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
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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 11th 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)

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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
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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	Polylchlorinated 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	Volatile Organic Compounds
VCM	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.

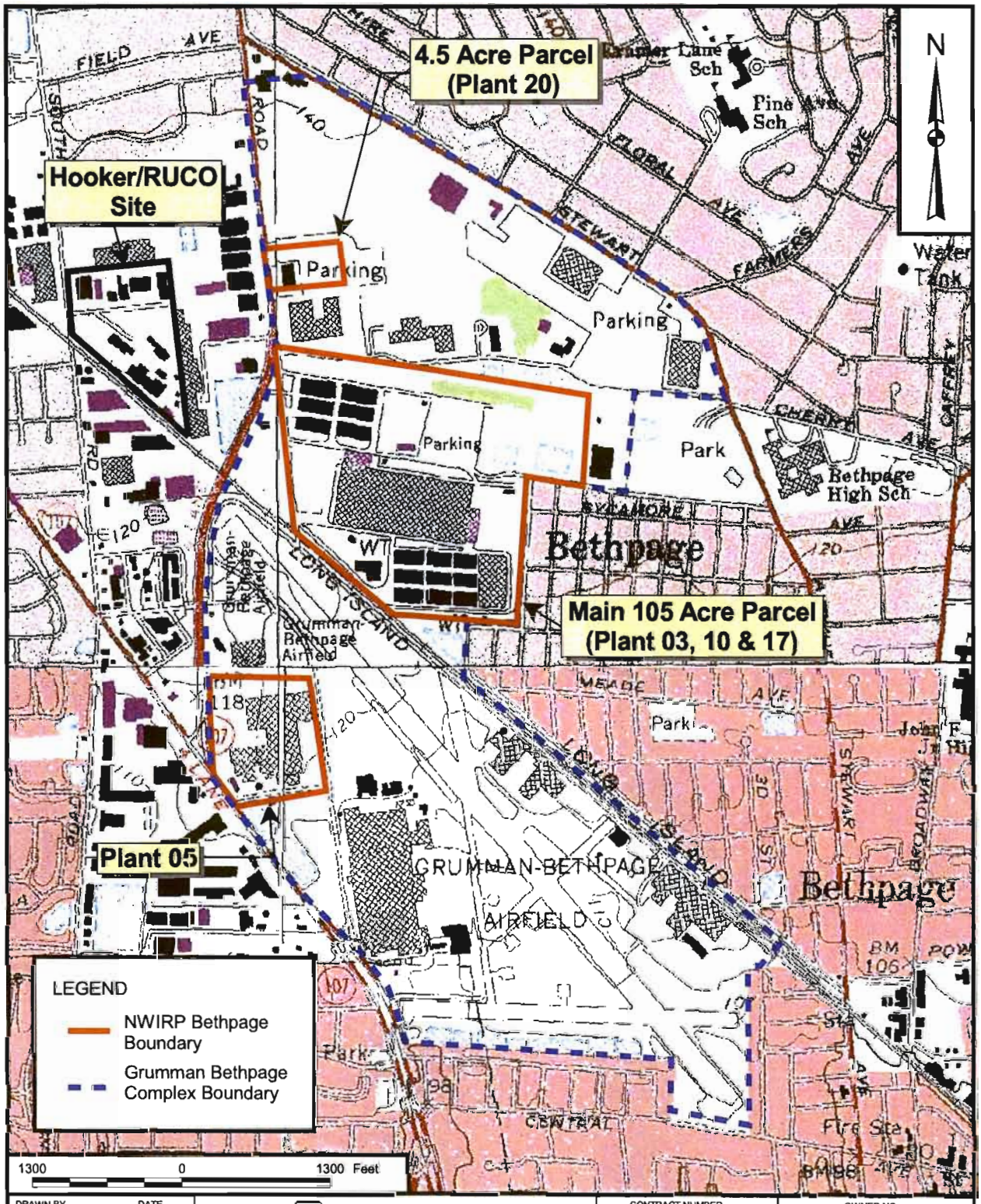
Section 9 summarizes each area of concern (AOC) identified by the Phase I environmental site assessments (ESAs) prepared by Northrop Grumman and how those AOCs were subsequently investigated by the Phase II ESAs. Because the research and visual site inspections for the Phase I ESAs were performed earlier 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

Rating Category	Map Color	Description
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: —	SITE LOCATION MAP PHASE II EBS NWIRP BETHPAGE, NEW YORK	APPROVED BY: — — DATE: —	
COST/SCHEDULE-AREA		APPROVED BY: — — DATE: —	
SCALE: AS NOTED		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 Grumann'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 MCPP, 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 an alconox 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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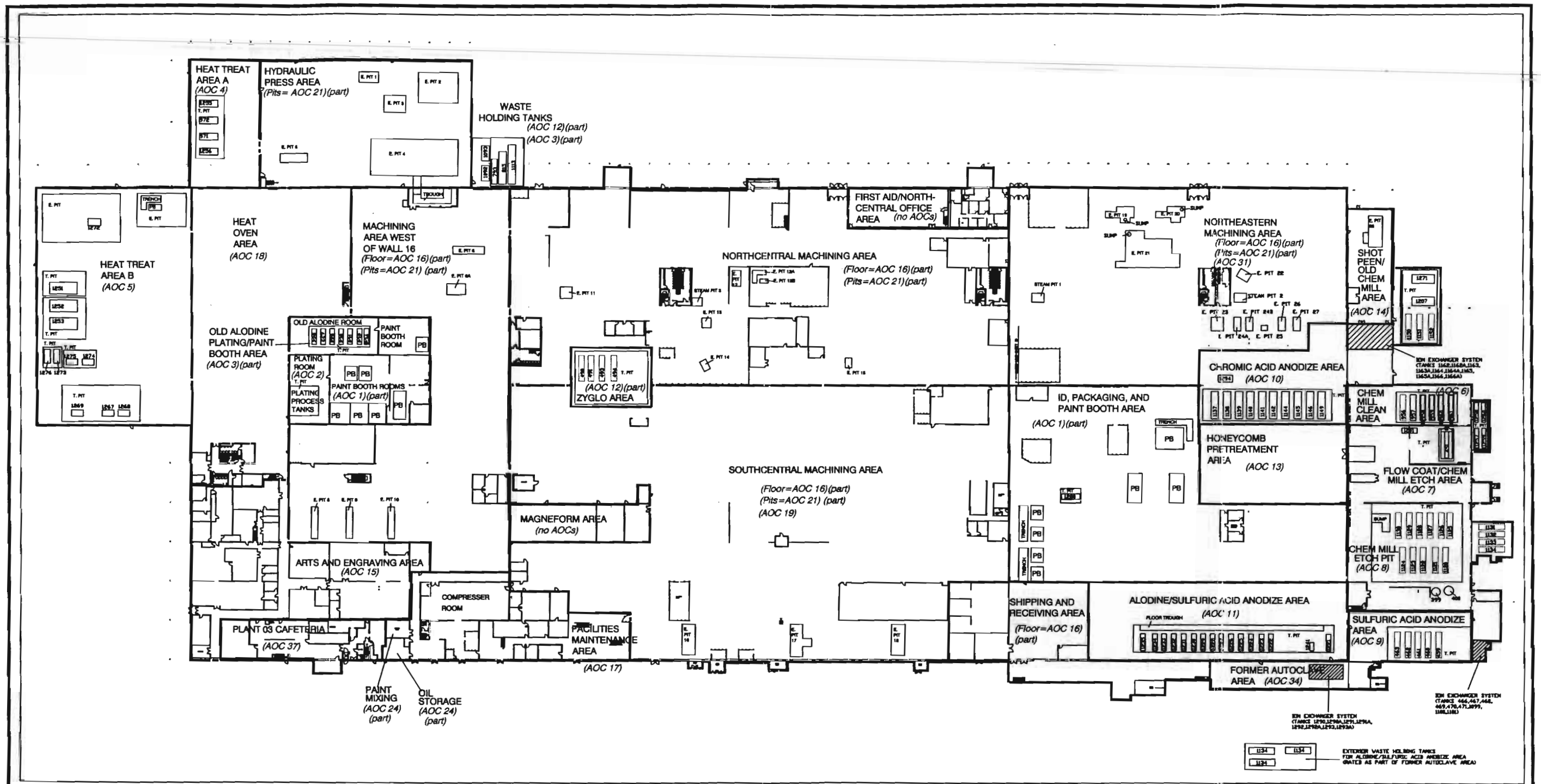

Legend

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.

N

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Figure 3-1

Plant 3 - Building 03-01 Interior Plan

Phase II EBS
NWIRP Bethpage, New York

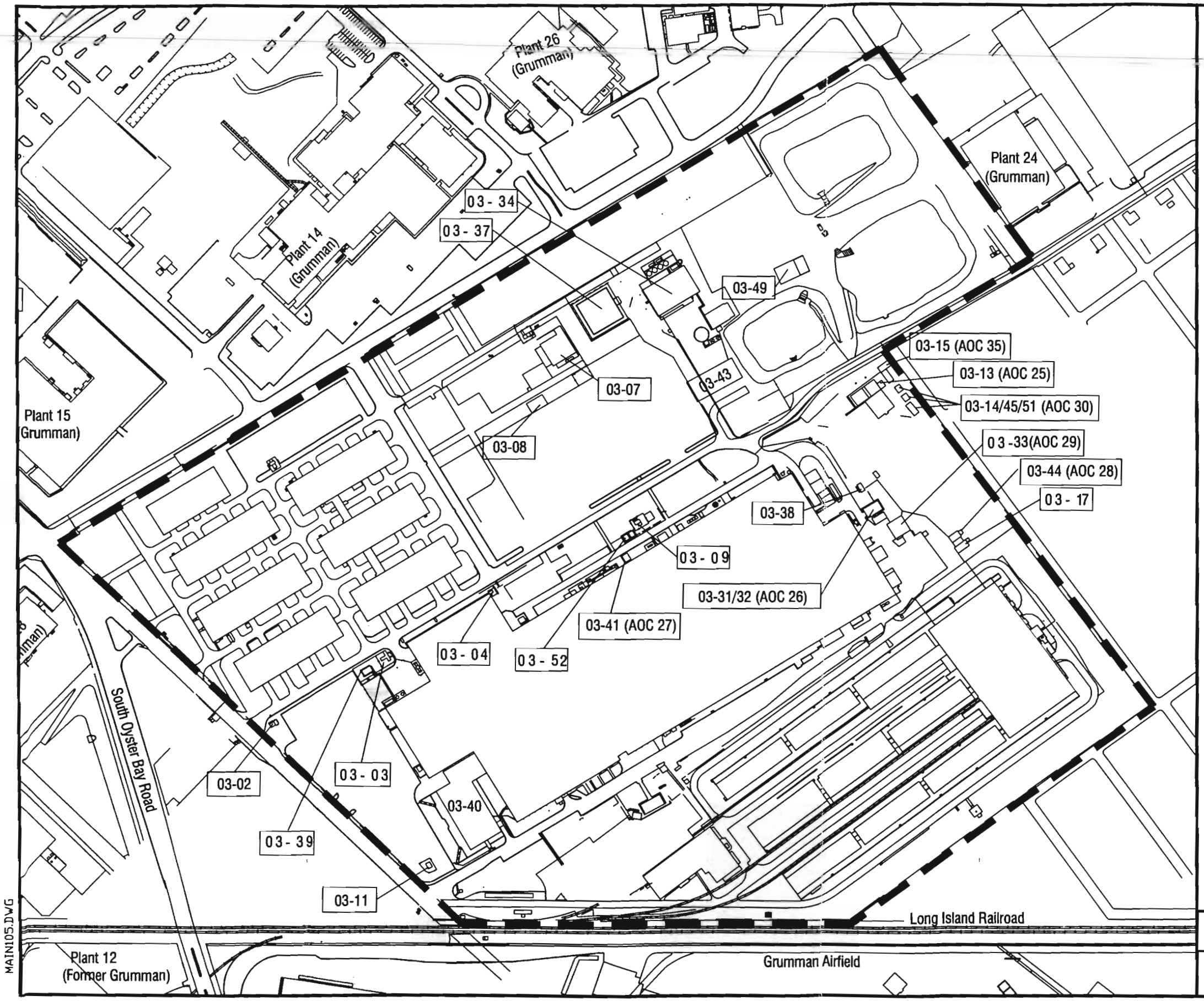

Figure 3-2

Other Plant 3 AOCs

Phase II EBS
NWIRP Bethpage, New York

Legend

Navy 105 Acre Parcel Boundary

Note: Areas investigated as part of AOC 20 (Diffusion Galleries and Drywells) and AOC 22 (Petroleum Storage Tanks) are located throughout the exterior ares 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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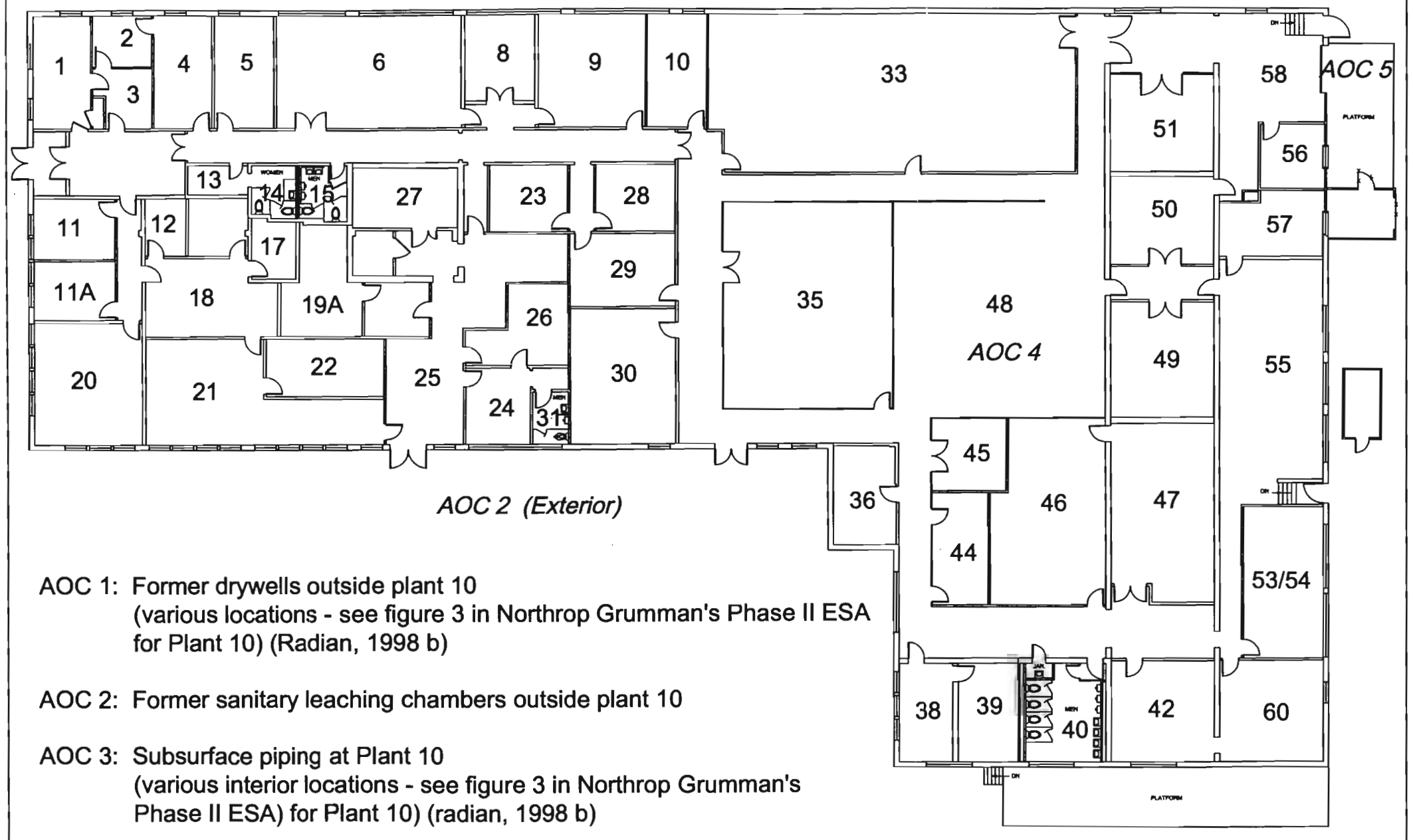
Figure 4-1

Building 10-01



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

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

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

Legend

1-PLANT DIRECTOR'S OFFICE
2-STATIONARY STOCK/STORAGE
3-SECRETARY OFFICE
4-DEPUTY DIRECTOR'S OFFICE
5-ADHESIVES/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/N.D.T. MANAGER'S 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-SPECTORGRAPHIC PLATE ROOM - CHEM. LAB.
18-X-RAY DIFFRACTION - CHEM.
19-DARK ROOM/READING ROOM - NDT LAB.
19A-DARK ROOM LAB.
20-LAB. OPERATIONS' OFFICE
21-INFARED ANALYSIS - CHEM. LAB.
21A-CHEMISTRY LAB. OFFICE
22-EMISSION SPECTROGRAPH - 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 CHROMOTOGRAPHY - 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-MIMICROELECTRONIC FAILURE ANALYSIS LAB. - QUALITY ENG'G
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 ENG'G
51-UTILITIES (ELECTRICAL)
53/54-MICROELECTRONICS FAILURE ANALYSIS LAB. - Q.E. SECITON
55-REC. INSP. SECTION/MAT.
56-MAINTENANCE SUPPLY ROOM
57-STAFF
58-RECEIVING PLANTFORM
60-QUALITY ENG'G OFFICE

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SCALE IN FEET

March 31, 1999	REV 1	PROJECT: CTO 283

Tetra Tech NUS, Inc.

10-01.DWG

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.

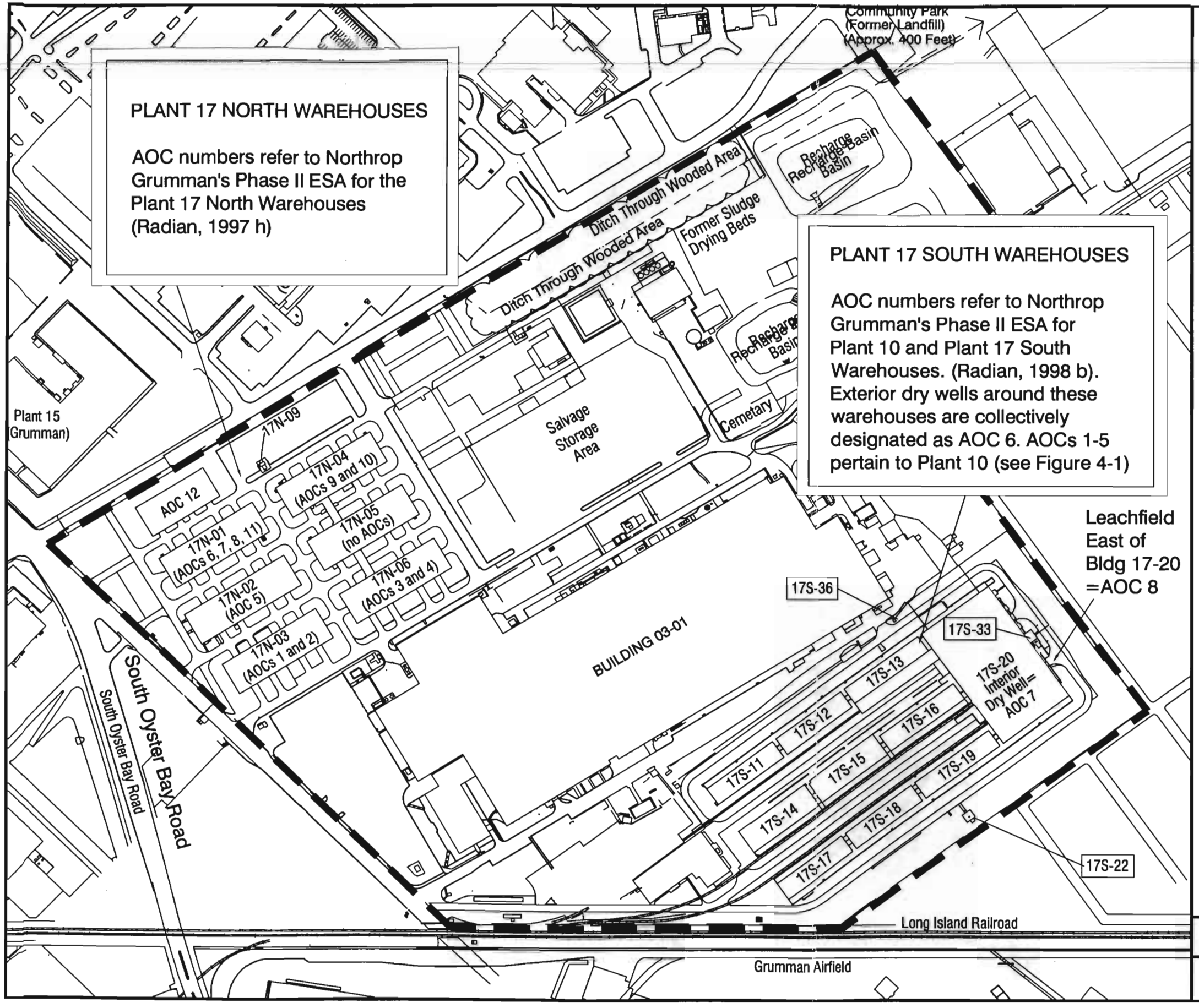

Figure 5-1

Plant 17

Phase II EBS
NWIRP Bethpage, New York

Legend

Navy 105 Acre Parcel Boundary

N

0 100 200 300 400
SCALE IN FEET

Dec. 7, 1999	REV 2	PROJECT: CTO 283

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MAIN105.DWG

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 eat 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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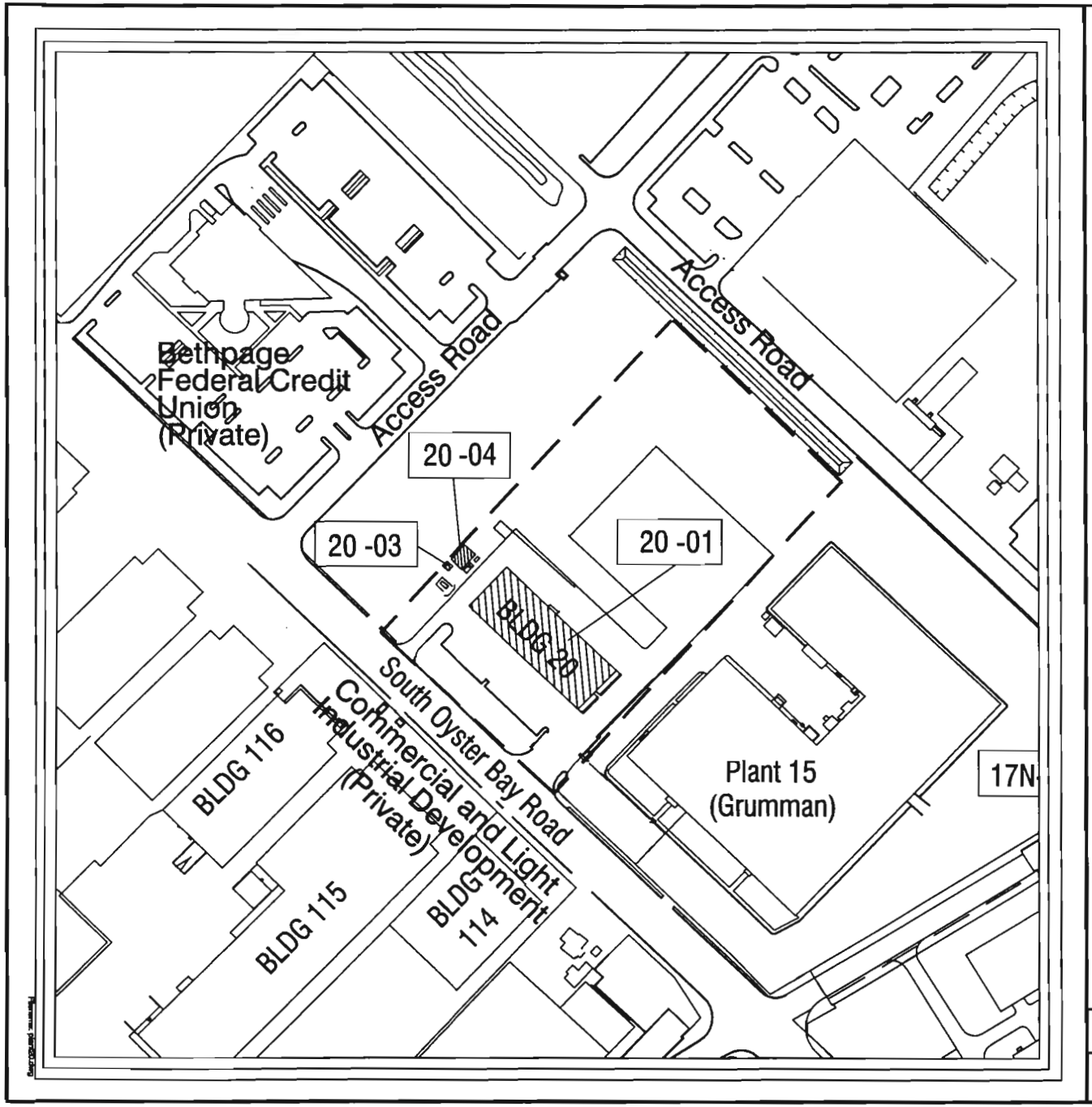

Figure 6-1

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.

N

0 200 400 600 800

SCALE IN FEET

Dec. 9, 1999	REV 2	PROJECT: CTO 283

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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.

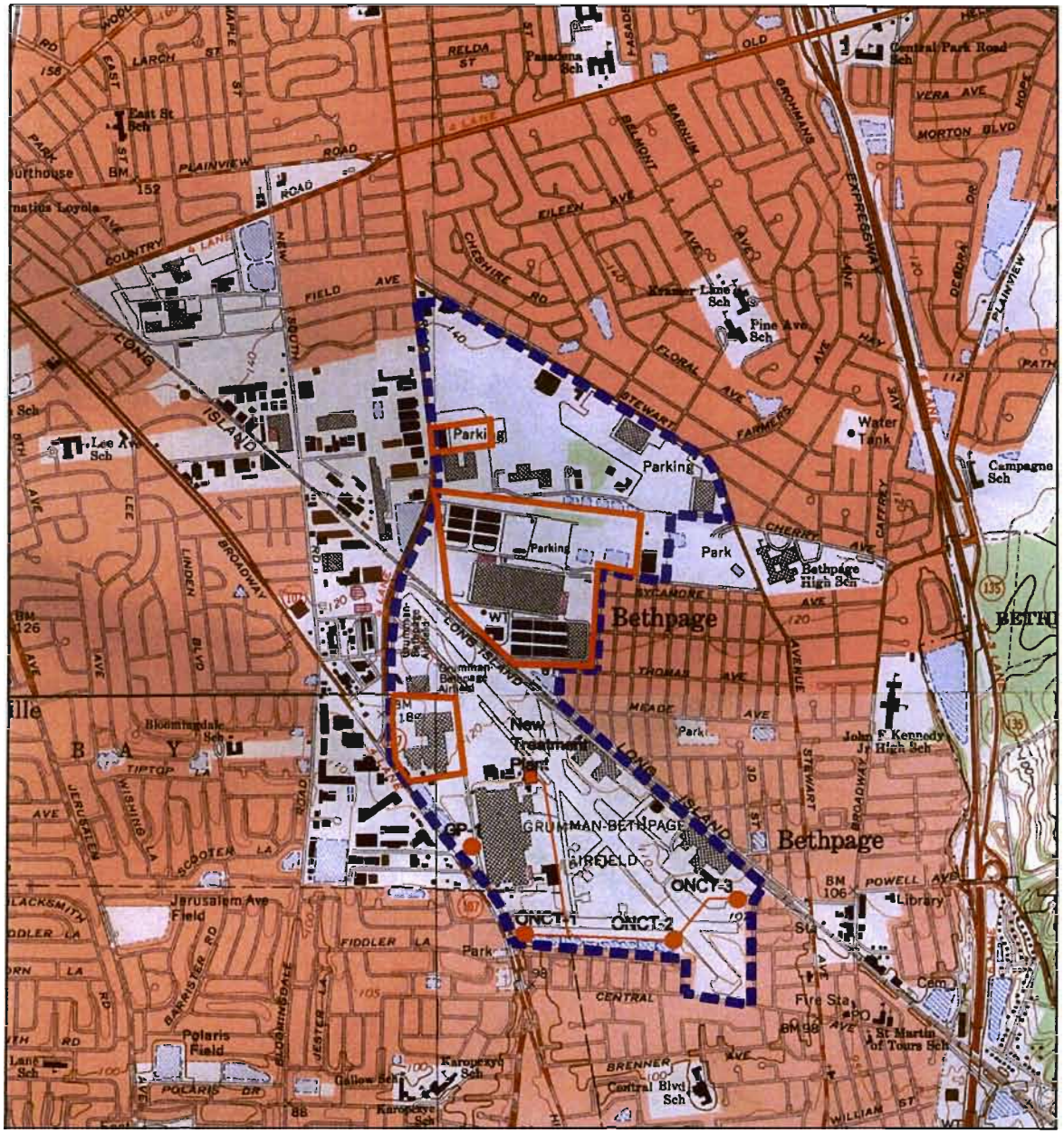

Figure 8-1

Interim Remedial Measure General Layout

Phase II EBS
NWIRP Bethpage, New York

Legend

- NWIRP Bethpage Boundary
- Northrop Grumman Bethpage Complex Boundary

Dec. 7, 1999	REV 2	PROJECT: CTO 283

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