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NAS WHITING FIELD
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LETTER REPORT REGARDING DRAFT FINAL INVESTIGATION AT SITES 35, 36, AND 37
NAS WHITING FIELD FL
2/3/1999
HARDING LAWSON ASSOCIATES

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Harding Lawson Associates

February 3, 1999

2511-2001

Ms. Linda Martin
Department of Navy, Southern Division
Naval Facilities Engineering Command
2155 Eagle Drive
North Charleston, South Carolina, 29418

SUBJECT: Draft Final Report on the Investigation at Sites 35, 36, and 37
Naval Air Station (NAS) Whiting Field, Milton, Florida
Contract Number N62467-89D-0317/050

Dear Ms. Martin:

Harding Lawson Associates (HLA) has prepared this letter report to present the results of additional investigations at Sites 35, 36, and 37 at Naval Air Station (NAS) Whiting Field in Milton, Florida. The assessment and this report were completed for the Department of Navy, Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under the Comprehensive Long-term Environmental Action, Navy (CLEAN) Contract No. N62467-89D-317.

The objective of the investigation was to complete an initial site screening assessment of three previously uninvestigated sites to determine if contaminants are present and additional investigations are warranted. The three sites under investigation were identified in July 1993 and added to the Installation Restoration Program in 1995. The sites include:

Site 35 -Building 1429, Public Works Maintenance Facility;
Site 36 -Building 1440A, Auto Repair Booth; and
Site 37 -Building 1486, Paint Spray Booth.

The scope of the field investigation was developed by the NAS Whiting Field Partnering Team during a site walkover on August 16, 1996. This letter report presents investigation methodology, analytical results for the soil and the groundwater samples collected, and conclusions and recommendations of the soil assessment. The groundwater conclusions and recommendations will be addressed as part of the Site 40, basewide groundwater investigation.

Site locations are shown on Figure 1 and site descriptions, field investigations, and results and recommendations are presented below.

SITE BACKGROUND

Site 35 - Building 1429, Public Works Maintenance Facility. Building 1429 was built in 1943 and used for maintenance of vehicles and equipment, generation of power and heat, storage of fire fighting equipment, woodworking and metals repair, and administrative offices. A gasoline service station (formerly Building 2848) with a pump island and underground fuel storage tanks was located at the northeast side of Building 1429. Three underground storage tanks (one diesel tank [No. 2851] and two gasoline tanks [No. 1429I and 1429J]) were located west of the pump island and under a vehicle shed. All three tanks were abandoned in place in 1984. The tanks were abandoned by pumping out the remaining fuel, filling the tanks with sand, and capping the fill ports with concrete. None of the tanks have been removed since abandonment.

Four 25,000 gallon fuel oil and one 10,000 gallon diesel underground storage tanks are also located at Building 1429. The fuel oil tanks are used for facility-wide heat generation and the diesel tank is connected to emergency

generators in Building 1429. Currently fuel oil is delivered to the tanks via tanker trucks, however, previous deliveries were made by railroad tank cars. The railroad spur is still present at the site and a catch basin for the spillage was observed during a site walkover. The discharge point for the catch basin is unknown. Possible wastes associated with Building 1429 include fuel, oil, and solvents.

Site 36 - Building 1440A, Auto Repair Booth. Building 1440A, Auto Repair Booth, consists of a single service bay with a lubrication rack sump for working under vehicles. The drain for the lubrication rack was plugged more than ten years ago. The drain originally emptied to a concrete sump which was connected to the storm sewer system. One aboveground waste oil tank is located on the east side of Building 1440A. Current conditions at the site indicate the waste oil tank may have previously been located on the west side of the building and was filled through a funnel system through the wall of the building. In addition, the southwest corner of the building may have previously contained a fuel pump island and a buried fuel tank. Possible wastes associated with Building 1440A include: oil, grease, fuel, and solvents

Site 37 - Building 1486 - Paint Spray Booth. Building 1486 was constructed in 1944 and includes the furniture shop and the paint spray booth. The paint spray reportedly contained a "waterfall recirculation system". The system worked as follows: objects were painted with a spray gun underneath a hood; the fumes from this operation were captured in the hood and combined with water; and the water was discharged into the sanitary sewer system. Possible wastes associated with Building 1486 include paint and solvents.

FIELD PROGRAM

The site screening investigation included the completion of soil boring and monitoring wells and the sampling and analysis of subsurface soil and groundwater samples.

Field Screening. Twelve soil borings were completed at the three sites (Figure 1). Table 1 presents the soil borings completed and sampling depths. Soil borings were initiated with a post-hole digger to a depth of 4 feet to clear utilities, and below that, continuous split spoon samples were collected to the total depth of the soil boring. Lithologic description of the samples were logged by an onsite geologist. A total of 167 soil samples were collected from soil borings at Sites 35, 36, and 37. All of the soil borings, except soil boring 35B001, were completed to a total depth of 30 feet below land surface (bls). Soil boring 35B001 was completed to a total depth of 54 feet bls.

Field screening of the soil samples included: screening for dense nonaqueous phase liquids (DNAPLs) using an ultraviolet light and centrifuge red dye test, total organic Vapor Analysis (OVA) headspace measurements, and field gas chromatograph (GC) screening. All of the subsurface soil samples were screened for headspace analysis with the Heathtech PortafidTM Flame Ionization Detector (FID).

The field GC analysis was conducted with a HNUTM 311 portable GC. The soil samples were analyzed for VOCs including: benzene, toluene, ethylbenzene, xylenes (BTEX), dichloroethene (DCE), perchloroethene (PCE), and trichloroethene (TCE).

Laboratory Analysis. Confirmatory soil samples were also collected for laboratory analysis. A minimum of three subsurface soil samples from each soil boring were analyzed for Target Compound List (TCL) volatile organic compounds (VOCs). Based on field screening results, select samples were sent to an offsite laboratory for analysis.

Monitoring well installation and groundwater sampling were also conducted to assess current groundwater conditions. In conjunction with the monitoring well installation, split spoon subsurface soil samples were collected at five feet intervals from one monitoring well. The subsurface soil samples were used to characterize the subsurface lithology and identify any potential clay confining units.

Eleven monitoring wells were installed at the three sites. Two well nests of three monitoring wells each were installed at Site 35, one well nest of three monitoring wells was installed at Site 36, and one well nest of two monitoring wells was installed at Site 37. Figure 1 shows the monitoring well locations and Table 2 provides the monitoring well completion details.

Following the installation and development of the monitoring wells, a groundwater sample was collected from each well and analyzed for TCL VOCs, TCL Semivolatile Organic Compounds (SVOCs), TCL Pesticides and PCBs, and Target Analyte List (TAL) Inorganic analytes.

An equipment rinsate blank and a travel blank sample (37R02801 and 35T04301) were collected and shipped with the soil samples. The equipment rinsate blank was collected from the subsurface soil sampling equipment.

INVESTIGATION RESULTS

Field Analysis. All DNAPL field screening tests (including ultraviolet light and centrifuge red dye test) indicated negative results. The negative results for these tests are not unusual given that these tests only indicate DNAPL presence in the parts per hundreds range.

The field screening results for total organic vapor head space are presented in Table 1. The reported total headspace concentrations ranged from 0 to greater than 5000 parts per million (ppm). Except for a few isolated concentrations of less than 5 ppm, all of the elevated concentrations were detected in soil boring 35B001. Subsurface soil samples collected from 4 to 38 feet bls contained total VOC headspace concentrations ranging from 180 to greater than 5,000 ppm.

The Chapter 62-770, Florida Administrative Code (FAC), identifies "excessively contaminated soil" as soil saturated with petroleum products or soil that causes a total hydrocarbon reading of 500 ppm for the gasoline analytical group or 50 ppm for the kerosene analytical group.

All of the soil gas headspace concentrations reported between the depths of 6 and 38 feet bls in soil boring 35B001 exceeded the Florida regulatory limit for excessively contaminated soils.

Table 1 also presents the summary of the field GC analysis results for subsurface soil samples. Seventy- seven subsurface soil samples were collected for analysis on the portable GC. Subsurface soil samples from soil boring 35B001 were the only samples reported to contain petroleum contaminants (benzene, toluene, ethylbenzene, or xylene) or DNAPL (DCE, PCE and TCE). Three of the nine samples collected from soil boring 35B001 contained benzene, toluene, ethylbenzene, xylene, and PCE.

Laboratory Results. Forty-five subsurface soil samples were collected and analyzed for VOCs. The analytical results are summarized on Table 3. No DNAPL constituents were detected above instrument detection limits in the laboratory samples. However, concentrations of the VOCs associated with petroleum compounds including ethylbenzene (160 to 3,600 ug/kg) and total xylenes (520 to 18,000 ug/kg) were detected in subsurface soil samples from soil boring 35B001. The detected concentrations of ethylbenzene and total xylene in the 4 to 6 feet bls sample exceeded the Florida Soil Cleanup Target Levels (SCTLs) for leaching of 400 and 300 ug/kg , respectively. The SCTL for xylene was also exceeded in the 20 to 22 feet bls sample (520 ug/kg).

Four additional VOCs: methylene chloride, acetone, 2-butanone, and 4-methyl-2-pentanone were also detected in the laboratory samples. The compounds and ranges of detected concentrations are as follows: methylene chloride - 2J to 55J ug/kg; acetone - 7J to 390J ug/kg; 2-butanone - 34 ug/kg; and 4-methyl-2-pentanone - 2J ug/kg. The highest concentrations of methylene chloride (55 ug/kg) and acetone (390 ug/kg) were detected in separate soil samples collected at Site 36. However, none of these detections exceeded Florida industrial and leaching SCTLs and USEPA Region III industrial screening values.

Table 4 summarizes the analytical results for organic compounds detected in the groundwater samples collected at Sites 35, 36, and 37. The complete analytical results are included in Attachment C. Six VOCs 1,1 DCE, chloroform, 1,1,1-trichloroethane, carbon tetrachloride, TCE, and benzene; and two SVOCs pyrene and bis(2-ethylhexyl) phthalate were detected in the groundwater samples. Three of the compounds [TCE, benzene, and bis(2-ethylhexyl) phthalate] were detected in one or more of the samples at concentrations exceeding either the Florida Groundwater Cleanup Target Levels (GCTLs) or Federal Maximum Contaminant Levels (MCLs).

Table 5 summarizes the analytical results for the inorganic compounds detected in the groundwater samples collected at the sites. Fifteen inorganic compounds were detected in the groundwater samples. However, only aluminum (monitoring wells WHF-35-2S and WHF-35-1D), iron (monitoring wells WHF-35-1D, WHF-35-2S, and WHF-37-1D), and manganese (monitoring well WHF-35-2D, WHF-37-1S, and WHF-37-1D) were reported at concentrations exceeding the Florida Groundwater Guidance Concentration or Federal MCLs.

SUMMARY AND RECOMMENDATIONS

The objectives of the investigation were to complete an initial site screening assessment of three previously uninvestigated sites to determine if contaminants are present as a result of previous operations.

Subsurface Soils. The analytical results indicate Site 35 soil (soil boring 35B001) is contaminated at levels exceeding the soil gas headspace criteria of 50 ppm for excessively contaminated soil as defined by the State of Florida (Chapter 62-770, FAC). Laboratory analysis of subsurface soil samples for the soil boring also indicated VOC concentrations typically associated with petroleum contamination exceeding the Florida SCTLs for leaching soils.

No VOCs were detected at concentrations exceeding regulatory criteria in the subsurface soil samples collected from Sites 36 and 37.

Groundwater. Groundwater samples collected from the shallow monitoring wells at Site 35 contained bis (2-ethylhexyl) phthalate at a concentration exceeding the Florida regulatory limits. In addition, shallow and deep groundwater samples collected at Sites 36 and 37 contained TCE at concentrations exceeding the Florida and Federal regulatory limits.

Based on the results of the field investigation additional soil and groundwater sampling is recommended at Site 35 to assess the extent of petroleum contaminated soil and groundwater associated with the former gas pumps and underground storage tank area. Additional groundwater investigation is recommended at Sites 36 and 37 to assess the extent of chlorinated solvent groundwater contamination.

If you have any questions or comments on this draft final letter report please contact Rao Angara or Eric Blomberg at (850) 656-1293.

Sincerely,

HARDING LAWSON ASSOCIATES

Rao Angara
Task Order Manager

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ATTACHMENT A

FIGURE

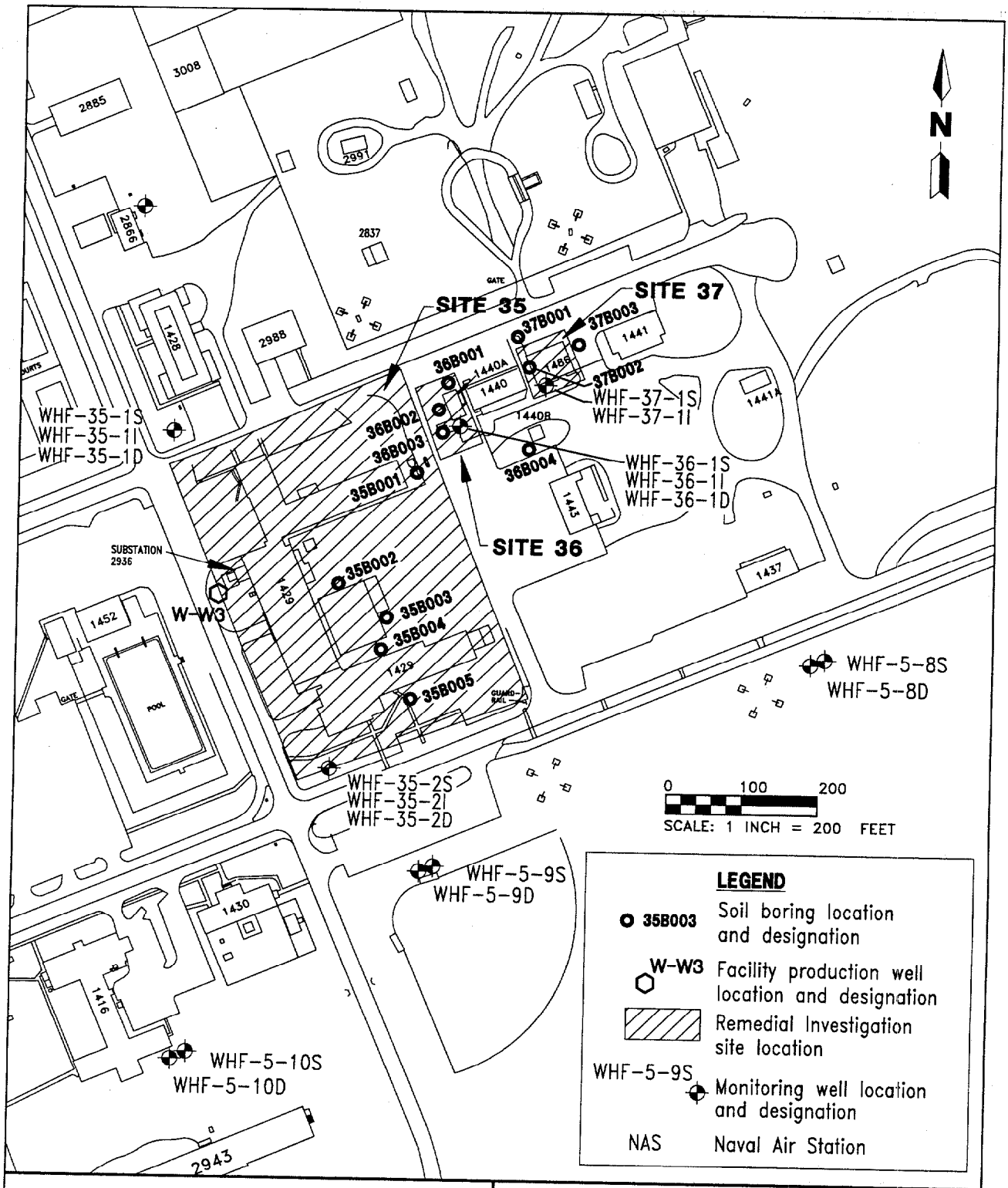

FIGURE 1
SAMPLING LOCATIONS FOR SITES ADJACENT TO PRODUCTION WELL W-W3

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INSTALLATION RESTORATION PROGRAM

NAS WHITING FIELD
MILTON, FLORIDA

ATTACHMENT B

TABLES

Table 1
Field Screening Analysis Summary
Sites 35, 36, and 37

Site Screening Investigation
NAS Whiting Field
Milton, Florida

Soil Boring Designation and laboratory Sample No.	Sample Depth (inches bls)	Soil Gas[1] Headspace (ppm)	Field Gas Chromatograph Analysis (µg/kg)						
			Benzene	Toluene	Ethylbenzene	Xylenes	DCE	PCE	TCE
SITE 35									
35B001 01	4 to 6	180							
35B001	6 to 8	5,000							
35B001	8 to 10	>5,000							
35B001	10 to 12	3,600							
35B001	12 to 14	>5,000							
35B001	14 to 16	3,300							
35B001	16 to 18	>5,000							
35B001	18 to 20	4,100							
35B001 02	20 to 22	>5,000							
35B001	22 to 24	>5,000							
35B001	24 to 26	>5,000							
35B001	26 to 28	350	–	6.9	6.6	17	–	4.2	1.4
35B001 03	28 to 30	230							
35B001	30 to 32	1,400							
35B001	32 to 34	300							
35B001	34 to 36	1,400							
35B001	36 to 38	1,500							
35B001 04	38 to 40	0	205	108.5	38.9	225	–	34.5	3.2
35B001	40 to 42	4	–	–	–	–	–	–	–
35B001 05	42 to 44	2	20.8	26.9	29.1	66	–	26.7	–
35B001	44 to 46	1	–	–	–	–	–	–	–
35B001	46 to 48	–	–	–	–	–	–	–	–
35B001	48 to 50	8	–	–	–	–	–	–	–
35B001	50 to 52	80	–	–	<1	<1	–	–	–
35B001 06	52 to 54	7	–	–	<1	<1	–	–	–
35B002	4 to 6	0							
35B002	6 to 8	0							
35B002 01	8 to 10	0							
35B002	10 to 12	0							
35B002	12 to 14	0							
35B002	14 to 16	0							
35B002	16 to 18	0							
35B002 02	18 to 20	0							
35B002	20 to 22	0	<1	<1	<1	<1	–	<1	<1
35B002	22 to 24	0							
35B002	24 to 26	0	<1	–	–	<1	–	<1	<1
35B002	26 to 28	0	–	–	–	–	–	<1	<1
35B002 03	28 to 30	0	–	< 1	< 1	< 1	–	< 1	–

See notes at end of table.

Table 1
Field Screening Analysis Summary
Sites 35, 36, and 37

Site Screening Investigation
NAS Whiting Field
Milton, Florida

Soil Boring Designation	Sample Depth (inches bls)	Soil Gas[1] Headspace (ppm)	Field Gas Chromatograph Analysis (µg/kg)						
			Benzene	Toluene	Ethylbenzene	Xylenes	DCE	PCE	TCE
SITE 35									
35B003	4 to 6	0							
35B003	6 to 8	0							
35B003 01	8 to 10	0							
35B003	10 to 12	0							
35B003	12 to 14	0							
35B003	14 to 16	0							
35B003	16 to 18	0							
35B003 02	18 to 20	0							
35B003	20 to 22	0							
35B003	22 to 24	0							
35B003	24 to 26	0	–	–	< 1	< 1	–	< 1	< 1
35B003	26 to 28	0	–	–	< 1	< 1	–	< 1	< 1
35B003 03	28 to 30	0	< 1	–	< 1	< 1	–	< 1	< 1
35B004	4 to 6	0	–	–	–	< 1	–	< 1	–
35B004	6 to 8	0							
35B004	8 to 10	0							
35B004	10 to 12	0							
35B004	12 to 14	0							
35B004	14 to 16	0							
35B004	16 to 18	0							
35B004	18 to 20	0							
35B004	20 to 22	0	–	<1	<1	<1	–	–	<1
35B004	24 to 26	0	<1	<1	–	–	–	–	–
35B004	26 to 28	0	<1	<1	–	–	–	–	–
35B004	28 to 30	0	–	< 1	< 1	< 1	–	–	–
35B005	4 to 6	0	–	–	–	–	–	<1	–
35B005	6 to 8	0							
35B005	8 to 10	0							
35B005	10 to 12	5	–	–	<1	<1	–	–	–
35B005	12 to 14	0							
35B005	14 to 16	0							
35B005	16 to 18	0							
35B005	18 to 20	0							
35B005	20 to 22	0							
35B005	22 to 24	0							
35B005	24 to 26	0	–	–	<1	–	–	<1	<1
35B005	26 to 28	0	–	–	<1	–	–	<1	<1
35B005	28 to 30	0	–	–	–	–	–	<1	–

See notes at end of table.

Table 1 Continued
Field Screening Analysis Summary
Sites 35, 36, and 37,

NAS Whiting Field
Milton, Florida

Sample Designation	Sample Depth (inches bls)	Soil Gas[1] Headspace (ppm)	Field Gas Chromatograph Analysis (µg/kg)						
			Benzene	Toluene	Ethylbenzene	Xylenes	DCE	PCE	TCE
SITE 36									
36B001	4 to 6	0							
36B001	6 to 8	0							
36B001	8 to 10	0							
36B001	10 to 12	0	–	–	–	–	–	–	–
36B001	12 to 14	0							
36B001 01	14 to 16	0							
36B001	16 to 18	0							
36B001	18 to 20	0							
36B001 02	20 to 22	0	–	<1	–	–	–	–	< 1
36B001	22 to 24	0							
36B001	24 to 26	0							
36B001	26 to 28	0							
36B001 03	28 to 30	0	<1	<1	<1	–	<1	<1	<1
36B002	4 to 6	0							
36B002	6 to 8	0							
36B002	8 to 10	0							
36B002 01	10 to 12	0	<1	–	–	–	–	<1	–
36B002	12 to 14	0							
36B002	14 to 16	0	–	<1	<1	–	–	–	–
36B002	16 to 18	0	–	–	–	–	–	<1	–
36B002	18 to 20	0	<1	<1	–	–	–	–	–
36B002	20 to 22	0	–	–	–	–	–	< 1	–
36B002 02	22 to 24	0	<1	<1	–	–	–	–	–
36B002 03	24 to 26	0							
36B002	26 to 28	0							
36B002	28 to 30	0	–	<1	–	–	–	–	–
36B003 01	4 to 6	0	<1	–	–	–	–	–	–
36B003	6 to 8	0	<1	<1	<1	<1	–	–	–
36B003	8 to 10	0	<1	–	<1	–	<1	–	–
36B003 02	10 to 12	0	–	<1	<1	–	–	–	<1
36B003	12 to 14	0	–	–	–	–	–	–	–
36B003	14 to 16	0	–	<1	<1	<1	<1	<1	<1
36B003	16 to 18	0	–	–	<1	<1	–	–	–
36B003	18 to 20	0	<1	<1	–	–	–	<1	–
36B003	20 to 22	0	–	–	<1	–	–	–	<1
36B003	22 to 24	0	–	–	–	<1	–	–	–
36B003 03	24 to 26	0	<1	<1	<1	<1	<1	–	<1
36B003	26 to 28	0	–	–	<1	<1	–	<1	–
36B003	28 to 30	0	–	<1	<1	–	–	<1	–

See notes at end of table.

Table 1 Continued
Field Screening Analysis Summary
Sites 35, 36, and 37

Site Screening Investigation
NAS Whiting Field
Milton, Florida

Sample Designation	Sample Depth (inches bls)	Soil Gas[1] Headspace (ppm)	Field Gas Chromatograph Analysis (µg/kg)						
			Benzene	Toluene	Ethylbenzene	Xylenes	DCE	PCE	TCE
Site 36									
36B004 01	4 to 6	0	–	–	< 1	–	–	–	–
36B004	6 to 8	0	–	–	–	< 1	–	< 1	–
36B004	8 to 10	0	< 1	–	< 1	–	–	–	–
36B004	10 to 12	0	–	< 1	–	–	–	–	–
36B004	12 to 14	0	< 1	–	–	–	–	< 1	–
36B004 02	14 to 16	0	–	< 1	< 1	< 1	–	–	–
36B004	16 to 18	0	< 1	–	–	–	–	< 1	–
36B004	18 to 20	0	< 1	–	–	–	–	–	–
36B004	20 to 22	0	< 1	–	–	–	–	< 1	–
36B004	22 to 24	0	< 1	–	< 1	–	–	< 1	< 1
36B004 03	24 to 26	0	–	< 1	< 1	–	–	–	< 1
36B004	26 to 28	0	–	–	–	–	–	< 1	–
36B004	28 to 30	0	–	–	< 1	–	–	–	–
SITE 37									
37B001	4 to 6	0							
37B001	6 to 8	0							
37B001	8 to 10	0							
37B001	10 to 12	0							
37B001	12 to 14	0							
37B001	14 to 16	0							
37B001	16 to 18	0	–	–	<1	–	–	<1	<1
37B001	18 to 20	0							
37B001	20 to 22	6	–	–	<1	< 1–	–	–	–
37B001	22 to 24	0							
37B001	24 to 26	0	–	–	–	< 1	–	<1	–
37B001	26 to 28	0	–	–	–	< 1	–	–	< 1
37B001	28 to 30	0	–	–	< 1	< 1	–	< 1	–
37B002	4 to 6	0							
37B002	6 to 8	0							
37B002	8 to 10	0	<1	–	–	–	–	<1	<1
37B002	10 to 12	0							
37B002	12 to 14	0							
37B002	14 to 16	0							
37B002	16 to 18	0							
37B002	18 to 20	0	–	<1	<1	<1	–	<1	–
37B002	20 to 22	0							
37B002	22 to 24	0							
37B002	24 to 26	0	<1	–	<1	<1	–	–	–

See notes at end of table.

Table 1 Continued
Field Screening Analysis Summary
Sites 35, 36, and 37

Site Screening Investigation
NAS Whiting Field
Milton, Florida

Sample Designation	Sample Depth (inches bls)	Soil Gas[1] Headspace (ppm)	Field Gas Chromatograph Analysis (µg/kg)						
			Benzene	Toluene	Ethylbenzene	Xylenes	DCE	PCE	TCE
Site 37									
37B002	26 to 28	0	–	–	–	–	–	< 1	–
37B002	28 to 30	0	–	–	–	–	–	<1	–
37B003	4 to 6	0							
37B003	6 to 8	0							
37B003	8 to 10	0							
37B003	10 to 12	0							
37B003	12 to 14	0							
37B003	14 to 16	0	–	–	–	–	–	–	–
37B003	16 to 18	5							
37B003	18 to 20	0							
37B003	20 to 22	0	–	–	<1	–	<1	–	–
37B003	22 to 24	0							
37B003	24 to 26	5	–	–	< 1	–	–	–	–
37B003	26 to 28	4	–	< 1	–	–	–	–	–
37B003	28 to 30	0	–	–	< 1	–	–	–	–

[1] The Florida regulatory limit is 50 parts per million (ppm).

Notes: bls = below land surface. TCE = Trichloroethene. NA = Not Analyzed
ppm = parts per million. PCE = tetrachloroethene.
µg/kg = micrograms per kilogram. – = Compound not detected above instrument detection limits
* = Sample for offsite laboratory analysis.

Table 2
Summary of Monitoring Well Construction Details

Remedial Investigation and Feasibility Study
Site 35, 36, and 37
NAS Whiting Field, Milton, Florida

Monitoring Well Designation	RI Phase of Well Completion	Well Size (inches)	Land Surface Elevation (feet msl)	TOC Elevation (feet msl)	Total Well Depth (feet BTOC)	Approximate Screen Interval (feet BTOC)	Surface Casing Length (feet bls)
Site 35							
WHF-35-1S	IIB	2	178.20	177.76	116	101 to 116	NA
WHF-35-1I	IIB	2	178.10	178.02	146	136 to 146	NA
WHF-35-1D	IIB	2	178.13	177.91	176	166 to 176	NA
WHF-35-2S	IIB	2	178.41	178.17	113	98 to 113	NA
WHF-35-2I	IIB	2	178.03	178.12	148	138 to 148	NA
WHF-35-2D	IIB	2	178.01	177.96	180	170 to 180	NA
Site 36							
WHF-36-1S	IIB	2	176.71	178.52	116	101 to 116	NA
WHF-36-1I	IIB	2	176.56	176.34	146	136 to 146	NA
WHF-36-1D	IIB	2	176.91	176.63	173	163 to 173	NA
Site 37							
WHF-37-1S	IIB	2	175.33	175.27	118	103 to 118	NA
WHF-37-1I	IIB	2	175.18	175.06	140	130 to 140	NA

Notes: msl = mean sea level. BTOC = Below Top of Casing.
NA = not applicable.

Table 3
Summary Analytical Results for Subsurface Soil Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	[1]Florida SCTLs	USEPA	35B00101	35B00102	35B00103	35B00104	35B00105	35B00106
Collect Date:	Industrial/Leachability	REGION III RBCs	20-Dec-96	20-Dec-96	20-Dec-96	20-Dec-96	20-Dec-96	21-Dec-96
Laboratory Sample No:		Industrial	MC698002	MC698003	MC698004	MC698005	MC698006	MC698007
Sample Depth (ft bls):			4 to 6	20 to 22	28 to 30	38 to 40	42 to 44	52 to 54
Volatile Organic Compounds (µg/kg)								
Methylene chloride	23,000/20	760,000.00	--	--	--	--	2 J	--
Acetone	5,500,000/2,800	200,000,000.00	--	100	--	7 J	--	--
2 - Butanone	350,000,000/22,000	1,200,000,000.00	--	34	--	--	--	--
4-Methyl-2-pentanone	NA/NA	NA	--	--	--	--	--	--
Ethylbenzene	240,000/400	200,000,000.00	3,600	160	--	--	--	--
Xylenes (total)	290,000/300	410,000,000.00	18,000	520*	--	--	--	--

Notes:

D = duplicate sample

bls = below land surface

µg/kg = micrograms/kilogram

-- = analyte not detected

J = estimated value

Shade = concentration exceeded screening criteria

[1] = Brownfields Cleanup Criteria Rule, 62-785 Florida Administrative Code, Effective July 6, 1998

Table 3
Summary Analytical Results for Subsurface Soil Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier: Collect Date: Laboratory Sample No: Sample Depth (ft bls):	[1]Florida SCTLs Industrial/Leachability	USEPA REGION III RBCs Industrial	35B00201 21-Dec-96 MC698008 8 to 10	35B00202 21-Dec-96 MC698009 18 to 20	35B00203 21-Dec-96 MC698010 28 to 30	35B00203D 21-Dec-96 MC698016 28 to 30	35B00301 21-Dec-96 MC698012 8 to 10	35B00302 21-Dec-96 MC698013 18 to 20
Volatile Organic Compounds (µg/kg)								
Methylene chloride	23,000/20	760,000.00	2 J	--	--	--	--	--
Acetone	5,500,000/2,800	200,000,000.00	--	--	--	--	--	--
2 - Butanone	350,000,000/22,000	1,200,000,000.00	--	--	--	--	--	--
4-Methyl-2-pentanone	NA/NA	NA	--	--	--	--	--	--
Ethylbenzene	240,000/400	200,000,000.00	--	--	--	--	--	--
Xylenes (total)	290,000/300	410,000,000.00	--	--	--	--	--	--

Notes:

D = duplicate sample

bls = below land surface

µg/kg = micrograms/kilogram

-- = analyte not detected

J = estimated value

Shade = concentration exceeded screening criteria

[1] = Brownfields Cleanup Criteria Rule, 62-785 Florida Administrative Code, Effective July 6, 19

Table 3
Summary Analytical Results for Subsurface Soil Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	[1]Florida SCTLs	USEPA	35B00302D	35B00303	35B00401	35B00402	35B00403	35B00501
Collect Date:	Industrial/Leachability	REGION III RBCs	21-Dec-96	21-Dec-97	7-Jan-97	7-Jan-97	7-Jan-97	7-Jan-97
Laboratory Sample No:		Industrial	MC783015	MC783014	MC783002	MC783003	MC783004	MC783005
Sample Depth (ft bls):			18 to 20	28 to 30	6 to 8	18 to 20	28 to 30	8 to 10
Volatile Organic Compounds (µg/kg)								
Methylene chloride	23,000/20	760,000.00	--	--	2 J	2 J	2 J	2 J
Acetone	5,500,000/2,800	200,000,000.00	--	--	--	--	--	--
2 - Butanone	350,000,000/22,000	1,200,000,000.00	--	--	--	--	--	--
4-Methyl-2-pentanone	NA/NA	NA	--	--	--	--	--	--
Ethylbenzene	240,000/400	200,000,000.00	--	--	--	--	--	--
Xylenes (total)	290,000/300	410,000,000.00	--	--	--	--	--	--

Notes:

D = duplicate sample

bls = below land surface

µg/kg = micrograms/kilogram

-- = analyte not detected

J = estimated value

Shade = concentration exceeded screening criteria

[1] = Brownfields Cleanup Criteria Rule, 62-785 Florida Administrative Code, Effective July 6, 19

Table 3

Summary Analytical Results for Subsurface Soil Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	[1]Florida SCTLs	USEPA	35B00502	35B00503	36B00101	36B00102	36B00103	36B00201
Collect Date:	Industrial/Leachability	REGION III RBCs	7-Jan-97	7-Jan-97	17-Dec-96	17-Dec-96	17-Dec-96	17-Dec-96
Laboratory Sample No:		Industrial	MC783006	MC783007	MC687002	MC687003	MC687004	MC687005
Sample Depth (ft bls):			16 to 18	28 to 30	14 to 16	20 to 22	28 to 30	10 to 12
Volatile Organic Compounds (µg/kg)								
Methylene chloride	23,000/20	760,000.00	4 J	2 J	--	--	--	--
Acetone	5,500,000/2,800	200,000,000.00	--	--	--	--	--	--
2 - Butanone	350,000,000/22,000	1,200,000,000.00	--	--	--	--	--	--
4-Methyl-2-pentanone	NA/NA	NA	--	--	--	--	2 J	--
Ethylbenzene	240,000/400	200,000,000.00	--	--	--	--	--	--
Xylenes (total)	290,000/300	410,000,000.00	--	--	--	--	--	--

Notes:

D = duplicate sample

bls = below land surface

µg/kg = micrograms/kilogram

-- = analyte not detected

J = estimated value

Shade = concentration exceeded screening criteria

[1] = Brownfields Cleanup Criteria Rule, 62-785 Florida Administrative Code, Effective July 6, 19

Table 3
Summary Analytical Results for Subsurface Soil Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	[1]Florida SCTLs	USEPA	36B00202	36B00203	36B00301	36B00302	36B00303	36B00303D
Collect Date:	Industrial/Leachability	REGION III RBCs	17-Dec-96	17-Dec-96	17-Dec-96	17-Dec-96	17-Dec-96	17-Dec-96
Laboratory Sample No:		Industrial	MC687006	MC687007	MC687008	MC378009	MC378010	MC378011
Sample Depth (ft bls):			22 to 24	24 to 26	4 to 6	10 to 12	24 to 26	24 to 26
Volatile Organic Compounds (µg/kg)								
Methylene chloride	23,000/20	760,000.00	--	--	--	55	--	--
Acetone	5,500,000/2,800	200,000,000.00	--	--	--	--	--	--
2 - Butanone	350,000,000/22,000	1,200,000,000.00	--	--	--	--	--	--
4-Methyl-2-pentanone	NA/NA	NA	--	--	--	--	--	--
Ethylbenzene	240,000/400	200,000,000.00	--	--	--	--	--	--
Xylenes (total)	290,000/300	410,000,000.00	--	--	--	--	--	--

Notes:

D = duplicate sample

bls = below land surface

µg/kg = micrograms/kilogram

-- = analyte not detected

J = estimated value

Shade = concentration exceeded screening criteria

[1] = Brownfields Cleanup Criteria Rule, 62-785 Florida Administrative Code, Effective July 6, 19

Table 3
Summary Analytical Results for Subsurface Soil Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	[1]Florida SCTLs	USEPA	36B00401	36B00402	36B00403	36B00403D	37B00101	37B00102
Collect Date:	Industrial/Leachability	REGION III RBCs	18-Dec-96	18-Dec-96	18-Dec-96	18-Dec-96	8-Jan-97	8-Jan-97
Laboratory Sample No:		Industrial	MC378012	MC378013	MC378014	MC378015	MC783011	MC783012
Sample Depth (ft bls):			4 to 6	14 to 16	24 to 26	24 to 26	14 to 16	20 to 22
Volatile Organic Compounds (µg/kg)								
Methylene chloride	23,000/20	760,000.00	--	--	--	--	3 J	3 J
Acetone	5,500,000/2,800	200,000,000.00	390	--	--	--	--	--
2 - Butanone	350,000,000/22,000	1,200,000,000.00	--	--	--	--	--	--
4-Methyl-2-pentanone	NA/NA	NA	--	--	--	--	--	--
Ethylbenzene	240,000/400	200,000,000.00	--	--	--	--	--	--
Xylenes (total)	290,000/300	410,000,000.00	--	--	--	--	--	--

Notes:

D = duplicate sample

bls = below land surface

µg/kg = micrograms/kilogram

-- = analyte not detected

J = estimated value

Shade = concentration exceeded screening criteria

[1] = Brownfields Cleanup Criteria Rule, 62-785 Florida Administrative Code, Effective July 6, 19

Table 3
Summary Analytical Results for Subsurface Soil Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	[1]Florida SCTLs	USEPA	37B00103	37B00103D	37B00201	37B00202	37B00203	37B00203D
Collect Date:	Industrial/Leachability	REGION III RBCs	9-Jan-97	8-Jan-97	8-Jan-97	8-Jan-97	8-Jan-97	8-Jan-97
Laboratory Sample No:		Industrial	MC783013	MC783019	MC783008	MC783009	MC783010	MC783018
Sample Depth (ft bls):			26 to 28	26 to 28	8 to 10	18 to 20	28 to 30	28 to 30
Volatile Organic Compounds (µg/kg)								
Methylene chloride	23,000/20	760,000.00	3 J	11 J	4 J	4 J	2 J	10 J
Acetone	5,500,000/2,800	200,000,000.00	--	--	--	--	--	--
2 - Butanone	350,000,000/22,000	1,200,000,000.00	--	--	--	--	--	--
4-Methyl-2-pentanone	NA/NA	NA	--	--	--	--	--	--
Ethylbenzene	240,000/400	200,000,000.00	--	--	--	--	--	--
Xylenes (total)	290,000/300	410,000,000.00	--	--	--	--	--	--

Notes:

D = duplicate sample

bls = below land surface

µg/kg = micrograms/kilogram

-- = analyte not detected

J = estimated value

Shade = concentration exceeded screening criteria

[1] = Brownfields Cleanup Criteria Rule, 62-785 Florida Administrative Code, Effective July 6, 19

Table 3
Summary Analytical Results for Subsurface Soil Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier: Collect Date: Laboratory Sample No: Sample Depth (ft bls):	[1]Florida SCTLs Industrial/Leachability	USEPA REGION III RBCs Industrial	37B00301 9-Jan-97 MC783014 14 to 16	37B00302 9-Jan-97 MC783015 26 to 28	37B00303 9-Jan-97 MC783016 28 to 30
Volatile Organic Compounds (µg/kg)					
Methylene chloride	23,000/20	760,000.00	3 J	4 J	8 J
Acetone	5,500,000/2,800	200,000,000.00	--	--	--
2 - Butanone	350,000,000/22,000	1,200,000,000.00	--	--	--
4-Methyl-2-pentanone	NA/NA	NA	--	--	--
Ethylbenzene	240,000/400	200,000,000.00	--	--	--
Xylenes (total)	290,000/300	410,000,000.00	--	--	--

Notes:

D = duplicate sample

bls = below land surface

µg/kg = micrograms/kilogram

-- = analyte not detected

J = estimated value

Shade = concentration exceeded screening criteria

[1] = Brownfields Cleanup Criteria Rule, 62-785 Florida Administrative Code, Effective July 6, 19

Table 4
Summary of Analytical Results for Organic Compounds in Groundwater Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	Florida	Federal	35G00101	35G00101D Duplicate	35G00201	35G00102	35G00202
Monitoring Well No.	Groundwater	MCLs	WHF-35-1S	WHF-35-1S	WHF-35-2S	WHF-35-1I	WHF-35-2I
Collect Date:	Cleanup Target		11-Jun-97	11-Jun-97	15-Jun-97	12-Jun-97	15-Jun-97
Laboratory Sample No.:	Level		MD908004	MD908005	MD950005	MD908008	MD950002
Volatile Organic Compounds (µg/l)							
1,1-Dichloroethene	7	7	6 J	7 J	--	--	--
Chloroform	5.7	100/80	--	--	3 J	--	3 J
1,1,1-Trichloroethane	200	200	2 J	2 J	--	--	--
Carbon tetrachloride	3	5	--	--	--	--	--
Trichloroethene	3	5	--	--	--	--	--
Benzene	1	5	--	--	--	--	--
Semivolatile Organic Compounds (µg/l)							
Pyrene	210	--	--	--	1 J	--	--
bis(2-Ethylhexyl) phthalate	6	--	--	--	9 J	--	--

Notes:

D = duplicate sample

F = filtered sample

NA = not analyzed

µg/l = microgram per liter

-- = analyte not detected

J = estimated value

MCL = Maximum Contaminant Level

Table 4

Summary of Analytical Results for Organic Compounds in Groundwater Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	Florida	Federal	35G00202D	35G00103	35G00203	36G00101	36G00102
Monitoring Well No.	Groundwater	MCLs	WHF-35-2I	WHF-35-1D	WHF-35-2D	WHF-36-1S	WHF-36-1I
Collect Date:	Cleanup Target		15-Jun-97	11-Jun-97	15-Jun-97	12-Jun-97	13-Jun-97
Laboratory Sample No.:	Level		MD950003	MD908006	MD950004	MD926002	MD926005
Volatile Organic Compounds (µg/l)							
1,1-Dichloroethene	7	7	--	--	1 J	2 J	2 J
Chloroform	5.7	100/80	3 J	--	--	--	--
1,1,1-Trichloroethane	200	200	--	--	--	--	2 J
Carbon tetrachloride	3	5	--	--	--	1 J	--
Trichloroethene	3	5	--	--	--	16	17
Benzene	1	5	--	--	--	--	--
Semivolatile Organic Compounds (µg/l)							
Pyrene	210	--	--	--	--	--	--
bis(2-Ethylhexyl) phthalate	6	--	5 J	--	--	--	--

Notes:

D = duplicate sample

F = filtered sample

NA = not analyzed

µg/l = microgram per liter

-- = analyte not detected

J = estimated value

MCL = Maximum Contaminant Level

Table 4

Summary of Analytical Results for Organic Compounds in Groundwater Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	Florida	Federal	37G00101	37G00102
Monitoring Well No.	Groundwater	MCLs	WHF-37-1S	WHF-37-1I
Collect Date:	Cleanup Target		12-Jun-97	12-Jun-97
Laboratory Sample No.:	Level		MD926004	MD908009
Volatile Organic Compounds (µg/l)				
1,1-Dichloroethene	7	7	4 J	7 J
Chloroform	5.7	100/80	--	--
1,1,1-Trichloroethane	200	200	3 J	6 J
Carbon tetrachloride	3	5	--	--
Trichloroethene	3	5	5 J	3 J
Benzene	1	5	--	3 J
Semivolatile Organic Compounds (µg/l)				
Pyrene	210	--	--	--
bis(2-Ethylhexyl) phthalate	6	--	--	--

Notes:

D = duplicate sample

F = filtered sample

NA = not analyzed

µg/l = microgram per liter

-- = analyte not detected

J = estimated value

MCL = Maximum Contaminant Level

Table 5

Summary of Analytical Results for Inorganics in Groundwater Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	Florida	Federal	35G00101	35G00101D	35G00201	35G00201F	35G00102	35G00202
Monitoring Well No.	Groundwater Cleanup	MCLs	WHF-35-1S	WHF-35-1S	WHF-35-2S	WHF-35-2S	WHF-35-2I	WHF-35-2I
Collect Date:	Target Level		11-Jun-97	11-Jun-97	15-Jun-97	15-Jun-97	12-Jun-97	15-Jun-97
Laboratory Sample No.:			MD908004	MD908005	MD950005	MD950006	MD908008	MD950002
Metals and Cyanide (µg/l)								
Aluminum	200	NA	47.8 J	45.2 J	3,380 J	215 J	68.9 J	65 J
Barium	2000	2000	78.8	79	32	14.5 J	21 J	24.8 J
Calcium	NA	NA	3,150	3,240	1,320	1,130	1,230	973
Chromium	100	100	--	--	7.6 J	--	--	--
Cobalt	NA	NA	--	--	--	3.4 J	--	--
Iron	300	NA	--	--	6,050 J	478 J	--	180 J
Magnesium	NA	NA	2,340	2,370	594	479 J	849	813
Manganese	50	NA	28.7 J	28.9 J	44.5 J	31.8 J	22.1 J	9.5 J
Nickel	100	100	--	--	14.1 J	8.6 J	--	--
Potassium	NA	NA	--	--	--	--	--	--
Selenium	50	50	--	--	--	--	--	--
Sodium	160,000	NA	4,330 J	4,430 J	19,900 J	19,800 J	3,700 J	20,900 J
Vanadium	49	NA	--	--	10.9	--	--	--
Zinc	5000	NA	--	130	--	--	--	--
Cyanide	200	200	--	--	--	10	--	--

Notes:

D = duplicate sample

NA = not analyzed

-- = analyte not detected

F = filtered sample

µg/l = microgram per liter

J = estimated value

MCL = Maximum Contaminant Level

Table 5

Summary of Analytical Results for Inorganics in Groundwater Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	Florida	Federal	35G00202D	35G00103	35G00203	36G00101	36G00101F	36G00102
Monitoring Well No.	Groundwater Cleanup	MCLs	WHF-35-2I	WHF-35-1D	WHF-35-2D	WHF-36-1S	WHF-36-1S	WHF-36-1I
Collect Date:	Target Level		15-Jun-97	11-Jun-97	15-Jun-97	12-Jun-97	12-Jun-97	13-Jun-97
Laboratory Sample No.:			MD950003	MD908006	MD950004	MD926002	MD926003	MD926005
Metals and Cyanide (µg/l)								
Aluminum	200	NA	50.7 J	**245 J**	38.2 J	151 J	--	108 J
Barium	2000	2000	25.3	23.5 J	77.3	14.5 J	12.1 J	13.8 J
Calcium	NA	NA	1,030	1,150	4,570	1,410	1,230	99220
Chromium	100	100	--	--	--	--	--	--
Cobalt	NA	NA	--	--	3.4 J	--	--	--
Iron	300	NA	196 J	**407 J**	--	--	--	--
Magnesium	NA	NA	819	590	3,200	731	651	396 J
Manganese	50	NA	9.3 J	34.4 J	**109 J**	44 J	39.3 J	28.9 J
Nickel	100	100	--	--	22.8	--	--	--
Potassium	NA	NA	--	--	1,080 J	--	--	--
Selenium	50	50	2.6 J	--	--	--	--	--
Sodium	160,000	NA	21,700 J	3,970 J	7,730 J	5,330 J	5,110 J	6,720 J
Vanadium	49	NA	--	--	--	--	--	--
Zinc	5000	NA	--	--	--	--	--	--
Cyanide	200	200	--	--	--	--	10	1.8 J

Notes:

D = duplicate sample

NA = not analyzed

-- = analyte not detected

F = filtered sample

µg/l = microgram per liter

J = estimated value

MCL = Maximum Contaminant Level

Table 5
Summary of Analytical Results for Inorganics in Groundwater Samples - Sites 35, 36, 37

Remedial Investigation and Feasibility Study
NAS Whiting Field, Milton, Florida

Sample Identifier:	Florida	Federal	36G00103	37G00101	37G00102
Monitoring Well No.	Groundwater Cleanup	MCLs	WHF-36-1D	WHF-37-1D	WHF-37-1I
Collect Date:	Target Level		13-Jun-97	12-Jun-97	12-Jun-97
Laboratory Sample No.:			MD926006	MD926004	MD908009
Metals and Cyanide (µg/l)					
Aluminum	200	NA	30.7 J	50.4 J	24.7 J
Barium	2000	2000	5.6 J	43.6	32.5
Calcium	NA	NA	--	5,120	869
Chromium	100	100	--	--	--
Cobalt	NA	NA	--	--	--
Iron	300	NA	253 J	**630 J**	--
Magnesium	NA	NA	142 J	1,150	1,150
Manganese	50	NA	28.8 J	**178 J**	**83.5 J**
Nickel	100	100	--	12.1 J	--
Potassium	NA	NA	--	--	--
Selenium	50	50	--	--	--
Sodium	160,000	NA	3,190 J	8,410 J	4,390 J
Vanadium	49	NA	--	--	--
Zinc	5000	NA	--	--	--
Cyanide	200	200	--	2.2 J	--

Notes:

D = duplicate sample

NA = not analyzed

-- = analyte not detected

F = filtered sample

µg/l = microgram per liter

J = estimated value

MCL = Maximum Contaminant Level