NORTHROP GRUMMAN

BETHPAGE FACILITY

Central Steam Plant Facility

Northrop Grumman Corporation
Bethpage, New York

Phase II
Site Assessment

October 2004

DVIRKA AND BARTILUCCI
CONSULTING ENGINEERS
A DIVISION OF WILLIAM F. COSULICH ASSOCIATES, P.C.

RLA/JOBS/NORTHROP/1965/Central Steam Phase II(08/30/04)

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October 5, 2004

Fred Weber, Environmental Engineer
Environmental, Safety, Health & Medical Services
Northrop Grumman Corporation
600 Grumman Road West
Mail Stop: Z18-025
Bethpage, NY 11714-3583

Re: Phase II Site Assessment
Central Steam Plant
Bethpage, New York
D&B No. 1965-10

Dear Mr. Weber:

Enclosed please find six copies of the document entitled:

"Phase II Site Assessment
Northrop Grumman Corporation
Central Steam Plant
Bethpage, New York"

If you have any questions and/or comments, please do not hesitate to contact me at (516) 364-9890.

Very truly yours,

Brian M. Veith, P.E.
Vice President

BMV/MRDt/cmc
Enclosure
cc: R. Walka (D&B)
♦1965\BMV04LTR.DOC-14

PHASE II SITE ASSESSMENT

NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
BETHPAGE, NEW YORK

Prepared for:

NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK

Prepared by:

DVIRKA AND BARTILUCCI CONSULTING ENGINEERS
WOODBURY, NEW YORK

OCTOBER 2004

PHASE II SITE ASSESSMENT
NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
BETHPAGE, NEW YORK

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Section 1

1.0 INTRODUCTION

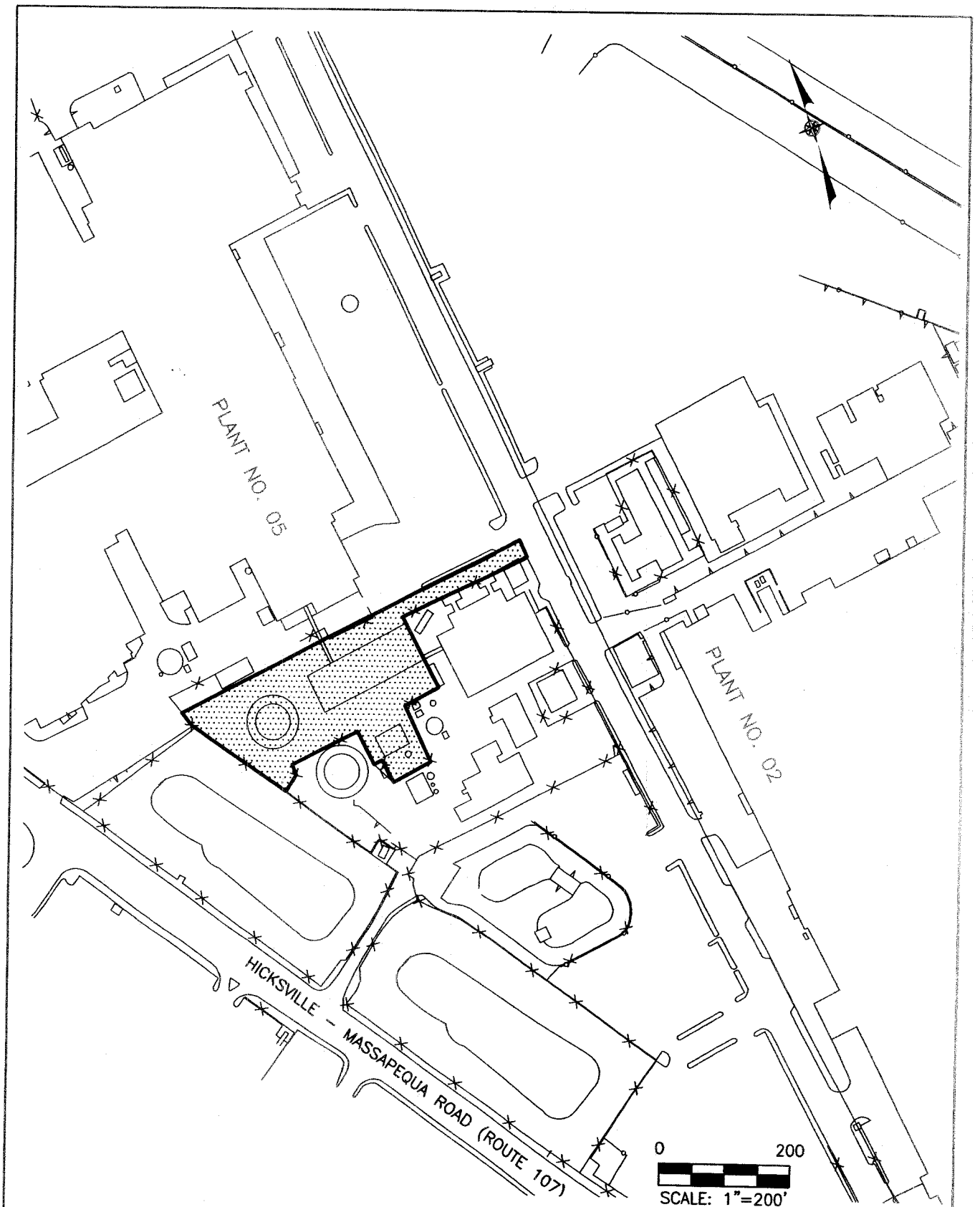
This report documents the findings of a Phase II Site Assessment, which addresses the recommendations presented in the Phase I Site Assessment undertaken for the Northrop Grumman Corporation (NGC) Central Steam Plant (CSP) facility.

The NGC CSP facility is located on the east side of Hicksville-Massapequa Road (Route 107) in Bethpage, New York. A site location map is presented on Figure 1-1. The site is approximately 1.37 acres (current Tax ID No.: Section 46, Block 323, Lot 246). The facility is currently owned by NGC, formerly known as Grumman Aerospace Corporation (GAC) or Grumman. The property is zoned industrial. Zoning to the north, east, south and west is also industrial. Zoning further west and south is high density residential. In addition, areas of commercial zoning are located west and south of the property along Hicksville-Massapequa Road and portions of Central Avenue.

The site is comprised of the CSP building, a maintenance storage shed, an air compressor building, a groundwater treatment building (Building 96), a groundwater preheat building (pretreatment) and several small skid-mounted buildings. A site plan is provided as Figure 1-2.

The CSP facility parcel is generally level, paved and appears to be well drained. Ground elevation is approximately 110 feet above mean sea level. The Soil Conservation Service (SCS) classifies the site as Urban Land. Urban Land is defined as an area with at least 85 percent asphalt, concrete or other impervious building material, with most of the remaining small areas of soil being well drained Riverhead, Hempstead or Enfield soils, or excessively drained Udipsaments (nearly level). Udipsaments (nearly level) are defined as manmade fill or borrow areas, most of which are grassed with 0 to 3 percent slopes, which consist of very deep soils that are excessively drained to well-drained.

The objective of the Phase II Site Assessment is to document the investigation activities undertaken in accordance with the initial scope of work developed from the recommendations of the Phase I Site Assessment. This report also presents the results obtained from the laboratory



NORTHROP GRUMMAN CORPORATION
BETHPAGE, NEW YORK
CENTRAL STEAM PLANT – PHASE II SITE ASSESSMENT

SITE LOCATION MAP

Dvirka and Bartilucci
Consulting Engineers
A Division of William F. Cosulich Associates, P.C.

FIGURE 1–1

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NORTHROP GRUMMAN CORPORATION

NASSAU COUNTY NEW YORK

CENTRAL STEAM PLANT
PHASE II SITE ASSESMENT

SITE PLAN

PROJECT NO.: 1965
DATE: OCTOBER 2004
SCALE: 1" = 20'
DRAWING NO.: 1-2

analysis of the environmental samples collected as part of the field program and provides an interpretation of the analytical results with respect to appropriate environmental standards, guidance values and criteria.

Section 2 of this document presents an overview of the findings and conclusions of the Phase I Site Assessment undertaken at the NGC CSP facility. The recommended technical scope of work for the Phase II Site Assessment as presented in the Phase I Site Assessment for the NGC CSP facility is presented in Section 3. A description of the field activities is presented in Section 4. The findings of the field program are presented in Section 5. The conclusions of the Phase II Site Assessment and recommendations regarding further investigation and/or remedial activities at the identified areas of environmental concern (AOCs) are presented in Section 6.

Appendix A contains Chain-of-Custody forms utilized to ship the samples collected during the field program. Boring logs from the field program are included in Appendix B. Appendix C presents the laboratory results of the soil samples collected during the field program.

Section 2

2.0 OVERVIEW OF PHASE I SITE ASSESSMENT

This section provides an overview of the findings and conclusions of the Phase I Site Assessment undertaken at the NGC CSP facility.

A Phase I Site Assessment of the NGC CSP facility was conducted by Dvirka and Bartilucci Consulting Engineers (D&B) and the report entitled, "Phase I Site Assessment, Central Steam Plant Facility, Bethpage, New York" was completed by D&B in June 2004. Information utilized in the preparation of the Phase I Site Assessment included a review of available aerial photographs dated 1950 to 1994; topographical maps dated 1943 to 1994; available files and construction drawings at NGC; available files at the New York State Department of Environmental Conservation Region 1 office; interviews with representatives of NGC; a state and federal environmental database report obtained in September 2003; and site inspections performed by D&B on December 2, 10 and 22, 2003 and February 24, 2004. Based upon the findings of the Phase I Site Assessment, the following areas were identified as potential AOCs:

- AOC 1 - Blowdown tank and pit
- AOC 2 - Pipe trench containing the No. 6 fuel oil and steam piping
- AOC 3 - Pit at the southeastern corner of the building
- AOC 4 - Asbestos-insulated equipment
- AOC 5 - Former septic system
- AOC 6 - Tank 02-29-01
- AOC 7 - Former 550-gallon diesel fuel underground storage tank (UST)
- AOC 8 - Building 96
- AOC 9 - Drainage features

The locations of the areas identified as potential AOCs are depicted on Figure 2-1. Based upon the findings of the Phase I Site Assessment, additional investigation was recommended for the above referenced potential AOCs.

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NORTHROP GRUMMAN CORPORATION

NASSAU COUNTY — NEW YORK

CENTRAL STEAM PLANT
PHASE II SITE ASSESMENT

POTENTIAL AREAS OF ENVIRONMENTAL CONCERN

PROJECT NO.	DRAWING NO.
1965	2-1
DATE: OCTOBER 2004	
SCALE: 1" = 20'	

It should be noted that a Drainage Discharge Determination was performed in conjunction with the Phase I Site Assessment. The Drainage Discharge Determination report recommended that certain Underground Injection Control (UIC) and non-UIC drainage features be either closed or re-directed to the Nassau County sewer system. As a result, a UIC Closure Program was conducted in conjunction with the Phase II Site Assessment to perform the activities recommended in the Drainage Discharge Determination report related to the identified UIC features requiring closure. Specifically, AOCs 1, 2, 3 and 8, as well as one of the drainage features associated with AOC 9, were identified in the Drainage Discharge Determination report as drainage features requiring closure or re-direction. The closure of these features will be conducted as part of the UIC Closure Program and the field activities and findings associated with those AOCs are presented in a separate report.

As part of the Phase I Site Assessment, it was recommended that NGC evaluate the need to conduct asbestos abatement. It should be noted that, with regard to asbestos-insulated equipment (AOC 4), D&B recommended that NGC contract with a company properly qualified in identifying asbestos-containing materials at the point when NGC determines that an assessment is necessary. As a result, field activities associated with AOC 4 were not performed during the Phase II Site Assessment.

Section 3

3.0 SCOPE OF WORK

Based upon the recommendations of the Phase I Site Assessment, a detailed technical scope of work was developed to investigate the identified AOCs. The following investigation activities were recommended in the Phase I Site Assessment report:

AOC 1

As described in Section 2, recommendations regarding AOC 1 will be addressed under a separate UIC Closure Program.

AOC 2

As described in Section 2, recommendations regarding AOC 2 will be addressed under a separate UIC Closure Program.

AOC 3

As described in Section 2, recommendations regarding AOC 3 will be addressed under a separate UIC Closure Program.

AOC 4

As described in Section 2, D&B recommended that any further investigation of asbestos insulated equipment be contracted to a company properly qualified to conduct this work. NGC retained an asbestos abatement contractor to conduct an evaluation to determine whether asbestos containing material is present at the CSP facility. The contractor prepared an asbestos survey which identified asbestos containing materials and provided recommendations for removal. NGC will implement the recommendations of the asbestos survey at a later date. As a result, field activities associated with AOC 4 were not conducted during this Phase II Site Assessment.

AOC 5

One soil probe should be advanced through the bottom of the backfilled leaching pool associated with the former septic system. Soil samples should be collected from 0 to 2 feet and 2 to 4 feet below the bottom of the pool and analyzed for volatile organic compounds (VOCs) utilizing United States Environmental Protection Agency (USEPA) Method 8260, semivolatile organic compounds (SVOCs) utilizing USEPA Method 8270 and priority pollutant (PP) metals utilizing USEPA Method 6010/7471.

AOC 6

Three soil probes should be advanced in the vicinity of Tank 02-29-01. Soil samples should be collected from 0 to 2 feet and 2 to 4 feet below ground surface (bgs) and analyzed for the VOCs and SVOCs listed in the NYSDEC's Spill Technology and Remediation Series (STARS) Memo #1 Table 2 by USEPA Methods 8260/8270 and by the Toxicity Characteristic Leaching Procedure (TCLP).

AOC 7

One soil probe should be advanced in the vicinity of the former 550-gallon diesel fuel underground storage tank (UST). Soil samples should be collected from 6 to 14 feet bgs at 2-foot intervals and analyzed for the VOCs and SVOCs listed in the NYSDEC's STARS Memo #1 Table 2 by USEPA Methods 8260/8270 and by TCLP.

AOC 8

As described in Section 2, recommendations regarding AOC 8 will be addressed under a separate UIC Closure Program.

AOC 9

As described in Section 2, recommendations regarding AOC 9 will be addressed under a separate UIC Closure Program.

Section 4

4.0 FIELD ACTIVITIES

This section provides a description of the field activities conducted as part of the Phase II Site Assessment undertaken at the Central Steam Plant. The AOCs investigated as part of this Phase II Site Assessment and associated sample locations are shown on Figure 4-1 and are summarized in Table 4-1. The information provided on Table 4-1 includes the AOC designation, the number of borings advanced and samples collected for each AOC, and the analytical parameters for each sample. Work performed during the Phase II Site Assessment included the collection and analysis of subsurface soil samples. Dedicated project field books, which are available in the project file, provide documentation of the daily field activities conducted at the site during the field program.

Soil sampling activities were conducted on July 28, 2004. Soil probes were advanced utilizing Geoprobe tooling and a truck-mounted Simco 200 Earthprobe. The Geoprobe tooling consisted of drill rods and a 2-inch outside diameter by 4-foot long soil probe sampler. A clear polyethylene terephthalate-G (PETG) sample tube liner, dedicated to each soil probe sample, was used to contain the sample within the sampler. Each soil probe was advanced utilizing the Earthprobe to drive the soil probe sampler, sample tube liner and drill rods to the desired depth. The soil probe sampler was also retrieved using the Earthprobe.

All soil samples collected were geologically characterized, inspected for staining, discoloration or odors, and screened for volatile organic compounds (VOCs) utilizing a photoionization detector (PID). These field observations are included on the soil boring logs provided in Appendix B. All soil samples were collected from the sample tube liners and placed in laboratory-supplied, precleaned jars, labeled, logged, stored on ice and retained for analysis.

While advancing soil probes, a PID was used to monitor VOCs in the workers' breathing zone and at the boreholes. Air monitoring results are documented in the project field books. The PID was calibrated on at least a daily basis, using isobutylene gas at a concentration of 100 parts per million in air. Equipment calibration is documented in the project field books.

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NORTHROP GRUMMAN CORPORATION

NASSAU COUNTY NEW YORK

CENTRAL STEAM PLANT
PHASE II SITE ASSESMENT

SAMPLE LOCATION MAP

PROJECT NO. 1965
DATE: OCTOBER 2004
SCALE: 1" = 20'
DRAWING NO. 4-1

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TABLE 4-1

NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
PHASE II SITE ASSESSMENT
SUMMARY OF FIELD ACTIVITIES

AOC Number	Area of Environmental Concern	Soil Probe ID Number	Soil Sampling Interval (depth bgs)	No. of Soil Probes	No. of Soil Probe Samples	Laboratory Analysis*	Comments
5	Leaching Pool Associated with Former Septic System	A05B01	6', 12-14', 14-16'	1	3	VOCs, SVOCs, PP Metals	Leaching pool backfilled. Samples collected beneath backfill layer. Sample collected from 6' bgs to characterize the backfill material.
6	Tank 02-29-01	A06B01	0-2', 2-4'	1	2	STARS Table 2 Compounds	--
		A06B02	0-2', 2-4'	1	2	STARS Table 2 Compounds	--
		A06B03	0-2', 2-4'	1	2	STARS Table 2 Compounds	--
7	Former 550-Gallon Diesel Fuel UST	A07B01	6-8', 8-10', 10-12', 12-14'	1	4	STARS Table 2 Compounds	--

* Target Constituents/Analytical Methods
STARS Table 2 Compounds analyzed by USEPA Methods 8260 and 8270 as well as the Toxicity Characteristic Leaching Procedure.
Volatile organic compounds (VOCs) analyzed by USEPA Method 8260.
Semivolatile organic compounds (SVOCs) analyzed by USEPA Method 8270.
Priority pollutant (PP) metals analyzed by USEPA Method 6010/7471.

Samples collected for laboratory analysis were placed in precleaned laboratory-supplied sample jars, which were immediately labeled and placed in an iced cooler for subsequent transport to the laboratory under Chain-of-Custody procedures. Any excess sample material not required for analysis was returned to the borehole from which it came. The remainder of the borehole was filled with clean sand and/or bentonite pellets. Each borehole was restored at grade with the same material originally in place. That is, asphalt areas were restored with asphalt, concrete areas were restored with concrete and grass covered areas were restored with soil or sand. In locations where manholes were encountered, the covers were replaced following sampling completion.

All nondedicated sampling equipment was decontaminated between sample locations. Decontamination procedures consisted of:

- External wash with a solution of non-phosphate detergent and potable water;
- Potable water rinse; and
- Distilled/deionized water rinse.

All disposable sampling equipment was properly discarded following its one-time use.

Section 5

5.0 FINDINGS

This section presents the findings of the Phase II Site Assessment, including a summary of the analytical results of the soil samples obtained during the field program. Soil sample results are generally compared to the Recommended Soil Cleanup Objectives presented in Appendix A of the NYSDEC Technical and Administrative Guidance Memorandum (TAGM) No. 4046 (referred to in this document as "TAGM 4046 Recommended Soil Cleanup Objectives"), as well as the typical Eastern USA Background concentration ranges included in TAGM 4046 (referred to in this document as "Eastern USA Background Levels"). However, AOCs 6 and 7 were investigated for potential contamination resulting from the operation of fuel oil tanks at the facility. Subsurface soil samples collected from these two AOCs were analyzed for fuel oil constituents only (i.e., VOCs and SVOCs listed in the NYSDEC's STARS Memo #1). As a result, the analytical results of these samples were compared to the STARS Table 2 Toxicity Characteristic Leaching Procedure (TCLP) Alternative Guidance Values as well as the TAGM 4046 Appendix A criteria for the total analyses, and the STARS Table 2 TCLP Extraction Guidance Values for the TCLP analyses.

As stated previously, the Phase II field investigation was conducted at the following AOCs at the NGC CSP facility:

- AOC 5 - Former septic system
- AOC 6 - Tank 02-29-01
- AOC 7 - Former 550-gallon diesel fuel UST

A total of 5 soil probes were advanced and a total of 13 subsurface soil samples were collected in these areas during the Phase II field investigation.

An area by area discussion of the analytical results obtained from the soil sampling program is provided in the sections that follow.

5.1 Discussion of Analytical Results

AOC 5

A total of three soil samples were collected from the soil probe advanced through the bottom of the leaching pool associated with the former septic system and analyzed for VOCs, SVOCs and PP metals. The laboratory results of the sample analyses are presented on Tables C-1, C-2 and C-3 provided in Appendix C. As shown on the tables, all of the compounds/ constituents analyzed for were either not detected or were detected at concentrations less than the TAGM 4046 Recommended Soil Cleanup Objectives or Eastern USA Background Levels.

AOC 6

A total of six soil samples were collected from the three soil probes advanced in the vicinity of Tank 02-29-01 and analyzed for STARS Table 2 VOCs and SVOCs. The laboratory results of the sample analyses are presented on Tables C-4 and C-5 provided in Appendix C. All of the compounds analyzed for were either not detected or were detected at concentrations less than the TAGM 4046 Recommended Soil Cleanup Objectives or the STARS TCLP Extraction Guidance Values.

AOC 7

A total of four soil samples were collected from the soil probe advanced in the vicinity of the former 550-gallon diesel fuel UST and analyzed for STARS Table 2 VOCs and SVOCs. The laboratory results of the sample analyses are presented on Tables C-4 and C-5 provided in Appendix C. All of the compounds analyzed for were not detected.

5.2 Data Validation

Soil sampling activities were conducted on July 28, 2004. The samples were analyzed for several parameters, including VOCs, SVOCs and PP metals. The sample analyses were

performed by Mitkem Corporation, a New York State Environmental Laboratory Approval Program (ELAP) certified laboratory.

All Quality Control (QC) data (i.e., surrogates, spikes, blanks, calibrations, etc.) was reviewed along with 20% of the environmental sample data yielding a "20% validation." The validation process was performed in accordance with NYSDEC Quality Assurance/Quality Control (QA/QC) requirements. The findings of the validation process are described below.

Thirteen soil samples were collected during the NGC Central Steam Plant Phase II Site Assessment field program. Three of the samples were analyzed for VOCs, SVOCs and PP metals utilizing USEPA Methods 8260, 8270 and 6010/7471, respectively. The remaining 10 samples were analyzed for the VOCs and SVOCs listed in Table 2 of the NYSDEC's STARS Memo #1 by USEPA Methods 8260/8270 and TCLP. Sample analyses were performed by Mitkem Corporation in accordance with USEPA SW-846 methodologies.

The data package submitted by Mitkem Corporation has been reviewed for completeness and compliance with USEPA methods and QA/QC requirements. The findings of the review process are summarized as follows:

- All samples were analyzed within the method specified holding times. The SVOC fraction of sample A05B01F was extracted one day outside of holding time. Qualification of the data was not required.

- Several of the samples for VOC analysis had one surrogate recovery outside QC limits. The samples were reanalyzed with similar results. Further action was not required and the data from the initial analyses have been included on the data summary tables for environmental assessment purposes.

- The bis(2-ethylhexyl)phthalate results for samples A05B01 (12-14') and A05B01A (14-16') have been qualified as nondetect due to laboratory contamination. That is, the method blank associated with these samples also contained bis(2-ethylhexyl)phthalate and the concentrations found in the samples were less than five times that found in the blank.

- The results for the VOC fraction of the TCLP extracts for samples A06B02 (0-2') and A06B02 (2-4') were highly suspect. The analytical results of these soil samples did not exhibit any VOCs. However, the analytical results for the TCLP extracts

exhibited trimethylbenzenes and naphthalene at concentrations exceeding the STARS TCLP Alternate Guidance Values. In addition, naphthalene was reported in the VOC fraction of the TCLP sample but not the SVOC fraction. The laboratory was contacted and it was determined that the samples were analyzed subsequent to the analysis of a highly contaminated sample and that the compounds reported were a result of "carry-over" from the previous sample and not attributable to the site. Therefore, the analytical results for the affected compounds have been qualified as nondetect and are reported as "U*" on the data summary tables. The naphthalene results for the TCLP extract of samples A06B01 (0-2') and A06B01 (2-4') have also been attributed to "carry-over" and have been qualified as nondetect and reported as "U*" on the data summary tables.

No other problems were found with the sample results and the data has been deemed valid and useable for environmental assessment purposes as qualified above.

Section 6

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the findings of the Phase II Site Assessment field investigation discussed in Section 5.0, conclusions and recommendations are presented in this section regarding the need for further investigation and/or remedial activities at the NGC CSP facility.

In support of providing conclusions and technical recommendations with regard to the level and degree to which remediation of the facility is required, the NYSDEC's TAGM No. 4046, "Determination of Soil Cleanup Objectives and Cleanup Levels," dated January 24, 1994, has been utilized to provide soil screening criteria for the site.

As discussed in the introduction of TAGM 4046, the document is designed to provide a basis and procedure for NYSDEC Project Managers at "...individual Federal Superfund, State Superfund, 1986 EQBA Title 3 and Responsible Party (RP) sites..." to determine soil cleanup levels. The TAGM provides a number of methods to determine the degree to which these sites are remediated including the Recommended Soil Cleanup Objectives and Eastern USA Background Levels.

The NGC CSP facility is not a Federal Superfund or State Superfund site nor is it a 1986 Environmental Quality Bond Act (EQBA) Title 3 or RP property. However, it is reasonable to utilize the TAGM 4046 Recommended Soil Cleanup Objectives for VOCs and SVOCs and the Eastern USA Background Levels for metals, to determine whether remediation is required at the facility. This includes the proposed revised NYSDEC TAGM 4046 Recommended Soil Cleanup Objectives for cadmium and chromium.

AOCs 6 and 7 were investigated due to potential contamination resulting from the operation of fuel oil tanks at the facility. As a result, soil samples collected from the soil probes advanced in these areas were analyzed only for the VOCs and SVOCs listed in NYSDEC's STARS Memo #1 Table 2. Section I of the NYSDEC STARS Memo #1 outlines that the document is designed to provide guidance to responsible parties to assist in determining remedial activities at a petroleum spill site or in determining the acceptability of a site assessment. As a

result, it is appropriate to utilize the NYSDEC STARS Memo #1 Table 2 TCLP Alternative Guidance Values in conjunction with the TAGM 4046 Recommended Soil Cleanup Objectives for total analyses, and the NYSDEC STARS Memo #1 Table 2 TCLP Extraction Guidance Values for TCLP analyses to determine whether remedial activities are necessary at AOCs 6 and 7.

As discussed in Section 5, the Phase II field investigation at the NGC CSP facility was conducted at the following areas:

- AOC 5 - former septic system
- AOC 6 - Tank 02-29-01
- AOC 7 - former 550-gallon diesel fuel UST

Conclusions and recommendations regarding no further action, additional investigation and/or remedial activities at the AOCs listed above are presented in the following sections.

AOC 5

As discussed in Section 5, none of the soil samples collected and analyzed from AOC 5 as part of the Phase II field investigation exhibited any constituents of concern in excess of the TAGM 4046 Recommended Soil Cleanup Objectives for VOCs and SVOCs or the Eastern USA Background Levels for metals. As a result, no further investigation and/or remediation activities are recommended regarding AOC 5.

AOC 6

As discussed in Section 5, none of the soil samples collected and analyzed from AOC 6 as part of the Phase II field investigation exhibited any constituents of concern in excess of the TAGM 4046 Recommended Soil Cleanup Objectives or the STARS Memo #1 TCLP Alternative Guidance values for the VOC and SVOC total analyses, or the STARS Memo #1 TCLP Extraction Guidance Values for the VOC and SVOC TCLP analyses. As a result, no further

investigation and/or remediation activities are recommended regarding AOC 6. However, it should be noted that the soil samples collected during the Phase II field program were collected from probes advanced in the vicinity of Tank 02-29-01. Soil probes were not advanced through the secondary containment dike due to access restrictions and in an effort to maintain the integrity of the secondary containment system. As a result, soil directly beneath the tank, containment dike and truck unload area was not evaluated as part of the Phase II Site Assessment.

AOC 7

As discussed in Section 5, none of the soil samples collected and analyzed from AOC 7 as part of the Phase II field investigation exhibited any constituents of concern in excess of the TAGM 4046 Recommended Soil Cleanup Objectives or the STARS Memo #1 TCLP Alternative Guidance Values for the VOC and SVOC total analyses, or the STARS Memo #1 TCLP Extraction Guidance Values for the VOC and SVOC TCLP analyses. As a result, no further investigation and/or remediation activities are recommended regarding AOC 7.

Appendix A

APPENDIX A

CHAIN-OF-CUSTODY FORMS

CONFIDENTIAL

MITKEM CORPORATION
175 Metro Center Boulevard
Warwick, Rhode Island 02886-1755
(401) 732-3400 • Fax (401) 732-3499
email: mitkem@mitkem.com

CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY Dvirka and Bartilucci	PHONE (516) 364 9870	COMPANY	PHONE	LAB PROJECT #: C0818
NAME Mike Hofgren	FAX (516) 364-9015	NAME SAME	FAX	
ADDRESS 330 Crossways Pk. Drive		ADDRESS		TURNAROUND TIME: STD.
CITY/ST/ZIP Woodbury, NY 11797		CITY/ST/ZIP		

CLIENT PROJECT NAME:	CLIENT PROJECT #:	CLIENT P.O.#:
NGC Central Steam Plant	1965-010	

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	REQUESTED ANALYSES: VOCs 8260	SVOCs 8270	STARS Memo1 VOCs + SVOCs (8260/8270)	TCLP	RCRA metals (6010/7471)	PP metals	COMMENTS
A06 B02 (0-2)	7/28/04 9:30		X		X		C1	2			X	X			
A06 B02 (2-4)	" / 9:35		X		X		C2	2			X	X			
A06 B01 (0-2)	" / 10:20		X		X		C3	2			X	X			
A06 B01 (2-4)	" / 10:25		X		X		C4	2			X	X			
A06 B03 (0-2)	" / 10:50		X		X		C5	2			X	X			
A06 B03 (2-4)	" / 10:55		X		X		C6	2			X	X			
A09 B02 (3-5)	" / 11:20		X		X		C7	2	X	X			X		
A09 B02 (5-7)	" / 11:25		X		X		C8	2	X	X			X		
A07 B01 (6-8)	" / 12:00		X		X		C9	2			X	X			
A07 B01 (8-10) MS/MSD	" / 12:05		X		X		~~C10~~	2			X	X			
A07 B01 (10-12)	" / 12:10		X		X		C11	2			X	X			
A07 B01 (12-14)	" / 12:15		X		X		C12	2			X	X			

TSF#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME	ADDITIONAL REMARKS:	COOLER TEMP:
	[signature]	7/28/04 / 5pm	J. Davis	7/29/04 0900		3°
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WHITE: LABORATORY COPY YELLOW: REPORT COPY PINK: CLIENT'S COPY

NGINS001141063

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CHAIN-OF-CUSTODY RECORD

REPORT TO		INVOICE TO		
COMPANY D+B	PHONE (516) 364 9890	COMPANY	PHONE	LAB PROJECT #:
NAME Mike Hofgren	FAX (516) 364 9045	NAME	FAX	
ADDRESS 330 Crossways Pk Dr.		ADDRESS SAME		TURNAROUND TIME: STD
CITY/ST/ZIP Woodbury NY 11797		CITY/ST/ZIP		

CLIENT PROJECT NAME:	CLIENT PROJECT #:	CLIENT P.O.#:
NGC Central Steam Plant	P65 010	

SAMPLE IDENTIFICATION	DATE/TIME SAMPLED	COMPOSITE	GRAB	WATER	SOIL	OTHER	LAB ID	# OF CONTAINERS	REQUESTED ANALYSES: VOCs (8260)	SVOCs (8270)	RCRA Metals (6010/7471)	PP Metals	COMMENTS
A03B01 (6-8)	7/25/04 1:00		X		X		13	2	X	X	X		
A03B01 (8-10)	" / 12:55		X		X		14	2	X	X	X		
A05B01	" / 1:35		X		X		15	2	X	X		X	
A05B01	" / 1:40		X		X		16	2	X	X		X	
A05B01F	" / 1:30		X		X		17	2	(X)	X		X	Hold analysis.
	/												
	/												
	/												
	/												
	/												
	/												
	/												

1 need Result

TSP#	RELINQUISHED BY	DATE/TIME	ACCEPTED BY	DATE/TIME	ADDITIONAL REMARKS:	COOLER TEMP:
		7/25/04 / 5pm		/		
		/		/		
		/		/		

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Appendix B

APPENDIX B

BORING LOGS

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 1965-010 **Project Name:** NGC – Central Steam Plant	**Boring No.: A05B01** **Sheet** 1 **of** 1 **By:** Paul Martorano
Drilling Contractor: Clearwater **Driller:** Bruce & Dennis Viggliotta **Drill Rig:** NA **Date Started:** 07/28/04	**Geologist:** Al Albano **Drilling Method:** Geoprobe **Drive Hammer Weight:** NA **Date Completed:** 07/28/04	**Boring Completion Depth:** 16' **Ground Surface Elevation:** NA **Boring Diameter:** 2 inch

Depth (ft.)	Soil Sample Type	Rec	PID ppm	Sample Description
-0-	GP	12'	0.0	Fill material. Gray/brown, silty SAND, with varying rock sizes, black coal fragments.
-2-				
-4-				
-6-				
-8-				
-10-				
-12-	GP	4'	0.0	Tan/orange, medium SAND, with some quartz rock.
-14-				
-16-				

Sample Types:
GP = Geoprobe

NOTES:
Sample collected for analysis from 12-14' and 14-16'.
Fill sample collected for analysis at 6' bgs.

D&B_BLOG

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 1965-010 Project Name: NGC – Central Steam Plant	Boring No.: A06B01 Sheet 1 of 1 By: Paul Martorano
Drilling Contractor: Clearwater Driller: Bruce & Dennis Viggliotta Drill Rig: NA Date Started: 07/28/04	Geologist: Al Albano Drilling Method: Geoprobe Drive Hammer Weight: NA Date Completed: 07/28/04	Boring Completion Depth: 4' Ground Surface Elevation: NA Boring Diameter: 2 inch

Depth (ft.)	Soil Sample Type	Rec	PID ppm	Sample Description
-0-	GP	2'	0.0	Concrete
-0.5-				Brown, medium-coarse, silty SAND, stiff
-2-	GP	2'	0.0	Tan, silty SAND, with heavy quartz rock.
-4-				

Sample Types:
GP = Geoprobe

NOTES:
Sample collected for analysis from 0-2' and 2-4'.

D&B_BLOG

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 1965-010 **Project Name:** NGC – Central Steam Plant	**Boring No.: A06B02** **Sheet** 1 **of** 1 **By:** Paul Martorano
Drilling Contractor: Clearwater **Driller:** Bruce & Dennis Viggliotta **Drill Rig:** NA **Date Started:** 07/28/04	**Geologist:** Al Albano **Drilling Method:** Geoprobe **Drive Hammer Weight:** NA **Date Completed:** 07/28/04	**Boring Completion Depth:** 4' **Ground Surface Elevation:** NA **Boring Diameter:** 2 inch

Depth (ft.)	Soil Sample Type	Rec	PID ppm	Sample Description
-0-	GP	2'	0.0	Concrete
-0.5-				Tan SAND, with medium rock, some silty, stiff sand.
-2-	GP	2'	0.0	Tan, medium-coarse SAND, with medium quartz rock.
-4-				

Sample Types:
GP = Geoprobe

NOTES:
Sample collected for analysis from 0-2' and 2-4'.

D&B_BLOG

Dvirka and Bartilucci CONSULTING ENGINEERS	**Project No.:** 1965-010 **Project Name:** NGC – Central Steam Plant	**Boring No.: A06B03** **Sheet** 1 **of** 1 **By:** Paul Martorano
Drilling Contractor: Clearwater **Driller:** Bruce & Dennis Viggliotta **Drill Rig:** NA **Date Started:** 07/28/04	**Geologist:** Al Albano **Drilling Method:** Geoprobe **Drive Hammer Weight:** NA **Date Completed:** 07/28/04	**Boring Completion Depth:** 4' **Ground Surface Elevation:** NA **Boring Diameter:** 2 inch

Depth (ft.)	Soil Sample Type	Rec	PID ppm	Sample Description
-0-	GP	2'	0.0	Concrete
-0.5-				Black, silty SAND, with medium, angular rock.
-1-				Reddish/brown, medium SAND, with medium quartz rock.
-2-	GP	2'	0.0	Tan, medium SAND, with medium quartz rock.
-4-				

Sample Types:
GP = Geoprobe

NOTES:
Sample collected for analysis from 0-2' and 2-4'.

D&B_BLOG

Dvirka and Bartilucci CONSULTING ENGINEERS	Project No.: 1965-010 Project Name: NGC – Central Steam Plant	Boring No.: A07B01 Sheet 1 of 1 By: Paul Martorano
Drilling Contractor: Clearwater Driller: Bruce & Dennis Viggliotta Drill Rig: NA Date Started: 07/28/04	Geologist: Al Albano Drilling Method: Geoprobe Drive Hammer Weight: NA Date Completed: 07/28/04	Boring Completion Depth: 14' Ground Surface Elevation: NA Boring Diameter: 2 inch

Depth (ft.)	Soil Sample Type	Rec	PID ppm	Sample Description
-6-	GP	2'	0.0	Reddish/tan, medium SAND, with medium-heavy quartz rock.
-8-	GP	2'	0.0	Light tan, fine-medium SAND, loose.
-10-	GP	2'	0.0	Light tan, fine-medium SAND, loose.
-12-	GP	2'	0.0	Light tan, fine-medium SAND, loose.
-14-				

Sample Types:
GP = Geoprobe

NOTES:
Sample collected for analysis from 6-8', 8-10', 10-12' and 12-14'.

D&B_BLOG

Appendix C

APPENDIX C

LABORATORY RESULTS

TABLE C-1
NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
PHASE II SITE ASSESSMENT
SOIL SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS

SAMPLE LOCATION	AOC 5				
SAMPLE IDENTIFICATION	A05B01	A05B01A	A05B01F	CONTRACT REQUIRED DETECTION LIMIT	TAGM 4046 RECOMMENDED SOIL CLEANUP OBJECTIVES
SAMPLE DEPTH	12'-14'	14'-16'	6'		
DATE OF COLLECTION	7/28/2004	7/28/2004	7/28/2004		
DILUTION FACTOR	1	1	1		
PERCENT SOLIDS	94	95	88		
UNITS	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Dichlorodifluoromethane	U	U	U	5	----
Chloromethane	U	U	U	5	----
Vinyl Chloride	U	U	U	5	200
Bromomethane	U	U	U	5	----
Chloroethane	U	U	U	5	1,900
Trichlorofluoromethane	U	U	U	5	----
1,1-Dichloroethene	U	U	U	5	400
Acetone	9	9	U	5	200
Iodomethane	U	U	U	5	----
Carbon Disulfide	U	U	U	5	2,700
Methylene Chloride	3 J	1 J	5 J	5	100
trans-1,2-Dichloroethene	U	U	U	5	300
Methyl tert-Butyl Ether	U	U	U	5	----
1,1-Dichloroethane	U	U	U	5	200
Vinyl Acetate	U	U	U	5	----
2-Butanone	U	U	U	5	300
cis-1,2-Dichloroethene	U	U	U	5	----
2,2-Dichloropropane	U	U	U	5	----
Chloroform	U	U	2 J	5	300
1,1,1-Trichloroethane	U	U	U	5	800
1,1-Dichloropropene	U	U	U	5	----
Carbon Tetrachloride	U	U	U	5	600
1,2-Dichloroethane	U	U	U	5	100
Benzene	U	U	U	5	60
Trichloroethene	U	U	U	5	700
1,2-Dichloropropane	U	U	U	5	----
Dibromomethane	U	U	U	5	----
Bromodichloromethane	U	U	U	5	----
cis-1,3-Dichloropropene	U	U	U	5	----
4-Methyl-2-pentanone	U	U	U	5	1,000
Toluene	U	U	U	5	1,500
trans-1,3-Dichloropropene	U	U	U	5	----
1,1,2-Trichloroethane	U	U	U	5	----
1,3-Dichloropropane	U	U	U	5	300

TABLE C-1 (continued)
NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
PHASE II SITE ASSESSMENT
SOIL SAMPLING RESULTS
VOLATILE ORGANIC COMPOUNDS

SAMPLE LOCATION	AOC 5			CONTRACT REQUIRED DETECTION LIMIT	TAGM 4046 RECOMMENDED SOIL CLEANUP OBJECTIVES
SAMPLE IDENTIFICATION	A05B01	A05B01A	A05B01F		
SAMPLE DEPTH	12'-14'	14'-16'	6'		
DATE OF COLLECTION	7/28/2004	7/28/2004	7/28/2004		
DILUTION FACTOR	1	1	1		
PERCENT SOLIDS	94	95	88		
UNITS	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Tetrachloroethene	U	U	U	5	1,400
2-Hexanone	U	U	U	5	----
Dibromochloromethane	U	U	U	5	----
1,2-Dibromoethane	U	U	U	5	----
Chlorobenzene	U	U	U	5	1,700
1,1,1,2-Tetrachloroethane	U	U	U	5	
Ethylbenzene	U	U	U	5	5,500
m,p-Xylene	U	U	U	5	1,200 *
o-Xylene	U	U	U	5	1,200 *
Xylene (total)	U	U	U	5	1,200
Styrene	U	U	U	5	----
Bromoform	U	U	U	5	----
Isopropylbenzene	U	U	U	5	----
1,1,2,2-Tetrachloroethane	U	U	U	5	600
Bromobenzene	U	U	U	5	----
1,2,3-Trichloropropane	U	U	U	5	----
n-Propylbenzene	U	U	U	5	----
2-Chlorotoluene	U	U	U	5	----
1,3,5-Trimethylbenzene	U	U	U	5	----
4-Chlorotoluene	U	U	U	5	----
tert-Butylbenzene	U	U	U	5	----
1,2,4-Trimethylbenzene	U	U	U	5	----
sec-Butylbenzene	U	U	U	5	----
4-Isopropyltoluene	U	U	U	5	----
1,3-Dichlorobenzene	U	U	U	5	1,600
1,4-Dichlorobenzene	U	U	U	5	8,500
n-Butylbenzene	U	U	U	5	----
1,2-Dichlorobenzene	U	U	U	5	7,900
1,2-Dibromo-3-chloropropane	U	U	U	5	----
1,2,4-Trichlorobenzene	U	U	U	5	3,400
Hexachlorobutadiene	U	U	U	5	----
Naphthalene	U	U	U	5	13,000
1,2,3-Trichlorobenzene	U	U	U	5	----
Total VOCs	12	10	7		10,000

Qualifiers:
U: Constituent analyzed for but not detected.
J: Constituent concentration found below CRDL, value estimated.

Notes:
---- : Not established.
* : Value is for total xylenes.
[ ] : Value exceeds the Recommended Soil Cleanup Objective.

TABLE C-2
NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
PHASE II SITE ASSESSMENT
SOIL SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

SAMPLE LOCATION	AOC 5			CONTRACT REQUIRED DETECTION LIMIT	TAGM 4046 RECOMMENDED SOIL CLEANUP OBJECTIVES
SAMPLE IDENTIFICATION	A05B01	A05B01A	A05B01F		
SAMPLE DEPTH	12'-14'	14'-16'	6'		
DATE OF COLLECTION	7/28/2004	7/28/2004	7/28/2004		
DILUTION FACTOR	1	1	1		
PERCENT SOLIDS	94	95	88		
UNITS	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Phenol	U	U	U	330	30 or MDL
bis(2-Chloroethyl)ether	U	U	U	330	----
2-Chlorophenol	U	U	U	330	800
1,3-Dichlorobenzene	U	U	U	330	1,600
1,4-Dichlorobenzene	U	U	U	330	8,500
1,2-Dichlorobenzene	U	U	U	330	7,900
2-Methylphenol	U	U	U	330	100 or MDL
2,2'-oxybis(1-chloropropane)	U	U	U	330	----
4-Methylphenol	U	U	U	330	900
N-Nitroso-di-n-propylamine	U	U	U	330	----
Hexachloroethane	U	U	U	330	----
Nitrobenzene	U	U	U	330	200 or MDL
Isophorone	U	U	U	330	4,400
2-Nitrophenol	U	U	U	330	330 or MDL
2,4-Dimethylphenol	U	U	U	330	----
2,4-Dichlorophenol	U	U	U	330	400
1,2,4-Trichlorobenzene	U	U	U	330	3,400
Naphthalene	U	U	U	330	13,000
4-Chloroaniline	U	U	U	330	220 or MDL
bis(2-Chloroethoxy)methane	U	U	U	330	----
Hexachlorobutadiene	U	U	U	330	----
4-Chloro-3-methylphenol	U	U	U	330	240 or MDL
2-Methylnapthalene	U	U	U	330	36,400
Hexachlorocyclopentadiene	U	U	U	330	----
2,4,6-Trichlorophenol	U	U	U	330	----
2,4,5-Trichlorophenol	U	U	U	660	100
2-Chloronapthalene	U	U	U	330	----
2-Nitroaniline	U	U	U	660	430 or MDL
Dimethylphthalate	U	U	U	330	2,000
Acenaphthylene	U	U	U	330	41,000
2,6-Dinitrotoluene	U	U	U	330	1,000
3-Nitroaniline	U	U	U	660	500 or MDL
Acenaphthene	U	U	U	330	50,000
2,4-Dinitrophenol	U	U	U	660	200 or MDL
4-Nitrophenol	U	U	U	660	100 or MDL
Dibenzofuran	U	U	U	330	6,200
2,4-Dinitrotoluene	U	U	U	330	----

TABLE C-2 (continued)
NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
PHASE II SITE ASSESSMENT
SOIL SAMPLING RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS

SAMPLE LOCATION	AOC 5			CONTRACT REQUIRED DETECTION LIMIT	TAGM 4046 RECOMMENDED SOIL CLEANUP OBJECTIVES
SAMPLE IDENTIFICATION	A05B01	A05B01A	A05B01F		
SAMPLE DEPTH	12'-14'	14'-16'	6'		
DATE OF COLLECTION	7/28/2004	7/28/2004	7/28/2004		
DILUTION FACTOR	1	1	1		
PERCENT SOLIDS	94	95	88		
UNITS	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Diethylphthalate	U	U	U	330	7,100
4-Chlorophenyl-phenylether	U	U	U	330	----
Fluorene	U	U	U	330	50,000
4-Nitroanline	U	U	U	660	----
4,6-Dinitro-2-methylphenol	U	U	U	660	----
N-Nitrosodiphenylamine	U	U	U	330	----
4-Bromophenyl-phenylether	U	U	U	330	----
Hexachlorobenzene	U	U	U	330	410
Pentachlorophenol	U	U	U	660	1,000 or MDL
Phenanthrene	U	U	U	330	50,000
Anthracene	U	U	U	330	50,000
Carbazole	U	U	U	330	----
Di-n-butylphthalate	U	U	U	330	8,100
Fluoranthene	U	U	U	330	50,000
Pyrene	U	U	U	330	50,000
Butylbenzylphthalate	U	U	U	330	50,000
3,3'-Dichlorobenzidine	U	U	U	330	----
Benzo(a)anthracene	U	U	U	330	224 or MDL
Chrysene	U	U	U	330	400
bis(2-Ethylhexyl)phthalate	U*	U*	U	330	50,000
Di-n-octylphthalate	U	U	U	330	50,000
Benzo(b)fluoranthene	U	U	U	330	1,100
Benzo(k)fluoranthene	U	U	U	330	1,100
Benzo(a)pyrene	U	U	U	330	61 or MDL
Indeno(1,2,3-cd)pyrene	U	U	U	330	3,200
Dibenzo(a,h)anthracene	U	U	U	330	14 or MDL
Benzo(g,h,i)perylene	U	U	U	330	50,000
Total PAHs	0	0	0		100,000
Total CaPAHs	0	0	0		10,000
Total SVOCs	0	0	0		500,000

Qualifiers:
U: Constituent analyzed for but not detected.
J: Constituent concentration found below CRDL, value estimated.
B: Compound found in method blank as well as the sample.
U*: Result qualified as non-detect based on validation criteria.

Notes:
---- : Not established.
MDL : Method Detection Limit.
[ ] : Value exceeds the Recommended Soil Cleanup Objective.

TABLE C-3
NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
PHASE II SITE ASSESSMENT
SOIL SAMPLING RESULTS
PRIORITY POLLUTANT METALS

SAMPLE LOCATION	AOC 5			INSTRUMENT DETECTION LIMIT	EASTERN USA BACKGROUND LEVELS
SAMPLE IDENTIFICATION	A05B01	A05B01A	A05B01F		
SAMPLE DEPTH	12'-14'	14'-16'	6'		
DATE OF COLLECTION	7/28/2004	7/28/2004	7/28/2004		
DILUTION FACTOR	1	1	1		
PERCENT SOLIDS	94	95	88		
UNITS	(mg/kg)	(mg/kg)	(mg/kg)	(ug/L)	(mg/kg)
Antimony	3.3 B	1.5 B	0.4 B	3.0	---
Arsenic	2.2 B	1.2 B	3.8	3.0	3 - 12*
Beryllium	0.12 B	0.096 B	0.38	0.5	0 - 1.75
Cadmium	U	U	0.11 B	0.7	0.1 - 1, (10***)
Chromium	4.8	4.5	6.7	0.6	1.5 - 40*, (50***)
Copper	34.9	17.6	11.5	4.0	1 - 50
Lead	7.2	4.6	8.7	4.0	200 - 500**
Mercury	U	U	0.03 B	0.1	0.001 - 0.2
Nickel	1.4 B	1.1 B	4.2	0.8	0.5 - 25
Selenium	0.84 B	0.84 B	0.46 B	9.0	0.1 - 3.9
Silver	1.9 B	1.2 B	U	2.0	---
Thallium	U	0.35 B	0.95 B	3.0	---
Zinc	27.3	17.2	13.7	7.0	9 - 50

Qualifiers:
U: Analyte analyzed for but not detected.
B: Analyte concentration is less than the CRDL, but greater than the IDL.

Notes:
--- : Not established.
* : New York State Background.
** : Background for metropolitan or suburban areas.
*** : Proposed revised criteria in TAGM 4046 Appendix A.
☐ : Value exceeds the Eastern USA Background Level or Recommended Soil Cleanup Objective.

TABLE C-4
NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
PHASE II SITE ASSESSMENT
SOIL SAMPLING RESULTS
STARS TABLE 2 COMPOUNDS

SAMPLE LOCATION	AOC 6								
SAMPLE IDENTIFICATION	A06B01	A06B01	A06B02	A06B02	A06B03	A06B03	CONTRACT REQUIRED DETECTION LIMIT	TAGM 4046 RECOMMENDED SOIL CLEANUP OBJECTIVE	STARS TABLE 2 TCLP ALTERNATIVE GUIDANCE VALUES
SAMPLE DEPTH	0' - 2'	2' - 4'	0' - 2'	2' - 4'	0' - 2'	2' - 4'			
DATE OF COLLECTION	7/28/2004	7/28/2004	7/28/2004	7/28/2004	7/28/2004	7/28/2004			
DILUTION FACTOR	1	1	1	1	1	1			
PERCENT SOLIDS	85	96	78	92	95	94			
UNITS	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)
Volatile Organic Compounds									
Methyl Tert Butyl Ether	U	U	U	U	U	U	5	---	----
Benzene	U	U	U	U	U	U	5	60	14
Toluene	U	U	U	U	U	U	5	1,500	100
Ethylbenzene	U	U	U	U	U	U	5	5,500	100
m,p-Xylene	U	U	U	U	U	U	5	1,200*	100**
o-Xylene	U	U	U	U	U	U	5	1,200*	100**
Xylene (total)	U	U	U	U	U	U	5	1,200	100**
Isopropylbenzene	U	U	U	U	U	U	5	---	100
n-Propylbenzene	U	U	U	U	U	U	5	---	100
1,3,5-Trimethylbenzene	U	U	U	U	U	U	5	---	100
1,2,4-Trimethylbenzene	U	U	U	U	U	U	5	---	100
sec-Butylbenzene	U	U	U	U	U	U	5	---	100
p-Isopropyltoluene	U	U	U	U	U	U	5	---	100
n-Butylbenzene	U	U	U	U	U	U	5	---	100
Naphthalene	U	U	U	U	U	U	5	13,000	200
SemiVolatile Organic Compounds									
Naphthalene	U	U	U	U	U	U	330	13,000	200
Acenaphthene	U	U	U	U	U	U	330	50,000	400
Fluorene	U	U	U	U	U	U	330	50,000	1,000
Phenanthrene	U	U	U	U	U	U	330	50,000	1,000
Anthracene	U	U	U	U	U	U	330	50,000	1,000
Fluoranthene	U	U	U	U	U	U	330	50,000	1,000
Pyrene	U	U	U	U	U	U	330	50,000	1,000
Benzo(a)anthracene	U	U	U	U	U	U	330	224 or MDL	0.04
Chrysene	U	U	U	U	U	U	330	400	0.04
Benzo(b)fluoranthene	U	U	U	U	U	U	330	1,100	0.04
Benzo(k)fluoranthene	U	U	U	U	U	U	330	1,100	0.04
Benzo(a)pyrene	U	U	U	U	U	U	330	61 or MDL	1,400
Indeno(1,2,3-cd)pyrene	U	U	U	U	U	U	330	3,200	0.04
Dibenzo(a,h)anthracene	U	U	U	U	U	U	330	14 or MDL	1,000
Benzo(g,h,i)perylene	U	U	U	U	U	U	330	50,000	0.04

Qualifiers:
U: Constituent analyzed for but not detected.

Notes:
---- : Not established.
* : Value is for total xylenes.
** : Value is for each isomer of xylene.
: Value exceeds the Recommended Soil Cleanup Objective.

TABLE C-4 (continued)
NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
PHASE II SITE ASSESSMENT
SOIL SAMPLING RESULTS
STARS TABLE 2 COMPOUNDS

SAMPLE LOCATION	AOC 7						CONTRACT REQUIRED DETECTION LIMIT	TAGM 4046 RECOMMENDED SOIL CLEANUP OBJECTIVE	STARS TABLE 2 TCLP ALTERNATIVE GUIDANCE VALUES
SAMPLE IDENTIFICATION	A07B01	A07B01	A07B01	A07B01					
SAMPLE DEPTH	6' - 8'	8' - 10'	10' - 12'	12' - 14'					
DATE OF COLLECTION	7/28/2004	7/28/2004	7/28/2004	7/28/2004					
DILUTION FACTOR	1	1	1	1					
PERCENT SOLIDS	94	90	89	89					
UNITS	(ug/kg)	(ug/kg)	(ug/kg)	(ug/kg)			(ug/kg)	(ug/kg)	(ug/kg)
Volatile Organic Compounds									
Methyl Tert Butyl Ether	U	U	U	U			5	----	----
Benzene	U	U	U	U			5	60	14
Toluene	U	U	U	U			5	1,500	100
Ethylbenzene	U	U	U	U			5	5,500	100
m,p-Xylene	U	U	U	U			5	1,200*	100**
o-Xylene	U	U	U	U			5	1,200*	100**
Xylene (total)	U	U	U	U			5	1,200	100**
Isopropylbenzene	U	U	U	U			5	---	100
n-Propylbenzene	U	U	U	U			5	---	100
1,3,5-Trimethylbenzene	U	U	U	U			5	---	100
1,2,4-Trimethylbenzene	U	U	U	U			5	---	100
sec-Butylbenzene	U	U	U	U			5	---	100
p-Isopropyltoluene	U	U	U	U			5	---	100
n-Butylbenzene	U	U	U	U			5	---	100
Naphthalene	U	U	U	U			5	13,000	200
SemiVolatile Organic Compounds									
Naphthalene	U	U	U	U			330	13,000	200
Acenaphthene	U	U	U	U			330	50,000	400
Fluorene	U	U	U	U			330	50,000	1,000
Phenanthrene	U	U	U	U			330	50,000	1,000
Anthracene	U	U	U	U			330	50,000	1,000
Fluoranthene	U	U	U	U			330	50,000	1,000
Pyrene	U	U	U	U			330	50,000	1,000
Benzo(a)anthracene	U	U	U	U			330	224 or MDL	0.04
Chrysene	U	U	U	U			330	400	0.04
Benzo(b)fluoranthene	U	U	U	U			330	1,100	0.04
Benzo(k)fluoranthene	U	U	U	U			330	1,100	0.04
Benzo(a)pyrene	U	U	U	U			330	61 or MDL	1,400
Indeno(1,2,3-cd)pyrene	U	U	U	U			330	3,200	0.04
Dibenzo(a,h)anthracene	U	U	U	U			330	14 or MDL	1,000
Benzo(g,h,i)perylene	U	U	U	U			330	50,000	0.04

Qualifiers:
U: Constituent analyzed for but not detected.

Notes:
---- : Not established.
* : Value is for total xylenes.
** : Value is for each isomer of xylene.
: Value exceeds the Recommended Soil Cleanup Objective.

TABLE C-5
NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
PHASE II SITE ASSESSMENT
SOIL SAMPLING RESULTS
STARS TABLE 2 COMPOUNDS BY TCLP

SAMPLE LOCATION	AOC 6							
SAMPLE IDENTIFICATION	A06B01	A06B01	A06B02	A06B02	A06B03	A06B03	CONTRACT REQUIRED DETECTION LIMIT	STARS TABLE 2 TCLP EXTRACTION GUIDANCE VALUES
SAMPLE DEPTH	0' - 2'	2' - 4'	0' - 2'	2' - 4'	0' - 2'	2' - 4'		
DATE OF COLLECTION	7/28/2004	7/28/2004	7/28/2004	7/28/2004	7/28/2004	7/28/2004		
DILUTION FACTOR	1	1	1	1	1	1		
UNITS	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)	(ug/l)
Volatile Organic Compounds								
Methyl Tert Butyl Ether	U	U	U	U	U	U	5	----
Benzene	U	U	U	U	U	U	5	0.7
Toluene	U	U	U	U	U	U	5	5
Ethylbenzene	U	U	U	U	U	U	5	5
m,p-Xylene	U	U	U*	U*	U	U	5	5**
o-Xylene	U	U	U*	U	U	U	5	5**
Xylene (total)	U	U	U*	U*	U	U	5	5**
Isopropylbenzene	U	U	U	U	U	U	5	5
n-Propylbenzene	U	U	U	U	U	U	5	5
1,3,5-Trimethylbenzene	U	U	U*	U*	U	U	5	5
1,2,4-Trimethylbenzene	U	U	U*	U*	U	U	5	5
sec-Butylbenzene	U	U	U	U	U	U	5	5
p-Isopropyltoluene	U	U	U	U	U	U	5	5
n-Butylbenzene	U	U	U	U	U	U	5	5
Naphthalene	U*	U*	U*	U*	U	U	5	10
SemiVolatile Organic Compounds								
Naphthalene	U	U	U	U	U	U	33	10
Acenaphthene	U	U	U	U	U	U	33	20
Fluorene	U	U	U	U	U	U	33	50
Phenanthrene	U	U	U	U	U	U	33	50
Anthracene	U	U	U	U	U	U	33	60
Fluoranthene	U	U	U	U	U	U	33	50
Pyrene	U	U	U	U	U	U	33	50
Benzo(a)anthracene	U	U	U	U	U	U	33	0.002
Chrysene	U	U	U	U	U	U	33	0.002
Benzo(b)fluoranthene	U	U	U	U	U	U	33	0.002
Benzo(k)fluoranthene	U	U	U	U	U	U	33	0.002
Benzo(a)pyrene	U	U	U	U	U	U	33	0.002
Indeno(1,2,3-cd)pyrene	U	U	U	U	U	U	33	0.002
Dibenzo(a,h)anthracene	U	U	U	U	U	U	33	50
Benzo(g,h,i)perylene	U	U	U	U	U	U	33	0.002

Qualifiers:
U: Constituent analyzed for but not detected.
J: Constituent concentration found below CRDL, value estimated.
U*: Results qualified as non-detect based on validation criteria.

Notes:
---- : Not established.
* : Value is for total xylenes.
** : Value is for each isomer of xylene.
▭ : Value exceeds the Recommended Soil Cleanup Objective.

TABLE C-5 (continued)
NORTHROP GRUMMAN CORPORATION
CENTRAL STEAM PLANT
PHASE II SITE ASSESSMENT
SOIL SAMPLING RESULTS
STARS TABLE 2 COMPOUNDS BY TCLP

SAMPLE LOCATION	AOC 7							
SAMPLE IDENTIFICATION	A07B01	A07B01	A07B01	A07B01			CONTRACT REQUIRED DETECTION LIMIT	STARS TABLE 2 TCLP EXTRACTION GUIDANCE VALUES
SAMPLE DEPTH	6' - 8'	8' - 10'	10' - 12'	12' - 14'				
DATE OF COLLECTION	7/28/2004	7/28/2004	7/28/2004	7/28/2004				
DILUTION FACTOR	1	1	1	1				
UNITS	(ug/l)	(ug/l)	(ug/l)	(ug/l)			(ug/l)	(ug/l)
Volatile Organic Compounds								
Methyl Tert Butyl Ether	U	U	U	U			5	----
Benzene	U	U	U	U			5	0.7
Toluene	U	U	U	U			5	5
Ethylbenzene	U	U	U	U			5	5
m,p-Xylene	U	U	U	U			5	5**
o-Xylene	U	U	U	U			5	5**
Xylene (total)	U	U	U	U			5	5**
Isopropylbenzene	U	U	U	U			5	5
n-Propylbenzene	U	U	U	U			5	5
1,3,5-Trimethylbenzene	U	U	U	U			5	5
1,2,4-Trimethylbenzene	U	U	U	U			5	5
sec-Butylbenzene	U	U	U	U			5	5
p-Isopropyltoluene	U	U	U	U			5	5
n-Butylbenzene	U	U	U	U			5	5
Naphthalene	U	U	U	U			5	10
SemiVolatile Organic Compounds								
Naphthalene	U	U	U	U			33	10
Acenaphthene	U	U	U	U			33	20
Fluorene	U	U	U	U			33	50
Phenanthrene	U	U	U	U			33	50
Anthracene	U	U	U	U			33	60
Fluoranthene	U	U	U	U			33	50
Pyrene	U	U	U	U			33	50
Benzo(a)anthracene	U	U	U	U			33	0.002
Chrysene	U	U	U	U			33	0.002
Benzo(b)fluoranthene	U	U	U	U			33	0.002
Benzo(k)fluoranthene	U	U	U	U			33	0.002
Benzo(a)pyrene	U	U	U	U			33	0.002
Indeno(1,2,3-cd)pyrene	U	U	U	U			33	0.002
Dibenzo(a,h)anthracene	U	U	U	U			33	50
Benzo(g,h,i)perylene	U	U	U	U			33	0.002

Qualifiers:
U: Constituent analyzed for but not detected.
J: Constituent concentration found below CRDL, value estimated.

Notes:
---- : Not established.
* : Value is for total xylenes.
** : Value is for each isomer of xylene.
[ ] : Value exceeds the Recommended Soil Cleanup Objective.