2C-3.4

Dvirka and Bartilucci
CONSULTING ENGINEERS

330 Crossways Park Drive, Woodbury, New York, 11797-2015
516-364-9890 • 718-460-3634 • Fax: 516-364-9045

June 18, 1997

Mr. John Cofman, P.E., Lead Engineer
Environmental Technology and Compliance
Northrop Grumman Corporation
Mail Stop: D08-001
Bethpage, NY 11714-3582

Re: Supplemental Investigation and Soil
Remediation Oversight - Runway Area
North Runway - Parcel L1
Bethpage, New York 11714
D&B No. 801/96-72

Dear Mr. Cofman:

The purpose of this letter report is to present the findings of a Supplemental Investigation and to document subsequent soil remediation activities that were conducted in the area of the former runway at the Northrop Grumman Corporation (NGC) property known as "North Runway - Parcel L1."

The Supplemental Investigation consisted of a field program which included the investigation, confirmation and delineation of surficial and subsurface soil contamination. A presentation of the analytical results of the soil samples, along with a comparison of these results to appropriate soil cleanup objectives are provided. Based upon the findings of the Supplemental Investigation field program, subsequent soil remediation activities were conducted which consisted of the excavation, transportation and off-site disposal of approximately 400 tons of nonhazardous contaminated soil. A description of the remediation activities and conclusions are also provided.

Introduction

The North Runway - Parcel L1 site is located to the east of the South Oyster Bay Road Extension, immediately south of the Long Island Railroad tracks in Bethpage, New York. A site location map and a site plan are presented on Figures 1 and 2, respectively (see Attachment A).

The North Runway - Parcel L1 property encompasses approximately 7.5 acres and, other than the presence of the former runway and associated support roadways and tarmac areas, is currently undeveloped. Historically, the site was utilized as a runway for aircraft designed, developed, manufactured and tested by NGC. The site was utilized as the northern end of a runway between approximately 1955 and 1990, at which time the runway was "closed." Aircraft maintenance and deicing procedures took place off-site further south in the vicinity of NGC Plant 4. The end of the runway included aircraft landing guidance and lighting systems, as well as thrust deflectors which were used to provide controlled deflection of jet exhaust. In addition to the site being used as a runway until its closure, the southwestern portion of the property was utilized for vehicle parking.

The North Runway - Parcel L1 site is currently inactive and the majority of the runway fixtures (i.e., thrust deflectors) have been removed. In addition, the concrete portion of the runway was excavated and removed by NGC.

Purpose

A previous investigation at the site indicated that two priority pollutant metals, arsenic and mercury (and zinc to a limited extent) and/or several semivolatile organic compounds (SVOCs) were the primary contaminants of concern detected in soil samples collected from former soil borings NR15, NR60, NR62, NR63, NR64 and NR72 located in the area of the former runway. Several of the SVOCs listed in Table 2 of NYSDEC's STARS Memo #1, primarily polycyclic aromatic hydrocarbons (PAHs), were contaminants of concern in former borings NR15 and NR72. Arsenic was a contaminant of concern in former borings NR15, NR60, NR62, NR63 and NR64; mercury in NR60; and zinc in NR62, NR63 and NR64. Figure 3 (see Attachment A) shows the locations of these former borings. This previous investigation is described in the report prepared by Dvirka and Bartilucci Consulting Engineers (D&B) of Woodbury, New York, in January 1997, entitled "Phase II Site Assessment, North Runway - Parcel L1, Northrop Grumman Corporation, Bethpage, New York."

Based on the findings of the previous investigation, it was requested by the potential buyer of the property and NGC that additional borings, soil sampling and analysis be performed to further characterize the soil in the vicinity of the aforementioned former soil borings. Therefore, D&B was retained by NGC to undertake a Supplemental Investigation at the site in order to investigate and/or confirm the presence of soil contamination and to delineate the extent of soil contamination, if present, in the area of the former runway for the purpose of remediation. Based upon the results of the Supplemental Investigation field program, remediation activities were to be conducted.

Supplemental Investigation

A brief description of the soil boring and soil sampling activities conducted in support of the Supplemental Investigation field program is provided below. Daily field activity reports, which are available in the project file, provide more specific documentation of the field program activities.

Soil Borings and Soil Sampling Activities

During the Supplemental Investigation field program, three soil borings, designated NR106, NR107 and NR108, were advanced in the vicinity of former soil boring locations NR15, NR16, NR60, NR62, NR63, NR64 and NR72. Soil boring NR106 was advanced approximately 25 feet between former soil boring locations NR15 and NR72. Soil boring NR107 was advanced approximately 15 feet from former soil boring location NR16 and 40 to 45 feet from former soil boring locations NR60 and NR62 and; soil boring NR108 was advanced approximately 50 feet from former soil boring locations NR62, NR63 and NR64. Figure 3 (see Attachment A) illustrates the approximate locations of these soil borings.

One soil sample was collected from soil boring NR106 from 0 to 1 foot below ground surface and analyzed for the semivolatile organic compounds (SVOCs) listed in Table 2 of NYSDEC's STARS Memo #1. The soil sample was analyzed by IEA Laboratory in Monroe, Connecticut. The soil sample was obtained by driving a 24-inch stainless steel split spoon sampler one-half its entire length utilizing a CME-55 drill rig and a 140 lb. safety hammer free-falling a distance of 30 inches. The split spoon sampler was subsequently retrieved, opened and its contents visually characterized. This information is included on boring logs provided in Attachment B.

Six soil samples were collected from soil borings NR107 and NR108 (three soil samples per location for a total of six samples) from 0 to 1 foot, 1 to 2 feet and 2 to 4 feet below ground surface and analyzed for priority pollutant metals by USEPA Method 6010/7471. The soil samples were analyzed by IEA Laboratory in Monroe, Connecticut. The soil samples were obtained by driving a 24-inch stainless steel split spoon sampler its entire length utilizing a CME-55 drill rig and a 140 lb. safety hammer free-falling a distance of 30 inches. The split spoon sampler was subsequently retrieved, opened and its contents visually characterized. This information is included on boring logs provided in Attachment B. The first split spoon was bisected into two discrete soil sample intervals, 0 to 1 foot and 1 to 2 feet. The second split spoon sample was collected from 2 to 4 feet.

The stainless steel split spoon sampler utilized for the collection of the soil samples was decontaminated between soil boring locations and sample collection. Decontamination

procedures consisted of an external alconox wash, a tap water rinse followed by a distilled/deionized water rinse.

Findings

The findings of the Supplemental Investigation including a summary of the analytical results of the soil samples are presented below. Soil sample results were compared to the criteria included in Appendix A of the New York State Department of Environmental Conservation (NYSDEC) Technical and Administrative Guidance Memorandum (TAGM) No. 4046 (hereafter referred to as the "NYSDEC TAGM criteria"), as well as the typical Eastern USA background soil contaminant concentration ranges included in the TAGM (hereafter referred to as the "Eastern USA background levels").

The analytical results of the soil samples collected at soil borings NR106 and NR107 and NR108 are presented on Tables 1 and 2, respectively (see Attachment C). The laboratory data is included in Attachment D. As indicated on Table 1, one soil sample was collected at soil boring NR106 from 0 to 1 foot below ground surface and analyzed for the SVOCs listed in Table 2 of NYSDEC's STARS Memo #1. Several SVOCs were detected in this soil sample; however, all of the SVOCs were detected at concentrations that were below the NYSDEC TAGM criteria.

Table 2 presents the results of the soil samples collected at soil borings NR107 and NR108. Three soil samples were collected from 0 to 1 foot, 1 to 2 feet and 2 to 4 feet at each soil boring location and analyzed for priority pollutant metals. As indicated on Table 2, arsenic was detected at concentrations in excess of the Eastern USA background level of 12 mg/kg in soil samples NR107 (0-1'), NR107 (1'-2') and NR107 (2'-4'); mercury was detected at concentrations in excess of the Eastern USA background level of 0.2 mg/kg in soil samples NR107 (1'-2') and NR107 (2'-4'); and zinc was found at concentrations in excess of the eastern USA background level of 50 mg/kg in soil samples NR107 (0-1') and NR107 (1'-2').

Conclusions and Recommendations

Based upon the findings of the Supplemental Investigation field program, the analytical data indicated that arsenic and mercury (and zinc to a limited extent) were the primary contaminants of concern found at the site. Therefore, it was recommended that soil remediation in the immediate vicinity of soil boring location NR107 be conducted to a minimum depth of 5 feet below ground surface. This depth was based upon the detection of arsenic and mercury to a depth of 4 feet at concentrations that exceeded the NYSDEC TAGM criteria and Eastern USA background levels.

It is important to note that zinc is not classified as a RCRA metal, that is, a metal which at elevated levels could classify a waste material as a characteristic hazardous waste. Furthermore, zinc is not identified as a hazardous constituent in Appendix 23 of NYSDEC's regulations found at 6 NYCRR Part 371. Accordingly, zinc does not warrant further concern and/or investigation.

Therefore, as indicated above, it was recommended that the soil be excavated to a minimum depth of 5 feet in the vicinity of soil boring location NR107 and that the material be properly transported and disposed of off-site.

The recommended area of excavation is shown on Figure 4 (see Attachment A). As shown on Figure 4, soil boring NR107 was located approximately 15 feet form former boring NR16. Because the previous investigation at the site indicated that contaminants were not detected at concentrations in excess of NYSDEC TAGM criteria and Eastern USA background levels in soil samples collected from former soil boring NR16, soil from half of the 50 foot by 50 foot quadrant surrounding NR16, in which NR107 was located was recommended for excavation.

Soil Remediation Oversight

Based upon the findings and conclusions and recommendations of the Supplemental Investigation field program described above, soil excavation and remediation activities were conducted at the North Runway - Parcel L1 site. D&B provided engineering oversight of these activities and a summary of the soil excavation and remediation program is provided below. Daily field activity reports, which are available in the project file, provide more specific documentation of the excavation and remediation program activities.

Soil Excavation and Remediation Activities

The soil excavation and remediation activities were conducted by Blue Water Environmental, Inc., (Blue Water) of Melville, New York. These activities consisted of the removal, transportation and off-site recycling of asphalt pavement and the excavation, loading, transportation and off-site disposal of nonhazardous contaminated soil.

The excavation and remediation program field activities included defining the specific area to be excavated; assigning a depth of excavation based upon the analytical results of the Supplemental Investigation field program (5.5 feet below ground surface); and the excavation, transportation and off-site disposal of nonhazardous contaminated soil. Figure 4 (see Attachment A) illustrates the approximate area of excavation. The field activities were conducted in accordance with the recommendations of the Supplemental Investigation field program described above, and based on the protocol established during previous remediation activities conducted at the site, as described

in the report prepared by D&B in January 1997, entitled "Remediation Report, North Runway - Parcel L1, Northrop Grumman Corporation, Bethpage, New York."

The removal of asphalt pavement and the excavation of approximately 400 tons of nonhazardous contaminated soil was conducted on April 21, 1997 utilizing a backhoe. The removed asphalt was loaded into two 20 cubic yard rolloff containers and subsequently transported off-site by Blue Water to its Melville, New York facility for recycling. All excavated nonhazardous contaminated soil was stockpiled on plastic sheeting on a portion of the runway within the NGC property boundary. The soil was subsequently covered with plastic sheeting to limit exposure. On May 1, 2 and 5, 1997, the stockpile of nonhazardous contaminated soil was loaded into 13 40-cubic yard capacity dump trailers utilizing a front-end loader and transported off-site via tractor-trailer by Clifford James Transport (CJT) under a nonhazardous waste manifest to Phoenix Soil LLC (Phoenix) in Waterbury, Connecticut for disposal and recycling. Waste characterization sample results are included in Attachment D. Nonhazardous waste manifests and weight tickets are included in Attachment E. A certificate of materials recycling from Phoenix is presented in Attachment F.

Conclusions

Soil excavation and remediation activities associated with the area of the former runway at the North Runway - Parcel L1 site were conducted and completed in accordance with the recommendations of the Supplemental Investigation field program, and the protocol established during previous remediation activities conducted at the site, as described in the report prepared by D&B in January 1997, entitled "Remediation Report, North Runway - Parcel L1, Northrop Grumman Corporation, Bethpage, New York."

Approximately 400 tons of nonhazardous contaminated soil was excavated, transported and disposed off-site at Phoenix Soil LLC in Waterbury, Connecticut. In addition, asphalt pavement was removed and transported off-site by Blue Water for recycling at its facility located in Melville, New York.

Based upon the results of the soil excavation and remediation program, further soil remediation activities are not warranted at the North Runway - Parcel L1 site.

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

Very truly yours,

Richard M. Walka
Vice President

RMW/MR(t)/ajm,cmc
Enclosure
cc: J. Ohlmann (NGC)
A. Postyn (NGC)
E. Kitt (D&B)
♦0801/RMW0512701.JC(R03)