reflects the former presence of a sludge drying bed (AOC 35) at this location before this and the other storage sheds to the north were constructed. Therefore, this area is being retained by the Navy for further investigation. The property will not be suitable for transfer until the former leachfield is successfully remediated. The Federal Government will have to notify the recipient about the materials known to have been stored in this building, as documented in the Phase I EBS and Phase I ESA, materials detected as part of the Phase II ESA, and progress of the remedial action.

### **3.5           NORTHEAST PART OF NAVY PARCEL**

This area, generally comprising the northeastern quadrant of the 105-acre parcel and located to the north and northeast of Building 03-01, is addressed in a separate Phase I ESA and corresponding Phase II ESA completed by Radian (Radian 1997b and 1997g). Areas within Plant 03, but not immediately associated with Building 03-01, are shown in Figure 3-2. Two areas, the Salvage Storage Area (environs of Building 03-07) and an area surrounding the recharge basins, were addressed in documentation produced as part of the IR Program. The recharge basins were also addressed by Grumman independently of the IR Program in a separate Phase I ESA and corresponding Phase II ESA (ERM, 1998a and 1998b).

#### **3.5.1        Building 03-07: Salvage Building**

Phase I EBS Conclusions: The Phase I EBS rated the present Building 03-07 as Category 2, based on the presence of a 4,000-gallon fiberglass fuel oil UST that had recently passed a tightness test and for which no evidence existed of spills, leaks, or other environmental concerns. However, the former location of a previous Building 03-07 that was razed after construction of the present building was rated in

Category 7 because of a lack of closure documentation for an associated fuel oil UST (Tank 03-07-1). The location of the former Building 03-07 is approximately 400 feet southwest of the present building.

Activity Since Phase I EBS: No environmental activity has occurred at either the current Building 03-07 since completion of the Phase I EBS. However, the Phase I ESA completed for the Salvage Area identified the former location of Tank 03-07-1, associated with the razed building 03-07, as AOC 1. Two soil borings were made at the suspected former location of the tank as part of a corresponding Phase II ESA, and soil samples were collected at 2-foot intervals to a depth of 20 feet and analyzed for VOCs, PCBs, and TPHs. No exceedances were noted for VOCs or PCBs. TPH was quantified at 430 mg/kg in one sample, but no STARS exceedances were noted in subsequent secondary sampling at this location. Northrop Grumman thus concluded that no further action was necessary.

Final Conclusions: The rating for the present Building 03-07 remains Category 2 based on the associated fiberglass fuel oil UST. The rating for the location of the razed former Building 03-07 is changed to Category 3 based on the findings of the Phase II ESA. Both locations are suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been stored at each, as documented in the Phase I EBS and Phase I ESA. For the former location of the razed Building 03-07, the Federal Government will also have to notify the recipient as to the materials detected by the Phase II ESA.

### **3.5.2 Building 03-08: Salvage Shed and Salvage Yard**

Phase I EBS Conclusions: The Salvage Shed was rated in Category 7 because a standing dark colored liquid of unknown composition was observed in a floor trench. The presence of the liquid prevented inspection of the trench for cracks or other deterioration that could have served as a pathway for the liquid to contaminated underlying soils.

Activity Since Phase I EBS: Since completion of the Phase I EBS, Northrop Grumman power-washed the trench with analconox solution and inspected the cleaned trench. Northrop Grumman reported that no cracks were found (Leskovjan, 1998).

Final Conclusions: The rating for Building 03-08 has been changed to Category 2. Liquids potentially containing contaminants may have accumulated in the floor trench in the building, but the trench was subsequently observed to be structurally sound enough to prevent potential leaks or other releases to the environment. This property is suitable for transfer without further environmental action. The Federal Government will have to notify recipients of this property about the extended occurrence of an uncharacterized oily sludge in the trench for an indefinite period of time before its recent cleanout by Grumman.

### **3.5.3 Salvage Storage Area**

Phase I EBS Conclusions: The Salvage Storage Area was rated in Category 3. The area had been investigated under the Navy's IR Program before the Phase I EBS. A Remedial Investigation (RI) produced under the IR Program had concluded that surface soil contamination in this area did not pose a significant direct carcinogenic or noncarcinogenic risk to workers onsite or to offsite residents. A subsequent Phase 2 RI produced under the IR Program had concluded that PCB concentrations in soils in this area did not pose a significant environmental risk.

Activity Since Phase I EBS: No further investigation or other environmental action has occurred in this area since completion of the Phase I EBS.

Final Conclusions: This area remains rated in Category 3 based on the findings of the IR Program, as reported in the Phase I EBS. It is suitable for transfer without further environmental action. The Federal Government will have to notify recipients of this property about the hazardous materials known to have been present there, as documented in the IAS and the Phase I EBS, and about the low levels of soil contamination documented in the RI and Phase 2 RI.

### **3.5.4 Building 03-12: Well House No. 15**

Phase I ESA Conclusions: This small well house building, which was used to pump industrial water to Building 03-01, was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at this building since the Phase I EBS.

Final Conclusions: The rating for this building remains Category 1. It is suitable for transfer without further action.

### **3.5.5 Building 03-34: Industrial Waste Treatment Facility**

Phase I ESA Conclusions: This onsite industrial wastewater treatment facility was constructed in 1984 to treat industrial wastewater from Plant 03 before discharge to the sanitary sewer or transportation offsite. No environmental concerns were identified for the building itself, which was of new construction with no visible structural defects and no records of problems. But a rating of Category 7 was assigned because one of several associated USTs (Tank 03-34-3) was awaiting a scheduled tightness test.

Activity Since Phase I EBS: The subject UST (Tank 03-43-3) has subsequently passed a tightness test. No potential environmental concerns were identified for Building 03-34 itself by the Phase I ESA completed for it, the permitted Drum Storage Pad (Building 03-37), and the Salvage Storage Area. But the Phase I ESA did identify the location of a removed UST approximately 50 feet south of the building (Tank 03-28-1) as AOC 2. The designation reflected a lack of closure documentation for the tank, which was a single-walled steel diesel fuel tank of 550 gallons. Soil samples were collected at 2-foot intervals from 10 to 20 feet below grade at the former tank location and analyzed for VOCs, TPHs, and PCBs. Only one constituent, methylene chloride, was detected, and it was less than regulatory guidance levels. No further action was recommended.

Final Conclusions: The rating for Building 03-34 is changed to Category 3 because Tank 03-34-3 passed a tightness test and the findings of the Phase II ESA. It is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about materials known to have been stored and handled there, as documented in the Phase I EBS and Phase I ESA, and about materials detected as part of Phase II ESA investigations.

### **3.5.6 Building 03-37: Drum Storage Pad**

Phase I ESA Conclusions: This permitted waste storage facility was rated in Category 2. Available evidence suggested that it was constructed and operated in compliance with Resource Conservation and Recovery Act (RCRA) and with applicable New York State regulations with no visible or documented evidence of releases outside of the secondary containment.

Activity Since Phase I EBS: The facility was investigated by Northrop Grumman as part of a Phase II ESA produced specifically for it, Building 03-34, and the Salvage Storage Area. No AOCs were identified for this facility. Northrop Grumman has since closed this facility in accordance with its permit. A letter dated March 10, 1999 states that the facility is officially closed.

Final Conclusions: Building 03-37 remains rated in Category 2. It is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about its waste handling history and its permitting history.

### **3.5.7 Building 03-43: Storage Building**

Phase I EBS Conclusions: This building served as a screen building for industrial wastewater directed to Building 03-34 for treatment. It was rated in Category 7 based on the high apparent probability that spills

of uncharacterized wastewater generated by various industrial processes in Building 03-01 could have spilled onto adjoining areas of bare soil.

Activity Since Phase I EBS: This building was not identified as an AOC by Northrop Grumman in Phase I ESAs for either Plant 03 or for the Salvage Area. No sampling or other detailed site investigations have been conducted at the building.

Final Conclusions: The rating for Building 03-43 is changed to Category 2. No soil sampling has been conducted to verify the absence of contamination in soils surrounding the building. But additional record reviews and visual site inspections by both the Navy and Northrop Grumman did not reveal documented evidence of specific spills or leaks from the building. Additionally, the building lacks any readily visible structural defects. These facts suggest that the probability of spills is not high. It is thus concluded that the building is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about uncharacterized industrial wastewater from Plant 03 operations that was handled in the building.

### **3.5.8 Building 03-49: Sand Shed**

Phase I EBS Conclusions: This small building, which was used to store road salt, fertilizer, and other nonhazardous materials used in grounds maintenance, was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at this building since the Phase I EBS.

Final Conclusions: Building 03-49 remains rated in Category 1 and is suitable for transfer without further environmental action.

### **3.5.9 Recharge Basins and Sludge Drying Beds**

Phase I EBS Conclusions: The recharge basins were rated in Category 3 based on low levels of detection of contaminants reported in a SI and RI produced under the IR Program. The sludge drying beds were rated in Category 5 because of an ongoing effort to remove PCB-contaminated soils documented in a Phase 2 RI produced under the IR Program.

Activity Since Phase I EBS: Although the IR program did not recommend further investigation of the recharge basins, Northrop Grumman elected to conduct a new Phase I ESA on the recharge basins in March 1998. Based on the recommendations of the document, additional sampling of the sediments in



the recharge basins and of the groundwater under the basins was conducted in 1998. The results were reported in a Phase II ESA dated April 22, 1998 (ERM, 1998b). The Phase II ESA report noted that low concentrations of certain SVOCs, metals, and PCBs were detected in the samples but did not recommend further action. Thus, the rating of 3/Light Green assigned in the Phase I EBS remains unchanged by the findings of the Phase II ESA.

The PCB removal action that was ongoing in 1997 has been completed. The excavation resulted soil that had a PCB concentration of less than 10 mg/kg at the former location of the sludge drying beds.

Final Conclusions: The rating for the recharge basins remains Category 3. The recharge basins are suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the low concentrations of constituents detected in the basins and documented in the RI, Phase 2 RI, and Phase II ESA. The rating for the sludge drying beds is changed to Category 4 based on the successful completion of the PCB removal action. The Federal Government will have to notify the recipient about constituents detected at the location in the RI and Phase 2 RI and details of the PCB removal action.

#### **3.5.10 Cemetery**

Phase I EBS Conclusions: This small cemetery, which was established before industrial development of the 105-acre parcel, was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at the cemetery since the Phase I EBS.

Final Conclusions: The cemetery remains rated in Category 1 and is suitable for transfer without further environmental action. Future land use would be limited to maintenance of the site as a cemetery.

#### **3.5.11 Wooded Area**

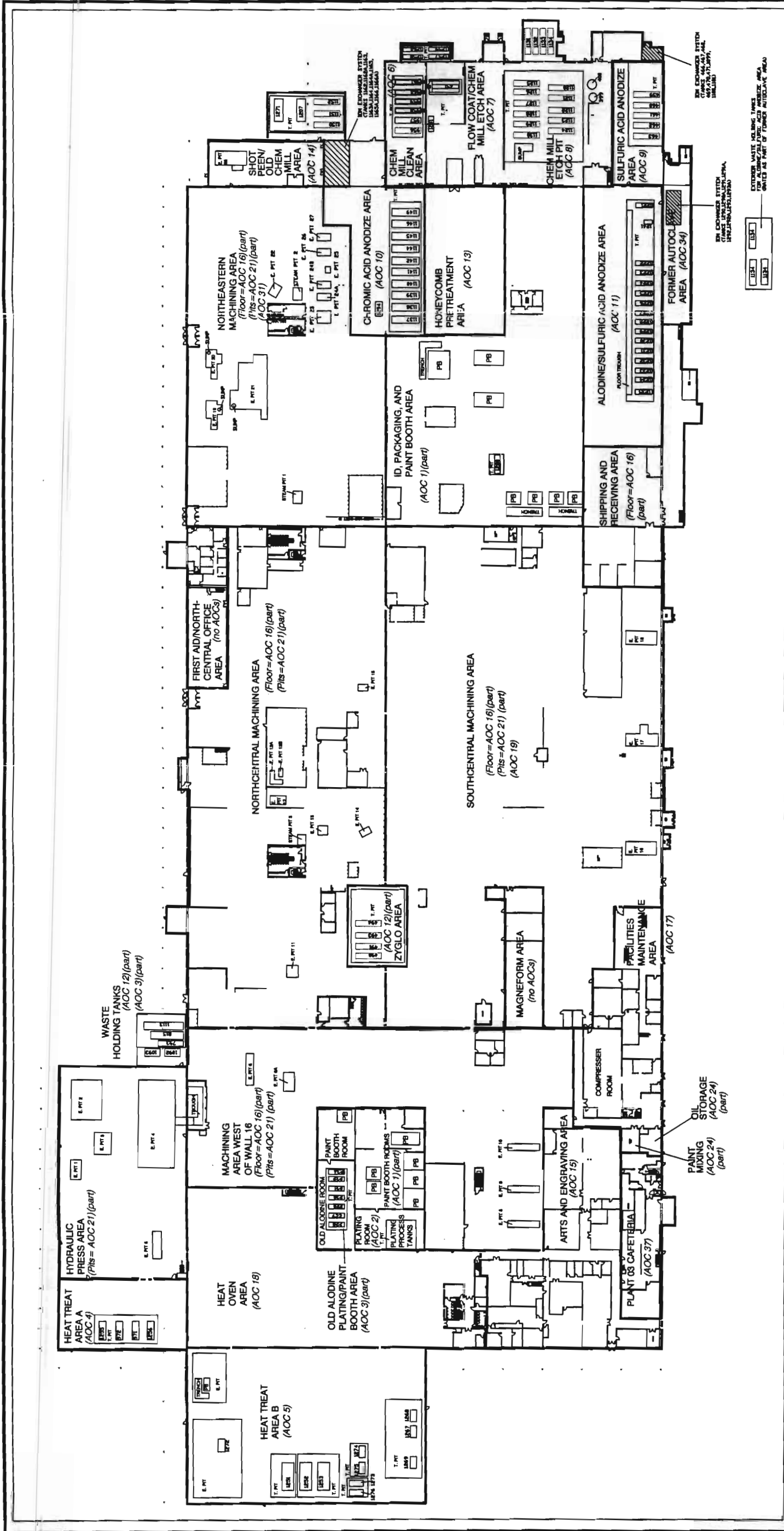
Phase I EBS Conclusions: A ditch through this wooded area along the northeastern perimeter of the 105-acre parcel was rated in Category 7 because of evidence from aerial photographs that the ditch once lead to a former shooting range and landfill to the north and east, respectively, of the parcel. The remainder of the wooded area was rated in Category 1.

Activity Since Phase I EBS: Soil samples were collected at 2-foot intervals to a depth of 4 feet at three locations within the swale and analyzed for metals. Copper and zinc were detected at concentrations

exceeding Eastern United States background levels, but no further action was recommended because neither copper nor zinc are regulated as hazardous constituents by New York State. Chromium exceeded of applicable TAGM criteria, but no further action was recommended because no exceedances were noted for the toxic hexavalent form of chromium. The exceedance was instead attributed to the less toxic trivalent form of chromium. These findings were reported to NYSDEC in a letter dated September 25, 1998. NYSDEC-DSHM approved Northrop Grumman's no further action request in a letter dated December 10, 1998.

Final Conclusions: The rating for the ditch has been changed to Category 3 based on the sampling results noted above without further environmental action. The Federal Government will have to notify the recipient about the history of the ditch and the findings of the sampling summarized above.

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**Legend**

- E. Pit - Equipment Pit
- T. Pit - Tank Pit (Process Tanks)
- Numbered Rectangles and Circles are Process Tanks

Note: Areas investigated as part of AOC 20 (Diffusion Galleries and Drywells), AOC 32 (PCE and TCE Storage Tanks), AOC 33 (Waste Accumulation Areas), and AOC 36 (Unbiased Random Locations) are located at various points throughout the interior and immediate exterior of Building 03-01.

SCALE IN FEET

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**Figure 3-1**  
**Plant 3 - Building 03-01**  
**Interior Plan**  
**Phase II EBS**  
**NWIRP Bethpage, New York**

Figure 3-2

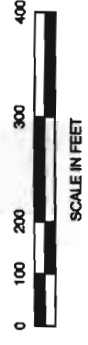
Other Plant 3 AOCs

Phase II EBS  
NWIRP Bethpage, New York

Legend



Note: Areas investigated as part of AOC 20 (Diffusion Galleries and Drywells) and AOC 22 (Petroleum Storage Tanks) are located throughout the exterior areas associated with Plant 03.

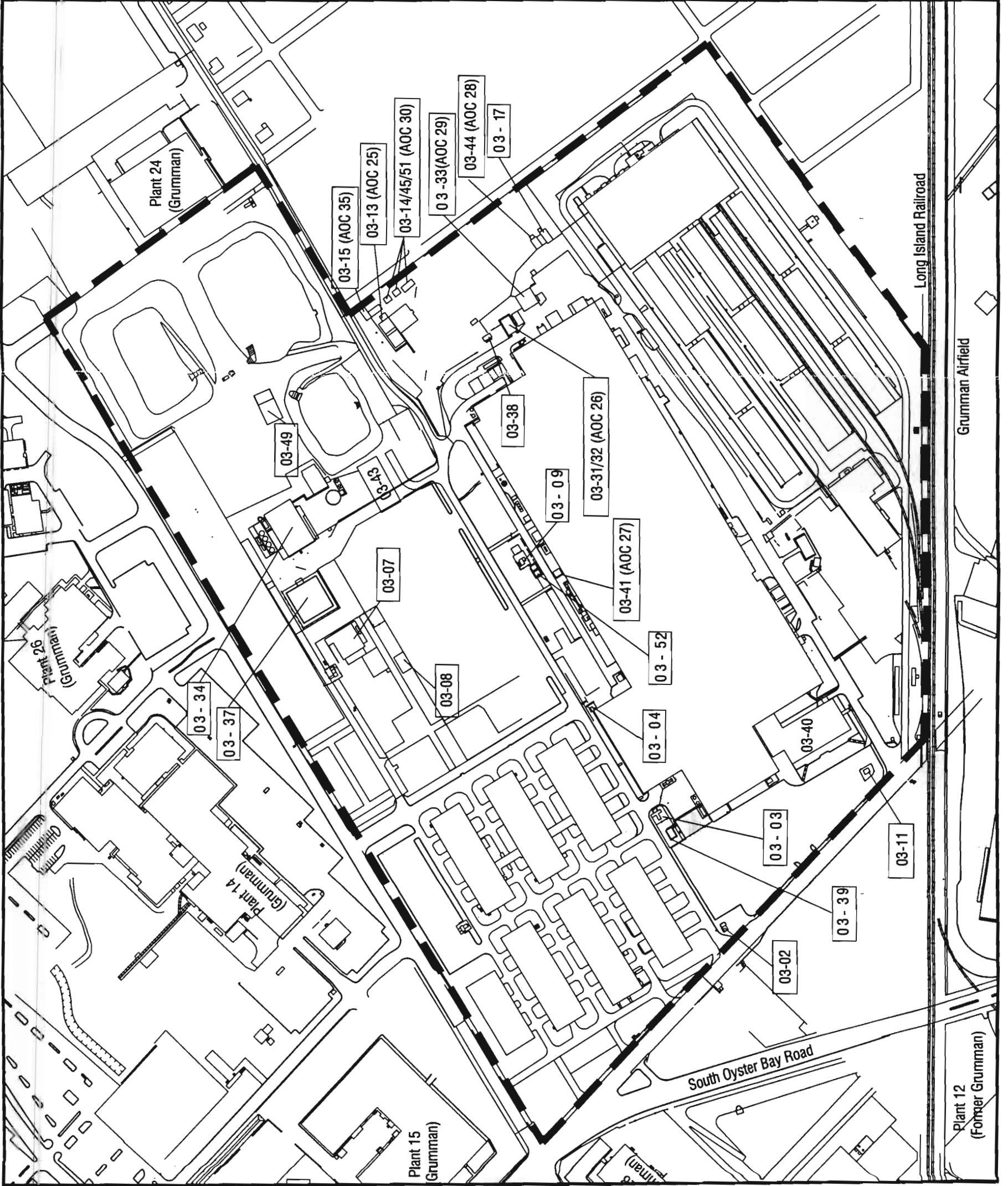


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## 4.0 ENVIRONMENTAL INFORMATION SUMMARY FOR PLANT 10

Plant 10 was addressed in a Phase I ESA and corresponding Phase II ESA completed by Radian for Northrop Grumman in March 1997 and March 1998, respectively (Radian 1997c and 1998b). Northrop Grumman's Drainage Discharge Determination (H2M, 1998), discussed in Section 3.0, addressed Plant 10 as well as Plant 03. The destinations for each drainage feature (including sinks, floor drains, clean outs, and other such features) were determined using as-built drawings, smoke or dye traces, or other procedures. Northrop Grumman then conducted sampling and other investigations as necessary to determine whether drainage features to uncontrolled destinations had resulted in environmental contamination. Northrop Grumman has performed remediation as necessary to comply with UIC regulations.

The sections below summarize the conclusions presented for each area of Plant 10 in the Navy's Phase I EBS and discuss how Northrop Grumman investigated each of those areas. Figure 4-1 illustrates the various areas of Plant 10 and also shows the locations of specific AOCs identified for Plant 10 by Northrop Grumman. The sections indicate what conclusions Northrop Grumman drew from its investigations and how those investigations were reported to NYSDEC and other regulatory agencies.

### 4.1 BUILDING 10-01: LABORATORY

Phase I EBS Conclusions: Building 10-01 was rated in Category 7 for the following reasons: (1) the former neutron generating pit in Room 49, (2) the equipment pit in Room 35, (3) the backup and flooding of the floor drain in Room 6 (the wet chemistry laboratory), (4) the unknown condition of piping to drywells and leaching chambers throughout the building, (5) the unknown condition of subsurface soils around the drywells, (6) observed floor damage (corroded concrete) in Room 39, and (7) lack of cleanup documentation for the mercury spill in Room 38.

Activity Since Phase I EBS: Northrop Grumman's investigation of Building 10-01 is summarized below. Northrop Grumman's Phase I ESA identified five AOCs for Building 10-01. The equipment pit in Room 35 was investigated as AOC 10. Room 6 and the piping throughout Building 10-01 was investigated as AOC 3. The drywells were investigated as AOC 1. Rooms 38 and 39 were investigated in a separate report issued in January 1999. Upon further review, Room 49 was determined to not represent a significant environmental risk, and no further investigation was conducted.

Northrop Grumman's Phase I ESA for Plant 10 identified the locations of the exterior drywells around Building 10-01 as AOC 1 (AOCs identified for Plant 10 have no relationship to corresponding AOCs identified for Plant 03). Soil samples were collected at depths of 12 to 14 feet and 32 to 34 feet at each drywell and analyzed for metals, VOCs, TPHs, and PCBs as part of Northrop Grumman's Phase II ESA

for Plant 10. No exceedances of TAGM criteria were noted for metals or PCBs. TPH as gasoline was quantified as high as 10.9 mg/kg and TPH as No. 2 fuel oil was quantified as high as 43 mg/kg in one sample from 12 to 14 feet. The VOC 1,2-dichloroethene was also found at 740 µg/kg in the same sample, exceeding the TAGM guidance value of 300 µg/kg. In response, additional samples were collected at the subject location and analyzed for VOCs and STARS constituents. No exceedances of TAGM criteria for VOCs or STARS guidance values were found. Northrop Grumman thus concluded that no further action was necessary and reported these findings to NYSDEC in a letter dated March 30, 1998. A letter issued by NYSDEC on June 23, 1998 accepted Northrop Grumman's conclusions for AOC 1.

An exterior area, immediately south of Building 10-01, that contains septic facilities was identified by Northrop Grumman's Phase I ESA as AOC 2. Soil samples at various depths were collected at two locations adjacent to the filled-in leaching chambers and analyzed for metals, VOCs, TPHs, and PCBs in Northrop Grumman's Phase II ESA. No exceedances of TAGM criteria were found for any analytes, and TPH was not detected. Later in the investigation process, Northrop Grumman collected samples directly through the filled-in leaching chambers and analyzed this later round of samples for PCBs, TPHs, VOCs, metals, and STARS constituents. Exceedances of TAGM criteria for several metals (including chromium, mercury, zinc, silver, and selenium) were found. TPH was detected in the samples, and the STARS constituent benzo(a)pyrene exceeded its corresponding guidance value. Northrop Grumman thus concluded that each leaching chamber would have to be excavated to a depth of 24 feet, but that surrounding soil would not have to be excavated. A letter from Northrop Grumman to NYSDEC dated June 26, 1998 stated that soil was excavated to a depth of 14 to 24 feet, as necessary to clean out the septic facilities, and endpoint soil samples were satisfactory.

The subsurface piping throughout Building 10-01 was identified in Northrop Grumman's Phase I ESA as AOC 3. Soil samples were collected as part of Northrop Grumman's Phase II ESA at 2-foot intervals to a depth of 4 feet at selected interior locations in rooms where the largest quantities of hazardous chemicals were handled and thus could have reached drains leading to the subsurface piping. Sample locations are shown on Figure 3 of Northrop Grumman's Phase II ESA. Sample locations included nine soil borings in Room 6 (the former wet chemistry laboratory). Other samples were taken in Rooms 5, 36, 44, 45, 46, 50, and 58, and in corridors and exterior areas surrounding Rooms 6 and 36 (see Figure 4-1 for names and locations of rooms). Soil samples were analyzed for metals, VOCs, TPHs, and PCBs. Exceedances of TAGM criteria for mercury were found in samples from under the wet chemistry laboratory, and TPH was detected in samples from several locations. Based on the results of subsequent sampling events, Northrop Grumman concluded that an area of mercury-contaminated soil, measuring 11 feet by 17 feet by 8 feet deep, under the former wet chemistry laboratory (Room 6) would require excavation.

Northrop Grumman subsequently removed and disposed of the concrete floor of Room 6, and then excavated approximately 50 cubic yards of soil from the area of mercury contamination identified in the Phase II ESA. According to a letter dated March 31, 1998 from Northrop Grumman to NYSDEC, mercury and SVOC exceedances were found in endpoint soil samples collected following the excavation. However, the concentration of total CaPAHs in the endpoint samples was less than 10,000 µg/kg, and TCLP analysis demonstrated that the potential leaching of mercury from the soils did not represent an unacceptable risk to groundwater. Furthermore, additional excavation of soil from under this room would have threatened the structural integrity of the building walls. Northrop Grumman thus concluded in the letter that no further action was necessary. A letter issued by NYSDEC on May 13, 1998 accepted Northrop Grumman's remediation of this area.

The stained woodblock and concrete floor in the Machine Shop (Room 48) was identified in Northrop Grumman's Phase I ESA as AOC 4. Soil samples were collected from under the floor at representative locations in the shop and analyzed for metals, VOCs, SVOCs, TPHs, and PCBs as part of Northrop Grumman's Phase II ESA. Sample locations are shown on Figure 3 of Northrop Grumman's Phase II ESA. No exceedances of TAGM criteria were found for VOCs, SVOCs, or PCBs. TPH was detected in the initial soil samples, and exceedances of TAGM criteria were found for arsenic and chromium. Northrop Grumman thus collected additional samples for analysis for metals and STARS constituents. No exceedances of TAGM criteria for metals or of STARS guidance values for the analyzed STARS constituents were found. Northrop Grumman thus concluded that no further action was necessary. Northrop Grumman reported these findings to NYSDEC in a letter dated March 30, 1998. A letter issued by NYSDEC on May 13, 1998 accepted Northrop Grumman's conclusions for AOC 4.

The Plant 10 loading dock was identified in Northrop Grumman's Phase I ESA as AOC 5. Soil samples were collected at 2-foot intervals to a depth of 4 feet at two locations under the concrete loading dock and analyzed for metals, VOCs, SVOCs, TPHs, and PCBs as part of Northrop Grumman's Phase II ESA. TPH was not detected, and no exceedances of TAGM criteria were found for metals, VOCs, SVOCs, or PCBs. Northrop Grumman thus concluded that no further action was necessary.

The machine pit in Room 35 was identified as AOC 10 by Northrop Grumman after completion of the Phase I ESA. Northrop Grumman also identified an abandoned hydraulic pump in Room 56 as a late AOC (AOC 10). Soil samples from under each location were analyzed for PCBs, TPHs, and STARS constituents as part of Northrop Grumman's Phase II ESA. No exceedances of TAGM for PCBs were found. TPH was quantified as high as 75 mg/kg, but the only exceedance of STARS guidances values was for benzo(a)pyrene. Based on the low magnitude of the exceedance at both locations (no greater than 110 µg/kg vs. a guidance value of 61 µg/kg), Northrop Grumman concluded that no further action was necessary.



Northrop Grumman also discovered an abandoned degreaser pit covered by wood flooring in parts of Rooms 44, 45, and 46 late in its investigation process. Based on observations made by field personnel, the concrete pit was in good condition and did not exhibit any cracking or staining. Therefore, this area was not assigned an AOC number. Soil samples at 0 to 2 and 2 to 4 foot depths under the pit were analyzed for VOCs, and no exceedances of TAGM criteria were found. These findings are presented in a letter report dated May 29, 1998 by Dvirka and Bartilucci for Northrop Grumman. The report concluded that no further action was necessary.

In response to the concerns expressed for Rooms 38 and 39 in the Navy's Phase I EBS, Northrop Grumman hired a consultant to collect soil samples from representative locations in each room and analyzed them for metals, VOCs, SVOCs, and TPHs. No exceedances of TAGM criteria were observed for the metals, VOCs, or SVOCs, and TPH was not detected. These results are presented in a letter report dated January 15, 1999 to Northrop Grumman from the consultant (H2M, 1999a). Based on these results, Northrop Grumman concluded that no further action was necessary.

Northrop Grumman has closed several features associated with Building 10-01 that require closure under UIC regulation. A letter dated June 17, 1998 from Northrop Grumman to the NCDH indicates that Northrop Grumman excavated approximately 85 cubic yards of soil in a depth range of 10 to 26 feet below ground surface at the location of Drywell C2. A letter dated May 19, 1998 from Northrop Grumman to the NCDH indicates that soil samples collected below Building 10-01's North Drywell did not display TAGM exceedances and thus do not require excavation in order to comply with UIC regulations.

Final Conclusions: Based on Navy review of the investigation and remediation activities conducted by Northrop Grumman, summarized above, the rating for Building 10-01 is changed to Category 4. The rating reflects the successful removal of the associated septic facilities and remediation of contaminated soils at the former site of those facilities (AOC 2), and the successful excavation of contaminated concrete and soil from Room 6 (the former wet chemistry laboratory) (AOC 3). The building is suitable for transfer without further environmental action. The Federal Government will have to inform the recipient about materials that were handled in Building 10-01 and about the drywells and septic facilities immediately outside of the building. The recipient should be provided with the results of Northrop Grumman's investigations of AOCs 1-5 and 9-10 for Plant 10, the abandoned degreaser pit, and Rooms 38 and 39 of Plant 10. The recipient should also be notified of the satisfactory remediation of the septic facilities and Room 6 (AOCs 2 and 3, respectively).

#### **4.2 BUILDING 10-02: STORAGE BUILDING**

Phase I EBS Conclusions: This small storage building was rated in Category 7 because old drawings reviewed as part of the Phase I EBS suggested that a series of underground fuel tanks formerly existed near this location. No environmental concerns were identified for the building itself.

Activity Since Phase I EBS: Northrop Grumman identified the tanks as USTs 03-01-1, 03-01-2, and 03-01-3, all located immediately south of the southwestern part of Building 03-01. These tanks were investigated in Northrop Grumman's Phase II ESA for Plant 03 (not Plant 10) as AOC 22. The tanks are thus regarded as separate and unaffiliated with Building 10-02. Northrop Grumman proposes that remediation be conducted as part of the Navy's IR Program (Leskovjan, 1998). The Navy is presently reviewing whether to include the tanks in the IR Program.

Northrop Grumman's Drainage Discharge Report (H2M, 1998) determined that a cesspool and leaching pool that formerly served Building 10-02 violated of UIC regulations. A letter dated May 27, 1998 from Northrop Grumman to NCDH stated that soil was excavated to a depth of 14 feet below the cesspool and 16 feet below the leaching pool. Endpoint sample data were satisfactory. The total volume of soil excavated from the cesspool was approximately 75 cubic yards and approximately 85 cubic yards from the leaching pool.

Final Conclusions: Based on Navy analysis of Northrop Grumman's investigations and remediation summarized above, the rating for Building 10-02 is changed to Category 4. The rating is based on the completed remediation of the associated cesspool and leaching pool. Building 10-02 is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the former cesspool and leaching pool, provide the results of Northrop Grumman's investigation of those features, and indicate that it has been remediated to NCDH's satisfaction.

The suspected tanks that formed the basis for the original Category 7 rating have been determined to be located closer to Building 03-01 than to Building 10-02. The former location of USTs 03-01-1, 03-01-2, and 03-01-3 on the south side of Building 03-01 is now rated Category 5 (see Section 3.1.7), but these tanks do not affect the suitability for transfer of Building 10-02 and immediate environs.

#### **4.3 BUILDING 10-04: SCALE HOUSE**

Phase I EBS Conclusions: This small, abandoned wooden structure, which appears to have been formerly used as a weigh station for trucks entering the plant, was rated in Category 1. An adjacent abandoned guard shack (Building 03-XA) was also rated in Category 1.

Activity Since Phase I EBS: Buildings 10-04 and 03-XA were not specifically the subject of any further investigation since completion of the Phase I EBS. However, Northrop Grumman did investigate soils under a cluster of railroad track spurs immediately south of the buildings. The rail spurs have been abandoned in recent years but were formerly used to provide freight service to NWIRP Bethpage. The rail spurs were not identified as potential problems in either the Navy's Phase I EBS or Northrop Grumman's Phase I ESA. Eleven soil borings were taken at the abandoned railroad tracks (identified by Northrop Grumman as the "Railroad Track Site" rather than as an AOC) and analyzed for VOCs as part of the Phase II ESA. No exceedances of TAGM criteria were found, and Northrop Grumman concluded that no further action was necessary.

Final Conclusions: The rating of Category 1 for Buildings 10-04 and 03-XA is not changed, and the buildings are suitable for transfer without further environmental action. However, based on Navy analysis of Northrop Grumman's investigations summarized earlier, a rating of 3 (Light Green) is assigned to the rail spur area to the south. This exterior area is also suitable for transfer without further environmental action, but the Federal Government will have to provide the recipient with the results of Northrop Grumman's investigations of the Railroad Track Site.

#### **4.4 BUILDING 03-40: GAC PROM**

Phase I EBS Conclusions: This office building, constructed in 1985 as an addition to the west side of Building 03-01, was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at any of these buildings since the Phase I EBS.

Final Conclusions: The building remains rated in Category 1 and is suitable for transfer without further environmental action.

#### **4.5 BUILDING 03-35: MAINTENANCE BUILDING**

Phase I EBS Conclusions: This storage building for maintenance equipment and tools was rated in Category 1. No potential environmental concerns could be identified based on the available information.

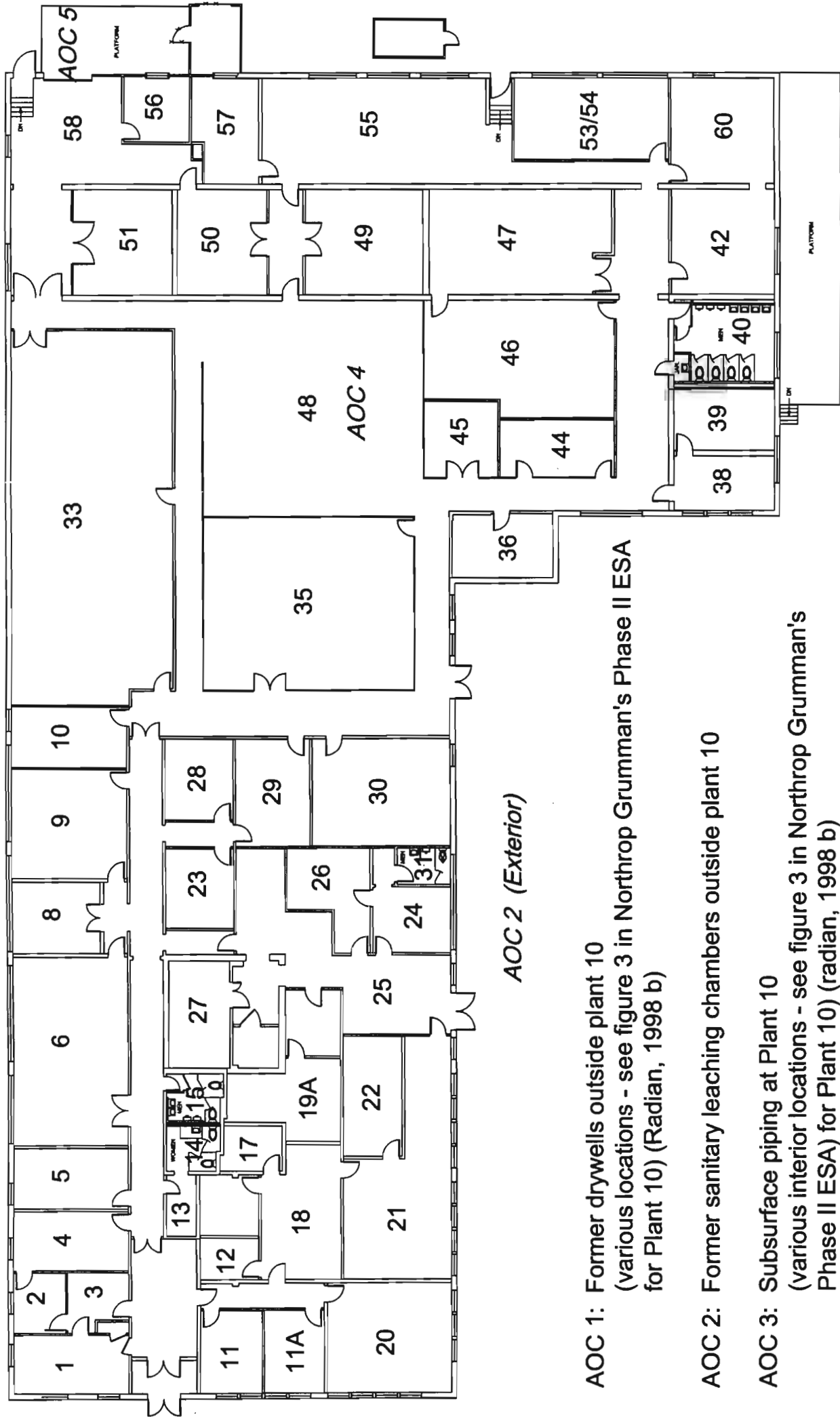
Activity Since Phase I EBS: No investigation or other environmental activity has occurred at any of these buildings since the Phase I EBS.

Final Conclusions: The building remains rated in Category 1 and is suitable for transfer without further environmental action.

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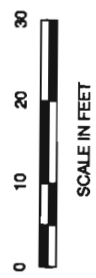
**Figure 4-1**

**Building 10-01**



**Legend**

- 1-PLANT DIRECTOR'S OFFICE
- 2-STATIONARY STOCK STORAGE
- 3-SECRETARY OFFICE
- 4-DEPUTY DIRECTOR'S OFFICE
- 5-ADHESIVE/SEALANT TEST LAB. - CHEM. LAB.
- 6-WET CHEMISTRY SECTION - CHEM. LAB.
- 8-MASS SPEC. ROOM
- 9-VACUUM FUSION LAB. SECTION - CHEM. LAB.
- 10-ADVANCED DEVELOPMENT IN D.T. MANAGERS OFFICE
- 11-ADMIN. OFFICE
- 11A-PLANNING OFFICE
- 12-CHEMISTRY LAB. SUPERVISOR'S OFFICE
- 13-LADIES' ROOM
- 14-LADIES' ROOM
- 15-MEN'S ROOM
- 16-LEAD ENGINEERS OFFICE - CHEM. LAB.
- 17-SPECTROGRAPHIC PLATE ROOM - CHEM. LAB.
- 18-X-RAY DIFFRACTION - CHEM.
- 19-DARK ROOM/READING ROOM - NDT LAB.
- 20-DARK ROOM
- 20-LAB. OPERATIONS OFFICE
- 21-IR/INFRARED ANALYSIS - CHEM. LAB.
- 21A-CHEMISTRY LAB. OFFICE
- 22-EMISSION SPECTROGRAPHY - CHEM. LAB.
- 23-PROCESS CONTROL OFFICE
- 24-NONDESTRUCTIVE TEST OFFICE
- 24A-X-RAY EXPOSURE - NOT LAB.
- 24B-NDT LAB.
- 25-PENET. & MAG. PARTICLE INSP. RM.
- 26-OFFICE
- 27-320KV X-RAY MACHINE - NDT LAB.
- 28-DIRECTOR/STAFF OFFICE
- 29-DIRECT READING SPECTROGRAPH
- 30-GAS CHROMATOGRAPHY - CHEM. LAB.
- 31-MEN'S ROOM
- 33-NONDESTRUCTIVE TEST LAB.
- 34-LOBBY
- 35-PHYSICAL TEST L
- 36-PAINT LAB. - CHEM. LAB. AB. - MET. LAB.
- 38-COMPUTER DEVELOPMENT ROOM - CHEM. LAB.
- 39-CHEMICAL STORAGE ROOM
- 40-MEN'S ROOM
- 41-MAINTENANCE SUPPLY ROOM
- 42-MICROELECTRONIC FAILURE ANALYSIS LAB. - QUALITY ENGG
- 44-STORE ROOM (CHEM. MACH. SHOP)
- 45-HEAT TREATING MET. LAB.
- 46-ETCHING-MOUNTING SEC. - MET. LAB.
- 47-MET. LAB. OFFICE
- 48-MACHINE SHOP
- 49-CHEMICAL EVALUATION
- 50-HYDRAULIC FAILURE ANALYSIS LAB. - QUALITY ENGG
- 51-UTILITIES (ELECTRICAL)
- 53-REC. INSP. SECTION/MAT.
- 54-MICROELECTRONICS FAILURE ANALYSIS LAB. - Q.E. SECTION
- 57-STAFF
- 58-RECEIVING PLATFORM
- 60-QUALITY ENGG OFFICE



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Note: AOC numbers refer to Northrop Grumman's Phase II ESA for Plant 10 and the Plant 17 South Warehouse (Radian, 1998 b)

- AOC 1: Former drywells outside plant 10 (various locations - see figure 3 in Northrop Grumman's Phase II ESA for Plant 10) (Radian, 1998 b)
- AOC 2: Former sanitary leaching chambers outside plant 10
- AOC 3: Subsurface piping at Plant 10 (various interior locations - see figure 3 in Northrop Grumman's Phase II ESA for Plant 10) (radian, 1998 b)
- AOC 4: Stained floor in Machine Shop at Plant 10
- AOC 5: Loading Dock at Plant 10

Numbers not preceded by "AOC" refer to room numbers in Plant 10.

## 5.0 ENVIRONMENTAL INFORMATION SUMMARY FOR PLANT 17

The Plant 17 North Warehouses, located in the northwestern quadrant of the 105-acre parcel, were addressed in a Phase I ESA and corresponding Phase II ESA completed by Radian in March 1997 and December 1997, respectively (Radian, 1997d and 1997h). The Plant 17 South Warehouses, located in the southeastern quadrant of the 105-acre parcel, were addressed in the same documents covering Plant 10. These documents include a Phase I ESA and corresponding Phase II ESA completed by Radian in March 1997 and March 1998, respectively (Radian 1997c and 1998b). Both warehouse complexes were also addressed in the drainage discharge report discussed previously in the context of Plants 03 and 10 (H2M, 1998).

The subsequent sections summarize the conclusions presented for each area of Plant 17 in the Navy's Phase I EBS and discuss how Northrop Grumman investigated each of those areas. Section 5.1 addresses the North Warehouse Complex and Section 5.2 addresses the South Warehouse Complex. Figure 5-1 illustrates the various areas of Plant 17 and also shows the locations of specific AOCs identified for Plant 17 by Northrop Grumman. The sections indicate what conclusions Northrop Grumman drew from its investigations and how those investigations were reported to NYSDEC and other regulatory agencies.

### 5.1 NORTH WAREHOUSE COMPLEX

The Plant 17 North Warehouses, located in the northwestern quadrant of the 105-acre parcel, were addressed in a Phase I ESA and corresponding Phase II ESA completed by Radian in March 1997 and December 1997, respectively (Radian, 1997d and 1997h).

#### 5.1.1 Building 17N-1: Warehouse 8

Phase I EBS Conclusions: Warehouse 8 was rated in Category 7 because of heavy oil stains observed on the floor under an air compressor and because no closure documentation was available for former exterior septic tanks and leaching chambers.

Activity Since Phase I EBS: The oil stains under the air compressor were identified by Northrop Grumman's Phase I ESA for the Plant 17 North Warehouses as AOC 7. Soil samples were collected at 2-foot intervals to a depth of 4 feet at a representative location under stained concrete and analyzed for TPHs and PCBs as part of Northrop Grumman's corresponding Phase II ESA. The former septic facilities were identified as AOC 11, and soil samples were collected at depths of 12 to 14 feet and 32 to 34 feet below grade in three representative locations and analyzed for metals, VOCs, TPHs, and PCBs. TPHs

were not detected in any samples, and no exceedances of TAGM criteria were noted for any other analyte.

Two additional AOCs were identified at Warehouse 8 by Northrop Grumman's Phase I ESA: AOC 6, a drum storage area, and AOC 8, a chemical storage area. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the concrete at two representative locations at the drum storage area (AOC 6). The samples were analyzed for metals, VOCs, SVOCs, TPHs and PCBs. TPHs were not detected in any sample, and no exceedances of TAGM criteria were noted for any other analyte.

Soil samples were collected at 2-foot intervals to a depth of 4 feet below the concrete at six representative locations at the chemical storage area (AOC 8). The samples were analyzed for metals, VOCs, SVOCs, TPH, and PCBs. TPH was not detected in any sample, and no exceedances of TAGM criteria were noted for VOCs, SVOCs, or PCBs. Mercury exceedances were detected in some samples. In response, additional soil samples were collected for mercury analysis. No exceedances of the TAGM criterion for mercury were found in any secondary soil sample. Northrop Grumman thus concluded that no further action was necessary.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA, the rating for Warehouse 8 has been changed to Category 3. Although mercury concentrations exceeding the TAGM criterion were detected in preliminary soil samples collected from under the chemical storage area, no exceedances were detected in subsequent soil samples. This property is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in the building and provide the recipient with the results of Northrop Grumman's investigation of AOCs 6, 7, 8, and 11 for the Plant 17 North Warehouses.

#### **5.1.2 Building 17N-2: Warehouse 6**

Phase I EBS Conclusions: Warehouse 6 was rated in Category 1. A collection pit was not identified as a potential environmental concern because the building did not appear to have a substantial history of much industrial activity that could have resulted in the accumulation of hazardous materials or petroleum products in the pit.

Activity Since Phase I EBS: In contrast to the Navy's Phase I EBS, Northrop Grumman's Phase I ESA for the Plant 17 North Warehouses identified the collection pit as an AOC (AOC 5). Soil samples were collected at 2-foot intervals to a depth of 4 feet under the pit and analyzed for metals, VOCs, SVOCs, TPHs, and PCBs as part of Northrop Grumman's corresponding Phase II ESA. TPH was not detected in any sample, and no exceedances of TAGM criteria were noted for any other analyte. However, a steam pit floor drain in the building was found to allow discharge to underlying soils, as described in Northrop



Grumman's Drainage Discharge Report (H2M, 1998). A letter dated May 19, 1998 from Northrop Grumman to NCDH stated that approximately 0.2 cubic yards of soil were excavated from under the floor drain, and endpoint soil samples were satisfactory.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase I ESA and remediation of the steam pit floor drain, the rating for Warehouse 6 is changed to Category 4. The rating reflects the successful remediation of contaminated soil from under the steam pit floor drain. The warehouse is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in the warehouse and provide the recipient with the results of Northrop Grumman's investigation of AOC 5 for the Plant 17 North Warehouses. The Federal Government will also have to notify the recipient about the remediation of soil under the steam pit floor drain.

#### **5.1.3 Building 17N-3: Warehouse 4**

Phase I EBS Conclusions: Warehouse 4 was rated in Category 1. A former stormwater drywell was not identified as a potential environmental concern because the building does not have a history of substantial industrial activity that could have significantly contaminated runoff directed to the drywell. An oil barrel storage pad was not identified as a potential environmental concern because of a lack of documented or visual evidence of leaks or spills in that area.

Activity Since Phase I EBS: In contrast to the Navy's Phase I EBS, Northrop Grumman's Phase I ESA for the Plant 17 North Warehouses identified the former drywell location and former oil storage area as AOCs (AOC 1 and 2, respectively). Soil samples were collected at depths of 12 to 14 feet and 32 to 34 feet at the location of the former drywell and analyzed for metals, VOCs, TPH, and PCBs as part of the corresponding Phase II ESA. TPH was not detected in any sample, and no exceedances of TAGM criteria were noted for any other analyte. Northrop Grumman concluded that no further action was necessary.

Soil samples were collected at 2-foot intervals to a depth of 4 feet at various representative locations under the oil barrel storage pad (AOC 2) and analyzed for metals, VOCs, SVOCs, TPHs, and PCBs. TPH was detected in many samples, and exceedances of TAGM criteria were noted for several SVOCs, arsenic, and copper in soil to a depth of 4 feet under the oil storage pad. Northrop Grumman concluded that contaminated soil under the pad would require excavation and disposal, and it collected additional soil samples to delineate the plume of contamination. The area was excavated to a depth of approximately 6 feet, and additional excavation was performed as necessary to obtain satisfactory endpoint soil samples. Northrop Grumman's remediation of the former oil storage area was reported to

NYSDEC in a letter dated March 31, 1998. A letter issued by NYSDEC dated May 13, 1998 accepted Northrop Grumman's remediation of the former oil storage area.

Final Conclusions: Based on Navy analysis of Northrop Grumman's investigation and remediation of the oil storage pad, the rating for Warehouse 4 is changed to Category 4. Warehouse 4 is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in the warehouse and provide the recipient with the results of Northrop Grumman's investigation of AOCs 1 and 2 for the Plant 17 North Warehouses. It will also have to notify the recipient of the successful remediation of the contaminated soil under the former oil storage area.

#### **5.1.4 Building 17N-4: Warehouse 9**

Phase I EBS Conclusions: Warehouse 9 was rated in Category 7 because of observed cracks in floor trenches (router bench collection trenches) inside the building. A sump near the southwest corner of the building was not identified as a potential environmental concern because the building did not have a history of much industrial activity that could have resulted in a significant accumulation of hazardous substances or petroleum products in the sump.

Activity Since Phase I EBS: The router bench collection trenches were identified in Northrop Grumman's Phase I ESA for the Plant 17 North Warehouses as AOC 10. Soil samples were collected at 2-foot intervals to a depth of 4 feet below the trenches at two representative locations and analyzed for metals, TPHs, and PCBs as part of Northrop Grumman's corresponding Phase II ESA. Although no exceedances of TAGM criteria were noted, TPH was detected in certain samples as high as 2,400 mg/kg. Additional samples were thus collected for analysis for STARS constituents. No exceedances of the STARS guidance values were noted. Northrop Grumman thus concluded that no further action was necessary.

Northrop Grumman also identified the sump in Warehouse 9 as an additional AOC (AOC 9) and collected soil samples at 2-foot intervals to a depth of 4 feet below the sump. The samples were analyzed for metals, VOCs, SVOCs, TPHs, and PCBs. TPH was not detected in any sample, and no exceedances of TAGM criteria were noted for any other analyte. Northrop Grumman concluded that no further action was necessary.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA, the rating for Warehouse 9 has been changed to Category 3. The building is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials

known to have been handled in the warehouse and provide the recipient with the results of Northrop Grumman's investigation of AOCs 9 and 10 for the North Warehouses.

#### **5.1.5 Building 17N-5: Warehouse 7**

Phase I EBS Conclusions: This warehouse was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at any of these buildings since the Phase I EBS.

Final Conclusions: The building remains rated in Category 1. It is suitable for transfer without further environmental action.

#### **5.1.6 Building 17N-6: Warehouse 5**

Phase I EBS Conclusions: Warehouse 5 was rated in Category 7 because no closure documentation was available for a septic tank and leaching pools located to the immediate northwest of the building.

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA for the Plant 17 North Warehouses identified the former septic tank and leaching pools as AOC 4. Soil samples were collected at depths of 12 to 14 feet and 32 to 34 feet below grade at the former septic facility location and analyzed for metals, VOCs, TPHs, and PCBs as part of Northrop Grumman's corresponding Phase II ESA. The Phase I ESA also identified a floor trench inside the warehouse as AOC 3. Soil samples were collected as part of the Phase II ESA at 0 to 2 and 2 to 4 feet below the trench and analyzed for metals, VOCs, TPHs, and PCBs. TPH was not detected in any sample, and no exceedances of TAGM criteria were noted for any other analyte. Northrop Grumman concluded that no further action was necessary for either AOC. The leaching pools and a steam pit drain associated with the floor trench were formally closed in compliance with UIC regulations.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA, the rating for Warehouse 5 is changed to Category 4. The building is suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the former presence of the septic tank, leaching pools, and floor trench, and provide the recipient with the results of Northrop Grumman's investigation of AOCs 3 and 4 for the Plant 17 North Warehouses.

### 5.1.7 Building 17N-09: Well House

Phase I EBS Conclusions: This well house was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: Building 17N-09 was not subject to further investigation since completion of the Phase I EBS. However, Northrop Grumman's Phase I ESA for the Plant 17 North Warehouses did identify the paved area to the northwest, which was historically used to store drums, as AOC 12. Soil samples were collected at 2-foot intervals to a depth of 4 feet at several representative locations across this area and analyzed for metals, VOCs, SVOCs, TPHs, and PCBs as part of the corresponding Phase II ESA. Specific sample locations for AOC 12 of Plant 17 North Warehouses are shown in Figure 5 of the corresponding Phase II ESA. Although no exceedances of TAGM criteria were found for VOCs, SVOCs, or PCBs, TPH was detected and exceedances of TAGM criteria for several metals (mercury, zinc, chromium, cadmium, and arsenic) were found in certain samples. Northrop Grumman collected additional samples to analyze for STARS constituents and found no exceedances of STARS guidance criteria. Northrop Grumman also collected additional samples to delineate the plume of metals contamination and concluded that shallow soils in the eastern and northern parts of the area would require excavation and disposal. A letter dated March 31, 1998 from Northrop Grumman to NYSDEC stated that the area was excavated to a depth of 3 feet as necessary, and additional excavation was performed in places to ensure that endpoint soil samples were satisfactory. A letter dated May 13, 1998 issued by NYSDEC accepted Northrop Grumman's remediation of this area.

Final Conclusions: Although the rating for the well house itself remains in Category 1, the paved area to the northwest is now rated Category 4 based on the successful remediation by Northrop Grumman of the adjoining area that was formerly used to store drums. The well house and surrounding area are suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the former drum storage activity at this location, provide the recipient with the results of Northrop Grumman's investigation of AOC 12 for the Plant 17 North Warehouses, and notify the recipient of the successful remediation of metals-contaminated soils at that location.

## 5.2 SOUTH WAREHOUSE COMPLEX

The Plant 17 South Warehouses, located in the southeastern quadrant of the 105-acre parcel, were addressed in the same documents covering Plant 10. These documents include a Phase I ESA and corresponding Phase II ESA completed by Radian in March 1997 and March 1998, respectively (Radian 1997c and 1998b).

### 5.2.1 Buildings 17S-11 through 17S-19: Warehouses I/J/K/E/F/G/A/B/C

Phase I EBS Conclusions: Each of these structurally similar warehouse buildings were individually rated in Category 1 or 2 depending on whether the inspectors found evidence of storage of hazardous materials or petroleum products. Even for those warehouses with evidence of storage of these materials, no evidence existed of leaks, spills, or other releases to the environment.

Activity Since Phase I EBS: Northrop Grumman's Phase I ESA for Plant 10 and the Plant 17 South Warehouses identified nine former stormwater drywells in exterior areas surrounding these buildings as AOC 6. The concerns were based on the fact that the drywells received stormwater runoff from paved areas around the warehouses where vehicles may have dripped fuels or lubricants or where hazardous materials may have fallen to the pavement during offloading operations. Soil samples were collected from the drywells and analyzed for metals, VOCs, SVOCs, TPHs, and PCBs as part of Northrop Grumman's corresponding Phase II ESA. TPH was detected in the samples as high as 20 mg/kg, and exceedances of TAGM criteria were found for zinc and PCBs. No exceedances of TAGM criteria were noted for the other analytes. Additional samples were collected to better characterize and delineate the contamination. Exceedances of TAGM criteria were noted for several metals, and exceedances of STARS guidances values were noted for several STARS constituents.

Based on the sampling results, Northrop Grumman concluded that remediation of contaminated soil would be necessary at two of the former drywell locations, one immediately exterior to Building 17S-14 (Warehouse 2E) and one immediately exterior to Building 17S-15 (Warehouse 2F). These findings were reported to NYSDEC in a letter dated March 30, 1998. A letter dated June 22, 1998 to NYSDEC stated that each of the two drywells requiring remediation were excavated to a depth of 24 feet, and endpoint soil samples were satisfactory. Northrop Grumman has also performed UIC closure activity for a sanitary leaching pool just south of Building 17S-19.

Final Conclusions: Based on Navy review of Northrop Grumman's Phase II ESA and subsequent remediation and UIC closure activities, the ratings for Buildings 17S-14, 17S-15, and 17S-19 are changed to Category 4. The ratings for the other subject warehouses are changed to Category 3. The buildings are suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about materials known to have been handled in the warehouses and provide results of Northrop Grumman's investigation of AOC 6 for the Plant 10 and the Plant 17 Warehouses. The notification will also have to address the remediation of the drywells and closure of the sanitary leaching pool.

### 5.2.2 Building 17S-20 (Warehouses D/H/L/M/N)

Phase I ESA Conclusions: This interconnected series of warehouses under one roof was rated in Category 7 because of an oily liquid accumulation in an interior machining pit and because of an abandoned exterior leachfield located immediately east of the building.

Activity Since Phase I EBS: The machining pit has been subsequently cleaned out and observed to be structurally sound (Taormina, personal correspondence). Thus there appears to be no pathway by which liquids in the pit could have migrated to underlying soils.

Northrop Grumman's Phase I ESA for the Plant 10 and the Plant 17 Warehouses identified the former leachfield as AOC 8. Soil samples were collected from six representative locations at the former leachfield and analyzed for metals, VOCs, TPHs, and PCBs as part of the corresponding Phase II ESA. TPH was not detected in the sample. The only exceedance of TAGM criteria was for arsenic, and it was noted only in a narrow interval of soil approximately 32 feet below grade. Northrop Grumman concluded that it was not necessary to further investigate or remediate soil in this area, considering the low magnitude of the exceedance and because exceedances were not noted in soil samples collected from depths above and below the subject depth. Northrop Grumman reported these findings to NYSDEC in a letter dated March 30, 1998.

Additionally, Northrop Grumman identified the location of a former drywell inside Building 17S-20 as a potential environmental concern (AOC 7). Northrop Grumman collected soil samples at depths of 12 to 14 feet and 32 to 34 feet at this location and analyzed them for metals, VOCs, SVOCs, TPHs, and PCBs. TPH was detected in one sample, and exceedances of TAGM criteria were found for zinc and several SVOCs. However, additional samples collected to better characterize and delineate the contamination revealed no exceedances of TAGM criteria. Exceedances of STARS guidance values were found for several STARS constituents. However, when the samples were subjected to TCLP analysis, TCLP guidance values in the STARS memorandum were not exceeded. Northrop Grumman thus concluded that no further action was necessary.

Northrop Grumman's Discharge Drainage Report recommended that three former drywell locations east of Building 17-20 be investigated further under the County UIC Program. A letter dated May 19, 1998 from Northrop Grumman to NCDH stated that 11.6 cubic yards of soil were excavated from under one of the drywells, designated as Drywell O1. A second letter from Northrop Grumman to NCDH dated June 17, 1998 stated that the second of the drywells, designated as Drywell N2, was excavated to a depth of 12 to 20 feet below grade. A third letter dated June 25, 1998 stated that the third drywell, designated as Drywell N1, was excavated to a depth of 12 to 24 feet below grade. Each of the letters reported that no exceedances were found in endpoint soil samples. Based on endpoint sample results,

Northrop Grumman concluded that no further excavation was necessary at the three former dry well locations east of Building 17-20. NCDH concurred with Northrop Grumman's no further excavation decision in letters dated June 1, 1998, June 19, 1998 and June 30, 1998. Northrop Grumman has also undertaken UIC closure activities for two drywells, two catch basins, and a trench drain inside Building 17S-20 (Dvirka and Bartilucci, 1999).

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase I ESA and Northrop Grumman's other investigation and remediation activities at this location, the rating for Building 17S-20 (including the exterior land area to the east where the former leachfield was located) is changed to Category 4. The building and surrounding land are suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the materials known to have been handled in the building and provide the results of Northrop Grumman's investigation of AOCs 7 and 8 for Plant 10 and Plant 17 South Warehouses. The recipient will also have to be notified about the remediation of drywells in compliance with UIC regulations.

### **5.2.3 Building 17S-22: Pump House**

Phase I EBS Conclusions: This small pumphouse structure was rated in Category 7 because of a lack of available closure documentation for a UST (Tank 17-22-1), which formerly stored diesel fuel for the pump. This UST was removed several years before the Phase I EBS and replaced with an AST for which no potential environmental concerns were identified.

Activity Since Phase I EBS: File data provided by Northrop Grumman in response to the EBS findings indicates that Tank 17-22-1 was removed after failing a tightness test in September, 1991. The failed test was labeled as Spill No. 91-05709. Data collected as part of the removal show that soils under the tank were not significantly contaminated (Tyree Brothers, 1991).

A letter to NCDH dated July 7, 1998 stated that a drywell associated with the pumphouse was excavated to a depth of 8 to 10 feet and the soil disposed of offsite. No exceedances for any constituent of interest were noted in endpoint soil samples.

Final Conclusions: The rating for Building 17S-22 has been changed to Category 4, reflecting removal of Tank 17-22-1. The structure is suitable for transfer without further environmental action. The recipient will have to be informed about the previous presence of the UST and about the findings from sampling conducted as part of the tank removal and as part of the investigation of the drywell.

#### **5.2.4 Building 17S-25: Storage Shed**

Phase I EBS Conclusions: This metal storage shed, attached to Building 17S-20, was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at any of these buildings since the Phase I EBS.

Final Conclusions: The building remains rated in Category 1. It is suitable for transfer without further environmental action.

#### **5.2.5 Buildings 17S-32 and 17S-33: Boiler Houses**

Phase I EBS Conclusions: These two one-room brick buildings located on the east side of Building 17S-20, were rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at any of these buildings since the Phase I EBS.

Final Conclusions: The building remains rated in Category 1. It is suitable for transfer without further environmental action.

#### **5.2.6 Building 17S-36: Water Lift Station**

Phase I EBS Conclusions: This electric pump structure was rated in Category 1. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: No investigation or other environmental activity has occurred at any of these buildings since the Phase I EBS.

Final Conclusions: The building remains rated in Category 1. It is suitable for transfer without further environmental action.

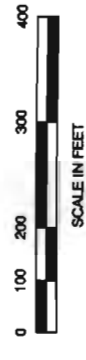


**Figure 5-1**

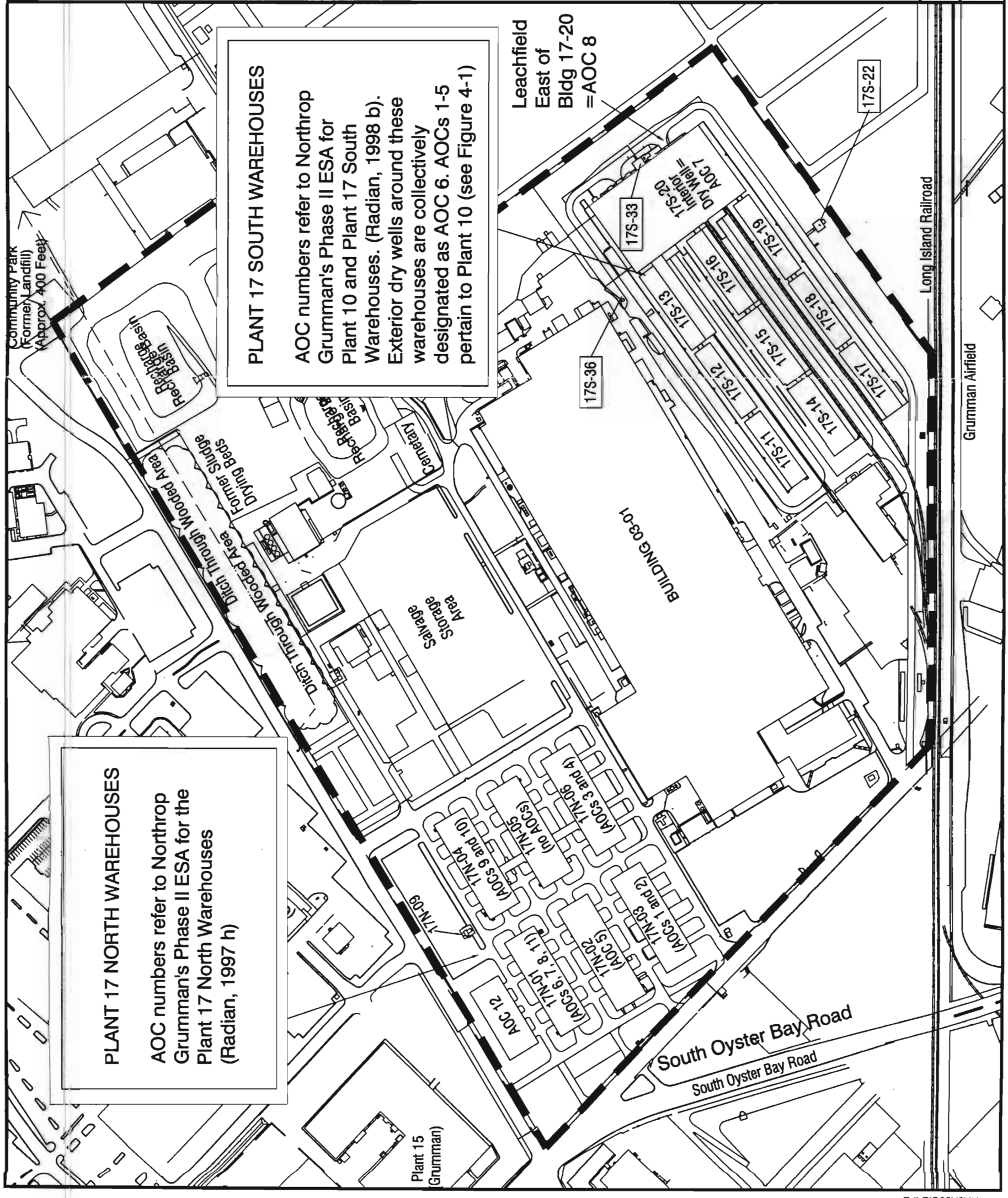
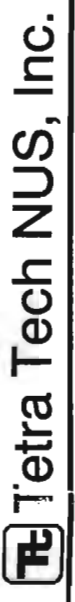
**Plant 17**

**Phase II EBS  
NWIRP Bethpage, New York**

**Legend**



Dec. 7, 1989      REV 2      PROJECT: CTO 283



## 6.0 ENVIRONMENTAL INFORMATION SUMMARY FOR PLANT 20

Plant 20, encompassing the entire 4.5-acre Navy-owned parcel of land in the northern part of the Grumman Bethpage complex, was addressed in a Phase I ESA and corresponding Phase II ESA completed for Northrop Grumman by Radian in February 1997 and September 1998, respectively (Radian 1997f and 1998i).

The subsequent sections summarize the conclusions presented for each area of Plant 20 in the Navy's Phase I EBS and discuss how Northrop Grumman investigated each of those areas in its Phase II ESAs. The sections indicate what conclusions Northrop Grumman drew from its investigations and how those investigations were reported to NYSDEC and other regulatory agencies. Buildings for Plant 20 are shown in Figure 6-1.

### 6.1 BUILDING 20-01

Phase I EBS Conclusions: Building 20-01 was rated in Category 5 because Northrop Grumman was closing the leachfield east of the building at that time under UIC regulations. The Phase I EBS also raised concerns over several USTs serving the building and noted that Northrop Grumman was investigating several other areas of the building, although the concerns at those areas were not visually apparent at the time. Remediation and closure of dry wells discharging to the leachfield were reported to the USEPA in a letter dated May 19, 1998. The USEPA-Groundwater Compliance Section approved closure and the continued use of existing drywells for stormwater drainage in a letter dated June 5, 1998.

Activity Since Phase I EBS: The closure process for the leachfield has been completed. The remedial action that was required for Building 20-01 was the cleanup and closure of a sanitary leachfield serving the building and located immediately to the east and northeast. The leachfield was closed in accordance with applicable underground injection control (UIC) requirements, and the closure was approved by the USEPA in 1997. Building 20-01 has also been subjected to an intensive program of field sampling as part of Northrop Grumman's Phase II ESA prepared specifically for it and its exterior surroundings (Radian, 1997i). This sampling program addressed six AOCs identified in Grumman's Phase I ESA for Plant 20 (Radian, 1997f).

Grumman identified the removed and abandoned USTs associated with Building 20-01 as AOC 6. Northrop Grumman collected soil samples over 2-foot intervals in a depth range of 10 to 20 feet from four borings at the tank locations and analyzed the samples for SVOCs, TPHs, and PCBs. TPH was detected at concentrations as high as 200 mg/kg in samples from one of the borings. An additional round of samples was collected from that boring location and analyzed for STARS constituents. No exceedances

of STARS guidance criteria were noted in these samples. Thus, Northrop Grumman concluded that no further action was necessary for AOC 6.

Other AOCs investigated by Grumman include a paint shop drain and drain line (discharging to the leachfield east of 20-01) (AOC 1), a waste oil storage area (AOC 2), an unused product storage area (AOC 3), an oil dispensing area (AOC 4), and a hydraulic lift reservoir (AOC 5). These areas are located inside Building 20-01. Although some slight exceedances of TAGM criteria for mercury, copper, and zinc were noted in an initial round of samples, no exceedances were noted in follow-up sampling performed to further investigate the exceedances. Northrop Grumman thus concluded that no further action was necessary for any AOC.

The formerly unpaved parking lot on the east side of Building 20-01 was not specifically investigated by Grumman as an AOC. Four of the soil borings sampled to investigate former USTs (AOC 6) were located in the exterior area immediately east of the building. As noted earlier, analytical data collected from soil samples from those borings did not suggest a need for remedial action. Still, the soil boring locations were not adequately spaced to allow a confident conclusion that no contaminated soil exists under the present pavement. The pavement essentially prevents exposure of surface receptors to the underlying soils. Sampling of groundwater monitoring wells located both upgradient and downgradient of the Plant 20 parcel, conducted by Northrop Grumman, showed that there were no hazardous substances detected in these wells that exceeded Federal or State drinking water standards, and thus no further action specifically addressing Plant 20 is recommended.

Final Conclusions: Based on Navy analysis of Northrop Grumman's Phase II ESA for Plant 20 and Northrop Grumman's conclusions summarized above, the rating for Building 20-01 is changed to Category 4. The rating reflects the completion by Northrop Grumman of its effort to clean out the former leachfield associated with the building. The investigation activities reported in the Phase II adequately resolve the environmental concerns raised for Building 20-01. Groundwater at the Plant 20 Parcel will not be used for drinking or other domestic purposes. A formal groundwater use restriction will become part of the deed as written in the Environmental Covenants, Conditions, Reservations, and Restrictions for NWIRP Bethpage Plant 20 of January 2002. The Federal Government will have to notify the recipient of the materials known to have been handled in Building 20-01 and provide the recipient with the results of Northrop Grumman's Phase II ESA investigations of that building.

## **6.2 REMAINDER OF 4.5-ACRE PARCEL**

Phase I EBS Conclusions: A vehicle wash facility (Building 20-04) and associated storage shed (Building 20-03) were investigated in the Phase I EBS, and both were rated in Category 2. The rating reflected the presence of an oil-water separator at the wash facility and the former storage of No. 2 fuel oil in the

storage building to fuel a former steam jenny housed there. No potential environmental concerns could be identified based on the available information.

Activity Since Phase I EBS: Building 20-03 (storage shed and steam jenny) was recently razed.

Final Conclusions: These buildings remain rated in Category 2 and are suitable for transfer without further environmental action. The Federal Government will have to notify the recipient about the oil-water separator and the former storage of fuel oil at these buildings.

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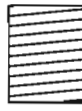
**Figure 6-1**

**4.5 - Acre Parcel  
(Plant 20)**

Phase II EBS  
NWIRP Bethpage, New York

**Legend**

— Parcel Perimeter



Building Addressed  
in Phase I EBS

Note: All Northrop Grumman  
AOCs for Plant 20 were associated  
with building 20-01.



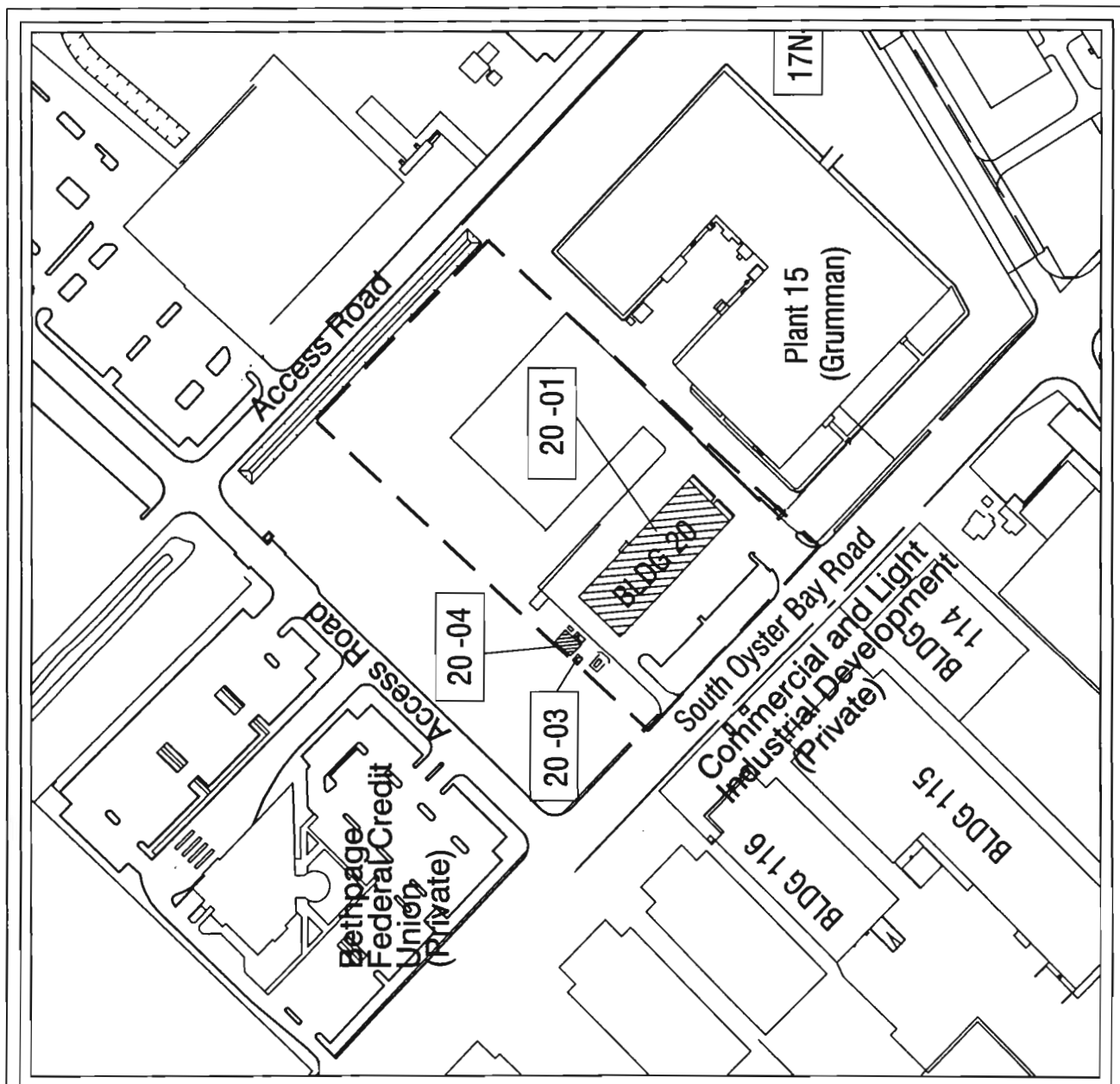
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REV 2

PROJECT: CTO 283

**Tetra Tech NUS, Inc.**





## 7.0 ENVIRONMENTAL INFORMATION SUMMARY FOR PLANT 05

The scope of the Final Phase II Environmental Baseline Survey addresses only real property owned by the Navy.



## 8.0 ENVIRONMENTAL INFORMATION SUMMARY FOR GROUNDWATER AND ADJACENT PROPERTIES

Hazardous substances (as defined by CERCLA) have been released to groundwater under the 105-Acres, as well as beneath the rest of the current and former Northrop Grumman property to the south and west. Based on available information, the levels of hazardous substances, mainly volatile organic compounds (VOCs), present in groundwater under this parcel at this time present an unacceptable risk to potential users. In response, the Navy, along with Northrop Grumman, are currently conducting remedial actions to address the contaminated groundwater under this and the adjacent properties. The actions that are being taken are in accordance with New York State Department of Environmental Conservation (NYSDEC) Record of Decision (ROD) for Operable Unit 2 Groundwater of March 01, that was prepared and is being issued by NYSDEC. The Occidental Chemical Company, owner of the nearby Hooker/RUCO Polymer Plant, under the direction of the Region II office of the U.S. Environmental Protection Agency (USEPA), is separately pursuing groundwater treatment in and around their 17-acre facility located northwest of NWIRP Bethpage (see Figure 1-1). The Hooker/RUCO site was listed on the National Priorities List in 1986.

In 1996 Northrop Grumman began installation of interim remedial measure (IRM) consisting of a pump and treat system to address groundwater contamination under NWIRP Bethpage and other parts of the Northrop Grumman Bethpage complex. NYSDEC has determined that the remedial actions as described in detail in the ROD for Operable Unit 2 are properly treating the groundwater contamination below the Navy's 105-Acres. Operation of the IRM continues to date. Its function is to intercept and contain contaminated groundwater from the Navy's 105-Acres and other Northrop Grumman properties so as to prevent VOC-contaminated groundwater from further migration to the south. In March 2000, the Navy began another interim action consisting of the installation of a series of permanent groundwater monitoring wells based on a plan that was developed by Northrop Grumman. Construction of these wells is required so that the long-term effectiveness of the pump and treat system can be evaluated and groundwater sampling of these wells over time will also determine when the remediation goals set forth in the groundwater ROD have been met. Installation of these wells was completed in November 2001. Figure 8-1 shows the general layout of the IRM, which consists of one production well (GP-1), three extraction wells (ONCT-1, ONCT-2, and ONCT-3), and a new treatment plant near Plant 05. The USEPA has stated that if Hooker/RUCO uses the Navy's IRM to treat contamination from the vinyl chloride monomer (VCM), the Navy would have to redesign the IRM system to accommodate the VCM flow.

The ratings assigned to the various units of real property on NWIRP Bethpage in Sections 3 through 6 of this Phase II EBS thus reflect surface conditions only and not groundwater.

In order to facilitate the transfer of property at NWIRP Bethpage for areas of property for which an Environmental Category Rating has been assigned based on surface conditions, the Navy has completed the feasibility study, selected a PRAP, and issued a ROD for submission to the satisfaction of the NYSDEC and other interested regulatory agencies, and in cooperation with Northrop Grumman, successfully installed, as an interim remedial measure (IRM), a pump and treat containment system and currently continues to operate the pump and treat system.

A detailed review of properties adjacent to NWIRP Bethpage is provided in Section 5 of the Phase I EBS. This review included a computerized environmental database search, in accordance with Provisional Standard 37-95 (PS 37-95) established by the American Society for Materials and Testing, for all properties within 1 mile of the perimeter of NWIRP Bethpage. It also involved a visual site reconnaissance of properties within a 0.25-mile radius of the NWIRP Bethpage perimeter in May 1997. None of the properties investigated appeared to have a potential to significantly affect the environmental condition of the land surface anywhere in NWIRP Bethpage. The Phase I EBS did acknowledge that some properties could potentially affect regional groundwater. But, as noted above, the groundwater under NWIRP Bethpage is under remediation as detailed in the ROD for Operable Unit 2.

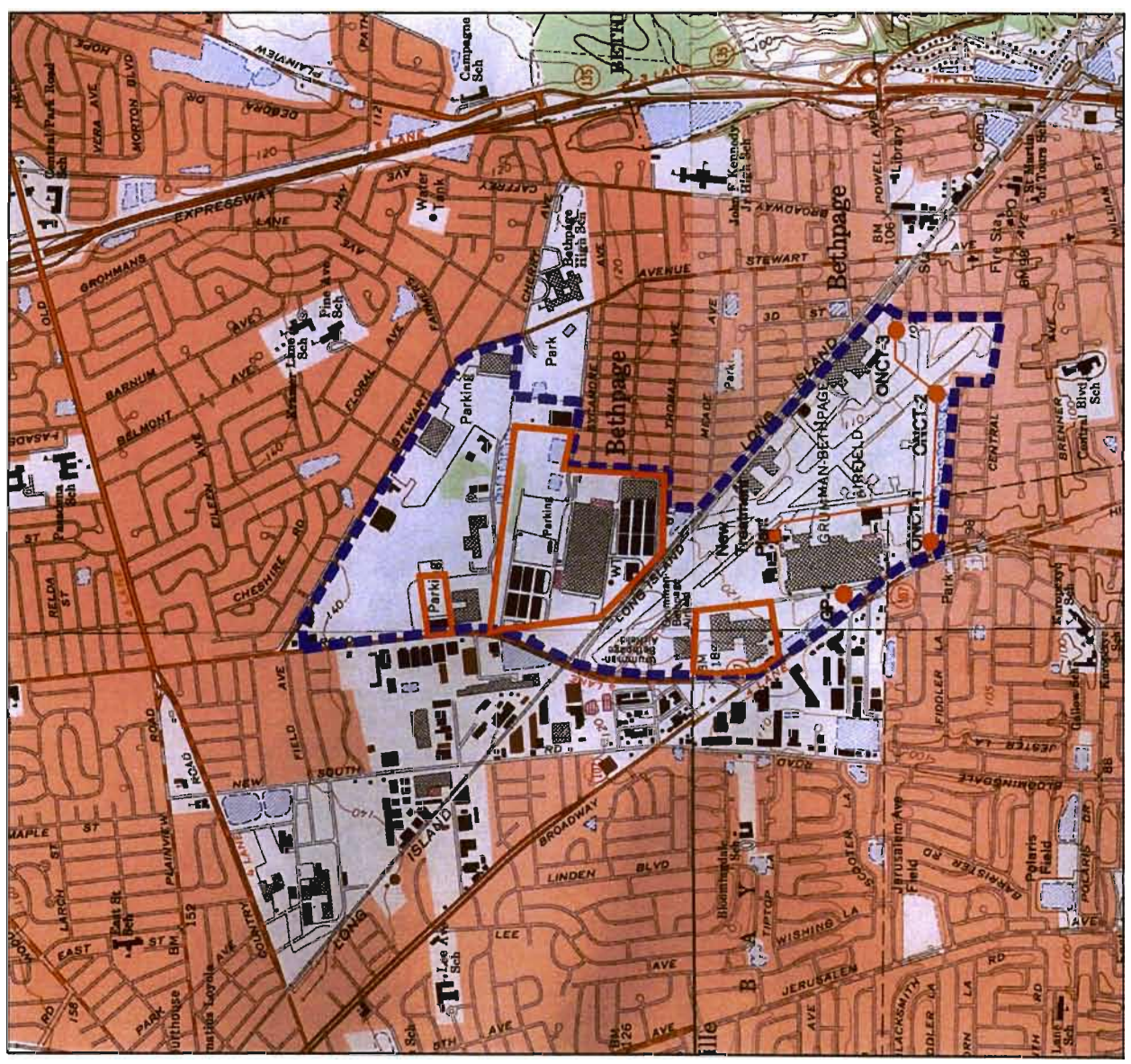
**Figure 8-1**  
**Interim Remedial Measure**  
**General Layout**

**Phase II EBS**  
**NWIRP Bethpage, New York**

- Legend**
- NWIRP Bethpage Boundary
  - - - Northrop Grumman Bethpage Complex Boundary



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<b>Tetra Tech NUS, Inc.</b>		



## 9.0 SUMMARY OF PHASE 2 INVESTIGATION AND REMEDIATION

This section summarizes how each AOC identified at NWIRP Bethpage by Northrop Grumman's ESAs have been subsequently addressed. Most of these studies were not available to the Navy at the time that the Phase I EBS was prepared. These studies thus represent independent evaluations by Northrop Grumman, separate from the Navy's EBS Process, of the baseline environmental condition of property on NWIRP Bethpage. Issues raised by these evaluations must be adequately addressed before the affected areas of real property are suitable for transfer, even if the issues were not identified by the Navy in the Phase I EBS.

Table 9-1 lists each AOC identified by Northrop Grumman in its Phase I ESA report completed for Plant 03 in April 1997 (Radian, 1997a). The table:

- Identifies and describes each AOC,
- Lists soil boring locations where NYSDEC TAGM #4046 exceedances exist,
- Lists constituents of concern that exceed TAGM #4046 criteria, their maximum concentrations and depths,
- Indicates each AOC location relative to the real property units used by the Navy in the EBS.

Table 9-2 provides similar information for each paint booth in Plant 03 collectively assigned to AOC 1. Table 9-3 provides similar information for each drywell in Plant 03 collectively assigned to AOC 20. Table 9-4 provides similar information for each machining equipment pit in Plant 03 collectively assigned to AOC 21. Table 9-5 provides similar information for each small volume waste accumulation area in Plant 03 collectively assigned to AOC 33. Table 9-6 lists similar information for each AOC identified by the other Northrop Grumman Phase I ESA reports for Plants 10, 17, and 20.

In a few instances, the Navy's Phase I EBS revealed locations of potential environmental concerns not identified as AOCs, or as drainage features requiring investigation, by Northrop Grumman. These instances either reflect conditions discovered subsequent to Northrop Grumman's inspections or differences in interpretation of records. The EBS also addresses environmental issues that have been identified and investigated as part of the Navy's IR Program, conducted since 1986 independently of Northrop Grumman.

Northrop Grumman's ESA process has been continuous and ongoing, progressing from the initial preparation of the Phase I ESAs to the collection of samples necessary to confirm, characterize, and delineate contamination at specific AOCs identified by the Phase I ESA reports. Where primary sampling confirmed the presence of significant contamination at an AOC, a subsequent round of secondary

sampling was conducted to better characterize and delineate the contamination. As additional areas of potential concern became apparent, they were assigned new AOC numbers and sampled by the same crews already present onsite performing other sampling activities. Thus, as an example, whereas the Phase I ESA for Plant 03 identified only 36 AOCs, the corresponding Phase II ESA reports findings for 39 AOCs.

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern (AOC) <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 1 Paint Booths: Existing paint booths (16), historic paint booths (10), Kolene paint stripper, and waste holding tanks 793, 794, 1257, 1258, 1259, and 1260.				Constituents of Concern exceeding the TAGM #4046 criteria remain at 11 of 28 AOCs. See Table 9-2 for a more detailed description of each AOC.	
AOC 2 Plating Area: Extensive floor staining around tanks and TCE Tank 210	AOC 2I	Chromium	63 mg/kg (2-4 feet)	EBS section: Old Alodine/Plating/Paint Booth Area.  In 1998, metal contaminated soils were removed to a depth of 14 feet below ground surface. 1 (side-wall sample) of 24 samples collected from 9 boring locations contained chromium above the TAGM #4046 criterion of 10 mg/kg. No additional excavation was performed.  References: ESA <sup>(3)</sup> – Sections 3.3.2, 5.2, 6.2 and Figure 5-6. Correspondence letter <sup>(2)</sup> (4/29/98).	No additional excavation required.  Area was backfilled with soil and capped with 6" of concrete.  Deed notification required <sup>(6)</sup> .

TABLE 9-1

**RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
NWIRP, BETHPAGE, NEW YORK  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 3 Old Alodine Area: Stained and cracked concrete in Old Alodine Area, former Alodine Leaching Well and Overflow Pit.	03-03-11	Arsenic	12.8 mg/kg (0-2 feet)	EBS section: Old Alodine/Plating/Paint Booth Area.  In 1997, 1 of 10 subsurface soil samples collected from 5 boring locations in the vicinity of waste transfer tank 815 contained arsenic, chromium, selenium and zinc above the TAGM #4046 criteria (7.5 mg/kg, 10 mg/kg, 2 mg/kg and 20 mg/kg, respectively).	No additional excavation required.
		Chromium	64.2 mg/kg (0-2 feet)		Area was backfilled with soil and capped with 6" of concrete.
		Selenium	11.2 mg/kg (0-2 feet)	In 1998, approximately 2700 yd <sup>3</sup> of metal contaminated soils were removed to an approximate depth of 30 feet below ground surface.	Deed notification required <sup>(6)</sup> .
	03-03-11W	Zinc	88.3 mg/kg (0-2 feet)		
References: ESA <sup>(3)</sup> – Sections 3.3.3, 5.3, 6.3 and Figure 5-7. Correspondence letters <sup>(2)</sup> (10/27/97, 2/2/98, 2/24/98 and 3/23/98).					

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 4 Heat Treat Area A: Residue around Tanks 971 and 972; hydraulic fluid sump and potential leaks from hydraulic ram on Tank 1255.	03-04-02A	B(a)P	70 µg/kg (0-2 feet)	EBS section: Heat Treat Area A.  In 1997, 10 subsurface soil samples were collected from 4 boring locations. The TAGM #4046 criterion for benzo(a)pyrene (61 ug/kg) was exceeded in 1 of 10 samples collected in the vicinity of the hydraulic oil sump. However, based on the low concentrations and the marginal nature of the exceedance no further action is required for this AOC. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 3.3.4, 5.4 and 6.4. Correspondence letter <sup>(2)</sup> (10/27/97).	No excavation required.  Deed notification required <sup>(6)</sup> .
AOC 5 Heat Treat Area B: Drain in pit and sump for Tank 1272, and vapor degreaser Tank 1251.	NA	NA	NA	EBS section: Heat Treat Area B.  In 1997, 15 subsurface soil samples were collected from 8 boring locations. There were no TAGM #4046 criteria exceedances.  References: ESA <sup>(3)</sup> – Sections 3.3.5, 5.5 and 6.5.	No remediation required.



TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHPROP GRUMMAN  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 6  Chem Mill Clean: Eroded concrete in trench and sump and documented chromium contamination outside Building 03- 01 at Column FF46.	AOC 6F (excavation pit floor sample)	Chromium  Zinc	250/4.8 mg/kg (12 feet)  50 mg/kg (12 feet)	EBS section: Chem Mill Clean Area.  In 1998, metal contaminated soils were excavated to depths of 4 feet and 12 feet below ground surface. 1 of 13 endpoint samples collected from 6 boring locations contained chromium and zinc at concentrations exceeding the TAGM #4046 criteria of 10 mg/kg and 20 mg/kg, respectively. The sample with the chromium exceedance was re-analyzed, resulting in a chromium concentration of only 4.8 mg/kg. Therefore, the sample collected at a depth interval of 5 – 7 feet below ground surface from location AOC 6D would contain the maximum chromium concentration (47 mg/kg) above the TAGM #4046 criterion of 10 mg/kg. In addition, zinc is not regulated as a hazardous substance. Based on these findings, no further excavation is required for this AOC.  References: ESA <sup>(3)</sup> – Sections 3.3.6, 5.6, 6.6 and Figure 5-8. Correspondence letters <sup>(2)</sup> (10/27/97, 3/23/98, 5/13/98 and 6/23/98).	No additional excavation required.  The interior area was backfilled with soil and capped with 6" of concrete.  Deed notification required <sup>(6)</sup> .

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 7 Chem Mill Flowcoat Area: Soil gas survey indicating PCE contamination; extensive use of PCE and toluene; floor staining with maskant, Maskant Tanks 451 and 697; and drying area.	NA	NA	NA	EBS section: Flow Coat/Chem Mill Etch Area.  In 1997, 8 subsurface soil samples were collected from 4 boring locations. There were no TAGM #4046 criteria exceedances.  References: ESA <sup>(3)</sup> – Sections 3.3.7, 5.7 and 6.7. Correspondence letter <sup>(2)</sup> (8/14/22/98).	No remediation required.
AOC 8 Chem Mill Etch: Corroded concrete below tanks, and floor trench that leads to a sump.	NA	NA	NA	EBS section: Flow Coat/Chem Mill Etch Area.  In 1997, 5 subsurface soil samples were collected from 3 boring locations. There were no TAGM #4046 criteria exceedances.  References: ESA <sup>(3)</sup> – Sections 3.3.8, 5.8 and 6.8. Correspondence letter <sup>(2)</sup> (8/14/97).	No excavation required.

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
<p>AOC 9</p> <p>Sulfuric Acid Anodize: Deteriorated concrete from chromic and sulfuric acid leaks at Tanks 461 and 457, former underground waste holding tanks 962 and 963 and the presence of PCE absorber and recovery systems.</p>	<p>NA</p>	<p>NA</p>	<p>NA</p>	<p>EBS section: Sulfuric Acid Anodize Area.</p> <p>In 1998, two phases of excavation were conducted at a location between support columns 43 and 45 of plant 3 (see Drawing 1 of the ESA). In the first phase, an area of approximately 440 ft<sup>2</sup> with metal contaminated soils was removed. In the second phase, an area of approximately 160 ft<sup>2</sup> with metal contaminated soils was removed. 3 endpoint samples were collected from 3 boring locations. There were no exceedances of the TAGM #4046 criteria.</p> <p>In 1998, metal contaminated soils were excavated to various depths of 4', 6' and 8' bgs at areas located between support columns 46 and 48 of plant 3 (see Drawing 1 of the ESA). 17 endpoint samples were collected from 7 boring locations. There were no exceedances of the TAGM #4046 criteria.</p> <p>References: ESA<sup>(3)</sup> – Sections 3.3.9, 5.9, 6.9 and Figure 5-9.                      Correspondence letters<sup>(2)</sup> (1/30/98 and 4/28/98).</p>	<p>No additional excavation required.</p>

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHTROP GRUMMAN  
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Area of Concern (AOC) <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 10 Chromic Acid Anodize: Stained floor in process pit area; TCE vapor degreaser; demineralizer room pit, Shell Pella oil pit and waste transfer tanks 1150, 1151, and 1152.	03-10-01	Zinc	25.7 mg/kg	EBS section: Chromic Acid Anodize Area.  Prior to 1997 activities, the chemical process pits were decontaminated with high-pressure steam and detergent.  In 1997, 18 subsurface soil samples were collected from 9 boring locations. 1 of 18 subsurface soil samples contained zinc above the TAGM #4046 criterion (20 mg/kg). The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 3.3.10, 5.10 and 6.10 Correspondence letters <sup>(2)</sup> (8/14/97, 10/27/97 and 11/25/97)	No excavation required.  Deed notification required <sup>(6)</sup> .
AOC 11 Alodine/Sulfuric Acid Anodize: TCE vapor degreaser Tank 1221, process pit, sumps, trench, and waste transfer tanks 1236, 1237, and 1238	NA	NA	NA	EBS section: Alodine/Sulfuric Acid Anodize Area. (Waste transfer tanks included in Former Autoclave Area).  In 1997, 12 subsurface soil samples were collected from 6 boring locations. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 3.3.11, 5.11 and 6.11. Correspondence letter <sup>(2)</sup> (8/14/97).	No remediation required.

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern (AOC) <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 12 Penetrant Inspection: Tank pit and underground waste holding tanks 1092 and 1093	03-12-02N	B(a)P	120 ug/kg (0-2 feet)	EBS section: Zyglo Area; Waste Holding Tanks East of Hydraulic Press Area.  In 1997, 3 of 35 subsurface soil samples collected from 14 boring locations contained benzo(a)pyrene and phenol above the TAGM #4046 criteria (61 ug/kg and 500 ug/kg, respectively).  Due to the close proximity of AOC 12 and AOC 33-09, the phenol contaminated soils at AOC 12 were removed as part of the excavation conducted for AOC 33-09. (See also-Table 9-5).  References: ESA <sup>(3)</sup> – Sections 3.3.12, 5.12 and 6.12. Correspondence letter <sup>(2)</sup> (5/13/98).	No additional excavation required.  Area was backfilled with soil and capped with 6" of concrete.  Deed notification required <sup>(6)</sup> .
AOC 13 Honeycomb Pretreatment Area: Navy soil gas survey indicating PCE contamination; TCE Degreaser Tank 965; TCE Still 966; and Tanks 806, 377, and 395 containing chromium.	AOC 13E	Chromium  Zinc	33 mg/kg (2-4 feet) 47 mg/kg (2-4 feet)	EBS section: Honeycomb Pretreatment Area.  In 1998, approximately 336 yd <sup>3</sup> of metal contaminated soils were removed to 12' below ground surface. 5 of 19 endpoint samples collected from 9 boring locations contained chromium above the TAGM #4046 criterion of 10 mg/kg. 1 of 19 endpoint samples contained zinc above the TAGM #4046 criteria (20 mg/kg).  References: ESA <sup>(3)</sup> – Sections 3.3.13, 5.13, 6.13 and Figure 5-10. Correspondence letter <sup>(2)</sup> (4/14/98).	No additional excavation required.  Area was backfilled with soil and capped with 6" of concrete.  Deed notification required <sup>(6)</sup> .

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 14  Old Chem Mill: TCE Degreaser Tank 920 and Still 302; and Waste Holding Tanks 81, 83, 84, 1049, and 1050.	AOC14NE E  AOC14NE C	Chromium  Zinc	68 mg/kg (6 feet) 110 mg/kg (2 feet)	EBS section: Shot Peen/Old Chem Mill Area.  In 1998, approximately 53 yd <sup>3</sup> of metal contaminated soils were removed to 6' below ground surface and approximately 76 yd <sup>3</sup> of metal contaminated soils were removed to 10' below ground surface. Concentrations of chromium and zinc were above the TAGM #4046 criterion of 10 mg/kg and 20 mg/kg, respectively.  References: ESA <sup>(3)</sup> – Sections 3.3.14, 5.14, 6.14 and Figure 5-11. Correspondence letter <sup>(2)</sup> (4/28/98).	No additional excavation required.  Area was backfilled with soil.  Deed notification required <sup>(6)</sup> .

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
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Area of Concern (AOC) <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 15  Printed Circuit and Engraving Departments: Solvent and chromate usage in printed circuit and engraving departments.	03-15-04  03-15-03	Chromium  Cadmium  Zinc	273/4.3 mg/kg (0-2 feet) 1.6 mg/kg (0-2 feet) 26 mg/kg (2-4 feet)	EBS section: Arts and Engraving Area.  In 1997, 18 subsurface soil samples were collected from 9 boring locations. 1 of 10 samples contained cadmium above the TAGM #4046 criterion of 1.0 mg/kg. 5 of 18 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. 4 of 10 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. However, reanalysis of the sample with the maximum chromium concentration found chromium at only 4.3 mg/kg. Therefore, the sample collected at a depth interval of 0 – 2 feet below ground surface from location 03-15-04W would contain the maximum chromium concentration (14 mg/kg) above the TAGM #4046 criterion of 10 mg/kg. Based on the chromium results for the re-analyzed sample and the marginal nature of the cadmium and zinc exceedances, no further action is required for this AOC. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 3.3.15, 5.15 and 6.15. Correspondence letter <sup>(2)</sup> (3/23/98).	No excavation required.  Deed notification required <sup>(6)</sup> .

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 16 Machine Shops: Extensive floor staining from cutting and lubricating oil.	03-16-02  03-16-04  03-16-10	Selenium  Chromium  Zinc	4.1 mg/kg (0-2 feet) 86.5 mg/kg (4-7 feet) 594 mg/kg (0-2 feet)	EBS section: Machine Shop West of Wall 16; South- central, North-central, & Northeastern Machining Areas.  In 1997, 61 subsurface soil samples were collected from 29 soil borings located throughout the machine shop floors. Selenium, chromium and zinc were detected in several samples above the TAGM #4046 criteria of 2 mg/kg, 10 mg/kg and 20 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils. No further action is required for this AOC.  References: ESA <sup>(3)</sup> – Sections 3.3.16, 5.16 and 6.16. Correspondence letter <sup>(2)</sup> (3/23/98).	No remediation required.  Deed notification required <sup>(6)</sup> .
AOC 17 Boiler Room: Boiler blow off (drywells) and floor drains in boiler room.	NA	NA	NA	EBS section: Facilities Maintenance Area.  This AOC is not addressed under the Phase II study. Correspondence with NCDH indicates that Northrop Grumman has excavated soils under the floor drains in compliance with county UIC regulations.  References: ESA <sup>(3)</sup> – Sections 3.3.17, 5.17 and 6.17.	No remediation required.



TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHRUP GRUMMAN  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 18 Router Room: Former degreasing pit in router room and TCE Degreaser Tank 256.	NA	NA	NA	EBS section: Heat Oven Area.  In 1997, 4 subsurface soil samples were collected from 2 boring locations. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 3.3.18, 5.18 and 6.18.	No remediation required.
AOC 19 Dry Wells at Columns GG7 and JJ2: Dry well at Column GG7 connected to floor drains.	AOC19 E	B(a)A Chrysene B(a)P D(a,h)A	820 ug/kg (22 feet) 980 ug/kg (22 feet) 800 ug/kg (22 feet) 160 ug/kg (22 feet)	EBS section: South-central Machining Area.  In 1998, approximately 322 yd <sup>3</sup> of VOC, SVOC, and metal contaminated soils were removed to a depth of 22' below ground surface, in the vicinity of Column JJ2. 7 of 16 endpoint samples collected from 8 boring locations in the vicinity of Column JJ2 contained benzo(a)anthracene, chrysene, benzo(a)pyrene and dibenzo(a,h)anthracene above the TAGM #4046 criteria of 224 ug/kg 400 ug/kg 61 ug/kg and 14 ug/kg, respectively. Based on the depth of the maximum contaminant concentrations, no further action is required for this AOC.  References: ESA <sup>(3)</sup> – Sections 3.3.19, 5.19, 6.19 and Figure 5-12. Correspondence letter <sup>(2)</sup> (4/28/98).	No additional excavation required.  Area was backfilled with soil and capped with 6" of concrete.  Deed notification required <sup>(6)</sup> .

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 20  Diffusion Galleries and Dry Wells: Diffusion galleries south of Plant 03 between Columns N0 to N13 and drywells external to Plant 03.				Constituents of Concern exceeding the TAGM #4046 criteria remain at 10 of 29 AOCs.  See Table 9-3 for a more detailed description of each AOC.	
AOC 21  Equipment Pits: Designated equipment pits (27) in Table 1 of Phase I ESA (Radian, 1997a)				Constituents of Concern exceeding the TAGM #4046 criteria remain at 9 of 28 AOCs.  See Table 9-4 for a more detailed description of each AOC.	
AOC 22  Petroleum Storage Tanks USTs: USTs and Former UST locations in three areas:  1. Area north of Bldg 03-13 (USTs 03-13- 1, 03-13-2 and 03- 13-3).	03-22-11A	B(a)A  B (a)P  D(a,h)A	760 ug/kg (2-4 feet) 720 ug/kg (2-4 feet) 64 ug/kg (2-4 feet)	1. EBS section: Area north of Building 03-13.  In 1997, 1 of 7 subsurface soil samples collected from 3 boring locations contained benzo(a)anthracene benzo(a)pyrene and dibenzo(a,h)anthracene above the TAGM #4046 criteria of 224 ug/kg, 61 ug/kg and 14 ug/kg, respectively.  References: ESA <sup>(3)</sup> – Sections 3.3.22, 5.22, and 6.22	No excavation required.  Deed notification required <sup>(6)</sup> .  Retained by Navy, no additional investigation required.

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
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Area of Concern (AOC) <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
<p>AOC 22 (continued)</p> <p>Petroleum Storage Tanks USTs: USTs and Former UST locations in three areas:</p> <p>2. Area south of Bldg 03-01 (USTs 03-01-1, 03-01-2 and 03-01-3).</p>	<p>03-22-16</p> <p>03-22-01BS</p>	<p>Chrysene</p> <p>B(a)P</p> <p>D(a,h)A</p> <p>B(a)A</p>	<p>7500 ug/kg (60-62 feet)</p> <p>2700 ug/kg (60-62 feet)</p> <p>450 ug/kg (22-24 feet)</p> <p>4300 ug/kg (60-62 feet)</p>	<p>2. EBS Section: Area south of Building 03-01, near Facility Maintenance Area.</p> <p>In 1997, 128 subsurface soil samples were collected from 21 boring locations as part of the Phase II ESA for Plant 03 (Northrop Grumman, Aug. 1998). Several samples contained chrysene, benzo(a)pyrene, dibenzo(a,h)anthracene and benzo(a)anthracene above the TAGM #4046 criteria of 400 ug/kg, 61 ug/kg, 14 ug/kg and 224 u/kg, respectively.</p> <p>In 2000, 14 subsurface soil samples were collected from 14 boring locations as part of the RCRA Facility Assessment for AOC 22 (TtNUS, Jan 2000). 1 of 3 samples (TT-22-SB05) analyzed for SVOCs contained chrysene (980 ug/kg, 55-59 feet) above the TAGM #4046 criteria of 400 ug/kg.</p> <p>References: RCRA Facility Assessment for AOC 22<sup>(5)</sup>.            ESA<sup>(3)</sup> – Sections 3.3.22, 5.22, 6.22 and Figure 5-14.</p>	<p>No excavation required.</p> <p>Area being retained by Navy for further investigation.</p>

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHPROP GRUMMAN  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 22 (continued)  Petroleum Storage Tanks USTs: USTs and Former UST locations in three areas:  3. Area south of Bldg 03-01 (UST 03- 01-05).	03-22-08A	B(a)P	100 ug/kg (6-8 feet)	3. EBS section: Area south of Building 03-01, near Former Autoclave Area.  In 1997, one of seven subsurface soil samples collected from three boring locations contained benzo(a)pyrene above the 61 ug/kg TAGM #4046 criterion. However, based on the low concentration, no further action is required for this part of AOC 22.  References: ESA <sup>(3)</sup> – Sections 3.3.22, 5.22, and 6.22.	No excavation required.  Deed notification required <sup>(6)</sup> .
AOC 23  Former Above Ground Storage Tanks	NA	See IR Site 1	See IR Site 1	EBS section: Former Drum Marshalling Areas/ Plant 03 Leachfield.  In 1997, 42 subsurface soil samples were collected from 19 boring locations. Laboratory analysis of soils collected from Sample Location (SL) 06 found benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, chrysene, dibenzo(a,h)anthracene, selenium, thallium, chromium, cadmium, copper, zinc, and PCBs above the TAGM #4046 criteria. Metal, SVOC, and PCB contaminated soils in the vicinity of SL 06 are currently under investigation as part of the Navy's Site 1 IR program.  References: ESA <sup>(3)</sup> – Sections 3.3.23, 5.23 6.23 and Figure 5-15.	No excavation required at this time.  Area being retained by Navy for further investigation.
AOC 24  Storage Room at	NA	NA	NA	EBS Section: Facilities Maintenance Area.  In 1998, approximately 56 yd <sup>3</sup> of zinc and SVOC contaminated soils were removed to a depth of six feet	No additional excavation required.

TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
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Area of Concern (AOC) <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
Column N11				below ground surface. 8 endpoint soil samples were collected from 5 boring locations. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 3.3.24, 5.24 6.24 and Figure 5-16.  Correspondence letters <sup>(2)</sup> (3/23/98 and 4/17/98).	
AOC 25  Roads and Grounds Building 03-13: Storage of oil, pesticides, and paints	NA	NA	NA	EBS section: Building 03-13 (Sanitation Office).  In 1997, 5 subsurface soil samples were collected from 2 boring locations. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 3.3.25, 5.25 and 6.25.	No remediation required.
AOC 26  Chemical Storage Building 03-31, 03-32: Potential for historic leaks from chemical storage; current storage of PCE and acid; sump and waste storage tank.	NA	NA	NA	EBS section: Buildings 03-31 and 03-32 (Bottle Gas Storage/ Chemical Storage Building).  In 1997, 9 subsurface soil samples were collected from 4 boring locations. There were no exceedances of the TAGM #4046 criteria. Note: These buildings are rated 5/Yellow (areas of known contamination where remedial or removal actions are underway) in the EBS only because they are located in the area of the Former Drum Marshalling Area.  References: ESA <sup>(3)</sup> – Sections 3.3.26, 5.26 and 6.26.	No remediation required.

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RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
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Area of Concern (AOC) <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
AOC 27 Storage Shed Building 03-41: Concrete trench with accumulated oily sludge.	AOC 27A	B(a)A B(a)P D(a,h)A	530 ug/kg (3-5 feet) 450 ug/kg (3-5 feet) 99 ug/kg (3-5 feet)	EBS section: Building 03-41 (Storage Shed).  In 1998, approximately 287 yd <sup>3</sup> of SVOC contaminated soils were removed to approximately sixteen feet below ground surface. 2 of 16 endpoint samples collected from 8 boring locations contained benzo(a)anthracene, benzo(a)pyrene and dibenzo(a,h)anthracene above the TAGM #4046 criteria of 220, ug/kg 61 ug/kg and 14 ug/kg, respectively.  References: ESA <sup>(3)</sup> – Sections 3.3.27, 5.27, 6.27 and Figure 5-17. Correspondence letters <sup>(2)</sup> (4/28/98, 5/21/98 and 6/23/98).	No additional excavation required.  Deed notification required <sup>(6)</sup> .
AOC 28 Pesticide Storage Building 03-44: Pesticide storage with a floor drain.	NA	NA	NA	EBS section: Razed as of the Phase I EBS, this building location was inspected as part of Building 03-17 (Equipment Repair Shop).  In 1997, 5 subsurface soil samples were collected from 2 boring locations. There were no exceedances of the TAGM #4046 criteria.	No remediation required.
AOC 29 Flammable Storage Shed next to Propane Storage Shed	NA	NA	NA	References: ESA <sup>(3)</sup> – Sections 3.3.28, 5.28 and 6.28. EBS section: Razed as of the Phase I EBS, this building location was inspected as part of Building 03-33 (Transportation Garage).  In 1997, two subsurface soil samples were collected from one boring location. There were no exceedances of the	No remediation required.

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RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
(Unnumbered): Potential for leaks from the storage of flammable liquids.				TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 3.3.29, 5.29 and 6.29.	
AOC 30  Unidentified Storage Sheds: Potential for leaks of oil and pesticides through plywood floors at middle and southern sheds.	NA	See IR Site 1	See IR Site 1	EBS sections: Building 03-15 (Facility Maintenance Garage); Building 03-14 (Facility Maintenance Storage); Buildings 03-45 and 03-51 (Storage Sheds).  In 1997, 44 subsurface soil samples were collected from 17 boring locations. Laboratory analysis found benzo(a)pyrene, dibenzo(a,h)anthracene, cadmium, copper, zinc, silver and arsenic were detected above the TAGM #4046 criteria. Metal and SVOC contaminated soils in this area are currently being addressed under the Navy's Site 1 IR Program.  References: ESA <sup>(3)</sup> – Sections 3.3.30, 5.30 6.30 and Figure 5-15.	Area being retained by Navy for further investigation.
AOC 31  Subsurface Vault at Column AA11: Subsurface vault filled with soil and metal scraps.	NA	NA	NA	EBS section: North-central Machining Area.  In 1997, 4 subsurface soil samples were collected from 2 boring locations. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 3.3.31, 5.31 and 6.31.	No remediation required.
AOC 32  PCE and TCE Storage Tanks: PCE	NA	NA	NA	EBS section: Chromic Acid Anodize Area (Tanks 1090, 1091, 1207, and 1271); Shot Peen/Old Chem Mill Area (Tank 885); Northeastern Machining Area (Tank 11).  References: ESA <sup>(3)</sup> – Sections 3.3.31, 5.31 and 6.31.	No remediation required.

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RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHPROP GRUMMAN  
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Area of Concern (AOC) <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
underground storage tanks 1090 and 1091, PCE aboveground storage tank 1207, and TCE aboveground storage tanks 11, 885, and 1271.				In 1997, 18 subsurface soil samples were collected from 6 boring locations. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 3.3.32, 5.32 and 6.32. Correspondence letter <sup>(2)</sup> (8/14/97)	
AOC 33  Waste Accumulation Areas: Designated waste accumulation areas as shown in Table 5 of Phase I ESA (Radian, 1997a).				Constituents of Concern exceeding the TAGM #4046 criteria remain at 10 of 27 AOCs.  See Table 9-5 for a more detailed description of each AOC.	
AOC 34 (except Dry well 34-07)  2 Areas - Old Autoclave Area: Use of PCB containing heat transfer fluid and reported leaks of heat transfer fluid, drain pit near Column LL41, waste cooling pit near	AOC34G (North)  03-34-02A (South)	B(a)P  D(a,h)A  B(a)A  B(a)P  B(b)F	71 ug/kg (7-9 feet)  30 ug/kg(7-9 feet)  1800 ug/kg(0-2 feet)  1700 ug/kg(0-2 feet)  1900 ug/kg(0-2 feet)  1200 ug/kg(0-2 feet)	EBS section: Former Autoclave Area and Identification, Packaging, and Paint Booth Area.  In 1998, SVOC and PCB contaminated soils were removed from two areas in the vicinity of the Old Autoclave Area. Approximately 384 yd <sup>3</sup> of contaminated soil was removed to 16 feet below ground surface and approximately 1017 yd <sup>3</sup> of contaminated soil was removed to 30 feet below ground surface. Not including dry-well 34-07, 1 of 30 endpoint samples collected from 18 boring locations contained benzo(a)pyrene and dibenzo(a,h)anthracene above the TAGM #4046 criteria of 61 ug/kg and 14 ug/kg, respectively.	No additional excavation required.  Area was backfilled with soil and capped with 6" of concrete.  Deed notification required <sup>(6)</sup> .



TABLE 9-1

RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
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Area of Concern (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
Column KK42, two interior drywells near Column KK42; and drywells 23 and 25.		B(k)F Chrysene D(a,h)A	1900 ug/kg(0-2 feet) 630 ug/kg(0-2 feet)	References: ESA <sup>(3)</sup> – Sections 3.3.34, 5.34, 6.34 and Figure 5-21 and 5-22. Correspondence letters <sup>(2)</sup> (3/23/98, 5/13/98, 6/25/98 and 9/14/98).	
AOC 34-07 Exterior Dry-well 34-07	03-34-07B	PCB (Aroclor-1242)	6900 mg/kg (20-22 feet)	In 1997, Aroclor-1242 was detected in 8 of 8 subsurface soil samples collected from 3 boring locations within Dry-well 34-07. 5 of 8 samples contained PCBs above the TAGM #4046 criteria of 10 mg/kg. Due to deep PCB contamination, Drywell 34-07 is currently being addressed under the Navy's Site 1 IR Program.  References: ESA <sup>(3)</sup> – Sections 3.3.34, 5.34, 6.34 and Figure 5-21 and 5-22.	Area being retained by Navy.  Additional investigation required for drywell 34-07.
AOC 35 Former Sludge Drying Bed: Located due east of the northeast corner of Plant 03.	NA	See IR Site 1	See IR Site 1	EBS section: Land under Buildings 03-14 and 03-15.  Metal and SVOC contaminated soil in the vicinity of the sludge drying bed is currently being addressed under the Navy's Site 1 IR Program.  References: ESA <sup>(3)</sup> – Sections 3.3.35, 5.35, 6.35 and Figure 5-15.	Area being retained by Navy for further investigation.
AOC 36 Unbiased random locations throughout Building 03-01 to investigate possible	NA	NA	NA	EBS section: Various.  In 1997, 199 subsurface soil samples were collected from 53 randomly placed boring locations. Due to the close proximity of AOC 36-10 and AOC 34, approximately 384 yd <sup>3</sup> of SVOC and PCB contaminated soils were removed	No additional excavation required.

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RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHPROP GRUMMAN  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
unidentified contamination pathways.				from AOC 36 (see Section 6-36 of the ESA) to 16 feet below ground surface. 11 endpoint samples were collected from 8 boring locations within the excavation pit of AOC 34. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 3.3.36, 5.36, 6.36, Drawing 1. Correspondence letters <sup>(2)</sup> (3/23/98 and 5/13/98).	
AOC 37  Cafeteria Elevator	NA	NA	NA	EBS section: Plant 03 Cafeteria.  In 1997, 3 subsurface soil samples were collected from 1 boring location. There were no exceedances of the TAGM #4046 criteria.	No remediation required.
AOC 38  Water Effluent Sump Pit: Sump pit that accepted water effluent from an oil/water separator before discharge to the sewer system.	NA	NA	NA	References: ESA <sup>(3)</sup> – Sections 3.3.37, 5.37 and 6.37.  EBS section: Facilities Maintenance Area.  In 1997, 2 subsurface soil samples were collected from 1 boring location. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 3.3.38, 5.38 and 6.38	No remediation required.
AOC 39  Water Blowdown Pit	NA	NA	NA	EBS section: Facilities Maintenance Area.  In 1997, 2 subsurface soil samples were collected from 1 boring location. There were no exceedances of the	No remediation required.

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RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHROP GRUMMAN  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
IR Site 1  Former Drum Marshaling Area	SB119  SB119  SB119  SS103  SS103  SS105  SS103	VOCs (e.g) - - TCE  - PCE  - 1,1,1- TCA Aroclor 1242  Aroclor 1248  Aroclor 1254  Chromium	200 ug/kg (3-5 feet) 4800 ug/kg (3-5 feet) 72 ug/kg (3-5 feet) 25 mg/kg (0-0.5 feet) 1300 mg/kg (0- 0.5 feet) 170 mg/kg (0- 0.5 feet) 61.1 mg/kg (0- 0.5 feet)	TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 3.3.39, 5.39, 6.39.  Site was investigated as part of IR program. Remedial actions are in progress. In accordance with the 1995 Record of Decision for OU 1, an air sparging and soil vapor extraction system has been operating at the site since 1996 to remove VOCs from site soils and shallow groundwater. Based on the most recent data, VOCs are expected to be at or below remediation goals.  The 1995 OU 1 Record of Decision for the site identifies excavation and offsite treatment and/or disposal for PCB and metal contaminated soils and a permeable cover and natural attenuation of lesser contaminated soils. These actions are in the design phase.  References: Remedial Investigation Report Phase 1, May 1992. Remedial Investigation Report Phase 2, October 1993.	Area is being retained by Navy.

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RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHPROP GRUMMAN  
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Area of Concern <sup>(4)</sup> (AOC)	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
IR Site 2 Recharge Basin Area	BP-S2-252	B(a)P	5500 ug/kg (0.5-1 feet)	<p>The 1995 OU 1 Record of Decision for the site identifies excavation and offsite treatment and/or disposal for PCB contaminated soils and a permeable cover and natural attenuation of lessor contaminated soils.</p> <p>In 1996, 7,239 tons of PCB-contaminated soil were excavated to a depth of about 10 feet and replaced with clean fill.</p> <p>17 surface soil samples were collected across the site in 2001 to determine extent of the final cover. In 2001, a 6-inch layer of clean fill was placed over the site to prevent exposure to residual contamination. These actions are complete.</p> <p>References: Remedial Investigation Report Phase 1, May 1992. Sites 2 and 3 Soil Results Letter Report, June 2001.</p>	<p>No additional excavation required.</p> <p>Area was backfilled with soil and capped with 6" of clean soil.</p> <p>Deed notification required<sup>(6)</sup>.</p>
	BP-S2-252	B(a)A	5600 ug/kg (0.5-1 feet)		
	BP-S2-252	B(b)F	5900 ug/kg (0.5-1 feet)		
	BP-S2-252	D(ah)A	830 ug/kg (0.5-1 feet)		
	BP-S2-258	Aroclor 1248	5100 ug/kg (0.5-1 feet)		
	BP-S2-258	Arsenic	9.7 mg/kg (0.5-1 feet)		
	SB215	VOCs (e.g) - TCE	32 ug/kg (3-5 feet)		
	SB219	PCE	6 ug/kg (3-5 feet)		

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Area of Concern (AOC) <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth (1)	Description	Remediation Conducted
IR Site 3 Salvage Storage Area	SS321	B(a)P	660 ug/kg (0-0.5 feet)	The 1995 OU 1 Record of Decision for the site identifies a permeable cover and natural attenuation of lesser contaminated soils.  Debris was removed from the site. Surface soils were scraped and approximately two inches of clean soil were on the site as a cover to prevent exposure to residual contamination. 10 surface soil samples were collected in 2001 and the results confirmed the effectiveness of this action. Therefore, these actions are complete.  Reference: Sites 2 and 3 Soil Results Letter Report, June 2001.	No excavation required.  Surface soil was scrapped and area was capped with 2" of clean soil.  Deed notification required <sup>(6)</sup> .
	SS322	As	10.4 mg/kg (0-0.5 feet)		
	SB334	VOCs (e.g.) - TCE	9 ug/kg (3-5 feet)		
	SB 304	- PCE	55 ug/kg (19-21 feet)		

Notes:  
 Refer to Figures 3-1 and 3-2 of this document for graphical depiction of AOC locations.  
 Table presents the environmental condition of Plant 3 AOCs 01 through 39 as of January, 2001

Definitions:  
 NA = Not Applicable.  
 B(a)P = Benzo(a)pyrene  
 B(a)A = Benzo(a)anthracene  
 D(a,h)A = Dibenzo(a,h)anthracene

- 1 Sample collection depths measured from ground surface and presented as depth intervals below ground surface (bgs). If no depth interval is given, the interval is the same as the preceding interval.
- 2 Information sources include miscellaneous correspondence letters from Northrop Grumman Corporation to NYSDEC and NCDH for the following AOCs:  
 AOC 02: Letter dated April 29, 1998 from Northrop Grumman to NYSDEC states that concrete and soil were excavated from pit, transported off site, and disposed of in accordance with state regulations. The excavation pit was backfilled with certified material. Letter dated June 23, 1998 from NYSDEC to Northrop Grumman approved the remediation.

AOC 03: Letter dated February 2, 1998 from Northrop Grumman to NYSDEC states that concrete and 2700 yd<sup>3</sup> of contaminated soils were excavated from to a depth of 29 feet bgs from under tank pit. Letter dated December 27, 1997 from Northrop Grumman to NYSDEC addresses the Waste Transfer Tank Area. Letter dated February 24, 1998 from NYSDEC to Northrop Grumman Remediation approved remediation.

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**RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHRUP GRUMMAN  
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- AOC 4: Letter dated October 27, 1997 from Northrup Grumman to NYSDEC requested No Further Action (NFA) / backfill activities.
- AOC 6: Letter dated October 27, 1997 from Northrup Grumman to NYSDEC reported findings for this area. Letter dated May 13, 1998 from Northrup Grumman to NYSDEC states that exterior area soils were excavated to depths of 4 and 12 feet. Letter dated June 23, 1998 from NYSDEC to Northrup Grumman approved remediation.
- AOC 7: Letter dated August 14, 1997 from Northrup Grumman to NYSDEC reported findings for this area. Letter dated August 22, 1997 from NYSDEC to Northrup Grumman granted approval to fill flow coat process pit in.
- AOC 8: Letter dated August 14, 1997 from Northrup Grumman to NYSDEC reported findings for this area. Letter dated August 22, 1997 from NYSDEC to Northrup Grumman granted approval to fill Chem-Mill Etch process pit in.
- AOC 9: Letter dated January 30, 1998 from Northrup Grumman to NYSDEC states that contaminated soil was excavated from this area as necessary. Letter dated April 28, 1998 from Northrup Grumman to NYSDEC reported endpoint sample results. Letter dated June 23, 1998 from NYSDEC to Northrup Grumman approved remediation.
- AOC 10: Letter dated November 25, 1997 from Northrup Grumman to NYSDEC reported results for including the chromic acid process pit. Letters dated August 14 and October 27, 1997 from Northrup Grumman to NYSDEC present similar results for the demineralizer (ion exchanger), Shell Pella pit, and waste transfer tanks.
- AOC 11: Letter dated August 14, 1997 from Northrup Grumman to NYSDEC reported findings for this area. Letter dated August 12, 1998 from NYSDEC to Northrup Grumman granted approval to back-fill the excavation pit.
- AOC 13: Letter dated April 14, 1998 from Northrup Grumman to NYSDEC states that contaminated soils were excavated from this area. Letter dated June 23, 1998 from NYSDEC to Northrup Grumman approved remediation.
- AOC 14: Letter dated April 28, 1998 from Northrup Grumman to NYSDEC states that contaminated soil was excavated as necessary from exterior locations. Letter dated May 13, 1998 from NYSDEC to Northrup Grumman approved remediation.
- AOC 15: Letter dated March 23, 1998 from Northrup Grumman to NYSDEC reported findings for this area.
- AOC 16: Letter dated March 23, 1998 from Northrup Grumman to NYSDEC requested NFA for all machine shop areas.
- AOC 19: Letter dated April 28, 1998 to NYSDEC states that the soils of were excavated from below the location of the former drywells near Column JJ2.
- AOC 24: Letter dated March 23, 1998 from Northrup Grumman to NYSDEC reported findings for this area. Letter dated April 17, 1998 from Northrup Grumman to NYSDEC states that soil was excavated as necessary. Letter dated June 23, 1998 from NYSDEC to Northrup Grumman approved remediation.
- AOC 27: Letter dated April 28, 1998 from Northrup Grumman to NYSDEC stated that soil under the shed was excavated to a depth of approximately 16 feet. Letter dated May 21, 1998 from Northrup Grumman to NYSDEC addresses residual concentrations of PAHs in the sidewalls of the excavation, closing out the remediation of AOC 27. Letter dated June 23, 1998 from NYSDEC to Northrup Grumman states that the remediation is acceptable.
- AOC 32: Findings for reported to NYSDEC in letter dated August 14, 1997.
- AOC 34: Letter dated May 13, 1998 from Northrup Grumman to NYSDEC states that soils at were excavated as necessary.
- AOC 38: letter dated February 10, 1998 from Northrup Grumman to NYSDEC reported findings for this area.
- AOC 39: letter dated February 10, 1998 from Northrup Grumman to NYSDEC reported findings for this area.

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**RESOLUTION OF AOCs IDENTIFIED FOR PLANT 03 BY NORTHRUP GRUMMAN  
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- 3 Final Phase II Environmental Site Assessment (ESA) for Plant 3, GOCO Facility, Bethpage New York (Radian International, 1998a); Volume 1-Technical Findings; Volume 2-Analytical Results Tables AOC01-AOC08; Volume 3-Analytical Results Tables AOC09-AOC32; Volume 4-Analytical Results Tables AOC33-AOC39; Volume 5-Borehole Logs AOC01-AOC20; Volume 6-Borehole Logs AOC21-AOC39.
- 4 See Drawing 1 of the Final Phase II ESA for a graphical depiction of AOC locations.
- 5 RCRA Facility Assessment for AOC 22, NWIRP Bethpage, New York (TINUS 2000).
- 6 Notification of AOC location and presence of residual contamination will be provided in quick claim deed by referencing Table 9-1 and Figure 10-3 in Final Phase 2 EBS.

TABLE 9-2

RESOLUTION OF PAINT BOOTHS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 1  
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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-1) PB1	03-01-01	Chromium	128 mg/kg (2-4 feet)	EBS Section: Heat Treat Area B (near Column AO.2)	No remediation required.
		Zinc	546 mg/kg (2-4 feet)	In 1997, 43 subsurface soil samples were collected from 12 boring locations, to a depth of 12' below ground surface.	Deed notification required <sup>(5)</sup> .
	03-01-01W	Copper	83.3 mg/kg (0-2 feet)	<ul style="list-style-type: none"> <li>1 of 43 samples contained mercury and benzo(k)fluoranthene above the TAGM #4046 criteria of 0.1 mg/kg and 1100 ug/kg, respectively.</li> </ul>	
		Mercury	1.3 mg/kg (0-2 feet)	<ul style="list-style-type: none"> <li>4 of 43 samples contained dibenzo(a,h)anthracene above the TAGM #4046 criterion of 14 ug/kg.</li> </ul>	
	03-01-01NN	B(a)A	1600 ug/kg (0-2 feet)	<ul style="list-style-type: none"> <li>5 of 43 samples contained copper above the TAGM #4046 criterion of 25 mg/kg.</li> </ul>	
		B(a)P	1300 ug/kg (0-2 feet)	<ul style="list-style-type: none"> <li>6 of 43 samples contained chrysene above the TAGM #4046 criterion of 400 ug/kg.</li> </ul>	
		B(k)F	1300 ug/kg (0-2 feet)	<ul style="list-style-type: none"> <li>7 of 43 samples contained benzo(a)pyrene above the TAGM #4046 criterion of 224 ug/kg.</li> </ul>	
		Chrysene	1400 ug/kg (0-2 feet)	<ul style="list-style-type: none"> <li>8 of 43 samples contained chromium and benzo(a)pyrene above the TAGM #4046 criteria of 10 mg/kg and 61 ug/kg, respectively.</li> </ul>	
		D(a,h)A	330 ug/kg (0-2 feet)	<ul style="list-style-type: none"> <li>11 of 43 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg.</li> </ul>	
				<p>The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.                      Correspondence letter<sup>(2)</sup> (3/23/98).</p>	



TABLE 9-2

RESOLUTION OF PAINT BOOTHS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 1  
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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-2) PB2	03-01-02	Zinc	22.2 mg/kg (0-2 feet)	EBS Section: Old Alodine/Plating/ Paint Booth Area (near Column F8)  In 1997, 1 of 2 subsurface soil samples collected from one boring location contained zinc above the TAGM #4046 criterion of 20 m/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 1-3) PB3	03-01-03	Arsenic Chromium Copper Nickel Selenium Zinc	8.8 mg/kg (0-2 feet) 22.7 mg/kg (0-2 feet) 34.9 mg/kg (0-2 feet) 16.6 mg/kg (0-2 feet) 2.8 mg/kg (0-2 feet) 45.3 mg/kg (0-2 feet)	EBS Section: Old Alodine/Plating/Paint Booth Area (near Column F9)  In 1997, 1 of 2 subsurface soil samples collected from one boring location contained arsenic, chromium, copper, nickel, selenium and zinc above the TAGM #4046 criteria of 7.5, 10, 25, 13, 2, and 20 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.	No remediation required.  Deed notification required <sup>(5)</sup> .

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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-4) PB4	03-01-04	Chromium Nickel Selenium Zinc	45.2 mg/kg (0-2 feet) 16.2 mg/kg (0-2 feet) 2.3 mg/kg (0-2 feet) 39.6 mg/kg (0-2 feet)	EBS Section: Old Alodine/Plating/Paint Booth Area (near Column G7)  In 1997, 1 of 2 subsurface soil samples collected from one boring location contained chromium, nickel and selenium above the TAGM #4046 criteria of 10, 13, and 2 mg/kg, respectively. Both subsurface soil samples contained zinc above the TAGM criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 1-5) PB5	AOC1-5,6D	Chromium Zinc	26 mg/kg (2 feet) 25 mg/kg (0-2 feet)	EBS Section: Old Alodine/Plating/Paint Booth Area (near Column G8)  In 1998, approximately 121 yd <sup>3</sup> of metal contaminated soils were removed to 4' below ground surface at AOCs 1-5 and 1-6. Due to the close proximity of paint booths 5 and 6, these areas were excavated together. A total of 10 sidewall and floor endpoint samples were collected from 10 boring locations. 2 of 10 endpoint samples contained chromium and zinc above the TAGM #4046 criteria of 10 and 20 mg/kg, respectively.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1, 6.1 and Figure 5-1. Correspondence letter(s) <sup>(2)</sup> (4/1/98 and 5/13/98)	No additional excavation required.  Area was backfilled with soil and capped with 6" of concrete.  Deed notification required <sup>(5)</sup> .

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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-6) PB6	NA	NA	NA	EBS Section: Old Alodine/Plating/Paint Booth Area (near Column G9)  AOC 1-6 was remediated in conjunction with AOC 1-5.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1, 6.1 and Figure 5-1. Correspondence letter(s) <sup>(2)</sup> (4/1/98 and 5/13/98)	No additional excavation required.  Area was backfilled with soil and capped with 6" of concrete.  Deed notification required <sup>(5)</sup> .  No remediation required.
(AOC 1-7) PB7	03-01-07B 03-01-07C 03-01-07	Selenium Chromium B(a)P Zinc	5.8 mg/kg (0-2 feet) 19.2 mg/kg (0-2 feet) 140 ug/kg (0-2 feet) 20.7 mg/kg (0-2 feet)	EBS Section: Old Alodine/Plating/ Paint Booth Area (near Column G10) In 1997, 6 subsurface soil samples were collected from 3 boring locations to a depth of 4' below ground surface. 1 of 6 samples contained chromium, selenium and zinc above the TAGM #4046 criteria of 10, 2 and 20 mg/kg, respectively. 3 of 6 samples contained benzo(a)pyrene above the TAGM #4046 criteria of 61 ug/kg. A 6" concrete slab exists over the area of contamination, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1. Correspondence letter(s) <sup>(2)</sup> (3/23/98)	Deed notification required <sup>(5)</sup> .  Deed notification required.

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RESOLUTION OF PAINT BOOTHS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 1  
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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-8) PB8	AOC 1-8D	Zinc B(a)A B(a)P D(a,h)P Chromium	69 mg/kg (0-2 feet) 350 ug/kg (0-2 feet) 230 ug/kg (0-2 feet) 33 ug/kg (0-2 feet) 32 mg/kg (6 feet)	EBS Section: Old Alodine/Plating/Paint Booth Area (near Column E11) In 1998, approximately 569 yd <sup>3</sup> of metal, VOC and SVOC contaminated soils were removed to 6' below ground surface. 1 of 16 endpoint samples collected from 10 boring locations contained benzo(a)anthracene, benzo(a)pyrene and dibenzo(a,h)anthracene above the TAGM #4046 criteria of 224, 61 and 14 ug/kg, respectively. 4 of 16 endpoint samples contained chromium, and 2 of 16 endpoint samples contained zinc above the TAGM #4046 criteria of 10 and 20 mg/kg, respectively. A 6" concrete slab covers the area of contamination, minimizing human exposure to subsurface soils.	No additional excavation required. Area was backfilled with soil and capped with 6" of concrete. Deed notification required <sup>(5)</sup> .
			References: ESA <sup>(3)</sup> - Sections 2.5.20, 3.3.1, 5.1, 6.1 and Figure 5-2. Correspondence letter(s) <sup>(2)</sup> (5/7/98 and 6/23/98)		

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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-9) PB9	03-01-09	Arsenic	14.2 mg/kg (2-4 feet)	EBS Section: Southcentral Machining Area (near Column JJ24)  In 1997, 20 subsurface soil samples were collected from 6 boring locations, to a depth of 8' below ground surface. 11 of 20 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. 3 of 20 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. 2 of 20 samples contained arsenic above the TAGM #4046 criterion of 7.5 mg/kg. 1 of 20 samples contained selenium above the TAGM #4046 criterion of 2 mg/kg.  A 6" concrete slab exists over the area of contamination, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1. Correspondence letter(s) <sup>(2)</sup> (3/23/98)	No remediation required.  Deed notification required <sup>(5)</sup> .
	03-01-09N	Selenium	11.6 mg/kg (2-4 feet)		
	03-01-09W	Zinc	87.8 mg/kg (6-8 feet)		
(AOC 1-10) PB10	03-01-10	Chromium	33.2 mg/kg (4-6 feet)	EBS Section: ID, Packaging, & Paint Booth Area (near Column KK26)  In 1997, 10 subsurface soil samples were collected from 5 boring locations to a depth of 4' below ground surface. 1 of 10 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. A 6" concrete slab exists over the area of contamination, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1. Correspondence letter(s) <sup>(2)</sup> (12/22/97 and 3/23/98)	No remediation required.  Deed notification required <sup>(5)</sup> .
		Zinc	51.3 mg/kg (0-2 feet)		

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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-11) PB11	03-01-11	Zinc	35.1 mg/kg (2-4 feet)	<p>EBS Section: ID, Packaging, &amp; Paint Booth Area (near Column LL26)</p> <p>In 1997, 2 subsurface soil samples were collected from 1 boring location to a depth of 4' below ground surface. 1 of 2 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.</p> <p>References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.                      Correspondence letter(s) <sup>(2)</sup> (12/22/97)</p>	<p>No remediation required.</p> <p>Deed notification required <sup>(5)</sup>.</p>
(AOC 1-12) PB12	03-01-12	Zinc	66.4 mg/kg (2-4 feet)	<p>EBS Section: ID, Packaging, &amp; Paint Booth Area (near Column LL26)</p> <p>In 1997, 18 subsurface soil samples were collected from 6 boring locations to a depth of 8' below ground surface. 1 of 18 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. A 6" concrete slab exists over the area of contamination, minimizing human exposure to subsurface soils.</p> <p>References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.                      Correspondence letter(s) <sup>(2)</sup> (12/22/97)</p>	<p>No remediation required.</p> <p>Deed notification required <sup>(5)</sup>.</p>

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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-13) PB13	03-01-13	Zinc	21.4 mg/kg (0-2 feet)	EBS Section: ID, Packaging, & Paint Booth Area (near Column MM26)  In 1997, 2 subsurface soil samples were collected from 1 boring location to a depth of 4' below ground surface. 1 of 2 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1. Correspondence letter(s) <sup>(2)</sup> (12/22/97)	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 1-14) PB14	03-01-14	Copper  Chromium  Nickel  Mercury  Arsenic  Zinc	139 mg/kg (2-4 feet)  71.6 mg/kg (2-4 feet)  534 mg/kg (2-4 feet)  1.5 mg/kg (2-4 feet)  9.5 mg/kg (2-4 feet)  30.1 mg/kg (2-4 feet)	EBS Section: ID, Packaging, & Paint Booth Area (near Column JJ31)  In 1997, 20 subsurface soil samples were collected from 6 boring locations to a depth of 8' below ground surface. 1 of 20 samples contained copper, nickel, mercury and zinc above the TAGM #4046 criteria of 25, 13, 0.1 and 20 mg/kg, respectively. 2 of 20 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. 3 of 20 samples contained arsenic above the TAGM #4046 criteria of 7.5 mg/kg. A 6" concrete slab exists over the area of contamination, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1. Correspondence letter(s) <sup>(2)</sup> (3/23/98)	No remediation required.  Deed notification required <sup>(5)</sup> .

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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-15) PB15	03-01-15	Chromium	10.5 mg/kg (0-2 feet)	EBS Section: ID, Packaging, & Paint Booth Area (near Column JJ33)  In 1997, 2 subsurface soil samples were collected from 1 boring location to a depth of 4' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 1-16) PB16	03-01-16	B(a)P  Chromium  Zinc	78 ug/kg (0-2 feet) 60.9 mg/kg (2-4 feet) 31.4 mg/kg (2/4 feet)	EBS Section: ID, Packaging, & Paint Booth Area (near Column GG33)  In 1997, 22 subsurface soil samples were collected from 7 boring locations to a depth of 8' below ground surface. 5 of 22 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. 4 of 22 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. 1 of 22 samples contained benzo(a)pyrene above the TAGM #4046 criterion of 61 ug/kg. A 6" concrete slab exists over the area of contamination, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.  Correspondence letter(s) <sup>(2)</sup> (3/23/98)	No remediation required.  Deed notification required <sup>(5)</sup> .



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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-17) HPB1	03-01-17	Chromium Zinc	19.9 mg/kg (2-4 feet) 44 mg/kg (2-4 feet)	EBS Section: Machining Area West of Wall 16 (near Column 14)  In 1997, 2 subsurface soil samples were collected from 1 boring location to a depth of 4' below ground surface. 2 of 2 samples contained chromium and zinc above the TAGM #4046 criteria of 10 and 20 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 1-18) HPB2	NA	NA	NA	EBS Section: Machining Area West of Wall 16 (near Column H15)  In 1997, 2 subsurface soil samples were collected from 2 boring locations to a depth of 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.	No remediation required.

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RESOLUTION OF PAINT BOOTHS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 1  
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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-19) HPB3	03-01-19 03-01-19E	Zinc B(a)A B(a)P	73.5 mg/kg (0-2 feet) 390 ug/kg (0-2 feet) 370 ug/kg (0-2 feet)	<p>EBS Section: Northcentral Machining Area (near Column DD1)</p> <p>In 1997, 10 subsurface soil samples were collected from 5 boring locations to a depth of 4' below ground surface. 3 of 10 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. 1 of 10 samples contained benzo(a)anthracene and benzo(a)pyrene above the TAGM #4046 criteria of 224 and 61 ug/kg, respectively. A 6" concrete slab exists over the area of contamination, minimizing human exposure to subsurface soils.</p> <p>References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1. Correspondence letter(s) <sup>(2)</sup> (3/23/98)</p>	<p>No remediation required.</p> <p>Deed notification required <sup>(6)</sup>.</p>
(AOC 1-20) HPB4	NA	NA	NA	<p>EBS Section: Southcentral Machining Area (near Column LL3)</p> <p>In 1998, approximately 642 yd<sup>3</sup> of metal, VOC (TCE ranging from 920-250000 ug/kg) and SVOC contaminated soils were removed to 10' below ground surface. A total of 23 sidewall and floor endpoint samples were collected from 16 boring locations. There were no exceedances of the TAGM #4046 criteria.</p> <p>In 1997, 1 of 2 subsurface soil samples collected from 1 boring location to 4' below ground surface contained dibenzo(a,h)anthracene (27 ug/kg) and benzo(a)pyrene (84 ug/kg) above the TAGM #4046 criteria of 14 and 61 ug/kg, respectively.</p> <p>References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1, 6.1 and Figure 5-3. Correspondence letter(s) <sup>(2)</sup> (5/7/98 and 6/23/98)</p>	<p>No additional excavation required.</p>

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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-21) HPB5	NA	NA	NA	EBS Section: Southcentral Machining Area (near Column G14)  In 1997, 2 subsurface soil samples were collected from 1 boring location to a depth of 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.	No remediation required.
(AOC 1-22) HPB6	03-01-22	Chromium	13.9 mg/kg (0-2 feet)	EBS Section: Southcentral Machining Area (near Column HH14)  In 1997 2 subsurface soil samples were collected from 1 boring location to a depth of 4' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 1-23) HPB7	NA	NA	NA	EBS Section: Southcentral Machining Area (near Column G23)  In 1997, 2 subsurface soil samples were collected from 1 boring location to a depth of 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.	No remediation required.

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RESOLUTION OF PAINT BOOTHS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 1  
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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-24) HPB8	NA	NA	NA	EBS Section: ID, Packaging, & Paint Booth Area (near Column HH35)  In 1997, 2 subsurface soil samples were collected from 1 boring location to a depth of 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.	No remediation required.
(AOC 1-25) HPB 9	03-01-25	Chromium Nickel Zinc	16.3 mg/kg (2-4 feet) 14.2 mg/kg (2-4 feet) 29.4 mg/kg (2-4 feet)	EBS Section: Northeastern Machining Area (near Column DD33)  In 1997, 2 subsurface soil samples were collected from 1 boring location to a depth of 4' below ground surface. 1 of 2 samples contained chromium, nickel and zinc above the TAGM #4046 criteria of 10, 13, and 20 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1.	No remediation required.  Deed notification required <sup>(5)</sup> .

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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-26) HPB10	03-01-26	Zinc	72.8 mg/kg (0-2 feet)	EBS Section: Northcentral Machining Area (near Column DD15)  In 1997, 10 subsurface soil samples were collected from 5 boring locations to a depth of 4' below ground surface. 3 of 10 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. A 6" concrete slab exists over the area of contamination, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1 and 6.1. Correspondence letter(s) <sup>(2)</sup> (3/23/98)	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 1-29) Paint Waste Tank 794	NA	NA	NA	EBS Section: Northeastern Machining Area (near Column AA30)  In 1998, approximately 118 yd <sup>3</sup> of metal and SVOC contaminated soils were removed to 4' below ground surface in the vicinity of the Paint Waste Tank. A total of 8 sidewall and floor endpoint samples were collected from 8 boring locations. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1, 6.1 and Figure 5-4. Correspondence letter(s) <sup>(2)</sup> (3/24/98 and 5/13/98)	No additional excavation required.

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Area of Concern (AOC) / Paint Booth Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 1-30) Paint Waste Holding Tanks	AOC 1-30D AOC 1-30F2 AOC 1-30F3 AOC 1-30F4	Zinc B(a)P Arsenic Chromium	74 mg/kg (1-3 feet) 100 ug/kg (6 feet) 13 mg/kg (6 feet) 17 mg/kg (6 feet)	EBS Section: Chem Mill Clean Area (near Column GG48)  In 1998, approximately 216 yd <sup>3</sup> of metal and SVOC contaminated soils were removed to a depth of 6' below ground surface. A total of 13 sidewall and floor endpoint samples were collected from 9 boring locations. 4 of 13 endpoint samples contained zinc and benzo(a)pyrene above the TAGM #4046 criteria of 20 mg/kg and 61 ug/kg, respectively. 2 of 13 endpoint samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. 1 of 13 endpoint samples contained arsenic above the TAGM #4046 criteria of 7.5 mg/kg.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.1, 5.1, 6.1 and Figure 5-5. Correspondence letter(s) <sup>(2)</sup> (3/24/98 and 5/13/98)	No additional excavation required.  Area was backfilled with soil and capped with 6" of concrete.  Deed notification required <sup>(5)</sup> .

Notes:

Refer to Figure 3-1 of this document for graphical depiction of AOC locations  
 Refer to Drawing 1 of Northrop Grumman's Phase 1 ESA for Plant 03 (Radian, 1997a) for graphical depiction of Plant 03 AOCs, primary sample locations, and delineation sample locations.  
 Refer to Figures 5-1 through 5-5, of Northrop Grumman's Phase 1 ESA for Plant 03 (Radian, 1997a) for graphical depiction of paint booth sample locations  
 Table presents the environmental condition of Plant 3 AOC 01-01 through AOC 01-30 as of January, 2001.  
 The designations AOC 1-27 and AOC 1-28 were not used.

Definitions:

- NA = Not Applicable.
- B(a)P = Benzo(a)pyrene
- B(a)A = Benzo(a)anthracene
- D(a,h)A = Dibenzo(a,h)anthracene
- B(k)F = Benzo(k)fluoranthene

TABLE 9-2

RESOLUTION OF PAINT BOOTHS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 1  
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- 1 Sample collection depths are measured from ground surface and presented as depth intervals below ground surface (bgs). If no depth interval is given, the interval is the same as the preceding interval.
- 2 Information sources include miscellaneous correspondence letters from Northrop Grumman Corporation to NYSDEC and NCDH for the following AOCs:  
AOC 1-1: Letter dated March 23, 1998 from Northrop Grumman to NYSDEC reported findings for this area.  
AOC 1-5: Letter dated April 1, 1998 from Northrop Grumman to NYSDEC states that contaminated soils were excavated from under this area. Letter dated May 13, 1998 from NYSDEC to Northrop Grumman approved remediation.  
AOC 1-6: Letter dated April 1, 1998 from Northrop Grumman to NYSDEC states that contaminated soils were excavated from under this area. Letter dated May 13, 1998 from NYSDEC to Northrop Grumman approved remediation.  
AOC 1-7: Letter dated March 23, 1998 from Northrop Grumman to NYSDEC reported findings for this area.  
AOC 1-8: Letter dated May 7, 1998 from Northrop Grumman to NYSDEC states that contaminated soils were excavated from under this area. Letter dated June 23, 1998 from NYSDEC to Northrop Grumman approved remediation.  
AOC 1-9: Letter dated March 23, 1998 from Northrop Grumman to NYSDEC reported findings for this area.  
AOC 1-10: Letters dated December 22, 1997 and March 23, 1998 from Northrop Grumman to NYSDEC reported findings for this area.  
AOC 1-11: Letters dated December 22, 1997 and March 23, 1998 from Northrop Grumman to NYSDEC reported findings for this area.  
AOC 1-12: Letter dated December 22, 1997 from Northrop Grumman to NYSDEC reported findings for this area.  
AOC 1-13: Letter dated December 22, 1997 from Northrop Grumman to NYSDEC reported findings for this area.  
AOC 1-14: Letter dated March 23, 1998 from Northrop Grumman to NYSDEC reported findings for this area.  
AOC 1-16: Letters dated December 22, 1998 and March 23, 1998 from Northrop Grumman to NYSDEC reported findings for this area.  
AOC 1-19: Letter dated March 23, 1998 from Northrop Grumman to NYSDEC reported findings for this area.  
AOC 1-20: Letter dated May 7, 1998 to NYSDEC states that contaminated soils were excavated from the former site of (HPB4). Letter dated June 23, 1998 from NYSDEC to Northrop Grumman approved remediation.  
AOC 1-26: Letter dated March 23, 1998 from Northrop Grumman to NYSDEC reported findings for this area.  
AOC 1-29: Letter dated March 24, 1998 from Northrop Grumman to NYSDEC states that contaminated soils were excavated from this area. Letter dated May 18, 1998 from NYSDEC to Northrop Grumman approved remediation.  
AOC 1-30: Letter dated March 24, 1998 from Northrop Grumman to NYSDEC states that contaminated soils were excavated from this area. Letter dated May 13, 1998 from NYSDEC to Northrop Grumman approved remediation.
- 3 Final Phase II Environmental Site Assessment (ESA) for Plant 3, GOCO Facility, Bethpage New York (Radian International, 1998a); Volume 1-Technical Findings; Volume 2-Analytical Results Tables AOC01-AOC08 and Volume 5-Borehole Logs AOC01-AOC20.
- 4 See Drawing 1 of Northrop Grumman's Final Phase II ESA for a graphical depiction of AOC locations.
- 5 Notification of AOC location and presence of residual contamination will be provided in quick claim deed by referencing Table 9-1 and Figure 10-3 in Final Phase 2 EBS.

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-1) 1	03-20-01	Chromium Zinc	19.9 mg/kg (8-10 feet) 23.9 mg/kg (10-12 feet)	Former diffusion gallery: Exterior area south of west section of Building 03-01.  In 1997, 2 subsurface soil samples were collected from 1 boring location to a depth of 12' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. Both samples contained zinc above the TAGM #4046 criterion of 20 mg/kg.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.  Deed notification required <sup>(7)</sup> .
(AOC 20-2) 2	03-20-02	Chromium	13.9 mg/kg (8-10 feet)	Former diffusion gallery: Exterior area south of west section of Building 03-01.  In 1997, 2 subsurface soil samples were collected from 1 boring location to a depth of 12' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.  Deed notification required <sup>(7)</sup> .



TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-3) 3	NA	NA	NA	<p>Dry well location: Exterior area south of eastern section of Building 03-01.</p> <p>In 1997, the vertical extent of metal, SVOC and PCB contaminated soil was determined to extend to 14' below ground surface.</p> <p>In 1998, approximately 210 yd<sup>3</sup> of metal, SVOC and PCB contaminated soils were removed to a depth of 18' below ground surface. 1 endpoint soil sample was collected from the excavation pit floor and analyzed for RCRA metals, VOCs, SVOCs and TPH. There were no exceedances of the TAGM #4046 criteria.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.                      Correspondence letter(s)<sup>(2)</sup> (6/17/98)</p>	No additional excavation required.
(AOC 20-4) 4	Endpoint Sample 20-04	Chromium	28.6 mg/kg (24-25 feet)	<p>Dry well location: Exterior area south of eastern section of Building 03-01.</p> <p>In 1998, approximately 240 yd<sup>3</sup> of metal, VOC, SVOC and PCB contaminated soils were removed to 24' below ground surface. One endpoint sample was collected from the excavation pit floor at a depth interval of 24'-25'. The endpoint sample contained chromium above the TAGM #4046 criterion of 10 mg/kg.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.                      Correspondence letter(s)<sup>(2)</sup> (6/25/98)</p>	<p>No additional excavation required.</p> <p>Deed notification required<sup>(7)</sup>.</p>

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-5) 5	03-20-05	Mercury Chromium	0.24 mg/kg (10-12 feet) 10.2 mg/kg (10-12 feet)	Dry well location: Exterior area south of west section of Building 03-01.  In 1997, 12 subsurface soil samples were collected from 6 boring locations to 14' below ground surface. 2 of 12 samples contained mercury above the TAGM #4046 criterion of 0.1 mg/kg. 1 of 12 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.  Deed notification required <sup>(7)</sup> .
(AOC 20-6) 6	NA	NA	NA	Dry well location: Exterior area north of eastern section of Building 03-01.  In 1998, metal, VOC, SVOC and PCB contaminated soils were removed to 16' below ground surface. 1 endpoint sample was collected from the excavation pit floor. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.  Correspondence letter(s) <sup>(2)</sup> (6/26/98)	No additional excavation required.
(AOC 20-7) 7	20-07	Chromium	13.5 mg/kg (16-17 feet)	Dry well location: Exterior area north of eastern section of Building 03-01.  In 1998, approximately 40 yd <sup>3</sup> of metal and SVOC contaminated soils were removed to 16' below ground surface. 1 endpoint soil sample collected from the excavation pit floor contained chromium above the TAGM #4046 criteria of 10 mg/kg.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.  Correspondence letter(s) <sup>(2)</sup> (6/25/98)	No additional excavation required.  Area was backfilled with soil.  Deed notification required <sup>(7)</sup> .

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-8) 8	Excavation Structure 20-08	Aroclor-1016	1400 mg/kg (29-31 feet)	Dry well location: Exterior area east of Building 03-01.  In 1998, metal, VOC, SVOC and PCB contaminated soils were removed to 30' below ground surface. 12 endpoint samples were collected as deep as 54' below ground surface from one boring location in the excavation pit. 6 of 12 endpoint samples contained PCBs above the TAGM #4046 criterion of 10 mg/kg. PCB impacted soils in this area are currently being investigated under the Navy's Site 1 IR Program.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1. Correspondence letter(s) <sup>(2)</sup> (9/14/98)	Area being retained by Navy for further investigation.
(AOC 20-9) 9	03-20-09	Chromium Zinc B(a)P B(a)A	18.9 mg/kg (10-12 feet) 20.8 mg/kg (10-12 feet) 290 ug/kg (10-12 feet) 270 ug/kg (10-12 feet)	Dry well location: Exterior area east of Building 03-01.  In 1997, 2 subsurface soil samples were collected from 1 boring location to 14' below ground surface. 1 of 2 subsurface soil samples contained chromium, zinc, benzo(a)pyrene and benzo(a)anthracene above the TAGM #4046 criteria of 10 mg/kg, 20 mg/kg, 61 ug/kg and 224 ug/kg, respectively.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.  Deed notification required <sup>(7)</sup> .
(AOC 20-10) 10	03-20-10	Zinc	20.6 mg/kg (12-14 feet)	Dry well location: Underneath exterior paint waste-holding tanks associated with Chem Mill Clean Area.  In 1997, 1 of 2 subsurface soil samples collected from 1 boring location contained zinc above the TAGM #4046 criterion of 20 mg/kg. Interior contaminated areas are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.  Deed notification required <sup>(7)</sup> .

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-11) 11	03-20-11	Chromium	19.3 mg/kg (10-12 feet)	Dry well location: Exterior area east of Building 03-01.  In 1997, 1 of 2 subsurface soil samples collected from 1 boring location contained chromium and zinc above the TAGM #4046 criteria of 10 and 20 mg/kg, respectively.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.
		Zinc	22.4 mg/kg (10-12 feet)		Deed notification required <sup>(7)</sup> .
(AOC 20-12) 12	03-20-12	Chromium	42.9 mg/kg (10-12 feet)	Dry well location: Exterior area east of Building 03-01.  In 1997, 1 of 2 subsurface soil samples collected from one boring location contained chromium above the TAGM #4046 criterion of 10 mg/kg.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.  Deed notification required <sup>(7)</sup> .

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-13) 13	NA	NA	NA	<p>Dry well location: Exterior area south of eastern section of Building 03-01.</p> <p>In 1998, approximately 325 yd<sup>3</sup> of metal, SVOC and PCB contaminated soils were removed to 28' below ground surface. One endpoint sample was collected from the excavation pit floor. There were no exceedances of the TAGM #4046 criteria.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.                      Correspondence letter(s)<sup>(2)</sup> (6/26/98)</p>	No additional excavation required.
(AOC 20-14) 14	03-20-14	Zinc	20.8 mg/kg (12-14 feet)	<p>Dry well location: Exterior area south of eastern section of Building 03-01.</p> <p>In 1997, 1 of 4 subsurface soil samples collected from 2 boring locations contained zinc above the TAGM #4046 criterion of 20 mg/kg.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.</p>	No remediation required. Deed notification required <sup>(7)</sup> .

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-15) 15	TTAOC20-SB04 (TINUS, 2000)	Chromium Lead	17 mg/kg (3-5 feet) 9.7 mg/kg (3-5 feet)	<p>Dry well location: Exterior area south of eastern section of Building 03-01.</p> <p>Due to the close proximity of AOC 22 and dry well # 15, the 1997 data generated from sample location 03-22-15A (collected as part of Northrop Grumman's Phase 2 ESA, investigation of AOC 22) is considered relevant to the environmental condition of AOC 20-15. Lead (4070 mg/kg), mercury (0.47 mg/kg) and zinc (119 mg/kg) were detected in this sample above the TAGM #4046 criteria of 7.8<sup>(6)</sup>, 0.1, and 20 mg/kg, respectively.</p> <p>In 1999, 12 subsurface soil samples were collected from 4 boring locations immediately adjacent to the 1997 boring (03-22-15A) as part of the Former Dry Well Investigation for AOC 20 (TINUS, Jan. 2000). Subsurface soil samples were collected as deep as 17' below ground surface. 3 of 12 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. 1 of 12 samples contained lead above the TAGM #4046 criterion of 7.8<sup>(6)</sup> mg/kg.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1. Former Dry Well Investigation South of Plant 03, AOC 20.<sup>(5)</sup></p>	No remediation required. Deed notification required <sup>(7)</sup> .
(AOC 20-16) 16	NA	NA	NA	<p>Dry well location:</p> <p>In 1996, one subsurface soil sample was collected from one boring location as part of the Phase 1 investigation for Plant 03. There were no exceedances of the TAGM #4046 criteria.</p> <p>References: ESA<sup>(3)</sup> – Executive Summary, Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.</p>	No remediation required.

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-17) 17	03-20-17	Chromium Zinc B(a)P	10.5 mg/kg (10-12 feet) 29.7 mg/kg (12-14 feet) 110 ug/kg (12-14 feet)	Dry well location: Exterior area south of GAC PROM (Building 03-40).  In 1997, 2 subsurface soil samples were collected from 1 boring location to 14' below ground surface. 1 of 2 samples contained chromium and benzo(a)pyrene above the TAGM #4046 criteria of 10 mg/kg and 61 ug/kg, respectively. Both samples contained zinc above the TAGM #4046 criteria of 20 mg/kg.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.  Deed notification required <sup>(7)</sup> .
(AOC 20-18) 18	03-20-18	B(a)P Chromium Copper Zinc	200 ug/kg (12-14 feet) 39 mg/kg (12-14 feet) 48.3 mg/kg (12-14 feet) 35 mg/kg (12-14 feet)	Dry well location: Exterior area south of GAC PROM (Building 03-40).  In 1997, 2 subsurface soil samples were collected from 1 boring location to 14' below ground surface. 1 of 2 samples contained chromium, copper, zinc and benzo(a)pyrene above the TAGM #4046 criteria of 10 m/kg, 25 mg/kg, 20 mg/kg and 61 ug/kg, respectively.  References: ESA <sup>(3)</sup> – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.  Deed notification required <sup>(7)</sup> .
(AOC 20-19) 19	NA	NA	NA	Dry well location: Exterior area south of GAC PROM (Building 03-40).  In 1996, one subsurface soil sample was collected from one boring location as part of the Phase 1 investigation for Plant 03. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Executive Summary, Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-20) 20	03-20-20	Chromium	12.3 mg/kg (12-14 feet)	Dry well location: Exterior area south of GAC PROM (Building 03-40).  In 1997, 2 subsurface soil samples were collected from one boring location to 14' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg.  References: ESA(3) – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.  Deed notification required <sup>(7)</sup> .
(AOC 20-21) 21	NA	NA	NA	Dry well location: Exterior area south of GAC PROM (Building 03-40).  In 1997, 2 subsurface soil samples were collected from one boring location to 14' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA(3) – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.



TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-22) 22	03-20-22AA	Arsenic Cadmium Chromium Zinc Chrysene B(a)A B(a)P D(a,h)A	13.1 mg/kg (6-8 feet) 1.5 mg/kg (6-8 feet) 19.8 mg/kg (6-8 feet) 132 mg/kg (6-8 feet) 1200 ug/kg (6-8 feet) 800 ug/kg (8-10 feet) 720 ug/kg (8-10 feet) 200 ug/kg (8-10 feet)	Dry well location: Exterior area south of GAC PROM (Building 03-40).  In 1997, 4 subsurface soil samples were collected from 1 boring location to 14' below ground surface. 1 of 4 samples contained arsenic, cadmium and dibenzo(a,h)anthracene above the TAGM #4046 criteria of 7.5 mg/kg, 1 mg/kg and 14 ug/kg, respectively. 3 of 4 samples contained chromium, zinc, benzo(a)anthracene, benzo(a)pyrene and chrysene above the TAGM #4046 criteria of 10 mg/kg, 20 mg/kg, 224 ug/kg, 61 ug/kg and 400 ug/kg, respectively.  References: ESA(3) – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.  Deed notification required <sup>(7)</sup> .
(AOC 20-23) 23	03-20-23	Zinc Chromium	52.4 mg/kg (10-12 feet) 28.3 mg/kg (10-12 feet)	Dry well location: Under Heat Treat Area B, located near Column F0.3.  In 1997, 2 subsurface soil samples were collected from 1 boring location to 14' below ground surface. 1 of 2 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. Both samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA(3) – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.  Deed notification required <sup>(7)</sup> .

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-24) 24	NA	NA	NA	<p>Dry well location: Under Heat Treat Area B, located near Column D0.2.</p> <p>In 1998, metal and SVOC contaminated soils were removed to approximately 16' below ground surface. One endpoint sample was collected from the excavation pit floor. There were no exceedances of the TAGM #4046 criteria.</p> <p>References: ESA(3) – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.                      Correspondence letter(s)<sup>(2)</sup> (5/21/98)</p>	No additional excavation required.
(AOC 20-25) 25	03-20-25	Selenium Cadmium Chromium Zinc	<p>4.4 mg/kg (10-12 feet)</p> <p>6.3 mg/kg (12-14 feet)</p> <p>17.7 mg/kg (12-14 feet)</p> <p>33.0 mg/kg (12-14 feet)</p>	<p>Dry well location: Under Hydraulic Press Area, near Column OC6.</p> <p>In 1997, 2 subsurface soil samples were collected from 1 boring location to 14' below ground surface. 1 of 2 samples contained selenium and chromium above the TAGM #4046 criteria of 2 and 10 mg/kg, respectively. Both samples contained cadmium and zinc above the TAGM #4046 criteria of 1 and 20 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.</p> <p>References: ESA(3) – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.</p>	<p>No remediation required.</p> <p>Deed notification required<sup>(7)</sup>.</p>

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-26) 26	NA	NA	NA	<p>Dry well location: Not mapped in Northrop Grumman's reports or correspondence.</p> <p>In 1996, one subsurface soil sample was collected from one boring location as part of the Phase 1 investigation for Plant 03. There were no exceedances of the TAGM #4046 criteria.</p> <p>References: ESA<sup>(3)</sup> – Executive Summary, Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.</p>	No remediation required.
(AOC 20-27) 27	03-20-27  03-20-27B	Selenium  Chromium  B(a)P  Zinc	<p>4.2 mg/kg (10-12 feet)</p> <p>11.1 mg/kg (12-14 feet)</p> <p>110 ug/kg (12-14 feet)</p> <p>22.7 mg/kg (12-14 feet)</p>	<p>Dry well location: Exterior area north of eastern section of Building 03-01.</p> <p>In 1997, 4 subsurface soil samples were collected from 2 boring locations to 14' below ground surface. 1 of 4 samples contained chromium, selenium and zinc above the TAGM #4046 criteria of 10, 2 and 20 mg/kg, respectively. 2 of 4 samples contained benzo(a)pyrene above the TAGM #4046 criterion of 61 ug/kg.</p> <p>References: ESA(3) – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.</p>	<p>No remediation required.</p> <p>Deed notification required<sup>(7)</sup>.</p>

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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Area of Concern (AOC) / Dry Well Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 20-28) 28	NA	NA	NA	Dry well location: Exterior area north of eastern section of Building 03-01.  In 1998, metal, SVOC and PCB contaminated soils were removed to approximately 14' below ground surface. One endpoint sample was collected from the excavation pit floor. There were no exceedances of the TAGM #4046 criteria.  References: ESA(3) – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1. Correspondence letter(s) <sup>(2)</sup> (/26/98)	No additional excavation required.
(AOC 20-29) 29	NA	NA	NA	Dry well location: Exterior area south of eastern section of Building 03-01.  In 1997, 2 subsurface soil samples were collected from one boring location to 14' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA(3) – Sections 2.5.20, 3.3.20, 5.20, 6.20 and Table 3-1.	No remediation required.

Notes:  
 Refer to Drawing 1 of Northrop Grumman's Phase 1 ESA for Plant 03 (Radian, 1997a) for graphical depiction of Plant 03 AOCs, primary sample locations, and delineation sample locations.  
 Table presents the environmental condition of Plant 3 AOC 20-01 through AOC 20-29 as of January, 2001.  
 The designations AOC 01-27 and AOC 01-28 were not used.

Definitions:  
 NA = Not Applicable.  
 B(a)P = Benzo(a)pyrene  
 B(a)A = Benzo(a)anthracene  
 D(a,h)A = Dibenzo(a,h)anthracene  
 B(k)F = Benzo(k)fluoranthene

TABLE 9-3

RESOLUTION OF INTERIOR AND EXTERIOR DRY WELLS ASSOCIATED WITH BUILDING 03-01 IDENTIFIED AS PART OF AOC 20  
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- 1 Sample collection depths are measured from ground surface and presented as depth intervals below ground surface (bgs). If no depth interval is given, the interval is the same as the preceding interval.
- 2 Information sources include miscellaneous correspondence letters from Northrop Grumman Corporation to NYSDEC and NCDH for the following AOCs:  
AOC 20-03: Letter dated June 17, 1998 from Northrop Grumman to NCDH states that contaminated soils were removed from under the dry well to a depth of 18 feet bgs.  
AOC 20-04: Letter dated June 25, 1998 from Northrop Grumman to NCDH states that contaminated soils were removed from under the dry well to 24 feet bgs and the subject dry well was fitted with a catch basin and integrated to the existing storm drainage system  
AOC 20-06: Letter dated June 26, 1998 from Northrop Grumman to NYSDEC states that contaminated soils were removed from under dry well to a depth of 16 feet bgs.  
AOC 20-07: Letter dated June 25, 1998 from Northrop Grumman to NCDH states that contaminated soils were removed from under the dry well to a depth of 16 feet bgs.  
AOC 20-08: Letter dated September 14, 1998 from Northrop Grumman to NYSDEC states that contaminated soils were removed from under the dry well to a depth of 30 feet bgs. However, the USEPA expressed concern over the elevated PCB concentrations in endpoint samples. This AOC is currently being investigated under the Navy's Site 1 IR program.  
AOC 20-13: Letter dated June 26, 1998 from Northrop Grumman to NCDH states that contaminated soils were removed from under the dry well to a depth of 28 feet bgs.  
AOC 20-24: Letter dated May 21, 1998 from Northrop Grumman to NYSDEC states that contaminated soils were removed from under the dry well to a depth of 16 feet bgs.  
AOC 20-28: Letter dated June 26, 1998 from Northrop Grumman to NYSDEC states that contaminated soils were removed from under the dry well to a depth of 14 feet bgs.
- 3 Final Phase II Environmental Site Assessment (ESA) for Plant 3, GOCO Facility, Bethpage New York (Radian International, 1998a); Volume 1-Technical Findings; Volume 3-Analytical Results Tables AOC 09-AOC 32 and Volume 5-Borehole Logs AOC 01-AOC 20.
- 4 See Drawing 1 of Northrop Grumman's Final Phase II ESA (Radian International 1998a) for a graphical depiction of AOC/sample locations.
- 5 Former Dry Well Investigation South Of Plant NO 03, Area Of Concern 20, Naval Weapons Reserve Plant (NWIRP) Bethpage, NY (Tetra Tech NUS, January 2000). Prepared as part of the Free Product Investigation conducted at the Bethpage Facility.
- 6 Site Background for lead, Halliburton NUS Environmental Corporation, May 1992. Final Remedial Investigation Report NWIRP Bethpage.
- 7 Notification of AOC location and presence of residual contamination will be provided in quick claim deed by referencing Table 9-1 and Figure 10-3 in Final Phase 2 EBS.

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-01) 2	03-21-01	Chromium	10.9 mg/kg (2-4 feet)	EBS section: Hydraulic Press Area (near Column OC13)  In 1997, 1 of 2 subsurface soil samples collected from 1 boring location contained chromium above the TAGM #4046 criteria of 10 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 21-02) 3	03-21-02	Cadmium Chromium Copper Zinc	1.1 mg/kg (0-2 feet) 14.2 mg/kg (0-2 feet) 28.5 mg/kg (0-2 feet) 45.5 mg/kg (0-2 feet)	EBS section: Hydraulic Press Area (near Column OB10)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained cadmium chromium and copper above the TAGM #4046 criteria of 1, 10 and 25 mg/kg, respectively. Both samples contained zinc above the TAGM #4046 criteria of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 21-03) 4	NA	NA	NA	EBS section: Hydraulic Press Area (near Column OB12)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21.	No remediation required.

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-04) 6	NA	NA	NA	EBS section: Machining Area West of Wall 16 (near Column C14)  In 1997, equipment pit #6 was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97).	No remediation required.
(AOC 21-05) 6A	NA	NA	NA	EBS section: Machining Area West of Wall 16 (near Column D13)  In 1997, equipment pit #6A was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97).	No remediation required.

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-06) 7	NA	NA	NA	EBS section: Machining Area West of Wall 16 (near Column H13)  In 1997, equipment pit #7 was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97).	No remediation required.
(AOC 21-07) 8	NA	NA	NA	EBS section: Machining Area West of Wall 16 (near Column K7)  In 1997, equipment pit #8 was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97).	No remediation required.



TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-08) 9	03-21-08	Chromium  Zinc	14.7 mg/kg (2-4 feet) 33 mg/kg (2-4 feet)	EBS section: Machining Area West of Wall 16 (near Column K8)  In 1997, equipment pit #9 was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained chromium and zinc above the TAGM #4046 criteria of 10 and 20 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (8/29/97).	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 21-09) 10	NA	NA	NA	EBS section: Machining Area West of Wall 16 (near Column K9)  In 1997, equipment pit #10 was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97).	No remediation required.

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-10) 11	NA	NA	NA	<p>EBS section: North-central Machining Area (near column CC3)</p> <p>In 1997, equipment pit #11 was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21.                      Correspondence letter<sup>(2)</sup> (4/29/98).</p>	No remediation required.
(AOC 21-11) 12	03-21-11	Zinc	26.6 mg/kg(2-4 feet)	<p>EBS section: North-central Machining Area (near Column CC11)</p> <p>In 1997, equipment pit #12 was decontaminated using high-pressure water/steam and detergent. 6 subsurface soil samples were collected from 2 boring locations to 4' below ground surface. 1 of 6 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21.                      Correspondence letter<sup>(2)</sup> (10/30/97).</p>	<p>No remediation required.</p> <p>Deed notification required<sup>(5)</sup>.</p>

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-12) 12B	NA	NA	NA	<p>EBS section: North-central Machining Area (near Column CC13)</p> <p>In 1997, equipment pit #12B was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter<sup>(2)</sup> (8/29/97).</p>	No remediation required.
(AOC 21-13) 14	03-21-13	Arsenic Chromium Selenium Zinc	11.6 mg/kg (0-2 feet) 303 mg/kg (0-2 feet) 7.5 mg/kg (0-2 feet) 36 mg/kg (0-2 feet)	<p>EBS section: North-central Machining Area (near Column FF10)</p> <p>In 1997, equipment pit #14 was decontaminated using high-pressure water/steam and detergent. A total of 10 subsurface soil samples were collected from 5 boring locations to 4' below ground surface. 1 of 10 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. 1 of 2 samples contained arsenic, selenium and zinc above the TAGM #4046 criteria of 7.5, 2 and 20 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter<sup>(2)</sup> (10/30/97 and 3/23/98).</p>	No remediation required.  Deed notification required <sup>(5)</sup> .

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-14) 15	NA	NA	NA	<p>EBS section: North-central Machining Area (near Column EE17)</p> <p>In 1997, equipment pit #15 was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location. There were no exceedances of the TAGM #4046 criteria.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21.                      Correspondence letter<sup>(2)</sup> (10/30/97).</p>	No remediation required.
(AOC 21-15) 16	NA	NA	NA	<p>EBS section: South-central Machining Area (near Column MM9)</p> <p>In 1997, equipment pit #16 was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21.                      Correspondence letter<sup>(2)</sup> (10/30/97).</p>	No remediation required.

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-16) 18	03-21-16	Zinc	30.4 mg/kg (0-2 feet)	<p>EBS section: South-central Machining Area (near Column MM19)</p> <p>In 1997, equipment pit #18 was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.</p> <p>References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97).</p>	<p>No remediation required.</p> <p>Deed notification required <sup>(5)</sup>.</p>
(AOC 21-17) 19	NA	NA	NA	<p>EBS section: Northeastern Machining Area (near Column BB31)</p> <p>In 1997, equipment pit #19 was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.</p> <p>References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97).</p>	<p>No remediation required.</p>

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-18) 20	NA	NA	NA	EBS section: Northeastern Machining Area (near Column BB34)  In 1997, 4 subsurface soil samples were collected from 2 boring locations to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (2/10/98).	No remediation required.
(AOC 21-19) 21	03-21-19	Zinc  Chromium	36.2 mg/kg (0-2 feet) 16.9 mg/kg (2-4 feet)	EBS section: Northeastern Machining Area (near Column BB31)  In 1997, equipment pit #21 was decontaminated using high-pressure water/steam and detergent. 4 subsurface soil samples were collected from 1 boring location to 8' below ground surface. 2 of 4 samples contained chromium and zinc above the TAGM #446 criteria of 10 and 20 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97).	No remediation required.  Deed notification required <sup>(5)</sup> .

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-20) 22	03-21-20	Chromium  Zinc	13.6 mg/kg (2-4 feet) 25 mg/kg (2-4 feet)	EBS section: Northeastern Machining Area (near Column CC37)  In 1997, equipment pit #22 was decontaminated using high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criteria of 10 mg/kg. Both samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97).	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 21-21) 23	03-21-21  03-21-21G	Zinc  PCE  TCE	38.9 mg/kg(0-2 feet) 14000 ug/kg (12 feet) 10000 ug/kg (12 feet)	EBS section: Northeastern Machining Area (near Column EE36)  In 1997, 37 subsurface soil samples were collected from 7 boring locations to 12' below ground surface. 2 of 2 samples contained zinc above the TAGM #4046 criteria of 20 mg/kg. 7 of 35 samples contained tetrachloroethene above the TAGM #4046 criteria of 1400 ug/kg. 4 of 35 samples contained trichloroethene above the TAGM #4046 criteria of 700 ug/kg. Letter dated May 21, 1998 to NYSDEC states that soil was excavated to a depth of 12 feet, and that no further action is necessary.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97).	No remediation required.  Area was backfilled with soil and capped with 6" of concrete.  Deed notification required <sup>(5)</sup> .

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-22) 24A	03-21-22	Zinc  Chromium	43.3 mg/kg (0-2 feet) 17.9 mg/kg (2-4 feet)	EBS section: Northeastern Machining Area (near Column EE37)  In 1997, equipment pit #24A was decontaminated with high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. Both samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21, 6.21 and Figure 5-13. Correspondence letter <sup>(2)</sup> (10/30/97).	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 21-23) 24B	03-21-23	Cadmium  Chromium  Zinc	1.3 mg/kg (2-4 feet) 24.5 mg/kg (2-4 feet) 87.7 mg/kg (2-4 feet)	EBS section: Northeastern Machining Area (near Column EE37)  In 1997, equipment pit #24B was decontaminated with high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained cadmium and chromium above the TAGM #4046 criteria of 1 and 10 mg/kg, respectively. Both samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97 and 3/23/98).	No remediation required.  Deed notification required <sup>(5)</sup> .



TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-24) / 25	03-21-24	Zinc Arsenic Chromium Selenium	27.1 mg/kg (0-2 feet) 9.2 mg/kg (2-4 feet) 16.3 mg/kg (2-4 feet) 4.7 mg/kg (2-4 feet)	<p>EBS section: Northeastern Machining Area (near Column EE38)</p> <p>In 1997, equipment pit #25 was decontaminated with high-pressure water/steam and detergent. 14 subsurface soil samples were collected from 4 locations to 8' below ground surface. 2 of 2 samples contained chromium and zinc above the TAGM #4046 criteria of 10 and 20 mg/kg, respectively. 1 of 2 samples contained arsenic above the TAGM #4046 criteria of 7.5 mg/kg. 1 of 14 samples contained selenium above the TAGM #4046 criterion of 2 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.</p> <p>References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97 and 3/23/98).</p>	<p>No remediation required.</p> <p>Deed notification required <sup>(5)</sup>.</p>

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-25) 26	03-21-25	Selenium Zinc	2.9 mg/kg (0-2 feet) 33.5 mg/kg (0-2 feet)	EBS section: Northeastern Machining Area (near Column EE39)  In 1997, equipment pit #26 was decontaminated using high-pressure water/steam and detergent. 6 subsurface soil samples were collected from 3 boring locations to a depth of 4' below ground surface. 2 of 2 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. 1 of 2 samples contained selenium above the TAGM #4046 criterion of 2 mg/kg. Lead was detected at 1660 mg/kg in a sample collected from the 0-2 feet interval. However, re-analysis of the original sample aliquot detected lead at only 4.5 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97 and 3/23/98).	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 21-26) 27	03-21-26	Chromium Zinc	19.7 mg/kg (0-2 feet) 20.4 mg/kg (0-2 feet)	EBS section: Northeastern Machining Area (near Column EE40)  In 1997, equipment pit #27 was decontaminated a high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained chromium and zinc above the TAGM #4046 criteria of 10 and 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/30/97).	No remediation required.  Deed notification required <sup>(5)</sup> .

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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Area of Concern (AOC) / Pit Number <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 21-27) 28	03-21-27	Chromium	10.1 mg/kg (0-2 feet)	EBS section: Shot Peen/Old Chem Mill Area (near Column BB43)  In 1997, equipment pit #28 was decontaminated with high-pressure water/steam and detergent. 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (8/29/97)	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 21-28) 1	NA	NA	NA	EBS section: Hydraulic Press Area (near Column OC9)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.21, 3.3.21, 5.21 and 6.21. Correspondence letter <sup>(2)</sup> (10/22/97).	No remediation required.

Notes: Refer to Drawing 1 of Northrop Grumman's Phase 1 ESA for Plant 03 (Radian, 1997a) for graphical depiction of Plant 03 AOCs, primary sample locations, and delineation sample locations. Table presents the environmental condition of Plant 3 AOC 21-01 through AOC 21-28 as of January, 2001.

Definitions:  
 PCE = Tetrachloroethene  
 TCE = Trichloroethene  
 NA = Not Applicable.

TABLE 9-4

RESOLUTION OF MACHINING EQUIPMENT PITS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 21  
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- 1 Sample collection depths measured from ground surface and presented as depth intervals below ground surface (bgs). If no depth interval is given, the interval is the same as the preceding interval.
- 2 Information sources include miscellaneous correspondence letters from Northrop Grumman Corporation to NYSDEC and NCDH for the following AOCs:  
AOCs 21-01: Letter dated October 13, 1997 from Northrop Grumman Corporation to NYSDEC, reported findings and concluded that no further action was necessary for equipment pit #2.  
AOCs 21-04, AOC 21-05, 21-06, 21-07, 21-09, 21-10, 21-11, 21-13, 21-14, 21-15, 21-16, 21-17, 21-19, 21-20, 21-22, 21-23, 21-24, 21-25 and 21-26: Several letters dated October 30, 1997 from Northrop Grumman Corporation to NYSDEC, reported findings and concluded that no further action was necessary for the above equipment pits.  
AOCs 21-08, 21-12 and 21-27: Letter dated August 29, 1997 from Northrop Grumman Corporation to NYSDEC reported findings and concluded that no further action was necessary equipment pits #9, #12B and #28, respectively.  
AOCs 21-14, 21-23, 21-24 and 21-25: Letter dated March 23, 1998 from Northrop Grumman Corporation to NYSDEC reported findings for and concluded that no further action was necessary equipment pits #15, #24B, #25 and #26, respectively.  
AOC 21-18: Letter dated February 10, 1998 from Northrop Grumman Corporation to NYSDEC reported findings and concluded that no further action was necessary for equipment pit #20.  
AOC 21-28: letter dated December 22, 1997 from Northrop Grumman Corporation to NYSDEC reported findings and concluded that no further action was necessary for equipment pit #1.
- 3 Final Phase II Environmental Site Assessment (ESA) for Plant 3, GOCO Facility, Bethpage New York (Radian International, 1998a); Volume 1-Technical Findings; Volume 3-Analytical Results Tables AOC 09-AOC 32 and Volume 6-Borehole Logs AOC 21-AOC 39.
- 4 See Drawing 1 of Northrop Grumman's Final Phase II ESA (Radian International 1998a) for a graphical depiction of AOC/sample locations.
- 5 Notification of AOC location and presence of residual contamination will be provided in quick claim deed by referencing Table 9-1 and Figure 10-3 in Final Phase 2 EBS.

TABLE 9-5

RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-1) 1	NA	NA	NA	EBS section: Heat Treat Area B (near Col. A0.4)  Due to its location over the Heat Treat Area 13 process pit, the Waste Accumulation Area identified as AOC 33-1 was removed from Northrop Grumman's Phase 2 scope of work.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.
(AOC 33-2) 2	NA	NA	NA	EBS section: Heat Treat Area B (near Col. F0.4)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.
(AOC 33-3) 3	03-33-03	Chromium  Zinc	13.6 mg/kg (0-2 feet) 22.9 mg/kg (0-2 feet)	EBS section: Heat Oven Area (near Col. C7)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained chromium and zinc above the TAGM #4046 criteria of 10 and 20 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .

TABLE 9-5

RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-4) 4	03-33-04	Arsenic Chromium Zinc	9.3 mg/kg (0-2 feet) 31.6 mg/kg (0-2 feet) 35.8 mg/kg (0-2 feet)	<p>EBS section: Old Alodine/Plating/Paint Booth Area (near Col. E9)</p> <p>In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained arsenic above the TAGM #4046 criterion of 7.5 mg/kg. Both samples contained chromium and zinc above the TAGM #4046 criteria of 10 and 20 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.</p>	<p>No remediation required.</p> <p>Deed notification required<sup>(5)</sup>.</p>

TABLE 9-5

RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-5) 5	03-33-05       03-33-05W	Zinc  B(a)A  B(a)P  Chromium  Chrysene  D(a,h)A	36.3 mg/kg (0-2 feet) 760 ug/kg (0-2 feet) 470 ug/kg (0-2 feet) 17.5 mg/kg (2-4 feet) 730 ug/kg (0-2 feet) 90 ug/kg (0-2 feet)	EBS section: Machining Area West of Wall 16 (near Col. C10)  In 1997, 28 subsurface soil samples were collected from 16 boring locations to 4' below ground surface. The following constituents were detected in the samples: - 1 of 2 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. - 2 of 2 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. - 1 of 28 samples contained chrysene above the TAGM #4046 criterion of 400 mg/kg. - 2 of 28 samples contained benzo(a)anthracene, benzo(a)pyrene and dibenzo(a,h)anthracene above the TAGM #4046 criteria of 224, 61 and 14 ug/kg, respectively.  The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .

TABLE 9-5

RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-6) 6	03-33-06	B(a)A B(a)P B(b)F B(k)F Chrysene	1800 ug/kg (0-2 feet) 1100 ug/kg (0-2 feet) 2100 ug/kg (0-2 feet) 2400 ug/kg (0-2 feet) 1300 ug/kg (0-2 feet)	EBS section: Machining Area West of Wall 16 (near Col. B12)  In 1997, 10 subsurface soil samples were collected from 5 boring locations to 4' below ground surface. 1 of 10 samples contained benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene and chrysene above the TAGM #4046 criteria of 224, 1100, 1100 and 400 ug/kg, respectively. 2 of 10 samples contained benzo(a)pyrene above the TAGM #4046 criterion of 61 ug/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 33-7) 7	NA	NA	NA	EBS section: Machining Area West of Wall 16 (near Col. B13)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.



**TABLE 9-5**  
**RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33**  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-8) 8	03-33-08  03-33-08A	Chromium  Zinc  B(a)A  Chrysene	10.4 mg/kg (2-4 feet) 24.9 mg/kg (2-4 feet) 330 ug/kg (2-4 feet) 430 ug/kg (2-4 feet)	EBS section: Machining Area West of Wall 16 (near Col. C13)  In 1997, 5 subsurface soil samples were collected from 2 boring locations to 6' below ground surface. 1 of 2 subsurface soil samples contained chromium and zinc above the TAGM #4046 criteria of 10 and 20 mg/kg, respectively. 1 of 5 samples contained benzo(a)anthracene and chrysene above the TAGM #4046 criteria of 224 and 400 ug/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .

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RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-9) 9	AOC 33-09C	B(a)A B(b)F B(k)F B(a)P D(a,h)A Chrysene	1300 ug/kg (8-10 feet) 1150 ug/kg (8-10 feet) 1150 ug/kg (8-10 feet) 1100 ug/kg (8-10 feet) 210 ug/kg (8-10 feet) 1300 ug/kg (8-10 feet)	EBS section: Zyglo Area (near Col. EE3)  In 1998, approximately 521 yd <sup>3</sup> of metal, VOC and SVOC contaminated soils were removed to 12' below ground surface. 24 sidewall and floor endpoint samples were collected from 16 boring locations in the vicinity of the excavation pit. The following constituents were detected in the samples: - 1 of 24 samples contained benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene and chrysene above the TAGM #4046 criteria of 224, 1100, 1100 and 400 ug/kg, respectively. - 3 of 24 samples contained dibenzo(a,h)anthracene above the TAGM #4046 criterion of 14 ug/kg. - 4 of 24 samples contained benzo(a)pyrene above the TAGM #4046 criteria of 61 ug/kg.  The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils. References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33, 6.33 and Figure 5-18. Correspondence letter(s) <sup>(2)</sup> (5/13/98)	No additional excavation required.  Deed notification required <sup>(5)</sup> .
(AOC 33-10) 10	NA	NA	NA	EBS section: South-central Machining Area (near Col. GG10)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.

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RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-11) 11	NA	NA	NA	EBS section: North-central Machining Area (near Col. BB12)  In 1998, approximately 637 yd <sup>3</sup> of metal and SVOC contaminated soil was removed to 10' below ground surface. 21 endpoint samples were collected from 17 boring locations in the vicinity of the excavation pit. Due to the close proximity of AOCs 33-11 and 33-12, the impacted soils were excavated during one activity and endpoint samples were collected from a common excavation pit area. There were no exceedances of the TAGM #4046 criteria in endpoint samples collected in the vicinity of AOC 33-11.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 6.33 and Figure 5-19. Correspondence letter(s) <sup>(2)</sup> (5/13/98)	No additional remediation required.
(AOC 33-12) 12	AOC 33-2A <sub>12</sub>	B(a)A B(a)P Chrysene	410 ug/kg (2.5-4 feet) 320 ug/kg (2.5-4 feet) 420 ug/kg (2.5-4 feet)	EBS section: North-central Machining Area (near Col. BB14)  In 1998, approximately 637 yd <sup>3</sup> of metal and SVOC contaminated soil was removed to 10' below ground surface. 21 endpoint samples were collected from 17 boring locations in the vicinity of the excavation pit. Due to the close proximity of AOCs 33-11 and 33-12, impacted soils were excavated during one activity and endpoint samples were collected from a common excavation pit area. 1 of 21 samples contained benzo(a)anthracene, benzo(a)pyrene and chrysene above the TAGM #4046 criteria of 224, 61 and 400 ug/kg, respectively.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 6.33 and Figure 5-19. Correspondence letter(s) <sup>(2)</sup> (5/13/98)	No additional remediation required.  Deed notification required <sup>(5)</sup> .

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RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-13) 13	03-33-13	Chromium Copper Nickel	18.8 mg/kg (0-2 feet) 30.8 mg/kg (0-2 feet) 14.5 mg/kg (0-2 feet)	EBS section: South-central Machining Area (near Col. GG13)  In 1977, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained chromium, copper and nickel above the TAGM #4046 criteria of 10, 25 and 13 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 33-14) 14	03-33-14	B(a)A B(a)P Chrysene Zinc	860 ug/kg (0-2 feet) 500 ug/kg (0-2 feet) 640 ug/kg (0-2 feet) 20.8 mg/kg (2-4 feet)	EBS section: North-central Machining Area (near Col. CC18)  In 1997, 10 subsurface soil samples were collected from 5 boring locations to 4' below ground surface. 1 of 10 samples contained benzo(a)anthracene, chrysene and zinc above the TAGM #4046 criteria of 224 ug/kg, 400 ug/kg and 20 mg/kg, respectively. 2 of 10 samples contained benzo(a)pyrene above the TAGM #4046 criterion of 61 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .

TABLE 9-5

RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-15) 15	NA	NA	NA	EBS section: South-central Machining Area (near Col. KK19)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.
(AOC 33-16) 16	03-33-16	Zinc	25.8 mg/kg (2-4 feet)	EBS section: North-central Machining Area (near Col. EE22)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained zinc above the TAGM #4046 criteria of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 33-17) 17	03-33-17	Chromium	10.8 mg/kg (2-4 feet)	EBS section: South-central Machining Area (near Col. HH23)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criteria of 10 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .

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RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-18) 18	03-33-18	Chromium	18.1 mg/kg (0-2 feet)	<p>EBS section: Shipping &amp; Receiving Area (near Col. MM23)</p> <p>In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criteria of 10 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.</p>	<p>No remediation required.</p> <p>Deed notification required<sup>(5)</sup>.</p>
(AOC 33-19) 19	AOC 33-19C	B(a)A B(a)P D(a,h)A Chrysene	960 ug/kg (2-4 feet) 870 ug/kg (2-4 feet) 230 ug/kg (2-4 feet) 990 ug/kg (2-4 feet)	<p>EBS section: ID, Packaging, &amp; Paint Booth Area (near Col. JJ27)</p> <p>In 1998, approximately 61 yd<sup>3</sup> of SVOC contaminated soils were removed to 10' below ground surface. A total of 8 sidewall and floor endpoint samples were collected from 5 boring locations in the vicinity of the excavation pit. The following constituents were detected in the endpoint samples:</p> <ul style="list-style-type: none"> <li>- 2 of 8 samples contained chrysene above the TAGM #4046 criteria of 400 ug/kg.</li> <li>- 4 of 8 samples contained benzo(a)anthracene and dibenzo(a,h)anthracene above the TAGM #4046 criteria of 224 and 14 ug/kg, respectively.</li> <li>- 5 of 8 samples contained benzo(a)pyrene above the TAGM #4046 criteria of 61 mg/kg.</li> </ul> <p>The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 6.33 and Figure 5-20.                      Correspondence letter(s)<sup>(2)</sup> (4/14/98)</p>	<p>No remediation additional required.</p> <p>Deed notification required<sup>(5)</sup>.</p>

TABLE 9-5

RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-20) 20	03-33-20	Zinc	20.1 mg/kg (2-4 feet)	EBS section: ID, Packaging, & Paint Booth Area (near Col. LL27)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained zinc above the TAGM #4046 criteria of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 33-21) 21	03-33-21	Zinc	27.3 mg/kg (0-2 feet)	EBS section: Northeastern Machining Area (near Col. DD29)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained zinc above the TAGM #4046 criteria of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .

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RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-22) 22	03-33-22	Chromium	101.5 mg/kg (2-4 feet)	EBS section: Northeastern Machining Area (near Col. EE30)  In 1997, 77 subsurface soil samples were collected from 18 boring locations to 8' below ground surface. The following constituents were detected in the samples: - 1 of 77 samples contained benzo(b)fluoranthene above the TAGM #4046 criterion of 1100 ug/kg. - 1 of 2 samples contained chromium and zinc above the TAGM #4046 criteria of 10 and 20 mg/kg, respectively. - 3 of 77 samples contained benzo(a)pyrene above the TAGM #4046 criterion of 61 ug/kg. - 5 of 77 samples contained benzo(a)anthracene and phenol above the TAGM #4046 criteria of 224 and 30 ug/kg, respectively.  The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils. References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .
		Zinc	31.1 mg/kg (2-4 feet)		
		B(a)A	2900 ug/kg (4-6 feet)		
		Chrysene	3300 ug/kg (4-6 feet)		
		B(b)F	1900 ug/kg (4-6 feet)		
		B(a)P	920 ug/kg (4-6 feet)		
(AOC 33-23) 23	NA	Phenol	64 ug/kg (6-8 feet)	EBS section: South-central Machining Area (near Col. HH33)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.
		NA	NA		



TABLE 9-5

RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-24) 24	03-33-24	Zinc	27.7 mg/kg (2-4 feet)	<p>EBS section: Northeastern Machining Area (near Col. CC34)</p> <p>In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.</p> <p>References: ESA<sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.</p>	<p>No remediation required.</p> <p>Deed notification required<sup>(5)</sup>.</p>

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RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-25) 25	03-33-25 03-33-25E  03-33-25 03-33-25EDNE	Zinc B(a)P B(b)F Chrysene D(a,h)A B(a)A	20.6 mg/kg (2-4 feet) 1600 ug/kg (0-2 feet) 3400 ug/kg (0-2 feet) 2400 ug/kg (0-2 feet) 44 ug/kg (4-6 feet) 1700 ug/kg (2-4 feet)	EBS section: Alodine/Sulfuric Acid Anodize Area (near Col. MM33)  In 1997, 39 subsurface soil samples were collected from 14 boring locations to 6' below ground surface. The following constituents were detected in the samples: - 1 of 2 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. - 2 of 39 samples contained benzo(b)fluoranthene above the TAGM #4046 criterion of 1100 ug/kg. - 3 of 39 samples contained dibenzo(a,h)anthracene above the TAGM #4046 criterion of 14 ug/kg. - 5 of 39 samples contained chrysene above the TAGM #4046 criterion of 400 ug/kg. - 10 of 39 samples contained benzo(a)anthracene above the TAGM #4046 criterion of 224 ug/kg. - 31 of 39 samples contained benzo(a)pyrene above the TAGM 4046 criterion of 61 ug/kg.  The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .

TABLE 9-5

RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern (AOC) / Waste Accumulation Area <sup>(4)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
(AOC 33-26) 26	03-33-26  03-33-26N 03-33-26NNW 03-33-26NDNE	Zinc  Phenol  B(a)A B(a)P D(a,h)A	30.9 mg/kg (0-2 feet) 1200 ug/kg (2-5 feet) 470 ug/kg (4-6 feet) 520 ug/kg (8-10 feet) 94 ug/kg (0-2 feet)	EBS section: Northeastern Machining Area (near Col. BB40)  In 1997, 53 subsurface soil samples were collected from 14 boring locations to 10' below ground surface. The following constituents were detected in the samples: - 1 of 2 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. - 2 of 53 samples contained phenol above the TAGM #4046 criterion of 30 ug/kg. - 3 of 53 samples contained benzo(a)anthracene and dibenzo(a,h)anthracene above the TAGM #4046 criteria of 224 and 14 ug/kg, respectively. - 7 of 53 samples contained benzo(a)pyrene above the TAGM #4046 criterion of 61 ug/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils. References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .
(AOC 33-27) 27	03-33-27	Chromium  Zinc	12.4 mg/kg (2-4 feet) 29.1 mg/kg (2-4 feet)	EBS section: ID, Packaging, & Paint Booth Area (near Col. JJ41)  In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. Both subsurface soil samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(3)</sup> – Sections 2.5.33, 3.3.33, 5.33 and 6.33.	No remediation required.  Deed notification required <sup>(5)</sup> .

TABLE 9-5

RESOLUTION OF SMALL VOLUME WASTE ACCUMULATION AREAS IN BUILDING 03-01 IDENTIFIED AS PART OF AOC 33  
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Notes:

Refer to Drawing 1 of Northrop Grumman's Phase 1 ESA for Plant 03 (Radian, 1997a) for graphical depiction of Plant 03 AOCs, primary sample locations, and delineation sample locations. Table presents the environmental condition of Plant 3 AOC 33-01 through AOC 33-27 as of January, 2001.

Definitions:

NA = Not Applicable.

B(a)P = Benzo(a)pyrene

B(a)A = Benzo(a)anthracene

D(a,h)A = Dibenzo(a,h)anthracene

B(k)F = Benzo(k)fluoranthene

B(b)F = Benzo(b)fluoranthene

- 1 Sample collection depths are measured from ground surface and presented as depth intervals below ground surface (bgs). If no depth interval is given, the interval is the same as the preceding interval.
- 2 Information sources include miscellaneous correspondence letters from Northrop Grumman Corporation to NYSDEC and NCDH for the following AOCs:  
AOC 33-09: Letter dated May 13, 1998 from Northrop Grumman to NYSDEC states that soil was excavated to depths of 8 and 12 feet below ground surface.  
AOCs 33-11/12: Letter dated May 13, 1998 from Northrop Grumman to NYSDEC, reported that soil was excavated to a depths of 8 and 10 feet below ground surface.  
AOC 33-19: Letter dated April 14, 1998 from Northrop Grumman to NYSDEC states that soil was excavated to a depth of 10 feet below ground surface.
- 3 Final Phase II Environmental Site Assessment (ESA) for Plant 3, GOCO Facility, Bethpage New York (Radian International, 1998a); Volume 1-Technical Findings; Volume 4-Analytical Results Tables AOC 33-AOC 39 and Volume 6-Borehole Logs AOC 21-AOC 39.
- 4 See Drawing 1 of Northrop Grumman's Final Phase II ESA (Radian International 1998a) for a graphical depiction of AOC/sample locations.
- 5 Notification of AOC location and presence of residual contamination will be provided in quick claim deed by referencing Table 9-1 and Figure 10-3 in Final Phase 2 EBS.

TABLE 9-6

RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAs  
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Area of Concern (AOC) <sup>(7)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
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Phase II ESA for Salvage Storage Area, Permitted Drum Storage Facility, and Industrial Waste Treatment Plant

AOC 1 UST 03-07-01 (old)	NA	NA	NA	EBS Section: Salvage Storage Area. In 1997, 11 subsurface soil samples were collected from 3 boring locations to 24' below ground surface. There were no exceedances of the TAGM #4046 criteria. References: ESA <sup>(3)</sup> – Sections 2.5.1, 3.3.1.2, 5.1.1, 6.0, Figure 2 and Table 5-1.	No remediation required.
AOC 2 UST 03-28-01	NA	NA	NA	EBS Section: South of Building 03-34 In 1997, 2 subsurface soil samples were collected from 1 boring location to 20' below ground surface. There were no exceedances of the TAGM #4046 criteria. References: ESA <sup>(3)</sup> – Sections 2.5.2, 3.3.2, 5.2, 6.0, Figure 2 and Table 5-1.	No remediation required.

Phase II ESA for Plant 10 and Plant 17 South Warehouses

AOC 1 Former Drywell Outside Plant 10	10-01A	1,2-DCE Cr	740 ug/kg (12-14 feet) 11 mg/kg (12-14 feet)	EBS Section: Immediately exterior of Building 10-01. In 1997, 6 subsurface soil samples were collected from 3 boring locations to 34' below ground surface. 1 of 6 samples contained 1,2-dichloroethene and chromium above the TAGM #4046 criteria of 300 ug/kg and 10 mg/kg, respectively. References: ESA <sup>(4)</sup> – Sections 2.5.1, 5.1.1, 6.1, 6.2, Figure 3 and Figure 4. Correspondence Letter(s) <sup>(2)</sup> 3/30/98.	No remediation required. Deed notification required <sup>(6)</sup> .
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TABLE 9-6

RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAs  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern (AOC) <sup>(7)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
AOC 2 Former Sanitary Leaching Chambers Outside of Plant 10 (Consists of Dry-wells 10-2AA, 10-2BA, 10-2CA, former septic tank and settling chambers.)	Drywell 10-2CA	Mercury	0.16 mg/kg (14-15 feet)	EBS Section: Immediately exterior of Building 10-01. In 1998, approximately 320 yd <sup>3</sup> of metal contaminated soils were removed to a depth of 24' below ground surface. Due to the close proximity of the settling chambers, drywells and septic tank, these features were excavated as one unit. 5 endpoint samples were collected from 5 discrete locations within the excavation pit. 1 of 5 samples contained mercury above the #TAGM 4046 criterion of 0.1 mg/kg. References: ESA <sup>(4)</sup> – Sections 2.5.2, 5.2, 6.1, 6.2, Figure 3 and Figure 4. Correspondence letter(s) <sup>(2)</sup> 6/26/98.	No additional excavation required. Area was backfilled with soil. Deed notification required <sup>(8)</sup> .
AOC 3 Subsurface Piping at Plant 10 (Wet Chemistry Laboratory and Paint Lab Area)	SSS-03 (Near South Wall) SSNF-08 (North Floor)	Mercury B(a)A D(a,h)A	2.2 mg/kg (3 feet) 320 ug/kg (3 feet) 43 ug/kg (8 feet)	EBS Section: Building 10-01. In 1998, approximately 50yd <sup>3</sup> of metal and SVOC contaminated soils were removed to 8' below ground surface. 10 endpoint soil samples were collected from the excavation pit. The following constituents were detected in the samples: - 1 of 10 samples contained benzo(a)anthracene above the TAGM #4046 criterion of 224 ug/kg. - 2 of 10 samples contained dibenzo(a,h)anthracene above the TAGM #4046 criterion of 14 ug/kg. - 3 of 10 samples contained mercury above the TAGM #4046 criterion of 0.1 mg/kg. References: ESA <sup>(4)</sup> – Sections 2.5.3, 5.3.1, 6.1, 6.2, Figure 3 and Figure 4. Correspondence letter(s) <sup>(2)</sup> 3/31/98.	No additional excavation required. Area was backfilled with soil and capped with 6" of concrete. Deed notification required <sup>(8)</sup> .

TABLE 9-6

RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAs  
 NWRRP, BETHPAGE, NEW YORK  
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Area of Concern (AOC) <sup>(7)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
AOC 4 Stained Floor in Machine Shop at Plant 10	10-04B  10-04A	Arsenic  Chromium  B(a)P  Zn	13.5 mg/kg (0-2 feet)  68.2 mg/kg (0-2 feet)  73 ug/kg (2-4 feet) 20 mg/kg (2-4 feet)	EBS Section: Building 10-01.  In 1997, 5 subsurface soil samples were collected from 2 boring locations to 4' below ground surface. The following constituents were detected in the samples: - 1 of 5 samples contained arsenic and benzo(a)pyrene above the TAGM #4046 criteria of 7.5 mg/kg and 61 ug/kg, respectively. - 2 of 5 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg. - 3 of 5 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg.  The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA(4) – Sections 2.5.4, 5.4, 6.1, 6.2, Figure 3 and Figure 4 Correspondence letter(s) <sup>(2)</sup> 3/30/98.	No remediation required.  Deed notification required <sup>(8)</sup> .
AOC 5 Loading Dock at Plant 10	NA	NA	NA	EBS Section: Building 10-01.  In 1997, 4 subsurface soil samples were collected from 2 boring locations to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA (4) – Sections 2.5.5, 5.5, 6.1, 6.2, Figure 3 and Figure 4.	No remediation required.

TABLE 9-6

RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAs  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern (AOC) <sup>(7)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
AOC 6 Former Stormwater Dry Wells (17S-06EA and 17S-06FA) Outside of Plant 17 South Warehouses	NA	NA	NA	EBS Section: Immediately exterior of each Plant 17S warehouse.  In 1998, metal, VOC, SVOC and PCB contaminated soils were removed from former drywells 17S06EA and 17S-06FA to a depth of 24' below ground surface. 2 endpoint samples were collected from the floor of each drywell. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(4)</sup> – Sections 2.5.6, 5.6, 6.1 and 6.2. Correspondence letter(s) <sup>(2)</sup> 3/30/98 and 6/22/98.	No additional excavation required.
AOC 7 Drywell Inside of Warehouse N at Plant 17 South	17S-07-1	Cr Zn B(a)A B(a)P Chrysene D(a,h)A Phenol	17.9 mg/kg (12-14 feet) 411 mg/kg (12-14 feet) 1200 ug/kg (12-14 feet) 950 ug/kg (12-14 feet) 1200 ug/kg (12-14 feet) 73 ug/kg (12-14 feet) 340 ug/kg (12-14 feet)	EBS Section: Building 17S-20.  In 1997, 2 subsurface soil samples were collected from 1 boring location to 34' below ground surface. 1 of 2 samples contained chromium, zinc, benzo(a)anthracene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene and phenol above the TAGM #4046 criteria of 10 mg/kg, 20 mg/kg, 224 ug/kg, 61 ug/kg, 400 ug/kg, 14 ug/kg and 30 ug/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(4)</sup> – Sections 2.5.7, 5.7, 6.1 and 6.2.	No remediation required.  Deed notification required <sup>(6)</sup> .



TABLE 9-6

RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAs  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern (AOC) <sup>(7)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
AOC 8 Former Sanitary Leaching Chambers East of Warehouses L and M at Plant 17 South	17S-08D	As	21.8 mg/kg (32-34 feet)	EBS Section: Building 17S-20.  In 1997, 12 subsurface soil samples were collected from 6 boring locations to 34' below ground surface. 1 of 12 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. 5 of 12 samples contained arsenic above the TAGM #4046 criterion of 7.5 mg/kg.  References: ESA <sup>(4)</sup> – Sections 2.5.8, 5.8, 6.1, 6.2 and Figure 4. Correspondence letter(s) <sup>(2)</sup> 3/30/98.	No remediation required.  Deed notification required <sup>(8)</sup> .
	17S-08A	Zn	21.9 mg/kg (12-14 feet)		

Phase II ESA for Plant 17 North Warehouses

AOC 1 Former Stormwater Dry Well at Warehouse 4	17-01	Cr	13.1 mg/kg (32-34 feet)	EBS Section: Building 17N-3  In 1997, 2 subsurface soil samples were collected from 1 boring location to 34' below ground surface. 1 of 2 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg.  References: ESA <sup>(5)</sup> – Sections 2.5.1, 5.1 and Figure 3.	No remediation required.  Deed notification required <sup>(8)</sup> .
AOC 2 Former Oil Barrel Storage Area at Warehouse 4	WHES4-SS4-10	Cr	13.4 mg/kg (6 feet)	EBS Section: Building 17N-3.  In 1998, approximately 266 yd <sup>3</sup> of metal and SVOC contaminated soil was removed to a depth of 6' below ground surface. A total of 14 sidewall and floor endpoint soil samples were collected from 13 boring locations. Additional soil was excavated at one location and the new endpoint had no exceedances.  References: ESA <sup>(5)</sup> – Sections 2.5.2, 5.2, 6.0 and Figure 3. Correspondence letter(s) <sup>(2)</sup> 3/31/98	No additional excavation required.  Deed notification required <sup>(8)</sup> .

TABLE 9-6

RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAs  
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Area of Concern (AOC) <sup>(7)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
AOC 3 Trench in Warehouse 5	17-03A	Cr Zn	11.6 mg/kg (2-4 feet) 22.3 mg/kg (2-4 feet)	EBS Section: Building 17N-6. In 1997, 3 subsurface soil samples were collected from 2 boring locations to 4' below ground surface. 1 of 3 samples contained chromium and zinc above the TAGM #4046 criteria of 10 and 20 mg/kg, respectively. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.	No remediation required. Deed notification required <sup>(6)</sup> .
AOC 4 Former Septic Tank and Leaching Pools at Warehouse 5	NA	NA	NA	References: ESA <sup>(5)</sup> – Sections 2.5.3, 5.3 and Figure 3. EBS Section: Building 17N-6. In 1997, 2 subsurface soil samples were collected from 1 boring location to 34' below ground surface. There were no exceedances of the TAGM #4046 criteria.	No remediation required.
AOC 5 Former Pit at Warehouse 6	NA	NA	NA	References: ESA <sup>(5)</sup> – Sections 2.5.4, 5.4 and Figure 3. EBS Section: Building 17N-2. In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.	No remediation required.
AOC 6 Drum Storage Area at Warehouse 8	NA	NA	NA	References: ESA <sup>(5)</sup> – Sections 2.5.5, 5.5 and Figure 3. EBS Section: Building 17N-1. In 1997, 4 subsurface soil samples were collected from 2 boring locations to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.	No remediation required.

TABLE 9-6

RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAs  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern (AOC) <sup>(7)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
AOC 7 Staining at Air Compressor at Warehouse 8	NA	NA	NA	EBS Section: Building 17N-1. In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria.	No remediation required.
AOC 8 Staining in Chemical Storage Area at Warehouse 8	17-08D	Cr Zn Hg	11.2 mg/kg (0-2 feet) 21.5 mg/kg (0-2 feet) 0.31 mg/kg (0-2 feet)	References: ESA <sup>(5)</sup> – Sections 2.5.7, 5.7 and Figure 3. EBS Section: Building 17N-1. In 1997, 12 subsurface soil samples were collected from 6 boring locations to 4' below ground surface. The following constituents of concern were detected in the samples: <ul style="list-style-type: none"> <li>- 2 of 12 samples contained chromium and mercury above the TAGM #4046 criteria of 10 and 0.1 mg/kg, respectively.</li> <li>- 1 of 12 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg.</li> </ul> The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils. References: ESA <sup>(5)</sup> – Sections 2.5.8, 5.8, 6.0 and Figure 3.	No remediation required.  Deed notification required <sup>(8)</sup> .
AOC 9 Sump at Warehouse 9	NA	NA	NA	EBS Section: Building 17N-4. In 1997, 1 subsurface soil sample was collected from 1 boring location to 2' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(5)</sup> – Sections 2.5.9, 5.9 and Figure 3.	No remediation required.

TABLE 9-6

RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAs  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern (AOC) <sup>(7)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
AOC 10 Router Bench Collection Trenches in Warehouse 9	17-10A	Zn	32.6 mg/kg (2-4 feet)	EBS Section: Building 17N-4. In 1997, 4 subsurface soil samples were collected from 2 boring locations to 4' below ground surface. 1 of 4 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils.  References: ESA <sup>(6)</sup> – Sections 2.5.10, 5.10 and Figure 3.	No remediation required.  Deed notification required <sup>(8)</sup> .
AOC 11 Former Sanitary Leaching Chambers South of Warehouse 8	NA	NA	NA	EBS Section: Building 17N-1.  In 1997, 6 subsurface soil samples were collected from 3 boring locations to 34' below ground surface. There were no exceedances of the TAGM #4046 criteria.  References: ESA <sup>(6)</sup> – Sections 2.5.11, 5.11 and Figure 3.	No remediation required.
AOC 12 Historic Drum Storage Area North of Warehouse 8	WHSE#8SS W-1	Cr	19.7 mg/kg (7 feet)	EBS Section: Land Area.  In 1998, approximately 2500 yd <sup>3</sup> of metal, VOC, SVOC, and PCB contaminated soil was removed to a depth of 4' below ground surface. Initial endpoint samples contained chromium, arsenic, trichloroethene and PCBs above the TAGM #4046 criteria. Soils in the vicinity of 5 sample locations required additional excavation to 7' below ground surface, which removed approximately 276 yd <sup>3</sup> of metal, VOC and PCB contaminated soil. 5 endpoint samples were collected from the floor of each secondary excavation pit. 1 of 5 samples contained chromium above the TAGM #4046 criterion of 10 mg/kg.  References: ESA <sup>(6)</sup> – Sections 2.5.12, 5.12, 6.0, Figure 3 and Figure 6. Correspondence letter(s) <sup>(2)</sup> 3/31/98	No additional excavation required.  Deed notification required <sup>(8)</sup> .

TABLE 9-6

RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAS  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern (AOC) <sup>(7)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
AOC 13 Lead Paint at All Plant 17N Warehouses	NA	NA	NA	EBS Section: 17N Buildings. In 1997, 24 surface soil samples were collected from 24 boring locations. There were no exceedances of the TAGM #4046 criteria. References: ESA <sup>(6)</sup> – Sections 2.5.13, 5.13 and Figure 3.	No remediation required.

Phase II ESA for Plant 20

AOC 1 Paint Shop Floor and Drain Line	NA	NA	NA	EBS Section: Building 20-01. In 1997, 4 subsurface soil samples were collected from 2 boring locations to a depth of 4' below ground surface. There were no exceedances of the TAGM #4046 criteria. References: ESA <sup>(6)</sup> – Sections 2.5.1, 5.1 and Figure 2. EBS Section: Building 20-01.	No remediation required.
AOC 2 Waste Oil Storage Area	NA	NA	NA	In 1997, 2 subsurface soil samples were collected from 1 boring location to 4' below ground surface. There were no exceedances of the TAGM #4046 criteria. References: ESA <sup>(6)</sup> – Sections 2.5.2, 5.2 and Figure 2. EBS Section: Building 20-01.	No remediation required.
AOC 3 Unused Product Storage Area	20-03	Hg Zn	0.11 mg/kg (2-4 feet) 31.4 mg/kg (2-4 feet)	In 1997, 14 subsurface soil samples were collected from 4 boring locations to 8' below ground surface. 1 of 14 samples contained mercury above the TAGM #4046 criterion of 0.1 mg/kg. 1 of 2 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils. References: ESA <sup>(6)</sup> – Sections 2.5.3, 5.3 and Figure 2.	No remediation required. Deed notification required <sup>(8)</sup> .

TABLE 9-6

RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAs  
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Area of Concern (AOC) <sup>(7)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
AOC 4 Oil Dispensing Area	20-04	Zn	20.1 mg/kg (2-4 feet)	EBS Section: Building 20-01. In 1997, 9 subsurface soil samples were collected from 2 boring locations to a depth of 14' below ground surface. 1 of 2 samples contained zinc above the TAGM #4046 criterion of 20 mg/kg. The areas of contamination are covered with at least 6" of concrete, minimizing human exposure to subsurface soils. <small>Reference: TAGM #4046</small> References: ESA <sup>(6)</sup> – Sections 2.5.4, 5.4 and Figure 3.	No remediation required. Deed notification required <sup>(6)</sup> .
AOC 5 Hydraulic Lift Reservoir	NA	NA	NA	EBS Section: Building 20-01. In 1997, 2 subsurface soil samples were collected from 1 boring location to a depth of 4' below ground surface. There were no exceedances of the TAGM #4046 criteria. References: ESA <sup>(6)</sup> – Sections 2.5.5, 5.5 and Figure 3.	No remediation required.
AOC 6 Removed or Abandoned USTs	NA	NA	NA	EBS Section: Building 20-01. In 1997, 12 subsurface soil samples were collected from 4 boring locations to 24' below ground surface. There were no exceedances of the TAGM #4046 criteria. References: ESA <sup>(6)</sup> – Sections 2.5.6, 5.6 and Figure 3.	No remediation required.
Leaching Pool No. 3: Dry Well 3	Boring number not defined.	Chloro-benzene 1,3-DCB 1,4-DCB Ethylbenzene Xylene	5,900 ug/kg (22-24 feet) 5,700ug/kg 11,000 ug/kg 6,100 ug/kg 55,000 ug/kg	In 1997, subsurface soil sampling and analysis detected chlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, ethylbenzene and xylene above the TAGM #4046 criteria of 1700, 1600, 8500, 5500 and 1200 ug/kg, respectively. References: Correspondence letter <sup>(2,7)</sup> 8/7/97. In 1997, subsurface soil sampling and analysis detected	No remediation recommended. Deed notification required <sup>(6)</sup>
Leaching Pool					No remediation

TABLE 9-6

RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAs  
 NWIRP, BETHPAGE, NEW YORK  
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Area of Concern (AOC) <sup>(7)</sup>	Boring Location(s)	Constituents of Concern	Maximum Constituent Concentration and Depth <sup>(1)</sup>	Description	Remediation Conducted
No. 12: Dry Well 12	Boring number not defined.	1,3-DCB 1,2,4-TCB	18,000 ug/kg (15-17 feet) 24,000 ug/kg	1,3-dichlorobenzene and 1,2,4-trichlorobenzene above the TAGM #4046 criteria of 1600 and 3400 ug/kg, respectively.  References: Correspondence letter <sup>(2,7)</sup> 8/7/97.	recommended. Deed notification required <sup>(9)</sup>

Notes:

Table presents the environmental condition of the following GOCO facilities as of January, 2001: Salvage Storage Area, Permitted Drum Storage Facility and the Industrial Waste Treatment Plant-AOC-01 through AOC-02; Plant 10-AOC-01 through AOC-08; Plant 17 South Warehouses-AOC-06 through AOC-08; Plant 17 North Warehouses-AOC-01 through AOC-13 and Plant 20-AOC-01 through AOC-06.

Definitions:

- NA = Not Applicable.
- 1,2-DCE = 1,2-Dichloroethene
- B(a)A = Benzo(a)anthracene
- D(a,h)A = Dibenzo(a,h)anthracene
- B(a)P = Benzo(a)Pyrene

- 1 Sample collection depths measured from ground surface and presented as depth intervals below ground surface (bgs). If no depth interval is given, the interval is the same as the preceding interval.
- 2 Information sources include miscellaneous correspondence letters from Northrop Grumman Corporation to NYSDEC and NCDH for the following AOCs:  
 Plant 10, AOC-01: Letter dated March 30, 1998 from Northrop Grumman to NYSDEC reported the findings of the Phase 2 Program for this AOC.  
 Plant 10, AOC-02: Letter dated June 26, 1998 from Northrop Grumman to NYSDEC states that 320 cubic yards of contaminated soils were removed from various leaching chambers located immediately exterior to Plant 10.  
 Plant 10, AOC-03: Letter dated March 31, 1998 from Northrop Grumman to NYSDEC states that 50 cubic yards of contaminated soils were removed from beneath concrete floor.  
 Plant 10, AOC-04: Letter dated March 30, 1998 from Northrop Grumman to NYSDEC reported the Phase 2 findings for this AOC.  
 Plant 17 South, AOC-06: Letters dated March 30, 1998 and June 22, 1998 from Northrop Grumman to NYSDEC states that contaminated soils were removed to a depth of 24 feet below ground surface from two former dry-wells located exterior of the Plant 17 South warehouses.  
 Plant 17 South, AOC-08: Letter dated March 30, 1998 from Northrop Grumman to NYSDEC reported the Phase 2 findings for this AOC.  
 Plant 17 North, AOC-02: Letter dated March 31, 1998 from Northrop Grumman to NYSDEC states that 266 cubic yards of contaminated soils were removed from the former oil barrel storage area.  
 Plant 17 North, AOC-12 Letter dated March 31, 1998 from Northrop Grumman to NYSDEC states that approximately 2800 cubic yards of contaminated soils were removed from the drum storage area north of Plant 17.  
 Plant 20, UIC Letter dated August 7, 1997 from USEPA to Northrop Grumman regarding the closure of dry wells at Plant 20.
- 3 Final Phase II Environmental Site Assessment (ESA) for the Salvage Area, Permitted Drum Storage Facility, and Industrial Waste Treatment Plant; GOCO Facility, Bethpage, New York (Radian International; September, 1997).
- 4 Final Phase II Environmental Site Assessment (ESA) for Plant 10 and Plant 17 South Warehouses; GOCO Facility, Bethpage, New York (Radian International; March 1998).
- 5 Final Phase II Environmental Site Assessment (ESA) for Plant 17 North Warehouses; GOCO Facility, Bethpage, New York (Radian International; December 1997).

**TABLE 9-6**

**RESOLUTION OF AOCs IDENTIFIED FOR PLANTS 10, 17, AND 20 BY PHASE I ESAs  
NWIRP, BETHPAGE, NEW YORK  
PAGE 12 OF 12**

- 6 Final Phase II Environmental Site Assessment (ESA) for Plant 20 Transportation Maintenance Facility; GOCO Facility, Bethpage, New York (Radian International, September 1997).
- 7 Refer to the following figures for a graphical depiction of AOC/sample locations:
  - Northrop Grumman's Phase II ESA for the Salvage Area, Permitted Drum Storage Facility, and Industrial Waste Treatment Plant; Figure 2.
  - Northrop Grumman's Phase II ESA for Plant 10 and Plant 17 South Warehouses; Figure 3.
  - Northrop Grumman's Phase II ESA for Plant 17 North Warehouses; Figure 3.
  - Northrop Grumman's Phase II ESA for Plant 20 Transportation Maintenance Facility; Figure 2.
- (8) Notification of AOC location and presence of residual contamination will be provided in quick claim deed by referencing Table 9-1 and Figure 10-3 in Final Phase 2 EBS.
- (9) Notification of AOC location and presence of residual contamination will be provided in quick claim deed by referencing Table 9-6 and Figure 10-4 in Final Phase 2 EBS.



**TABLE 9-7**

**RESOLUTION OF AOCs IDENTIFIED FOR PLANT 05 BY NORTHROP GRUMMAN  
NWIRP, BETHPAGE, NEW YORK**

The scope of the Final Phase II Environmental Baseline Survey addresses only real property owned by the Navy.

## 10.0 SUMMARY AND CONCLUSIONS

Table 10-1 summarizes the environmental condition of each unit of real property on NWIRP Bethpage based on the information reviewed as part of the Phase II EBS. The table indicates which section of the Phase II EBS addresses each unit of real property and contains specific information on the suitability for transfer of that unit of property. Figures 10-1 through 10-5 graphically illustrate the environmental condition of property throughout NWIRP Bethpage using color symbols corresponding to each rating category, as designated in Table 1-1. Figure 10-1 maps the environmental condition of each interior area in Building 03-01. Figure 10-2 maps the environmental condition of exterior areas and smaller buildings of Plants 03, 10, and 17. Figure 10-3 maps the environmental condition of areas comprising Plant 20. Figure 10-4 maps the environmental condition of each interior area in Building 05-01. Figure 10-5 maps the environmental condition of smaller buildings in Plant 05.

Most property on NWIRP Bethpage is suitable for transfer at this time without further environmental action. Exceptions include the following:

- Although Northrop Grumman has completed most environmental remediation required for Building 03-01, all exterior areas surrounding Building 03-01 and containing UIC 20-08 and Drywell 34-07 still require additional remediation. UIC 20-08 is located just outside of the Shot Peen/Old Chem Mill Area and Drywell 34-07 is located just outside of the shipping and receiving area.
- An exterior area east of Building 03-13, along the eastern perimeter of NWIRP Bethpage, where soils were found to be contaminated by metals from a former sludge drying bed documented to have once occurred at that location. Several storage sheds, including Buildings 03-14, 03-15, 03-45, and 03-51, were constructed at this location after abandonment of the sludge drying bed and were razed by Grumman in 1997. Although this contamination was confirmed by the investigation of AOC 35 in the Phase II ESA for Plant 03 (Radian, 1998a), it was not remediated by Northrop Grumman and instead will be included in a future remedial action under the Navy's IR Program.
- The Former Drum Marshalling Areas and Former Plant 03 Leachfield east of Building 03-01, investigated as Site 1 under the Navy's IR Program. An air sparging program was implemented at that location in 1996 and 1997 to begin remediation of contaminated soil and groundwater. This effort will be continued as funds become available under the IR Program.

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TABLE 10-1

**ENVIRONMENTAL CONDITION RATING SUMMARY  
NWIRP, BETHPAGE, NEW YORK  
PAGE 1 OF 5**

<b>Real Property Unit</b>	<b>Phase I EBS Rating</b>	<b>Phase II<sup>(1)</sup> EBS Rating</b>	<b>Addressed in Phase II EBS Section</b>	<b>Suitable for Transfer Without Further Action</b>
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**Building 03-01: Western Part**

Plant 03 Cafeteria	7/Gray	3/Light Green	3.1.1	Yes
Heat Treat Area A	7/Gray	3/Light Green	3.1.2	Yes
Hydraulic Press Area	7/Gray	3/Light Green	3.1.3	Yes
Heat Treat Area B	7/Gray	4/Dark Green	3.1.4	Yes
Arts & Engraving Area	2/Blue	3/Light Green	3.1.5	Yes
Heat Oven Area	1/White	3/Light Green	3.1.6	Yes
Facilities Maintenance Area (Interior)	7/Gray	4/Dark Green	3.1.7	Yes
Old Alodine/Plating/Paint Booth Area	7/Gray	4/Dark Green	3.1.8	Yes
Machining Area West of Wall 16	7/Gray	3/Light Green	3.1.9	Yes

**Building 03-01: Eastern Part**

Shipping and Receiving Area (Interior)	7/Gray	3/Light Green	3.2.1	Yes
Exterior Area Outside Shipping and Receiving Area Containing Drywell 34-07	1/White	5/Yellow	3.2.1	No
Exterior Area Containing Drywell 20-08	1/White	5/Yellow	3.2.11	No
Alodine/Sulfuric Acid Anodize Area	2/Blue	3/Light Green	3.2.2	Yes
Former Autoclave Area	7/Gray	4/Dark Green	3.2.3	Yes
Honeycomb Pretreatment Area	7/Gray	4/Dark Green	3.2.4	Yes
Chromic Acid Anodize Area	7/Gray	4/Dark Green	3.2.5	Yes
Southcentral Machining Area	7/Gray	4/Dark Green	3.2.6	Yes
Magneform Area	7/Gray	4/Dark Green	3.2.7	Yes

TABLE 10-1

ENVIRONMENTAL CONDITION RATING SUMMARY  
 NWIRP, BETHPAGE, NEW YORK  
 PAGE 2 OF 5

Real Property Unit	Phase I EBS Rating	Phase II <sup>(1)</sup> EBS Rating	Addressed in Phase II EBS Section	Suitable for Transfer Without Further Action
Identification, Packaging, Paint Booth Area	7/Gray	4/Dark Green	3.2.8	Yes
Northcentral Machining Area	7/Gray	4/Dark Green	3.2.9	Yes
First Aid/Northcentral Office Area	1/White	1/White	3.2.10	Yes
Shot Peen/Old Chem Mill Area	7/Gray	4/Dark Green	3.2.11	Yes
Flow Coat/Chem Mill Etch Area	3/Light Green	4/Dark Green	3.2.12	Yes
Sulfuric Acid Anodize Area	7/Gray	4/Dark Green	3.2.13	Yes
Northeastern Machining Area	7/Gray	4/Dark Green	3.2.14	Yes
Chem Mill Clean Area	5/Yellow	4/Dark Green	3.2.15	Yes
Zygo Area	7/Gray	4/Dark Green	3.2.16	Yes
Waste Holding Tanks (East of Hy. Press A)	3/Light Green	3/Light Green	3.2.17	Yes

**Area North of Building 03-01**

Building 03-02	1/White	1/White	3.3.1	Yes
Building 03-04	1/White	1/White	3.3.1	Yes
Building 03-09	1/White	1/White	3.3.1	Yes
Building 03-11	1/White	1/White	3.3.1	Yes
Building 03-03	2/Blue	2/Blue	3.3.2	Yes
Building 03-39	2/Blue	2/Blue	3.3.3	Yes
Building 03-41	1/White	4/Dark Green	3.3.4	Yes
Building 03-52	1/White	1/White	3.3.5	Yes

**Area East of Building 03-01**

Former Drum Marshalling Area/Leachfield	5/Yellow	5/Yellow	3.4.1	No
Building 03-13	7/Gray	3/Light Green	3.4.2	Yes
Building 03-14	1/White	5/Yellow	3.4.3	No
Building 03-15	7/Gray	5/Yellow	3.4.4	No
Buildings 03-31 and 03-32	7/Gray	5/Yellow	3.4.5	No

TABLE 10-1

ENVIRONMENTAL CONDITION RATING SUMMARY  
 NWIRP, BETHPAGE, NEW YORK  
 PAGE 3 OF 5

Real Property Unit	Phase I EBS Rating	Phase II <sup>(1)</sup> EBS Rating	Addressed in Phase II EBS Section	Suitable for Transfer Without Further Action
Building 03-33	1/White	5/Yellow	3.4.6	No
Building 03-38	7/Gray	5/Yellow	3.4.7	No
Buildings 03-17 and 03-44	7/Gray	5/Yellow	3.4.8	No
Building 03-45	7/Gray	5/Yellow	3.4.9	No
Building 03-51	1/White	5/Yellow	3.4.10	No

**Northeast Part of Navy Parcel**

Building 03-07	2/Blue	2/Blue	3.5.1	Yes
Building 03-08	7/Gray	2/Blue	3.5.2	Yes
Salvage Storage Area	3/Light Green	3/Light Green	3.5.3	Yes
Building 03-12	1/White	1/White	3.5.4	Yes
Building 03-34	7/Gray	3/Light Green	3.5.5	Yes
Building 03-37	2/Blue	2/Blue	3.5.6	Yes
Building 03-43	7/Gray	2/Blue	3.5.7	Yes
Building 03-49	1/White	1/White	3.5.8	Yes
Recharge Basins	3/Light Green	3/Light Green	3.5.9	Yes
Former Sludge Drying Beds	5/Yellow	4/Dark Green	3.5.9	Yes
Cemetery	1/White	1/White	3.5.10	Yes
Ditch Through Wooded Area	7/Gray	3/Light Green	3.5.11	Yes

**Plant 10**

Building 10-01	7/Gray	4/Dark Green	4.1	Yes
Building 10-02	7/Gray	4/Dark Green	4.2	Yes
Building 10-04	1/White	1/White	4.3	Yes
Building 03-40	1/White	1/White	4.4	Yes
Building 03-35	1/White	1/White	4.5	Yes

**Plant 17: North Warehouse Complex**

Building 17N-1	7/Gray	3/Light Green	5.1.1	Yes
Building 17N-2	1/White	4/Dark Green	5.1.2	Yes

TABLE 10-1

ENVIRONMENTAL CONDITION RATING SUMMARY  
 NWIRP, BETHPAGE, NEW YORK  
 PAGE 4 OF 5

Real Property Unit	Phase I EBS Rating	Phase II <sup>(1)</sup> EBS Rating	Addressed in Phase II EBS Section	Suitable for Transfer Without Further Action
Building 17N-3	1/White	4/Dark Green	5.1.3	Yes
Building 17N-4	7/Gray	3/Light Green	5.1.4	Yes
Building 17N-5	1/White	1/White	5.1.5	Yes
Building 17N-6	7/Gray	4/Dark Green	5.1.6	Yes
Building 17N-9	1/White	1/White	5.1.7	Yes
Parking Area North of Warehouses 8 & 9	7/Gray	4/Dark Green	5.1.7	Yes

**Plant 17: South Warehouse Complex**

Building 17S-11	1/White	3/Light Green	5.2.1	Yes
Building 17S-12	1/White	3/Light Green	5.2.1	Yes
Building 17S-13	2/Blue	3/Light Green	5.2.1	Yes
Building 17S-14	1/White	4/Dark Green	5.2.1	Yes
Building 17S-15	1/White	4/Dark Green	5.2.1	Yes
Building 17S-16	2/Blue	3/Light Green	5.2.1	Yes
Building 17S-17	1/White	3/Light Green	5.2.1	Yes
Building 17S-18	1/White	3/Light Green	5.2.1	Yes
Building 17S-19	1/White	4/Dark Green	5.2.1	Yes
Building 17S-20	7/Gray	4/Dark Green	5.2.2	Yes
Building 17S-22	7/Gray	4/Dark Green	5.2.3	Yes
Building 17S-25	1/White	1/White	5.2.4	Yes
Buildings 17S-32 and 17S-33	1/White	1/White	5.2.5	Yes
Building 17S-36	1/White	1/White	5.2.6	Yes

TABLE 10-1

ENVIRONMENTAL CONDITION RATING SUMMARY  
 NWIRP, BETHPAGE, NEW YORK  
 PAGE 5 OF 5

Real Property Unit	Phase I EBS Rating	Phase II <sup>(1)</sup> EBS Rating	Addressed in Phase II EBS Section	Suitable for Transfer Without Further Action
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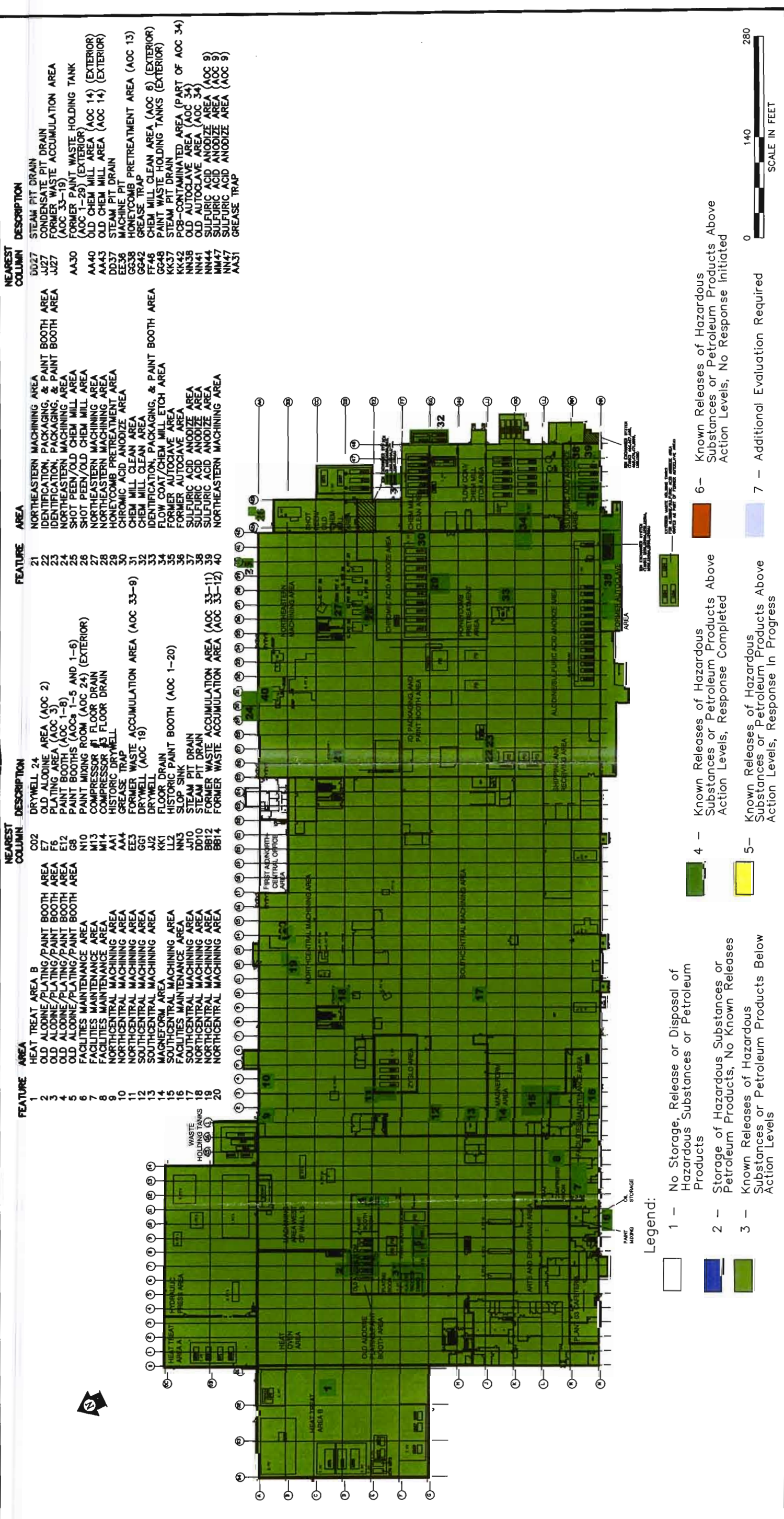
**Plant 20**

Building 20-01	5/Yellow	4/Dark Green	6.1	Yes
Building 20-03	2/Blue	2/Blue	6.2	Yes
Building 20-04	2/Blue	2/Blue	6.2	Yes

- For shop areas within Building 03-01 designated in the table as having a 4/Dark Green Phase II EBS rating, Figure 10-1 shows as dark green only the specific locations that underwent, excavation or other remedial activity. The remainder of those shop areas is shown in Figure 10-1 as light green. Other real property units outside of Building 03-01 are depicted in their entirety in Figures 10-2 and 10-5 using the color corresponding to the Phase II EBS rating in this table.







NEAREST COLUMN	DESCRIPTION	AREA	FEATURE
D027	STEAM PIT DRAIN	NORTHEASTERN MACHINING AREA	21
JJ27	CONDENSATE PIT DRAIN	IDENTIFICATION, PACKAGING, & PAINT BOOTH AREA	22
JJ27	FORMER WASTE ACCUMULATION AREA (AOC 33-19)	IDENTIFICATION, PACKAGING, & PAINT BOOTH AREA	23
AA30	FORMER PAINT WASTE HOLDING TANK (AOC 1-29) (EXTERIOR)	NORTHEASTERN MACHINING AREA	24
AA40	OLD CHEM MILL AREA (AOC 14) (EXTERIOR)	SHOT PEEN/OLD CHEM MILL AREA	25
AA43	OLD CHEM MILL AREA (AOC 14) (EXTERIOR)	SHOT PEEN/OLD CHEM MILL AREA	26
DD37	STEAM PIT DRAIN	NORTHEASTERN MACHINING AREA	27
EE36	MACHINE PIT	NORTHEASTERN MACHINING AREA	28
GG38	HONEYCOMB PRETREATMENT AREA (AOC 13)	CHROMIC ACID ANODIZE AREA	29
GG42	GREASE TRAP	CHEM MILL CLEAN AREA	30
FF46	CHEM MILL CLEAN AREA (AOC 6) (EXTERIOR)	CHEM MILL CLEAN AREA	31
GG48	PAINT WASTE HOLDING TANKS (EXTERIOR)	IDENTIFICATION, PACKAGING, & PAINT BOOTH AREA	32
KK37	STEAM PIT DRAIN	FLOW COAT/CHEM MILL ETCH AREA	33
KK42	PCB-CONTAMINATED AREA (PART OF AOC 34)	FORMER AUTOCLAVE AREA	34
NN38	OLD AUTOCLAVE AREA (AOC 34)	FORMER AUTOCLAVE AREA	35
NN41	SULFURIC ACID ANODIZE AREA (AOC 9)	SULFURIC ACID ANODIZE AREA	36
NN44	SULFURIC ACID ANODIZE AREA (AOC 9)	SULFURIC ACID ANODIZE AREA	37
NN47	SULFURIC ACID ANODIZE AREA (AOC 9)	SULFURIC ACID ANODIZE AREA	38
AA31	GREASE TRAP	NORTHEASTERN MACHINING AREA	39
			40

NEAREST COLUMN	DESCRIPTION	AREA	FEATURE
C02	DRYWELL 24	NORTHEASTERN MACHINING AREA	21
E7	OLD ALODINE AREA (AOC 2)	IDENTIFICATION, PACKAGING, & PAINT BOOTH AREA	22
F6	PLATING AREA (AOC 3)	IDENTIFICATION, PACKAGING, & PAINT BOOTH AREA	23
E12	PAINT BOOTH (AOC 1-8)	NORTHEASTERN MACHINING AREA	24
G8	PAINT BOOTHS (AOCs 1-5 AND 1-6) (EXTERIOR)	SHOT PEEN/OLD CHEM MILL AREA	25
N10	PAINT MIXING ROOM (AOC 24)	SHOT PEEN/OLD CHEM MILL AREA	26
M13	COMPRESSOR #1 FLOOR DRAIN	NORTHEASTERN MACHINING AREA	27
M14	COMPRESSOR #3 FLOOR DRAIN	NORTHEASTERN MACHINING AREA	28
AA1	HISTORIC DRYWELL	NORTHEASTERN MACHINING AREA	29
AA4	GREASE TRAP	CHROMIC ACID ANODIZE AREA	29
EE3	FORMER WASTE ACCUMULATION AREA (AOC 33-9)	CHROMIC ACID ANODIZE AREA	30
GG1	DRYWELL (AOC 19)	CHEM MILL CLEAN AREA	31
JJ2	FLOOR DRAIN	CHEM MILL CLEAN AREA	31
KK1	HISTORIC PAINT BOOTH (AOC 1-20)	IDENTIFICATION, PACKAGING, & PAINT BOOTH AREA	32
LL2	FLOOR DRAIN	IDENTIFICATION, PACKAGING, & PAINT BOOTH AREA	32
NN3	SLOP SINK	FORMER AUTOCLAVE AREA	35
JJ10	STEAM PIT DRAIN	FORMER AUTOCLAVE AREA	36
DD10	STEAM PIT DRAIN	FORMER AUTOCLAVE AREA	37
BB12	FORMER WASTE ACCUMULATION AREA (AOC 33-11)	SULFURIC ACID ANODIZE AREA	38
BB14	FORMER WASTE ACCUMULATION AREA (AOC 33-12)	SULFURIC ACID ANODIZE AREA	39

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY HJB	DATE 5/23/02	CONTRACT NO. 7576	OWNER NO.
CHECKED BY	DATE	APPROVED BY	DATE
COST/SCHED-AREA		APPROVED BY	DATE
SCALE AS NOTED		DRAWING NO. FIGURE 10-1	REV. 0

**Tetra Tech NUS, Inc.**

ENVIRONMENTAL CONDITION OF  
PROPERTY RATINGS MAP INTERIOR OF  
BUILDING 03-01  
PHASE II EBS  
NMRP BETHPAGE, NEW YORK



**Legend**

- 1 - No Storage, Release or Disposal of Hazardous Substances or Petroleum Products
- 2 - Storage of Hazardous Substances or Petroleum Products, No Known Releases
- 3 - Known Releases of Hazardous Substances or Petroleum Products Below Action Levels
- 4 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response Completed
- 5 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response In Progress
- 6 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, No Response Initiated
- 7 - Additional Evaluation Required

See Figure 10-1

SCALE IN FEET  
0 360 720

CONTRACT NO.	7576	OWNER NO.	
APPROVED BY		DATE	
APPROVED BY		DATE	
DRAWING NO.	FIGURE 10-2	REV.	0

**Tetra Tech NUS, Inc.**

**ENVIRONMENTAL CONDITION OF PROPERTY RATING MAP**

**MAIN NAVY 105 ACRE PARCEL PHASE II EBS**

**NWRP BETHPAGE, NEW YORK**

DRAWN BY	HJB	DATE	5/22/02
CHECKED BY		DATE	
COST/SCHED-AREA			
SCALE	AS NOTED		

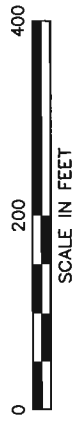
NO.	DATE	BY	CHKD	APPD	REVISIONS	REFERENCES

**Figure 10-5**  
**Environmental Condition**  
**of Property Map**  
**4.5 Acre Parcel (Plant 20)**

NWIRP Bethpage, New York  
 Legend

- 1 - No Storage, Release or Disposal of Hazardous Substances or Petroleum Products
- 2 - Storage of Hazardous Substances or Petroleum Products, No Known Releases
- 3 - Known Releases of Hazardous Substances or Petroleum Products Below Action Levels
- 4 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response Completed
- 5 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, Response in Progress
- 6 - Known Releases of Hazardous Substances or Petroleum Products Above Action Levels, No Response Initiated
- 7 - Additional Evaluation Required

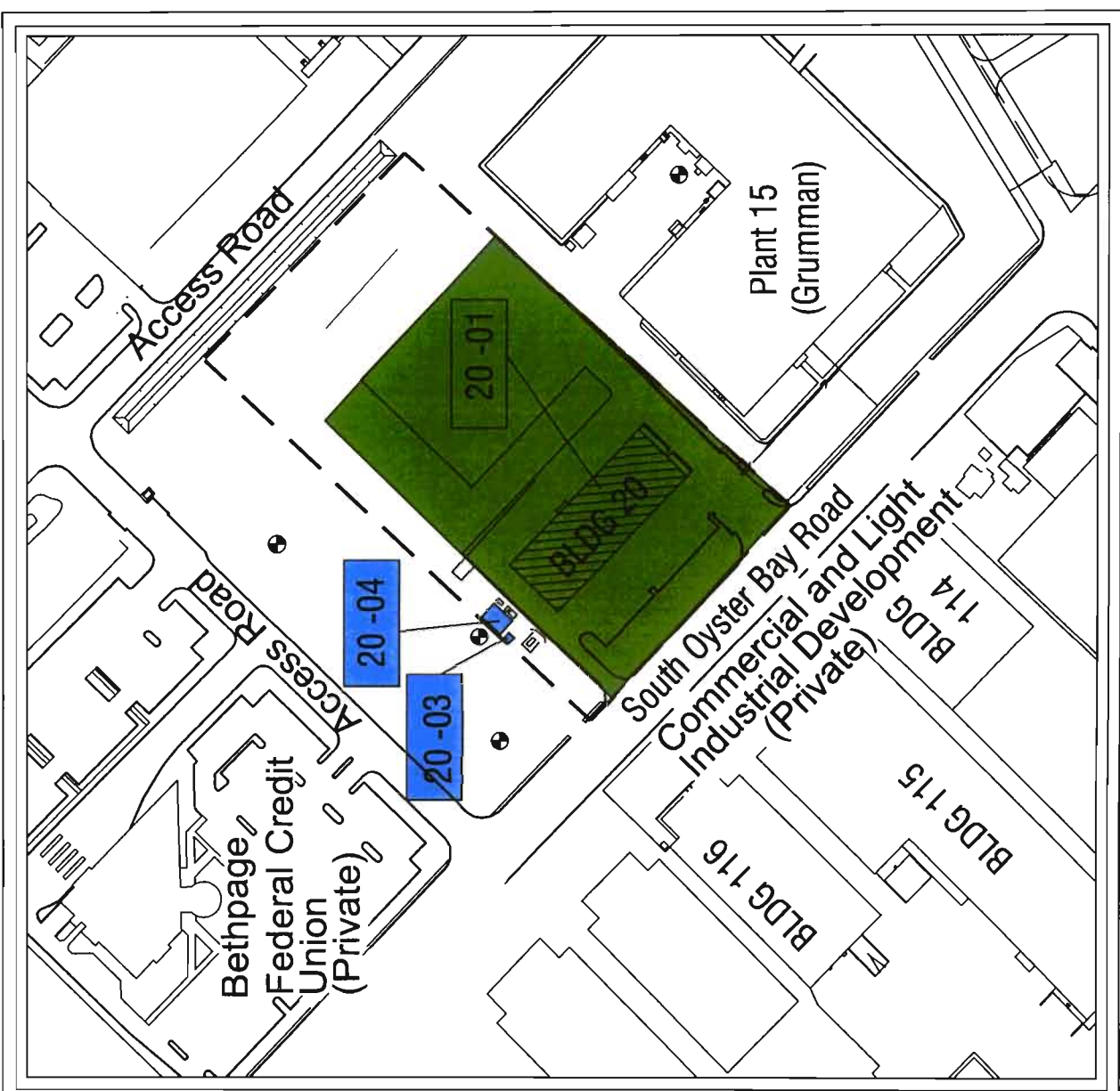
- Groundwater Monitoring Well
- Groundwater Flow



Jan. 25, 2002      REV 1      PROJECT: CTO 283

**Tetra Tech NUS, Inc.**

ACAD:7576CM13.dwg 05/22/02



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## 12. LIST OF PREPARERS

### **DOUB, J. PEYTON, CEP**

BS, Plant Sciences, Cornell University, 1982  
MS, Botany, University of California at Davis, 1984  
Years of Experience: 15  
Role: Task Manager, Lead Report Author

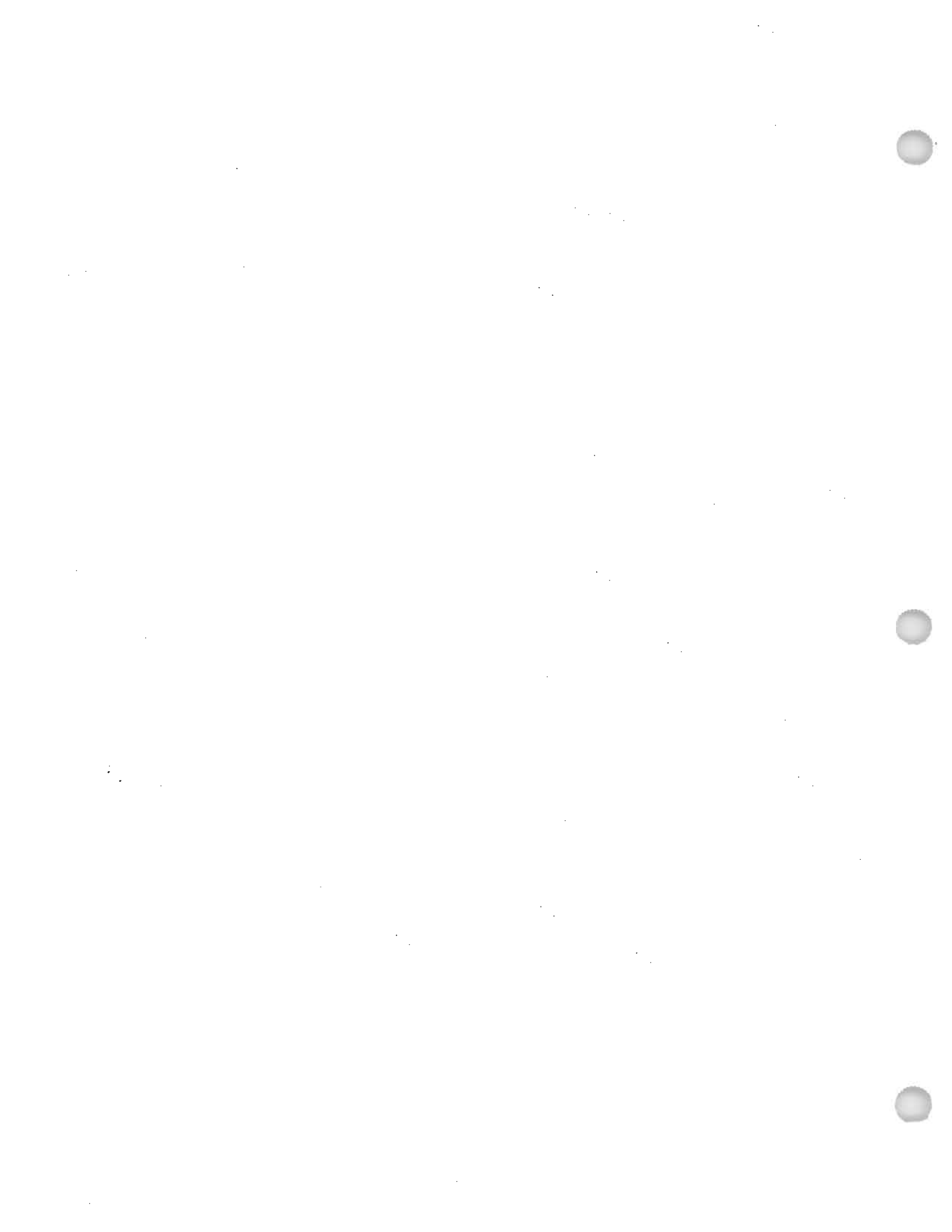
### **EFOTTE, GUSTAVE K., PG**

BS, Geology, SUNY Buffalo, 1987  
Years of Experience: 12  
Role: Technical Reviewer

### **GIANNINO, STEVEN P., PE**

BE, Civil Engineering, The Cooper Union, 1972  
MCE, Civil Engineering, U. of Delaware, 1974  
Years of Experience: 25  
Role: Program Manager

**APPENDIX A**  
**COPIES OF CITED CORRESPONDENCE**





**TETRA TECH NUS, INC.**

661 Andersen Drive • Pittsburgh, Pennsylvania 15220-2745  
(412) 921-7090 • FAX (412) 921-4040 • www.tetrattech.com

PITT-11-9-153

November 16, 1999

Project Number 7576

Mr. Jim Colter (Code 1823/JC)  
Remedial Project Manager  
Northern Division  
Naval Facilities Engineering Command  
10 Industrial Highway, MS#82  
Lester, Pennsylvania 19113

Reference: Clean Contract No. N62472-90-D-1298  
Contract Task Order No. 0283

Subject: RCRA Facility Assessment  
AOC 22 - Former Underground Storage Tanks  
NWIRP Bethpage, New York

Dear Mr. Colter:

Please find enclosed two copies of the subject report for your review. To maintain our current schedule, we are requesting comments by December 17, 1999.

If you have questions or need additional information, please call me at (412) 921- 8375.

Sincerely,

  
David D. Brayack  
Project Manager

/DDB

cc: Mr. R. Boucher (Navy) w/o attachment  
Mr. D. Rule (Navy) w/o attachment  
Mr. A. Taormina (JA Jones)  
Mr. M. Bartman (TINUS)/file  
Mr. J. Trepanowski (TINUS)  
Ms. M. Price (TINUS) w/o attachment

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## 6.0 CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations were developed based on the findings of this investigation.

1. The field investigation confirmed the presence and the extent of petroleum contaminated soils in the area of the former USTs.
  - In the immediate area of the former AOC 22 USTs, petroleum-contaminated soil start at a depth of approximately 10 to 20 feet below the ground surface and extend to the water table (55 to 60 feet below the ground surface). The vertical extent of petroleum below the water table was confirmed through evaluation of soil samples.
  - At a distance of 10 to 40 feet from the former AOC 22 USTs, petroleum-contaminated soils are only found at the water table. The soils above the water table were relatively clean. This area corresponds to approximately 0.25 acres.
  - At a distance greater than 60 feet from the former USTs, petroleum contaminated soils were not observed.
2. Even though total petroleum hydrocarbons were measured to be present in the soils at concentrations up to 2.1%, the concentration of regulated parameters in the soils were relatively low. The chemicals which exceeded NYSDEC soils cleanup objectives (TAGMs 4046) were all polynuclear aromatic hydrocarbons with a maximum concentration of 4.3 mg/kg in the 1997 investigation and 0.98 mg/kg in the 1999 investigation.
3. Based on free product thickness measurements in monitoring wells, there is no recoverable free product at the site. The maximum observed free product thickness was 0.02 feet.
4. Evaluation of the groundwater data found only limited fuel-related contamination in the groundwater. The fuel-related chemicals include benzene at 17 ug/l, ethylbenzene at 18 ug/l, and 2-methylnapthalene at 41 ug/l.

5. Chlorinated solvents at a maximum concentration of 86 ug/l were also detected in the groundwater. These chemicals are consistent with solvents that were detected regionally and are being addressed under a separate groundwater containment remedy.
  
6. Based on the following factors, active remediation of the petroleum-contaminated soils at AOC 22 is not recommended. Environmental data identifying petroleum contamination in this area would accompany property transfer documents.
  - The petroleum-contaminated soils are deep (greater than 10 to 20 feet). This depth effectively eliminates causal contact with the petroleum contamination.
  - The petroleum contamination in soils and groundwater is relatively low, at less than 5 mg/kg and 50 ug/l, respectively.
  - The petroleum-contaminated groundwater is already being address under a separate remedy for chlorinated solvents.
  - The depth of the contaminated soils (55 to 60 feet below ground surface) prevents effective excavation of the soils.
  - Available insitu techniques include biodegradation and thermal heating. Because of the viscous nature and high molecular weight of the fuel oil, neither technology is expected to be effective at remediating the soils. In addition, the existing petroleum contamination is biodegrading naturally, although slowly.

**NORTHROP GRUMMAN**

Integrated Systems & Aerostructures Sector  
AEW & EW Systems  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714

August 17, 1999  
ETCL99-154

Mr. John Kushwara, Chief  
Ground Water Compliance Section  
United States Environmental Protection Agency  
290 Broadway  
New York, New York 10007-1866

**Subject: Bethpage, New York 105-Acre Navy Site  
Drywell and Miscellaneous Remediation  
Plant 3, Location NN-3 & JJ-27 UIC Feature Closure**

- Enclosure: (1) EPA letter to J. Cofman (6/29/99)  
Steam Pit Drain at JJ27 and Slop Sink Sump at NN-3  
105-Acre Navy Site, Bethpage, NY
- (2) H2M letter to F. Weber (8/4/99)  
Plant 03, Location NN-3 & JJ-27 UIC Feature Closure  
105 Acre Navy Site, Bethpage, NY

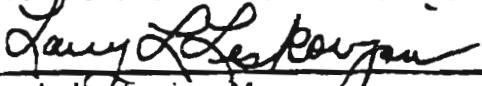
Dear Mr. Kushwara:

In accordance with your June 29, 1999 letter (Enclosure 1), Northrop Grumman has performed the closure of UIC features at Column JJ-27 and NN-3. Please find attached the H2M letter report (Enclosure 2) which summarizes these final closure activities. We consider the closure of these two UIC features to now be complete.

If you have any questions, please call me at (516) 575-2333 or Fred Weber of this office at (516) 575-6789.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S D08-01

cc: B. Mackay (NCDH); S. Kaminski, (NYSDEC, Albany); S. Farkas, (NYSDEC, Stony Brook); H. Wilkie, (NYSDEC, Albany); T. Kelly, (NCDPW); T. Mulvihill, (NCDH); J. Lovejoy, NCDH



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575 Broad Hollow Road, Melville, NY 11747-5076  
(516) 756-6000 • Fax: (516) 694-4122

August 4, 1999

Mr. Fred Weber  
Pollution Prevention Program  
Environmental Technology & Compliance  
Electronics & Systems Integration Division  
Northrop Grumman Corporation  
MS: D08-001  
Bethpage, NY 11714-3583



Re: Plant 03, Location NN-3 & JJ-27 – UIC Feature Closure  
105 Acre NAVY Site  
Bethpage, New York  
Northrop Grumman Corporation Contract No. 99-92187 OBP  
H2M Job No. NOGR 9801

Dear Mr. Weber:

As you are aware, a sloop sink sump, designated as location NN-3, and a floor drain, designated as location JJ-27, were recently backfilled and capped with concrete. Provided herein is a summary of the closure activity.

Location JJ-27 had been remediated to a depth of eight feet below the base of the pit in which the floor drain was located and location NN-3 was remediated to a depth of twenty-five feet below grade surface. The contaminant of concern at location JJ-27 was silver, with mercury the concern at location NN-3. Analysis of endpoint samples collected at each location indicated the contaminant of concern was below the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) Soil Cleanup Objective, as detailed in previous letters to your office.

On June 15, 1999, location JJ-27 and NN-3 were backfilled with clean sand to within eight inches of the capping grade. The backfill material was compacted with a continuous stream of water pressure to minimize the potential for future settlement of the area. Once compaction activities were completed the backfill material was capped with concrete. Due to the large size of the surface opening at location NN-3, welded wire mesh was installed to increase the concrete's tensile strength and minimize cracking. Concrete with

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# H2M GROUP

Fred Weber  
August 4, 1999  
Page 2

a 28-day strength of 3,500 psi was utilized in both locations and finished with a hand trowel.

If you should have any questions, please do not hesitate to contact this office.

Very truly yours,

**HOLZMACHER, McLENDON & MURRELL, P.C.**



Philip J. Schade, P.E.  
Project Manager

cc: Gary J. Miller, P.E./ H2M  
Scott E. Hamarich/H2M



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 2  
290 BROADWAY  
NEW YORK, NY 10007-1866



June 29, 1999

Mr. John Cofman  
Environmental Technology and Compliance  
M/S D08-01  
Northrup Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714

Re: Steam Pit Drain at Column JJ 27 and Slop Sink Sump at Column NN-3  
105-Acre Navy Site  
Bethpage, New York

Dear Mr. Cofman:

The Ground Water Compliance Section of the U.S. Environmental Protection Agency (EPA) has reviewed the letters from Northrup Grumman dated April 13 and June 15, 1999 regarding the above-referenced dry wells. The results of the analyses of the endpoint soil samples collected from the dry wells indicate that the dry wells have been remediated to the satisfaction of this office. The slop sink at column NN-3 should be disconnected from the sump, and the pipe leading from the sink into the sump should be sealed. Both dry wells should be backfilled and sealed as proposed in the April 7 and June 11 letters from H2M Group to Northrup Grumman. The Nassau County Department of Health (NCDH) should be given sufficient notification before this work is conducted so that NCDH may have the option of witnessing the work. Before EPA can close its files on the above-referenced dry wells, a letter summarizing these final closure activities should be submitted to me at:

Ground Water Compliance Section  
U.S. Environmental Protection Agency  
290 Broadway, 20<sup>th</sup> Floor  
New York, New York 10007-1866

If you have any questions, please call me at (212) 637-4228.

Sincerely,

Dermott Courtney  
Ground Water Compliance Section

cc: Bruce Mackay, NCDH  
Paul Kolakowsky, NYSDEC

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**NORTHROP GRUMMAN**

Integrated Systems & Aerostructures Sector  
AEW & EW Systems  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714

June 15, 1999  
ETCL99L-126

Mr. John Kushwara, Chief  
Ground Water Compliance Section  
United States Environmental Protection Agency  
290 Broadway  
New York, New York 10007-1866

**Subject: Bethpage, New York 105-Acre Navy Site  
Drywell and Miscellaneous Remediation  
Slop Sink Sump at Column NN-3**

Enclosure: (1) H2M letter to F. Weber (6/11/99) - Plant 03, Slop Sink Sump  
(Location NN-3) Soil Remediation of UIC Feature,  
105 acre Navy Site, Bethpage.

Dear Mr. Kushwara:

In accordance with your December 11, 1998 request, Northrop Grumman has performed a second and third round of soil remediation at the above referenced location. Please find attached the H2M report which indicates that the soil remediation goal has been achieved. As a result, no further action is warranted at this location.

We would appreciate your expeditious review and approval of this letter report to facilitate the transfer of the property.

If you have any questions, please call me at (516) 575-4680 or Fred Weber of this office at (516) 575-6789.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
\_\_\_\_\_  
John Cofman, Lead Engineer  
Environmental Technology and Compliance  
M/S D08-01

OPTIONAL FORM 99 (7-90)

**FAX TRANSMITTAL**

# of pages = 15

To	DEXTON DOUB	From	John COLTER
Dept./Agency	TENUS	Phone #	
Fax #	(301) 258-8679	Fax #	

NSN 7540-01-217-7368 5099-101 GENERAL SERVICES ADMINISTRATION

A-11

cc: w/enclosure

B. Mackay (NCDH); S. Kaminski (NYSDEC Albany); S. Farkas (NYSDEC  
Stony Brook); H. Wilkie (NYSDEC Albany); T. Kelly (NCDPW);  
T. Mulvihill (NCDH)

w/o enclosure

J. Lovejoy (NCDH)

# H2M GROUP

Holzmacher, McLendon & Murrell, P.C. • H2M Associates, Inc.  
H2M Construction Management, Inc. • H2M Labs, Inc.



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FILE

575 Broad Hollow Road, Melville, NY 11747-5076  
(516) 756-8000 • Fax: (516) 694-4122

June 11, 1999

Mr. Fred Weber  
Pollution Prevention Program  
Environmental Technology & Compliance  
Electronics & Systems Integration Division  
Northrop Grumman Corporation  
MS: D08-001  
Bethpage, NY 11714-3583

Re: Plant 03, Slop Sink Sump (Location NN-3) – Soil Remediation of UIC Feature  
105 Acre NAVY Site  
Bethpage, New York  
Northrop Grumman Corporation Contract No. 99-92187 OBP  
H2M Job No. NOGR 9801

Dear Mr. Weber:

As you are aware, a slop sink sump designated as location NN-3, within the Plant 03 facility, was recently remediated for a third time as a result of non-compliant endpoint sample analysis. Provided herein is a summary of the remediation activity to date and post excavation sample analytical results.

The slop sink sump in question is located within the former facility maintenance area, near column NN-3 at the Plant 03 facility which is currently owned by the United States Navy. As required by Nassau County Department of Health (NCDH) and United States Environmental Protection Agency (USEPA) UIC closure guidelines the subsurface soil below the slop sink sump was sampled and analyzed. Laboratory analysis indicated that concentrations of mercury exceeded the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) Soil Cleanup Objectives.

Subsurface soils were initially excavated through a penetration in the concrete base of the sump on September 18, 1998. An H2M subcontractor utilized a vactor truck to remove approximately 5 feet of subsurface soils to a depth of 9 feet below grade surface. An endpoint sample was collected from the bottom of the excavation and transferred to New York Testing Labs, Inc. (NYTL) and Ecotest labs, Inc. (Ecotest) for analysis for mercury.

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# H2M GROUP

Fred Weber  
June 11, 1999  
Page 2

Laboratory results indicated that concentrations of mercury exceeded the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) Soil Cleanup Objectives. The mercury concentration in the endpoint soil sample was detected at 28 mg/kg at NYTL and 72 mg/kg at Ecotest, both of which are greater than the soil cleanup objective of 0.1 mg/kg and the eastern background concentration limit of 0.2 mg/kg.

Subsurface soils were excavated a second time on March 16, 1999. The concrete bottom of the slop sink sump was removed and the areal extent of excavation was expanded to approximately two feet diameter. An H2M subcontractor utilized a vactor truck to remove an additional three feet of subsurface soils. An endpoint sample was collected from the bottom of the excavation and transferred to H2M Labs, Inc. for analysis for mercury. Laboratory analysis indicated that concentrations of mercury exceeded the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) Soil Cleanup Objectives. The mercury concentration in the endpoint soil sample was detected at 0.48 mg/kg.

Subsurface soils were excavated a third time on May 17, 1999. Since the excavation was being extended to depths, which required horizontal soil support, a 20 inch outside diameter corrugated polyvinyl chloride (PVC) pipe was installed into the excavation to provide horizontal shoring. An H2M subcontractor utilized a vactor truck to remove subsurface soils through the bottom of the PVC pipe. As the excavation depth increased, the pipe was extended deeper. The excavation was ultimately extended to a depth of 25 feet below grade surface. Four (4) 55-gallon drums of waste soils were removed for off site disposal.

An endpoint sample was collected from the bottom of the excavation and transferred to H2M Labs, Inc. for analysis for mercury. Laboratory analysis indicated that mercury concentrations were below NYSDEC Technical and Administrative Guidance Memorandum (TAGM) Soil Cleanup Objectives. The mercury concentration in the endpoint soil sample was detected at <0.08 mg/kg. A copy of the laboratory report is attached herewith.

Considering the above, it is our opinion that no further remedial action is required at location NN-3. Following approval by NCDH, final closure of the structure will entail backfilling the structure with clean fill and capping with at least six inches of concrete.

# H2M GROUP

Fred Weber  
June 11, 1999  
Page 3

The closure activity will be conducted to the satisfaction of the NCDH, Northrop Grumman Corporation and the US NAVY.

If you should have any questions, please do not hesitate to contact the undersigned at (516) 756-8000 extension 1623 or Scott Hamarich at extension 1624.

Very truly yours,

HOLZMACHER, McLENDON & MURRELL, P.C.



Philip J. Schade, P.E.  
Project Manager

cc: Gary J. Miller, P.E./ H2M

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**New York State Department of Environmental Conservation**

**Division of Solid & Hazardous Materials, Region One**

Building 40 - SUNY, Stony Brook, New York 11790-2356

Phone: (516) 444-0375 FAX: (516) 444-0231



John P. Cahill  
Commissioner

March 10, 1999

Mr. John Cofman  
Lead Engineer  
Environmental Technology and Compliance  
Mail Stop D08-001  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, NY 11714-3580



MAR 1999

ENVIRONMENTAL  
TECHNOLOGY &  
COMPLIANCE

Dear Mr. Cofman:

This letter is to confirm the receipt of the owner/operator and independent professional engineer's certifications for the Plant 3 Mini Drum Marshaling Area, signed on December 2, 1998, and for the Main Drum Marshaling area located at Plant 3, signed on September 1, 1998.

The New York State Department of Environmental Conservation has established a program to evaluate the corrective action measures necessary at closed and closing facilities within the State. Once the corrective action provisions have been met or determined not to be necessary at the facility, the facility can have its permit terminated.

The closure report and the certification are satisfactory to the Department and we now consider these areas officially closed.

If you have any questions, please contact me at (516) 444-0232.

Sincerely,

Shaun Snee

Environmental Engineer

Division of Solid and Hazardous Materials

cc: Jim Ready, EPA Region 2  
A. Cava  
S. Farkas  
S. Carlomagno  
H. Wilkie

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# H2M GROUP

Holzmacher, McLendon & Murrell, P.C. • H2M Associates, Inc.  
H2M Construction Management, Inc. • H2M Labs, Inc.



ACEC Member  
Supporting Excellence  
in Engineering

575 Broad Hollow Road, Melville, NY 11747-5076  
(516) 756-8000 • Fax: (516) 694-4122

January 15, 1999

Drew B. Bennett, P.E., Manager  
Environmental Technology & Compliance  
Integrated Systems & Aerostructures Sector  
Northrop Grumman Corporation  
MS: D08-001  
Bethpage, NY 11714-3583

▲  
JAN 1999  
ENVIRONMENTAL  
TECHNOLOGY &  
COMPLIANCE

Re: Plant 10, Rooms 38 and 39 – Soil Investigation  
105 Acre NAVY Site  
Northrop Grumman Corporation Contract No. 100262  
H2M Job No. NOGR 9701

Dear Mr. Bennett:

Pursuant to your request, Holzmacher, McLendon & Murrell, P.C. (H2M) investigated the quality of subsurface soils in Rooms 38 and 39 within Plant 10 at the above referenced site. It is our understanding that Room 38 was formerly used as a wet chemistry area in support of laboratory operations and that Room 39 was used for chemical storage. The soil investigation was prompted by the identification of a floor drain in Room 39 following removal of a layer of flooring. The floor drain was investigated as a potential underground injection well source and was determined to drain to the Nassau County sewer system. Documentation of the drain investigation effort was provided in a January 13, 1999 letter to your office.

Investigation of the subsurface soils included penetration of the concrete floor slab, collection of soil samples for analysis and comparison of laboratory results to applicable soil cleanup objectives. A summary of the site activity and our findings is provided below.

On December 11, 1998, H2M utilized a jackhammer to penetrate the concrete floor slab in one location within each of the two subject rooms. The attached figure shows a plan view of Plant 10 including the location of each room and the sampling locations. After penetrating the concrete slab, H2M utilized a decontaminated hand auger to collect soil samples from 1 – 2 feet and 2 – 4 feet below grade in each location. Therefore a total of four soil samples were collected and transported to H2M Labs, Inc. for analysis. Each sample was analyzed for metals, petroleum hydrocarbons, semi-volatile organic compounds (SVOCs) and volatile organic compounds (VOCs) as typically required by the Nassau County Department of Health (NCDH). Tables 1 through 4 (enclosed) include a summary of the results for each sample. In addition, the associated laboratory reports are also enclosed.

Tables 1 and 2 include sample analytical results for Room 39. The results for both samples collected from Room 39 show that all measured concentrations are below the referenced soil

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# H2M GROUP

Drew B. Bennett

1/15/99

Page 2

cleanup objectives. Tables 3 and 4 include sample analytical results for Room 38. The results for both samples collected from Room 38 show that all measured concentrations are below the referenced soil cleanup objective with the exception of mercury. Both samples from Room 38 include mercury concentrations that slightly exceed the cleanup objective.

The sample results for mercury from Room 38 were measured at 0.15 mg/kg at 1 - 2 feet below grade and 0.19 mg/kg at 2 - 4 feet below grade as compared to the NYSDEC soil cleanup objective of 0.1 mg/kg. While the results exceed the stated cleanup objective, both results are within the range of typical background soil concentrations (0.001 - 0.2 mg/kg) as referenced by NYSDEC.

Considering the above, it is concluded that the shallow subsurface soils beneath Rooms 38 and 39 do not include significant concentrations of the parameters tested. Furthermore, it is recommended that no further action be warranted relative to investigating and/or remediating the subject soils.

Upon completing the sample collection activity, each area was capped with approximately six to eight inches of concrete and was leveled even with the existing floor grade.

Mr. John Lovejoy of the Nassau County Department of Health (NCDH) was present at the site during initiation of the above-described investigation activity. While at the site, Mr. Lovejoy indicated that the county did not necessarily need to be involved in the investigative effort, as it was not an underground injection control program issue.

If you should have any questions, please do not hesitate to contact the undersigned at (516) 756-8000 extension 1623.

Very truly yours,

HOLZMACHER, McLENDON & MURRELL, P.C.



Philip J. Schade, P.E.  
Project Manager

enclosures

cc: Gary J. Miller, P.E./ H2M

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**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South County Drive Road  
Bethpage, New York 11714-3580

September 25, 1998  
ETC98-275

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation  
105-Acre Bethpage GOCO Environmental Assessment**

Enclosure: Letter Report - Subsurface Soil Investigation  
Drainage Swale North of the Main Drum Marshalling Area  
Bethpage, New York

Dear Mr. Farkas:

Please find enclosed a copy of a letter report entitled "Subsurface Soil Investigation, Report of Findings - Drainage Swale North of the Main Drum Marshalling Area", dated September 16, 1998, prepared by our consultant, Dvirka and Bartilucci Consulting Engineers (D&B). During a parallel environmental study conducted by the Navy's consultant, Tetra Tech NUS, a drainage swale located along the northern boundary of the 105-Acre Navy site was identified as a potential environmental concern. Because this swale had not been investigated during the Northrop Grumman Phase II program, D&B was retained to advance several soil borings to a depth of four feet below grade surface throughout the swale area.

As the enclosed letter report indicates, copper and zinc were detected at concentrations exceeding the TAGM criteria in the soil samples collected from locations SB-3 and SB-4. However, since copper and zinc are not listed as "Hazardous Constituents" in Appendix 23 of 6NYCRR Part 371, Northrop Grumman recommends no further action with respect to locations SB-3 and SB-4. The data also indicate that chromium was detected at locations SB-3 and SB-4 at concentrations exceeding the TAGM criteria. It should be noted that *hexavalent* chromium was either not detected or was detected at concentrations well below the TAGM criteria for both these locations. Consequently, we believe no further action is warranted with respect to the Drainage Swale North of the Main Drum Marshaling Area.



S. Farkas  
September 25, 1998  
ETC98-259  
Page 2

We have put together an ambitious schedule for the completion of the environmental assessment work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of the report.

If you have any questions, please call me at 516/575-2333 or Adam Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



Drew Bennett, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
S. Kaminski, NYSDEC; H. Wilkie, NYSDEC; T. Mulvihill, NCDH; T. Kelly,  
NCDPW

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

A-22



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2  
290 BROADWAY  
NEW YORK, NY 10007-1866

AUG - 4 1998

Mr. Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
Electronics & Systems Integration Division  
Northrup Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

Re: Northrup Grumman, Bethpage 105 Acre Navy Site  
Plant 03  
Dry Wells 20-08 and 34-07

Dear Mr. Leskovjan:

The Ground Water Compliance Section of the U.S. Environmental Protection Agency (EPA) has reviewed the results of analyses of soil samples collected from the excavated dry wells referenced above. The endpoint soil sample for Dry Well 20-08 contained the polychlorinated biphenyl (PCB) Aroclor 1242 at a concentration of 1,900 milligrams per kilogram, and the endpoint soil sample for Dry Well 34-07 contained the PCB Aroclor 1248 at a concentration of 25,000 mg/kg. Using EPA's maximum contaminant level for PCBs in drinking water (0.5 microgram per liter) and guidelines provided by the New York State Department of Environmental Conservation in its Hazardous Waste Remediation Division's Technical and Administrative Guidance Memorandum 4046 on the determination of soil cleanup objectives, as well as the information provided in your June 25 and June 26, 1998 letters to the Nassau County Department of Health (NCDH) regarding the PCB contamination in the above-referenced dry wells, this office has calculated soil cleanup objectives for the two dry wells.

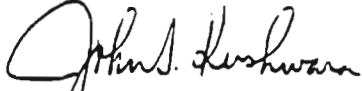
Dry Well 20-08 should be remediated so that the concentration of Aroclor 1242 in the soil is no greater than 13 mg/kg, and Dry Well 34-07 should be remediated so that the concentration of Aroclor 1248 in the soil is no greater than 1091 mg/kg. The results of analyses for PCBs in the endpoint soil samples collected from both excavated dry wells should be submitted to EPA and NCDH. Arrangements should be made for NCDH to witness the work and have the opportunity to split samples. This office does not require excavation beyond the point at which further excavation would endanger the structural integrity of a building, road, wall, utility pole, underground storage tank, or some other significant structure.



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If you have any questions, please call Dermott Courtney of my staff at (212) 637-4228.

Sincerely,



John S. Kushwara, Chief  
Ground Water Compliance Section

cc: Paul Kolakowsky, NYSDEC  
Bruce Mackay, NCDH

**NORTHROP GRUMMAN**

June 25, 1998  
ETC98-181

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

Mr. Bruce Mackay  
Nassau County Department of Health  
240 Old Country Road  
Mineola, New York 11501-4250

Subject: Northrop Grumman, Bethpage 105 Acre Navy Site  
Drywell and Miscellaneous Remediation  
Plant 03 - Drywell 34-07  
Remediation End Point Sample Results

Enclosures 1) End Point Soil Sample Location Drawings  
2) Plant 03 - Drywell 34-07 End Point Soil Sample Data

Dear Mr. Mackay:

As you know, Northrop Grumman has been conducting environmental closure activities on features found to be in violation of the UIC regulations. One such feature, drywell 34-07, was recently excavated from 10 - 28 feet below grade surface (bgs). Approximately 270 cubic yards of material was excavated for proper off-site disposal. A sketch showing the location of this feature is provided in Enclosure 1.

An endpoint sample was collected from the bottom of the excavation and analyzed for RCRA metals, total petroleum hydrocarbons, semi volatile organics, volatile organics, and polychlorinated biphenyls (PCBs). PCBs were added to the endpoint analysis because they were detected during an initial sampling and analysis program. The endpoint data is presented in Enclosure 2 for your review and approval. As the data indicates, PCBs were detected at a total concentration of 25,000 mg/kg. All other endpoint results were detected below the applicable TAGM criteria.

Although this sample was shown to contain total PCBs at levels greater than 10 mg/kg (TAGM criteria), impacts to groundwater are of minimal concern. This is supported by the chemical properties of the PCBs detected, in which the log  $K_{oc}$  value for Aroclor 1248 is 5.64 (as reported in Remediation Engineering Design Concepts, 1997, Suthan S. Suthersan, Geraghty & Miller Environmental Science and Engineering Series), indicating a strong affinity for adsorbing to the organic carbon content in soil. In addition, due to the low vapor pressure of Aroclor 1248 at  $4.94 \times 10^{-4}$  mm of Hg @ 25°C (S. S. Suthersan, 1997), exposure by inhalation of vapors is not a probable human health concern. Furthermore, exposure by contact or accidental ingestion is highly unlikely due to the fact that the elevated levels of PCBs are located approximately 30 feet bgs. To further minimize PCB migration, Northrop Grumman plans to install a solid bottom catch basin in place of the drywell that was excavated.

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B. Mackay  
June 25, 1998  
ETC98-181  
Page 2

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils from drywell 34-07. Although soils immediately below drywell 34-07 exhibit elevated levels of PCBs, Northrop Grumman recommends no further action for the following reasons: (a) there is no human exposure to the soils greater than 30 feet bgs; (b) the source of contamination has been remediated; (c) the soils greater than 30 feet bgs cannot be effectively remediated without significant economic hardship and the sacrificing of the structural integrity of the adjacent building structures; (d) natural attenuation processes (e.g., absorption, dilution, dispersion, etc.) will effectively remediate residual contamination that exceeds the TAGM criteria.

Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand, install a solid bottom catch basin, and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the UIC closure work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



Larry L. Leskovjan, Manager  
Environmental Technology and Compliance

cc: w/enclosure  
J. Kushwara (USEPA); S. Kaminski, NYSDEC (Albany); S. Farkas, NYSDEC (Stony Brook); H. Wilkie, NYSDEC (Albany); T. Kelly, NCDPW; T. Mulvihill, NCDH

w/o enclosure  
J. Lovejoy, NCDH

A-26

**New York State Department of Environmental Conservation**  
**Division of Solid & Hazardous Materials, Region One**  
 Building 40 - SUNY, Stony Brook, New York 11790-2358  
 Phone: (516) 444-0375 FAX: (516) 444-0231



June 23, 1998

Mr. Larry Leskovjan, Manager  
 Environmental, Health & Safety  
 M/S D16-001  
 Northrup Grumman Corporation  
 South Oyster Bay Rd.  
 Bethpage, NY 11714-3583

RE: Authorization to Backfill Various Areas of Concern  
 Grumman-Bethpage NYD002047967



Dear Mr. Leskovjan:

The Division of Solid and Hazardous Materials (DSHM) has completed its review of the following submissions concerning remediation of various Areas of Concern (AOCs) located within the Naval Weapons Industrial Reserve Plant at the Northrup Grumman Corp. in Bethpage. Based on our review of the sampling data, inspection of the designated areas and discussions with your engineers, the DSHM approves your requests for No Further Action (NFA) based upon achievement of TAGM criteria and hereby approves the backfilling of the excavations associated with the AOCs listed.

Date of Submittal	Description	DSHM Response
3/23/98	Plant 3, Various AOCs (36) - Request for NFA	Verbal O.K. 6/9/98
3/30/98	Plants 10/17 South, Various AOCs (4) - Request for NFA	Verbal O.K. 6/9/98
4/17/98	Plant 3, AOC 24 - Request for NFA/ Backfilling	None
4/28/98	Plant 3, AOC 9 - Request for NFA/ Backfilling	None
4/28/98	Plant 3, AOC 27 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
4/29/98	Plant 3, AOC 2 - Request for NFA/ Backfilling	None

7576-4023

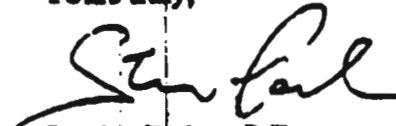
2-07

5/5/98	Plant 3, AOC 21-21 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/13/98	Plant 3, AOC 33-09 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/13/98	Plant 2, AOC 33-11/12 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/5/98	Plant 3, AOC 1-08 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/5/98	Plant 3, AOC 1-20 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/13/98	Plant 3, AOC 6 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/13/98	Plant 3, AOC 34 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98

We have also received submissions dated 5/21/98, for Plant 3, AOC 20-24, and 6/4/98 for Plant 10 Degreaser Pit which are still under review.

Please advise the Department of your schedule for filling the approved AOCs. We also recommend your receiving approval from the Nassau County Department of Health. If you have any questions, please do hesitate to contact me at (516) 444-0379 or Mr. Henry Wilkie at (518) 457-9255.

Yours truly,



Stanley Farkas, P.E.  
Environmental Engineer II

SF:ek

cc: A. Postyn, Northrop Grumman  
S. Kaminski, NYSDEC  
H. Wilkie, NYSDEC  
J. Lovejoy, NCDH

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**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
North Country Road  
Bethpage, New York 11714-3580

June 17, 1998  
ETC98-170

Mr. Bruce Mackay  
Nassau County Department of Health  
240 Old Country Road  
Mineola, New York 11501-4250

Subject: **Northrop Grumman, Bethpage 105 Acre Navy Site  
Drywell and Miscellaneous Remediation  
Plant 03 - Drywell 20-03  
Plant 03 - Kitchen Valve Box  
Plant 03 - Cafeteria Valve Box  
Plant 17S - Drywell N2  
Plant 10 - Drywell C2  
Remediation End Point Sample Results**

Enclosures **1) End Point Soil Sample Location Drawings  
2) Plant 03 - Drywell 20-03- End Point Soil Sample Data.  
3) Plant 03 - Kitchen Valve Box- End Point Soil Sample Data.  
4) Plant 03 - Cafeteria Valve Box- End Point Soil Sample Data.  
5) Plant 17S - Drywell N2 - End Point Soil Sample Data.  
6) Plant 10 - Drywell C2 - End Point Soil Sample Data.**

Dear Mr. Mackay:

As you know, Northrop Grumman has been conducting environmental closure activities on features found to be in violation of the UIC regulations. The table below summarizes the remediation depths and volumes of soil excavated from each feature. Soil excavation was not performed on the kitchen and cafeteria valve boxes because these features were not previously sampled. Sketches showing the location of the subject features, with the exception of the two valve boxes, are provided in Enclosure 1.



B. Mackay  
June 17, 1998  
ETC98-170  
Page 2

Feature	Remediation Interval (feet bgs)	Volume of Soil Excavated (yards <sup>3</sup> )
Plant 03 - Drywell 20-03	4-18	210
Plant 03 - Kitchen Valve Box	NA *	NA *
Plant 03 - Cafeteria Valve Box	NA *	NA *
Plant 17S - Drywell N2	12-20	11
Plant 10 - Drywell C2	10-26	85

\* NA = Not applicable.

With the exception of the two valve boxes, an endpoint sample was collected at the bottom of each excavation and analyzed for RCRA metals, total petroleum hydrocarbons, semi volatile organics, and volatile organics. A soil sample was collected from the bottom of the valve box located in the kitchen and cafeteria areas of Plant 03 and analyzed for the same constituents listed above. The endpoint data is presented in Enclosures 2 through 6 for your review and approval. The data does not indicate any exceedances of the TAGM criteria.

In summary, where excavation was performed, Northrop Grumman effectively removed, transported, and disposed of impacted soils from the above mentioned UIC features. The end point analysis results demonstrate that soil immediately below the excavations do not exceed the TAGM criteria. The soil sample results for the two valve boxes indicate that these structures have not been impacted by industrial discharges. Consequently, it is recommended that no further action is warranted at these five UIC features.

Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation areas with certified clean bank-run sand and restore the area to match existing conditions. Pursuant to NCDH recommendations, Northrop Grumman will pour a concrete skim coat at the bottom of each valve box approximately two inches thick. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

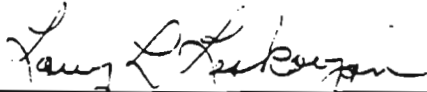
B. Mackay  
June 17, 1998  
ETC98-170  
Page 3

We have put together an ambitious schedule for the completion of the UIC closure work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



---

Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure

J. Kushwara (USEPA); S. Kaminski, NYSDEC (Albany); S. Farkas, NYSDEC (Stony Brook); H. Wilkie, NYSDEC (Albany); T. Kelly, NCDPW; T. Mulvihill, NCDH

w/o enclosure

J. Lovejoy, NCDH

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**NORTHROP GRUMMAN**

Commercial Aircraft Division  
Grumman Aerospace Corporation  
A Subsidiary of Northrop Grumman  
Post Office Box 9015  
Stuart, Fl. 34995-9015

June 8, 1998  
ETC98-163

Mr. Bruce Mackay  
Nassau County Department of Health  
240 Old Country Road  
Mineola, NY 11501-4250

Subject: **Northrop Grumman, Bethpage 105-Acre Navy Site  
Drywell and Miscellaneous Remediation  
Plant 03 - Compressor #3 Floor Drain at M14 to L15  
Request for No Further Action**

Enclosure : Location Drawing

Dear Mr. Mackay:

As you know, Northrop Grumman has been conducting environmental closure activities on features found to be in violation of the UIC regulations. One such feature, Compressor #3 Floor Drain at M14 to L15, was recently excavated to a depth of approximately 4 feet below grade surface (bgs). Remediation of this floor drain consisted of excavating debris/sediments directly beneath the floor drain using a flexible PVC hose connected to a vacuum truck. A sketch showing the location of this feature is enclosed.

An endpoint sample was not able to be collected by conventional means due to the gravelly nature of the remaining sediments. Consequently, we propose using the endpoint data from compressor #1, which was a similar installation in close proximity, that showed no contamination. It is important to note that your office previously approved a similar approach for compressor #2 in a letter dated June 1, 1998.

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils from compressor #3 Floor Drain at M14 to L15. Because of gravelly sediments, an endpoint sample was not able to be collected. Applying similar logic as was previously approved for compressor #2, it is recommended that no further action is warranted at compressor #3.

*B. Mackay*  
*June 8, 1998*  
*ETC98-163*  
*Page 2*

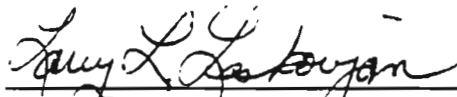
Upon your review and approval, Northrop Grumman will backfill the excavation area with lean concrete and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the UIC closure work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
J. Kushwara, USEPA; S. Kaminski, NYSDEC (Albany); S. Farkas, NYSDEC (Stony Brook); H. Wilkie, NYSDEC (Albany); T. Kelly, NCDPW;  
T. Mulvihill, NCDH

w/o enclosure  
J. Lovejoy, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Wacker Bay Road  
Bethpage, New York 11714-5530

June 2, 1998  
ETC98-151

Mr. Bruce Mackay  
Nassau County Department of Health  
240 Old Country Road  
Mineola, New York 11501-4250

Subject: **Northrop Grumman Corporation  
Bethpage, New York 105-Acre Navy Site  
Drywell and Miscellaneous Remediation  
Plant 03 Drywell 3-33  
Remediation End Point Sample Results**

Enclosures: 1) End Point Soil Sample Location Drawing  
2) End Point Soil Sample Data

Dear Mr. Mackay:

As you know, Northrop Grumman has been conducting environmental closure activities on features found to be in violation of the UIC regulations. One such feature, drywell 3-33, was recently excavated from 12 - 18 feet below grade surface (bgs). Approximately 32 cubic yards of material was excavated for proper off-site disposal. A sketch showing the location of drywell 3-33 is provided in Enclosure 1.

An endpoint sample was collected at the bottom of the excavation and analyzed for RCRA metals, total petroleum hydrocarbons, semi volatile organics, volatile organics, PCBs, herbicides, and pesticides. The endpoint data are presented in Enclosure 2 for your review and approval. The data do not indicate any exceedances of the TAGM criteria.

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils at drywell 3-33. The end point analysis results demonstrate that soils immediately below the excavation does not exceed the TAGM criteria. It is therefore recommended that no further action is warranted at drywell 3-33.

*B. Mackay*  
*June 1, 1998*  
*ETC98-151*  
*Page 2*

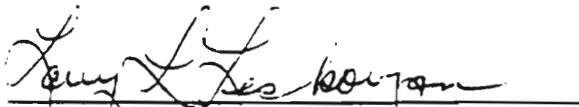
Upon your review and approval of the attached data and these recommendations, Northrop Grumman plans to reinstall a leaching pool at this location for continued storm drainage purposes. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the UIC closure work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



Larry L. Leskovjan, Manager:  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure

J. Kushwara (USEPA); S. Kaminski, NYSDEC (Albany); S. Farkas, NYSDEC (Stony Brook); H. Wilkie, NYSDEC (Albany); T. Kelly, NCDPW; T. Mulvihill, NCDH

w/o enclosure

J. Lovejoy, NCDH



**Dvirka  
and  
Bartilucci**

CONSULTING ENGINEERS

330 Crossways Park Drive, Woodbury, New York, 11797-2015  
516-364-9890 • 718-460-3634 • Fax: 516-364-9045  
e-mail: db-eng@worldnet.att.net

May 29, 1998

John Cofman, P.E., Lead Engineer  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
Mail Stop: D08-001  
Bethpage, NY 11714-3582

Re: Subsurface Investigation  
Plant 10 Degreaser Pit  
Bethpage, New York  
NGC P.O. 83-54369  
D&B No. 1572-01



Dear Mr. Cofman:

The purpose of this letter report is to document the field activities and results of laboratory analyses associated with a soil probe sampling program undertaken at the Northrop Grumman Corporation (NGC) Plant 10 site on April 29, 1998. Dvirka and Bartilucci Consulting Engineers (D&B) was retained to collect subsurface soil samples beneath a former Degreaser Pit and provide a letter report documenting the results of the sampling program. The following sections provide a description of the field activities along with a discussion of the laboratory results.

Soil Probe Sampling

On April 29, 1998, D&B conducted a soil sampling program for the purposes of collecting subsurface soil samples from beneath the bottom of a former Degreaser Pit located at the NGC Plant 10 facility. A site location map is presented on Figure 1 in Attachment 1. One soil probe, identified as B1 on Figure 2 in Attachment 1, was advanced from approximately 0 to 2 feet and 2 to 4 feet below the bottom of the former Degreaser Pit. Two soil samples were collected and analyzed for volatile organic compounds (VOCs) by United States Environmental Protection Agency (USEPA) Method 8240. The laboratory provided a 1-week turnaround time for the sample results.

Concrete coring through the bottom of the former pit was conducted utilizing a hammer drill equipped with a concrete coring bit in order to access the underlying soil. The soil probe was advanced manually utilizing Geoprobe tooling and an electric hammer-drill. The electric



John Cofman, P.E., Lead Engineer  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
May 29, 1998

hammer-drill was equipped with Geoprobe tooling which consisted of a 1.5-inch outside diameter by 2-foot long soil probe sampler and drill rods. A 1-inch diameter clear plastic polyethylene terephthalate-G (PETG) sample tube liner, dedicated to each soil probe sample, was utilized to secure the sample within the soil probe sampler. The soil probe was advanced utilizing the electric hammer-drill by driving the soil probe sampler, sample tube liner and drill rods to the desired depth. The soil probe sampler was then mechanically lifted to the surface by a mechanical floor jack.

Both soil probe samples collected utilizing the electric hammer-drill were physically and visually characterized and inspected for the presence of staining, discoloration or odors and were screened for volatile organic vapors utilizing a photoionization detector (PID). This information is presented on a soil boring log presented in Attachment 2. All sampling equipment, excluding the PETG sample tube liners which were dedicated to each soil probe sample, was decontaminated between the collection of each sample. Decontamination procedures consisted of an external alconox wash and tap water rinse, followed by a distilled/deionized water rinse.

#### Analytical Results of Soil Samples

The laboratory analysis was performed in accordance with USEPA SW846 methodologies and New York State Department of Environmental Conservation (NYSDEC) Quality Assurance/Quality Control (QA/QC) requirements by Envirotech Research, Inc. (Envirotech) of Edison, New Jersey, a subcontractor of D&B. The sample results in the data package submitted by Envirotech were reviewed in accordance with NYSDEC QA/QC requirements for data validation purposes. Sample analysis was performed within the method specified holding times and all QA/QC measures were met.

The methylene chloride results have been qualified as non-detect for both samples due to laboratory contamination. That is, the method blank associated with the samples also contained methylene chloride and the sample concentrations were less than five times the blank concentration.

No other problems were found with the data. Therefore, all of the results were deemed valid and usable for environmental assessment purposes, as qualified above.

The analytical results of the soil samples are summarized on Table 1 provided in Attachment 3. A copy of the laboratory data is provided in Attachment 4. All analytical results were compared to the Appendix A criteria listed in the NYSDEC's Technical and Administrative Guidance Memorandum (TAGM) 4046.

**.KA AND BARTILUCCI**

John Cofman, P.E., Lead Engineer  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
May 29, 1998

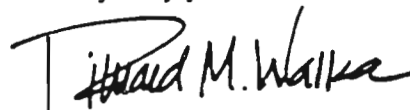
Page Three

As shown on Table 1 in Attachment 3, several VOCs, including acetone, cis-1,2-dichloroethene, trichloroethene and xylenes, were detected in soil samples B1 (0'-2') and B1 (2'-4'). However, these compounds were not detected at concentrations in excess of the NYSDEC TAGM 4046 Appendix A criteria.

Therefore, based on the above, it does not appear that further investigation is warranted at the former Degreaser Pit at Plant 10.

If you should have any questions and/or comments regarding this matter, please do not hesitate to contact Mr. Errol Kitt or me at (516) 364-9890.

Very truly yours,



Richard M. Walka  
Vice President

RMW/MPRt/ajm,ld  
Attachments

cc: A. Postyn (NGC)  
E. Kitt (D&B)

◆ 1572\RMW98-02.LTR(R07)

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A-40

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

May 27, 1998  
ETC98-148

Mr. Bruce Mackay  
Nassau County Department of Health  
240 Old Country Road  
Mineola, New York 11501-4250

Subject: **Northrop Grumman, Bethpage 105 Acre Navy Site  
Drywell and Miscellaneous Remediation  
Plant 03 - Steam Pit Drain at Column KK37  
Plant 10 - Cesspool 10-02  
Plant 10 - Leaching Pool 10-02  
Remediation End Point Sample Results**

Enclosures: 1) End Point Soil Sample Location Drawings  
2) Plant 03 - Steam Pit Drain KK37 - End Point Soil Sample Data  
3) Plant 10 - Cesspool and Leaching Pool 10-02 - End Point Soil Sample Data

Dear Mr. Mackay:

As you know, Northrop Grumman has been conducting environmental closure activities on features found to be in violation of the UIC regulations. The table below summarizes the remediation depths and volumes of soil excavated from each feature. Remediation of the floor drain steam pit drain consisted of excavating the soil directly beneath the floor drain using a flexible PVC hose connected to a vacuum truck. Sketches showing the location of these three features are provided in Enclosure 1.

Feature	Remediation Interval (feet bgs)	Volume of Soil Excavated (yards <sup>3</sup> )
Plant 03 - Steam Pit Drain at KK37	0-4	≈0.04
Plant 10 - Cesspool 10-02	0-14	75
Plant 10 - Leaching Pool 10-02	0-16	85



B. Mackay  
May 27, 1998  
ETC98-148  
Page 2

An endpoint sample was collected at the bottom of each excavation and analyzed for RCRA metals, total petroleum hydrocarbons, semi volatile organics, and volatile organics. The endpoint data are presented in Enclosures 2 and 3 for your review and approval. The data do not indicate any exceedances of the TAGM criteria.

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils from the above mentioned UIC features. The end point analysis results demonstrate that soil immediately below the excavation does not exceed the TAGM criteria. It is therefore recommended that no further action is warranted at these three UIC features.

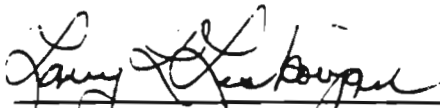
Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the UIC closure work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure

J. Kushwara (USEPA); S. Kaminski, NYSDEC (Albany); S. Farkas, NYSDEC (Stony Brook); H. Wilkie, NYSDEC (Albany); T. Kelly, NCDPW; T. Mulvihill, NCDH

w/o enclosure

J. Lovejoy, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

May 21, 1998  
ETC98-142

Mr. Bruce Mackay  
Nassau County Department of Health  
240 Old Country Road  
Mineola, New York 11501-4250

Subject: **Northrop Grumman, Bethpage 105 Acre Navy Site  
Drywell and Miscellaneous Remediation  
Plant 03 - Grease Trap at Column AA5  
Plant 03 - Grease Trap at Columns AA30-31  
Plant 03 - Grease Trap at Columns FF42 and GG42  
Remediation End Point Sample Results**

Enclosures: 1) End Point Soil Sample Location Drawings  
2) Plant 03 - Grease Traps End Point Soil Sample Data.

Dear Mr. Mackay:

As you know, Northrop Grumman has been conducting environmental closure activities on features found to be in violation of the UIC regulations. Three (3) grease traps located in Plant 03 were found to have outlet pipes discharging to the ground directly beside these features. As such, an area approximately 5' x 5' was excavated to a depth of about four (4) feet below grade surface (bgs) at each of the three grease trap locations where the pipe end was observed. Sketches showing the location of these three features are provided in Enclosure 1.

An endpoint sample was collected at the bottom of each excavation and analyzed for RCRA metals, total petroleum hydrocarbons, semi volatile organics, and volatile organics. The endpoint data is presented in Enclosure 2 for your review and approval. The data does indicate minor exceedances of chrysene, benzo (a) anthracene, benzo (b) fluoranthene, benzo (k) fluoranthene, and benzo (a) pyrene for the grease traps located at column AA5 and columns FF42/GG42. While some individual SVOCs exceeded the TAGM criteria, the total SVOCs concentrations of 17.0 ppm and 15.9 ppm were well below the total SVOCs TAGM criteria of 500 ppm. Because these two UIC features are located immediately adjacent to building foundations, additional excavation would severely jeopardize the structural stability of the building.

B. Mackay  
May 21, 1998  
ETC98-142  
Page 2

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils from the three grease trap located in Plant 03. With two exceptions, the end point analysis results demonstrate that soils immediately below the excavated areas do not exceed the TAGM criteria. Because the exceedances at the two grease traps are minor in nature, we believe the environmental impacts are minimal. In addition, further excavation at these two grease traps would undermine the building foundation. It is important to note that all of these areas will be filled and capped with concrete minimizing contaminant migration. It is therefore recommended that No Further Action is warranted at the three (3) Plant 03 grease traps.


Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the UIC closure work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure

J. Kushwara (USEPA); S. Kaminski, NYSDEC (Albany); T. Mulvihill, NCDH,  
S. Farkas (NYSDEC); H. Wilkie (NYSDEC); T. Kelly (NCDPW)

w/o enclosure

J. Lovejoy, NCDH

**NORTHROP GRUMMAN**

Electronics & Svstems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

May 21, 1998  
ETC98-141

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation - Building 03, Bethpage Site  
Area of Concern 27 - Scrap Metal Storage Shed  
Remediation End Point Sample Results**

Dear Mr. Farkas:

As a follow-up to our analytical data package for Area of Concern (AOC) 27, which was submitted to you on April 28, 1998 (file name: ETC 98-107), this letter presents Northrop Grumman Corporation's (Northrop Grumman) proposal for addressing residual concentrations of polynuclear aromatic hydrocarbons (PAHs) detected in Sidewall Soil Samples AOC 27A (3- to 5-ft) and AOC 27A (7- to 9-ft) at the referenced site.

As you recall, concentrations of several PAHs, specifically benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and dibenzo(a,h)anthracene, were detected in Sidewall Soil Samples AOC 27A (3 to 5 ft) and AOC 27A (7 to 9 ft) in excess of the Human Health Guidance Values specified in the Spill Technology and Remediation Series (STARS) Memo No. 1 - Petroleum-Contaminated Soil Guidance Policy (NYSDEC 1992). Concentrations of these compounds detected in TCLP analyses of these samples were less than the TCLP Extraction Guidance Values specified in the STARS Memo. Sample locations are shown on Figure 1.

Based on the results of the TCLP analyses conducted, impacts to groundwater from the residual PAH concentrations detected in Sidewall Soil Samples AOC 27A (3- to 5-ft and 7- to 9-ft) are not a concern. This is supported by the chemical properties of the PAHs detected, which have log  $K_{oc}$  values ranging from 5.60 to 6.64 indicating a strong affinity for adsorbing to the organic carbon content in soil.



S. Farkas  
May 21, 1998  
ETC98-141  
Page 2


Based on the results of the total analyses conducted, potential impacts to human health were identified for the residual PAH concentrations detected in Sidewall Soil Samples AOC 27A (3- to 5-ft and 7- to 9-ft). Because of the low vapor pressures, which range from  $9.59 \times 10^{-11}$  to  $5 \times 10^{-7}$ , of the specific PAHs detected, exposure by inhalation of vapors is not a human health concern. However, exposure by contact or accidental ingestion is a possible human health concern. To minimize human exposure to the residual PAHs, Northrop Grumman proposes to isolate the contaminated media by backfilling the excavated areas above the impacted media with up to 3-ft of clean backfill and replanting grass over the area. Covering the impacted area with up to 3-ft of clean backfill and planting grass over the area will isolate the residual contamination from human exposure even though decontamination of the area was not fully achieved. Furthermore, to ensure that future excavation is not undertaken in this area without the proper precautions, Northrop Grumman will place copies of a map showing the impacted area and tables summarizing residual contaminant concentrations with the property deed to be filed at the County Clerk's office.

We hope that this proposal satisfies any concerns that the New York State Department of Environmental Conservation may have regarding AOC 27. As this project is being conducted on a very tight schedule, your expedited review/response to this proposal would be appreciated.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
\_\_\_\_\_  
Larry V. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: S. Kaminski, NYSDEC; H. Wilkie, NYSDEC; T. Kelly, NCDPW;  
J. Lovejoy, NCDH; B. Mackay, NCDH; T. Mulvihill, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

May 21, 1998  
ETC98-134

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation - Building 03, Bethpage Site  
Area of Concern 20-24  
Remediation End Point Sample Results**

Enclosures: 1) End Point Soil Sample Location Drawing  
2) End Point Soil Sample Data

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting environmental remediation at the Bethpage Building 03 location for Areas of Concern (AOCs) that have significant exceedances of the TAGM 4046 soil criteria. One such location, AOC 20-24 - Former Drywell, was recently excavated to a depth of approximately sixteen (16) feet below grade surface (bgs). A sketch showing the excavated area and end point sample locations is provided in Enclosure 1.

Because AOC 20-24 was a drywell, sidewall samples were not collected. Previous work at the Bethpage site has shown that contamination does not migrate outside the confines of the drywell structure. An endpoint sample was collected, however, at the bottom of the excavation.

The end point sample results are presented in Enclosure 2 for your review and approval. The sample was analyzed, on a totals basis, for semi-volatile organic compounds (SVOCs) by method 8270 and for volatile organic compounds (VOCs) by method 8021. In addition, a TCLP (method 1311) procedure was conducted for which the extract was analyzed for SVOCs (method 8270). All analysis was conducted according to the Spill Technology and Remediation Series (STARS) Memo #1 - *Petroleum Contaminated Soil Guidance Policy*. The data indicates no exceedances of the STARS SVOCs guidance criteria. The endpoint sample results indicate no exceedances of the STARS criteria.

*S. Farkas*  
*May 21, 1998*  
*ETC98-134*  
*Page 2*

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils at AOC 20-24. The end point analysis results demonstrate that soils immediately adjacent to the excavated area do not exceed the STARS guidance criteria. It is therefore recommended that No Further Action is warranted at AOC 20-24.

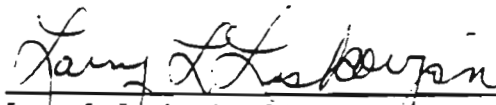
Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the remediation work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

***NORTHROP GRUMMAN CORPORATION***

  
\_\_\_\_\_  
Larry L. Leskovjan, Manager

Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
S. Kaminski, NYSDEC; H. Wilkie, NYSDEC, T. Mulvihill, NCDH;  
T. Kelly, NCDPW

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

May 21, 1998  
ETC98-143

Mr. Bruce Mackay  
Nassau County Department of Health  
240 Old Country Road  
Mineola, New York 11501-4250

Subject: **Northrop Grumman, Bethpage 105 Acre Navy Site  
Drywell and Miscellaneous Remediation  
Plant 03 - Floor Drain at KK1 to JJ2  
Plant 03 - Steam Pit Drain at JJ9 to HH10  
Plant 03 - Steam Pit Drain at DD26  
Plant 03 - Steam Pit Drain at DD36 to CC37  
Plant 03 - Compressor Drain #1 at N12 to M13  
Plant 03 - Drywell at JJ1 to HH2  
Remediation End Point Sample Results**

Enclosures: 1) End Point Soil Sample Location Drawings  
2) Plant 03 - Above Mentioned Drains and Compressor #1 -  
End Point Soil Sample Data.  
3) Plant 03 - Drywell at JJ1 to HH2 - End Point Soil Sample Data.

Dear Mr. Mackay:

As you know, Northrop Grumman has been conducting environmental closure activities on features found to be in violation of the UIC regulations. The table below summarizes the remediation depths and volumes of soil excavated from each feature. Remediation of a floor drain or steam pit drain consisted of excavating the soil directly beneath the floor drain using a flexible PVC hose connected to a vacuum truck. Sketches showing the location of these three features are provided in Enclosure 1.

Feature	Remediation Interval (feet bgs)	Volume of Soil Excavated (yards <sup>3</sup> )
Plant 03 - Floor Drain at KK1 to JJ2	0-7	≈0.07
Plant 03 - Steam Pit Drain at JJ9 to HH10	0-4	≈0.04
Plant 03 - Steam Pit Drain at DD26	0-4	≈0.04
Plant 03 - Steam Pit Drain at DD36 to CC37	0-4	≈0.04
Plant 03 - Compressor Drain #1 at N12 to M13	5-7.5	≈0.02
Plant 03 - Drywell at JJ1 to HH2	0-18	96

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108-143  
Page 2

An endpoint sample was collected at the bottom of each excavation and analyzed for RCRA metals, total petroleum hydrocarbons, semi volatile organics, and volatile organics. The endpoint data is presented in Enclosures 2 and 3 for your review and approval. The data does not indicate any exceedances of the TAGM criteria.

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils from the above mentioned UIC features. The end point analysis results demonstrate that soil immediately below the excavation does not exceed the TAGM criteria. It is therefore recommended that no further action is warranted at these six UIC features.

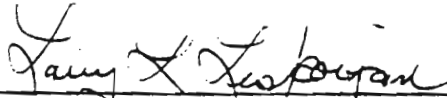
Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand or lean concrete and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the UIC closure work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



Larry M. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure

J. Kushwara (USEPA); S. Kaminski, NYSDEC (Albany); T. Mulvihill, NCDH, S. Farkas (NYSDEC); H. Wilkie (NYSDEC); T. Kelly (NCDPW)

w/o enclosure

J. Lovejoy, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

May 19, 1998  
ETC98-130

Mr. Bruce Mackay  
Nassau County Department of Health  
240 Old Country Road  
Mineola, New York 11501-4250

Subject: **Northrop Grumman, Bethpage 105 Acre Navy Site  
Drywell and Miscellaneous Remediation  
Plant 17South - Drywell O1  
Plant 10 - North Drywell  
Plant 17 North - Floor Drain in Warehouse #6  
Remediation End Point Sample Results**

- Enclosures: 1) End Point Soil Sample Location Drawings  
2) Plant 17South - Drywell O1 End Point Soil Sample Data  
3) Plant 10 - North Drywell End Point Soil Sample Data  
4) Plant 17North - Floor Drain in Warehouse #6

Dear Mr. Mackay:

As you know, Northrop Grumman has been conducting environmental closure activities on features found to be in violation of the UIC regulations. The table below summarizes the remediation depths and volumes of soil excavated from each subject feature. The Plant 10 north drywell was not remediated because preliminary sampling and analysis conducted below the drywell's invert did not detect any TAGM exceedances. As a result, unimpacted soils were excavated and stockpiled for reuse as backfill material. The endpoint sample was taken at the drywell invert which was determined in the field to be approximately 9 to 10 feet below grade surface (bgs). A sketch showing the location of these three features is provided in Enclosure 1.

Feature	Remediation Interval (feet)	Volume of Soil (yards <sup>3</sup> )
Plant 17S - Drywell O1	12-16	11.6
Plant 10 - North Drywell	0	0
Plant 17N - Floor Drain in #6	0-4	0.2

B. Mackay  
May 19, 1998  
ETC98-130  
Page 2

An endpoint sample was collected at the bottom of each excavation and analyzed for RCRA metals, total petroleum hydrocarbons, semi volatile organics, and volatile organics. The endpoint data is presented in Enclosures 2 through 4 for your review and approval. The data does not indicate any exceedances of the TAGM criteria.

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils from the above mentioned UIC features. The end point analysis results demonstrate that soils immediately below the excavation do not exceed the TAGM criteria. It is therefore recommended that no further action is warranted at these three UIC features.


Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the UIC closure work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
Larry L. Leskovjan, Manager  
Environmental Technology and Compliance

cc: w/enclosure  
J. Kushwara (USEPA); S. Kaminski, NYSDEC (Albany); T. Mulvihill, NCDH  
T. Kelly, NCDPW; S. Farkas (NYSDEC); H. Wilkie (NYSDEC)

w/o enclosure  
J. Lovejoy, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

May 14, 1998  
ETC98-127

Mr. Bruce Mackay  
Nassau County Department of Health  
240 Old Country Road  
Mineola, New York 11501-4250

Subject: **Northrop Grumman, Bethpage 105-Acre Navy Site  
Drywell and Miscellaneous Remediation  
Drywell 3-44  
Remediation End Point Sample Results**

Enclosures: 1) End Point Soil Sample Location Drawing  
2) End Point Soil Sample Data

Dear Mr. Mackay:

As you know, Northrop Grumman has been conducting environmental closure activities on features found to be in violation of the UIC regulations. One such feature, drywell 3-44, was recently excavated from 8 - 14 feet below grade surface (bgs). Approximately 17 cubic yards of material was excavated for proper off-site disposal. A sketch showing the location of drywell 3-44 is provided in Enclosure 1.

An endpoint sample was collected at the bottom of the excavation and analyzed for RCRA metals, total petroleum hydrocarbons, semi volatile organics, volatile organics, PCBs, herbicides, and pesticides. The endpoint data is presented in Enclosure 2 for your review and approval. The data does not indicate any exceedances of the TAGM criteria.

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils at drywell 3-44. The end point analysis results demonstrate that soil immediately below the excavation does not exceed the TAGM criteria. It is therefore recommended that no further action is warranted at drywell 3-44.



B. Mackay  
May 14, 1998  
ETC98-127  
Page 2

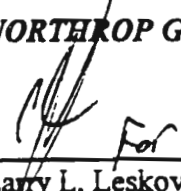
Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the UIC closure work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
\_\_\_\_\_  
Larry L. Leskovjan, Manager  
Environmental Technology and Compliance

cc: w/enclosure  
J. Kushwara, USEPA; S. Kaminski, NYSDEC (Albany); T. Mulvihill, NCDH

w/o enclosure  
J. Lovejoy, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3520

May 13, 1998  
ETC98-126

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation - Building 03, Bethpage Site  
Area of Concern 33-09 - Former Waste Accumulation Area  
Area of Concern 34 - Old Autoclave Area  
Area of Concern 33-11/12 - Former Waste Accumulation Area  
Area of Concern 6 - Chem Mill Clean Area  
Remediation End Point Sample Results**

Enclosures: 1) End Point Soil Sample Location Drawings  
2) End Point Soil Sample Data for AOC 33-09  
3) End Point Soil Sample Data for AOC 34  
4) End Point Soil Sample Data for AOC 33-11/12  
5) End Point Soil Sample Data for AOC 6

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting environmental remediation at the Bethpage Building 03 location for Areas of Concern (AOCs) that have significant exceedances of the TAGM 4046 soil criteria. One such location, AOC 33-09 - Former Waste Accumulation Area, was recently excavated to depths of eight and twelve feet below grade surface (bgs). Another location, AOC 34 - Old Autoclave Area, was excavated to depths of thirty and sixteen feet bgs. Similarly, AOC 33-11/12 - Former Waste Accumulation Area, was also excavated to depths of eight and ten feet. Lastly, AOC 6 - Chem Mill Clean Area, was excavated to depths of four and twelve feet bgs. Sketches showing the excavated areas and end point sample locations for AOCs 33-09, 34, 33-11/12, and 6 are provided in Enclosure 1.

In a previous meeting, we agreed to sample and analyze the side wall samples prior to excavation. This sampling methodology was chosen to ensure that the horizontal extent of impacted soil for each AOC was accurately defined. A few sidewall samples at the 2'-4' interval for AOC 33-11/12 were not collected because the sidewall sample locations were taken within a 5-foot thick concrete floor slab.

The following Table illustrates the end point analysis conducted for each of the AOCs remediated. The end point sample results are presented for your review in Enclosures 2 through 4.

AOC	Analysis	Method Number
33-09	VOCs	8270
	SVOCs	8240
34	PCBs	8082
	SVOCs	8270
33-11/12	Priority Pollutant Metals	6010/7471
	SVOCs	8270
6	Priority Pollutant Metals	6010/7471

#### AOC 33-09 - Former Waste Accumulation Area

The end point sample results for AOC 33-09 are provided in Enclosure 2. There are no VOC exceedances of the TAGM criteria. There are, however, minor exceedances of individual SVOCs constituents in sidewall sample AOC 33-09C and floor sample AOC 33-09M. Because the total concentration of carcinogenic SVOCs are well below the TAGM criteria of 10,000 µg/kg for these samples, the environmental impacts are negligible.

#### AOC 34- Old Autoclave

The end point sample results for AOC 34 are provided in Enclosure 3. The endpoint data does not indicate any PCBs or SVOCs exceedances of the TAGM criteria.

#### AOC 33-11/12 - Former Waste Accumulation Area

The end point sample results for AOC 33-11/12 are provided in Enclosure 4. There are no priority pollutant metal exceedances of the TAGM criteria. Sample AOC 33-12A<sub>12</sub> (2.5'-4') exhibited individual exceedances of the following SVOCs: benzo (a) anthracene, chrysene, benzo (b) fluoranthene, benzo (k) fluoranthene, and benzo (a) pyrene. However, the average concentration of these constituents for the 2-4 foot interval was well below each of the individual SVOC TAGM criteria. It is important to note that the extract for samples AOC 33-11/12 C<sub>FL</sub>, E<sub>FL</sub>, I<sub>FL</sub>, and H<sub>FL</sub> was re-analyzed after performing a silica gel clean-up procedure (method 3630C). This clean-up procedure was utilized to reduce the method detection limit (MDL) associated with the polycyclic aromatic hydrocarbons (PAHs). It is believed that heavy end hydrocarbons caused interference during the initial scan of these samples resulting in a MDL that was about two orders of magnitude above acceptable limits.

S. Farkas  
May 13, 1998  
ETC98-126  
Page 3

AOC 6 - Chem Mill Clean Area

The end point sample results for AOC 6 are provided in Enclosure 5. The data indicates that there is only one exceedance of the priority pollutant metal TAGM criteria. Floor sample AOC 6F exhibited a concentration of chromium of 250 mg/kg. As a result of this exceedance, the sample was re-analyzed for hexavalent chromium. The data on page 3 of Enclosure 5 shows that the hexavalent chromium concentration of sample AOC 6F is 4.8 mg/kg. Since the hexavalent chromium concentration is well below the TAGM criteria of 50 mg/kg for total chromium, no further action is warranted for AOC 6.

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils at AOCs 33-09, 34, 33-11/12, and 6. The end point analysis results demonstrate that soils immediately adjacent to the excavated areas do not exceed the TAGM criteria. It is therefore recommended that No Further Action is warranted at AOCs 33-09, 34, 33-11/12, and 6.

Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation areas with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the remediation work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
Larry L. Deskovjan, Manager

Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
S. Kaminski, NYSDEC; H. Wilkie, NYSDEC; T. Mulvihill, NCDH; T. Kelly, NCDPW

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

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72  
**York State Department of Environmental Conservation**  
Division of Solid & Hazardous Materials, Region One  
Building 40, SUNY, Stony Brook, New York 11790-2386  
Phone: (516) 444-0375 FAX: (516) 444-0231



May 13, 1998

Mr. Larry Leskovjan, Manager  
Environmental, Health & Safety  
M/S D16-001  
Northrup Grumman Corporation  
South Oyster Bay Rd.  
Bethpage, NY 11714-3583

RE: Authorization to Backfill Various Areas of Concern  
Grumman-Bethpage NYD002047967

Dear Mr. Leskovjan:

The Division of Solid and Hazardous Materials (DSHM) has completed its review of the following submissions concerning remediation of various Areas of Concern (AOCs) located within the Naval Weapons Industrial Reserve Plant at the Northrup Grumman Corp. in Bethpage:

Date of Letter	Description
3/24/98	Plant 3, AOC 1-29
3/24/98	Plant 9, AOC 1-30
3/31/98	Plant 10, AOC 3
3/31/98	Plant 17 North AOCs, 2 and 12
4/01/98	Plant 3, AOC 1-05/06
4/14/98	Plant 3, AOC 13
4/14/98	Plant 3, AOC 33-19
4/28/98	Plant 3, AOC 19
4/28/98	Plant 3, AOC 14



Based on our review of the sampling data, inspection of the designated areas and discussions with your engineers, the DSHM approves your requests for no further action based upon achievement of TAGM criteria and hereby approves the backfilling of the excavations associated with the AOCs listed.

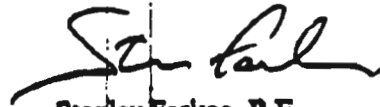
A-59

Ledy Leskovjan  
May 11, 1998

2.

Please advise the Department of your schedule for filling these areas. We also recommend your receiving approval from the Nassau County Department of Health. If you have any questions, please do hesitate to contact me at (516) 444-0379 or Mr. Henry Wilkie at (516) 457-9255.

Yours truly,



Stanley Farkas, P.E.  
Environmental Engineer II

SF:ek

cc: A. Postyn, Northrup Grumman  
S. Kaminski, NYSDEC  
H. Wilkie, NYSDEC  
J. Lovejoy, NCDH

A-60

\*\*\*END\*\*\*

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

April 29, 1998  
ETC98-110

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation - Building 03, Bethpage Site  
Area of Concern 2 - Cadmium Plating Area  
Remediation End Point Sample Results**

Enclosure 1) End Point Soil Sample Location Drawing  
2) End Point Soil Sample Data.

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting environmental remediation at the Bethpage Building 03 location for Areas of Concern (AOCs) that have significant exceedances of the TAGM 4046 soil criteria. One such location, AOC 2 - Cadmium Plating Area, was recently excavated to a depth of approximately fourteen (14) feet below grade surface (bgs). A sketch showing the excavated area and end point sample locations is provided in Enclosure 1.

In a previous meeting, we agreed to sample and analyze the side wall samples prior to excavation. This sampling methodology was chosen to ensure that the horizontal extent of impacted soil, for each AOC, was accurately defined. It should be noted, however, that sample AOC 02D (10'-12') was not collected during insitu sidewall sampling due to geoprobe refusal.

The end point sample results are presented in Enclosure 2. All samples were analyzed for priority pollutant metals by methods 6010/7471. The data indicates that there are no exceedances of the TAGM criteria except for one sidewall sample. Chromium was detected at a concentration of 63 mg/kg in sample AOC 02I (2'-4'). Since this exceedance is minor, we believe additional excavation is not warranted.



*S. Farkas*  
*April 29, 1998*  
*ETC98-110*  
*Page 2*

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils at AOC 2. With only one exception, the end point analysis results demonstrate that soils immediately adjacent to the excavated areas do not exceed the TAGM criteria. Because the one exceedance is minor in nature, we believe the environmental impacts are minimal. It is therefore recommended that no further action is warranted at AOC 2.

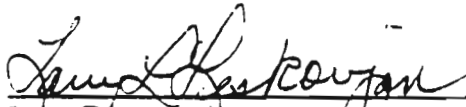
Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the remediation work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



Larry D. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
S. Kaminski, NYSDEC; H. Wilkie, NYSDEC; T. Mulvihill, NCDH;  
T. Kelly, NCDPW

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Cluster Bay Road  
Bethpage, New York 11714-3580

April 28, 1998  
ETC98-107

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject:           **Northrop Grumman Corporation - Building 03, Bethpage Site**  
                  **Area of Concern 9 - Sulfuric Acid Anodize**  
                  **Area of Concern 19 - Historic Drywell**  
                  **Area of Concern 27 - Scrap Metal Storage Shed**  
                  **Area of Concern 14 - Old Chem Mill Line**  
                  **Remediation End Point Sample Results**

Enclosure        1) End Point Soil Sample Location Drawings  
                  2) End Point Soil Sample Data.

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting environmental remediation at the Bethpage Building 03 location for Areas of Concern (AOCs) that have significant exceedances of the TAGM 4046 soil criteria. One such location, AOC 9 - Sulfuric Acid Anodize, was recently excavated to varying depths of approximately four, eight, and ten feet below grade surface (bgs). Another location, AOC 19 - Historic Drywell, was also recently excavated to a depth of about 22 feet bgs. Similarly, AOC 27 - Scrap Metal Storage Shed, was excavated to a depth of about 16 feet bgs. Lastly, two areas within AOC 14 - Old Chem Mill Line, were also excavated to depths of six and ten feet bgs. Sketches showing the excavated areas and end point sample locations, for AOCs 9, 19, 27, and 14 are provided in Enclosure 1.

In a previous meeting, we agreed to sample and analyze the side wall samples prior to excavation. This sampling methodology was chosen to ensure that the horizontal extent of impacted soil, for each AOC, was accurately defined. In most cases, this sampling practice was followed except where the excavations were located in close proximity to the building foundation. For these instances, the sidewall samples adjacent to building foundations were not collected.

The following Table illustrates the end point analysis conducted for each of the AOCs remediated. The end point sample results are presented for your review in Enclosure 2.

AOC	Analysis	Method Number
9	Priority Pollutant Metals	6010/7471
19	SVOCs	8270
	Priority Pollutant Metals	6010/7471
	VOCs	8240
27	STARS VOCs (Total & TCLP)	8021
	STARS SVOCs (Total & TCLP)	8270
14	Priority Pollutant Metals	6010/7471

#### AOC 9 - Sulfuric Acid Anodize

The end point analysis results, presented in Enclosure 2, indicate no exceedances of the TAGM criteria.

#### AOC 19 - Historic Drvwell

The SVOC end point analysis results show slight exceedances of individual constituents. However, the values for total carcinogenic SVOCs and overall total SVOCs were well below the levels presented in TAGM 4046 of 10,000 µg/kg and 500,000 µg/kg, respectively. The end point results for priority pollutant metals and VOC analysis indicated no exceedances of the TAGM criteria.

#### AOC 27 - Scrap Metal Storage Shed

The end point results indicated no exceedances of the STARS VOCs Human Health Guidance Values (totals basis). There were, however, minor exceedances of individual STARS SVOCs Human Health Guidance Values (totals basis). It is important to note that the value of total carcinogenic SVOCs were well below the TAGM criteria of 10,000 µg/kg. In addition, all STARS TCLP results for VOCs and SVOCs were below the method detection limits.

#### AOC 14 - Old Chem Mill Line

All end point sample results were below the TAGM criteria with the exception of two locations. Zinc was detected in sidewall sample AOC 14NE C (2') at a concentration of 110 mg/kg. Chromium was also detected in floor sample AOC 14 NE E at a concentration of 68 mg/kg. Since these exceedances are minor, No Further Action is recommended for AOC 14.

ETC98-107

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In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils at AOCs 9, 19, 27, and 14. With only two exceptions (AOC 14), the end point analysis results demonstrate that soils immediately adjacent to the excavated areas do not exceed the TAGM criteria. Because the two exceedances at AOC 14 are minor in nature, we believe the environmental impacts are minimal. It is therefore recommended that No Further Action is warranted at AOCs 9, 19, 27, and 14.

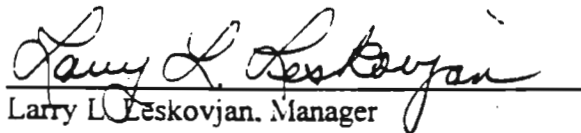
Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation areas with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the remediation work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure

S. Kaminski, NYSDEC; H. Wilkie, NYSDEC; T. Mulvihill, NCDH; T. Kelly, NCDPW

w/o enclosure

J. Lovejoy, NCDH; B. Mackay, NCDH

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**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

April 14, 1998  
ETC98-097

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation - Building 03, Bethpage Site  
Area of Concern 13 - Former Honeycomb Pretreatment  
Area of Concern 33-19 - Former Waste Accumulation Area  
Remediation End Point Sample Results**

Enclosures: 1) End Point Soil Sample Location Drawings  
2) End Point Soil Sample Data

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting environmental remediation at the Bethpage Building 03 location for Areas of Concern (AOCs) that have significant exceedances of the TAGM 4046 soil criteria. One such location, AOC 13 - Former Honeycomb Pretreatment, was recently excavated to a depth of approximately twelve (12) feet below grade surface (bgs). Another location, AOC 33-19 - Former Waste Accumulation Area, was also recently excavated to a depth of about ten (10) feet bgs. Sketches showing the excavated areas and end point sample locations for AOCs 13 and 33-19 are provided in Enclosure 1.

In a previous meeting, we agreed to sample and analyze the side wall samples prior to excavation. This sampling methodology was chosen to ensure that the horizontal extent of impacted soil for each AOC was accurately defined.

All end point samples for AOC 13 were analyzed for priority pollutant metals by methods 6010/7471. Similarly, the end point samples for AOC 33-19 were analyzed for semi-volatile organic compounds (SVOCs) by method 8270. The end point sample results are presented for your review in Enclosure 2. The data indicates that there are no exceedances of the TAGM criteria.

In summary, Northrop Grumman has effectively removed, transported, and disposed of impacted soils at AOCs 13 and 33-19. The end point analysis results demonstrate that soils immediately adjacent to the excavated areas do not exceed the TAGM criteria. It is therefore recommended that No Further Action is warranted at AOCs 13 and 33-19.

*S. Farkas*  
*April 14, 1998*  
*ETC98-097*  
*Page 2*

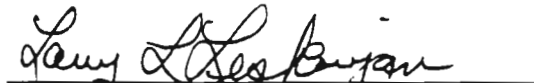
Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation areas with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the remediation work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

***NORTHROP GRUMMAN CORPORATION***

  
Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
T. John, NYSDEC; S. Kaminski, NYSDEC; T. Mulvihill, NCDH; T. Kelly, NCDPW  
D. Langer, Beveridge & Diamond, P.C.

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

April 1, 1998  
ETC98-090

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation - Building 03, Bethpage Site  
Area of Concern 1-05/06  
Remediation End Point Sample Results**

Enclosures: 1) End Point Soil Sample Location Drawing  
2) End Point Soil Sample Data

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting environmental remediation at the Bethpage Building 03 location for Areas of Concern (AOCs) that have significant exceedances of the TAGM 4046 soil criteria. One such location, AOC 1-05/06, which was associated with a paint booth, was recently excavated to a depth of approximately four (4) feet below grade surface (bgs). A sketch showing the excavated area and end point sample locations is provided in Enclosure 1.

Because of the shallow depth of excavation, side wall samples were collected along with the floor samples after the soil had been excavated.

The end point sample results are presented in Enclosure 2. All samples were analyzed for priority pollutant metals by methods 6010/7471. The data indicates that there are no exceedances of the TAGM criteria.

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils at AOC 1-05/06. The end point analysis results demonstrate that soils immediately adjacent to the excavated area do not exceed the TAGM criteria. It is therefore recommended that No Further Action is warranted at AOC 1-05/06.



S. Farkas  
April 1, 1998  
ETC98-090  
Page 2

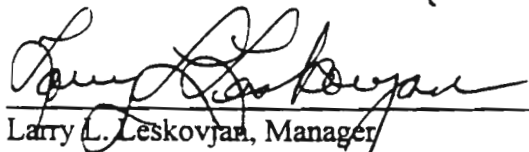
Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the remediation work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
S. Kaminski, NYSDEC (Albany); T. Mulvihill, NCDH; T. Kelly, NCDPW  
D. Langer, Beveridge & Diamond, P.C.

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

March 31, 1998  
ETC98-087

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation  
Building 17 North, Bethpage Site  
Areas of Concern 2 and 12  
Remediation End Point Sample Results**

Enclosures: 1) End Point Soil Sample Location Drawings  
2) End Point Soil Sample Data for AOC 2.  
3) End Point Soil Sample Data for AOC 12.

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting environmental remediation at the Bethpage Building 17 North location for two Areas of Concern (AOC) that have significant exceedances of the TAGM 4046 soil criteria. AOC 2, which was associated with a former oil barrel storage area at Warehouse 4, was recently excavated to a depth of approximately six (6) feet below grade surface (bgs). AOC 12, which was associated with a historic drum storage area north of Warehouse 8, was also excavated to an approximate depth of four (4) feet bgs. Sketches showing the excavated areas and end point sample locations are provided in Enclosure 1.

Because of the shallow depth of excavation, side wall samples in both areas were collected concurrently with the floor samples after the soil had been excavated.

For AOC 2 all end point samples were analyzed for priority pollutant metals (methods 6010/7471) and semi-volatile organic compounds (SVOCs) by method 8270. The end point sample results are provided for AOC 2 in Enclosure 2. All end point results were less than the TAGM criteria except for one location. Floor sample SS-11 exhibited concentrations of arsenic at 44.2 mg/kg and several SVOCs which exceeded the individual TAGM criteria. As a result, an additional three (3) feet of soil, across an area 6' by 10', was excavated around floor sample SS-11. After additional soil was excavated, another floor end point sample was

*S. Farkas*  
*March 31, 1998*  
*ETC98-087*  
*Page 2*

collected in the immediate vicinity of SS-11 and analyzed for arsenic (6010) and SVOCs (8270). The subsequent end point sample (SS-11-02) did not exhibit any exceedances of the TAGM criteria.

All end point samples for AOC 12 were analyzed for priority pollutant metals (methods 6010/7471), polychlorinated biphenyls (PCBs) by method 8080, volatile organic compounds (VOCs) by method 8240, and SVOCs by method 8270. Chromium was detected in side wall sample SSW-1 at a concentration of 87.8 mg/kg, which exceeded the TAGM criteria. Arsenic and trichloroethylene were detected in side wall sample SSW-3 at concentrations of 17.6 mg/kg and 1310 µg/kg, respectively. Side wall sample SSW-5 exhibited elevated levels of arsenic and chromium at concentrations of 15.1 mg/kg and 58.8 mg/kg, respectively. Arsenic was detected in floor sample SS-8 at a concentration of 23.8 mg/kg, which exceeded the TAGM criteria. Floor sample SS-13 exhibited elevated levels of arsenic and PCBs at concentrations of 24.8 mg/kg and 31.6 mg/kg, respectively. As a result of these exceedances, an additional three (3) feet of soil, across an area 20' by 30', was excavated in the vicinity of sample locations SSW-3, SSW-5, SS-8, and SS-13. Soil in the vicinity of sample SSW-1 was only excavated three (3) feet deep across an area 3' by 30' because further excavation to the west would have jeopardized an adjacent fiber optic line. Subsequently, additional end point samples were collected and analyzed for their respective exceedances as stated above. The additional end point samples taken at locations SSW-1, SSW-3, SSW-5, SS-8, and SS-13 did not exhibit any exceedances of the TAGM criteria.

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils at AOCs 2 and 12 located at Plant 17 North. The end point analysis results demonstrate that soils immediately adjacent to the excavated areas do not exceed the TAGM criteria. Upon verbal approval from your office, Northrop Grumman backfilled the excavated areas with certified clean bank-run sand and restored the areas to match existing conditions. It is therefore requested that a formal written approval be issued by your office based on visual site inspections and the data presented in this correspondence.

A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office upon completion.

S. Farkas  
March 31, 1998  
ETC98-087  
Page 3

If you have any questions, please call me at 516/575-2333 or A. Postyn. of this office. at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



---

Larry Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
S. Kaminski, NYSDEC (Albany); T. Mulvihill, NCDH; T. Kelly, NCDPW  
D. Langer, Beveridge & Diamond, P.C.  
w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

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**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

March 31, 1998  
ETC98-086

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation  
Building 10, Bethpage Site  
Area of Concern 3 - Wet Chemistry Laboratory**

Enclosures: 1) End Point Soil Sample Location Drawing  
2) End Point Soil Sample Data for AOC 3

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting environmental remediation at the Bethpage Building 10 location, in accordance with the recommendations set out in the Phase II Environmental Assessment Report dated March 1998 and submitted to the NYSDEC on March 9, 1998.

After completing an extensive Phase II sampling program at AOC 3 (Wet Chemistry Laboratory), Northrop Grumman initiated an excavation project to remediate elevated levels of mercury and semi-volatile organic compounds (SVOCs) present in the soil. The area of excavation is shown in the drawing provided in Enclosure 1. The concrete floor from the Wet Chemistry Laboratory was demolished and removed to a licensed waste landfill. Steel "H" beams were advanced to a depth of about ten (10) feet below grade surface (bgs) to provide support of the wooden sheeting. Wood lagging was placed and secured between the H-beams during soil removal to provide sheeting for the side walls. At the completion of soil excavation, approximately 50 cubic yards of impacted soil was removed from AOC 3 to a nominal depth of eight (8) feet bgs.

During soil excavation, sidewall endpoint soil samples were taken from the locations shown on the drawing provided in Enclosure 1. Sidewall samples were collected from beneath and in back of the wood lagging at depths of 3 and 6 feet bgs. Two endpoint soil samples were also taken from the bottom of the excavation as shown in Enclosure 1. All endpoint samples were analyzed for SVOCs by method 8270 and for mercury by method 7471. The endpoint soil analysis results are provided for your review in Enclosure 2.

S. Farkas  
March 31, 1998  
ETC98-086  
Page 2

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Several end point samples exhibited individual SVOCs above the method detection limits. However, the total carcinogenic SVOCs, or CaPAHs, were well below the TAGM criteria of 10,000 µg/kg. Mercury was detected in samples SSS-03, SSW-03 and SSN-03 at concentrations of 2.2 mg/kg, 0.36 mg/kg, and 0.36 mg/kg, respectively.

As a result of these three TAGM exceedances, Northrop Grumman instructed the laboratory to re-analyze a different aliquot of soil from the original soil samples for mercury. The results, as indicated in Enclosure 2, were nearly duplicated. The TCLP test by method 1311 was then conducted for samples SSS-03, SSW-03 and SSN-03 to determine if the mercury present in the soil could possibly leach and impact groundwater. Subsequent analysis of the leachate indicated that the levels of mercury were well below the regulatory limit. The TCLP results are also provided in Enclosure 2 for your review.

It is also important to note that following backfilling, Northrop Grumman will fully restore the concrete floor in the vicinity of the Wet Chemistry Laboratory. The concrete slab should eliminate the potential for mercury found in the soils to migrate. Due to the proximity of building foundations and adjacent walls, added excavation would jeopardize the structural integrity of the building. For the reasons provided above, Northrop Grumman advocates No Further Action regarding the investigation or remediation of soil in the vicinity of AOC 3 located in Plant 10.

In summary, Northrop Grumman conducted a thorough Phase II investigation in the vicinity of AOC 3 in an attempt to vertically and horizontally delineate concentrations of constituents that were above the TAGM criteria. An aggressive excavation program was completed that removed impacted soils to a depth of approximately 8 feet bgs. Although some end point soil samples were shown to have mercury levels that exceeded the TAGM criteria, we believe this is not an environmental concern because the TCLP values for mercury were below the regulatory limit. The restored concrete slab will minimize the migration potential of mercury present in the soil. It is therefore recommended that no further action is warranted in the vicinity of AOC 3 (Wet Chemistry Laboratory).

Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand and restore the concrete slab to match existing conditions. A complete engineering report documenting all field activities and laboratory data analysis shall be sent to your office at the completion of this project.

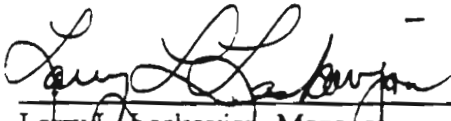
*S. Farkas*  
*March 31, 1998*  
*ETC98-086*  
*Page 3*

We have put together an ambitious schedule for the completion of the remediation work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn. of this office. at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
\_\_\_\_\_  
Larry L. Leskovjan, Manager  
Environmental Technology and Compliance

cc: w/enclosure  
T. John, NYSDEC; S. Kaminski, NYSDEC; T. Mulvihill, NCDH; T. Kelly, NCDPW  
D. Langer, Beveridge & Diamond, P.C.

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH



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**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

March 30, 1998  
ETC98-083

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation  
Buildings 10 and 17 South, Bethpage  
Areas of Concern (AOCs) 1 partial, 4 partial, 6 partial, and 8  
Recommendations for No Further Action**

Enclosures: 1) Soil Boring Location Drawings of Area of Concerns that are  
Recommended For No Further Action  
2) Phase II Soil and Concrete Sample Analysis Data for the  
Subject AOCs

Dear Mr. Farkas:

As you know, Northrop Grumman has completed a Phase II environmental sampling program at Buildings 10 and 17 South. The Phase II Final Report for Buildings 10 and 17 South was submitted to the NYSDEC on March 9, 1998.

Based upon a review of the Phase II soil data, Northrop Grumman is currently remediating 2 AOC/locations that were shown to have significant exceedances of the soil criteria established in TAGM No. HWR-94-4046 dated January 24, 1994. Soil criteria also includes the proposed (April 1995) TAGM amendment identifying new soil guidelines (concentrations) for chromium, cadmium, and total carcinogenic semivolatile organic compounds. There are, however, a few AOC/locations that have only minor exceedances of the TAGM criteria for which Northrop Grumman recommends No Further Action.

The purpose of this correspondence is to summarize the analytical data for the AOC/locations that Northrop Grumman proposes no further action. In addition, technical justifications are presented for each AOC to support a recommendation for No Further Action.

S. Farkas  
ETC98-083  
March 30, 1998  
Page 2

The drawing provided in Enclosure 1 illustrates the sample locations for the subject AOC/locations. Primary sampling locations are denoted by a triangle and delineation samples are represented by a "X". The corresponding data is provided in Enclosure 2 for your review.

#### **Area of Concern 1 - Former Drywells Outside of Plant 10**

One volatile organic compound (VOC), 1,2-dichloroethene, was detected in sample 10-01A-1 (12'-14') at a concentration of 740  $\mu\text{g}/\text{kg}$  which is above the TAGM criteria. This compound was not identified above its method detection limit (69  $\mu\text{g}/\text{kg}$ ) during subsequent confirmation sampling and analysis of the same soil interval.

#### **Area of Concern 4 - Stained Floor in the Machine Shop of Plant 10**

Arsenic and chromium were detected in sample 10-04B-1 (0-2') at concentrations of 13.5 mg/kg and 68.2 mg/kg, respectively. Delineation sampling and analysis conducted at four borings advanced five feet from the original sampling location did not detect arsenic and chromium above the TAGM criteria.

#### **Area of Concern 6 - Former Stormwater Drywells Outside of the Plant 17 South Warehouses**

Zinc and Polychlorinated Biphenyls (PCBs) were detected in sample 17S-06A-1 (12'-14') at concentrations of 235 mg/kg and 18,000  $\mu\text{g}/\text{kg}$ , respectively, which exceeded the TAGM criteria. Soil boring 17S-6J was advanced immediately adjacent to the primary sampling location (17S-06A) and subsequent analysis did not detect PCBs at concentrations that exceeded the TAGM criteria. However, zinc was detected in soil sample 17S-06J-S-1 (12'-14') at a concentration of 144 mg/kg. Because zinc is not considered a hazardous constituent per Appendix 23 of 6NYCRR Part 371, further work was not considered to be warranted.

Selenium was detected in sample 17S-6BA-S-2 (14'-16'), at a concentration of 8.5 mg/kg, which exceeded the TAGM criteria. No delineation sampling was conducted at this location.

Nickel and selenium were detected in sample 17S-6KA-S-1 (4'-6'), at concentrations of 54.8 mg/kg and 10.2 mg/kg, respectively. These TAGM exceedances were considered to be minor. Consequently, no delineation sampling was conducted at this location.

It is important to note that Northrop Grumman is planning to remediate drywell locations 17S-06E and 17S-06FA to a depth of about 16 feet below grade surface (bgs).

#### **Area of Concern 8 - Former Sanitary Leaching Chambers East of Warehouses L and M at Plant 17 South**

Arsenic was found to be present in a narrow interval of soil approximately 32 feet below grade near the Former Leaching Chambers east of Warehouses L and M (AOC 8). Several samples of soil contained arsenic above the TAGM criteria of 12 µg/kg. Although arsenic was detected at concentrations above the TAGM criteria, no further action is recommended at this AOC for the following reasons: a) the concentrations of arsenic do not greatly exceed the TAGM criteria (maximum of 21.8 mg/kg vs. 12 mg/kg TAGM); b) samples above and below the arsenic-containing intervals were not impacted; and c) the relative depth of these arsenic exceedances should eliminate migration.

In summary, Northrop Grumman conducted a thorough Phase II investigation in an attempt to vertically and horizontally delineate concentrations of constituents that were above the TAGM criteria. Upon a review of the analytical data, it is noticed that there are some minor exceedances of the TAGM criteria that are not recommended for remediation. In most every case, these minor exceedances are isolated for which "clean samples" exist immediately below and adjacent to the impacted sample. Although individual SVOCs constituents were shown to exceed their respective TAGM criteria, the total carcinogenic SVOCs, or CaPAHs, were, in almost all samples, less than 10,000 µg/kg. In addition, zinc exceedances were delineated, but because zinc is not considered to be a hazardous constituent per Appendix 23 of 6NYCRR Part 371, remediation was not considered to be warranted. In general, we believe these minor TAGM exceedances do not represent a significant environmental concern.

It is also important to note that at least a six-inch concrete slab exists over all interior AOCs/locations. The existing interior concrete slab will practically eliminate migration of constituents present in the soil that were found to exceed the TAGM criteria.

*S. Farkas*  
ETC98-083  
March 30, 1998  
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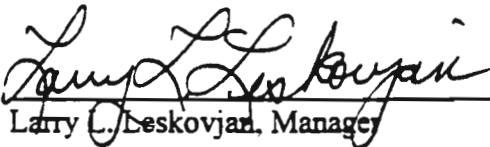
Upon your review of the attached data and these recommendations, it is hereby requested that a No Further Action letter be issued by your office for these subject AOCs/locations. A complete Plant 10 and 17 South Phase II Report, which includes analysis results for all samples collected, shall be sent for your files upon completion.

We have put together an ambitious schedule for the completion of the remediation work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



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Larry L. Deskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
S. Kaminski, NYSDEC (Albany); T. Mulvihill, NCDH; T. Kelly, NCDPW;  
D. Langer, Beveridge & Diamond, P.C.

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

March 30, 1998  
ETC98-083

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation  
Buildings 10 and 17 South, Bethpage  
Areas of Concern (AOCs) 1 partial, 4 partial, 6 partial, and 8  
Recommendations for No Further Action**

Enclosures: 1) Soil Boring Location Drawings of Area of Concerns that are  
Recommended For No Further Action  
2) Phase II Soil and Concrete Sample Analysis Data for the  
Subject AOCs

Dear Mr. Farkas:

As you know, Northrop Grumman has completed a Phase II environmental sampling program at Buildings 10 and 17 South. The Phase II Final Report for Buildings 10 and 17 South was submitted to the NYSDEC on March 9, 1998.

Based upon a review of the Phase II soil data, Northrop Grumman is currently remediating 2 AOC/locations that were shown to have significant exceedances of the soil criteria established in TAGM No. HWR-94-4046 dated January 24, 1994. Soil criteria also includes the proposed (April 1995) TAGM amendment identifying new soil guidelines (concentrations) for chromium, cadmium, and total carcinogenic semivolatile organic compounds. There are, however, a few AOC/locations that have only minor exceedances of the TAGM criteria for which Northrop Grumman recommends No Further Action.

The purpose of this correspondence is to summarize the analytical data for the AOC/locations that Northrop Grumman proposes no further action. In addition, technical justifications are presented for each AOC to support a recommendation for No Further Action.

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The drawing provided in Enclosure 1 illustrates the sample locations for the subject AOC/locations. Primary sampling locations are denoted by a triangle and delineation samples are represented by a "X". The corresponding data is provided in Enclosure 2 for your review.

#### **Area of Concern 1 - Former Drywells Outside of Plant 10**

One volatile organic compound (VOC), 1,2-dichloroethene, was detected in sample 10-01A-1 (12'-14') at a concentration of 740 µg/kg which is above the TAGM criteria. This compound was not identified above its method detection limit (69 µg/kg) during subsequent confirmation sampling and analysis of the same soil interval.

#### **Area of Concern 4 - Stained Floor in the Machine Shop of Plant 10**

Arsenic and chromium were detected in sample 10-04B-1 (0-2') at concentrations of 13.5 mg/kg and 68.2 mg/kg, respectively. Delineation sampling and analysis conducted at four borings advanced five feet from the original sampling location did not detect arsenic and chromium above the TAGM criteria.

#### **Area of Concern 6 - Former Stormwater Drywells Outside of the Plant 17 South Warehouses**

Zinc and Polychlorinated Biphenyls (PCBs) were detected in sample 17S-06A-1 (12'-14') at concentrations of 235 mg/kg and 18,000 µg/kg, respectively, which exceeded the TAGM criteria. Soil boring 17S-6J was advanced immediately adjacent to the primary sampling location (17S-06A) and subsequent analysis did not detect PCBs at concentrations that exceeded the TAGM criteria. However, zinc was detected in soil sample 17S-06J-S-1 (12'-14') at a concentration of 144 mg/kg. Because zinc is not considered a hazardous constituent per Appendix 23 of 6NYCRR Part 371, further work was not considered to be warranted.

Selenium was detected in sample 17S-6BA-S-2 (14'-16'), at a concentration of 8.5 mg/kg, which exceeded the TAGM criteria. No delineation sampling was conducted at this location.

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*ETC98-083*  
*March 30, 1998*  
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Nickel and selenium were detected in sample 17S-6KA-S-1 (4'-6'), at concentrations of 54.8 mg/kg and 10.2 mg/kg, respectively. These TAGM exceedances were considered to be minor. Consequently, no delineation sampling was conducted at this location.

It is important to note that Northrop Grumman is planning to remediate drywell locations 17S-06E and 17S-06FA to a depth of about 16 feet below grade surface (bgs).

**Area of Concern 8 - Former Sanitary Leaching Chambers East of Warehouses L and M at Plant 17 South**

Arsenic was found to be present in a narrow interval of soil approximately 32 feet below grade near the Former Leaching Chambers east of Warehouses L and M (AOC 8). Several samples of soil contained arsenic above the TAGM criteria of 12 µg/kg. Although arsenic was detected at concentrations above the TAGM criteria, no further action is recommended at this AOC for the following reasons: a) the concentrations of arsenic do not greatly exceed the TAGM criteria (maximum of 21.8 mg/kg vs. 12 mg/kg TAGM); b) samples above and below the arsenic-containing intervals were not impacted; and c) the relative depth of these arsenic exceedances should eliminate migration.

In summary, Northrop Grumman conducted a thorough Phase II investigation in an attempt to vertically and horizontally delineate concentrations of constituents that were above the TAGM criteria. Upon a review of the analytical data, it is noticed that there are some minor exceedances of the TAGM criteria that are not recommended for remediation. In most every case, these minor exceedances are isolated for which "clean samples" exist immediately below and adjacent to the impacted sample. Although individual SVOCs constituents were shown to exceed their respective TAGM criteria, the total carcinogenic SVOCs, or CaPAHs, were, in almost all samples, less than 10,000 µg/kg. In addition, zinc exceedances were delineated, but because zinc is not considered to be a hazardous constituent per Appendix 23 of 6NYCRR Part 371, remediation was not considered to be warranted. In general, we believe these minor TAGM exceedances do not represent a significant environmental concern.

It is also important to note that at least a six-inch concrete slab exists over all interior AOCs/locations. The existing interior concrete slab will practically eliminate migration of constituents present in the soil that were found to exceed the TAGM criteria.



S. Farkas  
ETC98-083  
March 30, 1998  
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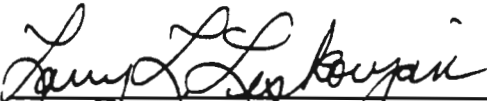
Upon your review of the attached data and these recommendations, it is hereby requested that a No Further Action letter be issued by your office for these subject AOCs/locations. A complete Plant 10 and 17 South Phase II Report, which includes analysis results for all samples collected, shall be sent for your files upon completion.

We have put together an ambitious schedule for the completion of the remediation work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



Larry C. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
S. Kaminski, NYSDEC (Albany); T. Mulvihill, NCDH; T. Kelly, NCDPW;  
D. Langer, Beveridge & Diamond, P.C.

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

March 24, 1998  
ETC98-075

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation - Building 03, Bethpage Site  
Area of Concern 1-29  
Remediation End Point Sample Results**

Enclosure 1) End Point Soil Sample Location Drawing  
2) End Point Soil Sample Data.

Dear Mr. Farkas:


As you know, Northrop Grumman has been conducting environmental remediation at the Bethpage Building 03 location for Areas of Concern (AOCs) that have significant exceedances of the TAGM 4046 soil criteria. One such location, AOC 1-29, which was associated with a paint waste holding tank, was recently excavated to a depth of approximately four (4) feet below grade surface (bgs). A sketch showing the excavated area and end point sample locations is provided in Enclosure 1.

Because of the shallow depth of excavation, side wall samples were collected along with the floor samples after the soil had been excavated.

The end point sample results are presented in Enclosure 2. All samples were analyzed for semi-volatile organic compounds (SVOCs) by method 8270 and by TCLP (method 1311) according to the Spill Technology and Remediation Series (STARS) Memo #1 - *Petroleum Contaminated Soil Guidance Policy*. The data indicates no exceedances of the STARS SVOCs guidance criteria.

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils at AOC 1-29. The end point analysis results demonstrate that soils immediately adjacent to the excavated area do not exceed the STARS guidance criteria. It is therefore recommended that no further action is warranted at AOC 1-29.

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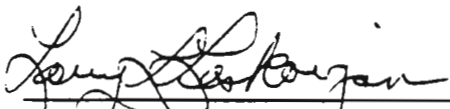
Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the remediation work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



---

Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
S. Kaminski, NYSDEC (Albany); T. Mulvihill, NCDH

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

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**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

March 24, 1998  
ETC98-072

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation - Building 03, Bethpage Site  
Area of Concern 1-30  
Remediation End Point Sample Results**

Enclosure 1) End Point Soil Sample Location Drawing  
2) End Point Soil Sample Data.

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting environmental remediation at the Bethpage Building 03 location for Areas of Concern (AOCs) that have significant exceedances of the TAGM 4046 soil criteria. One such location, AOC 1-30, which was associated with paint waste holding tanks, was recently excavated to a depth of approximately six (6) feet below grade surface (bgs). A sketch showing the excavated area and end point sample locations is provided in Enclosure 1.

In a previous meeting, we agreed to sample and analyze the side wall samples prior to excavation. This sampling methodology was chosen to ensure that the horizontal extent of impacted soil for each AOC was accurately defined. The limit of excavation, as defined by the Phase II program, was extended to the east until an existing subsurface concrete wall was encountered. As such, the horizontal limit of excavation was defined by the concrete wall on the east side of AOC 1-30. Consequently, a side wall sample was not collected from the east side of the AOC 1-30 excavation. End point floor samples were collected at the completion of soil excavation.

The end point sample results are presented in Enclosure 2. All samples were analyzed for priority pollutant metals (methods 6010 and 7471) and semi-volatile organic compounds (SVOCs) by method 8270. The data indicates that minor SVOCs were detected above the method detection limits. However, the total carcinogenic SVOCs were well below the TAGM limit of 10,000 µg/kg. Zinc was detected in side wall sample AOC 1-30D (1'-3') at a



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concentration of 74 mg/kg, which exceeded the TAGM criteria of 50 mg/kg. It is important to note that zinc is not considered a hazardous constituent per Appendix 23 of 6NYCRR Part 371. Arsenic was detected in floor sample AOC 1-30F3 at a concentration of 13 mg/kg, which slightly exceeded the TAGM criteria of 12 mg/kg. Since this exceedance is minor, further work is not considered to be warranted.

In summary, Northrop Grumman effectively removed, transported, and disposed of impacted soils at AOC 1-30. Although some of the end point analytical results indicate minor exceedances of the TAGM criteria, we believe they do not represent a significant environmental concern. It is therefore recommended that no further action is warranted at AOC 1-30.

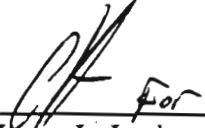
Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation area with certified clean bank-run sand and restore the area to match existing conditions. A complete engineering report documenting all field activities, laboratory data analysis, and waste disposal manifests shall be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the remediation work at the 105-Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
\_\_\_\_\_  
Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
S. Kaminski, NYSDEC (Albany); T. Mulvihill, NCDH

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

March 23, 1998  
ETC98-070

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation - Building 03, Bethpage, New York  
Areas of Concern (AOCs) 1 partial, 3 partial, 6 partial, 15 partial,  
16 partial, 20 partial, 21 partial, 24 partial, 33 partial, 34 partial,  
and 36 partial - Recommendations for No Further Action**

Enclosures: 1) Soil Boring Location Drawing of Area of Concerns that are  
Recommended for No Further Action.  
2) Phase II Soil and Concrete Sample Analysis Data for the  
Subject AOCs.

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting Phase II environmental sampling at the Bethpage Building 03 location in accordance with the recommendations set out in the Phase I Environmental Assessment Report dated April 11, 1997 which was submitted to the NYSDEC on April 23, 1997.

Based upon a review of the Phase II soil data, Northrop Grumman is currently remediating 21 AOCs that were shown to have significant exceedances of the soil criteria established in TAGM No. HWR-94-4046 dated January 24, 1994. Soil criteria also includes the proposed (April 1995) TAGM amendment identifying new soil guidelines (concentrations) for chromium, cadmium, and total carcinogenic semivolatile organic compounds. Remediation of AOCs 22 (petroleum underground storage tanks), 23 (above ground storage tanks), 30 (storage sheds), and 35 (sludge drying beds) have been recommended for inclusion in the Navy's Installation Restoration Program. There are, however, several AOCs/locations that have only minor exceedances of the TAGM criteria for which Northrop Grumman recommends No Further Action.

The purpose of this correspondence is to summarize the analytical data for the AOCs/locations that Northrop Grumman proposes No Further Action. In addition, technical justifications are presented for each AOC to support a recommendation for No Further Action.

The drawing provided in Enclosure 1 illustrates the sample locations for the subject AOCs/locations. Primary sampling locations are denoted by a triangle and delineation samples are represented by a "X". The corresponding data is provided in Enclosure 2 for your review. The associated data qualifiers are defined at the end of Enclosure 2.

S. Farkas  
March 23, 1998  
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#### Area of Concern 1 - Paint Booths

##### Paint Booth 1 - AOC 1-01

Copper, chromium, zinc, and several semi-volatile organic compounds (SVOCs) were detected in the primary soil samples above the TAGM criteria. Delineation sampling indicated that chromium was only detected above the TAGM criteria in sample 03-01-01S (6'-8') at 56.2 mg/kg. Copper was identified at a concentration of 83.3 mg/kg in the 0-2 foot sample from boring 03-01-01W located west of the primary sample location. Zinc was not detected in any delineation sampling. Delineation sampling and analysis identified several SVOCs in many soil samples, but none of the samples exhibited concentrations of total carcinogenic polycyclic aromatic hydrocarbons (CaPAHs), which are a subset of semi-volatile organic compounds, greater than 10,000 µg/kg. Mercury was detected at a concentration of 1.3 mg/kg in an isolated delineation sample 03-01-01NN (0-2').

##### Paint Booth 7 - AOC 1-07

Selenium was identified in sample 03-01-07B (0-2') at a concentration of 5.8 mg/kg which exceeds the TAGM criteria of 0.1-3.9 mg/kg. Benzo(a)pyrene was also detected in samples 03-01-07-S-1 and -2 at concentrations of 140 µg/kg and 93 µg/kg, respectively. However the total CaPAHs for each sample was less than 10,000 µg/kg.

##### Paint Booth 9 - AOC 1-09

Arsenic and selenium were detected in sample 03-01-09-S-2 (2'-4') at concentrations of 14.2 and 11.6 mg/kg, respectively. These constituents were not detected at concentrations greater than the TAGM criteria in any of the other primary or delineation samples collected at this AOC. Zinc was, however, identified in samples 03-01-09N-S-3 (4'-6') and -S-4 (6'-8') at concentrations of 50.4 mg/kg and 87.8 mg/kg, respectively. It is important to note that zinc is not considered a hazardous constituent per Appendix 23 of 6NYCRR Part 371.

##### Paint Booth 10 - AOC 1-10

Zinc was detected in the shallow soil sample 03-01-10-S-1 (0-2') at a concentration of 51.3 mg/kg which is slightly over the TAGM criteria for zinc of 50 mg/kg. Delineation sampling and analysis did not detect zinc in concentrations greater than 50 mg/kg in four borings advanced five feet from the primary sampling location. It is important to note that your office approved the filling of the pit associated with paint booth 10 in a letter to Northrop Grumman dated January 7, 1998.

##### Paint Booth 12 - AOC 1-12

Zinc was detected in soil sample 03-01-12-S-2 (2'-4') at a concentration of 66.4 mg/kg which is slightly over the TAGM criteria for zinc of 50 mg/kg. Delineation sampling and analysis did not detect zinc in concentrations greater than 50 mg/kg in four borings advanced five feet from the primary sampling location. It is important to note that your office approved the filling of the pit associated with paint booth 12 in a letter to Northrop Grumman dated January 7, 1998.

*S. Farkas*  
*March 23, 1998*  
*Page 5*

AOC 16-8

Zinc was detected at a concentration of 56 mg/kg in sample 03-16-08-S-1 (0-2'). Because zinc is not considered a hazardous constituent per Appendix 23 of 6NYCRR Part 371, delineation sampling and analysis were not conducted.

AOC 16-10

Zinc was detected at a concentration of 594 mg/kg in sample 03-16-10-S-1 (0-2'). Because zinc is not considered a hazardous constituent per Appendix 23 of 6NYCRR Part 371, delineation sampling and analysis were not conducted.

AOC 16-15

Zinc was detected at a concentration of 57 mg/kg in sample 03-16-15-S-1 (0-2'). Delineation sampling and analysis identified zinc to the north, south, and west of the primary sampling location to four feet below grade at a maximum concentration of 308 mg/kg. Because zinc is not considered a hazardous constituent per Appendix 23 of 6NYCRR Part 371, remediation was not considered to be warranted.

**Area of Concern 20 - Diffusion Galleries and Dry Wells**

AOC 20-5

Mercury was detected in sample 03-20-05-S-1 (10'-12') at a concentration of 0.24 mg/kg. Delineation sampling identified mercury in only one additional soil sample, the soil from the 10-12 foot interval in a boring to the south of the original sample location. The concentration of mercury was detected at 0.15 mg/kg which was below the TAGM criteria.

AOC 20-15

Copper and zinc were detected in sample 03-20-15-S (10' - 12') at 55.4 mg/kg and 96.2 mg/kg, respectively. Benzo(a)pyrene was detected at 160 µg/kg but the total CaPAHs were less than 10,000 µg/kg. Because copper and zinc are not considered hazardous constituents per Appendix 23 of 6NYCRR Part 371, delineation sampling was not performed in this area.

AOC 20-22

TPH, as diesel, was detected at 83 mg/kg in the primary sampling event for this area. In the delineation sampling, TPH was also detected. The greatest concentration was 300 mg/kg at 6-8 feet below grade in sample 03-20-22AA-S-1. There were several STARS exceedances for each soil sample, but the concentrations of the CaPAHs were well below 10,000 µg/kg. Arsenic, silver, and zinc were detected in the delineation samples at maximum concentrations of 13.1 mg/kg, 3.7 mg/kg, and 132 mg/kg, respectively.



S. Farkas  
March 23, 1998  
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has been completed that removed elevated levels of chromium located in subsurface soils beneath the Old Alodine Process Pit Area.

#### **Area of Concern 6 - Chem Mill Clean Area**

##### AOC 6-2

Zinc was detected in sample 03-06-02-S-2 (2'-4') at a concentration of 280 mg/kg which exceeded the TAGM criteria. Delineation sampling and analysis of soil samples taken five feet from the primary sample location did not detect zinc above the TAGM criteria.

##### AOC 6-3

Chromium was detected in sample 03-06-03-S-1 (0-2') at a concentration of 50.1 mg/kg which exceeded the TAGM criteria. Delineation sampling and analysis of soil samples taken five feet from the primary sample location did not detect chromium above the TAGM criteria. In addition, the original soil interval that exhibited the exceedance of chromium was re-sampled and analyzed and identified a concentration of 6.4 mg/kg for chromium (sample 03-06-03A-S-1).

#### **Area of Concern 15 - Printed Circuits and Engraving Departments**

Chromium was detected in sample 03-15-04-S-1 (0-2') at a concentration of 273 mg/kg. This sample was subsequently re-analyzed for chromium and the result was 4.3 mg/kg which is below the TAGM criteria of 50 mg/kg. In addition, delineation sampling and analysis of soil samples taken five feet from the primary sample location did not detect any priority pollutant metals above the TAGM criteria.

#### **Area of Concern 16 - Machine Shop Areas**

##### AOC 16-02

Selenium was detected in sample 03-16-02-S-1 (0-2') at a concentration of 4.1 mg/kg as well as total petroleum hydrocarbons (TPH), as diesel, at 560 mg/kg. TPH, as diesel, was also detected at a concentration of 93 mg/kg in sample 03-16-02-S-2 (2'-4'). Delineation sampling did not detect selenium at concentrations that exceeded the TAGM criteria. Similarly, subsequent sampling and analysis did not result in any exceedances of the Spills Technology and Remediation Series (STARS) Memo #1 - *Petroleum Contaminated Soil Guidance Policy*.

##### AOC 16-4

Chromium and TPH, as diesel, were detected in sample 03-16-04 S-2 (2'-4') at concentrations of 86.5 mg/kg and 110 mg/kg, respectively. Delineation sampling and analysis of soil samples taken five feet from the primary sample location did not detect any chromium above the TAGM criteria. Subsequent STARS analysis did not result in any exceedances that demonstrate the protection of human health and groundwater.

S. Farkas  
March 23, 1998  
Page 3

Paint Booth 14 - AOC 1-14

Chromium, copper, and nickel were detected in sample 03-01-14-S-2 (2'-4') at concentrations of 139 mg/kg, 71.6 mg/kg, and 534 mg/kg, respectively, which slightly exceeded the TAGM criteria. Delineation sampling and analysis did not detect any of these metals in concentrations greater than the TAGM criteria in deeper soil samples (to 8 feet below grade) in the primary boring and four borings around the primary sampling location.

Paint Booth 16 - AOC 1-16

Chromium was detected in sample 03-01-16-S-2 (2'-4') at a concentration of 60.9 mg/kg which slightly exceeded the TAGM criteria for chromium of 50 mg/kg. In addition, benzo(a)pyrene was identified in sample 03-01-16-S-1 (0'-2') at a concentration of 78 µg/kg, however the total CaPAHs were less than 10,000 µg/kg. Delineation sampling and analysis did not detect chromium or CaPAHs in concentrations greater than the TAGM criteria in deeper soil samples (to 8 feet below grade) in the primary boring and four additional borings around the primary sampling location. It is important to note that your office approved the filling of the pit associated with paint booth 16 in a letter to Northrop Grumman dated January 7, 1998.

Historic Paint Booth 3 - AOC 1-19

Zinc and several individual SVOCs were detected in sample 03-01-19-S-1 (0-2'). Zinc was quantified at 73.5 mg/kg. None of the SVOCs were detected at levels exceeding the TAGM criteria. Delineation samples were collected from four borings around the primary sampling location and analyzed for zinc and SVOCs. All delineation sample results from zinc were less than the TAGM criteria and the total CaPAHs were less than 10,000 µg/kg.

Historic Paint Booth 10 - AOC 1-26

Zinc was detected in soil sample 03-01-26-S-1 (0-2') at a concentration of 72.8 mg/kg. Delineation sampling and analysis did not detect zinc in levels greater than the TAGM criteria in four borings advanced five feet from the primary sampling location.

**Area of Concern 3 - Old Alodine Area**

In addition to the Old Alodine Process Pit Area, associated waste transfer tanks were also investigated during the Phase II sampling program. Arsenic, chromium, and selenium were detected in soil sample 03-03-11-S-1 (0-2') at concentrations of 12.8 mg/kg, 64.2 mg/kg, 11.2 mg/kg, respectively, which exceeded the TAGM criteria. Delineation sampling and analysis of soil samples taken five feet from the primary sample location did not detect these constituents above the TAGM criteria. Zinc was, however, detected in the 0-2 foot interval from soil borings taken south and west of the primary sampling location at concentrations of 68.1 mg/kg and 88.3 mg/kg, respectively. Zinc is not considered a hazardous constituent per Appendix 23 of 6NYCRR Part 371, thus remediation was not considered to be warranted. It is important to note that an extensive remediation program

S. Farkas  
March 23, 1998  
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AOC 20-23

For the primary sampling event, zinc was detected at a concentration of 52.4 mg/kg for sample 03-20-23-S-1 (10'-12'). Because zinc is not considered a hazardous constituent per Appendix 23 of 6NYCRR Part 371, delineation sampling was not conducted at this location.

AOC 20-25

For the primary sampling event, selenium was detected in sample 03-20-25-S-1 (10'-12') at 4.4 mg/kg. No delineation sampling was performed at this area.

AOC 20-27

TPH, as diesel, was detected in both samples 03-20-27-1 (10'-12') and 27-2 (12'-14') at concentrations of 7.8 and 5.6 mg/kg, respectively. Selenium was also identified at 4.2 mg/kg in the shallower of the two samples (10-12 foot interval). Secondary sampling consisted of the collection of soil samples from the same approximate location as the original location. The results indicate the total STARS SVOCs were considerably less than 10,000 µg/kg.

**Area of Concern 21 - Equipment Pits**

AOC 21-13

Two metals were detected in samples 03-21-13-S-1 (0-2') at concentrations greater than the NYSDEC TAGM criteria: chromium (303 mg/kg) and selenium (7.5 mg/kg). TPH, as diesel, was also detected at 6 mg/kg. Delineation samples collected from approximately the same sample location and from four new borings five feet from the original soil boring identified no metals in concentrations greater than the TAGM criteria. Also, another aliquot of the original sample was analyzed for chromium, and the result was 5.6 mg/kg, which was below the NYSDEC soil cleanup objective of 50 mg/kg. It is important to note that your office approved the filling of equipment pit 21-13 in a letter to Northrop Grumman dated December 24, 1997.

AOC 21-23

Sample 03-21-23-S-1 (0-2') exhibited a TPH, as diesel, concentration of 6.9 mg/kg and a concentration of silver of 4.1 mg/kg. In the 2'-4' interval of the same boring, TPH, as diesel, was detected at 23 mg/kg and zinc was detected at 87.7 mg/kg. No delineation sampling was performed. It is important to note that your office approved the filling of equipment pit 21-23 in a letter to Northrop Grumman dated November 25, 1997.

S. Farkas  
March 23, 1998  
Page 7

#### AOC 21-24

Sample 03-21-24-S-2 (2'-4') exhibited a concentration of selenium of 4.7 mg/kg which is greater than the NYSDEC TAGM criteria of 0.1 - 3.9 mg/kg. Delineation sampling consisted of advancing four additional soil borings in the four directions from the original sample location. No selenium concentration greater than the NYSDEC TAGM criteria was identified. Also, another aliquot of the original sample was analyzed for selenium, and the result was 3.5 mg/kg, which is below the NYSDEC TAGM criteria. It is important to note that your office approved the filling of equipment pit 21-24 in a letter to Northrop Grumman, dated December 24, 1997.

#### AOC 21-25

Sample 03-21-25-S-1 (0-2') exhibited a lead concentration of 1.680 mg/kg. Delineation sampling consisted of advancing two additional soil borings (north and south from the original soil boring) and analysis indicated no lead result greater than the NYSDEC TAGM criteria. Also, another aliquot of the original sample was analyzed for lead, and the result was 4.5 mg/kg. It is important to note that your office approved the filling of equipment pit 21-25 in a letter to Northrop Grumman dated December 24, 1997.

#### **Area of Concern 24 - Drum Storage Area**

Zinc was detected at a concentration of 55.5 mg/kg in an interior sample location 03-24-03-S-1 (0-2') which exceeded the TAGM criteria of 50 mg/kg. Delineation sampling and subsequent analysis conducted at four locations from the original boring did not identify any exceedances of the TAGM criteria. It should be noted that an exterior portion of AOC 24 will be excavated to a depth of 6 feet below grade surface (bgs) to remove impacted soils.

#### **Area of Concern 33 - Waste Accumulation Areas**

Analysis of soil boring 03-33-25-S identified TPH, as diesel, at 15 and 24 mg/kg for the 0-2' and 2'-4' interval, respectively. Also detected in concentrations greater than the NYSDEC individual TAGM criteria were semivolatile compounds including chrysene, benzo(a)pyrene, and Benz(a)anthracene. However, the total level of CaPAHs were significantly less than 10,000 µg/kg. A total of 11 soil borings were advanced to delineate the extent of SVOCs at location 33-25. None of the samples contained CaPAHs greater than 10,000 µg/kg.

#### **Area of Concern 34 - Old Autoclave Area**

Sample 03-34-02A-1 (0-2') exhibited concentrations of CaPAHs at 10,230 µg/kg which slightly exceeded the TAGM criteria of 10,000 µg/kg. The 2-4 foot interval within the same boring did not indicate total CaPAHs exceedances of the TAGM criteria. It is important to note that an extensive remediation program has been initiated at AOC 34 to remove elevated levels of PCBs located in subsurface soils beneath the Old Autoclave Process, Drywells, and Pit Areas.

S. Farkas  
March 23, 1998  
Page 8

## Area of Concern 36 - Unbiased Random Sampling

### AOC 36-01

Primary and delineation sampling and analysis identified several metals slightly greater than the NYSDEC TAGM criteria. Zinc was detected in sample 03-36-01E-S-2 (2'-4') at 115 mg/kg. Copper and zinc were detected in sample 03-36-01S-S-3 (4'-6') at concentrations of 600 mg/kg and 67.6 mg/kg, respectively. Arsenic and selenium were detected in sample 03-36-01W-S-4 (6'-8') at concentrations of 12.4 mg/kg and 9.5 mg/kg, respectively. The deepest of these exceedances was 8 feet below grade. Because these minor exceedances were isolated, no further action was considered to be warranted at this location.

### AOC 36-02

Chromium was detected in soil sample 03-36-02-S-1 (0-2') at a concentration of 63.6 mg/kg. Because this exceedance was considered minor, no delineation sampling was conducted.

### AOC 36-03

Primary sampling and analysis identified zinc in soil sample 03-36-03-S-2 (2'-4') at 111 mg/kg which exceeded the TAGM criteria. Delineation sampling and analysis was conducted for metals at four locations five feet from the original boring location. Zinc was further identified above TAGM at 52.9 mg/kg in a confirmatory sample 03-36-03A-S-2 (2'-4') and at 90.2 mg/kg (0-2') and 56.2 mg/kg (2'-4') in a new boring (03-36-03N-S) located to the north of the original soil boring.

### AOC 36-05

Primary sampling and analysis identified zinc at 95.9 mg/kg in sample 03-36-05-S-2 (2'-4'). Delineation sampling conducted at four locations five feet from the original sampling location did not detect zinc at concentrations greater than the NYSDEC TAGM criteria.

### AOC 36-08

Zinc was detected in sample 03-36-08-S-1 (0-2') at 60.9 mg/kg which exceeded the TAGM criteria. Delineation sampling and analysis identified zinc (56.8 mg/kg) in soil sample 03-36-08N-S-2 (2'-4') located five feet to the north of the original sampling location.

### AOC 36-15

Zinc was detected at 108 mg/kg in soil sample 03-36-15-S-2 (2'-4'). Delineation sampling conducted at four locations five feet from the original sampling point did not detect zinc at concentrations exceeding the TAGM criteria.

*S. Furkas*  
March 23, 1998  
Page 9

In summary, Northrop Grumman conducted a thorough Phase II investigation in an attempt to vertically and horizontally delineate concentrations of constituents that were above the TAGM criteria. Upon a review of the analytical data, it is noticed that there are some minor exceedances of the TAGM criteria that are not recommended for remediation. In most every case, these minor exceedances are isolated for which "clean samples" exist immediately below and adjacent to the impacted sample. Although individual SVOCs constituents were shown to exceed their respective TAGM criteria, the total carcinogenic SVOCs or CaPAHs were, in all but one sample, less than 10,000 µg/kg. In most instances, copper and zinc exceedances were delineated, but because they are not considered hazardous constituents per Appendix 23 of 6NYCRR Part 371, remediation was not considered to be warranted. In general, we believe these minor TAGM exceedances do not represent a significant environmental concern. It is also important to note that at least a six inch concrete slab exists over all interior AOCs/locations. The existing concrete slab will practically eliminate migration of constituents present in the soil that were found to exceed the TAGM criteria.

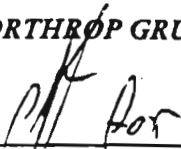
Upon your review of the attached data and these recommendations, it is hereby requested that a No Further Action letter be issued by your office for these subject AOCs/locations. A complete Plant 03 Phase II report, which includes analysis results for all samples collected, shall be sent for your files upon completion.

We have put together an ambitious schedule for the completion of the remediation work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
\_\_\_\_\_  
Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
M/S: D08-001

cc: w/enclosure  
S. Kaminski, NYSDEC (Albany); T. Mulvihill, NCDH

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

A-99

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**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

February 10, 1998  
ETC98-034

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11790

Subject: **Northrop Grumman Corporation  
Building 03, Bethpage Site  
Phase II Environmental Assessment Data  
Selected Pits**

Enclosures: 1) Drawing - Building 03 Pit Filling  
2) Analytical Data for Pits Associated with Areas of Concern (AOC) 16  
(partial), AOC 21 (partial), AOC 38, and AOC 39

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting Phase II environmental sampling at the Bethpage Building 03 location, in accordance with the recommendations set out in the Phase I Environmental Assessment Report dated April 11, 1997 and submitted to the NYSDEC on April 23, 1997.

The enclosed data is being transmitted for your review and represents concrete and soil samples taken from transfer pit #16-14 used for coolant oil (part of AOC 16) machine pit #21-18 (part of AOC 21), a sump pit that accepted water effluent from an oil/water separator before discharging to the sewer system (AOC 38), and a water blow-down pit (AOC 39). The machine pits have been decontaminated using high pressure water/steam and detergent.

The table below describes the subject pit areas and refers to the area of concern numbers designated in the Phase I Environmental Assessment Report. As a point of reference, AOCs 38 and 39 were added to the Phase II recommendations outlined in the Phase I report during the field program. The table also shows the sample numbers that correspond to the pits.



S. Farkas  
February 10, 1998  
ETC98-034  
Page 2

Description of Pit	Area of Concern (AOC) Designation	Sample Designation
Cooling Oil Transfer Pit	Part of AOC 16 - Machine Shop Areas	03-16-14
Equipment Pit 18	Part of AOC 21 - Pit 18	03-21-18
Water Effluent Sump Pit	AOC 38	03-38-01
Water Blow Down Pit	AOC 39	03-39-01

The attached drawing shows the locations and sizes of these pits.

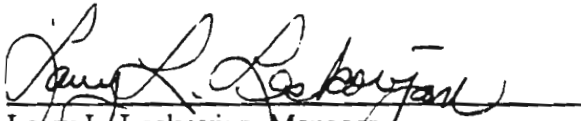
Based on the enclosed data, we believe that no further action is required at these locations and would like to begin filling the subject pits.

After your review of the analytical data, we would like your concurrence that the pits require no remediation or additional assessment work. We have a very ambitious work schedule and would appreciate an expedited review of the data.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
Larry J. Leskovjan, Manager  
Environmental Technology & Compliance  
M/S: D08-001

cc: w/enclosure  
T. John, NYSDEC; S. Kaminski, NYSDEC; T. Mulvihill, NCDH

w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

February 2, 1998  
ETC98-026

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation  
Building 03, Bethpage Site  
Area of Concern (AOC) 3**

Enclosures: 1) Drawing of Area of Concern 3 Soil and Concrete Sample Locations showing the Area Excavated During Phase III.  
2) Phase II Soil and Concrete Sample Analysis Data.  
3) Drawing of Sidewall and Bottom Endpoint Sample Locations  
4) Endpoint Soil Sample Analysis Data

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting Phase II environmental sampling at the Bethpage Building 03 location in accordance with the recommendations set out in the Phase I Environmental Assessment Report dated April 11, 1997 and submitted to the NYSDEC on April 23, 1997.

The drawing provided as Enclosure 1 illustrates the soil and concrete sample locations taken from Area of Concern (AOC) 3, known as the Old Alodine Process Line. The corresponding data is provided in Enclosure 2 for your review. As is shown from the data, approximately 300 samples were taken in the vicinity of AOC 3 in an attempt to vertically and horizontally delineate concentrations of constituents that were above the TAGM criteria. Chromium was found to be the primary constituent of concern and extended to a depth of 26 feet below grade surface (bgs).

After completing the Phase II sampling program at AOC 3, Northrop Grumman initiated an extensive excavation project to remediate elevated levels of chromium in the soil and concrete. The area of excavation is shown in the drawing provided as Enclosure 1 which is superimposed with the Phase II soil boring locations. The concrete floor from the Old Alodine Area was demolished and removed to a licensed hazardous waste landfill. Forty-two (42) steel I-beams were then advanced vertically to a depth of 38 feet bgs around the perimeter of the excavation. Building columns located within the excavation area were braced and supported to adjacent columns. Wood lagging was placed and secured between the I-beams during soil removal to provide shoring for the excavated side walls. At the completion of soil excavation, approximately 2700 cubic yards of chromium-impacted soil were removed from AOC 3 to a nominal depth of 29 feet bgs.

*S. Farkas*  
*February 2, 1998*  
*ETC98-026*  
*Page 2*

During soil excavation, 30 sidewall endpoint soil samples were taken from the locations shown on the drawing provided as Enclosure 3. Sidewall samples were collected from beneath and in back of the wood lagging at depths of 8, 16 and 24 feet bgs. Seven endpoint soil samples were also taken from the bottom of the excavation as shown in Enclosure 3. The endpoint soil analysis results are provided for your review in Enclosure 4. The data indicate that a number of the endpoint samples exceeded the proposed TAGM value for chromium of 50 mg/kg. As a result, Northrop Grumman instructed the laboratory to analyze the leachate of all the bottom samples and the side wall samples that had levels of total chromium greater than 100 mg/kg (20 times the hazardous waste TCLP limit for chromium) after a toxicity characteristic leachate procedure (TCLP) extraction was performed. The TCLP results are provided in Enclosure 4 for your review. The data indicates that there are no exceedances of the regulatory limit for chromium.

During a subsequent telephone conversation with Thomas John, of your office, it was requested that two of the original bottom endpoint samples with the highest levels of total chromium and the four highest sidewall samples were to be re-analyzed for total and hexavalent chromium. The results of these analyses are provided in Enclosure 4. Although three samples were shown to contain hexavalent chromium at levels greater than 50 mg/kg, it was demonstrated by previous TCLP analysis that the chromium does not leach at levels exceeding regulatory limits. It is also important to note that following backfilling, Northrop Grumman will fully restore the concrete floor in the vicinity of AOC 3. The concrete slab should eliminate the potential for chromium found in the soils to migrate. In addition, because of the extensive sheeting and shoring and column bracing that has already been performed in the area for soil excavation, added excavation would jeopardize the structural integrity of the building. For the reasons provided above, Northrop Grumman advocates no further action regarding the investigation or remediation of soil in the vicinity of AOC 3.

In summary, Northrop Grumman conducted a thorough Phase II investigation in the vicinity of AOC 3 in an attempt to vertically and horizontally delineate concentrations of constituents that were above the TAGM criteria. An aggressive excavation program was completed that removed impacted soils to a depth of approximately 30 feet bgs. Although some endpoint soil samples were shown to have chromium levels that exceeded the TAGM criteria, we believe this is not an environmental concern because the TCLP values for chromium were below the regulatory limit. The restored concrete slab minimizes migration potential of chromium present in the soil. It is therefore recommended that no further action is warranted in the vicinity of AOC 3.

Upon your review and approval of the attached data and these recommendations, Northrop Grumman will backfill the excavation pit with certified clean bank-run sand and restore the concrete slab to match existing conditions. A complete engineering report documenting all field activities and laboratory data analysis will be sent to your office at the completion of this project.

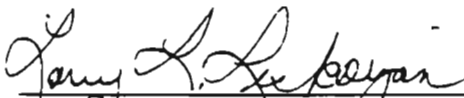
*S. Farkas*  
*February 2, 1998*  
*ETC98-026*  
*Page 3*

We have put together an ambitious schedule for the completion of the remediation work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

***NORTHROP GRUMMAN CORPORATION***



Larry D. Leskovjan, Manager  
Environmental Technology & Compliance  
D08-001

cc: w/enclosure  
T. John, NYSDEC; S. Kaminski, NYSDEC; T. Mulvihill, NCDH  
w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

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**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

January 30, 1998  
ETC98-025

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY - Building 40  
Stony Brook, New York 11794

Subject: **Northrop Grumman Corporation  
Building 03, Bethpage Site  
Phase III Environmental Remediation Summary  
Area of Concern (AOC) 9**

Enclosures: 1) Drawing of the Excavation Area and Endpoint Sample Locations  
for AOC 9  
2) Endpoint Soil Sample Analysis Data (2 sheets)

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting Phase II environmental sampling at the Bethpage Building 03 location in accordance with the recommendations set out in the Phase I Environmental Assessment Report dated April 11, 1997 and submitted to the NYSDEC on April 23, 1997.

Soil and concrete sampling conducted in the vicinity of Area of Concern (AOC) 9, known as the Sulfuric Acid Anodize Process Line, indicated levels of metals that exceeded the TAGM criteria. The drawing provided as Enclosure 1 illustrates the extent of impacted soils at AOC 9. The area shown in Enclosure 1 represents the portion of AOC 9 that is associated with the Navy's process line. It is important to note that Northrop Grumman will be remediating an area of AOC 9 located immediately east of the Navy's process line on or about March 1, 1998.

The remediation activities for the old Sulfuric Acid Anodize area consisted of two phases: a demolition phase and an excavation phase. The demolition phase consisted of the demolition and disposal of the concrete floor, and the surrounding curb and trench. Soil excavation included removing four (4) feet of soil over an area of approximately 440 square feet, as shown in Enclosure 1.

At the completion of soil excavation, sidewall and bottom endpoint soil samples were taken from the locations shown on the drawing provided as Enclosure 1. Sidewall samples were collected at a depth of approximately 2 feet below grade surface. All samples were analyzed for priority pollutant metals by method 6010/7471. The endpoint soil analysis results are provided for your review in Enclosure 2. The data indicate that the south sidewall sample 03-09-03RW-1 exceeded the TAGM criteria for chromium, copper, and zinc.

*S. Farkas*  
*January 30, 1998*  
*ETC98-025*  
*Page 2*

As a result of this sidewall exceedance, further excavation was conducted along the south end of the excavation pit, as shown in Enclosure 1. It was determined that the excavation along the south wall would extend approximately eight (8) feet to the edge of the foundation of Building 03, approximately 160 square feet by four (4) feet deep. An additional endpoint soil sample (03-09-05RB-1) was collected from the bottom of the newly excavated area adjacent to the south wall as shown in Enclosure 1. This sample was analyzed for priority pollutant metals by method 6010/7471. The data presented in Enclosure 2 indicate no exceedances of the TAGM criteria for this additional endpoint sample.

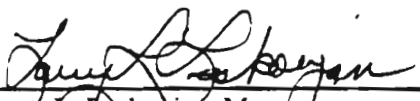
In summary, we believe that all soil that exceeded the TAGM criteria in the vicinity of the Navy's portion of the Old Sulfuric Anodize Area (AOC 9) has been removed. Upon your review and approval of the attached data, Northrop Grumman will backfill the excavation pit with certified clean bank-run sand and restore the concrete slab to match existing conditions. A complete engineering report documenting all field activities and laboratory data analysis will be sent to your office at the completion of this project.

We have put together an ambitious schedule for the completion of the environmental assessment and remediation work at the 105 Acre GOCO site and would appreciate your expeditious review and approval of this letter report.

If you have any questions, please call me at 516/575-2333 or A. Postyn, of this office, at 516/575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
Larry L. Leskovjan, Manager  
Environmental, Health, Safety  
& Medical Services  
M/S: D16-001

cc: w/enclosure  
T. John, NYSDEC; S. Kaminski, NYSDEC; T. Mulvihill, NCDH  
w/o enclosure  
J. Lovejoy, NCDH; B. Mackay, NCDH

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

December 22, 1997  
ETC97-298

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY-Building 40  
Stony Brook, New York 11790

Subject: **Northrop Grumman  
Building 03, Bethpage  
Phase II Environmental Assessment Data  
Selected Pits**

Enclosures: **Drawings and Analytical Data for Pits Associated with Areas of Concern -  
1 (partial) and 21 (partial)**

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting Phase II environmental sampling at the Bethpage Building 03 location in accordance with the recommendations set out in the Phase I Environmental Assessment Report dated April 11, 1997 and submitted to the NYSDEC on April 23, 1997.

The enclosed data is being transmitted for your review and represents concrete and soil samples taken from five paint booth pits (part of AOC 1) and a freezer pit (part of AOC 21). The paint booth pits have been decontaminated using high pressure water/steam and detergent.

The freezer pit is a concrete pit that was lined with aluminum sheeting and contained Styrofoam insulation between the aluminum sheets and the concrete walls. The pit was used to keep metal sheets cold after they were stretched. The floor of the pit was constructed such that cooling coils were sandwiched between two concrete slabs. Propylene glycol was used as the cooling fluid. Upon removing the upper layer of concrete, liquid coolant was found to be standing on the bottom layer of concrete. The upper layer of concrete was completely removed, along with the cooling coils and the coolant fluid. The pit was then decontaminated using high pressure water/steam and detergent. Soil samples were collected below the center portion of the bottom layer of flooring and analyzed for metals, volatile organic compounds, semi-volatile organic compounds, glycols, PCBs, and TPH.



The table below describes the subject pit areas and refers to the area of concern number designated in the Phase I Environmental Assessment Report. The table also shows the sample numbers that correspond to the pit or secondary containment.

Description of Pit/ Secondary Containment Area	Area of Concern (AOC) Designation	Sample Designation
Paint Booths 10 through 13	Part of 01 - pits	03-01-10 thru 03-01-13
Paint Booth 16	Part of AOC 1 - pit	03-01-16
Freezer Pit	Part of AOC 21	03-21-28

The attached drawings show the locations and sizes of these pits.

Based on the enclosed data, we believe that no further action is required at these locations and would like to begin filling the subject pits.

After your review of the analytical data, we would like your concurrence that the pits require no remediation or additional assessment work. We have a very ambitious work schedule and would appreciate an expedited review of the data.

If you have any questions, please call me at 575-2333 or A. Postyn, of this office, at 575-1566.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



L. L. Leskovjan, Manager  
Environmental, Health, Safety, &  
Medical Services  
M/S: D16-001

cc: w/enclosures  
T. John (NYSDEC)  
T. Mulvihill (NCHD)  
P. Mackay (NCHD)  
J. Lovejoy (NCHD)

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

November 25, 1997  
ETC97-274

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY-Building 40  
Stonybrook, New York 11790

Subject: **Northrop Grumman  
Building 03, Bethpage  
Phase II Environmental Assessment Data  
Chromic Acid Pit**

Enclosures: 1) Analytical Data for Chromic Acid Pit - Part of Area of Concern 10  
2) Drawing Showing Pit and Sample Locations  
3) Analytical Data Package from RECRA Environmental Inc.

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting Phase II environmental sampling at the Bethpage Building 03 location, in accordance with the recommendations set out in the Phase I Environmental Assessment Report dated April 11, 1997 and submitted to the NYSDEC on April 23, 1997.

The enclosed data is being transmitted for your review and represents concrete and soil samples taken from the chromic acid pit that is part of AOC 10. The analytical data shows that chromium contamination exists in parts of the pit's concrete flooring at levels above the soil TAGM for chromium (50 mg/kg).

The data also shows that the chromium concentration of all of the soil samples collected from below the pit's concrete floor are well below 50 mg/kg. Finally, the data shows that the concrete sample exhibiting the highest total chromium concentration (>4000 mg/kg) exhibited a TCLP chromium concentration of 0.0205 mg/l, well below the regulatory concentration of 5 mg/l. For sample numbers 10-09 through 10-15, six-inch concrete core samples from the floor were divided into 2" thick pieces and analyzed separately (given the c1, c2 and c3 designations for 0 - 2", 2" - 4", and 4" - 6" respectively).

A-111

November 25, 1997

ETC97-274

Page 2

As requested by Mr. Thomas John of your office, we have also enclosed the laboratory data package for the TCLP sample that was collected.

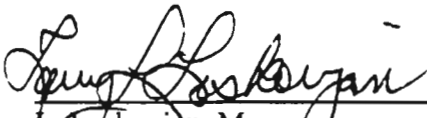
We would like to fill the pit with clean soil and cap it with 8" of concrete. Since the soil below the concrete floor has not been impacted with chromium and the chromium that exists in the flooring is predominately in the upper surfaces of the concrete, we feel that no real benefit will be gained by removing the contaminated portions of the floor prior to filling the pit.

After your review of the analytical data, we would like your concurrence that the pit requires no remediation or additional assessment work. We have a very ambitious work schedule and would appreciate an expedited review of the data.

If you have any questions, please call me at 575-2333 or J. Susco at 575-7171.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



L. Leskovjan, Manager  
Environmental, Health, Safety &  
Medical Services  
M/S: D16-001

cc: w/enclosures  
T. John (NYSDEC)  
(NCDH) - T. Mulvihill, J. Lovejoy, B. Mckay

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

October 30, 1997  
ETC97-254

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY-Building 40  
Stony Brook, NY 11790

Subject: **Northrop Grumman  
Building 03, Bethpage  
Phase II Environmental Assessment Data  
Selected Equipment Pits**

Enclosure: 1) Analytical Data for Nineteen Equipment Pits - Part of Area of Concern (AOC) 21  
2) Drawing Showing Equipment Pit locations

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting Phase II environmental sampling at the Bethpage Building 03 location, in accordance with the recommendations in the Phase I environmental assessment report dated April 11, 1997 and submitted to the NYSDEC on April 23, 1997.

The enclosed data is being transmitted for your review and represents concrete and soil samples taken from the nineteen machine (equipment) pits numbered 21-4, 21-5 and 21-6, 21-7, 21-9, 21-10, 21-11, 21-13, 21-14, 21-15, 21-16, 21-17, 21-19, 21-20, 21-22, 21-23, 21-24, 21-25, and 21-26. A drawing is attached that shows the sizes of the pits as well as the locations of the pits within plant 03.

Since there were 27 equipment pits altogether, our work plan called for taking a sample for STARS analysis from the pit with the highest TPH value. We instead took samples at the two pits with the highest TPH values. The pit with the highest TPH value is designated as 21-21. The soil at the 2'-4' depth below this pit exhibited a TPH concentration of 16,000 mg/kg and the soil at the 8-10' depth below the pit exhibited a TPH concentration of 2600 mg/kg. STARS analysis for samples collected at these depths showed no constituents above STARS guidelines. Though this pit is not being made part of today's request for release, due to the discovery of non-petroleum related contamination, we have enclosed the STARS and TPH data.

In addition, STARS analysis was conducted for pit number 21-11, which is part of today's request for release. The TPH concentration in the soil below this pit varied with depth: 2800 mg/kg (0'-2'), 680 mg/kg (2'-4'), 480 (4'-6'), 1600 mg/kg (6'-8'). The STARS analysis for the two samples with the highest TPH values (2800 mg/kg and 1600 mg/kg) indicated no detections above the STARS guidelines.

From the STARS analyses at pits 21-21 and 21-11, we concluded that it was not necessary to conduct STARS analysis at other locations, especially considering that the TPH concentrations at other locations were much less than at the two pits where STARS samples were collected.

During the initial round of sampling, chromium and selenium were found in the 0-2' interval of soil below pit 21-13 at concentrations of 303 mg/kg and 7.5 mg/kg, respectively; selenium was found in the 2'-4' interval of soil below pit 21-24 at a concentration of 4.7 mg/kg and lead was found in the 0-2' interval of soil below pit 21-25 at a concentration of 1660 mg/kg. Delineation sampling (5 feet from original sample in N, S, E, W directions, except where noted below) for these three pits showed none of these constituents above TAGM 4046 concentrations. Because of the close proximity of pits 21-23, 21-24, 21-25 and 21-26, pit 21-23 results can be used for the western delineation sample for pit 21-24, the western delineation samples for pit 21-25 were made part of pit 21-24 eastern delineation samples and the results for pit 21-26 can be used for the eastern sample results for pit 21-25.

In addition, we requested that the laboratory re-analyze each of the original samples from pits 21-13, 21-24 and 21-25 for the respective metals that were found to be above TAGM. The re-analysis showed markedly different results; for pit 21-13, the chromium concentration in the re-analysis was 5.6 mg/kg and the selenium concentration was 1.1, for pit 21-24, the selenium result was 3.5 mg/kg and in pit 21-25 the lead concentration was found to be 4.9 mg/kg. Based on the reanalysis and the delineation sampling, we concluded that the initial results are anomalous and are not indicative of soil contamination around the three pits.

Based on the enclosed data, we believe that no further action is required at the nineteen equipment pits and would like to begin filling the pits. These pits have been decontaminated by using high pressure water/steam and detergent, though oil staining may still be visible in the concrete.

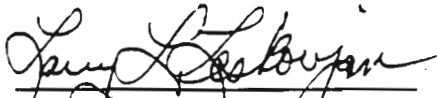
After your review of the analytical data, we would like your concurrence that the pits require no remediation or additional assessment work. We have a very ambitious work schedule and would appreciate an expedited review of the data.

October 30, 1997  
ETC97-254  
Page 3

If you have any questions, please call me at 575-2333 or J. Susco at 575-7171.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



L. Leskovjan, Manager  
Environmental, Health, Safety &  
Medical Services  
M/S: D16-001

cc: (w/attachment): T. John (NYSDEC), T. Mulvihill (NCHD), J. Lovejoy (NCHD),  
B. MacKay, (NCHD)

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A-116

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

October 27, 1997  
ETC97-251

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY-Building 40  
Stonybrook, NY 11790

Subject: Northrop Grumman  
Building 03, Bethpage  
Phase II Environmental Assessment Data  
Selected Pits and Secondary Containment Areas

Enclosures: Drawings and Analytical Data for Areas of Concern 1 (partial), 3 (partial),  
4, 6 (partial) and 10 (partial)

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting Phase II environmental sampling at the Bethpage Building 03 location, in accordance with the recommendations set out in the Phase I environmental assessment report dated April 11, 1997 and submitted to the NYSDEC on April 23, 1997.

The enclosed data is being transmitted for your review and represents concrete and soil samples taken from two chemical process pit areas (part of AOCs 6 and 10), a heat treat pit area (designated AOC 4) and a secondary containment area that surrounded three former wastewater tanks (part of AOCs 1 and 3). This wastewater area does not require RCRA closure since it falls within the wastewater treatment unit exemption granted in NYCRR 373-1.1(d)(xii).

Based on the enclosed data, we believe that no further action is required at these locations and would like to begin filling the subject pit areas and demolishing the subject secondary containment area. These pits and secondary containment areas have been decontaminated by using high pressure water/steam and detergent.



The table below describes the subject pit/secondary containment areas and refers to the area of concern number designated in the Phase I environmental assessment report. The table also shows the sample numbers that correspond to the pit or secondary containment.

Description of pit/sec. containment area	Area of Concern (AOC) Designation	Sample Designation
Alodine waste/ paint waste holding	Part of 01 and part of 03 - secondary containment	03-01-28 and 03-03-06
Old Heat Treat (Heat Treat Area A)	04 - pits	03-04-01 thru 03-04-03
Chem Mill Clean	06 - pit/trench	03-06-01 thru 03-06-03
Ion exchange pit/Shell Pella pit	Part of 10 - pit	03-10-06 (ion exchange) and 03-10-07 (Shell Pella)

Please note that sample 04-03 represents a sample near the pit (referred to as tank 1255 in the attached drawing) that contained a hydraulic ram that extended to approximately 56 feet below grade. Samples were collected at the 44' to 46' interval and the 56' to 64' interval for this location. Because of these depths, we analyzed for TPH and STARS compounds immediately, so that we would not have to go back to reanalyze if TPH was found. As the data shows, both the TPH and STARS analyses indicate that no detections of significance were found.

In addition, at AOC 4, no sample was collected at the southern most part of the pit (designated tank 1256), because the tank was used as a water quench tank for heat treated parts. Unlike tank 1255, which was also a quench water tank and was sampled for contaminants that could be associated with hydraulic oil, tank 1256 did not have a hydraulic ram associated with it.

The alodine waste/ paint waste holding secondary containment area is represented by two different AOCs, because three tanks that accepted wastewater streams from two different processes (Alodine represented by AOC 3 and Painting represented by AOC 1) were within the same containment area.

For the chem mill clean line pit/ trench, you will notice that the 2' - 4' interval for sample 03-06-02 exhibited a zinc concentration of 280 mg/kg. Upon sampling deeper at the original location and laterally around this location (north, south, east and west), zinc concentrations were found to be below TAGM 4046 or Eastern US background. It was therefore concluded that the original hit was an isolated finding.

DEC 22, 1991  
C97-251  
Because the ion exchange operation supported the chromic acid anodize process it was given the AOC 10 designation. The Shell Pella tank pit is located in the ion exchange room and was also given the AOC 10 designation. Shell Pella is a light weight oil.

The attached drawings show the locations of these pits and gives information as to size and configuration of the pits/trenches/secondary containment area.

After your review of the analytical data, we would like your concurrence that the process pits and the secondary containment area require no remediation or additional assessment work. We have a very ambitious work schedule and would appreciate an expedited review of the data.

If you have any questions, please call me at 575-2333 or J. Susco at 575-7171.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

*Larry L. Leskovjan*

Larry L. Leskovjan, Manager  
Environmental, Health, Safety &  
Medical Services  
M/S: D16-001

w/attachments

cc: T. John (NYSDEC)  
T. Mulvihill (NCHD)  
B. Mackay (NCHD)  
J. Lovejoy (NCHD)

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A-120

*J. Miller*

**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
3500 Oyster Bay Road  
Bethpage, New York 11714-3580

August 29, 1997  
ETC97-197

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY-Building 40  
Stonybrook, NY 11790

Subject: **Northrop Grumman  
Building 03, Bethpage  
Phase II Environmental Assessment Data - Selected Equipment Pits**

Enclosure: 1) Analytical Data for Three Equipment Pits - Part of Area of Concern 21  
2) Drawing Showing Equipment Pit Locations

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting Phase II environmental sampling at the Bethpage Building 03 location, in accordance with the recommendations set out in the Phase I Environmental Assessment Report dated April 11, 1997 and submitted to the NYSDEC on April 23, 1997.

The enclosed data is being transmitted for your review and represents concrete and soil samples taken from (equipment) pits numbered 21-08, 21-12 (no concrete sample collected), and 21-27. These pits are part of area of concern 21. A drawing is attached that shows the locations of the pits within Plant 03.

The equipment pits are all constructed of concrete and are of various depths and configurations (see drawing for pit sizing).

Based on the enclosed data, we believe that no further action is required at these three locations and would like to begin filling the pits. These pits have previously been decontaminated by using high pressure water, steam and detergent, though scattered oil staining may still be visible in the concrete.

A-121

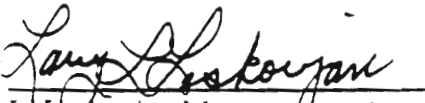
August 29, 1997  
ETC97-197

After your review of the analytical data, we would like your concurrence that the pits require no remediation or additional assessment work. We have a very ambitious work schedule and would appreciate an expedited review of the data.

If you have any questions, please call me at 575-2333 or J. Susco at 575-7171.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
\_\_\_\_\_  
L. Leskovjan, Manager  
Environmental, Health, Safety &  
Medical Services  
M/S: D16-001

cc: (w/attachment): T. John (NYSDEC), T. Mulvihill (NCHD), J. Lovejoy (NCHD),  
B. McKay (NCHD)

**NORTHROP GRUMMAN**

August 26, 1997  
ETC97-195

Grumman Aerospace Corporation  
Electronics & Systems Integration Division  
Grumman Building  
Bethpage, New York 11702

Mr. Tim Mulvihill  
Nassau County Department of Health  
240 Old Country Road  
Mineola, New York 11501

Subject: **Northrop Grumman, Bethpage, New York - Plant 03  
NYSDEC Concurrence of No Further Action on  
Several Process Pit and Secondary Containment Areas**

Enclosure: 1) Letter From S. Farkas of NYSDEC, dated August 22, 1997  
2) Letter from L. Leskovjan to S. Farkas dated August 14, 1997

Dear Mr. Mulvihill:

Northrop Grumman has been conducting environmental sampling at the Government Owned, Contractor Operated (GOCO) portion of the Bethpage facility, which includes Plant 03, in accordance with those recommendations found in the environmental Phase I reports submitted to you on May 7, 1997.

Based on the results of this sampling, on August 14, 1997 Northrop Grumman requested that the NYSDEC concur that no further investigation or remediation was necessary at seven process pit and secondary containment areas (see enclosed letter). This concurrence was requested, because these pits and secondary containment areas are scheduled to be demolished and/or filled.

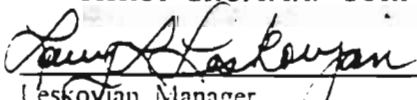
In a letter dated August 22, 1997, the NYSDEC approved of our plan for demolition and filling in of the pits and secondary containment areas. We are enclosing a copy of the letter and analytical data that we submitted to the NYSDEC for your information and review.

Based on the above, Northrop Grumman plans to proceed with the demolition and filling in of these secondary containment and process pit areas starting in early September.

If you have any questions, please call me at 516-575-2333 or J. Susco at 516-575-7171.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**

  
Leskovjan, Manager  
Environmental, Health, Safety & Medical Services  
M/S: D16-001

cc: J. Lovejoy (NCDH), B. McKay (NCDH), (w. enclosure)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Solid and Hazardous Materials  
SUNY- Building 40, Stony Brook, New York 11790-2356  
Phone (516) 444-0375  
Fax (516) 444-0231



*John P. Cahill*  
Commissioner

August 22, 1997

Mr. Larry Leskovjan  
Environmental, Health, Safety & Medical Services  
Northrup Grumman Corporation  
South Oyster Bay Road  
Bethpage, NY 11714-3580

RE: Demolition and Filling of 7 Secondary Containment and Pit Areas in  
Plant 3, Bethpage Facility

Dear Mr. Leskovjan:

The Division of Solid and Hazardous Materials (DSHM) has reviewed your request to begin demolition and filling of 3 secondary containment and 4 pit areas and the environmental sampling data submitted in your letter dated August 14th.

Based on the discussions at our meeting of August 15, inspection of each of the designated areas, and review of the sampling data, the DSHM has no objection to your demolition and filling of the secondary containment and pit areas listed below. We also recommend your receiving approval from Nassau County Department of Health prior to beginning the work. The 4 pit areas approved for filling are:

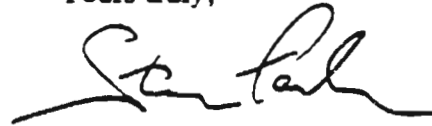
1. Near column JJ28 used for molten salt (Kolene) paint stripping and analyzed as part of area of concern AOC 1 in the Phase I Environmental Assessment dated April 11, 1997.
2. Near column GG47 in the Flowcoat Area and analyzed as part of AOC 7.
3. Near column KK47 used in the Chem Mill Etch process and analyzed as part of AOC 8.
4. Approximately between columns NN32 and NN39 used for Alodine/Sulfuric Anodize and analyzed as part of AOC 11.

The 3 secondary containment areas approved for demolition and filling are:

1. Near column DD46 used for Chromic Acid Anodize and analyzed as part of AOC 10.
2. Outside of Plant 3, near column NN38, waste holding tanks for Alodine/Sulfuric Anodize, analyzed as part of AOC 11.
3. Outside Plant 3, near column DD-46, used as PCE and TCE storage tanks and analyzed as part of AOC 32.

Please advise the Department of your schedule for demolition and fill of these areas. If you have any further questions, please contact me or Thomas John.

Yours truly,



Stanley Farkas, P.E.  
Environmental Engineer II

SF ek

cc: J. Susco, Northrup Grumman  
T. John, NYSDEC  
S. Kaminsky, NYSDEC  
J. Lovejoy, NCDH



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**NORTHROP GRUMMAN**

Electronics & Systems Integration Division  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

ETC97-188  
August 14, 1997

Mr. Stan Farkas  
NYS Department of Environmental Conservation  
SUNY-Building 40  
Stony Brook, New York 11790

Subject: **Northrop Grumman Corporation  
Building 03, Bethpage Facility  
Phase II Environmental Assessment Data  
Selected Pits and Secondary Containment Areas**

Enclosure: Analytical Data for Areas of Concern  
1 (partial), 7 (partial), 8, 10 (partial), and 11

Dear Mr. Farkas:

As you know, Northrop Grumman has been conducting Phase II environmental sampling at the Bethpage Building 03 location, in accordance with the recommendations set out in the Phase I Environmental Assessment Report dated April 11, 1997 and submitted to the NYSDEC on April 23, 1997.

The enclosed data is being transmitted for your review and represents concrete and soil samples taken from several chemical process pit areas and secondary containment areas surrounding tanks of hazardous materials or hazardous wastes. These hazardous waste areas do not require RCRA closure since they meet the wastewater treatment unit exemption granted in NYCRR 373-1.1(d)(xii). Process pits are concrete pits that contained tanks of process chemicals.

Based on the enclosed data, we believe that no further action is required at these locations and would like to begin filling the pit areas and demolishing the secondary containment areas. These pits and secondary containment areas have previously been decontaminated by using high pressure water/steam and detergent.

After your review of the analytical data, we would like your concurrence that the process pits and the secondary containment areas require no remediation or additional assessment work. We have a very ambitious work schedule and would appreciate an expedited review of the data.

ETC97-188  
August 14, 1997  
Page 2

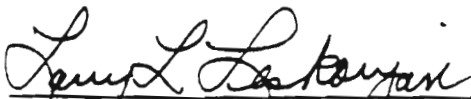
The table below describes the pit/secondary containment areas and refers to the area of concern number designated in the Phase I Environmental Assessment Report. The table also shows the sample number that corresponds to the pit or secondary containment.

Description of pit/sec. containment area	Area of Concern (AOC) Designation	Sample Designation
Kolene	Part of 01 - pit	03-01-27
Flow Coat	Part of 07 - pit	03-07-01 and 03-07-02
Chem Mill Etch	08 - pit	03-08-01 and 03-08-02
Chromic Acid Waste Holding	Part of 10 - secondary containment	03-10-01
Alodine/Sulfuric	Part of 11 - pit	03-11-02 thru 03-11-06
Alodine/Sulfuric Waste Holding	Part of 11 - secondary containment	03-11-01
Outside PCE and TCE Storage Tanks	Part of 32 - secondary containment	03-32-03 and 03-32-06

If you have any questions, please call me at 516/575-2333 or J. Susco. of my staff, at 516/575-7171.

Very truly yours,

**NORTHROP GRUMMAN CORPORATION**



Larry L. Leskovjan, Manager  
Environmental, Health, Safety &  
Medical Services  
M/S: D16-001

cc: T. John. NYSDEC. w/enclosure

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**APPENDIX B**

**TTNUS AND NORTHROP GRUMMAN RESPONSE TO NYSDEC COMMENTS  
ON MARCH 1999 FINAL PHASE II EBS**



MEMORANDUM

TO: Jim Colter

FROM: Peyton Doub

DATE: February 28, 2000

SUBJECT: Responses to NYSDEC-DER-BER comments on March 1999 Draft of Phase II EBS for NWIRP Bethpage

The following memorandum presents Tetra Tech NUS's responses to comments contained in a letter dated February 10, 2000, addressed to you from Steven M. Scharf of the New York State Department of Environmental Conservation (NYSDEC) Division of Environmental Remediation (DER), Bureau of Eastern Remedial Action (BER). The comments pertain to the March 1999 Draft Phase II Environmental Baseline Survey (EBS). A few of the comments have already been addressed in the subsequent December 1999 Interim Final Phase II EBS.

Many of the comments pertain to the approach and design of environmental sampling and remediation completed by Northrop Grumman and its contractors. These activities were performed in close cooperation with the New York State Department of Environmental Conservation (NYSDEC) Division of Solid and Hazardous Waste (DSHW) at Stony Brook and with the Nassau County Department of Health (NCDH). Northrop Grumman and its contractors may be better able than Tetra Tech NUS to explain to NYSDEC-DER-BER the investigative approaches agreed upon with the local agency offices.

The following responses are based on the information available to the Tetra Tech NUS at this time. Gray boxes are included following certain responses to indicate how Northrop Grumman and its contractors may be able to provide additional information that could better address the comment.

GENERAL COMMENTS

Although the NYSDEC-DER-BER letter contains only narrow comments geared to specific pages of the March 1999 document, two general comments form the basis of many of the specific comments in the letter. Responses to these general comments are presented below, followed by responses to each specific comment in the letter.

General Comment 1: Several comments question the rationale for soil sampling depths used by Northrop Grumman.

Response: A 4-foot soil sampling depth is generally adequate to identify maximum concentrations of subsurface soil contamination originating from surface activity. Metals and semivolatile organic compounds (SVOCs) are relatively immobile in soil. Volatile

organic compounds (VOCs) are more readily leached downward through the soil column by heavy rainfall. But most sampling locations at NWIRP Bethpage are interior locations under a roof and concrete floor. The soils are therefore not exposed to rainfall capable of leaching VOCs significantly downward in the soil column. Even in exterior locations, heavy rainfall throughout the intensively developed Bethpage facility is directed into stormwater management facilities. Therefore, even exterior soils do not likely experience the frequent and intense rainfall necessary to leach the maximum concentrations of VOCs from the surface to below 4 feet.

Northrop Grumman took a phased approach to the soil sampling. If exceedances were found in the "primary" samples collected in the upper 4-foot depth, additional "delineation" samples were collected as necessary to define the horizontal and vertical extent of the plume. If necessary to determine the depth of the exceedances, deeper samples were collected as part of the delineation effort.

Northrop Grumman coordinated closely with representatives of NYSDEC DSHW and NCDH while planning its sampling activities. Each of these local agencies reviewed analytical data on an ongoing basis and periodically issued letters once they were satisfied that the potential for contamination associated with specific areas of contamination (AOCs) had been addressed.

General Comment 2: Several comments question the suitability of Northrop Grumman's approach for addressing SVOC exceedances. If exceedances of NYSDEC risk-based guidance values for SVOCs were noted for individual constituents, Northrop Grumman compared the concentration of total carcinogenic PAHs against a criterion of 10,000 ug/kg. If that total value threshold was not exceeded, then Northrop Grumman took no further action. The commenter asked whether the NYSDOH and the Nassau County Department of Health had accepted this approach.

Response: Northrop Grumman coordinated closely with representatives of the NYSDEC DSHW Stony Brook office and the Nassau County Department of Health during its effort to investigate and cleanup NWIRP Bethpage facilities. These offices have consistently accepted no further action conclusions in situations where results exceeded guidance values for individual SVOC constituents but where the concentrations of total carcinogenic PAHs did not exceed 10,000 ug/kg.

#### SPECIFIC COMMENTS

Comment 1: Figure 1.1 incorrectly shows the location of the OXY Hooker RUCO Facility. The Hooker facility is the next triangular parcel to the southeast.

Response: Figure 1-1 will be modified as indicated.

Comment 2: Page 2-4, Third Paragraph: If an exceedance of TAGM 4046 or STARS guidance values for semivolatile organic compounds (SVOCs) were noted for individual SVOCs, then the concentration of total carcinogenic PAHs was compared with a TAGM

criterion of 10,000 ug/kg. If values are less, then no further action was taken. Has this been accepted by the NYSDOH and the Nassau County Department of Health?

Response: See response to General Comment 2.

Comment 3: Page 3-5, Area of Concern 20: The drywells collectively known as area of concern (AOC) 20 are not clearly identified on any figures. This needs to be corrected. Also, why weren't these drywells sampled for PCBs?

Response: Drawing 1 of Northrop Grumman's Phase II ESA shows each sample location investigated as part of AOC 20. These sample locations are denoted with a number beginning with "20". Data reviewed by Northrop Grumman when preparing their Phase I ESA for Plant 03 did not reveal a significant likelihood that the drywells had been contaminated by PCBs.

Comment 4: Drawing 1 that indicates the location of the drywells is missing from the Phase II ESA.

Response: Drawing 1 is an oversize drawing that was included in a pouch in the back of Northrop Grumman's Phase II ESA. The Navy will provide an extra copy.

Comment 5: Page 3-7, Drywells 23 and 24: Why weren't Drywells 23 and 24 sampled for PCBs?

Response: Data reviewed by Northrop Grumman when preparing their Phase I ESA for Plant 03 did not reveal a significant likelihood that the drywells had been contaminated by PCBs.

Comment 6: Page 3-7, AOC 1: Why was the area of Paint Spray Booth 1 only sampled to four feet below grade?

Response: See response to General Comment 1. The primary samples were collected at 0-2 and 2-4 feet below the paint booth location. The delineation samples collected to investigate the slight metal exceedances noted in the text were collected to a maximum depth of 8 feet.

Comment 7: Why were the waste accumulation areas, collectively known as AOC 33, only sampled to a depth of 4 feet for VOCs?

Response: See response to General Comment 1. For the subject location, AOC 33-3, Northrop Grumman did not find TAGM exceedances in the samples collected to a 4-foot depth. No plumes were found in the primary sampling, thus deeper sampling to investigate the downward migration of contamination plumes was not warranted.

Comment 8: To what depths were VOC samples taken below Tank 11?



Response: Soil samples to investigate tanks associated with AOC 32 were collected as deep as 18 feet below the invert of the tanks.

Comment 9: Page 3-10, last paragraph:

a. Has the excavation of 6 feet of soil outside the Facilities Maintenance Area been done yet?

Response: Northrop Grumman completed the excavation in 1998. The NYSDEC-DSHW issued a letter dated June 23, 1998 approving the excavation as complete. Although complete as of the March 1999 Phase II EBS, the Navy had not received the letter as of that time. The Phase II EBS will be updated accordingly.

b. What is the logic for going down 4 feet in any given area where VOCs are a concern?

Response: Soils under a building are not exposed to precipitation capable of significantly leaching VOCs downward. See response to General Comment 1. It is noted that, because TPH was detected in primary samples collected to a depth of 4 feet, deeper samples (to a maximum depth of 8 feet) were collected as part of the delineation effort and analyzed for STARS constituents, including STARS VOCs. The decision to excavate soil to a depth of 6 six feet at the exterior location was based on the analytical results from these deeper samples.

Comment 10: What was the NYSDEC response to soil samples taken in this area.

Response: As noted in the text, Northrop Grumman presented the results from the investigation of this sump pit (AOC 38) in a letter to NYSDEC DSHW dated February 10, 1998. Northrop Grumman's conclusion was that no further action was necessary. The information available to the Navy does not indicate that NYSDEC DSHW sent Northrop Grumman any written correspondence that formally accepts the conclusions.

Comment 11: Page 3-11, Second Paragraph: What were the parameters analyzed for in the samples from the floor drains beneath air compressors 1 and 3 and what was the NYSDEC response?

Response: The floor drains were cleaned out as part of Northrop Grumman's program for closing underground injection control (UIC) features. All UIC closure work was conducted in cooperation with NCDH. Endpoint samples collected following clean out of the floor drains were analyzed by Northrop Grumman for metals, petroleum hydrocarbons, SVOCs, and VOCs, and no exceedances were found.

Comment 12: Page 3-11, Slop Sink Near Column NN03: What is the status of the remediation in this area, what are the contaminants of concern, and what is the location of this AOC?

Response: The U.S. Environmental Protection Agency (EPA) issued a letter dated June 29, 1999 stating that endpoint samples collected following the remediation are satisfactory. The EPA letter requested that Northrop Grumman disconnect the slop sink from the sump and seal the pipe leading from the sink to the sump. Northrop Grumman has since completed those actions.. The Final Phase II EBS will include an oversize drawing showing each spot within the building that underwent remediation (i.e. that was rated in Category 4), including the location of the slop sink near Column NN03. The contaminant of concern was mercury.

Comment 13: Page 3-12, AOC 3: What are the exceedances of chromium remaining in AOC 3? Does this situation require deed restriction?

Response: Chromium concentrations in soil samples collected from the sidewalls of the completed excavation ranged up to 352 mg/kg. Chromium concentrations in soil samples collected from the bottom of the completed excavation ranged up to 133 mg/kg. The NYSDEC soil cleanup objective for chromium is 50 mg/kg. Most sidewall and bottom soil samples were below that level, suggesting that the exceedances at the edge of the completed excavation are localized. The exceedances are quite low relative to the soil cleanup objective. The excavated area has been backfilled with clean soil and covered with concrete, thereby preventing future exposure to surface receptors. TCLP extraction data did not reveal exceedances, thereby suggesting no significant threat to groundwater. Thus deed restrictions do not appear to be necessary.

Comment 14: Page 3-13, AOC 1:

a. To what depths were VOC samples taken below the paint spray booths?

Response: See response to General Comment 1. During the primary sampling event, Northrop Grumman collected soil samples to a depth of 4 feet under each booth location. In response to the metal and benzo(a)pyrene exceedances, described in the text, Northrop Grumman collected additional samples at Paint Booths 5, 6, and 8 (for metals analysis) and at Paint Booth 7 (for metals, VOCs, and SVOCs). The additional samples at Paint Booths 5, 6, and 7 were also collected collected to the 4-foot depth. However, Northrop Grumman considered it necessary to collect samples as deep as 8 feet under Paint Booth 8 to investigate the metals and benzo(a)pyrene exceedances.

b. What were the contaminants that exceeded the NYSDEC criteria in the area of paint spray booths 5, 6, and 8.

Response: For Paint Booth 5, they were chromium (up to 519 mg/kg), selenium (up to 9.1 mg/kg), and thallium (up to 10.3 mg/kg). For Paint Booth 6, they were arsenic (up to 16.8 mg/kg), chromium (up to 128 mg/kg), nickel (up to 25.6 mg/kg), thallium (up to 9.7 mg/kg), and zinc (up to 66.7 mg/kg).

For Paint Booth 8, they were:

- Metals: arsenic (up to 15.1 mg/kg), chromium (up to 233 mg/kg), , copper (up to 1,630 mg/kg), lead (up to 1,160 mg/kg), mercury (up to 0.13 mg/kg), nickel (up to 55.7 mg/kg), selenium (up to 8.6 mg/kg), silver (up to 18.1 mg/kg), and zinc (up to 660 mg/kg).
- SVOCs: benzo(a)anthracene (up to 1700 ug/kg), benzo(a)pyrene (up to 1,100 ug/kg), chrysene (up to 1900 ug/kg), dibenzo(a,h)anthracene (up to 260 ug/kg), and phenol (up to 1,900 ug/kg).
- VOCs: methylene chloride (up to 880 ug/kg) and trichloroethene (up to 86,000 ug/kg).

As noted in the Phase II EBS, Northrop Grumman completed soil excavations from under Paint Booths 5, 6, and 8 and received letters from the NYSDEC DSHW accepting the remediations as complete.

Comment 15: Page 3-14:

a. AOC 16 and AOC 21: What was the NYSDEC DSHW response to the Northrop Grumman determination of no further action on AOC 16 and AOC 21? How did Northrop Grumman determine that the exceedance of zinc does not constitute a hazardous waste?

Response: A letter dated June 23, 1998 from NYSDEC DSHW to Northrop Grumman summarizes in writing various verbal responses to requests for no further action on several AOCs, including AOCs 16 and 21.

Regarding zinc, Northrop Grumman has repeatedly noted in its ESAs that zinc is not regulated as a hazardous constituent under New York state regulations. Therefore, Northrop Grumman's reports note exceedances of TAGM guidance levels for zinc but still conclude that no further action is necessary.

b. AOC 1: Why were samples for VOCs limited to 4 feet?

Response: As noted in the response to General Comment 1, Northrop Grumman collected samples in the initial round of sampling only to a depth of 4 feet at most locations. Deeper samples were collected only if the shallower samples revealed exceedances requiring delineation. The components of AOC 1 mentioned on Page 3-14 are Historical Paint Booths 1 and 2. The samples collected to a depth of 4 feet below those two locations revealed no exceedances for any of the constituents analyzed (metals, VOCs, and SVOCs).

Comment 16: Page 3-15, Final Conclusions:

a. Why weren't the undocumented pit locations in the area west of wall 16 sampled? The conclusion that the scattered sampling would determine any plumes is premature?

Response: Recognizing the potential for undocumented contamination sources from past operations, Northrop Grumman collected samples at 16 randomly determined locations under the floor of Plant 3 under the umbrella of AOC 36 (Unbiased Random Sample Locations). The sampling program conducted under AOC 36 did not reveal any plumes of contamination, from unknown past sources of contamination, requiring remediation. The sampling for AOC 36, as for the other AOCs in Plant 3, was conducted in close cooperation with NYSDEC DSHW, and the NYSDEC DSHW letter dated June 23 indicates that the agency verbally approved a no further action conclusion for AOC 36.

It is further noted that it would be impossible to prove beyond doubt that every small area of soil under the floor of Plant 3 is uncontaminated. Based both on the intensive and widespread sampling of known sources throughout Plant 3, coupled with the even further unbiased sampling conducted as part of AOC 36, it seems reasonable to conclude that the probability of unknown contamination plumes remaining under Plant 3 is low.

b. What were the materials that were known to have been handled in this area and what parameters were sampled for in those samples that were taken?

Response: The Machining Area West of Wall 16 has always, as far as available documentation shows, been a machining area. Cutting oils used to lubricate and cool machining equipment are the only industrial materials expected to have been used in quantity in such an area. Samples collected as part of AOC 36 were analyzed for metals, VOCs, SVOCs, TPH, PCBs, and cyanide. Consistent with AOC 36's objective of investigating unknown sources, these analytes cover the entire spectrum of potential contaminants associated with past operations in Plant 3.

Comment 17: Page 3-15, Shipping and Receiving Area: Was the final decision by Northrop Grumman and the Navy not to sample for glycols approved by the NYSDEC DSHW?

Response: The NYSDEC DSHW was not involved in the decision. The Navy's Phase I EBS, prepared independently of Northrop Grumman's environmental program, subjectively concluded that some minor floor cracks in a room formerly used to store polyethylene glycol could have provided a pathway to underlying soils. Upon further consideration, the Navy concluded that the cracks were too narrow and the concrete floor too thick to allow significant quantities of spilled liquids to enter underlying soil. It is further noted that polyethylene glycol is not a regulated substance under RCRA or CERCLA.

Comment 18: Page 3-15, Shipping and Receiving Area: How high was the exceedance for zinc?

Response: 594 mg/kg, versus a TAGM guidance value of 50 mg/kg. Northrop Grumman concluded that no further action was necessary because NYSDEC does not regulate zinc as a hazardous substance.

Comment 19: Page 3-16, Alodine/Sulfuric Acid Anodize Area: What was the NYSDEC DSHW response to the no further action determination for this area?

Response: The NYSDEC DSHW approved the filling of the alodine/sulfuric acid process pit in a letter dated August 22, 1997.

Comment 20: Page 3-17, AOC 33 and Table 9-5: Not all of the waste accumulation areas appear to have been properly sampled and assessed. This requires a more detailed explanation.

Response: Northrop Grumman collected soil samples at the 0-2 and 2-4 foot depths below the former location of each of 26 waste accumulation areas and analyzed the samples for metals, VOCs, SVOCs, and PCBs. Additional sample locations and deeper sample depths were investigated as necessary to determine the spatial extent of exceedances noted in the primary samples. Based upon data from the primary and delineation samples, Northrop Grumman concluded that soils would have to be excavated from under the former locations of waste areas 9, 11, 12, and 19 (AOCs 33-9, 33-11, 33-12, and 33-19). Letters from Northrop Grumman to NYSDEC DSHW dated April 14, 1998 and May 13, 1998 report that the excavations had been completed and that endpoint samples did not indicate a need for further excavation. A letter from NYSDEC DSHW to Northrop Grumman dated May 13, 1998 indicates approval of the excavation of waste area 19. A letter from NYSDEC DSHW to Northrop Grumman dated June 23, 1998 indicates approval of the excavation of waste areas 9, 11, and 12.

Comment 21: Page 3-17, Former Autoclave Area, AOC 34: Were the soils beneath the autoclave area remediated for PCBs to 10 ppm before backfilling? Were confirmatory endpoint samples taken?

Response: Northrop Grumman collected end point samples following its concrete removal to remediate AOC 34 and determined that PCB concentrations in soil under the excavated concrete did not exceed the TAGM level of 10 ppm.

Comment 22: Page 3-18, AOC 11: What were the wastes stored in the holding tanks at AOC 11? Are VOCs a concern?

Response: Waste transfer tanks 1236, 1237, and 1238 held water-based liquids generated from operation of the Alodine/Sulfuric Acid Anodize Area. The bulk of water-based liquids from that operation were alodine, a liquid solution containing chromium. Other water-based liquids used in the alodine/sulfuric acid anodize process included

caustic soda, sulfuric acid, and Ridolene 57. Ridolene 57 is a mixture of sodium metasilicate, sodium pyrophosphate, and non-ionic surface agent. Thus, Northrop Grumman investigated soil samples from under this area only for metals.

The system did also include a single tank of trichloroethene (TCE), which is not a water-based liquid. The TCE, which was used as a degreaser in the alodine processing line, was brought into and out of the tank using 55-gallon drums. TCE was not a principal component of the waste stream generated by this process. The TCE tank was segregated from the other tanks. Any carryover of TCE used to degrease parts prior to alodine treatment would be expected to be minimal.

Comment 23: Page 3-19, Section 3.2.5:

a. Was the concrete removed from the former chromic acid anodize area?

Response: No, Northrop Grumman demonstrated that the chromium contamination had not migrated into the underlying soil, and they proceeded to fill the pit with clean soil. Northrop Grumman stated in its letter dated November 25, 1997 to NYSDEC DSHW that, because the chromium contamination is limited to the upper surface of the concrete in the pit, no benefit would be served by removing the concrete.

b. What were the wastes stored in the holding tanks 1150, 1151, and 1152? Are VOCs a concern?

Response: Waste transfer tanks 1150, 1151, and 1152 collected water-based liquids generated by operation of the chromic acid anodize operation. Water-based liquids used in that process include chromic acid, sulfuric acid, caustic soda, alum etch, Ridolene 57 (described in the response to Comment 22), and a deoxidizer (comprising ferric sulfate, potassium bifluoride, and nitric acid). Thus, Northrop Grumman investigated soil samples from under this area only for metals.

The system did also include a single tank of trichloroethene (TCE), which is not a water-based liquid. The TCE, which was used as a degreaser in the chromic acid processing line, was brought into and out of the tank using 55-gallon drums. TCE was not a principal component of the waste stream generated by this process. The TCE tank was segregated from the other tanks. Any carryover of TCE used to degrease parts prior to alodine treatment would be expected to be minimal.

Comment 24: Page 3-20, AOC 32: Why were soil samples for VOCs in AOC 32, the PCE and TCE waste holding tanks, only taken to 4 feet below grade?

Response: Two of the borings were extended to include samples as deep as 18 feet below the invert of the tanks for VOC analysis. No exceedances were found.

Comment 25: Page 3-20, UIC Concerns at FF42 and GG42: What was the determination of the UIC program with respect to the end point sampling of the removal action?

Response: Northrop Grumman has not received a response.

Comment 26: Page 3-21, South Central Machining Area, AOC 21: Why were VOC samples taken only to four feet? What was DHSM determination for Pits 16, 17, and 18?

Response: See response to General Comment 1. Because exceedances of TAGM criteria were not found in samples from the upper 4 feet of soil under these pits, deeper samples were not collected. It is noted that the March 1999 draft of the Phase II EBS incorrectly stated that Northrop Grumman investigated soils under Pit 17. Actually, Northrop Grumman did not identify Pit 17 as part of AOC 21, or as part of any other AOC, because it was visibly of good structural integrity. The only pits in the Southcentral Machining Area for which Northrop Grumman collected soil samples were Pits 16 and 18.

Comment 27: Page 3-22, AOC 1, Paint Spray Booths: Why weren't soil samples for VOCs taken much closer to the water table, given the highly contaminated soil found beneath the concrete?

Response: See response to General Comment 1. Deeper samples were collected only as necessary to further investigate exceedances noted in samples from the upper 4 feet.

Comment 28: Page 3-24, Section 3.2.8, Identification, Packaging and Paint Booth Area: Why were soil samples for VOCs limited to 4 feet below grade?

Response: See response to General Comment 1. Deeper samples were collected only as necessary to further investigate exceedances noted in samples from the upper 4 feet.

Comment 29: Page 3-25: Has the condensate pit drain at Column JJ 27 in the packaging and paint booth area been properly remediated?

Response: Northrop Grumman completed two rounds of soil excavation under the drain at Column JJ27 in 1999 and received written approval of the remediation in a letter from the U.S. Environmental Protection Agency dated June 29, 1999. The text will be updated accordingly.

Comment 30: Page 3-26, AOC 21: Why were soil samples for VOCs in AOC 21 limited to only four feet deep?

Response: See response to General Comment 1. Deeper samples were collected only as necessary to further investigate exceedances noted in samples from the upper 4 feet.

Comment 31: Page 3-28, Final Conclusions: What was the DSHW response to the Northrop Grumman statement that the remediation of the Northcentral Machining Area was complete, including the drain near Column DD10.

Response: Northrop Grumman has not received a written approval of its remediation of the drain near Column DD10.

Comment 32: Page 3-29, Shot Peen/Chem Mill Area:

a. Why were soil samples below the old chem mill area, known as AOC 14, only sampled for VOCs and not inorganics, such as chromium?

Response: Actually, the soil samples collected from under the former chem mill transfer tank locations were analyzed for metals, and the soil samples collected from under the former TCE degreaser tank locations in the old chem mill process area were analyzed for VOCs. The text will be adjusted to clarify.

b. What are the slight exceedances for chromium in the soils beneath AOC 14?

Response: Chromium was detected as high as 1,190 mg/kg (versus a NYSDEC Soil Cleanup Objective of 50 mg/kg) in soil samples collected during investigation of AOC 14. Based on this and other metal exceedances, Northrop Grumman excavated soils from under AOC 14, as reported in the Phase II EBS. The highest detection of chromium in the endpoint samples collected following the excavation was 68 mg/kg. Northrop Grumman concluded that the excavation was sufficient and received a letter from NYSDEC DSHW, dated May 13, 1998, approving no further action.

Comment 33: Page 3-30, Flow Coat/Chem Mill Etch Area:

a. Were endpoint samples taken after the 30-foot excavation for PCBs?

Response: Yes. The excavation was performed in connection with remediation of AOC 34. Endpoint soil samples were collected following the excavation and analyzed for PCBs and SVOCs. No exceedances of TAGM criteria were found. Northrop Grumman reported the endpoint sample data to NYSDEC DSHW in an enclosure to a letter dated May 13, 1998. NYSDEC DSHW approved the remediation in a letter to Northrop Grumman dated June 23, 1998.

b. Why weren't soil samples for inorganics taken in this area?

Response: Soils under this floor area within the Flow Coat/Chem Mill Etch Area were excavated due to the fact that several autoclaves were formerly located there.



Autoclaves were formerly located in two places in Plant 3: one set within an enclosed dock area on the south side of the building (the Former Autoclave Area) and a separate set in this area of the Flow Coat/Chem Mill Etch Area. The concerns associated with the former autoclaves are limited to PCBs and SVOCs.

Comment 34: Page 3-31 and Page 3-32, Northeastern Machining Area:

a. Why were soil samples for VOCs in AOC 21 limited to four feet deep?

Response: See response to General Comment 1. Deeper samples were collected only as necessary to further investigate exceedances noted in samples from the upper 4 feet.

b. What was the TAGM 4046 TCE exceedance in Pit 21?

Response: The TCE exceedance in the endpoint sample was a value of 14,000 ug/kg, compared to a TAGM criterion of 1,400 ug/kg. Northrop Grumman performed a TCLP extraction procedure on that sample to determine whether it could represent a potentially significant threat to groundwater. The results did not exceed TAGM guidance for TCLP data. NYSDEC DSHW's letter dated June 23, 1998 to Northrop Grumman approved the conclusion of no further action for the pit.

Comment 35: Page 3-32, Fourth Paragraph, Paint Waste Holding Tank: Why were the soils beneath the paint waste holding tank only sampled to 4 feet for VOCs?

Response: See response to General Comment 1. Deeper samples were collected only as necessary to further investigate exceedances noted in samples from the upper 4 feet.

Comment 36: Page 3-34, Second Paragraph: What drove Northrop Grumman to sample to a depth of 12 feet in the exterior area outside of the north wall but not in the sampling regimen in other areas?

Response: Northrop Grumman felt that the conditions at this location warranted deeper sampling in the primary sampling round.

Comment 37: Page 3-35, Zyglo Penetrant Area: The Phase I ESA concluded that no further work was needed, yet an excavation was ultimately done a 12-foot depth. What contaminants drove the subsequent excavation, were confirmatory samples taken, and why is this area different from numerous other areas where remediation was not required, given that the area was originally deemed "no further action necessary"?

Response: Based on sampling conducted directly under the containment pit and waste holding tanks associated with the former penetrant inspection operation (AOC 12), Northrop Grumman concluded that remediation was not necessary. But, samples collected as part of the investigation of a former waste accumulation area location

(designated as AOC 33-09) that was located directly adjacent to the containment pit, Northrop Grumman concluded that remediation was necessary. The investigation of AOC 33-09 addressed VOCs and SVOCs. The NYSDEC DSHW letter to Northrop Grumman dated June 23, 1998 approved the remediation of AOC 33-09. The Phase II EBS text will be clarified to better differentiate between investigation efforts for AOCs 12 and 33-09.

Comment 38: Page 3-35, Waste Holding Tanks 793, 815, and 1093 East of Hydraulic Press Area:

a. Were there any waste discharge lines associated with these tanks from the old chem mill area?

Response: No, the subject tanks received waste piped only from the Old Alodine Area (part of the "Old Alodine/Plating/Paint Booth Area").

b. What was the NYSDEC DSHW determination for these waste tanks and the underlying soils?

Response: A response from NYSDEC DSHW specifically confirming Northrop Grumman's no further action conclusion concerning exterior Waste Holding Tanks 793, 815, and 1093 is not available.

Comment 39: Page 3-36, AOC 20 and 22: AOC 20 and AOC 22 did require additional follow-up investigations for PCBs and total petroleum hydrocarbons that are still ongoing. The text must reflect it.

Response: The text will be updated to reflect the more recently completed investigations of AOCs 20 and 22.

Comment 40: Page 3-37, Building 03-03-1: What is the status of the diesel oil UST scheduled to be removed?

Response: To be provided by Northrop Grumman

Comment 41: Page 3-38, Building 03-39: Were other chemicals besides methanol stored here?

Response: Available evidence suggests that methanol has been the only liquid stored in this building.

Comment 42: Page 3-42, Building 03-13:

a. What was the status of the settling tanks associated with this building?

Response: The settling tanks have been abandoned and the area remains under investigation as part of Installation Restoration (IR) Program Site 1.

b. What was the NYSDEC Bureau of Spill Response response for the soils failing the STARS series by Building 03-13, AOC 22?

Response: A letter from the NYSDEC Bureau of Spill Response for AOC 22 is not available. It is noted that Northrop Grumman concluded that no remediation was necessary because, although there were exceedances of STARS guidance values for certain SVOCs, the total concentration of cancer-causing PAHs was under 10,000 ug/kg. See response to General Comment 2. The Navy is currently investigating AOC 22 as part of the IR Program.

Comment 43: Page 3-43, Building 3-14 (Facility Maintenance Storage) and Building 3-15: What is the status of the sludge drying beds associated with Building 3-14?

Response: The Navy plans to retain the former location of the sludge drying beds (AOC 35) associated with Buildings 03-14 and 03-15 (recently razed) until the area is remediated under the IR Program to the satisfaction of NYSDEC and EPA.

Comment 44: Page 4-45, Buildings 03-31 and 03-32: Has this area, located next to [IR Program] Site 1, been adequately screened for VOCs?

Response: VOCs were addressed in the sampling program conducted to investigate AOC 26. AOC 26 was designated because of the former presence of drums of PCE and nitric acid in these buildings.

Comment 45: Page 3-48, AOC 30 and Building 03-45:

a. Why wasn't AOC 30 sampled for pesticides?

Response: The report will be revised to note that pesticides were included in the sampling program for AOC 30 under the former location of Building 03-45.

b. What is the status of the Building 3-45 remediation?

Response: Building 03-45 is not itself undergoing remediation. It was rated Category 6 because it is located within an area that was used as sludge drying beds before the building was constructed. That area is being retained by the Navy until the Navy completes remediation of the former sludge drying beds under the IR Program.

Comment 45 [Second]: Page 3-50, Building 3-07: What was the NYSDEC Spill Response Program response to the TPH concentrations in the soil?

Response: A written response from the NYSDEC Spill Response Program is not available.

Comment 46: Page 3-50, Building 03-08 and Salvage Yard:

a. Why was the unknown brown liquid not sampled?

Response: Northrop Grumman removed the brown liquid and power washed the trench. No cracks or other openings in the walls or bottom of the trench were found that would have allowed the brown liquid to contact the underlying soil. Therefore, sampling was not necessary.

b. What was the NYSDEC DSHW determination on this building?

Response: No determination was sought from NYSDEC DSHW for this building. No sampling was conducted because there was no evidence suggesting potential environmental contamination originating from this building.

Comment 47: Page 3-51, Salvage Storage Area: The text states that the PCB concentration in the soils poses an environmental risk, yet the final conclusion states further environmental action is not required. Is remediation in this area required for PCBs.

Response: No. The March 1999 draft of the Phase II EBS contained a typographic error in the last sentence in the first paragraph on Page 3-51. That sentence should have read "A subsequent Phase 2 RI produced under the IR Program had concluded that PCB concentrations in soils in this area did not pose a significant environmental risk."

Comment 48: Page 3-53, Building 03-43: Building 03-43 is adjacent to the recharge basins and the sludge drying beds. It appears that contaminated sludges have impacted this building. This needs to be addressed.

Response: As indicated on Figure 10-2 of the report, Building 03-43 is located immediately adjacent to, but just outside of, the former location of the sludge drying beds.

Comment 49: Page 3-54, Recharge Basins and Sludge Drying Beds:

a. What were the levels of SVOCs, metals, and PCBs in the recharge basins that recommended no further action?

Response: The following exceedances were found in soil samples collected from the recharge basins and reported in a "Phase II Site Assessment", dated April 22, 1998 and prepared by ERM, Inc. for Northrop Grumman. The following SVOC exceedances of TAGM criteria were found:

- Benzo(a)anthracene, as high as 1,900 ug/kg (TAGM guidance of 220 ug/kg)
- Chrysene, as high as 1,900 ug/kg (TAGM guidance of 400 ug/kg)
- Benzo(b)fluoranthene, as high as 2,100 ug/kg (TAGM guidance of 1,100 ug/kg)
- Benzo(a)pyrene, as high as 1,500 ug/kg (TAGM guidance of 61 ug/kg)
- Dibenzo(a,h)anthracene, as high as 200 ug/kg (a TAGM guidance of 14 ug/kg)

The following metal exceedances of TAGM criteria were found:

- Copper, as high as 251 mg/kg (eastern US background of 50 mg/kg)
- Zinc, as high as 60.5 (eastern US background of 50 mg/kg)
- Mercury, as high as 0.29 (eastern US background of 0.2 mg/kg)

One PCB exceedance of TAGM criteria was also found. It was a PCB 1248 value of 1.2 mg/kg, compared to a TAGM guidance of 1.0 mg/kg.

The Phase II Site Assessment concluded that these levels did not indicate a need for remediation. It concluded that the metal and PCB exceedances were insignificant. It concluded that the SVOC exceedances did not pose a significant threat to groundwater because TCLP extraction data were below TAGM guidance criteria.

b. The surface soils in the sludge drying beds should be remediated to 1 ppm for PCBs.

Response: Soils at the former location of the sludge drying beds are being remediated in accordance with the onsite soil record of decision (ROD). Surface soils with a PCB concentration exceeding 1 ppm will be covered.

Comment 50: Page 3-55, Wooded Area: What was the exceedance of chromium, copper, and zinc in the wooded area?

Response: Chromium was detected as high as 293 mg/kg, versus a TAGM criterion of 50 mg/kg. But Northrop Grumman concluded that further action was not necessary because hexavalent chromium was detected below TAGM criteria. Copper was detected as high as 616 mg/kg, versus a TAGM criterion of 50 mg/kg. Zinc was detected as high as 261 mg/kg, versus a TAGM criterion of 50 mg/kg. Northrop Grumman concluded that the copper and zinc exceedances did not warrant remediation because copper and zinc are not listed as "Hazardous Constituents" in Appendix 23 of 6 NYCRR Part 371. Northrop Grumman reported these results to NYSDEC DSHW in a letter dated September 25, 1998.

Comment 51: Page 4-6, Second Paragraph, Abandoned Degreaser:

a. Why were soil samples limited to four feet in the area of the abandoned vapor degreaser?

Response: See response to General Comment 1. Deeper samples were collected only as necessary to further investigate exceedances noted in samples from the upper 4 feet. As noted in a letter report dated May 29, 1998 from Dvirka and Bartilucci to Northrop Grumman, exceedances of TAGM criteria were not found in the samples collected from the 0-2 and 2-4 foot intervals. Therefore, deeper samples were not considered to be necessary.

b. What was the condition of the subflooring in the abandoned vapor degreaser?

Response: Northrop Grumman will need to respond.

Comment 52: Page 5-2, AOC 6, AOC 8, Building 17N-01: Why were the soils beneath the drum storage and chemical storage areas sampled only to 4 feet for VOCs?

Response: See response to General Comment 1. Deeper samples were collected only as necessary to further investigate exceedances noted in samples from the upper 4 feet.

Comment 53: Page 5-2, Conclusions: The exceedance of TAGM 4046 for mercury conflicts with the preceding statements of no exceedance at all. Please explain.

Response: In the initial round of sampling for AOC 8 at Building 17N-01, mercury was detected at 0.14 mg/kg at the 0-2 foot depth at one location. Mercury was detected at 0.31 mg/kg at the 2-4 foot depth in a field duplicate sample at the same location. These values exceed the NYSDEC Soil Cleanup Objective for mercury of 0.1 mg/kg. In response, Northrop Grumman collected soil samples at the 0-2 and 2-4 foot intervals at four additional locations immediately surrounding the location where the mercury exceedances were found. These samples were analyzed for mercury, and mercury was not detected. Northrop Grumman therefore concluded that mercury levels in soil under Building 17N-01 did not warrant further action.

Comment 54: Page 5-7, Section 5.1.6, Building 17N-6: Is there any reason to suspect these leach fields were used for wastes other than sanitary?

Response: Available information on the usage history of Building 17N-6 (Warehouse 5) does not indicate that the leach fields were used for any purposes other than the treatment of sanitary waste.

Comment 55: Page 5-8, AOC 12: Why were soil samples for VOCs limited to four feet in depth?

Response: See response to General Comment 1. Deeper samples were collected only as necessary to further investigate exceedances noted in samples from the upper 4 feet. It is noted that further rounds of sampling conducted to delineate exceedances

found during the investigation of AOC 12 extended as deep as 8 feet. Soils were excavated at AOC 12 as deep as necessary to obtain satisfactory endpoint samples. The NYSDEC DSHW reviewed the endpoint sample data and accepted Northrop Grumman's remediation of AOC 12 in a letter dated May 13, 1998.

Comment 56: Page 5-10, Section 5.2.2, Building 17S-20: What was the UIC response to no further action to the drywell in AOC 20?

Response: Northrop Grumman has not received written responses from the NCDH responding to the completed remediation of the drywells associated with Building 17S-20.

Comment 57: Page 5-11, Building 17S-22: What is the status of the UST 17-22 S investigation?

Response: After publication of the March 1999 draft of the Phase II EBS, Northrop Grumman provided documentation that UST Tank 17-22-1 was removed after failing a tightness test in September 1991. The failed test was labeled Spill No. 91-05709. A contractor to Northrop Grumman, Tyree Brothers, Inc., collected samples showing that soils under the tank were not significantly contaminated. The Phase II EBS will be adjusted to include this information.

Comment 58: Page 6-1, Building 20-01: AOCs 1 through 6 are missing from Figure 6-1.

Response: Building 20-01 is a small building whose environmental suitability for transfer was determined for the building as a whole. Therefore, a detailed map of the building interior showing each AOC was not included in the Phase II EBS. However, maps showing the exact location of each AOC are available in Northrop Grumman environmental site assessment documents for Plant 20.

AOCs 1 through 5 are located inside Building 20-01. The exact location of each of AOCs 1 through 5 on a floor plan for Building 20-01 is shown in Figure 5, "Transportation Garage Building - Interior", in the *Phase I Environmental Site Assessment for the Plant 20 Transportation Maintenance Building*, dated February 1997 and prepared by Radian International for Northrop Grumman. Figure 6-1 will be revised to indicate that AOCs 1 through 5 for Plant 20 lie within the hatched area corresponding to the interior of Building 20-01.

AOC 6 constitutes the removed or abandoned USTs at Building 20-01, including Tanks 20-01-04, Tank 20-01-09, and Tank 20-02-01. Figure 6, "Current and Former Tanks - Plant 20" shows the locations of these tanks plus other tanks determined by Northrop Grumman to not require environmental sampling. These latter tanks were active and in compliance as of Northrop Grumman's Phase I ESA.

Comment 59: What was the NYSDEC Bureau of Spill Response determination on the Northrop Grumman finding for the UST removal of AOC 6.

Response: A written response from NYSDEC Bureau of Spill Response is not available.

Comment 60: Page 6-2, AOC 1: Where did the paint shop drain line discharge to? Were samples at this location also limited to four feet for VOCs?

Response: According to Northrop Grumman's *Phase I Environmental Site Assessment for the Plant 20 Transportation Maintenance Building*, dated February 1997 and prepared by Radian International, the paint shop drain line discharged to the leachfield immediately east of Building 20-01.

Comment 61: Page 6-3, Section 6.2: Was the No. 2 fuel oil tank removed?

Response: Northrop Grumman will need to answer this question.

Comment 62: Page 7-1, Section 7.0: What is the status of the remedial actions for Plant 5 indicated as necessary by the Northrop Grumman Phase II Environmental Site Assessment?

Response: Northrop Grumman is still in the process of performing its program of remedial actions at Plant 05. The Navy's Phase II EBS presents a snapshot of the environmental status of NWIRP Bethpage based on information available to the Navy as of November 1999. The Navy acknowledges that most of the remedial actions planned for Plant 05 based on the findings of Northrop Grumman's environmental site assessments had either not been completed as of November 1999 or not been reported by Northrop Grumman to the Navy as completed at that time. Thus, many areas in Plant 05 are designated in the EBS using condition rating categories indicative of unresolved environmental concerns (i.e. categories 5, 6, and 7). Prior to the ultimate transfer of ownership of Plant 05 to Northrop Grumman, the Navy will prepare a Finding of Suitability to Transfer (FOST) which will update the environmental condition of Plant 05. Transferred areas will have a rating of 1, 2, 3, or 4; or the Navy may elect to transfer areas with higher ratings in accordance with Early Transfer Authorization procedures established under CERCLA 120(h).

Comment 63: Page 7-2; Section 7.1.1, AOC 28 and 29: Why were soil borings for VOCs limited to four feet?

Response: The Phase II EBS did not report any sampling results for Plant 05 AOCs I-28 and I-29 (Note that Northrop Grumman designated each AOC associated with Plant 05 as either interior (AOC I-XX) or exterior (AOC E-XX). Northrop Grumman elected not to conduct any sampling in connection with its environmental site assessments for either of these two AOCs, which constitute utility trenches in the Shuttle Wing Hanger. They instead deferred the sampling of soils under the trenches to its program of UIC



closure for Plant 05. No UIC closure documentation was available to the Navy as of November 1999. The Shuttle Wing Hangar was therefore rated in Category 6.

Comment 64: Page 7-5, Section 7.1.2: Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

Comment 65: Page 7-6, AOC 25 and AOC 26: Why were soil borings for VOCs limited to four feet?

Response: See response to General Comment 1.

Comment 66: Page 7-7, Section 7.1.3, SBMS File Storage Area AOC I-22: Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

Comment 67: Page 7-7, Third Paragraph: Why were samples in AOC I-24 taken to 10 feet here only.

Response: The sampling at this location was designed to extend four feet below the bottom of the CB&I chamber, which was assumed to be six feet below the ground surface (deepest sample thus 10 feet below the surface). Northrop Grumman's approach to primary soil sampling was similar at this location as at many other locations. Primary soil samples were collected to a depth of four feet beneath the suspected contamination source, and deeper samples were collected only as necessary to delineate exceedances detected in the primary samples.

Comment 68: Page 708, Section 7.1.4, AOC I-21: Was AOC I-21 sampled for PCBs?

Response: The samples collected to investigate AOC I-21 were not analyzed for PCBs. AOC I-21 constitutes a series of drain pits in an electrical generating room. Northrop Grumman had no reason to believe that materials containing PCBs had ever been used in this room.

Comment 69: Pages 7-8 and 7-9, AOC I-20, AOC I-23, and AOC I-37: Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

Comment 70: Page 7-9, AOC E-35 and AOC E-37: Why were samples for VOCs taken only to four feet?

Response: See response to General Comment 1.

Comment 71: Page 7-10, AOC E-35: What is area AOC E-35 being remediated for?

Response: Northrop Grumman is remediating soils at exterior location AOC E-35 for arsenic, which was detected as high as 17.2 mg/kg, compared to an NYSDEC Soil Cleanup Objective of 7.5 mg/kg.

Comment 72, Page 7-11, Section 7.1.6, Paint Area: Why were samples for VOCs taken only to four feet?

Response: See response to General Comment 1.

Comment 73: Page 7-12, AOC I-5 and AOC I-5: Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

Comment 74: Page 7-13, Section 7.1.8: Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

Comment 75: Page 7-16, AOC I-15 and AOC I-17: Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

Comment 76: Page 7-16, AOC I-15 and AOC I-17: Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

Comment 77: Page 7-17, AOC I-10, AOC I-11, and AOC I-12: Why were VOC samples taken only to four feet?

Response: See response to General Comment 1.

Comment 78: Page 7-17, AOC E-17:

a. Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2. The comment refers to AOC E-7, a dry well near the northeast corner of Building 05-01 near the Old Model Shop, not AOC E-17 which is a cesspool associated with Building 25-03, a former pilots ready room.

b. Why were samples for VOCs taken only to four feet?

Response: As indicated in the text, soil samples were collected at the 11-13 and 15-17 foot intervals below ground level, or targeted to be about 4 feet below the bottom of the dry well.

Comment 79: Page 7-18 and Page 7-19, AOCs I-7, I-8, and I-9:

a. Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

b. Why were samples for VOCs taken only to four feet:

Response: See response to General Comment 1.

Comment 80: Page 7-19, AOC I-18:

a. Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

b. Why were samples for VOCs taken only to four feet:

Response: As indicated in the text, soil samples were collected in a depth range of 4 to 9 feet beneath the floor at the drywell (targeted to be about 4 feet below the bottom of the dry well). See response to General Comment 1.

Comment 81: Page 7-22, AOC I-35: Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

Comment 82: Page 7-23, AOC E-42: Why were samples for VOCs taken only to four feet?

Response: See response to General Comment 1.

Comment 83: Page 7-27, Building 5-11: Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

Comment 84: Page 7-28, AOC E-17: Has the use of total CPAHs in lieu of individual PAHs for cleanup values been accepted by the NYSDOH?

Response: See response to General Comment 2.

Comment 85: Section 9 and Section 10: The Tables 9-1 and 10-1 can be accepted as complete by the NYSDEC-DER-BERA once the above comments have been addressed.

Response: Acknowledged.

**NORTHROP GRUMMAN**

Airborne Early Warning  
and Electronic Warfare Systems

**Integrated Systems  
and Aerostructures Sector**

Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, NY 11714

ETC00L-156  
August 10, 2000

Mr. James Colter  
NAVFAC  
Northern Division  
10 Industrial Hwy  
Lester, PA 19113-2090

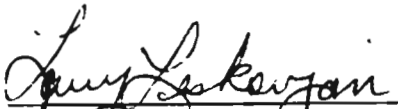
Dear ~~Mr.~~ <sup>*Jim*</sup> Colter:

By his e-mail to me dated April 20, 2000, Al Taormina requested that Northrop Grumman review the responses of the Navy's consultant to the NYSDEC's comments regarding the Navy's Phase II Environmental Baseline Study. Through the assistance of Adam Postyn, now with D&B Consulting Engineers, who worked for Northrop Grumman on the environmental remediation of the 105 acres, we have prepared the enclosed response. This package contains the copies of the No Further Action letters received from the regulatory agencies. You should have already received the electronic file of Adam's response letter.

I apologize for the length of time it took to get this to you. As you know, Adam has only recently returned to work full-time following a rather lengthy illness. Please call me at (516) 575-2333 if you have any questions or need additional information.

Sincerely,

**NORTHROP GRUMMAN CORPORATION**



Larry L. Leskovjan, Manager  
Environmental Technology & Compliance

cc: E. Doyle (w/o enclosure)  
J. Kaminski (w/o enclosure)  
A. Taormina (w/o enclosure)



**Dvirka  
and  
Bartilucci**

CONSULTING ENGINEERS

330 Crossways Park Drive, Woodbury, New York, 11797-2015  
516-364-9890 • 718-460-3634 • Fax: 516-364-9045  
e-mail: db-eng@worldnet.att.net

August 7, 2000



Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
Mail Stop: D08-001  
Bethpage, NY 11714-3582

Re: Responses to NYSDEC comments on March 1999 Draft of Phase II EBS for the NWIRP  
Bethpage Site  
Bethpage, NY 11714  
D&B No. 801/98-L

Dear Mr. Leskovjan:

As requested, I have prepared a response to comments received from the New York State Department of Environmental Conservation (NYSDEC) regarding the report entitled, "Draft Phase II Environmental Baseline Survey for Naval Weapons Industrial Reserve Plant - Bethpage, New York," dated March 1999. I understand that this report, prepared by Tetra Tech NUS, Inc., (Tetra Tech) summarizes all Phase II Environmental Site Investigation activities performed at the Bethpage Naval Weapons Industrial Reserve Plant (NWIRP). Specific comments resulting from the NYSDEC's review of this document have been summarized in a memorandum from Peyton Doub (Tetra Tech) to Jim Colter (Navy) on February 28, 2000. The Navy has requested Northrop Grumman Corporation to provide a more comprehensive response to certain of the NYSDEC's comments.

Based on my review of the February 28, 2000 memo in light of my understanding of the Bethpage NWIRP site, I offer the following responses to each NYSDEC comment in which the Navy has requested further information:

**General Comment 2:**

Northrop Grumman may be better able to explain the rationale for using the total CaPAH criterion as the basis for taking no further action on exceedances of individual guidance values for specific organic constituents.

**Response:**

*Northrop Grumman pursued an action level for total CaPAHs of 10,000 ug/kg for the NWIRP site after considering several Records of Decision (RODs) for Site Registry properties in New York State at industrial facilities that have successfully utilized this value. Most importantly, Northrop Grumman has obtained no further action letters from the NYSDEC Albany office for areas of concern (AOC) in which analytical results exceeded the NYSDEC TAGM 4046 comparison values for individual SVOC constituents*

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Larry L. Leskovjan, Manager  
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Northrop Grumman Corporation  
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*but the total CaPAHs were less than 10,000 ug/kg. It should also be noted that the NYSDEC Albany office consulted with and obtained the concurrence of the New York State Department of Health (NYSDOH) before issuing a no further action letter for the Bethpage NWIRP site. In addition, the criterion of 10,000 ug/kg for CaPAHs is articulated in the NYSDEC TAGM 4046 document dated January 24, 1994.*

**Comment 3 - Page 3-5, Area of Concern 20:**

Northrop Grumman will need to provide input concerning their decision not to investigate for PCBs. It does seem in the realm of possibility that cutting oils or hydraulic fluids containing PCBs could have inadvertently entered some of the dry wells during operations prior to 1980.

**Response:**

*Based on the report entitled, "Phase II Environmental Assessment - Plant 3," dated August 1998, prepared by Radian International, six dry wells were initially investigated as part of AOC 20. Two soil samples were collected from a boring advanced adjacent to these six dry wells at the 10-12 foot interval and the 12-14 foot interval. These soil samples were analyzed for TPH, metals, and volatiles. Following the primary sampling, a total of 21 additional known and suspected drywell locations were sampled using the same methodology as the original six. Additional delineation sampling was conducted within dry wells 20-03AA, 20-04-AA, 20-06B, 20-07AA, 20-08AA, 20-013AA, 20-14B, 20-22AA, 20-27B, and 20-25B using a hollow stem auger drill rig. Soil samples from these locations were analyzed for STARS Table II, PCBs, VOCs, and TPH.*

**Comment 5 - Page 3-7, Dry wells 23 and 24:**

Can Northrop Grumman provide explain why they did not to analyze the samples for PCBs.

**Response:**

*Based upon a review of the Plant 3 Phase II Environmental Assessment prepared by Radian International, a specific sampling and analysis methodology was not provided for dry wells 23 and 24. However, it should be noted that dry well 24 has been remediated to a depth of 16 feet below grade.*

**Comment 10: What was the NYSDEC response to soil samples taken in this area. Can Northrop Grumman produce such a letter.**

**Response:**

*The NYSDEC no further action letter for sump pit (AOC 38) is provided in Attachment A.*

Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
August 7, 2000

**Comment 11 - Page 3-11, Second Paragraph:** What were the parameters analyzed for in the samples from the floor drains beneath air compressors 1 and 3 and what was the NYSDEC response? Has Northrop Grumman received a letter response from NYSDEC DSHM concerning the UIC closure of the air compressors in the Facilities Maintenance Area?

**Response:**

*The closure letters regarding the floor drains located beneath the air compressors 1 and 3 are provided in Attachment B.*

**Comment 15 - Page 3-14: a. AOC 16 and AOC 21:** What was the NYSDEC DSHW response to the Northrop Grumman determination of no further action on AOC 16 and AOC 21? How did Northrop Grumman determine that the exceedance of zinc does not constitute a hazardous waste? Strictly speaking, this letter refers to several specific letters submitted by Northrop Grumman. Of these, a letter dated 3/23/98 requests approval for no further action on parts of AOCs 16 and 21. Can Northrop Grumman provide a letter covering the remainder?

**Response:**

*The Northrop Grumman letter dated 3/23/98 requested approval for no further action for various AOCs that exhibited minor TAGM exceedances. As summarized in this 3/23/98 letter, AOCs 16-2, 16-4, 16-8, 16-10, and 16-15 were recommended by Northrop Grumman for no further action although there were minor TAGM exceedances associated with these AOCs. Based upon a review of Radian's Phase II Site Assessment for Plant 3, all other parts of AOC 16 did not exhibit any TAGM exceedances. Therefore, no further action letters for these AOCs were not required.*

*Since AOC 21 was associated with equipment pits, Northrop Grumman sought no further action letters for all equipment pits before these pits could be backfilled. Therefore, Northrop Grumman obtained no further action letters for AOC 21, regardless of the analytical results as compared to the TAGM values. However, it should be noted that, because AOC 21-21 required remediation, a separate no further action letter was obtained for this particular AOC.*

*Applicable no further action letters for AOCs 16 and 21 are provided in Attachment C.*

**Comment 16 - Page 3-15, Final Conclusions:** a. Why weren't the undocumented pit locations in the area west of wall 16 sampled? The conclusion that the scattered sampling would determine any plumes is premature? The letter refers to Northrop Grumman's 3/23/98 letter which indicates results only for AOC 36 partial. Can Northrop Grumman provide documentation resolving the remainder of AOC 36? Also, can Northrop Grumman better justify that the probability of other unknown contamination sources under the machining floors of Building 03-01 is low?



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Northrop Grumman Corporation  
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**Response:**

*As previously discussed, the Northrop Grumman letter dated 3/23/98 requested approval for no further action for various AOCs that exhibited minor TAGM exceedances. As summarized in the 3/23/98 letter, AOCs 36-1, 36-2, 36-3, 36-5, 36-8, and 36-15 were recommended by Northrop Grumman for no further action although there were minor TAGM exceedances associated with these AOCs. Based upon a review of Radian's Phase II Site Assessment for Plant 3, all other parts of AOC 36, with the exception of AOC 36-10, did not exhibit any TAGM exceedances. Therefore, no further action letters for these AOCs were not required. It should be noted that AOC 36-10 was remediated as part of AOC 34 due to their close proximity to one another. The NYSDEC has issued a separate no further action letter for AOC 34.*

*The no further action letter responding to the Northrop Grumman letter dated 3/23/98 is provided in Attachment D.*

*As stated in Tetra Tech's February 28, 2000 memo, Northrop Grumman devised the Plant 3 Phase II sampling plan to target known AOCs that represent potential sources of contamination. In order to address sources of contamination that may not be associated with a known AOC, Northrop Grumman sampled 16 randomly determined locations throughout Plant 3. Since none of the 16 sample locations exhibited levels of contamination exceeding the NWIRP comparison values, further random sampling was not considered to be warranted.*

**Comment 16 - Page 3-15, Final Conclusions: b. What were the materials that were known to have been handled in this area and what parameters were sampled for in those samples that were taken? Can Northrop Grumman provide a more complete history of materials usage in this area.**

**Response:**

*According to the report entitled, "Phase I Environmental Site Assessment for the Product Manufacturing Plant 3 Site," dated April 11, 1997, prepared by Radian International (Radian), the area immediately west of Wall 16 was utilized for machining and assembly. The report indicates that machine shops at Northrop Grumman typically utilized large quantities of cutting and lubricating oils. It should be noted that, as I understand, the Plant 3 Phase I report was prepared by summarizing all available information regarding the historic operations of the property. Therefore, information beyond which is presented in Radian's Phase I report is likely not known to exist.*

**Comment 17 - Page 3-15, Shipping and Receiving Area: Was the final decision by Northrop Grumman and the Navy not to sample for glycols approved by the NYSDEC DSHW? Can Northrop Grumman add information on why they did not identify the floor cracks as an AOC.**

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Environmental Technology and Compliance  
Northrop Grumman Corporation  
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**Response:**

*As I understand, at the time of the original site inspection conducted in support of the Plant 3 Phase I environmental site assessment, Radian did not consider the small floor cracks located in the Shipping and Receiving area to be an AOC. Most importantly, floor staining was not observed in this area during the site inspection indicating that chemicals of concern were probably not inadvertently released over time.*

**Comment 20 - Page 3-17, AOC 33 and Table 9-5: Not all of the waste accumulation areas appear to have been properly sampled and assessed. This requires a more detailed explanation. Can Northrop Grumman produce a letter from NYSDEC DSHW approving of their no further action decision for the other waste management areas (other components of AOC 33)?**

**Response:**

*As previously discussed, the Northrop Grumman letter dated 3/23/98 requested approval for no further action for various AOCs that exhibited minor TAGM exceedances. As summarized in this 3/23/98 letter, AOC 33-25-S, was recommended by Northrop Grumman for no further action although there were minor TAGM exceedances associated with this AOC. Based upon a review of Radian's Phase II Site Assessment for Plant 3, all other parts of AOC 33, with the exception of AOCs 33-9, 33-11, 33-12, and 33-19, did not exhibit any TAGM exceedances. Therefore, no further action letters for these AOCs were not required. As mentioned in the February 28, 2000 Tetra Tech memo, AOCs 33-9, 33-11, 33-12 were and Northrop Grumman has received separate no further action letters for these AOCs.*

*The no further action letter responding to the Northrop Grumman letter dated 3/23/98 is provided in Attachment E.*

**Comment 21 - Page 3-17, Former Autoclave Area, AOC 34: Were the soils beneath the autoclave area remediated for PCBs to 10 ppm before backfilling? Were confirmatory endpoint samples taken? Northrop Grumman needs to clarify whether its remediation of AOC 34 included the former autoclave area between Columns NN 36 and NN 39 (on an enclosed exterior deck on the south side of the building). There is confusion in Northrop Grumman's reports and correspondence because AOC 34 was also applied to an interior area between Columns KK 41 and KK 42 (parts of the ID/Packaging/Paint Booth Area and Flow Coat/Chem Mill Etch Area).**

**Response:**

*Northrop Grumman removed PCB impacted concrete from the Former Autoclave Area - AOC 34 corresponding to the area immediately south of columns NN35 and NN43. Because soil samples collected, before remediation, within this area did not exhibit any PCB exceedances above 10 ppm, endpoint soil samples were not collected. Following*

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Environmental Technology and Compliance  
Northrop Grumman Corporation  
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*concrete removal, the remediated areas were restored with 6 inches of newly poured concrete to match the original conditions of the area.*

**Comment 22 - Page 3-18, AOC 11: What were the wastes stored in the holding tanks at AOC 11? Are VOCs a concern? Can Northrop Grumman verify that very little TCE entered the waste stream from the Alodine/Sulfuric Acid Anodize process.**

**Response:**

*According to Northrop Grumman personnel and the applicable findings of the Phase I Site Assessment, the Alodine/Sulfuric Acid Anodize process did not utilize significant quantities of trichloroethene.*

**Comment 23 - Page 3-19, Section 3.2.5: b. What were the wastes stored in the holding tanks 1150, 1151, and 1152? Are VOCs a concern? Can Northrop Grumman verify that very little TCE entered the waste stream from the Chromic Acid Anodize process.**

**Response:**

*According to Northrop Grumman personnel and the applicable findings of the Phase I Site Assessment, the Chromic Acid Anodize process did not utilize significant quantities of trichloroethene.*

**Comment 25 - Page 3-20, UIC Concerns at FF42 and GG42: What was the determination of the UIC program with respect to the end point sampling of the removal action? Can Northrop Grumman produce a response letter from NCDH approving its remediation of the grease trap at Columns FF42 and GG42?**

**Response:**

*The closure letters regarding these UIC concerns are provided in Attachment F.*

**Comment 26 - Page 3-21, South Central Machining Area, AOC 21: Why were VOC samples taken only to four feet? What was DHSM determination for Pits 16, 17, and 18? Can Northrop Grumman produce a written letter from NYSDEC DSHW approving no further action on AOC 21 in its entirety?**

**Response:**

*See response to Comment 15.*

**Comment 31 - Page 3-28, Final Conclusions: What was the DSHW response to the Northrop Grumman statement that the remediation of the North Central Machining Area was complete, including the drain near Column DD10. Can Northrop Grumman produce a copy of a letter from**

Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
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NYSDEC, NCDH, or EPA approving the remediation of the drain near Column DD10 (a UIC feature)?

**Response:**

*The closure letter regarding this UIC concern is provided in Attachment G.*

**Comment 36 - Page 3-34, Second Paragraph:** What drove Northrop Grumman to sample to a depth of 12 feet in the exterior area outside of the north wall but not in the sampling regimen in other areas? It would help if Northrop Grumman could provide a verbal rationale for why primary sampling below 4 feet was conducted at this (and certain other select locations) but not at many other locations.

**Response:**

*As described in the Plant 3 Phase I report, Northrop Grumman has conducted and completed a separate chromium investigation regarding the Chem Mill Clean line. As part of this investigation, a soil sample was collected at a depth of 10 feet below grade outside Plant 3 between columns FF45 and FF46. Because this sample exhibited elevated levels of chromium, it was known or suspected that the exterior area outside of the north wall was impacted with chromium well below the typical 0-4 foot sampling regime. Therefore, it was initially proposed that samples be collected from the area immediately north of the Chem Mill Clean line from the 0-2, 4-6, and 8-10 foot intervals. Samples were collected from as deep as 12 feet below grade in order to determine the vertical extent of contamination.*

**Comment 38 - Page 3-35, Waste Holding Tanks 793, 815, and 1093 East of Hydraulic Press Area:** b. What was the NYSDEC DSHW determination for these waste tanks and the underlying soils? Can Northrop Grumman provide a letter from NYSDEC DSHW approving the no further action conclusion for concerning exterior Waste Holding Tanks 793, 815, and 1093?

**Response:**

*Based on a review of the Phase II Site Assessment for Plant 3 prepared by Radian, soil samples associated with AOC 3-11 were advanced in the direct vicinity of Waste Holding Tanks 793, 815, and 1093. Because there were no TAGM exceedances associated with these samples, no further action letters were not required for these tanks.*

**Comment 42 - Page 3-42, Building 03-13:** a. What was the status of the settling tanks associated with this building? Were settling tanks specifically cleaned out and a closure letter received from NCDH?

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Northrop Grumman Corporation  
August 7, 2000

**Response:**

*As I understand, Northrop Grumman pumped the liquid contents from the settling tanks associated with the former leachfield east of Building 03-01 into tanker trucks for proper off-site transportation and disposal. Northrop Grumman then permanently closed the settling tanks by backfilling each tank with certified clean bank-run sand and welded each manhole cover shut. Based on the available information, Northrop Grumman was not required to obtain a closure letter from the NCDH regarding these settling tanks.*

**Comment 42 - Page 3-42, Building 03-13: b. What was the NYSDEC Bureau of Spill Response for the soils failing the STARS series by Building 03-13, AOC 22? Can Northrop Grumman provide a letter from the NYSDEC Bureau of Spill Response regarding AOC 22.**

**Response:**

*The no further action letter for the NYSDEC Spill #91-00585 associated with the tank adjacent to Building 03-13 is provided in Attachment H.*

**Comment 45 [Second]: Page 3-50, Building 3-07: What was the NYSDEC Spill Response Program response to the TPH concentrations in the soil? Can Northrop Grumman provide a letter from the NYSDEC Bureau of Spill Response regarding the TPH detection found in soil samples collected at the suspected former location of UST 03-07-1?**

**Response:**

*Based on a review of the report entitled, "Phase II Environmental Site Assessment for the Salvage Area, Permitted Drum Storage Facility, and Industrial Waste Treatment Plant," dated September 1997, prepared by Radian International, the TPH detection from soil samples collected in the vicinity of the former UST 03-07-1 were further investigated. Subsequent analysis indicated no exceedances of the TAGM criteria. Therefore, a no further action letter for this AOC was not required.*

**Comment 50 - Page 3-55, Wooded Area: What was the exceedance of chromium, copper, and zinc in the wooded area? Can Northrop Grumman produce a letter from NYSDEC DSHW approving of the no further action determination for the swale in the wooded area?**

**Response:**

*The no further action letter for the wooded area is provided in Attachment I.*

**Comment 51 - Page 4-6, Second Paragraph, Abandoned Degreaser: b. What was the condition of the subflooring in the abandoned vapor degreaser? Hopefully someone with Northrop Grumman or Dvirka and Bartilucci remembers the condition of the pit.**

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Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
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**Response:**

*According to observations by field personnel made during the investigation program, the concrete pit was in good condition and did not exhibit any cracking or staining.*

**Comment 54 - Page 5-7, Section 5.1.6, Building 17N-6: Is there any reason to suspect these leach fields were used for wastes other than sanitary? Northrop Grumman verify.**

**Response:**

*Based on the report entitled, "Phase I Environmental Assessment - Plant 17 - North Warehouses," dated March 1997, prepared by Radian International, Building 17N-6 was used as an office area and for the storage of aircraft components. Therefore, based upon the findings of the Phase I report, it does not appear that the leach fields associated with Building 17N-6 were used for wastes other than sanitary.*

**Comment 56 - Page 5-10, Section 5.2.2, Building 17S-20: What was the UIC response to no further action to the drywell in AOC 20? Has Northrop Grumman received a written response from NCDH regarding the completed remediation of dry wells associated with the Plant 17 South Warehouses?**

**Response:**

*The no further action letters regarding these dry wells are provided in Attachment J.*

**Comment 59 - What was the NYSDEC Bureau of Spill Response determination on the Northrop Grumman finding for the UST removal of AOC 6. Can Northrop Grumman provide a response letter from NYSDEC Bureau of Spill Response formally closing out USTs associated with Plant 20, AOC 6?**

**Response:**

*Based on a review of the report entitled, "Phase II Environmental Site Assessment for the Plant 20 Transportation Maintenance Facility, dated September 1997, prepared by Radian International, soil samples were collected in the vicinity of three former USTs: 20-01-04; 20-01-09; and 20-02-01. Laboratory analysis indicated no exceedances of the TAGM criteria for these three areas. Therefore, no further action letters for this AOC were not required.*

**Comment 60 - Page 6-2, AOC 1: Where did the paint shop drain line discharge to? Were samples at this location also limited to four feet for VOCs? Northrop Grumman needs to provide information on the closure of the Plant 20 leachfield and letters approving the closure.**

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Northrop Grumman Corporation  
August 7, 2000

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**Response:**

*The closure of the Plant 20 leachfield was documented in the report entitled, "Class V/Type 5X20 Dry Well Closure Program Plant 20," dated May 19, 1998, prepared by Dvirka and Bartilucci Consulting Engineers. The approval letter regarding this leachfield is provided in Attachment K.*

**Comment 78 - Page 7-17, AOC E-17: b. Why were samples for VOCs taken only to four feet?**  
Northrop Grumman verify depth of dry well and depth of deepest sample below the bottom the dry well.

**Response:**

*As summarized in the report entitled, "Phase II Site Assessment - Plant 5," dated December 1998, prepared by Dvirka and Bartilucci Consulting Engineers, AOC E-7 (Dry Well Near Northeast Corner of Plant 5 Building) was 11 feet deep with the deepest soil sample collected from the 15-17 foot interval.*

**Comment 80 - Page 7-19, AOC I-18: b. Why were samples for VOCs taken only to four feet?**  
Northrop Grumman verify depth of dry well and depth of deepest sample below the bottom the dry well.

**Response:**

*As summarized in the report entitled, "Phase II Site Assessment - Plant 5," dated December 1998, prepared by Dvirka and Bartilucci Consulting Engineers, AOC I-18 (High Voltage Crew Area Dry Well) was 9 feet deep with the deepest soil sample collected from the 11-13 foot interval.*

If you have any questions regarding this matter, please do not hesitate to contact me at (516) 364-9890.

Very truly yours,



Adam S. Postyn  
Environmental Engineer

ASP(t)/ld  
cc: R. Walka (D&B)  
♦0801\RMW08010LLL.DOC(R01)

**ATTACHMENT A**



New York State Department of Environmental Conservation  
Division of Solid and Hazardous Materials  
Building 40, SUNY, Stony Brook, New York 11790-2356  
Telephone: (516) 444-0375  
Facsimile: (516) 444-0231



John P. Cahill  
Commissioner

February 24, 1998

Mr. Larry Leskovjan, Manager  
Environmental, Health, safety & Medical Services  
M/S: D16-001  
Northrup Grumman Corporation  
South Oyster Bay Rd  
Bethpage, NY 11714-3580

RE: Analytical Data for Pits Associated with Area of Concern  
(AOC)16(partial), AOC 21 (partial), AOC 38, and AOC 39;  
Building 03  
Grumman-Bethpage  
NYD002047967

Dear Mr. Leskovjan:

The Division of Solid and Hazardous Materials (DSHM)) has reviewed the analytical data for the above referenced pits submitted in your letter dated February 10, 1998.

Based on our review of the sampling data, the DSHM has no objection to your filling of the pits listed below. We also recommend your receiving approval from Nassau County Department of Health prior to beginning the work. These pits (except AOC 38 and 39) are identified in the Phase I Environmental Assessment Report dated April 11, 1997. AOCs 38 and 39 were added to the Phase II recommendations during the field program.

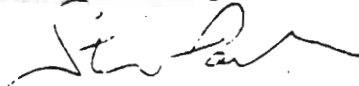
1. Area of Concern 16, Machine Shop areas, Transfer pump # 16-14 (84"x 30"x 36")
2. Area of Concern 21, Pit Number 21-18 (5' x 30' x 4')
3. Area of Concern 38, Water effluent sump pit# 38(4'x 3'x4')
4. Area of Concern 39, Water blow down pit # 39(4' x4' x4')

Please advise the Department of your schedule for filling these pits. If you have any questions, please contact me or Thomas John.

RECEIVED  
FEB 25 1998  
DIVISION OF SOLID & HAZARDOUS MATERIALS

B-36

Yours truly,



Stanley Farkas, P.E.  
Environmental Engineer II

cc: A. Postyn, Northrup Grumman  
S. Kaminski, NYSDEC  
T. John, NYSDEC  
J. Lovejoy, NCDH

**ATTACHMENT B**



COUNTY OF NASSAU  
DEPARTMENT OF HEALTH  
240 OLD COUNTRY ROAD  
MINEOLA, N.Y. 11501-4250

June 1, 1998

Mr. Larry Leskovjan, Manager  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, N.Y. 11714-3580

Re: USEPA Underground Injection  
Control Remediations  
Northrop Grumman Corporation  
105 Acre Navy Site  
Bethpage, N.Y.

Dear Mr. Leskovjan:

We are in receipt of your May 21, 1998 letter transmitting analytical results for endpoint soil samples collected following the remediation of six (6) United States Environmental Protection Agency (USEPA) Class V Injection wells located at the above referenced facility. The well locations are:

1. Plant 03 - Floor Drain at KK1 to JJ2
2. Plant 03 - Steam Pit Drain at JJ9 to HH10
3. Plant 03 - Steam Pit Drain at DD26
4. Plant 03 - Steam Pit Drain at DD36 to CC37
5. Plant 03 - Compressor Drain #1 at N12 to M13
6. Plant 03 - Drywell at JJ1 to HH2

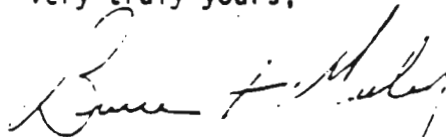
Based on a review of endpoint sampling results by the Health Department and the USEPA and on observations by Health Department representatives, it has been determined that no additional remediation of these injection wells is required at this time. Please note, you must obtain authorization from the USEPA-Groundwater Compliance Section if you plan to continue using any of these locations as fluid injection points. If you plan to discontinue the use of these injection wells, the location must be backfilled with clean sand and capped with a minimum 4-inches of concrete.

In addition to the above, the Department will not require endpoint samples to be collected from compressor drain #2 at N12 to M13. This decision was based on the inability to obtain a sample by conventional means due to the coarse gravelly nature of the sediments. In addition, endpoint data from compressor drain #1 a similar installation in close proximity to drain #2 showed no contamination.

As you are aware, final approval regarding all Class V injection well closures must be obtained from the USEPA. To this end, a final closure report must be submitted to the USEPA Groundwater Compliance Section, 290 Broadway, 20th Floor, New York, N.Y. 10007-1866, Attention: John Kushwara, Chief. The report must include a summary of all remedial work performed, copies of all waste disposal manifests, and the results of all endpoint samples. The report should also specify all well locations for which you are requesting authorization for continued use.

If you have any questions, please do not hesitate to contact me at (516) 571-3323.

Very truly yours,



Bruce F. Mackay, Chief  
Office of Groundwater  
Assessment and Enforcement  
Bureau of Water Supply Protection

BFM:JLL:al

cc: John Kushwara, USEPA  
Philip Schade, P.E., H2M Group

0487Q (30-31)



COUNTY OF NASSAU  
DEPARTMENT OF HEALTH  
240 OLD COUNTRY ROAD  
MINEOLA, N.Y. 11501-4250

June 15, 1998

↑  
JUN 1998  
ENVIRONMENTAL  
TECHNOLOGY &  
COMPLIANCE

Mr. Larry L. Leskovjan, Manager  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
M/S: D08-001  
South Oyster Bay Road  
Bethpage, New York 11714-3580

Re: USEPA Underground Injection  
Control Remediation  
Northrop Grumman Corporation  
105 Acre Navy Site  
Bethpage, N.Y.

Dear Mr. Leskovjan:

We are in receipt of your June 8, 1998 letter describing the remediation of a United States Environmental Protection Agency (USEPA) designated Class V injection well located at the above referenced facility. The well location is:

- Plant 3 Compressor #3 Floor Drain at M14 to L15

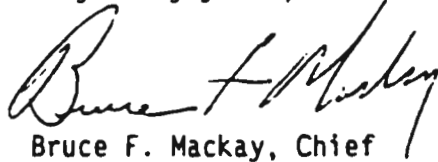
As described in your letter and based on observations by Department representatives, sediments from the Compressor #3 injection well were excavated with a vacuum truck to a depth approximately 4 feet below grade. Because of the gravelly nature of the sediments, an endpoint sample could not be collected by conventional means.

Based on a review by this Department and the USEPA of endpoint sampling data from the Compressor #1 location (which is of similar installation and in close proximity to Compressor #3), no additional remediation or sampling of the Compressor #3 injection well is required. The location must be backfilled with concrete in the manner described in your letter.

As you are aware, final approval regarding all Class V injection well closures must be obtained from the USEPA. To this end, a final closure report must be submitted to the USEPA Groundwater Compliance Section at 290 Broadway, 20th Floor, New York N.Y. 10007-1866, Attention: John Kushwara, Chief. The report must include a summary of all remedial work performed, copies of all waste disposal manifests, and the results of all endpoint samples. The report should also specify all well locations for which you are requesting authorization for continued use.

If you have any questions, please do not hesitate to contact me at (516) 571-3323.

Very truly yours,



Bruce F. Mackay, Chief  
Office of Ground Water  
Assessment & Enforcement  
Bureau of Water Supply Protection

BFM:JLL:jp

cc: John Kushwara, USEPA  
Adam Postyn, Northrop Grumman Corp.  
Philip Schade, P.E., H2M Group

0477Q (50 & 51)

**ATTACHMENT C**



New York State Department of Environmental Conservation  
Division of Solid & Hazardous Materials, Region One  
Building 40 - SUNY, Stony Brook, New York 11790-2356  
Phone: (516) 444-0375 FAX: (516) 444-0231



June 23, 1998

Mr. Larry Leskovjan, Manager  
Environmental, Health & Safety  
M/S D16-001  
Northrup Grumman Corporation  
South Oyster Bay Rd.  
Bethpage, NY 11714-3583

RE: Authorization to Backfill Various Areas of Concern  
Grumman-Bethpage NYD002047967

Dear Mr. Leskovjan:

The Division of Solid and Hazardous Materials (DSHM) has completed its review of the following submissions concerning remediation of various Areas of Concern (AOCs) located within the Naval Weapons Industrial Reserve Plant at the Northrup Grumman Corp. in Bethpage. Based on our review of the sampling data, inspection of the designated areas and discussions with your engineers, the DSHM approves your requests for No Further Action (NFA) based upon achievement of TAGM criteria and hereby approves the backfilling of the excavations associated with the AOCs listed.

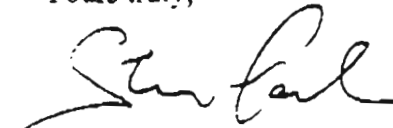
Date of Submittal	Description	DSHM Response
5/23/98	Plant 3, Various AOCs (36) - Request for NFA	Verbal O.K. 6/9/98
5/30/98	Plants 10/17 South, Various AOCs (4) - Request for NFA	Verbal O.K. 6/9/98
6/17/98	Plant 3, AOC 24 - Request for NFA/ Backfilling	None
6/28/98	Plant 3, AOC 9 - Request for NFA/ Backfilling	None
6/28/98	Plant 3, AOC 27 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
6/29/98	Plant 3, AOC 2 - Request for NFA/ Backfilling	None

5/5/98	Plant 3, AOC 21-21 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/13/98	Plant 3, AOC 33-09 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/13/98	Plant 1, AOC 33-11/12 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/5/98	Plant 3, AOC 1-08 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/5/98	Plant 3, AOC 1-20 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/13/98	Plant 3, AOC 6 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/13/98	Plant 3, AOC 34 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98

We have also received submissions dated 5/21/98, for Plant 3, AOC 20-24, and 6/4/98 for Plant 10 Degreaser Pit which are still under review.

Please advise the Department of your schedule for filling the approved AOCs. We also recommend your receiving approval from the Nassau County Department of Health. If you have any questions, please do hesitate to contact me at (516) 444-0379 or Mr. Henry Wilkie at (518) 457-9255.

Yours truly,

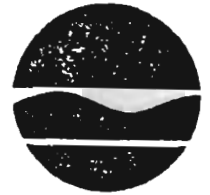


Stanley Farkas, P.E.  
Environmental Engineer II

SF:ek

cc: A. Postyn, Northrup Grumman  
S. Kaminski, NYSDEC  
H. Wilkie, NYSDEC  
J. Lovejoy, NCDH

New York State Department of Environmental Conservation  
Division of Solid and Hazardous Materials  
Building 40, SUNY, Stony Brook, New York 11790-2356  
Telephone: (516) 444-0375  
Facsimile: (516) 444-0231



John P. Cahill  
Commissioner

October 27, 1997

Mr. Larry Leskovjan  
Manager  
Environmental, Health, safety & Medical Services  
M/S: D16-001  
Northrup Grumman Corporation  
South Oyster Bay Rd  
Bethpage, NY 11714-3580

RE: Building 3, Filling of Pits 21-01, 21-02 and 21-03  
Grumman-Bethpage  
NYD002047967

Dear Mr. Leskovjan:

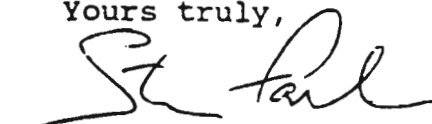
The Division of Solid and Hazardous Materials (DSHM) has reviewed the analytical data for the above referenced pits submitted in your letters dated September 29 and October 13, 1997.

Based on the discussions at our meeting of October 9, inspection of each of the designated areas, and review of the sampling data, the DSHM has no objection to your filling of the pits listed below. We also recommend your receiving approval from Nassau County Department of Health prior to beginning the work. The three pit areas approved for filling were analyzed as part of Area of Concern 21 in the Phase I Environmental Assessment Report dated April 11, 1997 and are:

1. Machine Pit number 21-01 (45'x30'x20')
2. Machine Pit number 21-02 (24'x18'x5')
3. Machine Pit number 21-03 (33'x90'x30')

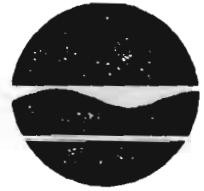
Please advise the Department of your schedule for filling of these pits. If you have any questions, please contact me or Thomas John.

Yours truly,

  
Stanley Farkas, P.E.

cc: J. Susco, Northrup Grumman  
S. Kaminski, NYSDEC  
T. John, NYSDEC  
J. Lovejoy, NCDH

New York State Department of Environmental Conservation  
Division of Solid and Hazardous Materials  
Building 40, SUNY, Stony Brook, New York 11790-2356  
Telephone: (516) 444-0375  
Facsimile: (516) 444-0231



John P. Cahill  
Commissioner

December 24, 1997

Mr. Larry Leskovjan, Manager  
Environmental Health, Safety & Medical Services  
M/S: D16-001  
Northrop Grumman Corporation  
South Oyster Bay Rd  
Bethpage, NY 11714-3580

Re: Analytical data for Equipment Pits in Building 3 Submitted  
in letter dated October 30, 1997  
Grumman - Bethpage  
NYD002047967

Dear Mr. Leskovjan:

The Division of Solid and Hazardous Materials (DSHM) has completed its review of the analytical data for the remaining 10 pits referenced above, which were not approved in my letter dated November 25, 1997.

Based on our review of the sampling data, discussions at our meeting of December 16, inspection of each of the designated areas, and the past usage of each pit, the DSHM has no objection to your filling of the pits listed below. We also recommend your receiving approval from Nassau County Department of Health prior to beginning the work.

1. Pit Number 21-04 (45'x9'x2')
2. Pit Number 21-09 (36'x12'x4')
3. Pit Number 21-11 (30'x18'x3')
4. Pit Number 21-13 (12'x16'x3')
5. Pit Number 21-14 (4'x12'x5')
6. Pit Number 21-16 (16'x30'x5')
7. Pit Number 21-19 (60'x10'x6')
8. Pit Number 21-20 (21'x18'x2')
9. Pit Number 21-24 (12'x3'x2')
10. Pit Number 21-25 (12'x3'x2')

The DSHM also requests that a photographic record be kept of each pit filled. In particular there should be color photographs documenting the size and bottom of each pit prior to being filled. This documentation is also applicable for all other excavated areas as well.

We would also appreciate a schedule for completing this work. If you need further assistance, please contact me or Thomas John.

Yours truly,



Stanley Farkas, P.E.  
Environmental Engineer II

cc: A. Postyn, Northrop Grumman  
S. Kaminski, NYSDEC  
T. John, NYSDEC  
J. Lovejoy, NCDH

New York State Department of Environmental Conservation  
Division of Solid and Hazardous Materials  
Building 40, SUNY, Stony Brook, New York 11790-2356  
Telephone: (516) 444-0375  
Facsimile: (516) 444-0231



John P. Cahill  
Commissioner

November 25, 1997

Mr. Larry Leskovjan, Manager  
Environmental, Health, safety & Medical Services  
M/S: D16-001  
Northrup Grumman Corporation  
South Oyster Bay Rd  
Bethpage, NY 11714-3580

RE: Analytical data for 19 Equipment Pits in Bethpage Building 3  
Grumman-Bethpage  
NYD002047967

Dear Mr. Leskovjan:

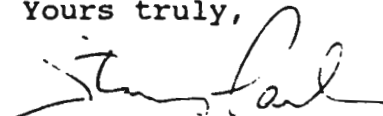
The Division of Solid and Hazardous Materials (DSHM) has reviewed the analytical data for the above referenced pits submitted in your letter dated October 30, 1997.

Based on our review of the sampling data, the DSHM has no objection to your filling of the nine pits listed below. We also recommend your receiving approval from Nassau County Department of Health prior to beginning the work. The pit areas approved for filling were analyzed as part of Area of Concern 21 in the Phase I Environmental Assessment Report dated April 11, 1997 and are as shown on Building 03 equipment pits drawing submitted on October 30, 1997.

1. Pit number 21-05 (6'x6'x6')
2. Pit number 21-06 (2'x18'x2')
3. Pit number 21-07 (24'x6'x4')
4. Pit Number 21-10 (6"x4'x4')
5. Pit Number 21-15 (16'x30'x5')
6. Pit Number 21-17 (24'x3'x4')
7. Pit Number 21-22 (2'x3'x2)
8. Pit Number 21-23 (2'x3'x2)
9. Pit Number 21-26 (12'x3'x2')

For the other ten pits submitted for approval, we require additional information regarding the use of each pit and justification for only one sample, especially in the larger size pits. The report indicates "secondary sampling" in certain contaminated pits. Please explain what secondary sampling consisted of. This information is required in order to make a determination to fill these pits. Please advise the Department of your schedule for filling the nine approved pits. If you have any questions, please contact me or Thomas John.

Yours truly,



Stanley Farkas, P.E.  
Environmental Engineer II

cc: J. Susco, Northrup Grumman  
S. Kaminski, NYSDEC  
T. John, NYSDEC  
J. Lovejoy, NCDH





New York State Department of Environmental Conservation

Division of Solid and Hazardous Materials  
Building 40, SUNY, Stony Brook, New York 11790-2356  
Telephone: (516) 444-0375  
Facsimile: (516) 444-0231

John P. Cahill  
Commissioner

October 16, 1997

Mr. Larry Leskovjan  
Manager  
Environmental, Health, safety & Medical Services  
M/S: D16-001  
Northrup Grumman Corporation  
South Oyster Bay Rd  
Bethpage, NY 11714-3580

RE: Building 3, Filling of Pits 21-08, 21-12 and 21-27  
Grumman-Bethpage  
NYD002047967

Dear Mr. Leskovjan:

The Division of Solid and Hazardous Materials (DSHM) has reviewed the analytical data for the above mentioned pits submitted August 29, 1997.

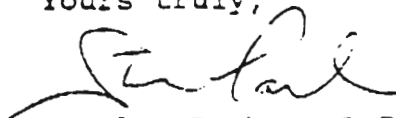
Based on the discussions at our meeting of October 9, inspection of each of the designated areas, and review of the sampling data, the DSHM has no objection to your filling of the pits listed below. We also recommend you receiving approval from Nassau County Department of Health prior beginning the work. The three pits areas approved for filling are:

1. Near column JJ7, Pit number 21-08.
2. Near Column CC13, Pit number 21-12.
3. Near column BB 44, Pit number 21-27.

Please advise the Department of your schedule for filling of these pits. If you have any questions, please

contact me or Thomas John.

Yours truly,



Stanley Farkas, P.E.  
Environmental Engineer II

cc: J. Susco, Northrup Grumman  
S. Kaminski, NYSDEC  
T. John, NYSDEC  
J. Lovejoy, NCDH

New York State Department of Environmental Conservation

Division of Solid and Hazardous Materials

Building 40, SUNY, Stony Brook, New York 11790-2356

Telephone: (516) 444-0375

Facsimile: (516) 444-0231



John P. Cahill  
Commissioner

February 24, 1998

Mr. Larry Leskovjan, Manager  
Environmental, Health, safety & Medical Services  
M/S: D16-001  
Northrup Grumman Corporation  
South Oyster Bay Rd  
Bethpage, NY 11714-3580

RE: Analytical Data for Pits Associated with Area of Concern  
(AOC)16(partial), AOC 21 (partial), AOC 38, and AOC 39;  
Building 03  
Grumman-Bethpage  
NYD002047967

Dear Mr. Leskovjan:


The Division of Solid and Hazardous Materials (DSHM) has reviewed the analytical data for the above referenced pits submitted in your letter dated February 10, 1998.

Based on our review of the sampling data, the DSHM has no objection to your filling of the pits listed below. We also recommend your receiving approval from Nassau County Department of Health prior to beginning the work. These pits (except AOC 38 and 39) are identified in the Phase I Environmental Assessment Report dated April 11, 1997. AOCs 38 and 39 were added to the Phase II recommendations during the field program.

1. Area of Concern 16, Machine Shop areas, Transfer pump # 16-14 (84"x 30"x 36")
2. Area of Concern 21, Pit Number 21-18 (5' x 30' x 4')
3. Area of Concern 38, Water effluent sump pit# 38(4'x 3'x4')
4. Area of Concern 39, Water blow down pit # 39(4' x4' x4')

Please advise the Department of your schedule for filling these pits. If you have any questions, please contact me or Thomas John.

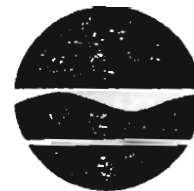
Yours truly,



Stanley Farkas, P.E.  
Environmental Engineer II

cc: A. Postyn, Northrup Grumman  
S. Kaminski, NYSDEC  
T. John, NYSDEC  
J. Lovejoy, NCDH

New York State Department of Environmental Conservation  
Division of Solid and Hazardous Materials  
Building 40, SUNY, Stony Brook, New York 11790-2356  
Telephone: (516) 444-0375  
Facsimile: (516) 444-0231



John P. Cahill  
Commissioner

January 7, 1998

Mr. Larry Leskovjan, Manager  
Environmental, Health, safety & Medical Services  
M/S: D16-001  
Northrup Grumman Corporation  
South Oyster Bay Rd  
Bethpage, NY 11714-3580

RE: Analytical data for Area of Concern 1(partial) and 21  
(partial) Building 3 pits and paint booths  
Grumman-Bethpage  
NYD002047967

Dear Mr. Leskovjan:

The Division of Solid and Hazardous Materials (DSHM) has reviewed the analytical data for the above referenced pits submitted in your letter dated December 22, 1997.

Based on our review of the sampling data, the DSHM has no objection to your filling of the pits listed below. We also recommend your receiving approval from Nassau County Department of Health prior to beginning the work. The pit areas approved for filling were analyzed as part of Area of Concern 01 and 21 in the Phase I Environmental Assessment Report dated April 11, 1997 and are as shown on Building 3 drawing submitted on December 22, 1997.

1. Paint Booths 10 through 13; 4 pits of (17"x 12'6" x4')
2. Paint Booth 16 (31'x12'6"x3'2")
3. Freezer Pit (27'x20'x20')

Please advise the Department of your schedule for filling these approved pits. If you have any questions, please contact me or Thomas John.

Yours truly,

Stanley Farkas, P.E.  
Environmental Engineer II

cc: A. Postyn, Northrup Grumman  
S. Kaminski, NYSDEC  
T. John, NYSDEC  
J. Lovejoy, NCDH

**ATTACHMENT D**

New York State Department of Environmental Conservation  
Division of Solid & Hazardous Materials, Region One  
Building 40 - SUNY, Stony Brook, New York 11790-2356  
Phone: (516) 444-0375 FAX: (516) 444-0231



June 23, 1998

Mr. Larry Leskovjan, Manager  
Environmental, Health & Safety  
M/S D16-001  
Northrup Grumman Corporation  
South Oyster Bay Rd.  
Bethpage, NY 11714-3888

RE: Authorization to Backfill Various Areas of Concern  
Grumman-Bethpage NYD002047967

Dear Mr. Leskovjan:

The Division of Solid and Hazardous Materials (DSHM) has completed its review of the following submissions concerning remediation of various Areas of Concern (AOCs) located within the Naval Weapons Industrial Reserve Plant at the Northrup Grumman Corp. in Bethpage. Based on our review of the sampling data, inspection of the designated areas and discussions with your engineers, the DSHM approves your requests for No Further Action (NFA) based upon achievement of TAGM criteria and hereby approves the backfilling of the excavations associated with the AOCs listed.

Date of Submittal	Description	DSEHM Response
3/23/98	Plant 3, Various AOCs (36) - Request for NFA	Verbal O.K. 6/9/98
3/30/98	Plants 10/17 South, Various AOCs (4) - Request for NFA	Verbal O.K. 6/9/98
4/17/98	Plant 3, AOC 24 - Request for NFA/ Backfilling	None
4/28/98	Plant 3, AOC 9 - Request for NFA/ Backfilling	None
4/28/98	Plant 3, AOC 27 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
4/29/98	Plant 3, AOC 2 - Request for NFA/ Backfilling	None

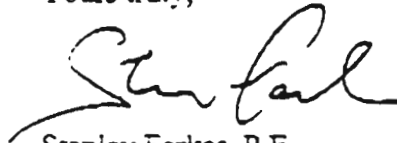


5/8/98	Plant 1, AOC 21-21 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/13/98	Plant 3, AOC 33-09 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/13/98	Plant 1, AOC 33-11/12 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/8/98	Plant 1, AOC 1-08 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/8/98	Plant 3, AOC 1-20 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/13/98	Plant 3, AOC 6 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/13/98	Plant 3, AOC 34 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98

We have also received submissions dated 5/21/98, for Plant 3, AOC 20-24, and 6/4/98 for Plant 10 Degreaser Pit which are still under review.

Please advise the Department of your schedule for filling the approved AOCs. We also recommend your receiving approval from the Nassau County Department of Health. If you have any questions, please do hesitate to contact me at (516) 444-0379 or Mr. Henry Wilkie at (518) 457-9255.

Yours truly,



Stanley Farkas, P.E.  
Environmental Engineer II

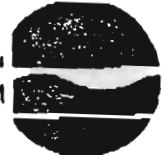
SF:ek

cc: A. Postyn, Northrup Grumman  
S. Kaminski, NYSDEC  
H. Wilkie, NYSDEC  
J. Lovejoy, NCDH

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**ATTACHMENT E**

New York State Department of Environmental Conservation  
 Division of Solid & Hazardous Materials, Region One  
 Building 40 - SUNY, Stony Brook, New York 11790-2356  
 Phone: (516) 444-0375 FAX: (516) 444-0231



John P. Cahill  
 Commissioner

June 23, 1998

Mr. Larry Leskovjan, Manager  
 Environmental, Health & Safety  
 M/S D16-001  
 Northrup Grumman Corporation  
 South Oyster Bay Rd.  
 Bethpage, NY 11714-3583

RE: Authorization to Backfill Various Areas of Concern  
 Grumman-Bethpage NYD002047967

Dear Mr. Leskovjan:

The Division of Solid and Hazardous Materials (DSHM) has completed its review of the following submissions concerning remediation of various Areas of Concern (AOCs) located within the Naval Weapons Industrial Reserve Plant at the Northrup Grumman Corp. in Bethpage. Based on our review of the sampling data, inspection of the designated areas and discussion with your engineers, the DSHM approves your requests for No Further Action (NFA) based upon achievement of TAGM criteria and hereby approves the backfilling of the excavations associated with the AOCs listed.

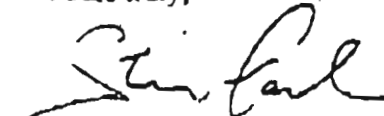
Date of Submittal	Description	DSHM Response
3/23/98	Plant 3, Various AOCs (36) - Request for NFA	Verbal O.K. 6/9/98
3/30/98	Plants 10/17 South, Various AOCs (4) - Request for NFA	Verbal O.K. 6/9/98
4/17/98	Plant 3, AOC 24 - Request for NFA/ Backfilling	None
4-28-98	Plant 3, AOC 9 - Request for NFA/ - Backfilling	None
4-28-98	Plant 3, AOC 27 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
4-29-98	Plant 3, AOC 2 - Request for NFA/ Backfilling	None

5/5/98	Plant J. AOC 21-21 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/13/98	Plant J. AOC 22-09 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/13/98	Plant J. AOC 24-11/12 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/5/98	Plant J. AOC 14-18 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/5/98	Plant J. AOC 17-20 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/13/98	Plant J. AOC 6 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/13/98	Plant J. AOC 34 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98

We have also received submissions dated 5/21/98, for Plant J. AOC 20-24, and 6/4/98 for Plant 10 Degreaser Pit which are still under review.

Please advise the Department of your schedule for filling the approved AOCs. We recommend your receiving approval from the Nassau County Department of Health. If you have any questions, please do hesitate to contact me at (516) 444-0379 or Mr. Henry Wilkie at (518) 457-9255.

Yours truly,



Stanley Farkas, P.E.  
Environmental Engineer II

SF:ek

cc: A. Postyn, Northrop Grumman  
S. Kaminski, NYSDEC  
H. Wilkie, NYSDEC  
J. Lovejoy, NCDH

**ATTACHMENT F**



COUNTY OF NASSAU  
DEPARTMENT OF HEALTH  
240 OLD COUNTRY ROAD  
MINEOLA, N.Y. 11501-4250

June 1, 1998

Mr. Larry Leskovjan, Manager  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, N.Y. 11714-3580

Re: USEPA Underground Injection  
Control Remediations  
Northrop Grumman Corporation  
105 Acre Navy Site  
Bethpage, N.Y.

Dear Mr. Leskovjan:

We are in receipt of your May 21, 1998 letter transmitting analytical results for endpoint soil samples collected following the remediation of three (3) United States Environmental Protection Agency (USEPA) Class V Injection wells located at the above referenced facility. The well locations are:

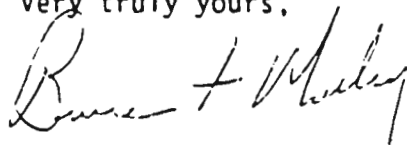
1. Plant 03 - Grease Trap at Column AA5
2. Plant 03 - Grease Trap at Columns AA30-31
3. Plant 03 - Grease Trap at Columns FF42 and GG42

Based on a review of endpoint sampling results by the Health Department and the USEPA and on observations by Health Department representatives, it has been determined that no additional remediation of these injection wells is required at this time. Please note, you must obtain authorization from the USEPA-Groundwater Compliance Section if you plan to continue using any of these locations as fluid injection points. If you plan to discontinue the use of these injection wells, the location must be backfilled with clean sand and capped with a minimum 4-inches of concrete.

As you are aware, final approval regarding all Class V injection well closures must be obtained from the USEPA. To this end, a final closure report must be submitted to the USEPA Groundwater Compliance Section, 290 Broadway, 20th Floor, New York, N.Y. 10007-1866, Attention: John Kushwara, Chief. The report must include a summary of all remedial work performed, copies of all waste disposal manifests, and the results of all endpoint samples. The report should also specify all well locations for which you are requesting authorization for continued use.

If you have any questions, please do not hesitate to contact me at (516) 571-3323.

Very truly yours,



Bruce F. Mackay, Chief  
Office of Groundwater  
Assessment and Enforcement  
Bureau of Water Supply Protection

BFM:JLL:a1

cc: John Kushwara, USEPA  
Philip Schade, P.E., H2M Group

0487Q (28-29)

**ATTACHMENT G**





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 2  
200 BROADWAY  
NEW YORK, NY 10007-1866

December 17, 1998

Mr. Drow B. Bennett, P.E., Manager  
Environmental Technology & Compliance Department  
Northrup Grumman Corporation  
M/S: D08-001  
South Oyster Bay Road  
Bethpage, New York 11714-3580

Re: Northrup Grumman, Bethpage 105-Acre Navy Site  
Plant 03  
Steam Pit Drain at Column DD10  
Steam Pit Drain at Column JJ27

Dear Mr. Bennett.

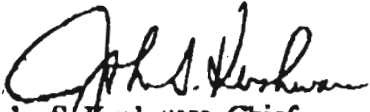
The Ground Water Compliance Section of the U.S. Environmental Protection Agency (EPA) has reviewed its file on the above-referenced dry wells. The dry well beneath the steam pit drain at column DD10 has been remediated to the satisfaction of this office and should be backfilled and sealed as described in Northrup Grumman's August 26, 1998 letter to the Nassau County Department of Health (NCDH). NCDH should be given sufficient notification before the dry well is backfilled and sealed so that arrangements can be made to witness the work, if NCDH so chooses.

The analysis of the soil sample collected from the dry well beneath the steam pit drain at column JJ27, after the removal of approximately 0.04 cubic yard of soil from the dry well, indicates that the concentration of silver in the soil remaining in the ground is 112 milligrams per kilogram. It is EPA's understanding that the background concentration of silver in soil is generally no greater than 5 mg/kg, and, to the extent that further excavation can be conducted without endangering the structural integrity of the building, the soil beneath the dry well should be excavated so that the concentration of silver in the soil does not exceed 5 mg/kg. In Northrup Grumman's August 26 letter to NCDH, it is recommended that no further action be required because "further excavation at this drain would undermine the foundation and severely jeopardize the structural stability of the building." If it is Northrup Grumman's contention that no further excavation can be conducted safely at this dry well, a report from an independent, licensed civil engineer regarding the feasibility of conducting further excavation at the dry well without undermining the structural integrity of the building should be submitted to EPA and NCDH. If further excavation cannot be conducted safely, Northrup Grumman should propose alternative means of remediation to EPA and NCDH for review and approval. Any excavation or other remediation should be scheduled so that NCDH may be present to witness the work and split samples.

DEC 21 1998

If you have any questions, please call Dermott Courtney of my staff at (212) 637-4228.

Sincerely,

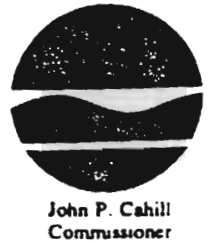
  
John S. Kushwara, Chief  
Ground Water Compliance Section

cc: Bruce Mackay, NCDH  
Paul Kolakowsky, NYSDEC

DEC 21 1988

**ATTACHMENT H**

New York State Department of Environmental Conservation  
Spill Prevention and Response  
Building 40 - SUNY, Stony Brook, New York 11790-2356  
TEL # (516) 444-0320  
FAX # (516) 444-0373



April 6, 1998

Mr. Larry L. Leskovjan  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714-3580

Re: Spill #91-00585, Plant #3, Northrop Grumman, Bethpage, N.Y.

Dear Mr. Leskovjan:

I have reviewed the February 1998 monitoring results for the referenced site. This was the final monitoring of these wells.

Based upon a review of the file, investigation/remediation has been completed at this time. Therefore, this office requests that you abandon the monitoring wells at the referenced site.

Please refer to the enclosed observation well abandonment specification sheet for proper abandonment procedures. Please call me at (516) 444-0320, when arrangements have been made to do the work.

Once the monitoring wells have been abandoned, this office has no further requirements for the referenced spill at this time. Should additional environmental problems be discovered at this site, this office will require further action at that time. We have removed the spill file from our active spill list.

If you have any questions please call me.

Sincerely,

Walter J. Parish, P.E.  
Environmental Engineer II

enclosure  
cc: K. Gomez  
R. Putnam, NCDH



**ATTACHMENT I**

**New York State Department of Environmental Conservation**  
**Division of Solid & Hazardous Materials, Region One**  
Building 40 - SUNY, Stony Brook, New York 11790-2356  
Phone: (516) 444-0375 FAX: (516) 444-0231



John P. Canill  
Commissioner

December 10, 1998

Mr. Drew Bennett  
Environmental Technology and Compliance  
M/S D08-001  
Northrup Grumman Corporation  
South Oyster Bay Rd.  
Bethpage, NY 11714-3580

Re: Drainage Swale North of the Main Drum Marshalling Area  
Grumman-Bethpage NYD002047967

Dear Mr. Bennett:

The Division of Solid and Hazardous Materials (DSHM) has completed its review of the letter report "Subsurface Soil Investigation - Drainage Swale North of the Main Drum Marshalling Area" prepared by Dvirka and Bartilucci Consulting Engineers (Dated September 16, 1998) and submitted in your letter, dated September 25, 1998. Based on our review of the sampling data and report, the DSHM hereby approves your request for No Further Action (NFA) for this area within the Naval Weapons Reserved Plant at the Northrup Grumman Corp. in Bethpage. We also recommend your receiving approvals from the Nassau County Department of Health. If you have any questions, please do not hesitate to contact me at (516)444-0378 or Henry Wilkie at (518)457-9225.

Yours truly,

Stanley Farkas, P.E.  
Environmental Engineer III

SF:djr  
cc: S. Kaminski, NYSDEC  
H. Wilkie, NYSDEC  
J. Lovejoy, NCDH

**ATTACHMENT J**



COUNTY OF NASSAU  
DEPARTMENT OF HEALTH  
240 OLD COUNTRY ROAD  
MINEOLA, N.Y. 11501-4250

June 1, 1998

Mr. Larry Leskovjan, Manager  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, N.Y. 11714-3580

Re: USEPA Underground Injection  
Control Remediations  
Northrop Grumman Corporation  
105 Acre Navy Site  
Bethpage, N.Y.

Dear Mr. Leskovjan:

We are in receipt of your May 19, 1998 letter transmitting analytical results for endpoint soil samples collected following the remediation of three (3) United States Environmental Protection Agency (USEPA) Class V Injection wells located at the above referenced facility. The well locations are:

1. Plant 17 South Drywell 01
2. Plant 10 North Drywell
3. Plant 17 North Floor Drain in Warehouse #6

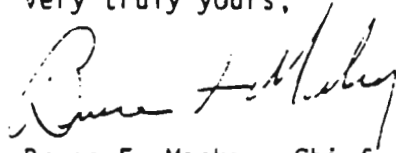
Based on a review of endpoint sampling results by the Health Department and the USEPA and on observations by Health Department representatives, it has been determined that no additional remediation of these injection wells is required at this time. Please note, you must obtain authorization from the USEPA-Groundwater Compliance Section if you plan to continue using any of these locations as fluid injection points. If you plan to discontinue the use of these injection wells, the location must be backfilled with clean sand and capped with a minimum 4-inches of concrete.



As you are aware, final approval regarding all Class V injection well closures must be obtained from the USEPA. To this end, a final closure report must be submitted to the USEPA Groundwater Compliance Section, 290 Broadway, 20th Floor, New York, N.Y. 10007-1866, Attention: John Kushwara, Chief. The report must include a summary of all remedial work performed, copies of all waste disposal manifests, and the results of all endpoint samples. The report should also specify all well locations for which you are requesting authorization for continued use.

If you have any questions, please do not hesitate to contact me at (516) 571-3323.

Very truly yours,



Bruce F. Mackay, Chief  
Office of Groundwater  
Assessment and Enforcement  
Bureau of Water Supply Protection

BFM:JLL:a1

cc: John Kushwara, USEPA  
Philip Schade, P.E., H2M Group

0487Q (28-29)



COUNTY OF NASSAU  
DEPARTMENT OF HEALTH  
140 OLD COUNTRY ROAD  
ROSELAND, N.Y. 11766-2500

June 30, 1998

▲  
JUL 1998  
ENVIRONMENTAL  
TECHNOLOGY &  
COMPLIANCE

Mr. Larry Leskovjan, Manager  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, N.Y. 11714-3580

Re: USEPA Underground Injection  
Control Remediations  
Northrop Grumman Corporation  
105 Acre Navy Site  
Bethpage, N.Y.

Dear Mr. Leskovjan:

We are in receipt of your June 25, 1998 letter transmitting analytical results for endpoint soil samples collected following the remediation of four (4) United States Environmental Protection Agency (USEPA) Class V Injection wells located at the above referenced facility. The well locations are:

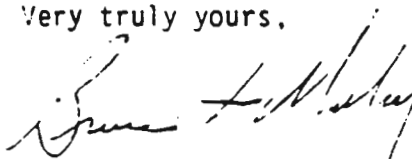
1. Plant 03 - Drywell 20-04
2. Plant 03 - Drywell 20-07
3. Plant 10 - Settling Tank C1
4. Plant 17S - Drywell N1

Based on a review by this Department and the USEPA of endpoint sampling results and on field observations by this Department's representatives, it has been determined that no additional remediation of these injection wells is required at this time. Please note, you must obtain authorization from the USEPA-Groundwater Compliance Section if you plan to continue using any of these locations as fluid injection points. If you plan to discontinue the use of these injection wells, the location must be backfilled with clean sand and capped with a minimum 4-inches of concrete.

As you are aware, final approval regarding all Class V injection well closures must be obtained from the USEPA. To this end, a final closure report must be submitted to the USEPA Groundwater Compliance Section, 290 Broadway, 20th Floor, New York, N.Y. 10007-1866, Attention: John Kushwara, Chief. The report must include a summary of all remedial work performed, copies of all waste disposal manifests, and the results of all endpoint samples. The report should also specify all well locations for which you are requesting authorization for continued use.

If you have any questions, please do not hesitate to contact me at (516) 571-3323.

Very truly yours,



Bruce F. Mackay, Chief  
Office of Groundwater  
Assessment and Enforcement  
Bureau of Water Supply Protection

BFM:JLL:jp

cc: John Kushwara, United States Environmental Protection Agency  
Adam Postyn, Northrop Grumman Corporation  
Philip Schade, P.E., H2M Group

08300 (2 & 3)



May 19, 1998

Mr. Adam Postyn  
Northrup Grumman Corporation  
South Oyster Bay Road  
Bethpage, New York 11714

Re: Warehouse N  
Plant 17 South  
Northrup Grumman Corporation

Dear Mr. Postyn:

The Ground Water Compliance Section of the U.S. Environmental Protection Agency (EPA) has reviewed the results of analyses of a soil sample collected from a dry well inside the above-referenced building. Contaminated soil was excavated from the dry well in February and again in April. The remaining soil is still contaminated with pyrene and phenanthrene, but it is EPA's understanding that the well's proximity to roof support columns precludes further excavation. The excavated well should be filled with clean fill and sealed with concrete.

If you have any questions, please call Dermott Courtney of my staff at (212) 637-4228.

Sincerely,

John S. Kushwara, Chief  
Ground Water Compliance Section

cc: Philip Schade, H2M Group  
John Lovejoy, NCDH  
Paul Kolakowsky, NYSDEC

THOMAS S. GULOTTA  
COUNTY EXECUTIVE



KATHLEEN A. GAFFNEY, M.D., M.P.H.  
COMMISSIONER

COUNTY OF NASSAU  
DEPARTMENT OF HEALTH  
240 OLD COUNTRY ROAD  
MINEOLA, N.Y. 11501-4250

June 19, 1998

Mr. Larry Leskovjan, Manager  
Environmental Technology and Compliance  
Northrop Grumman Corporation  
South Oyster Bay Road  
Bethpage, N.Y. 11714-3580

Re: USEPA Underground Injection  
Control Remediations  
Northrop Grumman Corporation  
105 Acre Navy Site  
Bethpage, N.Y.

Dear Mr. Leskovjan:

We are in receipt of your June 17, 1998 letter transmitting analytical results for endpoint soil samples collected following the remediation of three (3) United States Environmental Protection Agency (USEPA) Class V Injection wells located at the above referenced facility. The well locations are:

1. Plant 03 - Drywell 20-03
2. Plant 17S - Drywell N2
3. Plant 10 - Drywell C2

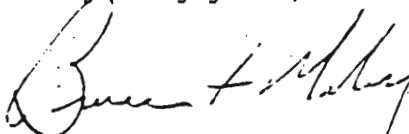
Based on a review by this Department and the USEPA of endpoint sampling results and on field observations by this Department's representatives, it has been determined that no additional remediation of these injection wells is required at this time. Please note, you must obtain authorization from the USEPA-Groundwater Compliance Section if you plan to continue using any of these locations as fluid injection points. If you plan to discontinue the use of these injection wells, the location must be backfilled with clean sand and capped with a minimum 4-inches of concrete.

In addition to the above, this Department and the USEPA have reviewed the analytical results submitted with your June 17, 1998 letter for bottom soil samples collected from the kitchen and cafeteria valve box locations. The results indicate that industrial discharges of regulated substances have not occurred at these features. The Department and the USEPA therefore concur with your recommendation that no remedial action at these locations is required. The valve box bottoms must, as discussed, be sealed with concrete to eliminate the current status as USEPA regulated injection points.

As you are aware, final approval regarding all Class V injection well closures must be obtained from the USEPA. To this end, a final closure report must be submitted to the USEPA Groundwater Compliance Section, 290 Broadway, 20th Floor, New York, N.Y. 10007-1866, Attention: John Kushwara, Chief. The report must include a summary of all remedial work performed, copies of all waste disposal manifests, and the results of all endpoint samples. The report should also specify all well locations for which you are requesting authorization for continued use.

If you have any questions, please do not hesitate to contact me at (516) 571-3323.

Very truly yours,



Bruce F. Mackay, Chief  
Office of Groundwater  
Assessment and Enforcement  
Bureau of Water Supply Protection

BFM:JLL:jp

cc: John Kushwara, United States Environmental Protection Agency  
Adam Postyn, Northrop Grumman Corporation  
Philip Schade, P.E., H2M Group

0487Q (47-48)

THOMAS S. GULOTTA  
COUNTY EXECUTIVE



KATHLEEN A. GAFFNEY, M.D., M.P.H.  
COMMISSIONER

COUNTY OF NASSAU  
DEPARTMENT OF HEALTH  
240 OLD COUNTRY ROAD  
MINEOLA, N.Y. 11501-4250

April 10, 1998

Mr. Philip J. Schade, P.E.  
H2M Group  
575 Broad Hollow Road  
Melville, New York, 11747-5076

Re: Northrop Grumman Corp.  
Bethpage, N.Y.  
Plant 17 South and  
North Warehouses

Dear Mr. Schade:


We are in receipt of your March 10, 1998 letter forwarding analytical results for endpoint soil samples collected following the remediation of four (4) United States Environmental Protection Agency (USEPA) Class V injection wells located at the above referenced facility. The injection well locations are Plant 17 South Warehouse N Interior Drywell, Plant 17 South Warehouse M Interior Trench Drain, Plant 17 South Warehouse N Interior Drywell and Plant 17 North Warehouse 5 Interior Floor Drain.

Based on the sampling results and observations by Department representatives, it was determined by this office and the USEPA that additional remedial action was required at the Plant 17 South Warehouse N Interior Drywell location. This work was performed on April 3, 1998 with endpoint sampling results forthcoming.

The Department with the USEPA has determined that no additional remedial action is required at the Plant 17 South Warehouse M Interior Trench Drain and Interior Drywell locations and the Plant 17 North Warehouse 5 Interior Floor Drain location. These locations must be backfilled with clean sand and cemented to grade with a minimum 4 inches of cement.

The Health Department must be notified five days in advance of any field work associated with the required actions to allow a representative to observe the work. You may contact me at (516) 571-3866 if you have any questions concerning this matter.

Very truly yours,

  
John L. Lovejoy  
Public Health Sanitarian  
Bureau of Water Supply Protection

JLL:jp

cc: Dermott Courtney  
United States Environmental Protection Agency  
Adam Postyn ✓  
Northrop Grumman Corporation

0477Q (28 & 29)



New York State Department of Environmental Conservation  
 Division of Solid & Hazardous Materials, Region One  
 Building 40 - SUNY, Stony Brook, New York 11790-2356  
 Phone: (516) 444-0375 FAX: (516) 444-0231



June 23, 1998

Mr. Larry Leskovjan, Manager  
 Environmental Health & Safety  
 MS D16-001  
 Northrup Grumman Corporation  
 South Oyster Bay Rd.  
 Bethpage, NY 11714-3583

RE: Authorization to Backfill Various Areas of Concern  
 Grumman-Bethpage NYD002047967

Dear Mr. Leskovjan:

The Division of Solid and Hazardous Materials (DSHM) has completed its review of the following submissions concerning remediation of various Areas of Concern (AOCs) located within the Naval Weapons Industrial Reserve Plant at the Northrup Grumman Corp. in Bethpage. Based on our review of the sampling data, inspection of the designated areas and discussions with your engineers, the DSHM approves your requests for No Further Action (NFA) based upon achievement of TAGM criteria and hereby approves the backfilling of the excavations associated with the AOCs listed.

Date of Submittal	Description	DSHM Response
3/23/98	Plant 3, Various AOCs (36) - Request for NFA	Verbal O.K. 6/9/98
3/30/98	* Plants 10/17 South, Various AOCs (4) - Request for NFA	Verbal O.K. 6/9/98
4/17/98	Plant 3, AOC 24 - Request for NFA Backfilling	None
4/28/98	Plant 3, AOC 9 - Request for NFA Backfilling	None
4/28/98	Plant 3, AOC 27 - Request for NFA Backfilling	Verbal O.K. 5/12/98
4/29/98	Plant 3, AOC 2 - Request for NFA Backfilling	None

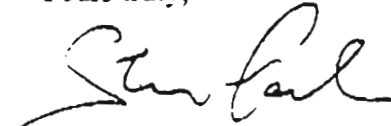
\* AOC 8 - former Security building corner lot 3

5/5/98	Plant 3, AOC 21-21 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/13/98	Plant 3, AOC 33-09 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/13/98	Plant 2, AOC 33-11/12 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/5/98	Plant 3, AOC 1-08 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/5/98	Plant 3, AOC 1-20 - Request for NFA/ Backfilling	Verbal O.K. 5/12/98
5/13/98	Plant 3, AOC 6 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98
5/13/98	Plant 3, AOC 34 - Request for NFA/ Backfilling	Verbal O.K. 5/15/98

We have also received submissions dated 5/21/98, for Plant 3, AOC 20-24, and 6/4/98 for Plant 10 Degreaser Pit which are still under review.

Please advise the Department of your schedule for filling the approved AOCs. We also recommend your receiving approval from the Nassau County Department of Health. If you have any questions, please do hesitate to contact me at (516) 444-0379 or Mr. Henry Wilkie at (518) 457-9255.

Yours truly,



Stanley Farkas, P.E.  
Environmental Engineer II

SF:ek

cc: A. Postyn, Northrup Grumman  
S. Kaminski, NYSDEC  
H. Wilkie, NYSDEC  
J. Lovejoy, NCDH

**ATTACHMENT K**



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 2  
290 BROADWAY  
NEW YORK, NY 10007-1866

June 5, 1998

Mr. Larry Leskovjan  
Manager  
Environmental, Health, Safety & Medical Services  
Electronics & Systems Integration Division  
Grumman Aerospace Corporation  
South Oyster Bay Road  
Bethpage, New York 11714

Re: Building 20  
Northrup Grumman

Dear Mr. Leskovjan:

The Ground Water Compliance Section of the U.S. Environmental Protection Agency (EPA) has reviewed the May 19, 1998 letter from Richard Walka of Dvirka and Bartilucci regarding the remediation and closure of dry wells at the above-referenced site. This office closes its file on the dry wells that have been closed and approves the continued use of the remaining dry wells for stormwater drainage.

The stormwater drainage wells on the property are considered active Class V wells by EPA's Underground Injection Control program, and there may be additional regulatory requirements when future regulations for Class V wells become promulgated. The stormwater drainage wells are authorized by rule pursuant to Title 40 of the Code of Federal Regulations, Part 144.24. Should any conditions change (such as injectate composition, accidental spills into the system, sealing the drain, construction of additional wells, etc.) you are required to notify this office, specifically:

John S. Kushwara, Chief  
Ground Water Compliance Section  
U.S. Environmental Protection Agency  
290 Broadway, 20<sup>th</sup> Floor  
New York, New York 10007-1866

If you have any questions, please call Dermott Courtney of my staff at (212) 637-4228.

Sincerely,



John S. Kushwara, Chief  
Ground Water Compliance Section

cc: Richard Russell, Dvirka and Bartilucci ✓  
Bruce Mackay, NCDH  
Paul Kolakowsky, NYSDEC