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NAS WHITING FIELD
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REMEDIAL INVESTIGATION FOR SITE 31 NAS WHITING FIELD

4/1/2001

HARDING LAWSON ASSOCIATES

41

REMEDIAL INVESTIGATION

SITE 31, SLUDGE BEDS AND DISPOSAL AREAS

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

UNIT IDENTIFICATION CODE: N60508
CONTRACT NO.: N62467-89-D-0317/116

APRIL 2001

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
NORTH CHARLESTON, SOUTH CAROLINA 29418

Harding Lawson Associates
Engineering and Environmental Services
2590 Executive Center Circle East
Tallahassee, Florida 32301 - (850) 656-1293

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10.0 PROFESSIONAL REVIEW CERTIFICATION

The work and professional opinions rendered in this report were conducted or developed in accordance with commonly accepted procedures and protocols consistent with applied standards of practice. This report is based on the geologic investigation and associated information detailed in the text and appended to this report. If conditions are discovered or determined to exist differing from those described, the undersigned geologist should be notified to evaluate the effects of any additional information on the assessment described in this report. The RI for Site 31, Sludge Drying Beds and Disposal Areas, was developed for NAS Whiting Field in Milton, Florida, and should not be construed to apply for any other purpose or to any other site.

Eric Blomberg
[illegible] Geologist
[illegible] No. 1695

4-23-01
Date

CERTIFICATION OF TECHNICAL
DATA CONFORMITY (MAY 1987)

The Contractor, Harding Lawson Associates, hereby certifies that, to the best of its knowledge and belief, the technical data delivered herewith under Contract No. N62467-89-D-0317/116 are complete and accurate and comply with all requirements of this contract.

DATE: April 20, 2001

NAME AND TITLE OF CERTIFYING OFFICIAL: Rao Angara
Task Order Manager

NAME AND TITLE OF CERTIFYING OFFICIAL: Eric Blomberg, P.G.
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(DFAR 252.227-7036)

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FOREWORD

To meet its mission objectives, the U.S. Navy performs a variety of operations, some requiring the use, handling, storage, or disposal of hazardous materials. Through accidental spills and leaks and conventional methods of past disposal, hazardous materials may have entered the environment in ways unacceptable by today's standards. With growing knowledge of the long-term effects of hazardous materials on the environment, the Department of Defense initiated various programs to investigate and remediate conditions related to suspected past releases of hazardous materials at their facilities.

One of these programs is the Installation Restoration (IR) program. This program complies with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended by the Superfund Amendments and Reauthorization Act (SARA), the Resource Conservation and Recovery Act and the Hazardous and Solid Waste Amendments of 1984. These acts establish the means to assess and clean up hazardous waste sites for both private-sector and Federal facilities. The CERCLA and SARA acts form the basis for what is commonly known as the Superfund program.

Originally, the Navy's part of this program was called the Naval Assessment and Control of Installation Pollutants (NACIP) program. Early reports reflect the NACIP process and terminology. The Navy eventually adopted the program structure and terminology of the standard IR program.

The IR program is conducted in several stages as follows:

- preliminary assessment (PA),
- site inspection (SI) (formerly the PA and SI steps were called the initial assessment study under the NACIP program),
- remedial investigation and feasibility study, and
- remedial design and remedial action.

The Southern Division, Naval Facilities Engineering Command manages the environmental program at Naval Air Station (NAS) Whiting Field, with oversight by the U.S. Environmental Protection Agency and the Florida Department of Environmental Protection (formerly Florida Department of Environmental Regulation). All aspects of the program are conducted in compliance with State and Federal regulations, as ensured by the participation of these regulatory agencies. Questions regarding the CERCLA program at NAS Whiting Field should be addressed to Ms. Linda Martin, Code 1859, at (803) 820-5574.

EXECUTIVE SUMMARY

A remedial investigation (RI) and feasibility study is being conducted at Naval Air Station (NAS) Whiting Field in Milton, Florida, by Southern Division, Naval Facilities Engineering Command, as part of the Department of Defense Installation Restoration (IR) program. The IR program was designed to identify and abate or control contaminant migration resulting from past operations at naval installations.

This RI report contains the results of assessment activities used to characterize site-specific chemicals detected in environmental media (soil and groundwater) at Site 31, Sludge Drying Beds and Disposal Areas at NAS Whiting Field. Site 31 is composed of 6 areas, Site 31A (sludge drying beds) and Sites 31B through 31F (sludge disposal areas). Soil and groundwater samples were analyzed for target compound list organic analytes, target analyte list inorganic analytes, and secondary water quality parameters. Data obtained from these activities were used to evaluate the nature and extent of contamination at the site and support feasibility studies (if required) and baseline risk assessments. Human health and ecological baseline risk assessments are included with the RI report.

A phased approach was implemented to conduct the RI. Phase I was completed in May 1992. The subsequent phases of the RI were designated as Phase IIA and Phase IIB. Fieldwork for Phase IIA was completed in March 1994. RI Phase IIB was completed in August 1997.

The fieldwork conducted during the RI included the following tasks:

- surface soil sampling,
- subsurface soil sampling,
- monitoring well installation,
- groundwater sampling, and
- hydrogeologic investigations.

An interim removal action (IRA) was performed by the Navy Response Action Contractor (RAC) at Site 31C, during the Spring of 1999. The removal action involved the excavation and offsite disposal of 1,635 cubic yards of contaminated surface soil identified during the RI, and subsequent sampling events conducted by the RAC. Information provided in the Removal Action Completion Report (Bechtel, 1999) indicates a cleanup to residential soil cleanup target levels (SCTLs) was achieved at Site 31C.

The following conclusions are based on results of the RI investigation and IRA activities at Site 31, Sludge Drying Beds and Disposal Areas, NAS Whiting Field.

Surface Soil Summary

- Sites 31A, 31B, 31D, 31E, 31E, and 31F: No compounds or analytes were detected at concentrations in excess of their respective background screening values and Region III RBCs or Florida SCTLs.

- Site 31C: Chromium was detected at a concentration in excess of the background screening value and the Florida residential SCTL in one surface soil sample. Lead was detected at a concentration in excess of the background screening value and the Florida residential SCTL in 2 surface soil samples, and was detected at a concentration in excess of the Florida industrial SCTL in 1 surface soil sample. Copper was detected at a concentration in excess of the background screening value and Florida residential SCTL in 5 surface soil samples. Barium and mercury were detected at concentrations in excess of the background screening value and Florida residential SCTLs in four surface soil samples. Aroclor-1260 and dieldrin were detected at concentrations in excess of their respective Florida residential SCTL in 2 surface soil samples. All areas of contaminated surface soil which were identified at Site 31C during the RI, and confirmed in the IRA sampling, were excavated and removed from site by the RAC.

Subsurface Soil Summary

- Subsurface soil samples were only collected at Sites 31A and 31C, and were only analyzed for inorganic analytes. No inorganic analytes were detected at concentrations in excess of their background screening values or respective Florida SCTLs and USEPA Region III RBCs. No contamination was detected in Phase IIA surface soil samples collected at Sites 31 B, D, E, and F. Therefore, contaminants were not anticipated in subsurface soil at these areas.

Groundwater Summary

- Groundwater samples were only collected at Site 31C. The pH of groundwater collected from Site 31C was below the lower range for Federal and State Secondary MCLs. However, the observed values are within the range observed in facility-specific background groundwater samples collected at NAS Whiting Field (Harding Lawson Associates, 1998). No analytes were detected at concentrations exceeding the Federal maximum contaminant levels (MCLs) or Florida groundwater cleanup target levels (GCTLs), however, trichloroethene was detected at a concentration of 2 μg/l in one sample. The USEPA risk-based screening concentration for tap water is 1.6 μg/l for trichloroethene.

Hydrogeologic Summary

- The groundwater flow direction is toward the southwest for Sites 31A, 31B, 31C, and 31D and likely discharges at Clear Creek, located from 1,400 to 2,700 feet west of these sites. The groundwater flow direction is toward the east-southeast for Sites 31E and 31F and likely discharges to Big Coldwater Creek, located approximately 9,000 feet east of these sites.

- Based on a 50-year site history and an evaluation of hydrogeologic data, a potential migration distance for chemicals of potential concern is estimated to be approximately 4,200 feet for Site 31C; however, there is no evidence of any chemical migration from the site.

Human Health Risk Assessment Summary

- Human health chemicals of concern were identified in surface soil at Site 31C. Prior to the completion of the IRA, the total excess lifetime cancer risk at Site 31C associated with ingestion of surface soil by a hypothetical future resident, current and hypothetical future trespassers, and hypothetical future occupational workers exceeded the Florida target risk level of 1×10^{-6}. The excess lifetime cancer risk was due primarily to Aroclor-1260, dieldrin, and copper. All areas of contaminated surface soil which were identified at Site 31C during the RI field sampling, and confirmed in the IRA sampling, were excavated and removed from the site by the RAC, and therefore, no longer pose unacceptable carcinogenic risks to human receptors.

- No human health chemicals of potential concern were identified for surface soil samples collected at Sites 31A, 31B, 31D. Manganese was identified as a HHCOPC in surface soil at Sites 31E and 31F. However, the non-cancer risk associated with manganese at the sites is within the USEPA acceptable range (HI is less than 1).

  No human health chemicals of potential concern were identified for subsurface soil at Sites 31A and 31C.

- Trichloroethene was identified as a human health chemical of potential concern in groundwater at Site 31C. An ELCR of 2×10^{-7} was calculated a hypothetical future resident exposure; however, there is no current or anticipated exposure pathway.

Ecological Risk Assessment Summary

Prior to the IRA soil removal more than 20 volatile and semivolatile organic compounds, pesticides, PCBs, and inorganic analytes were identified as ecological chemicals of potential concern (ECOPCs) for various receptors at Site 31C. However, only copper, cadmium, lead, and mercury were primary contributors to ecological risk.

- Risks identified for terrestrial wildlife prior to the IRA, resulting from exposure to ECOPCs in Site 31C surface soil were addressed through removal of contaminated soil.

- Risks were not identified for terrestrial wildlife resulting from exposure to ECOPCs in surface soil at Sites 31A, 31 B, 31D, 31E, and 31F.

- Reduction in terrestrial plant biomass used as forage material was evaluated by comparing exposure concentrations for surface soil with phytotoxicity benchmarks. Based on this comparison, it is unlikely plant biomass or plant cover at Sites 31A, 31D, 31E and 31F would be reduced enough to affect small mammal and bird populations at Site 31.

- Site 31B has a higher concentration of silver. However, is unlikely to result in changes in community and populations.

- Site-specific toxicity tests were performed on two samples collected from areas showing stressed vegetation. The toxicity test showed a reduction in lettuce seed germination; however, there was no significant correlation between lettuce seed germination rates and ECOPC concentrations detected in surface soil from Site 31C. This suggests other nonmeasured physical, biological, or chemical factors may be responsible for the observed reduction in lettuce seed germination.

- It is unlikely soil invertebrate biomass at Sites 31A, 31B, 31D, 31E and 31F would be reduced enough to affect small mammal and bird populations at Site 31. Site-specific toxicity tests were performed on samples collected from two areas showing stressed vegetation. A comparison of survival and growth rates between background and control samples an Site 31C samples showed no significant difference.

- The results of the ecological risk assessment suggest changes in community structure and populations are not predicted for Sites 31A, 31B, 31D, 31E, and 31F. Although samples collected from stressed areas of Site 31C during the RI indicated potential risks to plants and wildlife receptors, surface soil from areas of stressed vegetation was excavated and removed during the IRA at Site 31C.

Conclusions and Recommendations

Based on the interpretation of findings from the remedial investigation activities and the Removal Action Completion Report, No Further Action (NFA) is proposed for surface and subsurface soils at Sites 31A (Sludge Drying Beds), 31B, 31C, 31D, 31E, and 31F (Sludge Disposal Areas). Based on the recommendation for NFA, a feasibility study is not required.

GLOSSARY

ABB-ES	ABB Environmental Services, Inc.
ARAR	applicable or relevant and appropriate requirement
ATSDR	Agency for Toxic Substances and Disease Registry
BAF	bioaccumulation factor
bls	below land surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CLP	Contract Laboratory Program
cm/sec	centimeters per second
COPC	chemical of potential concern
CT	central tendency
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethene
DDT	dichlorodiphenyltrichloroethane
DQO	data quality objective
ECOPC	ecological chemical of potential concern
Eh	Redox potential
ELCR	excess lifetime cancer risk
EPC	exposure point concentration
ERA	ecological risk assessment
FAC	Florida Administrative Code
FDEP	Federal Department of Environmental Protection
FS	feasibility study
ft/day	feet per day
ft/ft	feet per foot
ft/min	feet per minute
ft/yr	feet per year
GIR	General Information Report
HHCOPC	human health chemical of potential concern
HHRA	Human Health Risk Assessment
HI	hazard index
HLA	Harding Lawson Associates
HQ	hazard quotient
HRS	Hazard Ranking System
IAS	Initial Assessment Study
IDL	instrument detection limit
IR	Installation Restoration
IRIS	Integrated Risk Information System
k_{oc}	organic carbon partitioning coefficient
k_d	distribution coefficient

GLOSSARY (Continued)

LD_{50}	lethal dose to 50 percent of test population
LDC	Laboratory Data Consultants, Inc.
LOAEL	lowest observed adverse effects level
MCL	maximum contaminant level
µg/l	micrograms per liter
mg/kg	milligrams per kilogram
MS/MSD	matrix spike and matrix spike duplicate
NAS	Naval Air Station
NCP	National Oil and Hazardous Substances Contingency Plan
NEESA	Naval Energy and Environmental Support Activity
NFA	no further action
NOAEL	no observable adverse effect level
NPL	National Priorities List
NTU	nephelometric turbidity unit
PAH	polynuclear aromatic hydrocarbon
PARCC	precision, accuracy, representativeness, completeness, and comparability
PCB	polychlorinated biphenyl
PCPT	piezocone penetrometer test
PDE	potential dietary exposure
ppm	parts per million
PVC	polyvinyl chloride
%D	percent Difference
QAPP	Quality Assurance Project Plan
QC	quality control
RBC	risk-based concentration
RGO	remedial goal option
RI	remedial investigation
RI/FS	remedial investigation and feasibility study
RME	reasonable maximum exposure
RPD	relative percent difference
RRF	relative response factor
%RSD	percent Relative Standard Deviation
RTECS	Registry of Toxic Effects of Chemical Substances
RTV	reference toxicity value
SARA	Superfund Amendments and Reauthorization Act
SCTL	soil cleanup target level
SDG	sample delivery group
SFF	site foraging frequency
SI	site inspection
SOUTHNAV-FACENGCOM	Southern Division, Naval Facilities Engineering Command

GLOSSARY (Continued)

SQL	sample quantitation limit
SVOC	semivolatile organic compound
TAL	target analyte list
TCE	trichloroethene
TCL	target compound list
UCL	upper confidence limit
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound

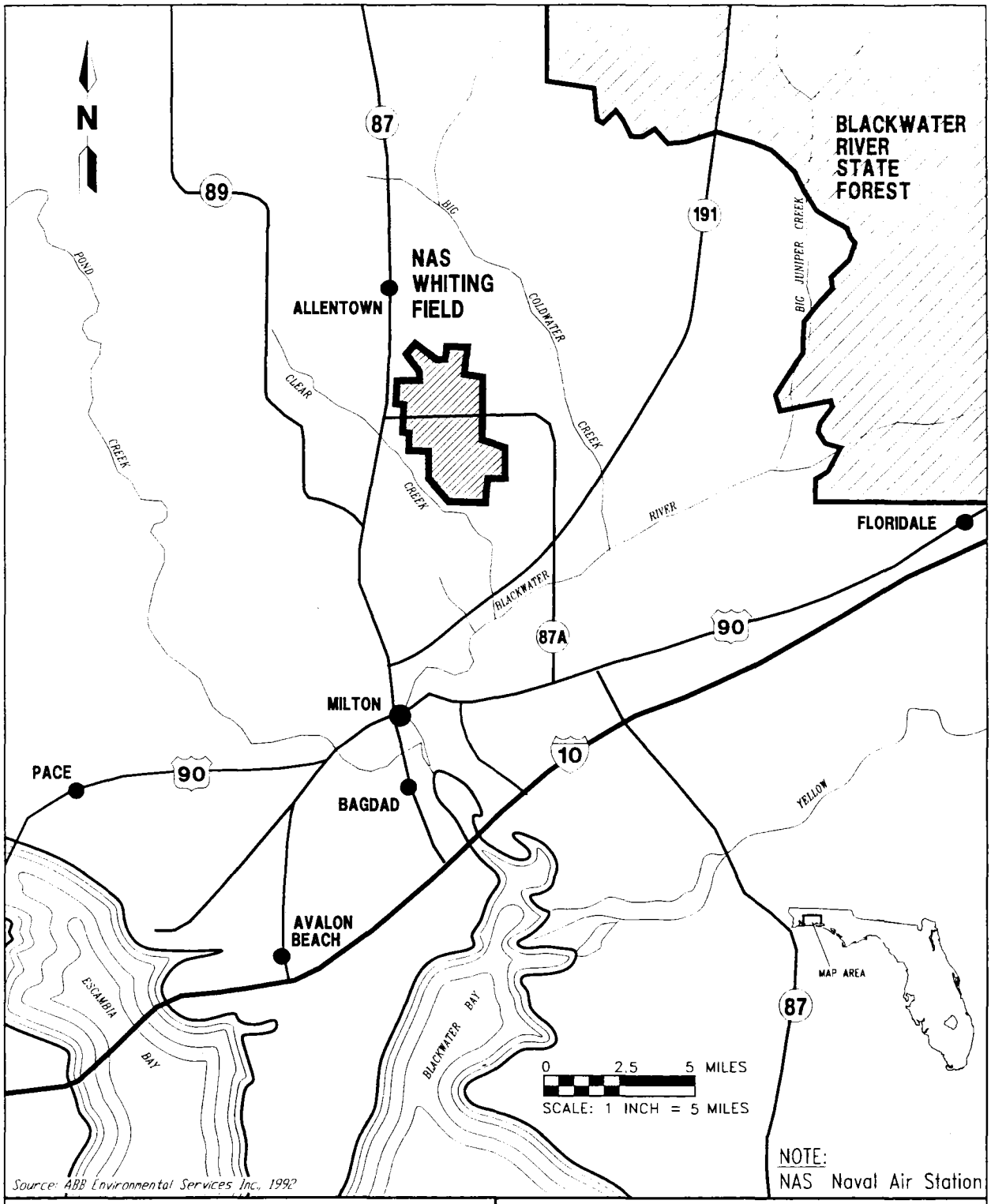

FIGURE 1-1
FACILITY LOCATION MAP

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REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA

Section 105(a)(8)(A) of SARA requires the USEPA to develop criteria to set priorities for remedial action for chemicals detected in environmental media based on relative risk to human health and the environment. To meet this requirement, USEPA has established the Hazard Ranking System (HRS) as Appendix A to the NCP. First promulgated in 1982, the HRS was amended in December 1990, effective March 14, 1991 (55 Federal Register No. 241:51532-51667), to comply with requirements of Section 105(c)(1) of SARA to increase the accuracy of the assessment of relative risk. The HRS (March 1991) has been substantially revised and is designed to prioritize sites after the SI phase of the CERCLA process.

The HRS score for NAS Whiting Field was generated in 1993. The score was sufficient to place NAS Whiting Field on the National Priorities List (NPL).

In January 1994, the USEPA placed NAS Whiting Field on a proposed list of sites to be included on the NPL (40 CFR 300, Federal Register, January 18, 1994), and on May 31, 1994, NAS Whiting Field was placed on the NPL effective June 30, 1994 (40 CFR 300, Federal Register, May 31, 1994). As a result, the RI/FS for NAS Whiting Field must follow the requirements of the NCP, as amended by SARA, and regulatory guidance for conducting RI/FS programs under CERCLA.

1.3 REPORT ORGANIZATION.

The RI Report is organized into ten chapters (Chapters 1.0 to 10.0). Chapter 1.0 presents the purpose and regulatory setting for the RI at NAS Whiting Field. Chapter 2.0 summarizes the site history and description. Chapter 3.0 presents the investigative methodology for conducting the assessment. Chapter 4.0 presents the site-specific data quality assessment. Chapter 5.0 discusses the investigative results of the assessment. Chapter 6.0 presents the Human Health Risk Assessment (HHRA), and Chapter 7.0 presents the Ecological Risk Assessment (ERA). Chapter 8.0 discusses the fate and transport of chemicals determined to be human and/or ecological chemicals of potential concern. Chapter 9.0 provides a summary of the conclusions and recommendations. Chapter 10.0 presents professional review certification.

2.0 SITE BACKGROUND

This chapter provides a description and summarizes the history of Site 31, Sludge Drying Beds and Disposal Areas at NAS Whiting Field.

2.1 SITE HISTORY.

Site 31 comprises six locations used for drying and disposal of sludge generated at the wastewater treatment plant. From the 1940s until 1990, liquid sludge was dried at Site 31A and the resulting solids were later spread at Sites 31B, 31C, and 31D. Liquid sludge was also periodically sprayed from a tanker truck over the area of Sites 31B, 31C, 31D, 31E, and 31F. Table 2-1 summarizes the site designations and locations. Appendix A of the GIR describes all basewide activities likely to have generated and discharged potential contaminants which may have entered the wastewater treatment system, which may have potentially impacted soil and groundwater at Sites 31A – 31F. An interim remedial action was performed at Site 31C during the Spring of 1999, and is discussed in more detail in Chapters 5 through 9.

Site 31 was not included with sites identified during the Initial Assessment Study (IAS) conducted by Envirodyne Engineers. The IAS indicates several industrial waste sources in the South Field area formerly discharged to the sanitary sewer system (Envirodyne Engineers Inc., 1985). Aircraft cleaning compound, photo processing chemicals, and silver sludge from the photo lab, were discharged to the sanitary sewer from 1940 to 1984, potentially accumulating in the sludge at the facility wastewater plant. Site 31 is one of five sites identified during Phase I of the RI. It was subsequently added to the Phase II RI program for investigation.

Table 2-1
Site 31, Sludge Drying Beds Location Summary

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Site Designation	Size (Acres)	Approximate Location
31A	0.2	Sludge Drying Bed at the Wastewater Treatment Plant (Figure 1-2)
31B	2.5	East of Site 15, adjacent to the west side of Perimeter Road in the South Air Field area (Figure 1-2).
31C	2.8	Southeast of Site 15, adjacent to the south side of Perimeter Road in the South Air Field area.
31D	1.0	Southeast of Runway 4, adjacent to the north side of Perimeter Road in the South Air Field area (Figure 1-2).
31E	3.45	Northwest of Site 9, adjacent to the west of Perimeter Road in the South Air Field (Figure 1-2).
31F	3.45	Northwest of Site 9, adjacent to the east of Perimeter Road in the South Air Field (Figure 1-2).

2.2 SITE DESCRIPTION.

Site 31, Sludge Drying Beds and Disposal Areas, is a single site designation, including multiple disposal areas along the South Field perimeter road (Figure 1-2). Site 31 includes the sludge drying beds located near the Wastewater Treatment Plant (Site 31A), three disposal areas along the perimeter road, near the south end of Runway 4/22 (Sites 31B, 31C, and 31D), and two sludge disposal areas along the perimeter road, northeast of Runway 4/22 (Sites 31E and 31F) (Figure 1-2).

Site 31A is a sludge drying bed unit, 92 feet long by 80 feet wide (Figure 2-1). The unit consists of four sludge drying beds surrounded by containment walls which extend to a depth of 2 1/2 to 3 feet below land surface (bls). The area of the site is approximately 0.2 acre. The surface of each sludge drying bed is covered with a mixture of coarse-grained sand and fine gravel. The sludge drying beds were taken out of service in 1990. Sludge from the wastewater treatment plant may have contained hazardous substances such as methylene chloride and heavy metals from industrial effluent.

Sites 31B, 31C, and 31D are mowed grassy areas, located in an area of surface water control berms on the southwestern slopes of the South Air Field (Figure 2-2). A rubble pile containing concrete, asphalt, and metal rubble from former base operations is located at the southeast corner of Site 31C. Dried sludge was periodically removed from Site 31A, and disposed of at Sites 31B, 31C, and 31D. Spray applications of liquid sludge were also applied to these areas by tanker trucks.

Sites 31E and 31F are locations where liquid sludge was formerly applied to the land surface northeast of Runway 4/22, east and west of the perimeter road (Figure 2-3). The extent of Sites 31E and 31F is estimated to be approximately 6.9 acres.

U.S. Department of Agriculture (USDA)soil survey maps of the area indicate the soil at Sites 31A, 31C, 31D, 31E, and 31F is classified as Troup Loamy Sand and the soil at Site 31B is classified as Troup Loamy Sand and Bonifay Sand (USDA, 1980).

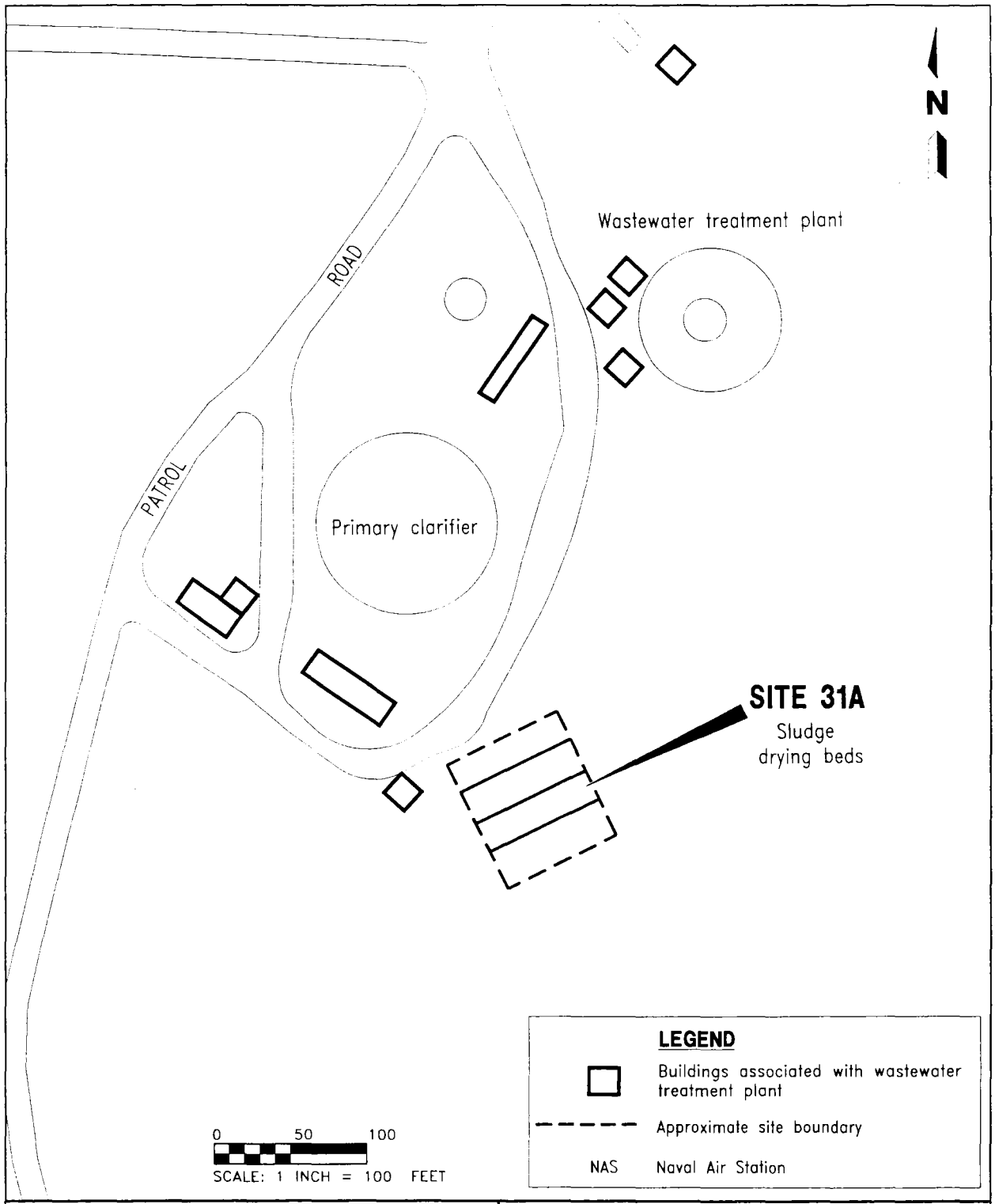

FIGURE 2-1
SITE 31A, SLUDGE DRYING BEDS, SITE PLAN MAP

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REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA

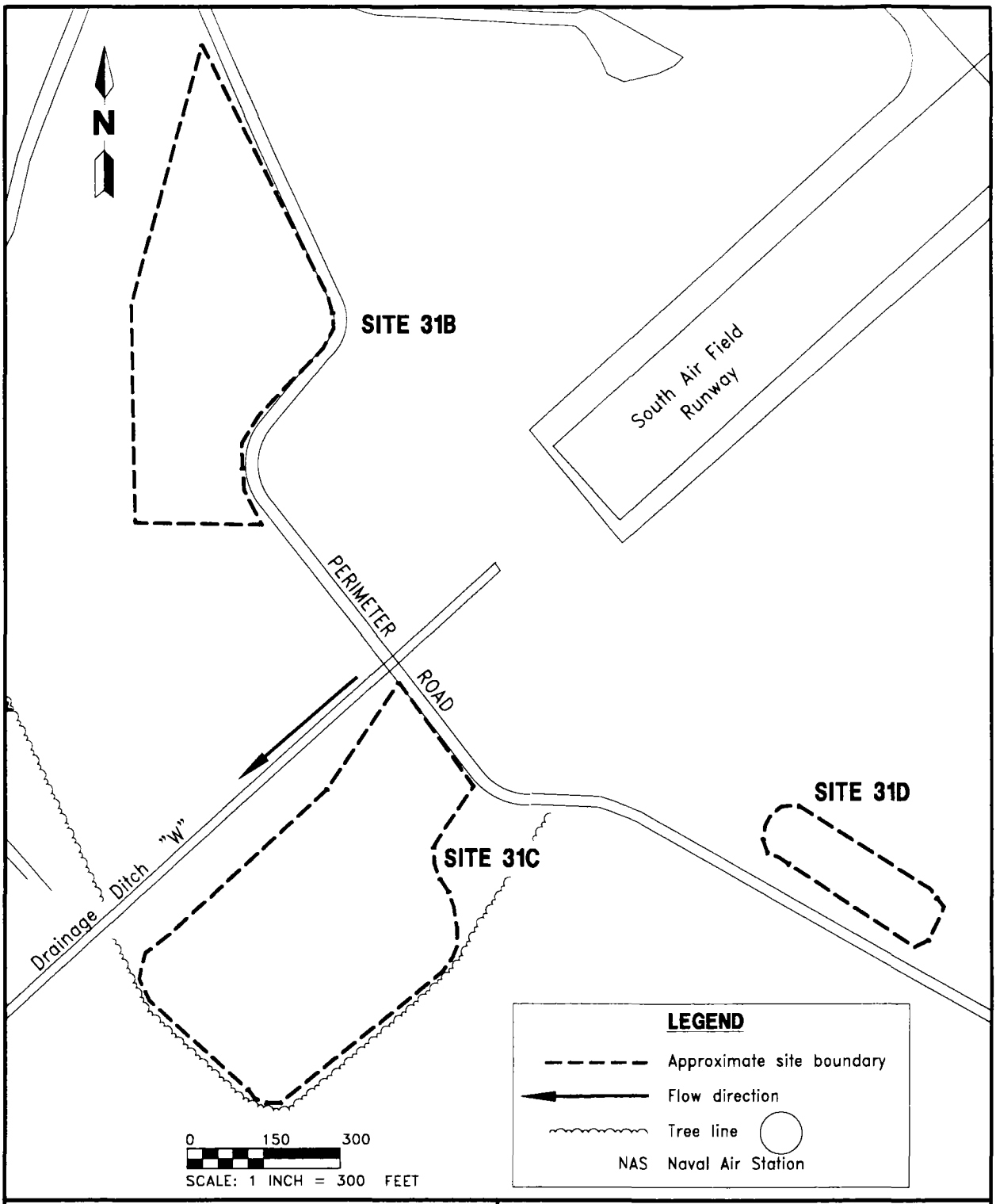

FIGURE 2-2
SITES 31B, 31C, AND 31D, SLUDGE DISPOSAL AREAS, SITE PLAN MAP

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REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA

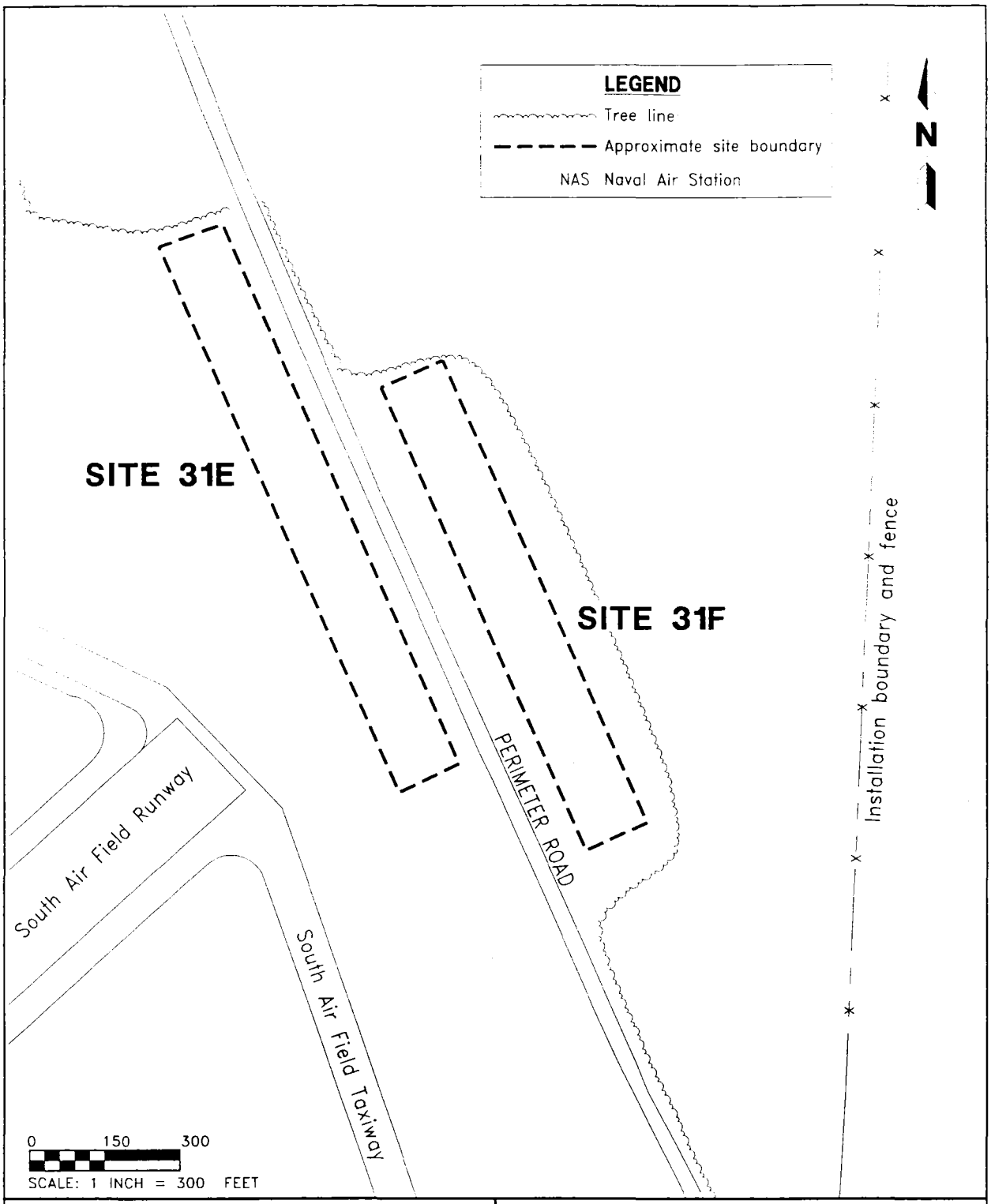

FIGURE 2-3
SITES 31E AND 31F, SLUDGE DISPOSAL AREAS, SITE PLAN MAP

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA

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3.0 FIELD INVESTIGATION

Field investigative techniques used during the RI are described in the RI/FS Workplan, Volume II (E.C. Jordan, 1990). The RI/FS Workplan provides descriptions of sampling methods, field personnel responsibilities, sample management, chain of custody, project documentation, change in field methods, protocols on corrective actions, decontamination procedures, waste management, and other general project standards and procedures.

Field and laboratory quality assurance and quality control (QA/QC) requirements for the RI activities comply with the RI/FS Quality Assurance Project Plan (QAPP) located in Appendix A of the RI/FS Workplan. Health and safety requirements were in accordance with the general Health and Safety Plan located in Volume III of the RI/FS Workplan. Field investigative methods not covered in the documents identified above are described in Technical Memorandum No. 7, RI Phase IIB Workplan (ABB Environmental Services, Inc. [ABB-ES], 1995a) and in the NAS Whiting Field GIR (HLA, 1998). These field and laboratory investigation techniques are in general conformance with USEPA Standard Operating Procedures (USEPA, 1991a and 1996a) and were followed during the RI sampling and analysis program.

The RI for Sites 31A – F is intended to evaluate the impact to these areas, if any, due to land disposal of sewage sludge which may have contained contaminants conveyed from industrial sources.

The Phase IIA investigation included collection of surface soil samples at each area associated with Site 31. The Phase IIB investigation included collection of surface soil samples from each area associated with Site 31, collection of subsurface soil samples from Sites 31A and 31C, installation of groundwater monitoring wells at Site 31C, and collection of groundwater samples.

Based on the nature of the former disposal activities and a review of analytical data collected during the Phase IIA surface soil investigation, subsurface soil samples were collected at Site 31A; and subsurface soil and groundwater samples were collected at Site 31C during the Phase IIB investigation. No impacts to subsurface soil or groundwater were anticipated at Sites 31B, D, E, or F.

Subsurface soil samples at Site 31A were collected to determine whether contaminants leaching from sludge drying beds have impacted the underlying soil. The Phase IIB investigation at Site 31C was required to determine whether impacts from contaminants detected in surface soil have affected subsurface soil or groundwater.

A facility-wide background characterization was conducted to assess existing conditions at NAS Whiting Field, including ambient concentrations of various chemicals in the environment. The characterization included determining the identity of a constituent and its concentration as either naturally occurring or resulting from manmade sources unrelated to waste disposal activities. These data are used to assess whether similar constituents found at individual sites are related natural conditions or the deposition of hazardous substances. The background characterization included collection of surface and subsurface soil, surface water, sediment, and groundwater samples Detailed information is presented in Chapter 3.0 of the GIR.

All soil and groundwater samples were analyzed for Contract Laboratory Program (CLP) (Naval Energy and Environmental Support Activity [NEESA] Level D) target compound list (TCL) volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyls (PCBs) and target analyte list (TAL) inorganic analytes. A description of the number and types of environmental samples and the analytical methodology for the RI for Site 31 Sludge Drying Beds and Disposal Areas is provided in the following sections.

3.1 SURFACE SOIL.

The surface soil assessment included the collection of 24 surface soil samples during Phase IIA and 19 surface soil samples during Phase IIB of the RI. Soil samples were described using the Unified Soil Classification System and recorded in a bound field logbook by HLA personnel. Soil sample analytical data are presented in Appendix A of this report.

The Phase IIA surface soil samples (designated 31-SL-01 through 31-SL-24) were collected at each of the Site 31 areas, from the interval between land surface to a depth of 2 feet below land surface (bls) in August 1992 (see Figures 3-1, 3-2, and 3-3).

Phase IIB surface soil samples were collected in December 1995 at locations (designated 31S001 through 31S019, respectively) shown on Figures 3-1, 3-2 and 3-3. Phase IIB samples were collected from 0 to12-inches bls, to confirm the presence or absence of chemicals previously detected and to characterize the nature and extent of contamination. In addition to providing unbiased sampling locations, these samples also support ecological and human health risk assessments. Phase IIB surface soil sample locations, at each site except for Site 31A, were determined using a systematic sampling method where one point is chosen at random along a transect, and then samples are collected at equidistant intervals (Gilbert, 1987; USEPA, 1989a).

3.2 SUBSURFACE SOIL.

The subsurface investigation at Site 31 included hand-auger soil sampling and split-spoon sampling during soil boring and monitoring well installation operations. Lithologic descriptions for all borings advanced during the installation of groundwater monitoring wells are presented in Appendix B. A summary of the Site 31 lithology descriptions from Phase IIB is also presented in Section 5.1 of this report.

3.2.1 Hand-Auger Soil Sampling

Five subsurface soil samples (designated 31B00101 through 31B00501) were collected at shallow depths (ranging from 1.5 to 3 feet bls) with a hand-auger at Site 31A. Sampling methodology was followed as presented in Paragraph 2.1.3.3 of the GIR (HLA, 1998). Subsurface soil samples were collected from within each sludge drying bed and also from one location outside the sludge drying beds (Figure 3-1).

3.2.2 Split-Spoon Sampling

Fifteen subsurface soil samples (31B00601 to 31B00605, 31B00701 to 31B00705, and 31B00801 to 31B00805) were collected at Site 31C on May 21, 1996. The samples were collected at 5-foot intervals (5 to 7, 10 to 12, 15 to 17, 20 to 22, and 25 to 27 feet bls) using a 2-foot split-spoon sampler from soil borings 31B006, 31B007, and 31B008 located at Site 31C (see Figure 3-2).

Subsurface soil samples were also collected from soil borings at monitoring well locations (see Figure 3-4). A 2-foot split-spoon sample was collected for visual inspection by an HLA geologist. All data were entered into a bound logbook. Soil descriptions and other pertinent data are presented in Section 5.1 and Appendix B of this report. Split-spoon samples were generally collected at 5-foot intervals during drilling of the monitoring wells. Monitoring well installations were conducted in conjunction with the hydrogeologic and groundwater investigations at Site 31C.

3.3 GROUNDWATER.

Six groundwater monitoring wells (WHF-31-1S, WHF-31-2S, WHF-31-3S, WHF-31-4S, WHF-31-4I, and WHF-31-4D) were installed in 1996 during the Phase IIB investigation. Groundwater samples were collected during Phase IIB from these monitoring wells in October to November 1996 and in July 1997.

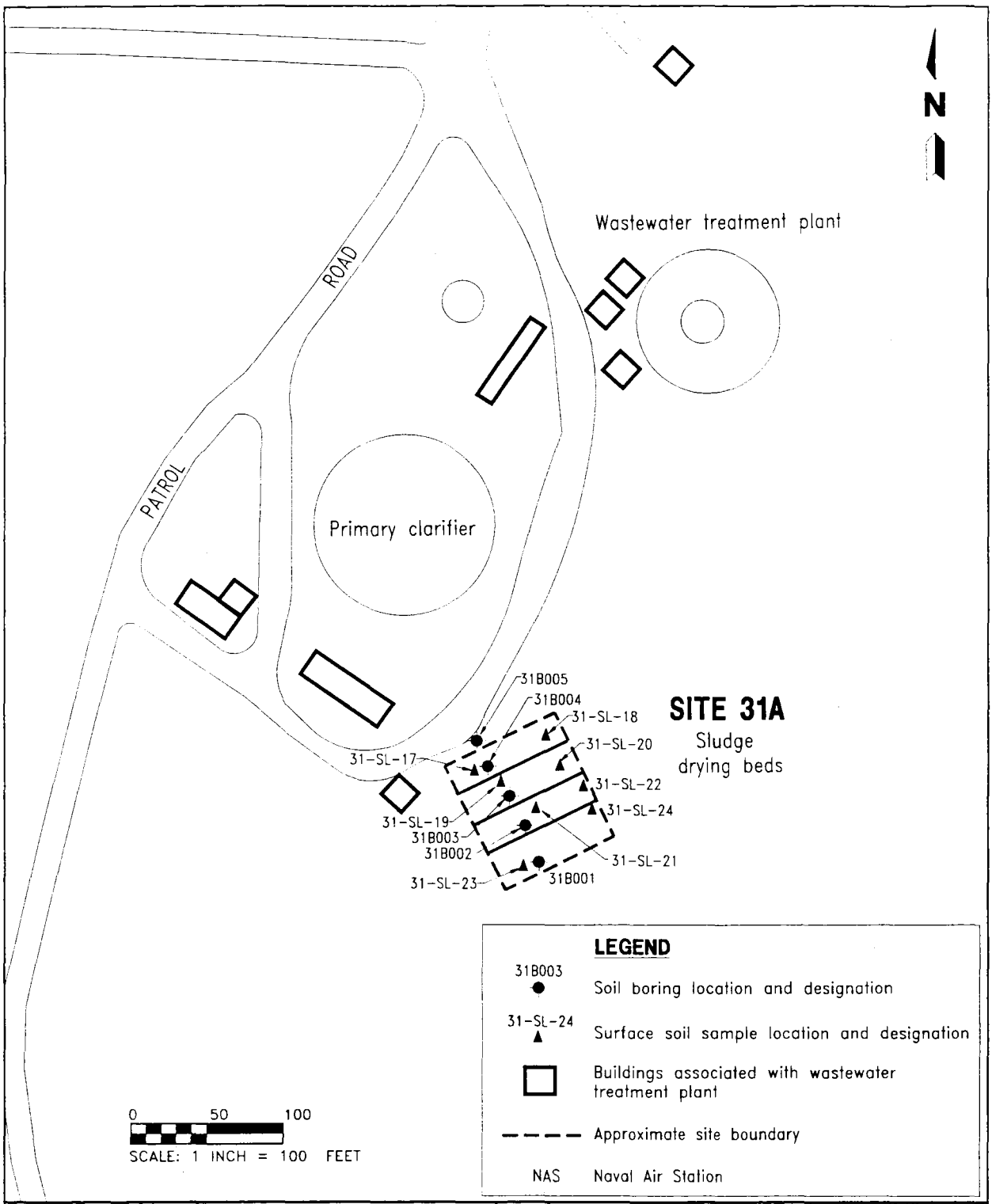

FIGURE 3-1
SITE 31A, LOCATIONS OF SOIL BORINGS AND SURFACE SOIL SAMPLES

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REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA

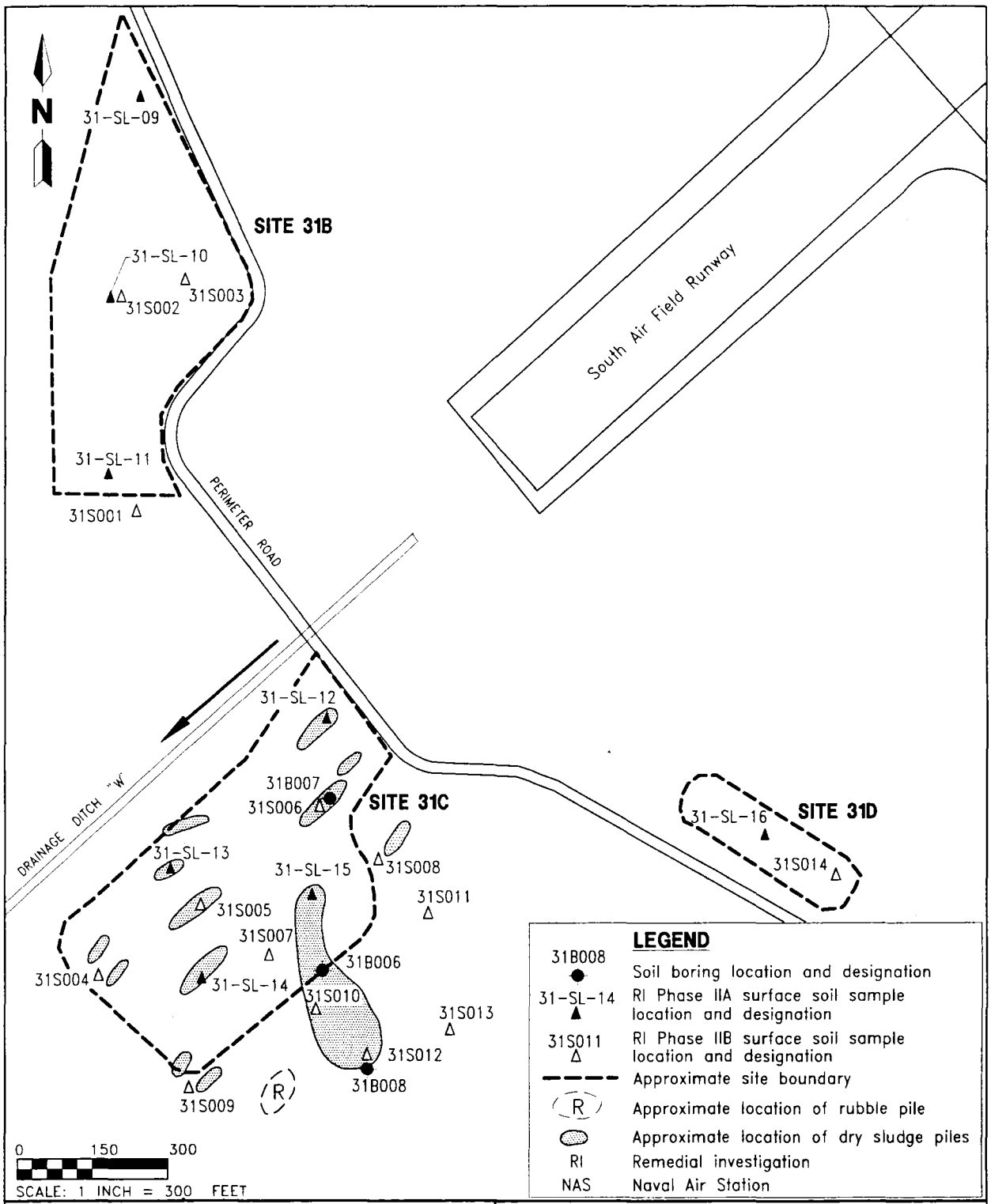

FIGURE 3-2
SITES 31B, 31C, AND 31D LOCATIONS OF SOIL BORINGS AND SURFACE SOIL SAMPLES

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REMEDIAL INVESTIGATION REPORT SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD MILTON, FLORIDA

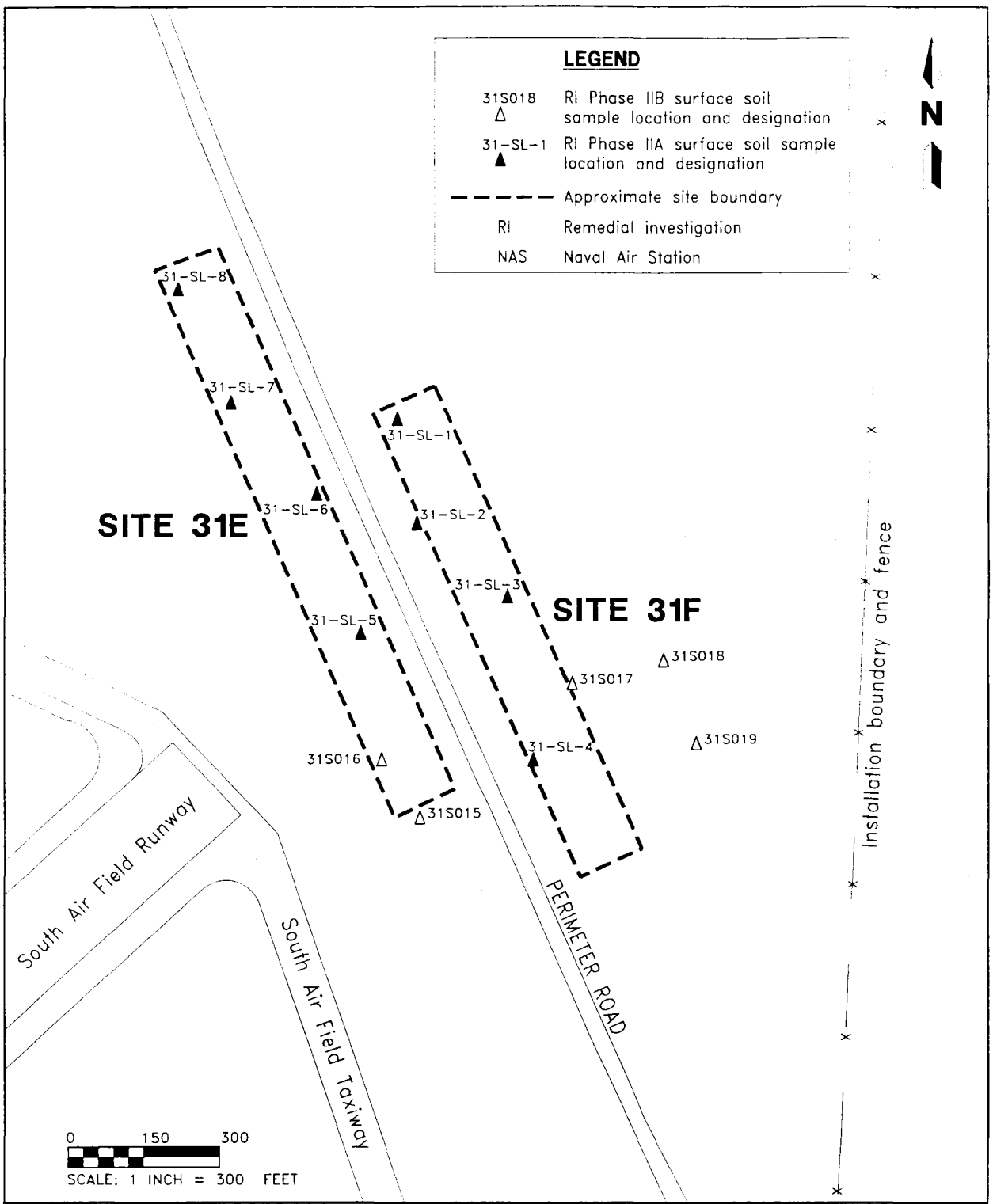

FIGURE 3-3
SITES 31E AND 31F, LOCATIONS OF SURFACE SOIL SAMPLES

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REMEDIAL INVESTIGATION REPORT SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD MILTON, FLORIDA

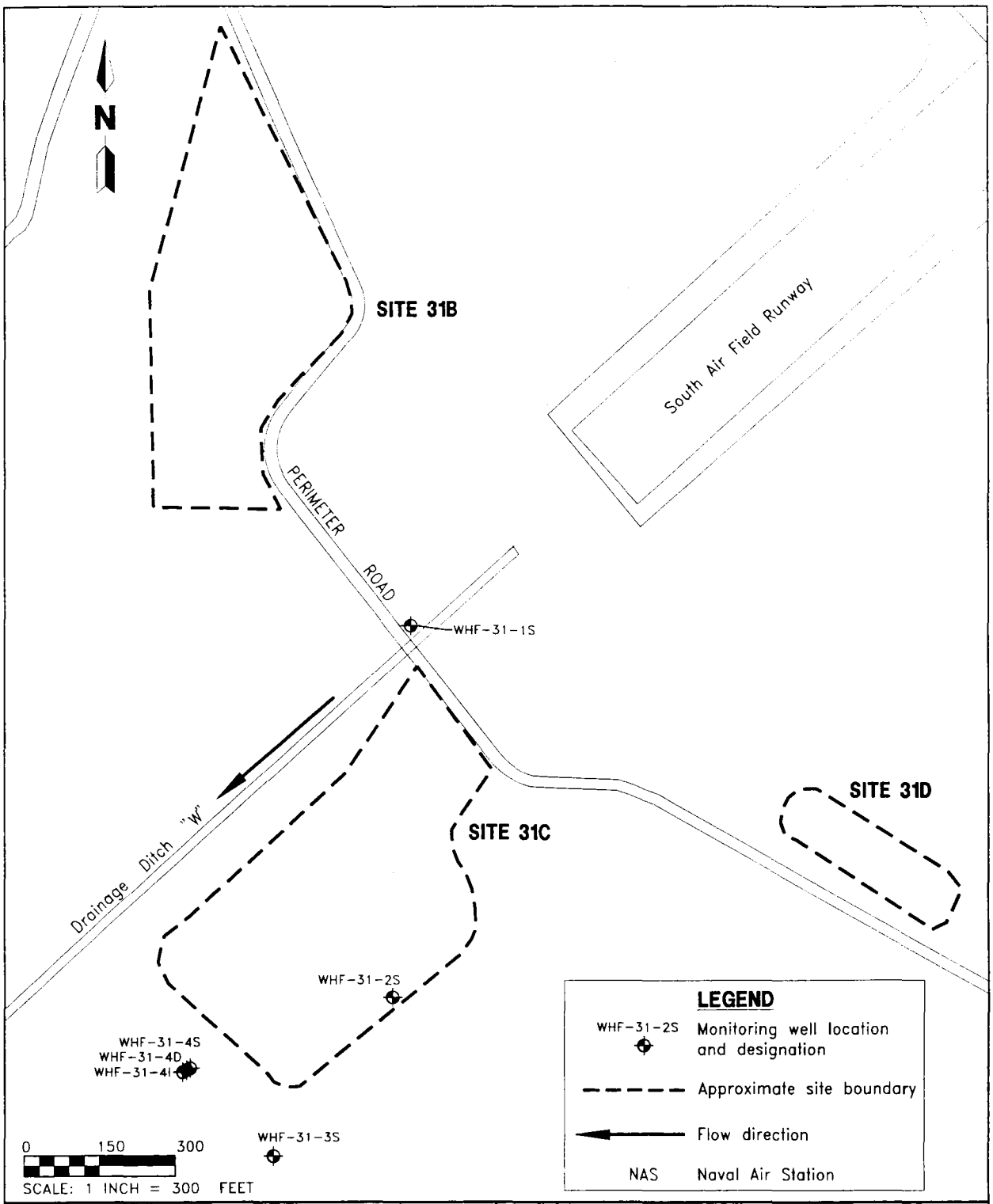

FIGURE 3-4
SITE 31C, LOCATION OF MONITORING WELLS

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REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA

Monitoring well locations are presented on Figure 3-4. Analytical data for groundwater samples attached as Appendix C to this report, and are discussed in Section 5.3.

Purging and sampling was conducted in accordance with methods presented in Paragraph 2.1.7.2 of the GIR (HLA, 1998). Groundwater samples were collected from the six monitoring wells using low-flow sampling techniques. Samples collected for TAL inorganic analytes were unfiltered (total analysis) if turbidity was below 10 nephelometric turbidity units (NTUs). If turbidity was greater than 10 NTUs, an additional groundwater sample was collected and filtered (dissolved-phase inorganics) using a 45-micron filter. The purpose of the additional groundwater sample was to assess uncertainty associated with a turbid unfiltered groundwater sample.

In addition to analyses for potential groundwater contaminants, secondary water quality parameters including alkalinity, chloride, sulfates, hardness, ammonia, total Kjeldahl nitrogen, nitrate, nitrite, pH, phosphorous, total dissolved solids, and total organic carbon were determined for use in assessing remedial alternatives, if required in the FS. Water quality parameter data are presented in Section 5.5 of this report.

3.4 HYDROGEOLOGIC ASSESSMENT.

The hydrogeologic assessment of Site 31 utilized data from several adjacent sites, including Sites 15 and 16 (Southwest Disposal Areas) and Sites 9, 10, 11, 12, 13, and 14 (Southeast Disposal Areas). The hydrogeologic field investigation activities included the collection of water-level data from site monitoring wells and conducting slug test analyses on monitoring wells in each of these areas. Results of the Phase IIA hydrological assessment are presented in Phase IIA Technical Memorandum No. 4, Hydrogeologic Assessment (ABB-ES, 1995c), and Section 5.4 and Appendix D of this report. Monitoring well construction details are presented in Table 3-1.

3.5 INTERIM REMEDIAL ACTION.

As stated in Chapter 1.0, an IRA was completed at Site 31C. Figure 3-5 presents the delineation, and confirmation sampling locations along with the Phase I and Phase II RI sampling locations. Additional information on the IRA can be found in Appendix J.

Table 3-1
Summary of Remedial Investigation and Feasibility Study
Monitoring Well Construction Details

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station 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)
Basewide Monitoring Wells							
WHF-1466-6DD	IIB	2	172.86	172.86	218	208 to 218	NA
WHF-1466-6D	IIB	2	173.21	173.05	190	180 to 190	NA
WHF-1466-6I	IIB	2	173.01	173.06	160	150 to 160	NA
WHF-1466-6S	IIB	2	173.40	173.09	131	116 to 131	NA
WHF-1466-7S	IIB	2	--	172.26	131	116 to 131	NA
WHF-1466-21D	IIB	2	--	61.44	96	86 to 96	NA
WHF-1466-21I	IIB	2	--	61.75	69	59 to 69	NA
WHF-1466-21S	IIB	2	--	62.39	40	25 to 40	NA
WHF-1466-22D	IIB	2	--	139.11	167	157 to 167	NA
WHF-1466-22I	IIB	2	--	139.23	140	130 to 140	NA
WHF-1466-22S	IIB	2	--	139.36	108	93 to 108	NA
WHF-1466-23D	IIB	2	128.10	127.63	150	140 to 150	NA
WHF-1466-23I	IIB	2	127.83	128.22	120.57	110 to 120	NA
WHF-1466-23S	IIB	2	128.63	128.44	90.14	75 to 90	NA
Southwest Disposal Area							
Site 15, Southeast Landfill							
WHF-15-1	VS	4	64.17	66.35	73.20	63 to 73	NA
WHF-15-2I	IIA	2	57.24	60.10	63.20	53 to 63	NA
WHF-15-2S	IIA	2	57.18	59.58	32.90	17 to 32	NA
WHF-15-2D	IIA	2	57.05	59.39	112.44	107 to 112	NA
WHF-15-3D	IIA	2	67.84	69.44	119.48	109 to 119	NA
WHF-15-3I	IIA	2	67.26	69.69	87.83	77 to 87	NA
WHF-15-3S	IIA	2	67.35	69.29	37.94	22 to 37	NA
WHF-15-4S	IIA	2	140.62	143.29	109.15	94 to 109	NA
WHF-15-5D	IIA	2	102.81	106.11	128.38	115 to 125	NA
WHF-15-5I	IIA	2	102.05	105.17	98	85 to 95	NA
WHF-15-5S	IIA	2	101.73	104.14	68.18	58 to 68	NA
WHF-15-6D	IIA	2	72.56	75.08	123.36	113 to 123	NA
WHF-15-6S	IIA	2	71.87	74.29	43.73	28 to 43	NA
WHF-15-7D	IIB	2	116.36	119.49	147.53	136 to 146	NA
WHF-15-7I	IIB	2	116.59	119.85	121.50	106 to 116	NA
WHF-15-7S	IIB	2	116.96	120.18	88.85	71 to 86	NA

See notes at end of table.

Table 3-1 (Continued)
Summary of Remedial Investigation and Feasibility Study
Monitoring Well Construction Details

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station 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)
Southwest Disposal Area							
Site 15, Southeast Landfill (Continued)							
WHF-15-8D	IIB	2	76.19	79.08	115	103 to 113	NA
WHF-15-8I	IIB	2	76.69	79.48	85.2	73 to 83	NA
WHF-15-8S	IIB	2	77.03	79.67	55	38 to 53	NA
Site 16, Open Disposal and Burning Area							
WHF-16-1	VS	4	47.47	50.04	43.00	33 to 43	NA
WHF-16-2	I	4	79.38	82.19	74.20	69 to 74	NA
WHF-16-2I	IIA	2	78.02	80.60	130.14	120 to 130	NA
WHF-16-2S	IIA	2	80.77	83.66	49.80	34 to 49	NA
WHF-16-3D	IIA	2	48.64	51.40	118.08	108 to 118	NA
WHF-16-3I	IIA	2	48.73	51.31	52.87	47 to 52	NA
WHF-16-3II	IIA	2	48.60	51.22	78.91	73 to 78	NA
WHF-16-3S	IIA	2	48.60	51.69	23.25	8 to 23	NA
WHF-16-4D	IIA	2	49.88	52.87	122.54	112 to 122	0 to 65
WHF-16-4II	IIA	2	50.62	53.01	64.80	54 to 64	NA
WHF-16-4S	IIA	2	52.19	54.79	22.38	7 to 22	NA
WHF-16-5	IIA	2	--	37.54	13.50	3 to 13	NA
WHF-16-6D	IIB	2	53.58	56.77	62.10	50 to 60	NA
WHF-16-6S	IIB	2	53.67	56.57	26	10 to 25?	NA
WHF-16-7D	IIB	2	35.19	38.05	75.20	63 to 73	NA
WHF-16-7I	IIB	2	35.14	38.17	43.50	33 to 43	NA
WHF-16-7S	IIB	2	35.05	38.27	13.00	3 to 13	NA
Site 31C, Sludge Disposal Area							
WHF-31-1S	IIB	2	149.25	149.70	115.35	100 to 115	NA
WHF-31-2S	IIB	2	119.03	122.37	88.80	73 to 88	NA
WHF-31-3S	IIB	2	102	105.49	75.70	60 to 75	NA
WHF-31-4D	IIB	2	104.05	106.63	144.20	134 to 144	NA
WHF-31-4I	IIB	2	104.22	107.14	105.40	95 to 105	NA
WHF-31-4S	IIB	2	104.03	106.52	82.40	67 to 82	NA

See notes at end of table.

Table 3-1 (Continued)
Summary of Remedial Investigation and Feasibility Study
Monitoring Well Construction Details

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station 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)
Southeast Disposal Area							
Site 9, Waste Fuel Disposal Pit							
WHF-9-1	VS	4	144.66	146.55	118.40	108 to 118	NA
WHF-9-2	I	4	158.11	161.07	124.35	114 to 124	NA
WHF-9-3S	IIA	2	147.92	150.85	108.24	93 to 108	0 to 77
Site 10, Southeast Open Disposal Area (A)							
WHF-10-1	VS	4	144.19	146.73	118.20	108 to 118	NA
WHF-10-2	IIA	2	147.78	150.75	113.14	98 to 113	NA
Site 11, Southeast Open Disposal Area (B)							
WHF-11-1	VS	4	122.48	124.86	128.40	118 to 128	NA
WHF-11-1S	IIA	2	114.91	116.65	54.40	39 to 54	NA
WHF-11-2	I	4	145.19	148.12	125.84	120 to 125	NA
WHF-11-3	IIA	2	114.29	117.19	73.16	58 to 73	0 to 46
WHF-11-4D	IIB	2	--	125.79	109.00	99 to 109	NA
WHF-11-4S	IIB	2	--	129.43	79.00	64 to 79	NA
Site 12, Tetraethyl Lead Disposal Area							
WHF-12-1	VS	4	134.20	136.40	113.40	103 to 113	NA
WHF-12-2	IIB	2	--	135.56	85	70 to 85	NA
Site 13, Sanitary Landfill							
WHF-13-1	VS	4	100.40	102.66	122.90	112 to 122	NA
WHF-13-1I	IIB	2	--	109.17	93	83 to 93	NA
WHF-13-1S	IIA	2	104.61	108.97	61.30	46 to 61	NA
WHF-13-2S	IIA	2	99.94	102.86	72.41	57 to 72	0 to 42
WHF-13-3	IIB	2	81.37	81.44	41	26 to 41	NA
WHF-13-4	IIB	2	80.41	80.37	41	26 to 41	NA
Site 14, Short-Term Sanitary Landfill							
WHF-14-1	VS	4	137.83	139.69	153.20	143 to 153	NA
WHF-14-2	IIA	2	142.86	145.80	118.30	103 to 118	0 to 94

Notes: RI = Remedial Investigation.
msl = mean sea level.
TOC = top-of-casing.
BTOC = below top of casing.
bls = below land surface.
IIB = Remedial Investigation Phase IIB.
NA = not applicable.
-- = land surface elevation not available.
VS = Verification Study.
IIA = Remedial Investigation Phase IIA.
I = Remedial Investigation Phase I.

4.0 SITE-SPECIFIC DATA QUALITY ASSESSMENT

This chapter describes how the data generated during Phase IIB of the RI at Site 31 were managed and evaluated. Section 4.1 describes the analytical program and data management for the RI at Site 31. Section 4.2 summarizes the precision, accuracy, representativeness, comparability, and completeness (PARCC) report on the data. Section 4.3 presents a summary of the Data Quality Assessment.

Data for soil samples collected during Phase IIA of the RI were qualified according to USEPA functional guidelines for evaluation of organic (USEPA, 1991b) and inorganic (USEPA, 1988a) analytical data analyzed using USEPA CLP protocol. The data quality objective (DQO) assessment for the Phase IIA soil samples is presented in detail in RI/FS *Phase IIA Technical Memorandum No. 3* (ABB-ES, 1994).

4.1 ANALYTICAL PROGRAM.

Environmental and QC samples collected during the Phase IIB of the RI at Site 31 were analyzed using field screening and off-site laboratory analytical methods. QC data for Site 31 are included with sample delivery groups (SDGs) WF010, WF012, WF014, WF017, WF036, and WF046 and are presented in Appendix E. Environmental sampling locations are presented in Chapter 3.0 of this report, and sample results are presented in Chapter 5.0 and Appendix A (soil data) and Appendix C (groundwater data).

Environmental samples (surface soil, subsurface soil, and groundwater) were collected, and analyzed by an off-site laboratory using USEPA CLP methodology for analysis of TCL VOCs, SVOCs, pesticides, and PCBs, and TAL metals and cyanide. Some groundwater samples were also analyzed for wet chemistry analyses. Wet chemistry parameters included ammonia-nitrogen, chloride, hardness, nitrate-nitrite, phosphorous, sulfate, sulfite, total dissolved solids, total Kjeldahl nitrogen, and total organic carbon. The laboratory analytical program is described in more detail in Section 2.2 of the NAS Whiting Field GIR (HLA, 1998).

Analytical results obtained for all environmental samples during the RI sampling events were submitted as NEESA Level D (USEPA Level IV) analytical packages for VOCs, SVOCs, pesticides, PCBs, metals, and cyanide.

4.2 DATA REVIEW.

Data validation is the technical review of individual analytical results relative to the following criteria:

- DQOs and the QAPP in the NAS Whiting Field Workplans (E. C. Jordan Co., Inc., 1990 and ABB-ES, 1995a).
- NEESA guidance document 20.2-047B, *Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Program* (NEESA, 1988).
- USEPA, *Contract Laboratory Program National Functional Guidelines for Organic Data Review*, February 1994 (USEPA, 1994a).
- USEPA, *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, February 1994 (USEPA, 1994b).

The data validation process is described in Section 2.3 of the NAS Whiting Field GIR (HLA, 1998).

The data were reviewed, validated, and evaluated using the PARCC criteria specified in the DQOs. PARCC criteria are described in Section 2.3 of the NAS Whiting Field GIR (HLA, 1998). The Site 31 Phase IIB soil and groundwater analytical data were validated by Laboratory Data Consultants, Inc. (LDC) of Carlsbad, California, in 1996. The Site 31 Phase IIB surface soil data include SDGs WF010 and WF012. The Site 31 Phase IIB subsurface soil data include SDGs WF014 and WF017. The Site 31 Phase IIB groundwater data include SDGs WF036 and WF046. The subsections below summarize the PARCC criteria evaluation of the analytical data.

4.2.1 Precision

Precision is a measure of the agreement or repeatability of a set of replicate results (relative percent difference [RPD]) obtained from duplicate laboratory analyses of samples collected from the same location and depth interval. Precision for analytical data collected during the RI sampling events was evaluated using results of field duplicate samples, laboratory duplicate samples, matrix spike and matrix spike duplicate (MS/MSD) samples, and/or consecutive laboratory control samples. The evaluation of precision for the RI sampling event is presented in Table 4-1 and summarized below.

The RPD criteria were not met for six environmental samples (four soil and two groundwater) and associated duplicates for two organics (acetone and di-*n*-butylphthalate) and several inorganic analytes. None of the organic analytical results were qualified during the data validation process based on RPD criteria for environmental and associated duplicate sample pairs.

The RPD criteria for nine inorganic analytes (arsenic, cadmium, chromium, cobalt, copper, magnesium, potassium, silver, and zinc) in soil samples from some SDGs may not have been met because of sample heterogeneity. The inorganic analytical results were not qualified during the data validation process based on the RPD evaluation criteria alone.

The RPD criteria for one VOC (di-*n*-butylphthalate) and two inorganic analytes (cobalt and zinc) were not met for groundwater samples and the associated duplicate in each SDG. The RPD criteria for cobalt were not met for one groundwater sample (54G00101) and the associated duplicate in SDG WF036. The RPD criteria for di-*n*-butylphthalate and zinc were not met for one groundwater sample (31G00101) and the associated duplicate in SDG WF046.

4.2.2 Accuracy

Accuracy is a measure of the agreement between the true value and the value measured using an analytical method (percent recovery). Accuracy also is evaluated during data validation by assessing initial and continuing calibration data for the analytical instrument. Accuracy for analytical data collected during the RI sampling events was assessed by evaluating percentage recoveries for MS/MSD samples, surrogate recoveries, laboratory control samples, and initial and continuing calibration standard results. The evaluation of recoveries for MS/MSD samples is presented in Table 4-2 and summarized below.

The percent recovery for some of the soil and groundwater samples was above or below the target range; therefore, some analytical results may be biased high or low. Some of the analytical results for SVOCs, one pesticide compound, and inorganic analytes were qualified based on the evaluation of percent recovery.

A summary of the surrogate spike samples and the surrogate compounds that were outside control limits for the Phase IIB samples collected at Site 31 is presented in Table 4-3. The required control limits were also identified for each surrogate compound. All the samples associated with these surrogates were qualified in accordance with the USEPA functional guidelines as presented in Subsection 3.3.4 of the GIR (HLA, 1998).

Initial calibrations are performed to make sure the instrument is capable of producing acceptable qualitative and quantitative data for compounds on the TCL for VOCs. Initial calibration demonstrates the instrument is

Table 4-1
Precision Summary for Soil and Groundwater Field Duplicate Samples

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SDG Number	Sample ID	Compound	Sample Concentration	Duplicate Concentration	RPD	Control Limits
SOIL						
WF010						
Volatile Organic Compounds (µg/kg)	31S01501	Acetone	ND	5	NC	50
Inorganic Analytes (mg/kg)	31S01501	Aluminum	9,620	8,270	15	20
		Arsenic	1.4	1.9	30	30
		Barium	14.6	12.2	18	30
		Beryllium	0.17	0.15	13	30
		Calcium	112	103	8	20
		Chromium	6.7	6.0	11	30
		Cobalt	0.80	1.2	40	30
		Copper	5.5	4.2	27	30
		Iron	4,730	4,380	8	20
		Lead	5.3	5.4	2	20
		Magnesium	154	114	30	30
		Manganese	183	172	6	20
		Mercury	0.01	0.01	0	30
		Nickel	3.9	3.4	13	30
		Potassium	ND	197	NC	30
		Vanadium	12.8	11.3	12	30
		Zinc	6.8	5.0	30	30
		Cyanide	ND	ND	NC	30

See notes at end of table.

Table 4-1 (Continued)
Precision Summary for Soil and Groundwater Field Duplicate Samples

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Site 31, Sludge Drying Beds And Disposal Areas
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SDG Number	Sample ID	Compound	Sample Concentration	Duplicate Concentration	RPD	Control Limits
SOIL						
WF012						
Volatile Organic Compounds (µg/kg)	31S00501	Acetone	9	8	12	50
Inorganic Analytes (mg/kg)	31S00501	Aluminum	4,500	6,050	29	20
		Arsenic	1.3	1.2	8	30
		Barium	6.6	8.6	26	30
		Calcium	5,850	6,250	7	20
		Chromium	2.8	3.8	30	30
		Cobalt	ND	1.2	NC	30
		Copper	2.2	3.0	31	30
		Iron	2,470	2,840	14	20
		Lead	3.2	2.9	10	20
		Magnesium	80.1	138	53	30
		Manganese	87.0	95.3	9	20
		Nickel	1.9	2.2	15	30
		Potassium	81.9	115	34	30
		Selenium	0.18	ND	NC	30
		Sodium	192	175	9	30
		Vanadium	5.9	7.2	20	30
		Zinc	3.9	5.2	28	30
		Cyanide	0.09	ND	NC	30

See notes at end of table.

Table 4-1 (Continued)
Precision Summary for Soil and Groundwater Field Duplicate Samples

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Site 31, Sludge Drying Beds And Disposal Areas
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SDG Number	Sample ID	Compound	Sample Concentration	Duplicate Concentration	RPD	Control Limits
SOIL						
WF014						
Volatile Organic Compounds (µg/kg)	31B00201	Acetone	3	11 U	NC	50
Semivolatile Organic Compounds (µg/kg)	31B00201	bis(2-Ethylhexyl)phthalate	370 U	48	NC	50
Inorganic Analytes (mg/kg)	31B00201	Aluminum	4,360	4,050	7	20
		Arsenic	1.0	1.2	18	30
		Barium	4.7	4.3	9	30
		Beryllium	0.05	ND	NC	30
		Cadmium	0.21	0.34	47	30
		Calcium	107	121	12	30
		Chromium	2.6	2.1	21	30
		Cobalt	0.76	ND	NC	30
		Copper	8.5	8.4	1	30
		Iron	2,960	2,750	7	20
		Lead	2.9	2.9	0	30
		Magnesium	81.1	72.0	12	30
		Manganese	8.0	7.5	7	30
		Mercury	0.04	0.04	0	30
		Nickel	1.8	1.6	12	30
		Potassium	88.8	114	25	30
		Sodium	175	183	5	30
		Vanadium	6.0	5.3	12	30
		Zinc	7.1	6.4	10	30

See notes at end of table.

Table 4-1 (Continued)
Precision Summary for Soil and Groundwater Field Duplicate Samples

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Milton, Florida

SDG Number	Sample ID	Compound	Sample Concentration	Duplicate Concentration	RPD	Control Limits
SOIL						
WF017						
Volatile Organic Compounds (µg/kg)	31B00601	Acetone	3	11	114	50
Semivolatile Organic Compounds (µg/kg)	31B00601	Di-*n*-butylphthalate	39	350 U	NC	50
		bis(2-Ethylhexyl)phthalate	110	79	33	50
Pesticides and PCBs (µg/kg)	31B00601	gamma-Chlordane	1.5	1.1	31	50
Inorganic Analytes (mg/kg)	31B00601	Aluminum	1,580	1,760	11	20
		Arsenic	0.44	0.29	41	30
		Barium	7.4	9.6	26	30
		Beryllium	0.07	0.07	0	30
		Cadmium	0.52	0.68	27	30
		Calcium	237	297	22	20
		Chromium	3.9	5.4	32	30
		Copper	11.4	13.6	18	30
		Iron	1,120	1,310	16	20
		Lead	6.3	7.0	11	30
		Magnesium	83.5	98.7	17	30
		Manganese	9.2	11.3	20	20
		Mercury	0.07	0.08	13	30
		Selenium	0.14	ND	NC	30
		Silver	1.1	1.7	43	30
		Sodium	23.5	26.3	11	30
		Vanadium	2.2	2.4	9	30
		Zinc	11.0	15.9	36	30
		Cyanide	0.10	ND	NC	30

See notes at end of table.

Table 4-1 (Continued)
Precision Summary for Soil and Groundwater Field Duplicate Samples

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SDG Number	Sample ID	Compound	Sample Concentration	Duplicate Concentration	RPD	Control Limits
GROUNDWATER						
WF036						
Semivolatile Organic Compounds (µg/l)	54G00101	Diethylphthalate	1	10 U	NC	40
		Di-*n*-butylphthalate	1	10 U	NC	40
Inorganic Analytes (µg/l)	54G00101	Aluminum	87.6	91.6	4	25
		Barium	75.2	74.3	1	25
		Beryllium	0.18	0.18	0	25
		Calcium	1,680	1,660	1	25
		Chromium	1.2	1.0	2	25
		Cobalt	0.90	1.4	43	25
		Magnesium	1,950	1,920	2	25
		Manganese	13.9	12.9	7	25
		Mercury	0.02	0.01 U	NC	25
		Potassium	2,410	2,530	5	25
		Sodium	2,110	2,070	2	25
		Zinc	4.5	3.5	25	25

See notes at end of table.

Table 4-1 (Continued)
Precision Summary for Soil and Groundwater Field Duplicate Samples

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SDG Number	Sample ID	Compound	Sample Concentration	Duplicate Concentration	RPD	Control Limits
GROUNDWATER						
WF046						
Semivolatile Organic Compounds (µg/l)	31G00101	Di-*n*-butylphthalate	6	3	67	40
Inorganic Analytes (µg/l)	31G00101	Aluminum	96.0	91.1	5	25
		Barium	22.6	22.5	0.4	25
		Calcium	857	851	0.7	25
		Copper	1.3 U	1.4	NC	25
		Iron	120	103	15	25
		Magnesium	662	675	2	25
		Manganese	9.7	9.9	2	25
		Potassium	1,910	2,200	15	25
		Sodium	1,760	1,890	7	25
		Vanadium	1.8	1.7 U	NC	25
		Zinc	3.5	9.8	95	25

Notes:
SDG = sample delivery group.
ID = identification.
RPD = relative percent difference.
µg/kg = micrograms per kilogram.
ND = not detected.
NC = not calculable.
mg/kg = milligrams per kilogram.
PCB = polychlorinated biphenyl.
U = the analyte was not detected above the reported sample instrument detection level.
µg/l = micrograms per liter.
D_1 = sample concentration.
D_2 = duplicate concentration.

$$RPD = 100 \times \frac{|D_1 - D_2|}{0.5(D_1 + D_2)}$$

1

Table 4-2
Accuracy Summary for MS/MSD Samples

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SDG Number	MS/MSD Sample	Analyte	% Recovery MS/MSD	Control Limits
WF010 - Soil				
Semivolatile Organic Compounds	31S01501	4-Chloro-3-methylphenol	104/--	26 to 103
		2,4-Dinitrotoluene	94/--	28 to 89
Inorganic Analytes[1]	31S01501	Antimony	73.8	75 to 125
WF012 - Soil				
Semivolatile Organic Compounds	31S00501	4-Nitrophenol	120/115	11 to 114
WF014 - Soil				
Semivolatile Organic Compounds	BKS00201	Pentachlorophenol	133/136	17 to 109
		4-Nitrophenol	--/132	11 to 114
WF017 - Soil				
Semivolatile Organic Compounds	31B00601	N-Nitroso-di-*n*-propylamine	33/--	41 to 126
		1,2,4-Trichlorobenzene	33/--	38 to 107
Inorganic Analytes[1]	31B00601	Lead	179.2/--	75 to 125
WF036 - Groundwater				
Semivolatile Organic Compounds	54G00101	4-Nitrophenol	101/81	10 to 80
WF046 - Groundwater				
Semivolatile Organic Compounds	31G00101	4-Nitrophenol	88/96	10 to 80
Pesticides and PCBs	31G00101	Endrin	127/--	56 to 121

[1] MSD analyses are generally not performed for inorganic analysis and, therefore, only the percent recovery for the MS is reported.

MS/MSD = matrix spike and matrix spike duplicate.
SDG = sample delivery group.
% = percent.
-- = not detected
PCB = polychlorinated biphenyl.

Table 4-3
Accuracy Summary for Surrogate Recoveries Outside QC Criteria

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SDG Number	Sample ID	Spiked Analyte	Surrogate Recovery (%R)[1]	QC Limits (percent)
WF010	31S00101	Tetrachloro-m-xylene	57/56	60 to 150
WF012	31R00201	Decachlorobiphenyl	54/43	60 to 150
WF012	31S00901	Decachlorobiphenyl	45/40	60 to 150
WF012	31S01201	Decachlorobiphenyl	48/50	60 to 150
WF012	31S01301	Decachlorobiphenyl	46/--	60 to 150
WF014	BKR00101	Decachlorobiphenyl	43/39	60 to 150
WF017	31R00101	Decachlorobiphenyl	27/27	60 to 150
WF017	31B00603	Tetrachloro-m-xylene	46/49	60 to 150
WF017	31B00603	Decachlorobiphenyl	54/53	60 to 150
WF017	31B00604	Tetrachloro-m-xylene	52/54	60 to 150
WF017	31B00604	Decachlorobiphenyl	58/--	60 to 150
WF036	54G00101	Tetrachloro-m-xylene	57/52	60 to 150
WF046	31G00101	Tetrachloro-m-xylene	48/55	60 to 150
WF046	31R03301	Tetrachloro-m-xylene	59/--	60 to 150

[1] Reported as value for first column/second column.

Notes: QC = quality control.
SDG = sample delivery group.
ID = identification.
%R = percent recovery.
-- = second column value not reported.

capable of acceptable performance in the beginning of the analytical run and of producing a linear calibration curve. Continuing calibrations are performed to ensure that the instrument is capable of producing acceptable qualitative and quantitative data. Continuing calibration establishes the 12-hour Relative Response Factor

(RRF) on which the quantitations are based and checks satisfactory performance of the instrument on a day-to-day basis. Initial and continuing calibrations for organic analysis are measured by the percent Relative Standard Deviation (%RSD) for initial calibrations and the percent Difference (%D) for continuing calibrations. For inorganic analysis, the Initial Calibration Verification and continuing calibration verification are measured. Table 4-4 summarizes the initial and continuing calibration details for the surface soil and groundwater samples collected at Site 31.

The evaluation of the %RSD for the initial calibrations and the %D for the continuing calibrations indicates the response factors for the system performance check compounds generally met the required criteria for VOCs, SVOCs, pesticides, and PCBs. Analytes exhibiting an RRF not meeting the minimum requirements were qualified as J/UJ.

4.2.3 Representativeness

Representativeness is the degree to which the data obtained from an environmental sample accurately reflect the presence or absence of contamination at a site. Field QC samples (including source water blanks, equipment rinse blanks, and trip blanks) and laboratory QC samples (including method [organic analysis] and preparation blanks [inorganic analysis]) were used to assess representativeness. Representativeness also is assessed by review of the adherence to extraction and analysis holding times. The evaluation of representativeness in field QC samples for the RI sampling event is presented in Table 4-5 and summarized below.

Trip Blanks. Acetone was detected in four of the eight trip blank samples at concentrations ranging from 4 to 12 micrograms per liter (µg/l). Environmental samples associated with the trip blanks with results greater than the instrument detection limit (IDL) but less than 10 times the amount detected in the trip blank were appropriately annotated with a J or UJ qualifier (LDC, 1996).

Rinsate Blanks. Acetone (17 µg/l) and 1,2-dichloropropane (1 µg/l) were each detected in one of the four rinsate blanks. Two SVOCs, bis(2-ethylhexyl)phthalate and di-*n*-butylphthalate, were detected in one or more of the rinsate blank samples. Di-*n*-butylphthalate, if present, was not detected in associated samples at concentrations exceeding the detection limits. Bis(2-ethylhexyl)phthalate was detected at similar and higher concentrations in many associated samples. Environmental samples associated with the field blank with results greater than the IDL but less than 10 times the amount detected in the field blank were appropriately annotated with a UJ qualifier.

Metals detected at concentrations exceeding the IDL and less than the contract-required detection limits are aluminum, barium, beryllium, calcium, chromium, copper, cyanide, iron, lead, magnesium, manganese, sodium, and zinc.

Laboratory Method and Preparation Blanks. Four VOCs (acetone, 2-butanone, styrene and xylenes) were detected in one or more of the laboratory method blanks associated with the SDGs for Site 31. Two SVOCs (bis(2-ethylhexyl) phthalate and di-*n*-butylphthalate) were detected one or more of the laboratory method blanks associated with SDGs for Site 31.

Environmental samples associated with method blanks containing acetone with results greater than IDL but less than 10 times the amount detected in the laboratory preparation blanks were annotated with a UJ qualifier (LDC, 1996).

Table 4-4
Summary of Initial and Continuing Calibration for Site 31 Samples

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SDG	Date	Compound	Initial Calibration	Continuing Calibration	Qualifier
WF010	12/27/95	4-Nitrophenol	--	28.1	UJ
		Benzo(b)fluoranthene	--	31.4	UJ
		Indeno(1,2,3-cd)pyrene	--	32.8	UJ
	11/30/95	alpha-BHC	21.7	--	UJ
		alpha-BHC	20.3	--	UJ
WF012	1/11/96	Trichloroethene	--	27.7	UJ
		2-Hexanone	--	50.9	UJ
		1,1,2,2-Tetrachloroethane	--	34.2	UJ
	1/12/96	2-Hexanone	--	48.4	UJ
	1/13/96	Chloromethane	--	27.2	UJ
		Vinyl chloride	--	27.2	UJ
		Acetone	--	68.1	UJ
		2-Butanone	--	69.9	UJ
		1,2-Dichloroethane	--	29.6	UJ
		4-Methyl-2-pentanone	--	31.4	UJ
	1/15/96	Chloroethane	--	26.3	UJ
		Acetone	--	51.7	UJ/J
		2-Butanone	--	40.8	UJ
		1,2-Dichloroethane	--	35.4	UJ
	1/17/96	Endosulfan sulfate	24.0	--	UJ

See notes at end of table.

Table 4-4 (Continued)
Summary of Initial and Continuing Calibration for Site 31 Samples

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Naval Air Station Whiting Field
Milton, Florida

SDG	Date	Compound	Initial Calibration	Continuing Calibration	Qualifier
WF014	1/15/96	1,1-Dichloroethene	33.9	--	UJ
		Carbon disulfide	32.8	--	UJ
	1/14/96	Acetone	31.3	--	UJ/J
	1/16/96	Acetone	--	46.7	UJ/J
		Methylene chloride	--	32.2	UJ
		2-Butanone	--	54.2	UJ
		4-Methyl-2-pentanone	--	31.9	UJ
		2-Hexanone	--	60.0	UJ
	1/12/96	Acetone	--	36.7	UJ/J
	1/20/96	Benzo(k)fluoranthene	--	30.7	UJ/J
	1/31/96	4-Nitrophenol	--	38.2	UJ
		4-Nitroaniline	--	27.9	UJ
		Pentachlorophenol	--	29.4	UJ
		Benzo(g,h,i)perylene	--	35.3	UJ/J
	1/17/96	Endosulfan sulfate	24.0	--	UJ

See notes at end of table.

Table 4-4 (Continued)
Summary of Initial and Continuing Calibration for Site 31 Samples

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SDG	Date	Compound	Initial Calibration	Continuing Calibration	Qualifier
WF017	5/31/96	Chloromethane	48.8	26.5	UJ
	6/1/96	Chloromethane	42.0	--	UJ
	6/2/96	Chloromethane	--	37.6	UJ
	6/3/96	Chloromethane	--	33.4	UJ
	6/4/96	Chloromethane	--	64.3	UJ
		Chloroethane	--	37.9	UJ
		Chloromethane	--	62.2	UJ
	6/6/96	4-Nitroaniline	--	29.2	UJ
		Di-*n*-octylphthalate	--	25.2	UJ
	6/7/96	Butylbenzylphthalate	--	26.8	UJ
		3,3'-Dichlorobenzidine	--	32.9	UJ
		bis(2-Ethylhexyl)phthalate	--	27.4	UJ
	6/12/96	Endrin aldehyde	21.4	--	J
WF036	NA	Di-*n*-octylphthalate	--	30.0	J
		Di-*n*-octylphthalate	--	25.3	J
		alpha-BHC	23.9	--	J
WF046	7/31/97	alpha-BHC	20.3	--	J
		alpha-BHC	24.2	--	J
		gamma-BHC	21.9	--	J

Notes: Calibration values expressed as percent recovery.

SDG = sample delivery group.
-- = not detected.
UJ = the analyte was not detected above the reported sample instrument detection limit (IDL); however, the reported concentration is approximate and may not reliably be presumed to be less than the IDL value.
BHC = benzene hexachloride.
J = the analyte was positively identified and is reported as an approximate concentration.
NA = not available.

Table 4-5
Representativeness Summary for Site 31 Field Quality Control Samples

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Sample Identifier:	31T00101	31T00201	31R00101	31R00201	31T00201	31R00101
Sample Type:	Trip Blank	Trip Blank	Rinsate Blank	Rinsate Blank	Trip Blank	Rinsate Blank
Collection Date:	12-DEC-95	13-DEC-95	12-DEC-95	08-JAN-96	11-JAN-96	22-MAY-96
Laboratory Sample No.:	G8924005	G8938001	G8924006	RA855021	RA870018	RB592020
Volatile Organic Compounds (µg/l)						
Acetone	10	12	--	--	--	17
Toluene	--	--	--	--	--	--
Methylene chloride	--	--	--	--	--	--
1,2-Dichloropropane	--	--	--	--	--	--
Semivolatile Organic Compounds (µg/l)						
Di-*n*-butylphthalate	NA	NA	7	--	NA	6
bis(2-Ethylhexyl)phthalate	NA	NA	--	--	NA	6
Pesticides and PCBs (µg/l)						
None detected						
Inorganic Analytes (µg/l)						
Aluminum	NA	NA	56.5	--	NA	86.5
Barium	NA	NA	0.86	--	NA	2.3
Beryllium	NA	NA	0.42	--	NA	--
Calcium	NA	NA	18.7	--	NA	503
Chromium	NA	NA	--	--	NA	11.3
Copper	NA	NA	5.2	1.3	NA	1.4
Iron	NA	NA	35.6	21.2	NA	132
Lead	NA	NA	--	--	NA	0.60
Magnesium	NA	NA	--	--	NA	66.2
Manganese	NA	NA	--	--	NA	3.8
Sodium	NA	NA	--	40.3	NA	264
Zinc	NA	NA	3.2	3.0	NA	7.8
Cyanide	NA	NA	--	--	NA	--

See notes at end of table.

Table 4-5 (Continued)
Representativeness Summary for Site 31 Field Quality Control Samples

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Sample Identifier:	31T00301	31T03801	31R03301	31T06501	31T06601	31T06701
Sample Type:	Trip Blank	Trip Blank	Rinsate Blank	Trip Blank	Trip Blank	Trip Blank
Collection Date:	22-MAY-96	31-OCT-96	15-JUL-96	15-JUL-96	16-JUL-96	21-JUL-96
Laboratory Sample No.:	RB592021	MC262007	MW241002	ME241001	ME261001	ME305001
Volatile Organic Compounds (µg/l)						
Acetone	4	--	--	4	--	--
Toluene	--	--	--	--	1	--
Methylene chloride	--	--	--	--	--	1
1,2-Dichloropropane	--	--	1	--	--	--
Semivolatile Organic Compounds (µg/l)						
Di-*n*-butylphthalate	NA	NA	--	NA	NA	NA
bis(2-Ethylhexyl)phthalate	NA	NA	--	NA	NA	NA
Pesticides and PCBs (µg/l)						
None detected						
Inorganic Analytes (µg/l)						
Aluminum	NA	NA	--	NA	NA	NA
Barium	NA	NA	1.1	NA	NA	NA
Beryllium	NA	NA	--	NA	NA	NA
Calcium	NA	NA	126	NA	NA	NA
Chromium	NA	NA	--	NA	NA	NA
Copper	NA	NA	--	NA	NA	NA
Iron	NA	NA	4.4	NA	NA	NA
Lead	NA	NA	--	NA	NA	NA
Magnesium	NA	NA	--	NA	NA	NA
Manganese	NA	NA	0.40	NA	NA	NA
Sodium	NA	NA	65.6	NA	NA	NA
Zinc	NA	NA	5.4	NA	NA	NA
Cyanide	NA	NA	--	NA	NA	NA

Notes: µg/l = micrograms per liter.
-- = analyte not detected.
NA = not analyzed.
PCB = polychlorinated biphenyl.

Aluminum, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, manganese, mercury, potassium, thallium, vanadium and cyanide were detected in one or more of the laboratory method blanks. Sample results greater than IDL but less than five times the amount detected in the laboratory preparation blanks were appropriately annotated with a J or UJ qualifier (LDC, 1996).

Sampling and analysis holding times for each analytical fraction were met in all samples.

Qualification of the environmental samples was required because of the detection of target analytes in laboratory and field blanks. Qualification of the RI data, based on blank contamination, was performed according to USEPA data validation guidelines (USEPA, 1994a and USEPA, 1994b).

4.2.4 Comparability

Comparability is the confidence with which one data set can be compared with another and the degree to which the environmental data from each sampling event are considered equivalent. Comparability of the analytical data was assured by using standard operating procedures for sample collection, by using standard chemical analytical methods, and by reporting the analytical results in standard units (SUs). The sampling, shipment, and analytical protocols were consistent with USEPA standard operating procedures and methodologies described in work plans for NAS Whiting Field throughout the period of the RI.

4.2.5 Completeness

Completeness is the percentage of useable data reported and validated compared with the total number of measurements made. Useable data are those measurements that were not rejected (qualified with an "R") during the validation process. Only one sample (31B00301) of the analytical data was rejected. The goal for analytical completeness for the RI sampling event was 85 percent useable data. The completeness goal of 85 percent was met for all matrices and all parameters.

4.3 SUMMARY.

Based on the results of the QC sample analyses, the established precision and accuracy goals of the project were achieved (Table 4-6). Some field and/or laboratory derived contamination was present in some of the QC samples; therefore, the results from some of the environmental samples were required to be amended. QC sample results and data validation criteria indicate 100 percent completeness was achieved for SDGs WF010, WF012, WF017, WF036 and WF046. SDG WF014 had a completeness of 99.7 percent for TAL metals (low percent recovery for mercury only), thus satisfying the 85 percent completeness goal. Standard methods of analysis and units of measure were used throughout the project, thus meeting the QC criteria and the DQOs presented in the work plan.

Overall, the data generated during the sampling event meet established DQOs and are acceptable for use in site characterization, risk assessment, and evaluation of corrective measures.

Table 4-6
Summary of DQO Assessment - PARCC Parameters

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	Precision[1]	Accuracy[2]	Representativeness	Completeness (%)	Comparability
Surface and Subsurface Soil Samples					
TCL VOCs	Acceptable	Acceptable	Acceptable	100	Acceptable
TCL SVOCs	Acceptable	Acceptable	Acceptable	100	Acceptable
Pesticides and PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
TAL Metals	Acceptable	Acceptable	Acceptable	[3]100	Acceptable
Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable

[1] Cumulative of sampling and analytical components.
[2] Analytical component.
[3] WF014 had a completeness of 99.7 percent for TAL metals.

Notes: Includes sample delivery groups WF010, WF012, WF014, WF017, WF036, and WF046.
All the units are expressed as the ratio of number of analytes meeting the quality control criteria to the total number of analytes.

DQO = data quality objective.
PARCC = precision, accuracy, reproducibility, completeness, and comparability.
% = percent.
TCL VOC = target compound list volatile organic compound.
TCL SVOC = target compound list semivolatile organic compound.
PCB = polychlorinated biphenyl.
TAL = target analyte list.

5.0 INVESTIGATION RESULTS

Surface soil, subsurface soil, and groundwater samples were collected for laboratory analysis during the RI, to determine the nature and extent of contaminants, if present. Observations and measurements were also used to determine geologic and hydrogeologic characteristics of Site 31.

A total of 43 surface soil samples, 20 subsurface soil samples, and 6 groundwater samples were collected. All samples were analyzed for TCL VOCs, SVOCs, pesticides, and PCBs and TAL inorganic analytes.

A general discussion of the surface and subsurface geology at NAS Whiting Field is presented in Subsection 1.4.5 of the GIR (HLA, 1998). Surface soil encountered during the RI was generally dark to light brown (fine- to very fine-grained) clayey silty loamy sand or light brown to orange (fine- to very fine-grained) silty sand (ABB-ES, 1995b).

Subsurface soil was only sampled at Sites 31A and 31C, and consists predominantly of light colored, poorly graded (fine- to medium-grained) sand to a depth of at least 144 feet bls. Layers of clay were commonly encountered in most soil borings and monitoring wells, at depths of approximately 15, 21 and 26 feet bls. Clay layers were typically 6-inches in thickness.

Groundwater elevation measurements, from shallow and deep groundwater monitoring wells and slug test data, were used to calculate horizontal and vertical hydraulic gradients, hydraulic conductivity, and seepage velocity. Data were collected from monitoring wells located at Site 31C, and other surrounding sites.

5.1 SURFACE SOIL ASSESSMENT.

Surface soil samples were collected at each Site 31 disposal area, during Phase II of the RI. Analytical results were compared to background screening values, USEPA Region III Risk-Based Concentrations (RBCs) and Florida residential and industrial Soil Cleanup Target Levels (SCTLs) to determine whether detected compounds represented a potential environmental concern. Results were also compared to Florida leachability-based SCTL, to determine whether compounds in surface soil represent a potential source of groundwater contaminants. Analytical laboratory results for each disposal area are summarized in the subsections below. Background surface soil screening values for the Troup Loamy Sand and Bonifay Sand soil types encountered in Sites 31A through 31F, are presented in Table 5-1. Background sampling locations and rational are provided in Chapter 3.0 of the GIR.

5.1.1 Site 31A

Eight surface soil samples were collected at Site 31A. Sample locations are shown on Figure 3-1. Table 5-2 summarizes the analytical results. Table 5-3 presents statistical data relevant to the analytical results, and compares concentrations of contaminants detected in Site 31A surface soil samples to Whiting Field background screening values, Florida SCTLs, and USEPA Region III Risk-based Concentrations.

TCL VOCs. Benzene, 1,1-dichloroethene, trichloroethene [TCE], toluene, chlorobenzene, and xylenes were detected in sample 31-SL-22, and xylenes were detected in five other surface soil samples. However, no VOCs were detected at concentrations in excess of Florida residential SCTLs or USEPA RBCs in the surface soil samples collected at Site 31A.

TCL SVOCs. SVOCs were not detected in any of the surface soil samples collected at Site 31A.

Pesticides and PCBs. Dieldrin, 4,4'-dichlorodiphenyl-dichloroethylene [DDE], 4,4'-dichlorodiphenyl-dichloroethane [DDD], alpha-chlordane, and gamma-chlordane were detected in surface soil sample 31-SL-23. Alpha-chlordane and gamma-chlordane were also detected in surface soil sample 31-SL-24. However, no pesticide or PCB compounds were detected at concentrations in excess of Florida residential SCTLs or USEPA RBCs in the surface soil samples collected at Site 31A.

Table 5-1
Comparison of Analytes Detected in Background Surface Soil Samples for the Troup Loamy Sand and Bonifay Sand

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Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Volatile Organic Compounds (µg/kg)							
None detected							
Semivolatile Organic Compounds (µg/kg)							
bis(2-Ethylhexyl)phthalate	3/9	360 to 400	57 to 115*	80.3	80.3	45,000/400,000	76,000/280,000/3,600,000
Pesticides and PCBs (µg/kg)							
None detected							
Inorganic Analytes (mg/kg)							
Aluminum	9/9	40	5,080 to 21,300	7,667	15,334	[8]7,800/200,000	72,000/--/--
Antimony	9/9	2.7 to 12	2.9 to 5	4	8	[8]3.1/81	26/240/5
Arsenic	9/9	2	0.91 to 3.7	1.56	3.1	[7].42/3.8	0.8/3.7/29
Barium	9/9	40	6 to 26.2	11.87	23.7	[8]550/14,000	110/87,000/1,600
Beryllium	5/9	0.08 to 1	0.05 to 0.35	0.18	0.36	[7]16/410	120/800/63
Cadmium	2/9	0.59 to 1	0.22 to 0.36*	0.29	0.58	[8]3.9/100	75/1300/8
Calcium	9/9	1,000	82 to 269	202	404	--/--	--/--
Chromium	9/9	2	2.4 to 16.3	5.34	10.7	[8,9]23/6,000	[9]210/420/38
Cobalt	8/9	10	0.78 to 3*	1.44	2.87	[8]470/12,000	4,700/110,000
Copper	6/9	5	2.6 to 8.5	4.7	9.4	[8]310/8,100	110/76,000/--
Iron	9/9	20	2,630 to 12,400	4,294	8,588	[8]2,300/60,000	23,000/480,000/--
Lead	9/9	0.6 to 1	2.7 to 9.8	5.76	11.5	--	400/920/--
Magnesium	9/9	1,000	68.8 to 316	129	258	--/--	--/--
Manganese	9/9	3	66.7 to 314	201.55	403	[8]150/4,000	1,600/22,000/--
Mercury	4/9	0.03 to 0.1	0.04 to 0.07	0.06	0.12	--/--	3.4/26/2.1
Nickel	3/9	2.3 to 8	1.7 to 5.9	3.6	7.2	[8]160/4,100	110/28,000/130
Potassium	3/9	128 to 1,000	81.3* to 96.8	88.5	177	--/--	--/--

See notes at end of table.

Table 5-1 (Continued)
Comparison of Analytes Detected in Background Surface Soil Samples for the Troup Loamy Sand and Bonifay Sand

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Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Inorganic Analytes (mg/kg) (Continued)							
Selenium	6/9	0.41 to 1	0.15* to 0.4	0.22	0.44	[8]39/1,000	390/10,000
Silver	1/9	0.32 to 2	0.35	0.35	0.70	[8]39/1,000	390/9,100/17
Sodium	9/9	1,000	125 to 265	194	388	--/--	--/--
Thallium	1/9	0.44 to 2	0.58*	0.58	1.16	--/--	--/--
Vanadium	9/9	10	6 to 31.1	10.6	21.2	[8]55/1,400	15/7,400/980
Zinc	7/9	4	4.3 to 16.3	7.7	15.4	[8]2,300/61,000	23,000/560,000/6000
Cyanide	2/9	0.23 to 0.5	0.11 to 0.14	0.125	0.25	[8]1,500/40,000	30/39,000/40

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] Value indicated by an asterisk is the average of a sample and its duplicate. If the target analyte is not detected in either the environmental sample or associated duplicate, the value used for the nondetection is one-half the reporting limit.
[3] The mean of detected concentrations is the arithmetic mean of all environmental samples in which the analyte was detected; it includes a single value for an environmental sample and associated duplicate. The arithmetic mean does not include those environmental samples in which the analyte was not detected.
[4] The background screening value for organics is the mean detected concentration and will not be used for screening purposes in the risk assessment. The background screening value for inorganics is two times the mean detected background concentration and will be used for screening purposes in the risk assessment.
[5] Source: USEPA Region III, Risk-Based Concentrations Table, October, 1999.
[6] Source: 62-777 Florida Administrative Code, Table 2, Soil Cleanup Target Levels, August 1999.
[7] The values correspond to a human cancer risk level of 1 in 1,000,000.
[8] The calculated values correspond to a noncancer hazard quotient of 0.1.
[9] Reported values are for hexavalent chromium.

Notes: USEPA = U.S. Environmental Protection Agency.
RBC = risk-based concentration.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
-- = criteria not available.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
DDD = dichlorodiphenyldichloroethane.
mg/kg = milligrams per kilogram.

Table 5-2
Organic and Inorganic Analytes Detected in Site 31A Surface Soil Samples

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Location Identifier:	31-SL-17	31-SL-18	31-SL-19	31-SL-20	31-SL-21	31-SL-22 Duplicate Sample	31-SL-23	31-SL-24
Sample Identifier:	31-SL-17	31-SL-18	31-SL-19	31-SL-20	31-SL-21	31-SL-22A	31-SL-23	31-SL-24
Collection Date:	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92
Laboratory Sample No.:	22527005	22527006	22527007	22527008	22527009	2258002	22527010	22527011
Volatile Organic Compounds (µg/kg)								
1,1-Dichloroethene	--	--	--	--	--	--	--	--
Trichloroethene	--	--	--	--	--	--	--	--
Benzene	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--
Chlorobenzene	--	--	--	--	--	--	--	--
Xylenes (total)	6	--	--	3 J	3 J	3 J	2 J	1 J
Semivolatile Organic Compounds (µg/kg)								
None detected								
Pesticides and PCBs (µg/kg)								
Dieldrin	--	--	--	--	--	--	1.3 J	--
4,4'-DDE	--	--	--	--	--	--	3.2 J	--
4,4'-DDD	--	--	--	--	--	--	1.6 J	--
alpha-Chlordane	--	--	--	--	--	--	1.7 J	1.9 J
gamma-Chlordane	--	--	--	--	--	--	2.3 J	4
Inorganic Analytes (mg/kg)								
Aluminum	154	240	167	293	307	185	298	296
Barium	1.2 J	2.9 J	2.6 J	2.1 J	2.5 J	6.9	2.9 J	2.9 J
Calcium	73.8 J	77.3 J	90.5 J	68 J	135	--	76.7 J	72.3 J

See notes at end of table.

Table 5-2 (Continued)
Organic and Inorganic Analytes Detected in Site 31A Surface Soil Samples

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Location Identifier:	31-SL-17	31-SL-18	31-SL-19	31-SL-20	31-SL-21	31-SL-22 Dup	31-SL-23	31-SL-24
Sample Identifier:	31-SL-17	31-SL-18	31-SL-19	31-SL-20	31-SL-21	31-SL-22A	31-SL-23	31-SL-24
Collection Date:	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92
Laboratory Sample No.:	22527005	22527006	22527007	22527008	22527009	22528002	22527010	22527011
Inorganic Analytes (mg/kg) (Continued)								
Chromium	0.75 J	2.2	1.6	1.5 J	0.98 J	--	1.5 J	1.5 J
Copper	3.1 J	6.1	7 J	4.1 J	4.5 J	--	5.9	5.1 J
Iron	576	541	284	522	528	479	536	431
Lead	3.4	7	4	2.7	7.2	--	10.8	4.7
Magnesium	--	14.7 J	13.2 J	17 J	13.7 J	26.3 J	13.2 J	14 J
Manganese	1.6 J	1.8 J	2.6 J	1.5 J	1.4 J	0.84 J	1.7 J	1.2 J
Mercury	--	--	--	--	--	--	--	0.14
Nickel	--	--	--	--	--	--	--	6 J
Silver	0.62 J	1.1 J	0.39 J	0.82 J	0.39 J	--	1.3 J	1.3 J
Sodium	134 J	123 J	164 J	180 J	127 J	--	189 J	124 J
Thallium	--	--	0.36 J	--	--	--	--	--
Vanadium	0.64 J	0.42 J	0.38 J	1 J	0.33 J	--	0.38	--
Zinc	4.3	5.8	8.1	4.4	5.3	--	7.4	27.1

Notes: µg/kg = micrograms per kilogram.
-- = analyte, if present, was less than the detection limit.
J = estimated value.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
DDD = dichlorodiphenyldichloroethane.
mg/kg = milligrams per kilogram.

Table 5-3
Comparison of Analytes Detected in Site 31A Surface Soil Samples to Background Screening and Benchmark Concentrations

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Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Volatile Organic Compounds (µg/kg)							
1,1-Dichloroethene	1/8	5	2.25*	2.3	--	1,000/9,500	90/100/60
Trichloroethene	1/8	5	1.75*	1.8	--	58,000/520,000	6,000/8,500/30
Benzene	1/8	5	1.75*	1.8	--	22,000/190,000	1,100/1,600/7
Toluene	1/8	5	2.25*	2.3	--	[8]1,500,000/40,000,000	380,000/2,600,000/500
Chlorobenzene	1/8	5	2.25*	2.3	--	[8]150,000/4,000,000	30,000/200,000/1300
Xylenes (total)	6/8	5	1 to 6	3	--	[8]15,000/4,000,000	5,900,000/40,000,000/200
Semivolatile Organic Compounds (µg/kg)							
None detected							
Pesticides and PCBs (µg/kg)							
Dieldrin	1/8	16 to 17	1.3	1.3	--	[7]39/360	70/300/4
4,4'-DDE	1/8	16 to 17	3.2	3.2	--	[7]1000/16,000	3,300/13,000/18,000
4,4'-DDD	1/8	16 to 17	1.6	1.6	--	[8]2,600/23,000	4,600/18,000/4,000
Alpha-Chlordane	2/8	82 to 84	1.7 to 1.9	1.8	--	[8]1,800/16,000	3,100/12,000/9,600
Gamma-Chlordane	2/8	82 to 84	2.3 to 4	3.2	--	[7]1,800/16,000	3,100/12,000/9,600
Inorganic Analytes (mg/kg)							
Aluminum	8/8	40	154 to 307	242	15,848	[8]7,800/200,000	72,000/--/--
Barium	8/8	40	1.2 to 4.95*	2.8	23.2	[8]540/14,000	110/87,000/1,600
Calcium	7/8	109.15 to 1,000	68 to 135	84.8	396	--/--	--/--

See notes at end of table.

Table 5-3 (Continued)
Comparison of Analytes Detected in Site 31A Surface Soil Samples to Background Screening and Benchmark Concentrations

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Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Inorganic Analytes (mg/kg) (Continued)							
Chromium	7/8	1.95 to 2	0.75 to 2.2	1.4	11	[8,9]23/600	[9]210/420/38
Copper	8/8	4.7 to 5	3.1 to 7	4.9	9.4	[8]310/8,100	110/76,000/--
Iron	8/8	20	284 to 576	495	8,832	[8]2,300/61,000	23,000/480,000/--
Lead	7/8	1 to 5.8	2.7 to 10.8	5.7	11.4	--	400/920/--
Magnesium	7/8	10 to 1,000	13.2 to 17	14.5	268	--/--	--/–
Manganese	8/8	3	0.92* to 2.6	1.6	392	[8]150/4,000	1,600/22,000/--
Mercury	1/8	0.04 to 0.1	0.14	0.14	0.12	--/--	3.4/26/2.1
Nickel	1/8	2.2 to 8	6	6	7.2	[8]150/4,000	110/28,000/130
Silver	7/8	0.74 to 2	0.39 to 1.3	0.85	0.70	[8]39/1,000	390/9,100/17
Sodium	7/8	149 to 1,000	123 to 189	149	406	--/--	--/--
Thallium	1/8	0.33 to 2	0.36	0.36	1.16	5/140	--/--
Vanadium	6/8	0.27 to 10	0.33 to 1	0.53	21.8	[8]54/1,400	15/7,400/980
Zinc	7/8	4 to 6.15	4.3 to 27.1	8.9	15.4	[8]2,300/61,000	23,000/560,000/6,000

See notes at end of table.

Table 5-3 (Continued)
Comparison of Analytes Detected in Site 31A Surface Soil Samples to Background Screening and Benchmark Concentrations

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[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] Value indicated by an asterisk is the average of a sample and its duplicate. If the target analyte is not detected in either the environmental sample or associated duplicate, the value used for the nondetection is one-half the reporting limit.
[3] The mean of detected concentrations is the arithmetic mean of all environmental samples in which the analyte was detected; it includes a single value for an environmental sample and associated duplicate. The arithmetic mean does not include those environmental samples in which the analyte was not detected.
[4] The background screening value for organics is the mean detected concentration and will not be used for screening purposes in the risk assessment. The background screening value for inorganics is two times the mean detected background concentration and will be used for screening purposes in the risk assessment.
[5] Source: USEPA Region III, Risk-Based Concentrations Table, October, 1999.
[6] Source: 62-777 Florida Administrative Code, Table 2, Soil Cleanup Target Levels, August 1999.
[7] The values correspond to a human cancer risk level of 1 in 1,000,000.
[8] The calculated values correspond to a noncancer hazard quotient of 0.1.
[9] Reported values are for hexavalent chromium.

Notes: USEPA = U.S. Environmental Protection Agency.
RBC = risk-based concentration.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
-- = criteria not available.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
DDD = dichlorodiphenyldichloroethane.
mg/kg = milligrams per kilogram.

TAL Metals and (Total) Cyanide. Sixteen TAL metals were detected in the surface soil samples, however, no analytes were detected at concentrations in excess of residential Florida SCTLs or USEPA RBCs.

5.1.2 Site 31B

Six surface soil samples were collected at Site 31B. Sample locations are shown on Figure 3-1. Table 5-4 summarizes the analytical results. Table 5-5 presents statistical data relevant to the analytical results, and compares concentrations of contaminants detected in Site 31B surface soil samples to Whiting Field background screening values, Florida SCTLs, and USEPA Region III Risk-based Concentrations.

TCL VOCs. Xylenes were detected in two surface soil samples, and were the only VOCs detected. No VOCs were detected at concentrations in excess of Florida SCTLs or USEPA RBCs in the surface soil samples collected at Site 31B.

TCL SVOCs. SVOCs were not detected in any surface soil sample collected at Site 31B.

Pesticides and PCBs. 4,4'-DDD and 4,4'-dichlorodiphenyltrichloroethane (DDT) were detected in sample 31S00101. No pesticide or PCB compounds were detected at concentrations in excess of Florida SCTLs or USEPA RBCs in the surface soil samples collected at Site 31B.

TAL Metals and (Total) Cyanide. Twenty inorganic analytes were detected in the surface soil samples collected at Site 31B. Arsenic, iron, and manganese were detected at concentrations in excess of residential USEPA RBCs, however, no analytes were detected at concentrations in excess of Background Screening Values and Florida SCTLs.

5.1.3 Site 31C

Fourteen surface soil samples were collected at Site 31C. Sample locations are shown on Figure 3-1. Table 5-6 summarizes the analytical results. Table 5-7 presents statistical data relevant to the analytical results, and compares concentrations of contaminants detected in Site 31C surface soil samples to Whiting Field background screening values, Florida SCTLs, and USEPA Region III Risk-based Concentrations.

TCL VOCs. Methylene chloride, carbon disulfide, toluene, and xylenes were detected in the surface soil samples, and were the only VOCs detected. No VOCs were detected at concentrations in excess of Florida residential SCTLs in surface soil samples collected at Site 31C.

TCL SVOCs. Butylbenzylphthalate, bis(2-ethylhexyl)phthalate, benzo(b)fluoranthene, and benzo(k)-fluoranthene were detected in surface soil samples collected at Site 31C. No other SVOCs were detected, and no SVOCs were detected at concentrations in excess of Florida SCTLs or USEPA RBCs in the surface soil samples collected at Site 31C.

Pesticides and PCBs. Dieldrin, 4,4'-DDE, alpha-chlordane, gamma-chlordane and Aroclor-1260 were detected in surface soil samples collected at Site 31C. No other pesticide or PCB compounds were detected. Aroclor-1260 and Dieldrin were detected at concentrations exceeding the Florida residential SCTLs and USEPA residential RBCs, in two samples. No other pesticide or PCB compounds were detected at concentrations in excess of Florida SCTLs.

TAL Metals and (Total) Cyanide. Twenty-three inorganic analytes (including cyanide) were detected in the surface soil samples collected at Site 31C. Barium, chromium, copper, lead, mercury, and silver were detected in one or more samples at concentrations exceeding their respective background screening values and Florida residential and SCTLs. Chromium and silver also exceeded leachability criteria. Lead was detected at concentrations exceeding the Florida industrial SCTLs. Arsenic was detected at concentrations in excess of the residential SCTL and RBC, but did not exceed the background screening value.

Table 5-4
Organic and Inorganic Analytes Detected in Site 31B Surface Soil Samples

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Location Identifier:	31-SL-09	31-SL-10	31-SL-11	31S001	31S002	31S003
Sample Identifier:	31-SL-09	31-SL-10	31-SL-11	31S00101	31S00201	31S00301
Collection Date:	17-AUG-92	17-AUG-92	17-AUG-92	12-DEC-95	12-DEC-95	12-DEC-95
Laboratory Sample No.:	22515011	22515012	22515013	G8924001	G8924002	G8924003
Volatile Organic Compounds (µg/kg)						
Xylenes (total)	4 J	--	2 J	--	--	--
Semivolatile Organic Compounds (µg/kg)						
None detected						
Pesticides and PCBs (µg/kg)						
4,4'-DDD	--	--	--	4.9 J	--	--
4,4'-DDT	--	--	--	10 J	--	--
Inorganic Analytes (mg/kg)						
Aluminum	10,900	8,700	6,700	5,710	10,400	7,430
Arsenic	1.9 J	1.6 J	1.2 J	1.1 J	2.3	0.97 J
Barium	12.5 J	7.1 J	7 J	5.3 J	16.8 J	13.4 J
Beryllium	0.15 J	0.08 J	0.09 J	--	--	--
Calcium	229 J	237 J	354 J	43.2	279	227
Chromium	7.8	5.9	4.5	3.9	8.9	7
Cobalt	0.81 J	0.67 J	1.2 J	--	--	0.95 J
Copper	5.3 J	4.5 J	13.1	--	--	--
Iron	5,980	4,520	3,440	3,000	6,290	3,670
Lead	4.8	3.7	3.4	2.9	7.1	3.6
Magnesium	117 J	97.1 J	250	100 J	217 J	163 J
Manganese	154	117	143	86.2	206	250
Mercury	--	0.37	0.08 J	0.02 J	0.02 J	0.02 J
Nickel	--	--	--	--	4.5 J	5.1 J
Potassium	--	--	--	--	--	168 J
Selenium	--	--	--	--	0.37 J	--
Silver	5.9	4.2	3.6	--	--	--
Sodium	202 J	161 J	176 J	--	--	--
Vanadium	15.8	11.6	8.4 J	7.1 J	18.7	9.1 J
Zinc	12	11.3	9.6	3.8 J	4.2 J	6.1

Notes: µg/kg = micrograms per kilogram.
J = estimated value.
-- = analyte, if present, was less than the detection limit.
PCB = polychlorinated biphenyl.
DDD = dichlorodiphenyldichloroethane.
DDT = dichlorodiphenyltrichloroethane.
mg/kg = milligrams per kilogram.

Table 5-5
Comparison of Analytes Detected in Site 31B Surface Soil Samples

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Milton, Florida

Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Volatile Organic Compounds (µg/kg)							
Xylenes (total)	2/6	5 to 11	2 to 4	3	--	[8]15,000,000/400,000,000	5,900,000/40,000,000/200
Semivolatile Organic Compounds (µg/kg)							
None detected							
Pesticides and PCBs (µg/kg)							
4,4'-DDD	1/6	3.6 to 35	4.9	4.9	--	[8]2,600/23,000	4,600/18,000/4,000
4,4'-DDT	1/6	3.6 to 35	10	10	--	[7]1,000/16,000	3,300/13,000/18,000
Inorganic Analytes (mg/kg)							
Aluminum	6/6	40	5,710 to 10,900	8,307	15,334	[8]7,800/200,000	72,000/--/--
Arsenic	6/6	2	0.97 to 2.3	1.5	3.1	[7]0.42/3.8	0.8/3.7/29
Barium	6/6	40	5.3 to 16.8	10.4	23.7	[8]540/14,000	110/87,000/1,600
Beryllium	3/6	1	0.08 to 0.15	0.11	0.36	[7]16/410	120/800
Calcium	6/6	1,000	43.2 to 334	228	404	--/--	--/--
Chromium	6/6	2	3.9 to 8.9	6.3	10.7	[8,9]23/6,000	[9]210/420/38
Cobalt	4/6	10	0.67 to 1.2	0.91	2.87	[8]470/12,000	4,700/110,000/--
Copper	3/6	5	4.5 to 13.1	7.6	9.4	[8]310/8,200	110/76,000/--
Iron	6/6	20	3,000 to 6,290	4,483	8,588	[8]2,300/61,000	23,000/480,000/--
Lead	6/6	0.6	2.9 to 7.1	4.3	11.5	--	400/920/--
Magnesium	6/6	1,000	97.1 to 250	157	258	--/--	--/--
Manganese	6/6	3	86.2 to 250	159	403	[8]150/4,000	1,600/22,000/--
Mercury	5/6	0.06 to 0.1	0.02 to 0.37	0.1	0.12	--/--	3.4/26/130
Nickel	2/6	2.3 to 8	4.5 to 5.1	4.8	7.2	[8]150/4,000	110/28,000/--
Potassium	1/6	129 to 1,000	168	168	177	--/--	--/--
Selenium	1/6	0.45 to 1	0.37	0.37	382	[8]39/1,000	390/10,000/5

See notes at end of table.

Table 5-5 (Continued)
Comparison of Analytes Detected in Site 31B Surface Soil Samples to Background Screening and Benchmark Concentrations

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Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Inorganic Analytes (mg/kg) (Continued)							
Silver	3/6	2	3.6 to 5.9	4.6	0.70	[8]39/1,000	390/9,100/17
Sodium	3/6	1,000	161 to 202	180	382	--/--	--/--
Vanadium	6/6	10	7.1 to 18.7	11.8	21.2	[8]54/1,400	15/7,400/980
Zinc	6/6	4	3.8 to 12	7.8	15.4	[8]2,300/61,000	23,000/560,000/6000

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] Value indicated by an asterisk is the average of a sample and its duplicate. If the target analyte is not detected in either the environmental sample or associated duplicate, the value used for the nondetection is one-half the reporting limit.
[3] The mean of detected concentrations is the arithmetic mean of all environmental samples in which the analyte was detected; it includes a single value for an environmental sample and associated duplicate. The arithmetic mean does not include those environmental samples in which the analyte was not detected.
[4] The background screening value for organics is the mean detected concentration and will not be used for screening purposes in the risk assessment. The background screening value for inorganics is two times the mean detected background concentration and will be used for screening purposes in the risk assessment.
[5] Source: USEPA Region III, Risk-Based Concentrations Table, October, 1999.
[6] Source: 62-777 Florida Administrative Code, Table 2, Soil Cleanup Target Levels, August 1999.
[7] The values correspond to a human cancer risk level of 1 in 1,000,000.
[8] The calculated values correspond to a noncancer hazard quotient of 0.1.
[9] Reported values are for hexavalent chromium.

Notes: USEPA = U.S. Environmental Protection Agency.
RBC = risk-based concentration.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
-- = criteria not available.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
DDD = dichlorodiphenyldichloroethane.
mg/kg = milligrams per kilogram.

Table 5-6
Organic and Inorganic Analytes Detected in Site 31C Surface Soil Samples

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Milton, Florida

Location Identifier:	31-SL-12	31-SL-13	31-SL-14	31-SL-15	31S004	31S005	31S005 Duplicate Sample	31S006
Sample Identifier:	31-SL-12	31-SL-13	31-SL-14	31-SL-15	31S00401	31S00501	31S00501D	31S00601
Collection Date:	17-AUG-92	17-AUG-92	17-AUG-92	17-AUG-92	07-JAN-96	07-JAN-96	07-JAN-96	07-JAN-97
Laboratory Sample No.:	22515014	22515015	22515016	22515017	RA855010	RA855011	RA855012	RA855013
Volatile Organic Compounds (µg/kg)								
Methylene chloride	160 J	120 J	240 J	160 J	--	--	--	--
Carbon disulfide	6 J	3 J	8	39 J	--	--	--	--
Toluene	--	--	--	--	--	--	--	--
Xylenes (total)	4 J	4 J	5 J	11 J	--	--	--	--
Semivolatile Organic Compounds (µg/kg)								
Butylbenzylphthalate	--	--	--	--	--	--	--	--
bis(2-Ethylhexyl)phthalate	1,300	1,300	2,600	720 J	--	--	--	--
Benzo(b)fluoranthene	100 J	--	--	--	--	--	--	--
Benzo(k)fluoranthene	110 J	--	--	--	--	--	--	--
Pesticides and PCBs (µg/kg)								
Dieldrin	27 J	33 J	99 J	120 J	--	--	--	--
4,4'-DDE	28 J	28 J	99 J	100 J	--	--	--	--
alpha-Chlordane	25 J	14 J	68 J	65 J	--	--	--	--
gamma-Chlordane	27 J	17 J	76 J	49 J	--	--	--	--
Aroclor-1260	350 J	340 J	1,400 J	860 J	--	--	--	--
Inorganic Analytes (mg/kg)								
Aluminum	6,520	5,030	16,800	9,260	4,840	4,500	6,050	4,870
Antimony	3.1 J	3.7 J	7.1 J	6.5 J	--	--	--	--
Arsenic	0.96 J	0.67 J	1.7 J	1.3 J	1.4 J	1.3 J	1.2 J	1.3 J
Barium	147	155	534	232	6.1 J	6.6 J	8.6 J	7.2 J

See notes at end of table.

Table 5-6 (Continued)
Organic and Inorganic Analytes Detected in Site 31C Surface Soil Samples

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Location Identifier:	31-SL-12	31-SL-13	31-SL-14	31-SL-15	31S004	31S005	31S005 Duplicate Sample	31S006
Sample Identifier:	31-SL-12	31-SL-13	31-SL-14	31-SL-15	31S00401	31S00501	31S00501D	31S00601
Collection Date:	17-AUG-92	17-AUG-92	17-AUG-92	17-AUG-92	07-JAN-96	07-JAN-96	07-JAN-96	07-JAN-97
Laboratory Sample No.:	22515014	22515015	22515016	22515017	RA855010	RA855011	RA855012	RA855013
Inorganic Analytes (mg/kg) (Continued)								
Beryllium	0.42 J	0.3 J	1.3 J	0.56 J	--	--	--	--
Cadmium	11.6	12	26.8	13.6	--	--	--	--
Calcium	2,000	1,520	4,160	2,320	154 J	143 J	146 J	160 J
Chromium	84.9	86.3	295	130	3.6	2.8	3.8	4.4
Cobalt	0.91 J	0.83 J	2.2 J	1.1 J	--	--	1.2 J	0.84 J
Copper	248	279	948	468	--	--	--	--
Iron	7,080	6,220	22,500	11,200	2,640	2,470	2,840	2,520
Lead	635	344	1,890	912	2.9	3.2	2.9	2.9
Magnesium	493	438 J	1,120	695	104 J	80.1 J	138 J	93.2 J
Manganese	170	64	76.7	46	61.4 J	87	95.3	139
Mercury	2.6	2.4	8.8	6.7	--	--	--	--
Nickel	4.9 J	7.8 J	8.6 J	3.9 J	1.9 J	1.9 J	2.2 J	--
Potassium	--	--	--	--	74.5 J	81.9 J	115 J	122 J
Selenium	1.5 J	1.4 J	4.9	2.6	0.29 J	0.18 J	--	0.15 J
Silver	73.7	48.1	154	128	--	--	--	--
Sodium	193 J	232 J	294 J	205 J	179 J	192 J	175 J	187 J
Vanadium	6.1 J	4.1 J	12.1 J	9.6 J	6.8 J	5.9 J	7.2 J	6 J
Zinc	276	287	346	186	6.9	3.9 J	5.2	4.8
Cyanide	0.57 J	0.5 J	1.1 J	0.52 J	0.12 J	0.09 J	--	0.09 J

See notes at end of table.

Table 5-6 (Continued)
Organic and Inorganic Analytes Detected in Site 31C Surface Soil Samples

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Location Identifier:	31S007	31S008	31S009	31S010	31S011	31S012	31S013
Sample Identifier:	31S00701	31S00801	31S00901	31S01001	31S001101	31S01201	31S01301
Collection Date:	07-JAN-96	07-JAN-96	07-JAN-96	07-JAN-96	07-JAN-96	08-JAN-96	08-JAN-96
Laboratory Sample No.:	RA855014	RA855018	RA855017	RA855015	RA855016	RA855019	RA855020
Volatile Organic Compounds (µg/kg)							
Methylene chloride	--	--	--	--	--	--	--
Carbon disulfide	--	--	--	--	--	--	--
Toluene	--	--	--	1 J	--	--	--
Xylenes (total)	--	--	--	--	--	--	--
Semivolatile Organic Compounds (µg/kg)							
Butylbenzylphthalate	--	--	--	--	--	39 J	--
bis(2-Ethylhexyl)phthalate	42 J	60 J	570	--	--	540	210 J
Benzo(b)fluoranthene	--	--	--	--	--	--	--
Benzo(k)fluoranthene	--	--	--	--	--	--	--
Pesticides and PCBs (µg/kg)							
Dieldrin	--	--	2.1 J	--	--	3.5 J	--
4,4'-DDE	--	--	2.3 J	--	--	4.1 J	--
alpha-Chlordane	--	--	1.3 J	--	--	2 J	--
gamma-Chlordane	--	--	1.4 J	--	--	--	--
Aroclor-1260	--	--	--	--	--	--	--
Inorganic Analytes (mg/kg)							
Aluminum	1,670	2,460	2,010	1,970	2,260	1,960	2,520
Antimony	--	--	--	--	--	--	--
Arsenic	0.59 J	1.2 J	0.77 J	0.74 J	1.1 J	0.89 J	0.91 J
Barium	5.4 J	5.1 J	19.3 J	2.7 J	2.7 J	31.1 J	9 J

See notes at end of table.

Table 5-6 (Continued)
Organic and Inorganic Analytes Detected in Site 31C Surface Soil Samples

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Location Identifier:	31S007	31S008	31S009	31S010	31S011	31S012	31S013
Sample Identifier:	31S00701	31S00801	31S00901	31S01001	31S001101	31S01201	31S01301
Collection Date:	07-JAN-96	07-JAN-96	07-JAN-96	07-JAN-96	07-JAN-96	08-JAN-96	08-JAN-96
Laboratory Sample No.:	RA855014	RA855018	RA855017	RA855015	RA855016	RA855019	RA855020
Inorganic Analytes (mg/kg) (Continued)							
Beryllium	--	--	--	--	--	--	--
Cadmium	--	--	1.6	--	--	1.4	0.22 J
Calcium	152 J	188 J	277 J	93.3 J	116 J	145 J	115 J
Chromium	2.4	3.6	9.4	1.4 J	1.7 J	12.9	4.9
Cobalt	--	--	--	0.94 J	--	0.83 J	--
Copper	--	--	57.4	--	--	118	29.8
Iron	645	2,200	1,920	1,080	1,310	2,090	1,790
Lead	11.6	11.1	19.5	1.8	2.5	28.5	6.7
Magnesium	40.3 J	53.4 J	76.1 J	52.7 J	45.7 J	56.7 J	78.9 J
Manganese	1.9 J	34.2	8.9	5.2	8.2	7.4	10.2
Mercury	--	0.13	0.64	--	--	0.24	0.15
Nickel	--	--	--	--	1.5 J	1.6 J	--
Potassium	73.5 J	73.8 J	101 J	--	94.4 J	134 J	82 J
Selenium	--	--	0.28 J	--	--	0.41 J	0.29 J
Silver	--	0.97 J	3.3	--	--	5.1	1.1 J
Sodium	201 J	192 J	189 J	197 J	182 J	201 J	196 J
Vanadium	3.5 J	5.9 J	3 J	2.3 J	2.9 J	3.1 J	3.8 J
Zinc	--	12.4	50	--	3.6	11.3	6.4
Cyanide	0.09 J	0.09 J	0.22 J	0.09 J	0.09 J	0.27 J	0.23 J

Notes: µg/kg = micrograms per kilogram.
J = estimated value.
-- = analyte, if present, was less than the detection limit.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
mg/kg = milligrams per kilogram.

Table 5-7
Comparison of Analytes Detected in Site 31C Surface Soil Samples to Background Screening and Benchmark Concentrations

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Site 31, Sludge Drying Beds And Disposal Areas
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Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Volatile Organic Compounds (µg/kg)							
Methylene chloride	4/14	6 to 68.5	120 to 240	170	--	[7]8,500/76,000	16,000/23,000/20
Carbon disulfide	4/14	6 to 12	3 to 39	14	--	[8]780,000/20,000,000	200,000/1,400,000/5,600
Toluene	1/14	6 to 12	1	1	--	[8]1,00,000/40,000,000	380,000/2,600,000/500
Xylenes (total)	4/14	6 to 12	4 to 11	6	--	[8]15,000/400,000	5,900/40,000/200
Semivolatile Organic Compounds (µg/kg)							
Butylbenzylphthalate	1/14	360 to 11,000	39	39	--	[8]1,500,000/40,000,000	15,000,000/320,000,000/310,000
bis(2-Ethylhexyl)phthalate	9/14	360 to 11,000	42 to 2,600	816	80.3	[7]45,000/400,000	76,000/280,000/3,600,000
Benzo(b)fluoranthene	1/14	360 to 11,000	100	100	--	870/7,800	1,400/4,800
Benzo(k)fluoranthene	1/14	360 to 11,000	110	110	--	8,700/78,000	14,000/48,000
Pesticides and PCBs (µg/kg)							
Dieldrin	6/14	3.6 to 270	2.1 to 120	47.4	--	[7]39/360	70/300/4
4,4'-DDE	6/14	3.6 to 270	2.3 to 100	43.6	--	[7]1,000/16,000	3,300/13,000/18,000
alpha-Chlordane	6/14	1.8 to 1,300	1.3 to 68	29.2	--	[7]1,800/16,000	3,100/12,000/9,600
gamma-Chlordane	5/14	1.8 to 1,300	1.4 to 76	34.1	--	[7]1,800/16,000	3,100/12,000/9,600
Aroclor-1260	4/14	36 to 2,700	340 to 1,400	738	--	[7]320/2,800	500/2,100/17,000

See notes at end of table.

Table 5-7 (Continued)
Comparison of Analytes Detected in Site 31C Surface Soil Samples to Background Screening and Benchmark Concentrations

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Inorganic Analytes (mg/kg)							
Aluminum	14/14	40	1,670 to 16,800	4,818	15,848	[8]7,800/200,000	72,000/--/--
Antimony	4/14	12	3.1 to 7.1	5.1	8	3.1/81	26/240/5
Arsenic	14/14	2	0.59 to 1.7	1.1	3.2	[7]0.42/3.8	0.8/[12]3.7/29
Barium	14/14	40	2.7 to 534	83.2	23.2	[8]540/14,000	110/87,000/1,600
Beryllium	4/14	1	0.3 to 1.3	0.65	0.36	[7]15/400	120/800/63
Cadmium	7/14	1	0.22 to 26.8	9.6	0.58	[8]3.9/100	75/1,300/8
Calcium	14/14	1,000	93.3 to 4,160	825	396	--/--	--/--
Chromium	14/14	2	1.4 to 295	46	11	[8]23/6,000	[12]210/420/38
Cobalt	8/14	10	0.83 to 3.1*	1.3	3	[8]470/12,000	4,700/110,000/--
Copper	7/14	5	29.8 to 948	307	9.4	[8]310/8,100	110/76,000/--
Iron	14/14	20	645 to 22,500	4,704	8,832	[8]2,300/61,000	--/--
Lead	14/14	0.6 to 1	1.8 to 1,890	277	11.4	[11]400/--	400/920/--
Magnesium	14/14	1,000	40.3 to 1,120	247	268	--/--	--/--
Manganese	14/14	3	1.9 to 170	51.7	392	[8]150/4,000	1,600/22,000/--
Mercury	8/14	0.1	0.13 to 8.8	2.7	0.12	[8]2.3/61	3.4/26/130
Nickel	8/14	8	1.5 to 8.6	4	7.2	[8]150/4,000	110/28,000/--
Potassium	9/14	134 to 1,000	73.5 to 134	94.9	177	--/--	--/--
Selenium	10/14	1	0.15 to 4.9	1.2	0.46	[8]39/1,000	390/9,900
Silver	8/14	2	0.97 to 154	51.8	0.70	[8]39/1,000	390/9,100/17
Sodium	14/14	1,000	179 to 294	202	406	--/--	--/--
Vanadium	14/14	10	2.3 to 12.1	5.4	21.8	[8]54/1,400	15/7,400/980
Zinc	12/14	4	3.6 to 346	99.6	15.4	[8]2,300/61,000	23,000/560,000/6000
Cyanide	14/14	0.05 to 1	0.09 to 1.1	0.3	0.28	150/4,000	30/39,000/40

See notes at end of table.

Table 5-7 (Continued)
Comparison of Analytes Detected in Site 31C Surface Soil Samples to Background Screening and Benchmark Concentrations

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Naval Air Station Whiting Field
Milton, Florida

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] Value indicated by an asterisk is the average of a sample and its duplicate. If the target analyte is not detected in either the environmental sample or associated duplicate, the value used for the nondetection is one-half the reporting limit.
[3] The mean of detected concentrations is the arithmetic mean of all environmental samples in which the analyte was detected; it includes a single value for an environmental sample and associated duplicate. The arithmetic mean does not include those environmental samples in which the analyte was not detected.
[4] The background screening value for organics is the mean detected concentration and will not be used for screening purposes in the risk assessment. The background screening value for inorganics is two times the mean detected background concentration and will be used for screening purposes in the risk assessment.
[5] Source: USEPA Region III, Risk-Based Concentrations Table, October, 1999.
[6] Source: 62-777 Florida Administrative Code, Table 2, Soil Cleanup Target Levels, August 1999.
[7] The values correspond to a human cancer risk level of 1 in 1,000,000.
[8] The calculated values correspond to a noncancer hazard quotient of 0.1.
[9] Reported values are for hexavalent chromium.

Notes: USEPA = U.S. Environmental Protection Agency.
RBC = risk-based concentration.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
-- = criteria not available.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
DDD = dichlorodiphenyldichloroethane.
mg/kg = milligrams per kilogram.

5.1.4 Site 31D

Two surface soil samples were collected at Site 31D. Sample locations are shown on Figure 3-2. Table 5-8 summarizes the analytical results. Table 5-9 presents statistical data relevant to the analytical results, and compares concentrations of contaminants detected in Site 31D surface soil samples to Whiting Field background screening values, Florida SCTLs, and USEPA Region III Risk-based Concentrations.

TCL VOCs. Xylene was the detected in one surface soil sample, 31-SL-16. The detected concentration was below Florida SCTLs and USEPA RBCs. No other VOCs were detected in surface soil samples collected at Site 31D.

TCL SVOCs. SVOCs were not detected in the surface soil samples collected at Site 31D.

Pesticides and PCBs. Pesticide and PCB compounds were not detected in the surface soil samples collected at Site 31D.

TAL Metals and (Total) Cyanide. Eighteen TAL metals were detected in the surface soil samples. No analytes were detected at concentrations in excess of Whiting Field background screening values and Florida SCTLs or USEPA RBCs.

5.1.5 Site 31E

Six surface soil samples were collected at Site 31E. Sample locations are shown on Figure 3-3. Table 5-10 summarizes the analytical results. Table 5-11 presents statistical data relevant to the analytical results, and compares concentrations of contaminants detected in Site 31E surface soil samples to Whiting Field background screening values, Florida SCTLs, and USEPA Region III Risk-based Concentrations.

TCL VOCs. 2-hexanone and xylene were detected in the surface soil samples collected at Site 31E. The detected concentrations were below Florida SCTLs and USEPA RBCs. No other VOCs were detected in surface soil samples collected at Site 31E.

TCL SVOCs. Bis(2-ethylhexyl)phthalate was detected in the surface soil samples collected at Site 31E. The detected concentration was below Florida SCTLs and USEPA RBCs. No other VOCs were detected in surface soil samples collected at Site 31E.

Pesticides and PCBs. Pesticide and PCB compounds were not detected in any surface soil samples collected at Site 31E.

TAL Metals and (Total) Cyanide. Nineteen inorganic analytes were detected in the surface soil samples. Manganese was detected at a concentration in excess of the Whiting Field Background Screening Value, and the residential USEPA RBC. However, no analytes were detected at concentrations in excess of Whiting Field background screening values and Florida SCTLs.

5.1.6 Site 31F

Seven surface soil samples were collected at Site 31F. Sample locations are shown on Figure 3-3. Table 5-12 summarizes the analytical results. Table 5-13 presents statistical data relevant to the analytical results, and compares concentrations of contaminants detected in Site 31F surface soil samples to Whiting Field background screening values, Florida SCTLs, and USEPA Region III Risk-based Concentrations.

TCL VOCs. Carbon disulfide and xylenes were detected in the seven surface soil samples. The detected concentrations of these compounds were below Florida SCTLs and USEPA RBCs. No other VOCs were detected in surface soil samples collected at Site 31F.

Table 5-8
Organic and Inorganic Analytes Detected in Site 31D Surface Soil Samples

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Location Identifier:	31-SL-16	31S014
Sample Identifier:	31-SL-16	31S01401
Collection Date:	18-AUG-92	12-DEC-95
Laboratory Sample No.:	22527004	G8924004
Volatile Organic Compounds (µg/kg)		
Xylenes (total)	3 J	--
Semivolatile Organic Compounds (µg/kg)		
None detected		
Pesticides and PCBs (µg/kg)		
None detected		
Inorganic Analytes (mg/kg)		
Aluminum	4,360	5,620
Arsenic	0.66 J	0.87 J
Barium	4.6 J	10.6 J
Beryllium	0.07 J	--
Calcium	248 J	156 J
Chromium	3.6	3.9
Cobalt	--	0.7 J
Copper	3.7 J	--
Iron	2,590	2,660
Lead	4.4	3.6
Magnesium	86.6 J	141 J
Manganese	33.1	196
Mercury	--	0.01 J
Nickel	--	3.2 J
Potassium	--	183 J
Sodium	127 J	--
Vanadium	6.6 J	6.8 J
Zinc	8.6	4.4 J

Notes: µg/kg = micrograms per kilogram.
J = estimated value.
-- = analyte, if present, was less than the detection limit.
PCB = polychlorinated biphenyl.
mg/kg = milligrams per kilogram.

Table 5-9
Comparison of Analytes Detected in Site 31D Surface Soil Samples to Background Screening and Benchmark Concentrations

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Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Volatile Organic Compounds (µg/kg)							
Xylenes (total)	½	5 to 11	3	3	--	[8]15,000/4,000,000	5,900,000/40,000,000/200
Semivolatile Organic Compounds (µg/kg)							
None detected							
Pesticides and PCBs (µg/kg)							
None detected							
Inorganic Analytes (mg/kg)							
Aluminum	2/2	40	4,360 to 5,620	4,990	15,334	[8]7,800/200,000	72,000/--/--
Arsenic	2/2	2	0.66 to 0.87	0.77	3.1	[7]0.42/3.8	0.8/3.7/29
Barium	2/2	40	4.6 to 10.6	7.6	23.7	[8]540/14,000	110/87,000/1,600
Beryllium	1/2	1	0.07	0.07	0.36	[7]15/400	120/800/63
Calcium	2/2	1,000	156 to 248	202	404	--/--	--/--
Chromium	2/2	2	3.6 to 3.9	3.8	10.7	[8,9]23/6,000	[9]210/420/38
Cobalt	1/2	0.34 to 10	0.7	0.7	2.87	[8]470/12,000	4,700/110,000/--
Copper	1/2	5	3.7	3.7	9.4	[8]310/8,100	110/76,000/--
Iron	2/2	20	2,590 to 2,660	2,625	8,588	[8]2,300/61,000	23,000/480,000/--
Lead	2/2	0.6 to 1	3.6 to 4.4	4	11.5	--	400/920/--
Magnesium	2/2	1,000	86.6 to 141	114	258	--/--	--/--
Manganese	2/2	3	33.1 to 196	115	403	[8]150/4,000	1,600/22,000/--
Mercury	1/2	0.05 to 0.1	0.01	0.01	0.12	--/--	3.4/26/130

See notes at end of table.

Table 5-9 (Continued)
Comparison of Analytes Detected in Site 31D Surface Soil Samples to Background Screening and Benchmark Concentrations

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Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Inorganic Analytes (mg/kg) (Continued)							
Nickel	1/2	2.3 to 8	3.2	3.2	7.2	[8]150/4,000	110/28,000/--
Potassium	1/2	131 to 1,000	183	183	177	--/--	--/--
Sodium	1/2	1,000	127	127	382	--/--	--/--
Vanadium	2/2	10	6.6 to 6.8	6.7	21.2	[8]54/1,400	15/7,400/980
Zinc	2/2	4	4.4 to 8.6	6.5	15.4	[8]2,300/61,000	23,000/560,000/6,000

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] Value indicated by an asterisk is the average of a sample and its duplicate. If the target analyte is not detected in either the environmental sample or associated duplicate, the value used for the nondetection is one-half the reporting limit.
[3] The mean of detected concentrations is the arithmetic mean of all environmental samples in which the analyte was detected; it includes a single value for an environmental sample and associated duplicate. The arithmetic mean does not include those environmental samples in which the analyte was not detected.
[4] The background screening value for organics is the mean detected concentration and will not be used for screening purposes in the risk assessment. The background screening value for inorganics is two times the mean detected background concentration and will be used for screening purposes in the risk assessment.
[5] Source: USEPA Region III, Risk-Based Concentrations Table, October, 1999.
[6] Source: 62-777 Florida Administrative Code, 2, Soil Cleanup Target Levels, August 1999.
[7] The values correspond to a human cancer risk level of 1 in 1,000,000.
[8] The calculated values correspond to a noncancer hazard quotient of 0.1.
[9] Reported values are for hexavalent chromium.

Notes: USEPA = U.S. Environmental Protection Agency.
RBC = risk-based concentration.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
-- = criteria not available.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
DDD = dichlorodiphenyldichloroethane.
mg/kg = milligrams per kilogram.

Table 5-10
Organic and Inorganic Analytes Detected in Site 31E Surface Soil Samples

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Location Identifier:	31-SL-05	31-SL-06	31-SL-07	31-SL-07 Duplicate Sample	31-SL-08	31S015	31S015 Duplicate Sample	31S016
Sample Identifier:	31-SL-05	31-SL-06	31-SL-07	31-SL-07A	31-SL-08	31S01501	31S01501D	31S01601
Collection Date:	17-AUG-92	18-AUG-92	17-AUG-92	17-AUG-92	17-AUG-92	13-DEC-95	13-DEC-95	13-DEC-95
Laboratory Sample No.:	22515005	22527003	22515007	22515008	22515009	G8938002	G8938003	G8938004
Volatile Organic Compounds (µg/kg)								
2-Hexanone	--	1 J	--	--	--	--	--	--
Xylenes (total)	--	3 J	2 J	2 J	2 J	--	--	--
Semivolatile Organic Compounds (µg/kg)								
bis(2-Ethylhexyl)phthalate	190 J	--	--	--	--	--	--	--
Pesticides and PCBs (µg/kg)								
None detected								
Inorganic Analytes (mg/kg)								
Aluminum	9,190	7,870	6,550	6,480	6,840	9,620	8,270	5,920
Arsenic	1.6 J	1.1 J	0.89 J	0.99 J	0.87 J	1.4 J	1.9 J	1.5 J
Barium	10.7 J	22.8 J	12.2 J	12.5 J	11 J	14.6 J	12.2 J	7.2 J
Beryllium	0.1 J	0.1 J	0.09 J	0.11 J	0.09 J	--	--	--
Calcium	107 J	281 J	169 J	188 J	168 J	112 J	103 J	122 J
Chromium	6.6	4	4.4	5	5.2	6.7	6	5.4
Cobalt	0.97 J	0.95 J	0.68 J	1.2 J	1.1 J	0.8 J	1.2 J	--
Copper	5.4 J	4 J	5.4 J	4.8 J	4.4 J	5.5 J	--	--
Iron	4,490	3,980	2,980	3,010	3,270	4,730	4,380	3,010
Lead	5.6	4.4	4.2	5.7	4	5.3	5.4	5.2
Magnesium	104 J	119 J	121 J	119 J	109 J	154 J	114 J	105 J
Manganese	194	399	212	210	279 J	183	172	60.3

See notes at end of table.

Table 5-10 (Continued)
Organic and Inorganic Analytes Detected in Site 31E Surface Soil Samples

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Location Identifier:	31-SL-05	31-SL-06	31-SL-07	31-SL-07 Duplicate Sample	31-SL-08	31S015	31S015 Duplicate Sample	31S016
Sample Identifier:	31-SL-05	31-SL-06	31-SL-07	31-SL-07A	31-SL-08	31S01501	31S01501D	31S01601
Collection Date:	17-AUG-92	18-AUG-92	18-AUG-92	18-AUG-92	17-AUG-92	13-DEC-95	13-DEC-95	13-DEC-95
Laboratory Sample No.:	22515005	22527003	22515007	22515008	22515009	G8938002	G8938003	G8938004
Inorganic Analytes (mg/kg) (Continued)								
Mercury	--	--	--	--	--	0.01 J	0.01	--
Nickel	--	3.6 J	--	2.4 J	--	3.9 J	3.4 J	4.1 J
Potassium	--	--	--	146 J	--	--	197 J	149 J
Silver	2.8	--	6.6	2.6	2.5	--	--	--
Sodium	180 J	135 J	142 J	179 J	166 J	--	--	--
Vanadium	12.2	9.9 J	8.1 J	8.6 J	8.8	12.8	11.3	8.6 J
Zinc	8 J	6	10.6	7.8 J	8.4	6.8	5	3.6 J

Notes: µg/kg = micrograms per kilogram.
-- = analyte, if present, was less than the detection limit.
J = estimated value.
PCB = polychlorinated biphenyl.
mg/kg = milligrams per kilogram.

Table 5-11
Comparison of Analytes Detected in Site 31E Surface Soil Samples to Background Screening and Benchmark Concentrations

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Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Volatile Organic Compounds (µg/kg)							
2-Hexanone	1/6	11	1	1	--	[8]310,000/8,100,000	5,100/34,000/1,400
Xylenes (total)	3/6	5 to 11	2* to 3	2.3	--	[8]1,500/400,000	5,900,000/40,000,000/200
Semivolatile Organic Compounds (µg/kg)							
bis(2-Ethylhexyl)phthalate	1/6	360 to 370	190	190	80.3	45,000/400,000	76,000/280,000/3,600,000
Pesticides and PCBs (µg/kg)							
None detected							
Inorganic Analytes (mg/kg)							
Aluminum	6/6	40	5,920 to 9,190	7,547	15,848	[8]7,800/200,000	72,000/--/--
Arsenic	6/6	2	0.87 to 1.65*	1.3	3.2	[7]0.42/3.8	0.8/3.7/29
Barium	6/6	40	7.2 to 22.8	12.9	23.2	[8]550/14,000	110/87,000/1,600
Beryllium	4/6	1	0.09 to 0.1	0.1	0.36	[7]15/400	120/800/63
Calcium	6/6	1,000	107 to 281	161	396	--/--	--/--
Chromium	6/6	2	4 to 6.6	5.4	11	[8,9]23/6,000	[9]210/420/38
Cobalt	5/6	10	0.94* to 1.1	0.99	3	[8]470/12,000	4,700/110,000/--
Copper	5/6	5	4 to 5.4	4.6	9.4	[8]310/8,100	110/76,000/--
Iron	6/6	20	2,995* to 4,555*	3,717	8,832	[8]2,300/61,000	23,000/480,000/--
Lead	6/6	0.6 to 1	4 to 5.6	4.9	11.4	--/--	400/920/--
Magnesium	6/6	1,000	104 to 134*	115	268	--/--	--/--
Manganese	6/6	3	60.3 to 399	220	392	[8]150/4,000	1,600/22,000/--
Mercury	1/6	0.04 to 0.1	0.01*	0.01	0.12	--/--	3.4/26/130

See notes at end of table.

Table 5-11 (Continued)
Comparison of Analytes Detected in Site 31E Surface Soil Samples to Background Screening and Benchmark Concentrations

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Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Inorganic Analytes (mg/kg) (Continued)							
Nickel	4/6	2.3 to 8	1.8* to 4.1	3.3	7.2	[8]150/4,000	110/28,000/130
Potassium	3/6	131 to 1,000	106* to 348.5*	201	177	--/--	--/--
Silver	3/6	0.33 to 2	2.5 to 4.6*	3.3	0.70	[8]39/1,000	390/9,100/17
Sodium	4/6	1,000	135 to 180	160	406	--/--	--/--
Vanadium	6/6	10	8.35* to 12.2	10	21.8	[8]54/1,400	15/7,400/980
Zinc	6/6	4	3.6 to 9.2*	6.9	15.4	[8]2,300/61,000	23,000/560,000/6,000

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] Value indicated by an asterisk is the average of a sample and its duplicate. If the target analyte is not detected in either the environmental sample or associated duplicate, the value used for the nondetection is one-half the reporting limit.
[3] The mean of detected concentrations is the arithmetic mean of all environmental samples in which the analyte was detected; it includes a single value for an environmental sample and associated duplicate. The arithmetic mean does not include those environmental samples in which the analyte was not detected.
[4] The background screening value for organics is the mean detected concentration and will not be used for screening purposes in the risk assessment. The background screening value for inorganics is two times the mean detected background concentration and will be used for screening purposes in the risk assessment.
[5] Source: USEPA Region III, Risk-Based Concentrations Table, October, 1999.
[6] Source: 62-777 Florida Administrative Code, Table 2, Soil Cleanup Target Levels, August 1999.
[7] The values correspond to a human cancer risk level of 1 in 1,000,000.
[8] The calculated values correspond to a noncancer hazard quotient of 0.1.
[9] Reported values are for hexavalent chromium.

Notes: USEPA = U.S. Environmental Protection Agency.
RBC = risk-based concentration.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
-- = criteria not available.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
DDD = dichlorodiphenyldichloroethane.
mg/kg = milligrams per kilogram.

Table 5-12
Organic and Inorganic Analytes Detected in Site 31F Surface Soil Samples

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Location Identifier:	31-SL-01	31-SL-02	31-SL-03	31-SL-04	31S017	31S018	31S019
Sample Identifier:	31-SL-01	31-SL-02	31-SL-03	31-SL-04	31S01701	31S01801	31S01901
Collection Date:	17-AUG-92	17-AUG-92	17-AUG-92	17-AUG-92	13-DEC-95	13-DEC-95	13-DEC-95
Laboratory Sample No.:	22515001	22527002	22515004	22515003	G8938005	G8938006	G8938007
Volatile Organic Compounds (µg/kg)							
Carbon disulfide	--	3 J	--	--	--	--	--
Xylenes (total)	--	3 J	--	2 J	--	--	--
Semivolatile Organic Compounds (µg/kg)							
bis(2-Ethylhexyl)phthalate	--	--	81 J	230 J	--	--	--
Di-*n*-octylphthalate	--	--	--	--	--	220 J	--
Pesticides and PCBs (µg/kg)							
None detected							
Inorganic Analytes (mg/kg)							
Aluminum	10,700	9,930	6,600	5,800	5,010	5,490	5,490
Arsenic	1.9 J	1.3 J	0.7 J	0.98 J	1.1 J	0.72 J	0.72 J
Barium	24.5 J	21.1 J	11.2 J	13.4 J	10.6 J	12.8 J	12.8 J
Beryllium	0.15 J	0.11 J	0.08 J	0.09 J	--	--	--
Calcium	216 J	126 J	962 J	138 J	223 J	78.7	78.7
Chromium	7.1	5.8	4.6	3.9	5	4.1	4.1
Cobalt	1.1 J	1.4 J	0.66 J	0.93 J	0.71 J	0.97 J	--
Copper	5.6 J	17.9 J	4.6 J	5.5	--	--	--
Iron	5,380	4,800	3,060	2,850	2,580	3,180	3,180
Lead	6.4	5.5	2.9	4.5	4.4	4.8	4.8
Magnesium	164 J	154 J	549 J	98.6 J	134 J	113 J	130 J
Manganese	456	410	290	295	231	122	150

See notes at end of table.

Table 5-12 (Continued)
Organic and Inorganic Analytes Detected in Site 31F Surface Soil Samples

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Location Identifier:	31-SL-01	31-SL-02	31-SL-03	31-SL-04	31S017	31S018	31S019
Sample Identifier:	31-SL-01	31-SL-02	31-SL-03	31-SL-04	31S01701	31S01801	31S01901
Collection Date:	17-AUG-92	17-AUG-92	17-AUG-92	17-AUG-92	13-DEC-95	13-DEC-95	13-DEC-95
Laboratory Sample No.:	22515001	22527002	22515004	22515003	G8938005	G8938006	G8938007
Inorganic Analytes (mg/kg) (Continued)							
Mercury	--	--	--	--	0.01 J	0.02 J	0.02 J
Nickel	--	6.9 J	--	--	3.2 J	4 J	4 J
Selenium	--	--	0.52 J	--	--	--	--
Silver	2.4	--	4.1	3.7	--	--	0.68 J
Sodium	183 J	133 J	190 J	233 J	--	--	--
Vanadium	14.2	12.3	8.3	7.3 J	6.5 J	7.8 J	7.8 J
Zinc	9.9	23.1	7.9 J	7.9 J	4.7	3.5	--

Notes: µg/kg = micrograms per kilogram.
-- = analyte, if present, was less than the detection limit.
J = estimated value.
PCB = polychlorinated biphenyl.
mg/kg = milligrams per kilogram.

Table 5-13
Comparison of Analytes Detected in Site 31F Surface Soil Samples to Background Screening and Benchmark Concentrations

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Volatile Organic Compounds (µg/kg)							
Carbon disulfide	1/7	5 to 11	3	3	--	[8]780,000/20,000,000	200,000/1,400,000/5,600
Xylenes (total)	2/7	5 to 11	2 to 3	2.5	--	[8]15,000/4,000,000	5,900,000/40,000,000/200
Semivolatile Organic Compounds (µg/kg)							
bis(2-Ethylhexyl)phthalate	2/7	360 to 380	81 to 230	156	80.3	[8]45,000/400,000	76,000/280,000/3,600,000
Di-*n*-octylphthalate	1/7	360 to 380	220	220	--	[8]150,000/4,000,000	1,500,000/ 27,000,000/480,000,000
Pesticides and PCBs (µg/kg)							
None detected							
Inorganic Analytes (mg/kg)							
Aluminum	7/7	40	5,010 to 10,700	7,003	15,848	[8]7,800/200,000	72,000/--/--
Arsenic	7/7	2	0.7 to 1.9	1.1	3.2	[7]0.42/3.8	0.8/3.7/29
Barium	7/7	40	10.6 to 24.5	15.2	23.2	[8]540/14,000	110/87,000/1,600
Beryllium	4/7	1	0.08 to 0.15	0.11	0.36	[7]15/400	120/800/63
Calcium	7/7	1,000	78.7 to 962	260	396	--/--	--/--
Chromium	7/7	2	3.9 to 7.1	4.9	11	[8,9]23/600	[9]210/420/38
Cobalt	6/7	10	0.66 to 1.4	0.96	3	[8]470/12,000	4,700/110,000/--
Copper	4/7	5	4.6 to 17.9	8.4	9.4	[8]310/8,100	110/76,000/--
Iron	7/7	20	2,580 to 5,380	3,576	8,832	[8]2,300/61,000	23,000/480,000/--
Lead	7/7	0.6 to 1	2.9 to 6.4	4.8	11.4	--/--	400/920/--
Magnesium	7/7	1,000	98.6 to 549	192	268	--/--	--/--
Manganese	7/7	3	122 to 456	279	392	[8]150/4,000	1,600/22,000/--
Mercury	3/7	0.05 to 0.1	0.01 to 0.02	0.02	0.12	--/--	3.4/26/2.1
Nickel	4/7	2.3 to 8	3.2 to 6.9	4.5	7.2	[8]150/4,000	110/28,000/130

See notes at end of table.

Table 5-13 (Continued)
Comparison of Analytes Detected in Site 31F Surface Soil Samples to Background Screening and Benchmark Concentrations

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Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Inorganic Analytes (mg/kg) (Continued)							
Selenium	1/7	0.46 to 1	0.52	0.52	0.46	[8]39/1,000	390/10,000/5
Silver	4/7	0.33 to 2	0.68 to 4.1	2.7	0.70	[8]39/1,000	390/9,100/17
Sodium	4/7	1,000	133 to 233	185	406	--/--	--/--
Vanadium	7/7	10	6.5 to 14.2	9.2	21.8	[8]54/1,400	15/7,400/980
Zinc	6/7	4	3.5 to 23.1	9.5	15.4	[8]2,300/61,000	23,000/560,000/6000

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] Value indicated by an asterisk is the average of a sample and its duplicate. If the target analyte is not detected in either the environmental sample or associated duplicate, the value used for the nondetection is one-half the reporting limit.
[3] The mean of detected concentrations is the arithmetic mean of all environmental samples in which the analyte was detected; it includes a single value for an environmental sample and associated duplicate. The arithmetic mean does not include those environmental samples in which the analyte was not detected.
[4] The background screening value for organics is the mean detected concentration and will not be used for screening purposes in the risk assessment. The background screening value for inorganics is two times the mean detected background concentration and will be used for screening purposes in the risk assessment.
[5] Source: USEPA Region III, Risk-Based Concentrations Table, October, 1999.
[6] Source: 62-777 Florida Administrative Code, Table 2, Soil Cleanup Target Levels, August 1999.
[7] The values correspond to a human cancer risk level of 1 in 1,000,000.
[8] The calculated values correspond to a noncancer hazard quotient of 0.1.
[9] Reported values are for hexavalent chromium.

Notes: USEPA = U.S. Environmental Protection Agency.
RBC = risk-based concentration.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
-- = criteria not available.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
DDD = dichlorodiphenyldichloroethane.
mg/kg = milligrams per kilogram.

TCL SVOCs. Bis(2-ethylhexyl)phthalate and di-*n*-octylphthalate were detected in the surface soil samples collected at Site 31F. The detected concentrations of these compounds were below Florida SCTLs and USEPA RBCs. No other VOCs were detected in surface soil samples collected at Site 31F.

Pesticides and PCBs. Pesticide and PCB compounds were not detected in surface soil samples collected at Site 31F.

TAL Metals and (Total) Cyanide. Nineteen inorganic analytes were detected in the surface soil samples. Manganese was detected at a concentration in excess of the Whiting Field background screening value and the USEPA residential RBC. However, no analytes were detected at concentrations in excess of Whiting Field background screening values and Florida SCTLs.

5.2 SUBSURFACE SOIL ASSESSMENT.

Subsurface soil samples were collected at Sites 31A and 31C during Phase IIB of the RI. The analytical results for each disposal area are presented in the subsections below. Analytical results were compared to background screening values and Florida SCTLs to determine whether detected compounds represent a potential environmental concern.

5.2.1 Site 31A

Five subsurface soil samples were collected at Site 31A. Sample locations are shown on Figure 3-1. Table 5-14 summarizes the analytical results. Table 5-15 presents statistical data relevant to the analytical results, and compares concentrations of contaminants detected in Site 31A subsurface soil samples to Whiting Field background screening values, USEPA Region III RBCs, and Florida SCTLs.

TCL VOCs. TCL VOCs were not detected in the subsurface soil samples collected from the soil borings at Site 31A.

TCL SVOCs. Bis(2-ethylhexyl)phthalate was detected in subsurface soil samples collected at Site 31A. The detected concentrations were below Florida SCTLs and USEPA RBCs.

Pesticides and PCBs. Pesticide and PCB compounds were not detected in the subsurface soil samples collected at Site 31A.

TAL Metals and (Total) Cyanide. Twenty-two inorganic analytes were detected in the subsurface soil samples from Site 31A. No inorganic analytes were detected in the subsurface soil samples at concentrations in excess of their respective background screening values and Florida SCTLs or USEPA RBCs.

5.2.2 Site 31C

Fifteen subsurface soil samples were collected at Site 31C. Sample locations are shown on Figure 3-2. Table 5-16 summarizes the analytical results. Table 5-17 presents statistical data relevant to the analytical results, and compares concentrations of contaminants detected in Site 31C subsurface soil samples to Whiting Field background screening values USEPA RBCs and Florida SCTLs.

TCL VOCs. Methylene chloride and acetone were detected in subsurface soil samples collected from the soil boring at Site 31C. However, no compounds were detected in the subsurface soil samples at concentrations in excess of their respective Florida SCTLs or USEPA RBCs.

TCL SVOCs. SVOCs were not detected in the subsurface soil samples collected at Site 31C.

Table 5-14
Organic and Inorganic Analytes Detected in Site 31A Subsurface Soil Samples

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Sample Location:	31B001	31B002	31B002 Duplicate Sample	31B003	31B004	31B005
Sample Identifier:	31B00101	31B00201	31B00201D	31B00301	31B00401	31B00501
Sample Depth Interval (feet bls):	1.5 to 2.7	1.5 to 2.7	1.5 to 2.7	1.5 to 2.7	1.5 to 2.7	1.5 to 3.0
Collection Date:	11-JAN-96	11-JAN-96	11-JAN-96	11-JAN-96	11-JAN-96	11-JAN-96
Laboratory Sample No.:	RA870016	RA870014	RA870015	RA870013	RA870012	RA870017
Volatile Organic Compounds (µg/kg)						
None detected						
Semivolatile Organic Compounds (µg/kg)						
bis(2-Ethylhexyl)phthalate	52 J	--	48 J	--	38 J	--
Pesticides and PCBs (µg/kg)						
None detected						
Inorganic Analytes (mg/kg)						
Aluminum	3,720 J	4,360 J	4,050	6,010	3,740	5,620
Arsenic	1.2 J	1 J	1.2 J	2.9	0.93 J	1.3 J
Barium	5.7 J	4.7 J	4.3 J	6.6 J	9.3 J	11.2 J
Beryllium	0.05 J	0.05 J	--	0.05 J	0.05 J	0.05 J
Cadmium	0.32 J	0.21 J	0.34 J	--	--	0.21 J
Calcium	137 J	107 J	121 J	133 J	139 J	643 J
Chromium	2.4	2.6	2.1 J	3.9 J	3.3	3.8
Cobalt	--	0.76 J	--	--	1.2 J	0.9 J
Copper	10.9	8.5	8.4	8	--	--
Iron	2,560	2,960	2,750	3,690	2,850	3,490

See notes at end of table.

Table 5-14 (Continued)
Organic and Inorganic Analytes Detected in Site 31A Subsurface Soil Samples

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Milton, Florida

Sample Location:	31B001	31B002	31B002 Duplicate Sample	31B003	31B004	31B005
Sample Identifier:	31B00101	31B00201	31B00201D	31B00301	31B00401	31B00501
Sample Depth Interval (feet bls):	1.5 to 2.7	1.5 to 2.7	1.5 to 2.7	1.5 to 2.7	1.5 to 2.7	1.5 to 3.0
Collection Date:	11-JAN-96	11-JAN-96	11-JAN-96	11-JAN-96	11-JAN-96	11-JAN-96
Laboratory Sample No.:	RA870016	RA870014	RA870015	RA870013	RA870012	RA870017
Inorganic Analytes (mg/kg) (Continued)						
Lead	3.2	2.9	2.9	4.1	5.3	3.5
Magnesium	79 J	81.1 J	72 J	118 J	74.1 J	137 J
Manganese	7.8	8	7.5	13.8	70.9 J	155
Mercury	0.1 J	0.04 J	0.04 J	-- R	0.04 J	0.05 J
Nickel	1.5 J	1.8 J	1.6 J	1.7 J	2.4 J	3.5 J
Potassium	--	88.8 J	114 J	127 J	96.1 J	129 J
Selenium	--	--	--	0.17 J	0.16 J	--
Silver	0.43 J	--	--	--	--	--
Sodium	192 J	175 J	183 J	179 J	177 J	168 J
Thallium	0.13 J	--	--	0.19 J	--	--
Vanadium	5.2 J	6 J	5.3 J	8.8 J	5.7 J	7.7 J
Zinc	9.3	7.1	6.4	6.6	--	8.5

Notes: bls = below land surface.
D = duplicate sample.
µg/kg = micrograms per kilogram.
J = estimated value.
-- = analyte, if present, is at a concentration less than the detection limit.
PCB = polychlorinated biphenyl.
mg/kg = milligrams per kilogram.
R = value was rejected during data validation.

Table 5-15
Comparison of Analytes Detected in Site 31A Subsurface Soil Samples to Background Screening and Benchmark Concentrations

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Volatile Organic Compounds (µg/kg)							
None detected							
Semivolatile Organic Compounds (µg/kg)							
bis(2-Ethylhexyl)phthalate	3/4	360 to 380	38 to 116.5*	68.8	80.3	[7]45,000/400,000	76,000/280,000/3,600,000
Pesticides and PCBs (µg/kg)							
None detected							
Inorganic Analytes (mg/kg)							
Aluminum	4/4	40	3,720 to 6,010	4,419	27,834	[8]7,800/200,000	72,000/--/--
Arsenic	4/4	2	0.93 to 2.9	1.5	6.2	[7]0.42/3.8	0.8/[12]3.7/29
Barium	4/4	40	4.5 to 9.3	6.5	15.8	[8]540/14,000	110/87,000/1,600
Beryllium	4/4	1	0.05 to 0.275*	0.11	0.26	[7]15/400	120/800/63
Cadmium	2/4	1	0.275* to 0.32	0.3	0.92	[8]3.9/100	75/1,300/8
Calcium	4/4	1,000	114* to 139	131	444	--/--	--/--
Chromium	4/4	2	2.35* to 3.9	3	22.8	[8,10]23/6,000	210/420/38
Cobalt	2/4	10	1.2 to 2.88*	2	1.48	[8]470/12,000	4,700/110,000/--
Copper	3/4	5	8 to 10.9	9.1	8.8	[8]310/8,100	110/76,000/--
Iron	4/4	20	2,560 to 3,690	2,989	18,100	[8]2,300/61,000	--/--
Lead	4/4	0.6	2.9* to 5.3	3.9	8.4	--/--	400/920/--
Magnesium	4/4	1,000	74.1 to 118	86.9	272	--/--	--/--
Manganese	4/4	3	7.75* to 70.9	25.1	42.6	[8]150/4,000	1,600/22,000/--
Mercury	3/[12]3	0.1	0.04* to 0.1	0.06	ND	[8]2.3/61	3.4/26/130
Nickel	4/4	8	1.5 to 2.4	1.8	5.0	[8]150/4,000	110/28,000/--
Potassium	3/4	1,000	96.1 to 127	108	181	--/--	--/--
Selenium	2/4	1	0.16 to 0.17	0.17	0.30	[8]39/1,000	390/9,900
Silver	1/4	2	0.43	0.43	1.12	[8]39/1,000	390/9,100/17

See notes at end of table.

Table 5-15 (Continued)
Comparison of Analytes Detected in Site 31A Subsurface Soil Samples to Background Screening and Benchmark Concentrations

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Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Inorganic Analytes (mg/kg) (Continued)							
Sodium	4/4	1,000	177 to 192	182	ND	--/--	--/--
Thallium	2/4	2	0.13 to 0.19	0.16	ND	--/--	--/--
Vanadium	4/4	10	5.2 to 8.8	6.3	45	[8]54/1,400	15/7,400/980
Zinc	¾	4	6.6 to 9.3	7.6	15.6	[8]2,300/61,000	23,000/560,000/6000

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] Value indicated by an asterisk is the average of a sample and its duplicate. If the target analyte is not detected in either the environmental sample or associated duplicate, the value used for the nondetection is one-half the reporting limit.
[3] The mean of detected concentrations is the arithmetic mean of all environmental samples in which the analyte was detected; it includes a single value for an environmental sample and associated duplicate. The arithmetic mean does not include those environmental samples in which the analyte was not detected.
[4] The background screening value for organics is the mean detected concentration and will not be used for screening purposes in the risk assessment. The background screening value for inorganics is two times the mean detected background concentration and will be used for screening purposes in the risk assessment.
[5] Source: USEPA Region III, Risk-Based Concentrations Table, October, 1999.
[6] Source: 62-777 Florida Administrative Code, Table 2, Soil Cleanup Target Levels, August 1999.
[7] The values correspond to a human cancer risk level of 1 in 1,000,000.
[8] The calculated values correspond to a noncancer hazard quotient of 0.1.
[9] Sample 31B00301 had rejected data for mercury. See Table 5-14.
[10] Values are for hexavalent chromium.

Notes: USEPA = U.S. Environmental Protection Agency.
RBC = risk-based concentration.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
PCB = polychlorinated biphenyl.
mg/kg = milligrams per kilogram.
-- = criteria not available.
ND = not detected.

Table 5-16
Organic and Inorganic Analytes Detected in Site 31C Subsurface Soil Samples

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Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Sample Location:	31B006	31B006 Duplicate Sample	31B006	31B006	31B006	31B006
Sample Identifier:	31B00601	31B00601D	31B00602	31B00603	31B00604	31B00605
Sample Depth Interval (feet bls):	5 to 7	5 to 7	10 to 12	15 to 17	20 to 22	25 to 27
Collection Date:	21-MAY-96	21-MAY-96	21-MAY-96	21-MAY-96	21-MAY-96	21-MAY-96
Laboratory Sample No.:	RB592001	RB592006	RB592002	RB592003	RB592004	RB592005
Volatile Organic Compounds (µg/kg)						
Methylene chloride	--	--	2 J	1 J	--	--
Acetone	--	--	--	--	--	--
Semivolatile Organic Compounds (µg/kg)						
None detected						
Pesticides and PCBs (µg/kg)						
gamma-Chlordane	1.5 J	1.1 J	--	--	--	--
Inorganic Analytes (mg/kg)						
Aluminum	1,580	1,760	1,500	2,260	587	1,690
Arsenic	0.44 J	0.29 J	0.5 J	0.22 J	0.11 J	0.13 J
Barium	7.4 J	9.6 J	7.2 J	3.2 J	2.1 J	2.1 J
Beryllium	0.07 J	0.07 J	0.1 J	0.07 J	0.08 J	--
Cadmium	0.52 J	0.68 J	0.61 J	--	--	--
Calcium	237 J	297 J	253 J	225 J	215 J	184 J
Chromium	3.9	5.4	7.4	5.3	7	5.8
Cobalt	--	--	--	--	--	--
Copper	11.4	13.6 J	11.6	--	--	--
Iron	1,120	1,310	1,210	1,030	413	782
Lead	6.3 J	7 J	6.2 J	1.1 J	1 J	0.61 J
Magnesium	83.5 J	98.7 J	73.5 J	64.4 J	50.7 J	55.9 J
Manganese	9.2	11.3	8.6	4.2	2.9 J	2 J
Mercury	0.07	0.08	0.08	--	--	--
Nickel	--	--	1.7 J	--	1.9 J	--
Potassium	--	--	--	--	--	--
Selenium	0.14 J	--	--	--	--	--
Silver	1.1 J	1.7 J	1.1 J	--	--	--
Sodium	--	--	--	--	--	--
Thallium	--	--	--	--	--	--
Vanadium	2.2 J	2.4 J	3.1 J	4 J	1.7 J	3.6 J
Zinc	11	15.9	17	--	--	--
Cyanide	0.1 J	--	0.13 J	--	0.1 J	--

See notes at end of table.

Table 5-16 (Continued)
Organic and Inorganic Analytes Detected in Site 31C Subsurface Soil Samples

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Sample Location:	31B007	31B007	31B007	31B007	31B007
Sample Identifier:	31B00701	31B00702	31B00703	31B00704	31B00705
Sample Depth Interval (feet bls):	5 to 7	10 to 12	15 to 17	20 to 22	25 to 27
Collection Date:	21-MAY-96	21-MAY-96	21-MAY-96	21-MAY-96	21-MAY-96
Laboratory Sample No.:	RB592010	RB592011	RB592012	RB592013	RB592014
Volatile Organic Compounds (µg/kg)					
Methylene chloride	--	--	--	--	--
Acetone	--	--	--	--	--
Semivolatile Organic Compounds (µg/kg)					
None detected					
Pesticides and PCBs (µg/kg)					
gamma-Chlordane	--	--	--	--	--
Inorganic Analytes (mg/kg)					
Aluminum	940	5,800	5,060	1,410	1,300
Arsenic	0.29 J	2 J	0.58 J	0.21 J	0.2 J
Barium	3.6 J	9.5 J	4.8 J	3.9 J	4.3 J
Beryllium	--	0.16 J	--	--	0.08 J
Cadmium	--	0.78 J	--	--	--
Calcium	--	--	--	--	--
Chromium	--	13.1	--	--	--
Cobalt	--	--	--	--	--
Copper	--	9.8	3 J	--	--
Iron	697	5,440	2,200	643	376
Lead	9.5 J	12.8 J	2.8 J	1.9 J	1.8 J
Magnesium	--	103 J	73 J	--	67.1 J
Manganese	6.7	19.9	5.8	4.8	5.2
Mercury	--	0.09	--	--	--
Nickel	--	1.8 J	--	--	--
Potassium	--	--	--	92.1 J	--
Selenium	--	--	--	--	--
Silver	--	2.5	--	--	--
Sodium	--	--	--	--	--
Thallium	--	--	--	--	--
Vanadium	1.4 J	16.3	7.5 J	4.5 J	3.8 J
Zinc	--	15.8	--	--	--
Cyanide	1.1 J	0.28	0.16 J	--	--

See notes at end of table.

Table 5-16 (Continued)
Organic and Inorganic Analytes Detected in Site 31C Subsurface Soil Samples

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Sample Location:	31B008	31B008	31B008	31B008	31B008
Sample Identifier:	31B00801	31B00802	31B00803	31B00804	31B00805
Sample Depth Interval (feet bls):	5 to 7	10 to 12	15 to 17	20 to 22	25 to 27
Collection Date:	21-MAY-96	21-MAY-96	21-MAY-96	21-MAY-96	21-MAY-96
Laboratory Sample No.:	RB592015	RB592016	RB592017	RB592018	RB592019
Volatile Organic Compounds (µg/kg)					
Methylene chloride	--	--	--	--	--
Acetone	970 J	--	770 J	480 J	--
Semivolatile Organic Compounds (µg/kg)					
None detected					
Pesticides and PCBs (µg/kg)					
gamma-Chlordane	--	--	--	--	--
Inorganic Analytes (mg/kg)					
Aluminum	1,500	1,500	2,120	1,070	1,020
Arsenic	0.31 J	0.29 J	0.47 J	0.36 J	0.37 J
Barium	3.6 J	3.6 J	5.9 J	3.2 J	3 J
Beryllium	--	--	--	--	--
Cadmium	--	--	--	--	--
Calcium	--	--	--	--	--
Chromium	--	--	--	--	--
Cobalt	--	--	--	--	--
Copper	--	--	--	--	--
Iron	935	897	1,260	479	654
Lead	0.64 J	1.3 J	1.6 J	1.2 J	1.1 J
Magnesium	84.5 J	83.2 J	80 J	73.9 J	--
Manganese	5.1	9	--	--	--
Mercury	--	--	0.05 J	--	--
Nickel	--	--	--	--	--
Potassium	--	--	--	--	--
Selenium	--	--	--	--	--
Silver	--	--	--	--	--
Sodium	--	--	--	--	--
Thallium	--	--	--	--	--
Vanadium	1.8 J	2 J	4.5 J	4 J	6.5 J
Zinc	--	--	--	--	--
Cyanide	--	--	0.11 J	--	0.17 J

Notes: bls = below land surface.
D = duplicate sample.
µg/kg = micrograms per kilogram.
-- = analyte, if present, is at a concentration less than the detection limit.
J = estimated value.
PCB = polychlorinated biphenyl.
mg/kg = milligrams per kilogram.

Table 5-17
Comparison of Analytes Detected in Site 31C Subsurface Soil Samples to Background Screening and Benchmark Concentrations

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Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Volatile Organic Compounds (µg/kg)							
Acetone	3/15	10 to 170	480 to 970	740	ND	780,000/20,000,000	780,00/5,000,000/2,800
Methylene chloride	2/15	10 to 12	1 to 2	1.5	ND	8,500/76,000	16,000/23,000/20
Semivolatile Organic Compounds (µg/kg)							
None detected							
Pesticides and PCBs (µg/kg)							
gamma-Chlordane	1/15	1.8 to 2.1	1.3*	1.3	ND	1,800/16,000	3,100/12,000/9,600
Inorganic Analytes (mg/kg)							
Aluminum	15/15	40	587 to 5,800	1,962	27,834	[8]7,800/200,000	72,000/--/--
Arsenic	15/15	2	0.11 to 2	0.43	6.2	[7]0.42/3.8	0.8/3.7/29
Barium	15/15	40	2.1 to 9.5	4.6	15.8	[8]540/14,000	110/87,000/1,600
Beryllium	6/15	0.06 to 0.07	0.07* to 0.16	0.09	0.26	[7]15/400	120/800/63
Cadmium	3/15	0.25 to 0.29	0.6* to 0.78	0.66	0.92	[8]3.9/100	75/1,300/8
Calcium	5/15	180 to 274	184 to 267*	229	444	--	--
Chromium	6/15	2 to 9.6	4.65* to 13.1	7.2	22.8	[8,9]23/600	[9]210/420/38
Copper	4/15	0.67 to 2.3	3 to 12.5*	9.2	8.8	[8]310/8,100	110/76,000/--
Iron	15/15	20	376 to 5,440	1,215	18,100	[8]2,300/61,000	23,000/480,000/--
Lead	15/15	0.6	0.61 to 12.8	3.3	8.4	--/--	400/920/--
Magnesium	12/15	56.5 to 65.6	50.7 to 103	75	272	--/--	--/--
Manganese	12/15	2.1 to 3.8	2 to 19.9	7	42.6	[8]150/4,000	1,600/22,000/--
Mercury	4/15	0.03	0.05 to 0.09	0.07	ND	--/--	3.4/26/2.1
Nickel	3/15	1.5 to 1.8	1.7 to 1.9	1.8	5.0	[8]150/4,000	110/28,000/130
Potassium	1/15	65.4 to 77.2	92.1	92.1	181	--	--

See notes at end of table.

Table 5-17 (Continued)
Comparison of Analytes Detected in Site 31C Subsurface Soil Samples to Background Screening and Benchmark Concentrations

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Analyte	Frequency of Detection[1]	Range of Detection Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Values[4]	USEPA Region III RBCs[5] Residential/ Industrial	Florida Soil Cleanup Target Levels[6] Residential/ Industrial/leaching
Inorganic Analytes (mg/kg) (Continued)							
Selenium	1/15	0.065 to 0.14	0.10*	0.1	0.3	[8]39/1,000	390/10,000/5
Silver	3/15	0.52 to 0.61	1.1 to 2.5	1.7	1.12	[8]39/1,000	390/9,100/17
Vanadium	15/15	10	1.4 to 16.3	4.5	45	[8]54/1,400	15/7,400/980
Zinc	3/15	1.3 to 4.9	13.45* to 17	15.4	15.6	[8]2,300/61,000	23,000/560,000/6000
Cyanide	8/15	0.04 to 0.09	0.07* to 1.1	0.27	ND	[8]150/4000	30/39,000/40

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] Value indicated by an asterisk is the average of a sample and its duplicate. If the target analyte is not detected in either the environmental sample or associated duplicate, the value used for the nondetection is one-half the reporting limit.
[3] The mean of detected concentrations is the arithmetic mean of all environmental samples in which the analyte was detected; it includes a single value for an environmental sample and associated duplicate. The arithmetic mean does not include those environmental samples in which the analyte was not detected.
[4] The background screening value for organics is the mean detected concentration and will not be used for screening purposes in the risk assessment. The background screening value for inorganics is two times the mean detected background concentration and will be used for screening purposes in the risk assessment.
[5] Source: USEPA Region III, Risk-Based Concentrations Table, October, 1999.
[6] Source: 62-777 Florida Administrative Code, Table 2, Soil Cleanup Target Levels, August 1999.
[7] The values correspond to a human cancer risk level of 1 in 1,000,000.
[8] The calculated values correspond to a noncancer hazard quotient of 0.1.
[9] Values are for hexavalent chromium.

Notes: USEPA = U.S. Environmental Protection Agency.
RBC = risk-based concentration.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
PCB = polychlorinated biphenyl.
mg/kg = milligrams per kilogram.
-- = criteria not available.
ND = not detected.

Pesticides and PCBs. Gamma-chlordane was detected in one sample and the associated duplicate sample (31B00601 and 31B00601D) collected from soil boring 31B006 at Site 31C (Figure 3-2). The detected concentration was not in excess of the Florida SCTLs or USEPA RBCs. No other pesticide or PCB compounds were detected in subsurface soil samples collected at Site 31C.

TAL Metals and (Total) Cyanide. Twenty inorganic analytes were detected in subsurface soil samples from Site 31C. No analytes were detected at concentrations in excess of their respective background screening values and Florida SCTLs or USEPA RBCs.

5.3 GROUNDWATER ASSESSMENT.

Groundwater samples were collected from 6 monitoring wells at Site 31C. Monitoring well locations are shown on Figure 3-4. Representative measurements of field parameters recorded during groundwater purging and sampling events is presented in Table 5-18. Table 5-19 summarizes the analytical results, and Table 5-20 provides basic statistical parameters of detected analyte concentrations in Site 31C Phase IIB groundwater samples including the frequency of detection, range of detected analytes, mean analyte concentration, and screening value. The range of analyte concentrations in Site 31 groundwater samples were compared in Table 5-20 to background screening values, Federal and State applicable or relevant and appropriate requirement (ARARs), including Federal maximum contaminant levels (MCLs) and Florida groundwater guidance concentrations. The background screening values, background sample locations, and rationale for selection are detailed in Chapter 3.0 of the GIR.

Field Parameters. The pH values for groundwater samples collected at Site 31C ranged from 4.59 to 5.27 SUs. The pH values were below the lower range for the Florida secondary drinking water requirement of 6.5 SUs; however, they were within the range of values observed in background groundwater samples collected for NAS Whiting Field. Temperature measurements ranged from 22.0 to 28.0 degrees Celsius, and the specific conductance ranged from 5 to 40 micromhos per centimeter. Turbidity measurements from groundwater samples, collected using low-flow sampling methods, ranged from 1.07 to 18.0 NTUs. With the exception of sample WHF-31-2S, all of groundwater samples had turbidity measurements below 10 NTUs. Reduction oxidation (redox) measurements ranged from 278.9 to 341.7 millivolts. Dissolved oxygen measurements ranged from 6.7 to 13.6 milligrams per liter.

Volatile Organic Compounds. Methylene chloride and TCE were each detected in a groundwater sample collected from monitoring wells WHF-31-4I and WHF-31-4D, respectively. The detected concentrations did not exceed the Florida GCTLs or Federal MCLs.

Semivolatile Organic Compounds. SVOCs were not detected in the groundwater samples collected from monitoring wells at Site 31C.

Pesticides and PCBs. Pesticide and PCB compounds were not detected in the groundwater samples collected from monitoring wells at Site 31C.

Inorganic Analytes. Thirteen inorganic analytes were detected in groundwater samples collected from Site 31C monitoring wells. Three analytes (potassium, vanadium, and cyanide) were detected at concentrations exceeding the background screening values. However, none of the inorganic analytes were detected at concentrations exceeding their respective Federal MCLs and Florida GCTLs.

Water Quality Parameters. Table 5-18 presents the groundwater quality parameters measured in the groundwater samples collected during Phase IIB of the RI. These parameters were within the range of values expected for the sand and gravel aquifer (Florida Geological Survey, 1992).

Table 5-18
Summary of Groundwater Field Parameters, Site 31C

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Monitoring Well Designation	Date Sampled	pH (SU)	Temperature (°C)	Specific Conductance (µmhos/cm)	Turbidity (NTU)	Redox (mV)	DO (mg/l)
WHF-31-1S	15-JUL-97	5.24	26.0	5	9.6	318.7	8.7
WHF-31-2S	30-OCT-96	5.27	25.0	39	18.0	323.0	9.7
WHF-31-2S	21-JUL-97	5.10	28.0	40	3.56	382.4	8.3
WHF-31-3S	31-OCT-96	5.03	23.3	20	2.1	341.0	8.1
WHF-31-3S	16-JUL-97	5.11	27.0	25	5.03	341.7	6.7
WHF-31-4S	16-JUL-97	4.59	25.0	28	3.5	278.9	7.6
WHF-31-4I	31-OCT-96	4.95	22.1	12	1.6	366.0	8.4
WHF-31-4I	16-JUL-97	4.69	25.0	25	1.07	341.0	9.0
WHF-31-4D	01-NOV-96	5.17	22.0	12	7.2	302.0	8.4
WHF-31-4D	16-JUL-97	5.04	25.0	22	9.7	305.9	13.6

Notes: SU = standard unit.
°C = degrees Celsius.
µmhos/cm = micromhos per centimeter.
NTU = nephelometric turbidity unit.
Redox = oxidation reduction potential.
mV = millivolt.
DO = dissolved oxygen.
mg/l = milligrams per liter.

Table 5-19
Organic, Inorganic, and Water Quality Parameters Measured in Groundwater Samples at Site 31C

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Location Identifier:	WHF-31-1S	WHF-31-1S Duplicate Sample	WHF-31-2S	WHF-31-2S Filtered Sample	WHF-31-2S	WHF-31-3S	WHF-31-3S
Sample Identifier:	31G00101	31G00101D	31G00201	31G00201F	31G00201	31G00301	31G00301
Collection Date:	15-JUL-97	15-JUL-97	30-OCT-96	30-OCT-96	21-JUL-97	31-JUL-96	16-JUL-97
Laboratory Sample No.:	ME241003	ME241004	MC262005	MC262006	ME303001	MC284002	ME260004
Volatile Organic Compounds (µg/l)							
Methylene chloride	--	--	--	--	NA	--	--
Trichloroethene	--	--	--	--	NA	--	--
Semivolatile Organic Compounds (µg/l)							
None detected				NA	NA		NA
Pesticides and PCBs (µg/l)							
None detected				NA	NA		NA
Inorganic Analytes (µg/l)							
Aluminum	96 J	91.1 J	--	--	NA	--	NA
Barium	22.6 J	22.5 J	55.4 J	53.9 J	NA	31.2 J	NA
Calcium	857 J	851 J	2.090 J	2,060 J	NA	1,960 J	NA
Chromium	--	--	--	8.5 J	NA	--	NA
Cobalt	--	--	--	1.6 J	NA	--	NA
Copper	--	1.4 J	--	--	NA	--	NA
Iron	120	103	--	57 J	NA	--	NA
Magnesium	662 J	675 J	1,450 J	1,470 J	NA	920 J	NA
Manganese	9.7 J	9.9 J	20.9 J	22.2 J	NA	--	NA
Nickel	--	--	2 J	2.1 J	NA	--	NA
Potassium	1,910 J	2,200 J	--	--	NA	--	NA

See notes at end of table.

Table 5-19 (Continued)
Organic, Inorganic, and Water Quality Parameters Measured in Groundwater Samples at Site 31C

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Location Identifier:	WHF-31-1S	WHF-31-1S Duplicate Sample	WHF-31-2S	WHF-31-2S Filtered Sample	WHF-31-2S	WHF-31-3S	WHF-31-3S
Sample Identifier:	31G00101	31G00101D	31G00201	31G00201F	31G00201	31G00301	31G00301
Collection Date:	15-JUL-97	15-JUL-97	30-OCT-96	30-OCT-96	21-JUL-97	31-OCT-96	16-JUL-97
Laboratory Sample No.:	ME241003	ME241004	MC262005	MC262006	ME303001	MC284002	ME260004
Inorganic Analytes (µg/l) (Continued)							
Sodium	1,760 J	1,890 J	--	--	NA	--	NA
Vanadium	1.8 J	--	--	--	NA	--	NA
Zinc	--	--	9.4 J	8.2 J	NA	--	NA
Cyanide	--	--	--	--	NA	7.9	NA
Groundwater Quality (mg/l)							
Alkalinity as $CaCO_3$	4	NA	--	NA	--	--	--
Ammonia-N	--	NA	--	NA	--	--	--
Chloride	2.7	NA	1.6	NA	1.8	2.3	2.2
Hardness as $CaCO_3$	--	NA	22	NA	--	14	--
Nitrate-nitrite	0.31	NA	1.68	NA	1.53	1.41	0.98
Phosphorous-P (total)	--	NA	--	NA	--	--	--
Sulfate	--	NA	3.7	NA	6.2	--	--
Sulfide	--	NA	--	NA	--	--	--
Total dissolved solids	27	NA	18	NA	33	14	12
Total Kjeldahl nitrogen	0.2	NA	--	NA	--	--	0.3
Total organic carbon	--	NA	--	NA	--	--	1
Dissolved organic carbon	--	NA	--	NA	--	1.3	--

See notes at end of table.

Table 5-19 (Continued)
Organic, Inorganic, and Water Quality Parameters Measured in Groundwater Samples at Site 31C

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Location Identifier:	WHF-31-4S	WHF-31-4I	WHF-31-4I	WHF-31-4D	WHF-31-4D
Sample Identifier:	31G00401	31G00402	31G00402	31G00403	31G00403
Collection Date:	16-JUL-97	31-OCT-96	16-JUL-97	01-NOV-96	16-JUL-97
Laboratory Sample No.:	ME261002	MC284003	ME261003	MC284004	ME261004
Volatile Organic Compounds (µg/l)					
Methylene chloride	--	--	1 J	--	--
Trichloroethene	--	--	--	--	2 J
Semivolatile Organic Compounds (µg/l)					
None detected			NA		NA
Pesticides and PCBs (µg/l)					
None detected			NA		NA
Inorganic Analytes (µg/l)					
Aluminum	93.7 J	--	NA	--	NA
Barium	30.8 J	9.8 J	NA	9.6 J	NA
Calcium	697 J	545 J	NA	548 J	NA
Chromium	--	--	NA	--	NA
Cobalt	--	--	NA	--	NA
Copper	3.8 J	--	NA	--	NA
Iron	41.6 J	--	NA	61.5 J	NA
Magnesium	731 J	335 J	NA	339 J	NA
Manganese	5.4 J	11.6 J	NA	9.2 J	NA
Nickel	--	--	NA	1.4 J	NA
Potassium	--	--	NA	--	NA

See notes at end of table.

Table 5-19 (Continued)
Organic, Inorganic, and Water Quality Parameters Measured in Groundwater Samples at Site 31C

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Location Identifier:	WHF-31-4S	WHF-31-4I	WHF-31-4I	WHF-31-4D	WHF-31-4D
Sample Identifier:	31G00401	31G00402	31G00402	31G00403	31G00403
Collection Date:	16-JUL-97	31-OCT-96	16-JUL-97	01-NOV-96	16-JUL-97
Laboratory Sample No.:	ME261002	MC284003	ME261003	MC284004	ME261004
Inorganic Analytes (µg/l) (Continued)					
Sodium	1,110 J	1,830 J	NA	1,930 J	NA
Vanadium	--	--	NA	--	NA
Zinc	--	--	NA	--	NA
Cyanide	--	1.3 J	NA	--	NA
Groundwater Quality (mg/l)					
Alkalinity as $CaCO_3$	4	4	18	4	--
Ammonia-N	--	--	--	--	--
Chloride	2.5	2.4	2.2	2.3	2.5
Hardness as $CaCO_3$	--	12	--	6	--
Nitrate-nitrite	0.65	0.37	0.67	0.43	0.46
Phosphorous-P (total)	--	--	--	--	--
Sulfate	--	--	--	--	--
Sulfide	--	--	--	--	--
Total dissolved solids	17	35	16	14	24
Total Kjeldahl nitrogen	0.2	--	--	--	0.1
Total organic carbon	1.8	--	--	--	--
Dissolved organic carbon	--	--	--	2.9	--

Notes: D = duplicate sample.
F = filtered sample.
µg/l = micrograms per liter.
-- = analyte, if present, is at a concentration less than the detection limit.
$CaCO_3$ = calcium carbonate.
PCB = polychlorinated biphenyl.
NA = not analyzed.
J = estimated value.
mg/l = milligrams per liter.

Table 5-20
Comparison of Analytes Detected in Site 31C Groundwater Samples to Background Screening and Benchmark Concentrations

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Analyte	Frequency of Detection[1]	Range of Detected Analyte Concentration[2]	Mean Analyte Concentration[3]	Background Screening Values[4]	Federal MCLs[5]	Florida Groundwater Guidance	
						Concentration[6]	Basis
Volatile Organic Compounds (µg/l)							
Methylene chloride	1/6	1	1	--	5	5	P
Trichloroethene	1/6	2	2	--	5	3	P
Semivolatile Organic Compounds (µg/l)							
None detected							
Pesticides and PCBs (µg/l)							
None detected							
Inorganic Analytes (µg/l)							
Aluminum	2/6	93.55* to 93.7	93.6	654	[8]200	200	S
Barium	6/6	8.9 to 55.4	26.4	72.6	2,000	2,000	P
Calcium	6/6	545 to 2,090	1,120	3,316	NA	NA	
Copper	2/6	3.8 to 7.0*	5.4	10.8	[8]1,000/[7]1,300	1,000	S
Iron	3/6	41.6 to 112*	71.5	964	[8]300	300	S
Magnesium	6/6	335 to 1,450	741	2,426	NA	NA	
Manganese	5/6	5.4 to 20.9	11.4	42.8	[8]50	50	S
Nickel	2/6	1.4 to 2	1.7	42.8	100	100	P
Potassium	1/6	2,060*	2,060	1,530	NA	NA	
Sodium	4/6	1,110 to 1,930	1,674	4,770	NA	160,000	P
Vanadium	1/6	13.4*	13.4	3.8	NA	49	T
Zinc	1/6	9.4	9.4	200	[8]5,000	5,000	S
Cyanide	2/6	1.3 to 7.9	4.6	7	200	200	P

See notes at end of table.

Table 5-20 (Continued)
Comparison of Analytes Detected in Site 31C Groundwater Samples to Background Screening and Benchmark Concentrations

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[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] Value indicated by an asterisk is the average of a sample and its duplicate. If the target analyte is not detected in either the environmental sample or associated duplicate, the value used for the nondetection is one-half the reporting limit.
[3] The mean of detected concentrations is the arithmetic mean of all environmental samples in which the analyte was detected; it includes a single value for an environmental sample and associated duplicate. The arithmetic mean does not include those environmental samples in which the analyte was not detected.
[4] The background screening value for organics is the mean detected concentration and will not be used for screening purposes in the risk assessment. The background screening value for inorganics is two times the mean detected background concentration and will be used for screening purposes in the risk assessment.
[5] Source: USEPA Region III, Risk-Based Concentrations Table, October, 1999.
[6] Source: 62-777 Florida Administrative Code, Groundwater Cleanup Target Levels, August 1999.
[7] The values correspond to a human cancer risk level of 1 in 1,000,000.
[8] The calculated values correspond to a noncancer hazard quotient of 0.1.

Notes: USEPA = U.S. Environmental Protection Agency.
RBC = risk-based concentration.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
PCB = polychlorinated biphenyl.
mg/kg = milligrams per kilogram.
-- = criteria not available.
ND = not detected.
P = primary.
S = secondary.
T = systemic toxicant.

Filtered Groundwater Samples. One filtered sample for TAL inorganics (metals only) was collected from monitoring well WHF-31-2S during the October 30, 1996 sampling event because of higher turbidity (18 NTUs). Table 5-19 also contains a summary of analytes detected in the filtered sample (sample identifier 31G00201F). Comparison of the analytical results between the filtered sample and the corresponding unfiltered sample (31G00201) indicates similar analytes and concentrations were detected in both samples. This suggests that the unfiltered sample is representative of the groundwater conditions at the site.

5.4 HYDROGEOLOGIC ASSESSMENT.

The hydrogeologic assessment included determining horizontal and vertical hydraulic gradients, hydraulic conductivities, and seepage velocities. The hydrogeologic assessment results are used to characterize the transport of chemicals of potential human health or ecological concern from the site by groundwater flow. Contaminant fate and transport for chemicals of potential concern at Site 31 is presented in Chapter 8.0 of this report.

Groundwater Flow Direction. Table 5-21 summarizes the results of the water-level measurements for the RI/FS sites in the Southwest and Southeast Disposal Areas. Groundwater flow patterns for the measurement events on January 16 to 18, 1997 (Figure 5-1) and August 7 to 9, 1997, (Figure 5-2) are similar, indicating a groundwater flow direction to the southwest for Sites 31A, 31B, 31C, and 31D. The potentiometric surface maps for the measurement events indicate a groundwater flow direction to the east-southeast for Sites 31E and 31F. Facility-wide water table elevation data for all measurement events are provided in Appendix D of this report.

Horizontal Hydraulic Gradients. Table 5-22 provides a summary of the horizontal hydraulic gradients calculated for the Southwest and Southeast Disposal Areas.

The horizontal hydraulic gradients in the Southwest Disposal Area ranged from 0.0054 feet per foot (ft/ft) (monitoring wells WHF-15-4S and WHF-15-5S) to 0.0070 ft/ft (monitoring wells WHF-16-2S and WHF-16-3S). The average horizontal hydraulic gradient for each measurement event ranged from 0.0062 ft/ft for January 1997 to 0.0060 ft/ft for August 1997. The overall average horizontal hydraulic gradient for all measurement events in 1997 was 0.0061 ft/ft.

The horizontal hydraulic gradient calculated for Site 31C was 0.0063 ft/ft (monitoring wells WHF-31-1S and WHF-31-3S) for the August 7 to 9, 1997 measurement event.

The horizontal hydraulic gradients in the Southeast Disposal Area ranged from 0.0027 ft/ft (monitoring wells WHF-9-1 and WHF-10-1) to 0.0036 ft/ft (monitoring wells WHF-11-2 and WHF-14-1). The average horizontal hydraulic gradient for each measurement event ranged from 0.0030 ft/ft for August 1997 to 0.0031 ft/ft for January 1997. The overall average horizontal hydraulic gradient for all measurement events in 1997 was 0.0030 ft/ft.

Vertical Hydraulic Gradients. Table 5-23 presents a summary of the vertical hydraulic gradients calculated for the Southwest and Southeast Disposal Areas.

The vertical hydraulic gradients for the Southwest Disposal Area were calculated using well pairs at Sites 15, 16, and 31C. Values calculated for the paired monitoring wells ranged from 0.0012 ft/ft to 0.0378 ft/ft. Vertical hydraulic gradients were in a downward direction for five of the seven well pairs; however, an upward gradient was observed for two monitoring well pairs (WHF-15-3S/WHF-15- 3D and WHF-16-3S/WHF-16-3D) during the January and August 1997 surveys.

Table 5-21
Summary of Water-Level Elevations

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Monitoring Well Designation	Well TOC Elevation (msl)	Well Depth (ft BTOC)	January 16 to 18, 1997		August 7 to 9, 1997		Approximate Screen Interval (ft msl)
			Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	
Background Locations							
WHF-1466-6DD	172.86	218	118.37	54.49	120.49	52.37	-35 to -45
WHF-1466-6D	173.05	190	118.50	54.55	120.62	52.43	-7 to -17
WHF-1466-6I	173.06	160	118.43	54.63	120.61	52.45	23 to 13
WHF-1466-6S	173.09	131	118.48	54.61	120.63	52.46	57 to 42
WHF-1466-7S	172.26	131	118.43	53.83	120.65	51.61	56 to 41
WHF-1466-21D	61.44	96	30.27	31.17	30.53	30.91	-24 to -34
WHF-1466-21I	61.75	69	30.90	30.85	31.16	30.59	3 to -7
WHF-1466-21S	62.39	40	31.52	30.87	31.80	30.59	37 to 22
WHF-1466-22D	139.11	167	95.00	44.11	96.51	42.60	-18 to -28
WHF-1466-22I	139.23	140	94.60	44.63	96.17	43.06	9 to -1
WHF-1466-22S	139.36	108	94.72	44.64	96.33	43.03	46 to 31
WHF-1466-23D	127.63	150	--	--	78.84	49.30	-12 to -22
WHF-1466-23I	128.22	120.57	--	--	78.86	49.29	18 to 8
WHF-1466-23S	128.44	90.14	--	--	78.98	49.90	53 to 38
Southwest Disposal Area							
Site 15, Southeast Landfill							
WHF-15-1	66.35	73.20	24.54	41.81	25.51	40.84	4 to -6
WHF-15-2I	60.10	63.20	18.01	42.09	18.93	41.17	7 to 2
WHF-15-2S	59.58	32.90	16.79	42.79	18.09	41.49	42 to 27
WHF-15-2D	59.39	112.44	17.33	42.06	18.24	41.15	-47 to -52
WHF-15-3D	69.44	119.48	23.59	45.85	24.85	44.59	-40 to -50
WHF-15-3I	69.69	87.83	24.25	45.44	25.57	44.12	-7 to -17
WHF-15-3S	69.29	37.94	23.63	45.66	24.80	44.49	47 to 32
WHF-15-4S	143.29	109.15	95.55	47.74	97.24	46.05	48 to 33
WHF-15-5D	106.11	128.38	64.34	41.77	65.40	40.71	-9 to -19
WHF-15-5I	105.17	98	63.40	41.77	64.46	40.71	20 to 10
WHF-15-5S	104.14	68.18	62.34	41.80	63.40	40.74	45 to 35
WHF-15-6D	75.08	123.36	33.19	41.89	34.15	40.93	-37 to -47
WHF-15-6S	74.29	43.73	32.14	42.15	33.12	41.17	46 to 31
WHF-15-7D	119.49	147.53	72.63	47.18	74.17	45.64	-16 to -26
WHF-15-7I	119.85	121.50	73.03	47.14	74.56	45.61	14 to 4
WHF-15-7S	120.18	88.85	73.36	47.09	74.90	45.55	49 to 34

See notes at end of table.

Table 5-21 (Continued)
Summary of Water-Level Elevations

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Monitoring Well Designation	Well TOC Elevation (msl)	Well Depth (ft BTOC)	January 16 to 18, 1997		August 7 to 9, 1997		Approximate Screen Interval (ft msl)
			Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	
Southwest Disposal Area							
Site 15, Southeast Landfill (Continued)							
WHF-15-8D	79.08	115	41.09	37.99	42.35	36.73	-24 to -34
WHF-15-8I	79.48	85.2	41.48	38.00	42.24	37.24	6 to 16
WHF-15-8S	79.67	55	41.67	38.00	41.79	37.88	42 to 57
Site 16, Open Disposal and Burning Area							
WHF-16-1	50.04	43.00	10.26	39.76	10.87	39.17	17 to 7
WHF-16-2	82.19	74.20	--	--	--	--	12 to 7
WHF-16-2I	80.60	130.14	33.88	46.72	35.11	45.49	-38 to -48
WHF-16-2S	83.66	49.80	35.26	46.93	36.49	45.70	48 to 33
WHF-16-3D	51.40	118.08	8.34	43.06	9.28	42.12	-56 to -66
WHF-16-3I	51.31	52.87	12.04	39.27	12.67	38.64	3 to -1
WHF-16-3II	51.22	78.91	12.12	39.10	12.75	38.47	-26 to -31
WHF-16-3S	51.69	23.25	12.23	39.46	12.92	38.77	43 to 27
WHF-16-4D	52.87	122.54	12.80	40.07	13.45	39.42	-59 to -79
WHF-16-4II	53.01	64.80	12.81	40.20	13.47	39.54	0 to -9
WHF-16-4S	54.79	22.38	14.15	40.64	14.86	39.93	47 to 32
WHF-16-5	37.54	10.00	3.35	34.19	3.67	33.87	34 to 24
WHF-16-6D	56.77	62.10	14.18	42.61	15.09	41.68	7 to -3
WHF-16-6S	56.57	22.50	13.96	42.61	14.73	41.84	50 to 35
WHF-16-7D	38.05	75.20	1.99	36.06	2.39	35.66	-25 to -35
WHF-16-7I	38.17	43.50	2.11	36.06	2.50	35.67	5 to -5
WHF-16-7S	38.27	13.00	3.53	34.74	4.00	34.27	35 to 25
Site 31C, Sludge Disposal Area							
WHF-31-1S	149.70	115.35	--	--	105.17	44.53	49 to 34
WHF-31-2S	122.37	88.80	80.12	42.25	82.36	40.01	49 to 34
WHF-31-3S	105.49	75.70	67.74	37.75	68.63	36.86	45 to 30
WHF-31-4D	106.63	144.20	68.17	38.46	69.09	37.54	-28 to -38
WHF-31-4I	107.14	105.40	68.53	38.61	69.45	37.69	12 to 2
WHF-31-4S	106.52	82.40	--	--	68.61	37.91	39 to 24

See notes at end of table.

Table 5-21 (Continued)
Summary of Water-Level Elevations

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Monitoring Well Designation	Well TOC Elevation (msl)	Well Depth (ft BTOC)	January 16 to 18, 1997		August 7 to 9, 1997		Approximate Screen Interval (ft msl)
			Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	Depth to Groundwater (ft BTOC)	Groundwater Elevation (ft msl)	
Southeast Disposal Area							
Site 9, Waste Fuel Disposal Pit							
WHF-9-1	146.55	118.40	83.07	63.48	84.69	61.86	39 to 29
WHF-9-2	161.07	124.35	96.01	65.06	97.88	63.19	44 to 36
WHF-9-3S	150.85	108.24	87.01	63.84	88.69	62.16	57 to 42
Site 10, Southeast Open Disposal Area (A)							
WHF-10-1	146.73	118.20	84.50	62.23	86.16	60.57	39 to 29
WHF-10-2	150.75	113.14	88.38	62.37	90.08	60.67	49 to 34
Site 11, Southeast Open Disposal Area (B)							
WHF-11-1	124.86	128.40	58.24	66.47	59.28	65.43	7 to -2
WHF-11-1S	116.65	54.40	45.71	70.94	44.83	71.82	78 to 63
WHF-11-2	148.12	125.84	90.29	57.83	92.20	55.92	27 to 22
WHF-11-3	117.19	73.16	59.10	58.09	60.13	57.06	59 to 44
WHF-11-4D	125.79	109	69.72	59.56	71.16	58.12	27 to 17
WHF-11-4S	129.43	79	70.07	59.36	71.19	58.24	65 to 50
Site 12, Tetraethyl Lead Disposal Area							
WHF-12-1	136.40	113.40	77.02	59.38	78.42	57.98	33 to 23
WHF-12-2	135.56	85	76.11	59.45	79.54	56.02	65 to 50
Site 13, Sanitary Landfill							
WHF-13-1	102.66	122.90	48.38	54.28	49.41	53.25	-9 to -19
WHF-13-1I	109.17	93	52.20	56.97	53.63	55.54	26 to 16
WHF-13-1S	108.97	61.30	52.27	56.70	53.55	55.42	61 to 46
WHF-13-2S	102.86	72.41	49.10	53.76	50.14	52.52	45 to 30
WHF-13-3	81.44	41	--	--	28.26	53.18	55 to 40
WHF-13-4	80.37	41	--	--	31.35	49.02	54 to 39
Site 14, Short-Term Sanitary Landfill							
WHF-14-1	139.69	153.20	85.85	53.84	87.11	52.58	-3 to -13
WHF-14-2	145.80	118.30	92.55	53.25	93.83	52.17	42 to 27

Notes: TOC = top of casing.
msl = mean sea level.
ft BTOC = feet below top of casing.
ft msl = feet above mean sea level.
-- = no water level was recorded for this round of sampling.

Figure 5-1 Potentiometric Surface Map of the Water Table in the Sand-and-Gravel Aquifer, South Field Area, January 1997

Figure 5-2 Potentiometric Surface Map of the Water Table in the Sand-and-Gravel Aquifer, South Field Area, August 1997

Table 5-22
Summary of Horizontal Hydraulic Gradients

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Well Designation	Distance Between Wells (feet)	January 16 to 18, 1997		August 7 to 9, 1997	
		Water Level (msl)	Horizontal Gradient (ft/ft)	Water Level (msl)	Horizontal Gradient (ft/ft)
Southwest Disposal Area					
WHF-16-2S	1,063	46.93	0.0070	45.70	0.0065
WHF-16-3S		39.46		38.77	
WHF-15-4S	983	47.74	0.0060	46.05	0.0054
WHF-15-5S		41.80		40.74	
WHF-15-3S	523	45.66	0.0055	44.49	0.0057
WHF-15-2S		42.79		41.49	
Site 31C					
WHF-31-1S	1,215	--	--	44.53	0.0063
WHF-31-3S		--		36.86	
	Average gradient		0.0062		0.0060
Southeast Disposal Area					
WHF-9-3S	526	63.84	0.0028	62.16	0.0028
WHF-10-2		62.37		60.67	
WHF-9-1	460	63.48	0.0027	61.86	0.0028
WHF-10-1		62.23		60.57	
WHF-9-2	842	65.06	0.0032	63.19	0.0030
WHF-10-2		62.37		60.67	
WHF-11-3	1,381	58.09	0.0031	57.06	0.0033
WHF-13-2		53.76		52.52	
WHF-11-2	1,123	57.83	0.0036	55.92	0.0030
WHF-14-1		53.84		52.58	
WHF-9-2	3,547	65.06	0.0033	63.19	0.0031
WHF-14-2		53.25		52.17	
	Average gradient		0.0031		0.0030

Notes: msl = mean sea level.
ft/ft = feet per foot.
-- = measurement not recorded.

The vertical hydraulic gradients for the Southeast Disposal Area were calculated using well pairs at Site 11 (monitoring wells WHF-11-4S and WHF-11-4D) and Site 14 (monitoring wells WHF-14-1 and WHF-14-2).

Values calculated for the paired monitoring wells ranged from 0.0036 ft/ft to 0.0144 ft/ft. Vertical hydraulic gradients were in an upward direction; however, a downward gradient was observed on Site 11 during the August 7 to 9, 1997 survey.

Hydraulic Conductivity and Seepage Velocity. Ten slug tests were conducted in the Southwest Disposal Areas and five slug test were conducted in the Southeast Disposal Areas during the RI. Table 5-24 summarizes the hydraulic conductivity values calculated for monitoring wells in the Southwest and Southeast Disposal Areas. Two to six trials of rising head slug tests were conducted in each of the monitoring wells tested in these areas.

Average hydraulic conductivity values for individual monitoring wells in the Southwest Disposal Area ranged from 3.67 feet per day (ft/day) (1.29×10^{-3} centimeters per second [cm/sec]) for WHF-15-6S to 46.49 ft/day (1.64×10^{-2} cm/sec) for WHF-16-3II. The geometric mean of the hydraulic conductivity data from monitoring wells tested in the Southwest Disposal Area was 11.45 ft/day (4.04×10^{-3} cm/sec).

Average hydraulic conductivity values for individual monitoring wells in the Southeast Disposal Area ranged from 4.73 ft/day (1.67×10^{-3} cm/sec) for WHF-11-3 to 14.55 ft/day (5.13×10^{-3} cm/sec) for WHF-13-2S. The geometric mean of the hydraulic conductivity data from monitoring wells tested in the Southeast Disposal Area was 8.38 ft/day (2.96×10^{-3} cm/sec).

Hydraulic conductivity data from monitoring wells WHF-10-2 and WHF-11-2 in the Southeast Disposal Area exceeded the 20 percent variance criteria in the data evaluation procedure and were rejected.

The evaluation of hydraulic conductivity data is presented in Section 2.3 in Table 2-2 of *Technical Memorandum No. 4, Hydrogeologic Assessment* (January) (ABB-ES, 1995c).

Seepage Velocity. Table 5-25 summarizes the average linear pore water velocity (seepage velocities) for the water table zone of the sand and gravel aquifer at sites in the Southwest and Southeast Disposal Areas. The calculations used an assumed effective porosity of 0.35 for the sites. The value represents silty through poorly graded sands (Fetter, 1988). Seepage velocities for the Southwest Disposal Area ranged from 0.13 ft/day to 0.32 ft/day. The average of the seepage velocity values for the Southwest Disposal Area sites was 0.23 ft/day (84 feet per year [ft/yr]). The average of the seepage velocity values for the Southeast Disposal Area sites was 0.08 ft/day (29 ft/yr).

6.0 HUMAN HEALTH RISK ASSESSMENT

An HHRA has been conducted as part of the RI/FS for Site 31 at NAS Whiting Field. The purpose of the HHRA is to characterize the risks associated with the hypothetical exposures to site-related chemicals. Contaminant fate and transport is discussed in Chapter 8.0. Based upon a preliminary evaluation of human health risks, an interim remedial action (IRA) to remove areas of contaminated surface soil was completed at Site 31C, thereby eliminating the risks associated with potential exposure. However, the data collected during the RI have been evaluated for the purpose of this HHRA. Information provided in the IRA completion report is used to supplement relevant sections of the HHRA. Figures showing the extent of soil removed during the IRA, and analytical laboratory data tables for IRA screening, delineation and confirmatory samples, are attached as Appendix I.

This HHRA is conducted in accordance with the following guidance documents:

- USEPA's Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A) (USEPA, 1989b),
- Guidance for Data Useability in Risk Assessment (Part A), Final (USEPA, 1992a), and
- Region IV Risk Assessment Guidance (USEPA, 1995a).

Additionally the HHRA will consider Florida Department of Environmental Protection (FDEP) guidance:

Florida Soil Cleanup Target Levels (SCTLs)
Florida Groundwater Cleanup Target Levels (GCTLs)

The methodology for the HHRA is described in Chapter 2 of the GIR (HLA, 1998). The HHRA methodology presented in the GIR (HLA, 1998) consists of the following steps:

- data evaluation,
- selection of chemicals of potential concern (COPCs),
- exposure assessment,
- toxicity assessment, and
- risk characterization.

For the purpose of this HHRA, Sites 31B and 31D (Site 31BD) and Sites 31E and 31F (Sites 31EF) were combined and evaluated as single exposure areas due to their close proximity. Sites 31A and 31C were retained as separate exposure areas because of increased exposure point concentrations (EPCs).

6.1 DATA EVALUATION.

The data evaluation involves numerous activities, including sorting data by medium, evaluating sample quantitation limits (SQLs), and evaluating quality of data with respect to qualifiers. The field sample data and background sample data for Site 31 were divided into the following categories: surface soil, subsurface soil, groundwater.

SQLs are compared to USEPA Region III RBCs and Florida screening values. Surface and subsurface soil SQLs were compared to Region III RBCs and Florida SCTLs, for residential and industrial scenarios, respectively. Groundwater SQLs were compared to Florida GCTLs and USEPA Region III tap water RBCs. Analyte-specific SQLs that are above RBCs and Florida screening values are identified and discussed in the uncertainty analysis.

The quality of the data was evaluated with respect to the data qualifiers. Only data of sufficient quality were retained for evaluation in this HHRA. The HHRA considers data with "J", "U", and "UJ" qualifiers as well as

data with no qualifier. Discussion of the quality of data obtained by the RAC during the IRA is presented in the IRA Completion Report.

6.1.1 Background Data

A background investigation that included the collection and analysis of 15 surface soil samples, 14 subsurface soil samples, and 10 groundwater samples was completed. Locations of background soil samples were selected to represent areas that were unlikely to be affected by past or present waste disposal practices, and major soil types based on the USDA Soil Conservation Service (USDA, 1980) soil classification. Aerial photographs were used to identify areas that have not been subjected to past or present waste disposal practices.

Ten background surface soil samples were collected on August 10, 1992, during the RI Phase IIA investigation. The samples were analyzed for PAHs using CLP methods, TCL PCBs, and TAL inorganic analytes. Five additional background surface soil samples were collected between December 4, 1995, and January 11, 1996, during the RI Phase IIB investigation. These samples were analyzed for TCL VOCs, TCL SVOCs (including PAHs), TCL pesticides and PCBs, and TAL inorganic analytes.

The 14 subsurface soil samples were collected from 7 soil borings between May 20 and 21, 1996, during the RI Phase IIB sampling. All subsurface soil samples were analyzed for TCL VOCs, SVOCs, pesticides, PCBs, TAL inorganic analytes, total organic carbon (TOC), and grain size distribution. Six of the seven background soil borings were completed at locations where background surface soil samples were also collected. Soil boring location BKB007XX (Subsurface soil samples BKB00701 and BKB00702) did not have a corresponding background surface soil sample. A subsurface soil sample was collected from 5 to 7 feet bgs and from 10 to 12 feet bgs at each soil boring location. The subsurface soil sample collection depths were determined to represent depths generally associated with the likely maximum depth of excavations or construction activities.

A total of 10 background groundwater samples were collected from the 7 background monitoring wells during the RI Phase IIA and the Phase IIB sampling events. All background monitoring well locations, with the exception of WHF-BKG-3, were hydraulically upgradient from all NAS Whiting Field RI sites. Although monitoring well WHF-BKG-3 is potentially located cross gradient from RI Site 17, it is not believed to be influenced by the site and was used in the background evaluation. Four additional monitoring wells were installed as well clusters during the RI Phase IIB sampling program.

Groundwater samples were collected on October 14 and 15, 1993, from the three background shallow monitoring wells during the RI Phase IIA sampling program. These samples were analyzed for TCL VOCs, SVOCs, pesticide/PCBs, and TAL inorganics. Field water quality measurements of temperature, pH, specific conductance, and turbidity were also collected during sampling.

Groundwater samples were collected from all seven background monitoring wells between July 16 and July 30, 1996, during RI Phase IIB sampling program. These samples were analyzed for TCL VOCs, SVOCs, pesticide/PCBs, TAL inorganics, and general water chemistry parameters: alkalinity, chloride, hardness, ammonia, nitrogen, nitrate/nitrite nitrogen, total sulfide, sulfate, total Kjeldahl nitrogen (TKN), total phosphorus, total dissolved solids (TDS), and TOC.

Background sample analytical results are discussed in detail in Section 3.3 and in Tables 3-8 through 3-24 of the GIR (HLA, 1998). Background sample locations are shown in Figures 3-10 (soil) and 3-12 (groundwater) of the GIR.

6.2 SELECTION OF HUMAN HEALTH CHEMICALS OF POTENTIAL CONCERN.

The human health chemicals of potential concern (HHCOPCs) were selected per the methodology described in Section 2.5 of the GIR (HLA, 1998). An evaluation of VOCs, SVOCs, pesticides, PCBs, and inorganic analytes is included in this HHRA, for all surface soil, subsurface soil and groundwater samples collected during the RI. The HHCOPC methodology considers 1) frequency of detection, 2) consistency with background conditions, 3) a comparison to regulatory and risk-based screening values, and 4) a comparison to essential nutrient levels.

In selecting HHCOPCs, USEPA Region IV criteria were used (USEPA, 1995a). For each medium, the following criteria were employed to exclude detected analytes from the list of HHCOPCs. Each criterion by itself is justification for excluding the analyte:

Less than 5 Percent Frequency of Detection. If an analyte has a frequency of detection (number of samples in which the analyte is detected divided by the number of samples analyzed for that analyte) less than 5 percent (USEPA, 1995a) and is not selected as an HHCOPC in another medium, it is not selected as an HHCOPC. This criterion is not used if there are less than 20 environmental samples for a specific medium; therefore, it was not employed in this HHRA.

Less than Background Screening Concentrations. If the maximum detected concentration of an analyte is less than twice the arithmetic mean of the background concentration (inorganics only), the analyte is not selected as an HHCOPC (USEPA, 1995a). The background screening values for surface soil, subsurface soil, and groundwater are identified below.

- A representative surface soil background data set consisting of Troup Loamy Sand is used for background screening of Site 31 surface soil samples with the exception of Sites 31B and 31D, which used a combined data set consisting of Bonifay Loamy Sand, Dothan Fine Sandy Loam, and Troup Loamy Sand. Site 31B soil was consistent with the Bonifay Loamy Sand/Troup Loamy Sand background soil type and Site 31D was consistent with Troup Loamy Sand/Dothan soil type. Since the same background sample was used for the Bonifay Loamy Sand and Dothan Fine Sandy Loam, the combined data set is identical for Sites 31B and 31D. Sample locations are identified on Figure 3-10 and are discussed in Subsection 3.3.1 of the GIR (HLA, 1998). The background surface soil data used for screening surface soils at Site 31 are presented in Tables 3-8, 3-9 and 3-14 of the GIR (HLA, 1998).

- Background subsurface soil sample locations are identified on Figure 3-11 and are discussed in Subsection 3.3.2 of the GIR (HLA, 1998). Tables 3-15 through 3-17 present the background screening data and Table 3-18 presents summary statistics for screening subsurface soil at Site 31.

- Background groundwater sample locations are identified on Figure 3-12 and are discussed in Subsection 3.3.3 of the GIR (HLA, 1998). Tables 3-21 through 3-23 of the GIR (HLA, 1998) present background screening data for groundwater. Table 3-24 of the GIR (HLA, 1998) presents the summary statistics used for screening the groundwater at Site 31.

Less than Risk-Based Screening Concentrations, Standards, and Guidelines. If the maximum detected concentration of the analyte in a medium is less than its corresponding USEPA Region III RBC (USEPA, 1997a), and less than Federal and Florida standards and guidelines, the analyte is not selected as an HHCOPC (USEPA, 1995b). The target hazard quotient (HQ) in the USEPA Region III RBC table is 1 and the target cancer risk is 1×10^{-6}. All RBCs based on noncarcinogenic effects are adjusted for a target HQ of 0.1 per Region IV guidance (USEPA, 1995b).

The residential soil RBCs and Florida SCTLs for residential areas are used for surface soil. The construction worker is the only receptor typically evaluated for potential exposures to subsurface

soil. Hence, use of the industrial soil RBCs and Florida SCTLs for industrial areas to select COPCs in subsurface soil would be appropriate. Nonetheless, residential screening values were used for subsurface soil to provide a conservative assessment for subsurface soils.

No RBC is available for lead in soil due to a lack of toxicity data. Based on USEPA recommendation, a screening level of 400 milligrams per kilogram (mg/kg) for lead under residential land use is used as the RBC for lead in soil (USEPA, 1994c). The maximum detected concentration of any organic analyte in surface soil also detected in groundwater (above a standard or guideline) is compared to the Florida Leaching Value (FDEP, 1996) for that analyte.

Tap water RBCs (USEPA, 1997a), Federal MCLs (USEPA, 1996b) and Florida GCTLs are used as screening criteria for the groundwater.

Less than Essential Nutrient Screening Values. If the maximum detected concentration of an essential nutrient in a medium is below a toxic level and consistent with or only slightly above its background concentration, the essential nutrient is not selected as an HHCOPC. The derivation of essential nutrient screening values is presented in Appendix C-1 of the GIR.

HHCOPCs were not screened using the iron essential nutrient value; the RBC was used instead. However, if iron is determined to be a risk driver, a comparison of the risk concentrations against the essential nutrient level for iron will be presented in the uncertainty section for that medium.

If the analyte meets any of the above criteria, is not a member of the same chemical class as other HHCOPCs in the medium, and is not a breakdown product of other HHCOPCs in the medium, then the analyte is not selected as an HHCOPC. In situations where multiple screening values are available, a chemical is excluded only if its maximum screening concentration is less than all of the corresponding screening values. Appendix F presents the RBCs, regulatory guidance values, and ARARs that are used in HHCOPC selection. After applying these criteria with professional judgment, HHCOPCs are identified for each medium. HHCOPC selection for each media is presented below in Subsections 6.2.1 through 6.2.6.

6.2.1 Surface Soil Site 31A

Twelve samples and two duplicates were collected from Site 31A (listed in the footnotes of Table 6-1). Sample locations and individual sample analytical data are presented on Figure 3-1 and in Tables 5-2 and 5-14, respectively. The HHRA for 31A surface soil includes four samples identified as subsurface soil in the RI sections of this report (Table 5-14). The basis for this conservative decision is that the subsurface soil sampling interval begins at 1.5 feet, which is within FDEP's definition of surface soil (FDEP-defined surface soils include soils within the top two feet of ground surface). Because a potential receptor could contact soil at a depth of 1.5 feet, these four samples (31B00101, 31B00201, 31B00301, and 31B00401, as well as a duplicate sample, 31B00201D) were combined with the shallower surface soil samples and the combined data set was evaluated as 31A surface soil. The background data set for surface soil is applicable for all soils (0-1 and 1.5 feet bgs samples) evaluated in the Site 31A surface soil data set.

No compounds or analytes were detected at concentrations in excess of their respective background screening criteria and/or the lesser of the RBC or residential SCTLs. Therefore, no HHCOPCs were identified for surface soil at Site 31A. The HHCOPC selection criteria for surface soil at Site 31A are presented in Table 6-1.

6.2.2 Surface Soil, Sites 31B and 31D

Eight surface soil samples were collected from Sites 31B and 31D (listed in footnotes of Table 6-2). Sample locations and/or individual sample analytical data are presented on Figure 3-2 and in Tables 5-4 and 5-8, respectively.

Table 6-1
Selection of Human Health Chemicals of Potential Concern for Surface Soil at Site 31A

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Reporting Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Concentration[4]	Selected Screening Concentration[5]	Analyte HHCOPC? (Yes/No)	Reason[6]
Volatile Organic Compounds (µg/kg)								
1,1-Dichloroethene	1/12	5 to 12	2.3*	2.3	NA	90	No	S
Benzene	1/12	5 to 12	1.8*	1.8	NA	1,100	No	S
Chlorobenzene	1/12	5 to 12	1.8*	1.8	NA	30,000	No	S
Toluene	1/12	5 to 12	2.3*	2.3	NA	380,000	No	S
Trichloroethene	1/12	5 to 12	2.3*	2.3	NA	30	No	S
Xylenes (total)	6/12	5 to 12	1 to 6	3	NA	5,900,000	No	S
Semivolatile Organic Compounds (µg/kg)								
bis(2-Ethylhexyl)phthalate	3/12	340 to 380	38 to 120*	70	NA	46,000	No	S
Pesticides and PCBs (µg/kg)								
4,4-DDD	1/12	3.6 to 17	1.6	1.6	NA	2,700	No	S
4,4-DDE	1/12	3.6 to 17	3.2	3.2	NA	1,900	No	S
Dieldrin	1/12	3.6 to 17	1.3	1.3	NA	40	No	S
alpha-Chlordane	2/12	1.9 to 84	1.7 to 1.9	1.8	NA	1,800	No	S
gamma-Chlordane	2/12	1.9 to 84	2.3 to 4	3.2	NA	1,800	No	S
Inorganic Analytes (mg/kg)								
Aluminum	12/12	40	154 to 6,010	1,630	15,336	7,800	No	B,S
Arsenic	4/12	0.21 to 2	0.93 to 2.9	1.5	3	0.43	No	B
Barium	12/12	40	1.2 to 9.3	4	23	110	No	B,S
Beryllium	4/12	0.05 to 1	0.05 to 0.28*	0.11	0.3	16	No	B,S

See notes at end of table.

Table 6-1 (Continued)
Selection of Human Health Chemicals of Potential Concern for Surface Soil at Site 31A

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Reporting Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Concentration[4]	Selected Screening Concentration[5]	Analyte HHCOPC? (Yes/No)	Reason[6]
Inorganic Analytes (mg/kg) (Continued)								
Cadmium	2/12	0.57 to 1	0.28* to 0.32	0.3	0.52	3.9	No	B,S
Calcium	11/12	109 to 1,000	68 to 139	102	494	1,000,000	No	B,S
Chromium	11/12	1.95 to 2	0.75 to 3.9	2	10.6	23	No	B,S
Cobalt	2/12	0.32 to 10	1.2 to 2.9*	2	3	470	No	B,S
Copper	11/12	4.7 to 5	3.1 to 10.9	6.1	9.4	110	No	S
Iron	12/12	20	284 to 3,690	1,330	8,626	2,300	No	B
Lead	11/12	0.6 to 5.8	2.7 to 10.8	5	10.8	400	No	B,S
Magnesium	11/12	10 to 1,000	13.2 to 118	40.8	268	460,468	No	B,S
Manganese	12/12	3	0.92* to 70.9	9.4	384	160	No	B,S
Mercury	4/11	0.04 to 0.1	0.04* to 0.14	0.08	0.12	2.3	No	S
Nickel	5/12	2.2 to 8	1.5 to 6	2.7	7.2	110	No	B,S
Potassium	3/12	124.5 to 1,000	96.1 to 127	108	197.2	1,000,000	No	B,S
Selenium	2/12	0.43 to 1	0.16 to 0.17	0.17	0.46	39	No	B,S
Silver	8/12	0.74 to 2	0.39 to 1.3	0.79	0.7	39	No	S
Sodium	11/12	149 to 1,000	123 to 192	161	398	1,000,000	No	B,S
Thallium	3/12	0.33 to 2	0.13 to 0.36	0.23	1.16	0.55	No	B,S
Vanadium	10/12	0.27 to 10	0.33 to 8.8	2.9	21	15	No	B,S
Zinc	10/12	4 to 6.15	4.3 to 27.1	8.5	15.6	2,300	No	S

See notes at end of table.

Table 6-1 (Continued)
Selection of Human Health Chemicals of Potential Concern for Surface Soil at Site 31A

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

[1] Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
[2] A value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect, one-half of the contract-required quantification limit/contract-required detection limit is used as a surrogate concentration for the nondetect.
[3] The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.
[4] The background screening value is twice the average of detected concentrations for inorganic analytes in background samples.
[5] For all chemicals except the essential nutrients (calcium, magnesium, potassium, and sodium), the lesser of the U.S. Environmental Protection Agency (USEPA) Region III Risk-Based Concentration (RBC) table for residential soil exposure per January 1993 guidance (*Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening*, EPA/903/R-93-001) (USEPA, 1993a) or the Florida Soil Cleanup Goals (Florida Department of Environmental Protection, 1999) was used for screening. Values from the USEPA Region III RBC Tables, dated May 2000, are based on an excess lifetime cancer risk of 1×10^{-6} or an adjusted hazard quotient of 0.1. For the essential nutrients, screening values were derived based on recommended daily allowances. Lead value is from the Revised Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER Directive 9355.4-12) (USEPA, 1994c). Values are presented in Appendix C of this report.
[6] Analyte was excluded from the risk assessment for the following reasons:
B = the maximum detected concentration did not exceed the background screening concentration; therefore, the analyte will not be considered further.
S = the maximum detected concentration did not exceed the screening concentration; therefore, the analyte will not be considered further.

Notes: The average of a sample and its duplicate is used for all table calculations.
Samples: 31-SL-17, 31-SL-18, 31-SL-19, 31-SL-20, 31-SL-21, 31-SL-22 31-SL-23, 31-SL-24, 31B00101, 31B00201, 31B00301, 31B00401.
Sample duplicates: 31-SL-22A, 31B00201D.
Background samples: BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00401, BKS00501, and 31B00501.
Background duplicate sample: BKS00201D.

HHCOPC = human health chemical of potential concern.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
NA = not applicable.
PCB = polychlorinated biphenyl.
DDD = dichlorodiphenyldichloroethane.
DDE = dichlorodiphenyldichloroethene.
Mg/kg = milligrams per kilogram.

Table 6-2
Selection of Human Health Chemicals of Potential Concern for Surface Soil at Sites 31B and 31D

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Reporting Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Concentration[4]	Selected Screening Concentration[5]	Analyte HHCOPC? (Yes/No)	Reason[6]
Volatile Organic Compounds (µg/kg)								
Xylenes (total)	3/8	5 to 11	2 to 4	3	NA	5,900,000	No	S
Pesticides and PCBs (µg/kg)								
4,4'-DDD	1/8	3.6 to 35	4.9	4.9	NA	2,700	No	S
4,4'-DDT	1/8	3.6 to 35	10	10	NA	1,900	No	S
Inorganic Analytes (mg/kg)								
Aluminum	8/8	40	4,360 to 10,900	7,480	15,334	7,800	No	B
Arsenic	8/8	2	0.66 to 2.3	1.3	3.1	0.43	No	B
Barium	8/8	40	4.6 to 16.8	9.7	23.7	110	No	B,S
Beryllium	4/8	1	0.07 to 0.15	0.1	0.36	16	No	B,S
Calcium	8/8	1,000	43.2 to 354	222	404	1,000,000	No	B,S
Chromium	8/8	2	3.6 to 8.9	5.7	10.7	23	No	B,S
Cobalt	5/8	0.34 to 10	0.67 to 1.2	0.87	2.87	470	No	B,S
Copper	4/8	5	3.7 to 13.1	6.7	9.4	110	No	S
Iron	8/8	20	2,590 to 6,290	4,020	8,588	2,300	No	B
Lead	8/8	0.6 to 1	2.9 to 7.1	4.2	11.5	400	No	B,S
Magnesium	8/8	1,000	86.6 to 250	146	258	460,468	No	B,S
Manganese	8/8	3	33.1 to 250	148	403	160	No	B
Mercury	6/8	0.05 to 0.1	0.01 to 0.37	0.09	0.12	2.3	No	S
Nickel	3/8	2.3 to 8	3.2 to 5.1	4.3	7.2	110	No	B,S
Potassium	2/8	129 to 1,000	168 to 183	176	177	1,000,000	No	S
Selenium	1/8	0.45 to 1	0.37	0.37	0.44	39	No	B,S

See notes at end of table.

Table 6-2 (Continued)
Selection of Human Health Chemicals of Potential Concern for Surface Soil at Sites 31B and 31D

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Reporting Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Concentration[4]	Selected Screening Concentration[5]	Analyte HHCOPC? (Yes/No)	Reason[6]
Inorganic Analytes (mg/kg) (Continued)								
Silver	3/8	0.33 to 2	3.6 to 5.9	4.6	0.7	39	No	S
Sodium	4/8	1,000	127 to 202	167	388	1,000,000	No	B,S
Vanadium	8/8	10	6.6 to 18.7	10.5	21.2	15	No	B
Zinc	8/8	4	3.8 to 12	7.5	15.4	2,300	No	B,S

[1] Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
[2] For duplicate samples having one nondetect, one-half of the contract-required quantification limit/contract-required detection limit is used as a surrogate concentration for the nondetect.
[3] The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.
[4] The background screening value is twice the average of detected concentrations for inorganic analytes in background samples.
[5] For all chemicals except the essential nutrients (calcium, magnesium, potassium, and sodium), the lesser of the U.S. Environmental Protection Agency (USEPA) Region III Risk-Based Concentration (RBC) table for residential soil exposure per January 1993 guidance (*Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening*, EPA/903/R-93-001) (USEPA, 1993a) or the Florida Soil Cleanup Goals (Florida Department of Environmental Protection, 1999) was used for screening. Values from the USEPA Region III RBC Tables, dated May 2000, are based on an excess lifetime cancer risk of 1×10^{-6} or an adjusted hazard quotient of 0.1. For the essential nutrients, screening values were derived based on recommended daily allowances. Lead value is from the Revised Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER Directive 9355.4-12) (USEPA, 1994c). Values are presented in Appendix C of this report.
[6] Analyte was excluded from the risk assessment for the following reasons:
B = the maximum detected concentration did not exceed the background screening concentration; therefore, the analyte will not be considered further.
S = the maximum detected concentration did not exceed the selected screening concentration; therefore, the analyte will not be considered further.

Notes: The average of a sample and its duplicate is used for all table calculations.
Samples: 31-SL-09, 31-SL-10, 31-SL-11, 31-SL-16, 31S00101, 31S00201, 31S00301, 31S01401.
Background samples: BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00301, BKS00401, and BKS00501.
Background duplicate sample: BKS00201D.

HHCOPC = human health chemical of potential concern.
µg/kg = micrograms per kilogram.
NA = not applicable.
PCB = polychlorinated biphenyl.
DDD = dichlorodiphenyldichloroethane.
DDT = dichlorodiphenyltrichloroethane.
mg/kg = milligrams per kilogram.

No compounds or analytes were detected at concentrations in excess of their respective background screening criteria and/or the lessor of the RBC or SCTL for residential areas. Therefore, no HHCOPCs were identified for surface soil at Sites 31B and 31D. The HHCOPC selection criteria for surface soil at Sites 31B and 31D are presented in Table 6-2.

6.2.3 Surface Soil, Site 31C

Fourteen surface soil samples and one duplicate sample were collected from Site 31C (listed in footnotes of Table 6-3). Sample locations and individual sample analytical data are presented on Figure 3-2 and in Table 5-6, respectively.

Aroclor-1260, dieldrin, and nine inorganic analytes (aluminum, barium, cadmium, chromium, copper, iron, lead, mercury, and silver) were detected at concentrations in excess of their respective background screening criteria and/or the lesser of the RBCs or SCTLs. Therefore, these compounds and analytes are HHCOPCs for surface soil at Site 31C. The HHCOPC selection criteria for surface soil at Site C are presented in Table 6-3. Data presented in the IRA Completion Report indicate all identified areas of surface soil containing HHCOPCs at concentrations in excess of their respective background screening criteria and the lesser of the RBC or SCTL for residential areas have been removed.

6.2.4 Surface Soil, Sites 31E and 31F

Thirteen surface soil samples and two duplicate samples were collected from Sites 31E and 31F (listed in footnotes of Table 6-4). Sample locations and individual sample analytical data are presented on Figure 3-3 and in Tables 5-10 and 5-12, respectively.

Manganese was detected at a concentration in excess of its respective background screening criteria and the RBC, and therefore was identified as an HHCOPC for surface soil at Sites 31E and 31F. The HHCOPC selection criteria for surface soil at Sites 31E and 31F are presented in Table 6-4.

6.2.5 Subsurface Soil, Site 31C

The only exposure area with subsurface soil data available was 31C. Although subsurface soil data were collected at Site 31A, the data were evaluated as surface soil based on the depth of collection (see Subsection 6.2.1). Six subsurface soil samples and one duplicate sample collected from Site 31C were used in risk assessment calculations (listed in footnotes of Table 6-5). Sample locations and individual sample analytical data are presented on Figure 3-2 and in Table 5-16, respectively.

No compounds or analytes were detected at concentrations in excess of their respective background screening criteria and/or the lessor of the RBC or SCTL for industrial areas. Therefore, no HHCOPCs were identified for subsurface soil at Site 31C. The HHCOPC selection criteria for surface soil at Site 31A are presented in Table 6-1.

6.2.6 Groundwater Site 31C

Six groundwater samples and one duplicate sample were collected from Site 31C (samples are identified in the notes of Table 6-6). Sample locations and individual sample analytical data are presented on Figure 3-4 and Table 5-19, respectively.

Trichloroethene was detected at a concentration in excess of the RBC for tap water and therefore was identified as an HHCOPC for groundwater at Site 31C. The HHCOPC selection criteria for groundwater at Site 31C are presented in Table 6-6.

Table 6-3
Selection of Human Health Chemicals of Potential Concern
for Surface Soil at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Reporting Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Concentration[4]	Selected Screening Concentration[5]	Analyte HHCOPC? (Yes/No)	Reason[6]
Volatile Organic Compounds (µg/kg)								
Carbon disulfide	4/14	6 to 12	3 to 39	14	NA	200,000	No	S
Methylene chloride	4/14	6 to 68.5	120 to 240	170	NA	16,000	No	S
Toluene	1/14	6 to 12	1	1	NA	380,000	No	S
Xylenes (total)	4/14	6 to 12	4 to 11	6	NA	5,900,000	No	S
Semivolatile Organic Compounds (µg/kg)								
Benzo(b)fluoranthene	1/14	360 to 11,000	100	100	NA	870	No	S
Benzo(k)fluoranthene	1/14	360 to 11,000	110	110	NA	8,700	No	S
Butylbenzylphthalate	1/14	360 to 11,000	39	39	NA	1,500,000	No	S
bis(2-Ethylhexyl)phthalate	9/14	360 to 11,000	42 to 2,600	816	NA	46,000	No	S
Pesticides and PCBs (µg/kg)								
4,4-DDE	6/14	3.6 to 270	2.3 to 100	43.6	NA	1,900	No	S
Aroclor-1260	4/14	36 to 2,700	340 to 1,400	738	NA	320	Yes	
Dieldrin	6/14	3.6 to 270	2.1 to 120	47.4	NA	40	Yes	
alpha-Chlordane	6/14	1.8 to 1,300	1.3 to 68	29.2	NA	1,800	No	S
gamma-Chlordane	5/14	1.8 to 1,300	1.4 to 76	34.1	NA	1,800	No	S
Inorganic Analytes (mg/kg)								
Aluminum	14/14	NA	1,670 to 16,800	4,818	15,848	7,800	Yes	
Antimony	4/14	12	3.1 to 7.1	5.1	8	3.1	No	B
Arsenic	14/14	NA	0.59 to 1.7	1.1	3.2	0.43	No	B
Barium	14/14	NA	2.7 to 534	83.2	23.2	110	Yes	

See notes at end of table.

Table 6-3 (Continued)
Selection of Human Health Chemicals of Potential Concern for Surface Soil at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Reporting Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Concentration[4]	Selected Screening Concentration[5]	Analyte HHCOPC? (Yes/No)	Reason[6]
Inorganic Analytes (mg/kg) (Continued)								
Beryllium	4/14	1	0.3 to 1.3	0.65	0.36	16	No	S
Cadmium	7/14	1	0.22 to 26.8	9.6	0.58	3.9	Yes	
Calcium	14/14	NA	93.3 to 4,160	825	396	1,000,000	No	S
Chromium	14/14	NA	1.4 to 295	46	11	23	Yes	
Cobalt	8/14	10	0.83 to 3.1*	1.3	3	470	No	S
Copper	7/14	5	29.8 to 948	307	9.4	110	Yes	
Cyanide	14/14	NA	0.09 to 1.1	0.3	0.28	30	No	S
Iron	14/14	NA	645 to 22,500	4,700	8,832	2,300	Yes	
Lead	14/14	NA	1.8 to 1,890	277	11.4	400	Yes	
Magnesium	14/14	NA	40.3 to 1,120	247	268	460,468	No	S
Manganese	14/14	NA	1.9 to 170	51.7	392	160	No	B
Mercury	8/14	0.1	0.13 to 8.8	2.7	0.12	2.3	Yes	
Nickel	8/14	8	1.5 to 8.6	4	7.2	110	No	S
Potassium	9/14	134 to 1,000	73.5 to 134	94.9	177	1,000,000	No	B,S
Selenium	10/14	1	0.15 to 4.9	1.2	0.46	39	No	S
Silver	8/14	2	0.97 to 154	51.8	0.7	39	Yes	
Sodium	14/14	NA	179 to 294	202	406	1,000,000	No	B,S
Vanadium	14/14	NA	2.3 to 12.1	5.4	21.8	15	No	B,S
Zinc	12/14	4	3.6 to 346	99.6	15.4	2,300	No	S

See notes at end of table.

Table 6-3 (Continued)
Selection of Human Health Chemicals of Potential Concern
For Surface Soil at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

[1] Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
[2] A value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect, one-half of the contract-required quantification limit/contract-required detection limit is used as a surrogate concentration for the nondetect.
[3] The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.
[4] The background screening value is twice the average of detected concentrations for inorganic analytes in background samples.
[5] For all chemicals except the essential nutrients (calcium, magnesium, potassium, and sodium), the lesser of the U.S. Environmental Protection Agency (USEPA) Region III Risk-Based Concentration (RBC) table for residential soil exposure per January 1993 guidance (*Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening*, EPA/903/R-93-001) (USEPA, 1993a) or the Florida Soil Cleanup Goals (Florida Department of Environmental Protection, 1999) was used for screening. Values from the USEPA Region III RBC Tables, dated May 2000, are based on an excess lifetime cancer risk of 1×10^{-6} or an adjusted hazard quotient of 0.1. For the essential nutrients, screening values were derived based on recommended daily allowances. Lead value is from the Revised Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER Directive 9355.4-12) (USEPA, 1994c). Values are presented in Appendix C of this report.
[6] Analyte was excluded from the risk assessment for the following reasons:
B = the maximum detected concentration did not exceed the background screening concentration; therefore, the analyte will not be considered further.
S = the maximum detected concentration did not exceed the screening concentration; therefore, the analyte will not be considered further.

Notes: The average of a sample and its duplicate is used for all table calculations.
Samples: 31-SL-12, 31-SL-13, 31-SL-14, 31-SL-15, 31S00401, 31S00501, 31S00601, 31S00701, 31S00801, 31S00901, 31S01001, 31S01101, 31S01201, 31S01201R, 31S01301.
Sample duplicates: 31S00501D.
Background samples: BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00401, and BKS00501.
Background duplicate sample: BKS00201D.

HHCOPC = human health chemical of potential concern.
µg/kg = micrograms per kilogram.
NA = not applicable.
PCB = polychlorinated biphenyl
DDE = dichlorodiphenyldichloroethene.
mg/kg = milligrams per kilogram.
* = average of a sample and its duplicate.

Table 6-4
Selection of Human Health Chemicals of Potential Concern for Surface Soil at Site 31E and 31F

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Reporting Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Concentration[4]	Selected Screening Concentration[5]	Analyte HHCOPC? (Yes/No)	Reason[6]
Volatile Organic Compounds (µg/kg)								
2-Hexanone	1/13	11	1	1	NA	5,100	No	S
Carbon disulfide	1/13	5 to 11	3	3	NA	200,000	No	S
Xylenes (total)	5/13	5 to 11	2 to 3	2.5	NA	5,900,000	No	S
Semivolatile Organic Compounds (µg/kg)								
Di-*n*-octylphthalate	1/13	360 to 380	220	220	NA	150,000	No	S
bis(2-Ethylhexyl)phthalate	3/13	360 to 380	81 to 230	167	NA	46,000	No	S
Inorganic Analytes (mg/kg)								
Aluminum	13/13	NA	5,010 to 10,700	7,250	15,848	7,800	No	B
Arsenic	13/13	NA	0.7 to 1.9	1.2	3.2	0.43	No	B
Barium	13/13	NA	7.2 to 24.5	14.1	23.2	110	No	S
Beryllium	8/13	1	0.08 to 0.15	0.1	0.36	16	No	B,S
Calcium	13/13	NA	78.7 to 962	214	396	1,000,000	No	S
Chromium	13/13	NA	3.9 to 7.1	5.1	11	23	No	B,S
Cobalt	11/13	10	0.66 to 1.4	0.98	3	470	No	B,S
Copper	9/13	5	4 to 17.9	6.3	9.4	110	No	S
Iron	13/13	NA	2,580 to 5,380	3,640	8,832	2,300	No	B
Lead	13/13	NA	2.9 to 6.4	4.8	11.4	400	No	B,S
Magnesium	13/13	NA	98.6 to 349	156	268	460,468	No	S
Manganese	13/13	NA	60.3 to 456	252	392	160	Yes	
Mercury	4/13	0.04 to 0.1	0.01* to 0.02	0.02	0.12	2.3	No	B,S
Nickel	8/13	2.3 to 8	1.8* to 6.9	3.9	7.2	110	No	B,S
Potassium	3/13	128 to 1,000	106 to 349*	201	177	1,000,000	No	S
Selenium	1/13	0.46 to 1	0.52	0.52	0.46	39	No	S

See notes at end of table.

Table 6-4 (Continued)
Selection of Human Health Chemicals of Potential Concern
For Surface Soil at Site 31E and 31F

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Range of Reporting Limits	Range of Detected Concentrations[2]	Mean of Detected Concentrations[3]	Background Screening Concentration[4]	Selected Screening Concentration[5]	Analyte HHCOPC? (Yes/No)	Reason[6]
Inorganic Analytes (mg/kg) (Continued)								
Silver	7/13	0.33 to 2	0.68 to 4.6*	3	0.7	39	No	S
Sodium	8/13	1,000	133 to 233	173	406	1,000,000	No	B,S
Vanadium	13/13	NA	6.5 to 14.2	9.5	21.8	15	No	B,S
Zinc	12/13	4	3.5 to 23.1	8.2	15.4	2,300	No	S

[1] Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
[2] A value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect, one-half of the contract-required quantification limit/contract-required detection limit is used as a surrogate concentration for the nondetect.
[3] The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.
[4] The background screening value is twice the average of detected concentrations for inorganic analytes in background samples.
[5] For all chemicals except the essential nutrients (calcium, magnesium, potassium, and sodium), the lesser of the U.S. Environmental Protection Agency (USEPA) Region III Risk-Based Concentration (RBC) table for residential soil exposure per January 1993 guidance (*Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening*, EPA/903/R-93-001) (USEPA, 1993a) or the Florida Soil Cleanup Goals (Florida Department of Environmental Protection, 1999) was used for screening. Values from the USEPA Region III RBC Tables, dated May 2000, are based on an excess lifetime cancer risk of 1×10^{-6} or an adjusted hazard quotient of 0.1. For the essential nutrients, screening values were derived based on recommended daily allowances. Lead value is from the Revised Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER Directive 9355.4-12) (USEPA, 1994c). Values are presented in Appendix C of this report.
[6] Analyte was excluded from the risk assessment for the following reasons:
B = the maximum detected concentration did not exceed the background screening concentration; therefore, the analyte will not be considered further.
S = the maximum detected concentration did not exceed the screening concentration; therefore, the analyte will not be considered further.

Notes: The average of a sample and its duplicate is used for all table calculations.
Samples: 31-SL-01, 31-SL-02, 31-SL-03, 31-SL-04, 31-SL-05 31-SL-06, 31-SL-07, 31-SL-08, 31S01501, 31S01601, 31S01701, 31S01801, 31S01901.
Sample duplicates: 31-SL-07A, 31S01501D.
Background samples: BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00401, and BKS00501.
Background duplicate sample: BKS00201D.

HHCOPC = human health chemical of potential concern.
µg/kg = micrograms per kilogram.
NA = not applicable.
Mg/kg = milligrams per kilogram.
* = average of a sample and its duplicate.

Table 6-5
Selection of Human Health Chemicals of Potential Concern for Subsurface Soil at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Reporting Limit Range	Detected Concentrations Range[2]	Mean of Detected Concentrations[3]	Background Screening Concentration[4]	Selected Screening Concentration[5]	Analyte HHCOPC? (Yes/No)	Reason[6]
Volatile Organic Compounds (µg/kg)								
Acetone	1/6	10 to 170	970	970	NA	780,000	No	S
Methylene chloride	1/6	10 to 11	2	2	NA	16,000	No	S
Pesticides and PCBs (µg/kg)								
gamma-Chlordane	1/6	1.8 to 2	1.3*	1.3	NA	1,800	No	S
Inorganic Analytes (mg/kg)								
Aluminum	6/6	40	940 to 5,800	2,150	27,834	7,800	No	B,S
Arsenic	6/6	2	0.29 to 2	0.63	6.2	0.43	No	B
Barium	6/6	40	3.6 to 9.5	6	15.8	110	No	B,S
Beryllium	3/6	0.06	0.07* to 0.16	0.11	0.26	16	No	B,S
Cadmium	3/6	0.25	0.6* to 0.78	0.66	0.92	3.9	No	B,S
Calcium	2/6	180 to 274	253 to 267*	260	444	1,000,000	No	B,S
Chromium	3/6	2 to 3.1	4.7* to 13.1	8.4	22.8	23	No	B,S
Copper	3/6	0.96 to 2.1	9.8 to 12.5*	11.3	8.8	110	No	S
Cyanide	4/6	0.04 to 0.08	0.07* to 1.1	0.4	ND	30	No	S
Iron	6/6	20	697 to 5,440	1,730	18,110	2,300	No	B
Lead	6/6	0.6	0.64 to 12.8	6.2	8.4	400	No	S
Magnesium	5/6	56.5 to 65.6	73.5 to 103	87.1	272	460,468	No	B,S
Manganese	6/6	2.1 to 3.8	5.1 to 19.9	9.9	42.6	160	No	B,S
Mercury	3/6	0.03	0.08* to 0.09	0.08	ND	2.3	No	S
Nickel	2/6	1.5	1.7 to 1.8	1.8	5	110	No	B,S
Selenium	1/6	0.065 to 0.14	0.10*	0.1	0.3	39	No	B,S
Silver	3/6	0.52 to 0.61	1.1 to 2.5	1.7	1.12	39	No	S

See notes at end of table.

Table 6-5 (Continued)
Selection of Human Health Chemicals of Potential Concern for Subsurface Soil at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Reporting Limit Range	Detected Concentrations Range[2]	Mean of Detected Concentrations[3]	Background Screening Concentration[4]	Selected Screening Concentration[5]	Analyte HHCOPC? (Yes/No)	Reason[6]
Inorganic Analytes (mg/kg) (Continued)								
Vanadium	6/6	10	1.4 to 16.3	4.5	45	15	No	B
Zinc	3/6	3.1 to 4.1	13.5* to 17	15.4	15.6	2,300	No	S

[1] Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
[2] A value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect, one-half of the contract-required quantification limit/contract-required detection limit is used as a surrogate concentration for the nondetect.
[3] The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.
[4] The background screening value is twice the average of detected concentrations for inorganic analytes in background samples.
[5] For all chemicals except the essential nutrients (calcium, magnesium, potassium, and sodium), lesser of the U.S. Environmental Protection Agency (USEPA) Region III Risk-Based Concentration (RBC) table for residential soil exposure per January 1993 guidance (*Selecting Exposure Routes and Contaminants of Concern by Risk-Based Screening*, EPA/903/R-93-001) (USEPA, 1993a) or Florida Soil Cleanup Goals residential scenario (Florida Department of Environmental Protection, 1999) were used for screening. For analytes that are HHCOPCs in groundwater, the Florida Soil Cleanup Goals based on leachability are used for screening. There were four HHCOPCs selected in groundwater at Site 13, however, trichloroethene was not detected in subsurface soil at Site 13. Actual values are taken from the USEPA Region III RBC Tables dated May 2000, and are based on an excess lifetime cancer risk of 1×10^{-6} or an adjusted hazard quotient of 0.1. For the essential nutrients, screening values were derived based on recommended daily allowances. Lead value is from the Revised Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER Directive 9355.4-12) (USEPA, 1994c). Values are presented in Appendix C of this report.
[6] Analyte was included or excluded from the risk assessment for the following reasons:
B = the maximum detected concentration did not exceed the background; therefore, the analyte will not be considered further.
S = the maximum detected concentration did not exceed the screening concentration; therefore, the analyte will not be considered further.

Notes: The average of a sample and its duplicate is used for all table calculations.
Samples: 31B00601, 31B00602, 31B00701, 31B00702, 31B00801, and 31B00802.
Duplicate samples: 31B00601D.
Background samples: BKB00101, BKB00102, BKB00201, BKB00202, BKB00301, BKB00302, BKB00401, BKB00402, BKB00501, BKB00502, BKB00601, BKB00602, BKB00701, and BKB00702.
Background duplicate samples: BKB00401D, and BKB00602D.

HHCOPC = human health chemical of potential concern.
µg/kg = micrograms per kilogram.
NA = not applicable.
PCB = polychlorinated biphenyl.
* = average of a sample and its duplicate.
mg/kg = milligrams per kilogram.
ND = not detected in any background sample.

Table 6-6
Selection of Human Health Chemicals of Potential Concern for Unfiltered Groundwater at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Reporting Limit Range	Detected Concentrations Range[2]	Mean of Detected Concentrations[3]	Background Screening Concentration[4]	Selected Screening Concentration[5]	Analyte HHCOPC? (Yes/No)	Reason[6]
Volatile Organic Compounds (µg/l)								
Methylene chloride	1/6	10	1	1	NA	4.1	No	S
Trichloroethene	1/6	10	2	2	NA	1.6	Yes	
Inorganic Analytes (µg/l)								
Aluminum	2/6	16.5 to 200	93.6* to 93.7	93.6	654	200	No	B,S
Barium	6/6	NA	8.9 to 55.4	26.4	72.6	250	No	B,S
Calcium	6/6	NA	545 to 2,090	1,120	3,316	1,055,398	No	B,S
Copper	2/6	1.7 to 25	3.8 to 7.0*	5.4	10.8	150	No	B,S
Cyanide	2/6	0.83 to 10	1.3 to 7.9	4.6	7	73	No	S
Iron	3/6	31.8 to 100	41.6 to 112*	71.5	964	300	No	B,S
Magnesium	6/6	NA	335 to 1,450	741	2,426	118,807	No	B,S
Manganese	5/6	4.9 to 15	5.4 to 20.9	11.4	42.8	50	No	B,S
Nickel	2/6	1.2 to 40	1.4 to 2	1.7	42.8	73	No	B,S
Potassium	1/6	745 to 5,000	2,060*	2,060	1,528	297,016	No	S
Sodium	4/6	949 to 5,000	1,110 to 1,930	1,674	4,772	160,000	No	B,S
Vanadium	1/6	0.58 to 50	13.4*	13.4	3.8	26	No	S
Zinc	1/6	2.8 to 20	9.4	9.4	200	500	No	B,S

See notes at end of table.

Table 6-6 (Continued)
Selection of Human Health Chemicals of Potential Concern for Unfiltered Groundwater at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

[1] Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
[2] A value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect, one-half of the contract-required quantification limit/contract-required detection limit is used as a surrogate concentration for the nondetect.
[3] The mean of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.
[4] The background screening value is twice the average of detected concentrations for inorganic analytes in background samples.
[5] For all chemicals except the essential nutrients, the lesser of the U.S. Environmental Protection Agency (USEPA), Region III Risk-Based Concentration (RBC) table for tap water exposure or the Florida Groundwater Guidance Concentration (Florida Department of Environmental Protection, 1999) was used for screening. Actual values are taken from the USEPA Region III RBC Tables dated May 2000, and are based on an excess lifetime cancer risk of 1×10^{-6} or an adjusted hazard quotient of 0.1. For the essential nutrients, screening values were derived based on recommended daily allowances. Values are presented in Appendix C.
[6] Analyte was included or excluded from the risk assessment for the following reasons:
B = the maximum detected concentration did not exceed the background screening concentration; therefore, the analyte will not be considered further.
S = the maximum detected concentration did not exceed the screening concentration; therefore, the analyte will not be considered further.

Notes: Samples: 31G00101, 31G00201, 31G00301, 31G00401, 31G00402, 31G00403.
Sample duplicate: 31G00101D.
Background samples: BKG00101 through BKG00103, BKG00201 through BKG00203, and BKG00301.
Background duplicate sample: BKG00101D.

HHCOPC = human health chemical of potential concern.
µg/kg = micrograms per kilogram.
NA = not applicable.
* = average of a sample and its duplicate.

In summary, the COPCs identified for soil and groundwater are as follows:

- Surface soil at Site 31C: Aroclor-1260, dieldrin, aluminum, barium, cadmium, chromium, copper, iron, lead, mercury, silver.
- Surface soil at Sites 31E and 31F: manganese.
- Groundwater at Site 31C: trichloroethene.
- No COPCs were identified in surface soil at Site 31A, 31BD, or in subsurface soil at Site 31C.

6.3 EXPOSURE ASSESSMENT.

The exposure assessment methodology is described in Subsection 2.5.3 of the GIR (HLA, 1998). This process involves several steps, including characterization of the exposure setting in terms of physical characteristics and the populations that may hypothetically be exposed to site-related chemicals;

- identification of potential exposure pathways and receptors; and

- quantification of exposure for each population in terms of the amount of chemical either ingested, inhaled, or absorbed through the skin from all complete or hypothetically complete (potential future) exposure pathways.

Summaries of hypothetical exposure pathways to chemicals detected at Site 31 are presented on Figure 6-1.

The hypothetical pathways including medium and route of exposure, the hypothetical exposed population, and the rationale for pathway selection or exclusion are provided in Table 6-7, and are described in more detail in Subsections 6.3.1 through 6.3.3. Receptor-specific exposure parameters for each exposure scenario are presented in Appendix C to the GIR (HLA, 1998). Risk calculation spreadsheets in Appendix F to this RI report also contain the assumptions for exposure parameters and quantification of exposures.

6.3.1 Characterization of Exposure Setting

The physical characteristics of the site and the nature of the surrounding populations are evaluated to provide a basis for assessing potential exposures. The HHRA summarizes important site characteristics that may influence human contact with site contaminants, including surface conditions, soil type, degree of vegetative cover, climate, geology, and conditions that affect the migration of contaminants, such as speed and direction of groundwater flow.

Evaluation of population characteristics includes the location of current populations relative to the site and the daily activities of these populations. The current land usage is considered along with long-term proposed or planned land usage in determining the possible exposure scenarios (e.g., residential, commercial, industrial, or recreational).

Demographics are also characterized and identified for the populations residing and working near the site, the activity patterns or residents and workers, and the locations of potentially sensitive subpopulations such as children or elderly persons. Sources of this information include site visits, previous investigation reports, maps, aerial and standard photographs, and personnel interviews.

NAS Whiting Field is located in northwest Florida approximately 7 miles north of Milton (Figure 1-1) and 20 miles northeast of Pensacola. NAS Whiting Field currently consists of two air fields separated by an industrial area and covers approximately 2,560 acres in Santa Rosa County.

NAS Whiting Field, home of Training Air Wing Five, was constructed in the early 1940s. It was commissioned as the Naval Auxiliary Air Station Whiting Field in July 1943 and has served as a naval

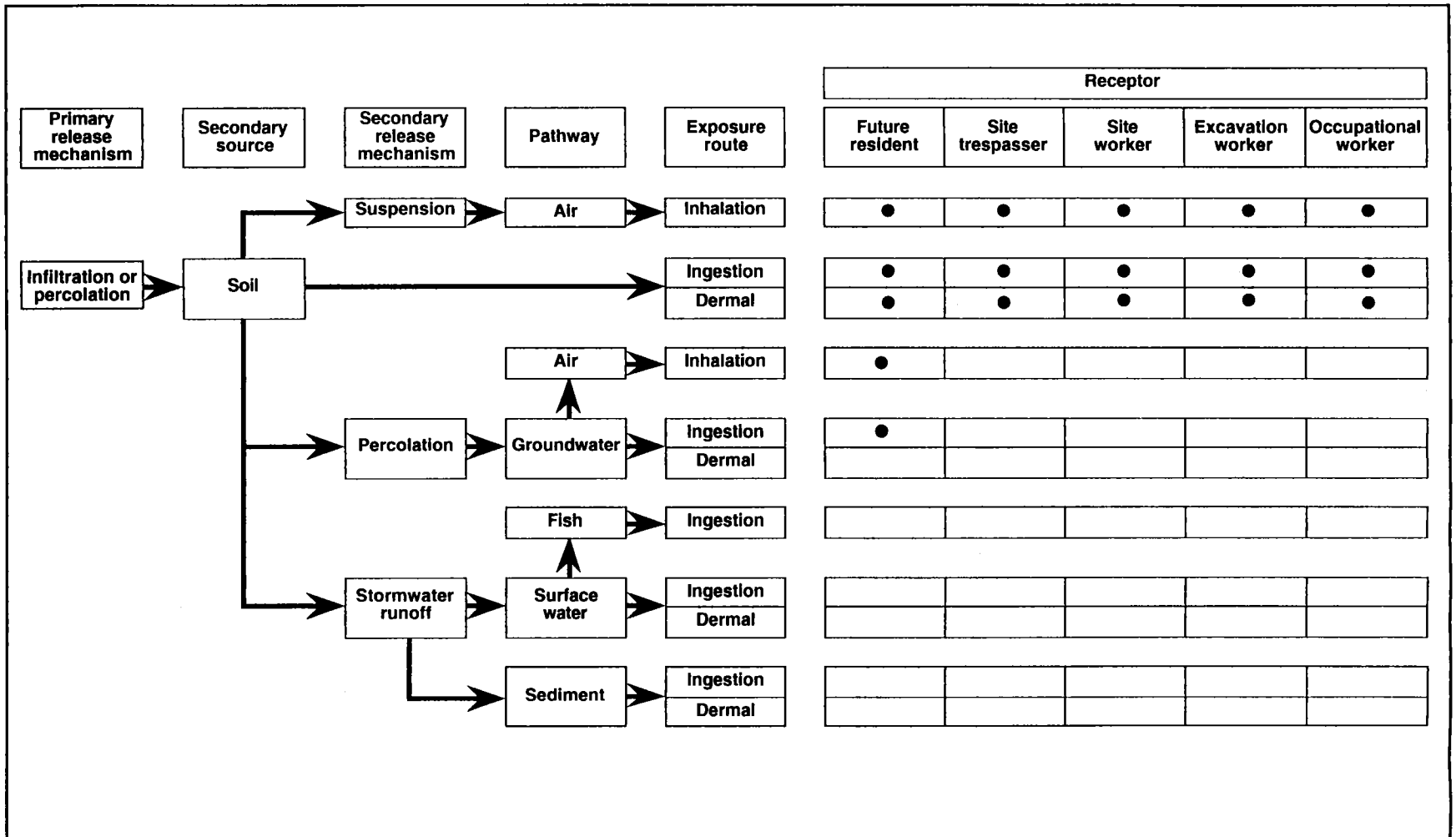


FIGURE 6-1
SITE 31, COMPLETE EXPOSURE PATHWAYS FOR HUMAN RECEPTORS

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

2534-09 WHITING SITE 31RI FIG 6-1 FINAL 050198HAS

Table 6-7
Summary of Potential Exposure Pathways

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Medium of Exposure	Route of Exposure	Potentially Exposed Population	Selected for Evaluation?	Reason for Selection or Evaluation
Current Land Use				
Surface Soil	Dermal contact with soil, ingestion of soil, and inhalation of fugitive dust.	Resident (adult and child) Trespasser (adult and adolescent) Occupational worker (adult) Site maintenance worker (adult) Excavation worker (adult)	No Yes No Yes No	No humans currently reside at Site 31. Adolescents and adults may be exposed to contaminants in the surface soil while trespassing. The site maintenance workers may be exposed to contaminants in surface soil while performing routine site activities.
Subsurface Soil	Dermal contact with soil, ingestion of soil, and inhalation of fugitive dust.	Excavation worker (adult)	No	There are no excavation activities currently at Site 31. Additionally, there are no human health chemicals of potential concern (HHCOPCs) selected for subsurface soil.
Groundwater	Ingestion of groundwater as drinking water and inhalation to VOCs while showering.	Resident (adult)	No	There are no current exposures to groundwater.
Future Land Use				
Surface soil	Dermal contact with soil, ingestion of soil, and inhalation of fugitive dust.	Resident (child and adult) Trespasser (adolescent and adult) Occupational worker (adult) Site maintenance worker (adult) Excavation worker (adult)	Yes Yes Yes Yes Yes	If Site 31 is developed, residents, trespassers, occupational workers, site maintenance workers, and excavation workers could be exposed to chemicals in surface soil.
Subsurface soil	Dermal contact with soil, ingestion of soil, and inhalation of fugitive dust.	Excavation worker (adult)	Yes	Although it is possible an excavation worker could be exposed to subsurface soil in the future if the site is developed, there were no HHCOPCs identified; therefore, this hypothetical exposure pathway is not evaluated in this human health risk assessment.
Groundwater	Ingestion of groundwater as drinking water and inhalation to VOCs while showering.	Resident (adult)	Yes	If Site 31 is developed, the exposure pathway to analytes in groundwater could become complete.

aviation training facility since then. The field's mission has been to train student naval aviators in the use of basic instruments, formation and tactic phases of fixed-wing and propeller-driven aircraft, and in the basic and advanced portions of helicopter training. A detailed discussion of the former facility operations and disposal history is presented in Appendix A to the GIR (HLA, 1998).

Located on an upland area, elevations at NAS Whiting Field range from 150 to 190 feet above sea level. The facility is bounded by low-lying receiving waters; Clear Creek to the west and south and Big Coldwater Creek to the east. These two streams are tributaries of the Blackwater River, which discharges to the estuarine waters of the East Bay of the Escambia Bay coastal system.

Agricultural and forestry are the primary land use in adjacent areas surrounding the facility. Residential homes and businesses are located within several miles to the southwest of the facility comprising the city of Milton. Wetlands are present along Clear Creek to the west of the facility and along Big Coldwater Creek to the east of the facility

Site 31, Sludge Drying Beds and Disposal Areas, is a single site designation, including multiple disposal areas along the South Field perimeter road (Figure 1-2). Site 31 includes the sludge drying beds located near the Wastewater Treatment Plant (Site 31A), three disposal areas along the perimeter road, near the south end of Runway 4/22 (Sites 31B, 31C, and 31D), and two sludge disposal areas along the perimeter road, northeast of Runway 4/22 (Sites 31E and 31F) (Figure 1-2).

Site 31A is a sludge drying bed unit, 92 feet long by 80 feet wide (Figure 2-1). The unit consists of four sludge drying beds surrounded by containment walls which extend to a depth of 2 1/2 to 3 feet below land surface (bls). The area of the site is approximately 0.2 acre. The surface of each sludge drying bed is covered with a mixture of coarse-grained sand and fine gravel. The sludge drying beds were taken out of service in 1990. Sludge from the wastewater treatment plant may have contained hazardous substances such as methylene chloride and heavy metals from industrial effluent.

Sites 31B, 31C, and 31D are mowed grassy areas, located in an area of surface water control berms on the southwestern slopes of the South Air Field (Figure 2-2). A rubble pile containing concrete, asphalt, and metal rubble from former base operations is located at the southeast corner of Site 31C. Dried sludge was periodically removed from Site 31A, and disposed of at Sites 31B, 31C, and 31D. Spray applications of liquid sludge were also applied to these areas by tanker trucks.

Sites 31E and 31F are locations where liquid sludge was formerly applied to the land surface northeast of Runway 4/22, east and west of the perimeter road (Figure 2-3). The extent of Sites 31E and 31F is estimated to be approximately 6.9 acres.

6.3.2 Identification of Exposure Pathways

This step involves the identification of all relevant exposure pathways (current and future) through which specific populations may be exposed to contaminants at the site. An exposure pathway consists of four necessary elements: a source or mechanism of chemical release, a transport or retention medium, a point of human contact, and a route of exposure at the point of contact (USEPA, 1989a).

The first step in defining potential exposure pathways is to identify all sources of contamination (e.g., surface water, sediment, groundwater, air, surface soil, and subsurface soil). Once sources are identified, relevant fate and transport mechanisms are evaluated to predict current and potential future exposures. Population characteristics are then used to identify where people may contact contaminated media and the possible routes of exposure (e.g., inhalation, ingestion, or dermal absorption). The receptors to be evaluated are

selected based on the current and realistic future use of the site and surrounding area. Table 6-7 lists relevant exposure pathway scenarios.

6.3.2.1 Potential Surface Soil Exposure

No humans currently reside or work at Site 31. There is, however, a current exposure potential for a trespasser (adult or adolescent) and a site maintenance worker. Therefore, these two receptors will be evaluated as a current exposure scenario.

Site 31 could be developed eventually for residential land use in the future; therefore, the residential receptor will be evaluated as part of the hypothetical future land-use scenario. Also there are no buildings currently at the site; therefore, exposure for occupational workers will be only considered as part of the future land-use scenario. Other possible future exposure scenarios include excavation activities, such as installation of utility lines, and site maintenance, such as mowing the grass.

The following exposure scenarios for soil are evaluated in this HHRA:

- Current and future trespassers. Assumed to be an adolescent (ages 7 through 16) and adult who occur at the site 45 days per year over a 30-year period and are potentially exposed to soil via incidental ingestion, dermal contact, and dust inhalation.

- Current and future site maintenance worker. Assumed to be an adult working at the site 30 days per year over a 25-year period, potentially exposed to soil via incidental ingestion, dermal contact, and dust inhalation.

- Future residents. Assumed to be a child (ages 1 through 6) and adult present 350 days per year over a 30-year period, potentially exposed to soil via incidental ingestion, dermal contact, and dust inhalation.

- Future occupational worker. Assumed to be an adult working at the site 250 days per year over a 25-year period, potentially exposed to soil via incidental ingestion, dermal contact, and dust inhalation.

- Future excavation worker. Assumed to be an adult performing excavation-related activities 30 days per year for one year, potentially exposed to soil via incidental ingestion, dermal contact, and dust inhalation.

The Site is located at an active military facility that is not scheduled for closure. There are no agricultural activities ongoing at the facility, nor are any planned in the future. Therefore, potential exposure to COPCs in soils at Site 31 via ingestion of agricultural products is not a complete exposure pathway under the current land use, nor is expected to be under the foreseeable future land use.

6.3.2.2 Potential Subsurface Soil Exposure

There are no current exposures to subsurface soil because no excavation or construction activities are ongoing at Site 31. Additionally, there are no HHCOPCs identified in subsurface soil. Therefore, subsurface soil exposure pathways are not evaluated as current or potential future (hypothetical) exposure pathways in this HHRA.

6.3.2.3 Potential Groundwater Exposure

Currently, groundwater at Site 31 is not used for any potable or nonpotable purpose, nor are there plans to use the water resource in the foreseeable future. However, if that Site 31 or areas hydraulically downgradient of Site 31 are developed, the exposure pathway to analytes in groundwater could become complete. Therefore, hypothetical future residential use of groundwater is evaluated in this HHRA as follows:

- Assumed to be a child (ages 1 through 6) and adult present 350 days per year over a 30-year period, potentially exposed to groundwater as drinking water via ingestion. In addition, an adult resident may be exposed to VOCs in groundwater during showering via inhalation for 350 days per year over 24 years.

6.3.2.4 Clear Creek

NAS Whiting Field is located on a plateau that is bound by the receiving waters, Clear Creek to the west and south, and Big Coldwater Creek to the east. Because of the flat open nature of the airfield and the installation facilities, NAS Whiting Field is drained by an extensive storm sewer drainage system. The drainage ditch system conveys surface water runoff from NAS Whiting Field to Clear Creek on the western site boundary.

Clear Creek and Big Coldwater Creek are classified by Florida Department of Environmental Protection as Class III surface waters. Florida Class III surface waters are suitable for the propagation of fish and aquatic life and for body contact recreation. Fish of recreationally important size or species do not occur in Clear Creek. Clear Creek is not a drinking water source. No drinking water intakes exist downstream of NAS Whiting Field in either creek or in the Blackwater River.

Although no aquatic habitat is present at any of the Site 31 areas, groundwater from Sites 31A, 31B, 31C, and 31D may discharge off site into Clear Creek, and groundwater from Sites 31E and 31F may discharge off site into Big Coldwater Creek. Groundwater discharge to surface water is not evaluated as part of the ERA for Site 31 because both Clear Creek and Big Coldwater Creek receive groundwater discharge and storm water runoff from multiple sources of potential contamination at NAS Whiting Field.

In addition, surface water and sediment samples collected during Phase I of the RI from sampling locations located upstream and downstream of the expected groundwater discharge points from Sites 31A, 31B, 31C, and 31D do not conclusively support any impact to surface water quality of Clear Creek from past Site 31 activities (ABB-ES, 1992). 6.3.3 Exposure Point Concentrations

EPCs are calculated for all HHCOPCs in surface soil and groundwater. The EPC of each HHCOPC in soil is the lesser of the maximum detected concentration or the 95 percent upper confidence limit (UCL) on the arithmetic mean concentration for soils. The following equation is used to calculate the UCL on the arithmetic mean (USEPA, 1992a; 1995b):

where:

$$UCL = e^{\wedge}(x + 0.5s^2 + sH/[(n-1)^{1/2}]$$

UCL	=	95 percent upper confidence limit of estimated mean,
e	=	constant (base of natural log, approximately equal to 2.718),
x	=	arithmetic mean of log-transformed data,
s	=	standard deviation of log-transformed data,
H	=	H-statistic (Gilbert, 1987), and
n	=	number of samples.

In calculating the 95 percent UCLs, nondetections are assigned a concentration equal to one-half the sample quantification limit. If a sample quantification limit is not available, one of the following values is substituted: the method detection level or the CRQL for organics, or CRDL for inorganics. In cases where an analyte is detected in nine or fewer samples, the UCL is not calculated, and the EPC is equal to the maximum detected concentration (USEPA, 1995b).

The EPC of each HHCOPC in groundwater is the lesser of the maximum detected concentration and the arithmetic mean of the samples collected within the groundwater plume.

The EPC quantification process involves developing assumptions regarding exposure conditions and exposure scenarios for each receptor to estimate the total amount of contaminants a hypothetical receptor may ingest, dermally absorb, or inhale from each exposure pathway. The ultimate goal of this step, as defined in USEPA guidance, is to identify the combination of these exposure variables or parameters resulting in the most intense level of exposure that may "reasonably" be expected to occur under current and future site conditions (USEPA, 1989b).

The EPCs for HHCOPCs in surface soil for Sites 31C, 31E and 31F are presented in Tables 6-8 and 6-9, respectively; groundwater is presented in Table 6-10. Data collected during the IRA were not used in the quantification of EPCs for surface soil. The EPCs were used with receptor-specific exposure parameters to quantify exposures to the HHCOPCs, as shown in the risk calculation spreadsheets in Appendix F to this report.

6.4 TOXICITY ASSESSMENT.

The toxicity assessment methodology is described in Subsection 2.5.4 of the GIR (HLA, 1998). The toxicity assessment evaluates the available evidence on the hypothetical adverse effects associated with exposure to each HHCOPC. This information is used to develop a relationship between the extent of exposure and the likelihood or severity of adverse human health effects. Two steps are typically associated with toxicity assessment: hazard identification and dose-response assessment.

- Hazard identification is the process of determining if exposure to an agent can cause a particular adverse health effect and, more importantly, if that effect will occur in humans. The objectives of the hazard identification in the HHRA are to (1) identify which of the contaminants detected at the site are hypothetical hazards, and (2) summarize their potential toxicity in brief nontechnical language.
- A dose-response assessment is conducted to characterize and quantify the relationship between intake, or dose, of an HHCOPC and to determine the likelihood of a toxic effect or response. There are two categories of toxic effects evaluated in this HHRA: carcinogenic and noncarcinogenic.

Following USEPA guidance for HHRAs (USEPA, 1989b), these two endpoints (cancer and noncancer) are evaluated separately. As a result of the dose-response assessment, identified dose-response values are used to estimate the incidence of adverse effects as a function of human exposure to a chemical. For carcinogens, USEPA weight-of-evidence classifications and numerical toxicity factors have been developed and have undergone extensive peer review. The most recent toxicity information is used from the following sources (listed in the order of preference: Integrated Risk Information System (IRIS), Health Effects Assessment Tables (HEAST), Agency for Toxic Substances and Disease Registry Toxicology Profiles, and the USEPA Environmental Criteria and Assessment Office (now called the National Center for Environmental Assessment).

Cancer Toxicity Values. Toxicity factors for carcinogenic analytes include current slope factors, unit risk values, and weight-of-evidence classifications for all carcinogens. A chemical-specific toxicity value, called the Cancer Slope Factor (CSF), developed by the USEPA Carcinogen Risk Assessment Verification Endeavor group, is used to express the dose-response relationship. Another toxicity value developed by the USEPA is the cancer "unit risk." The unit risk describes the relationship between the exposure concentration and the probability of a carcinogenic response during the lifetime of the individual. The unit risk is the CSF divided by body weight (70 kg) and multiplied by the inhalation rate (20 cubic meters per day) or the water consumption rate (2 liters per day).

Table 6-8
Exposure Point Concentrations for Human Health Chemicals of Potential Concern for Surface Soil at Site 31C (Prior to Interim Remedial Action)

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Maximum Detected Concentration	95% UCL[2]	Exposure Point Concentration[3,4]
Pesticides and PCBs (µg/kg)				
Aroclor-1260	4/14	1,400	1,353	1,350
Dieldrin	6/14	120	118	118
Inorganic Analytes (mg/kg)				
Aluminum	14/14	16,800	7,480	7,480
Barium	14/14	534	765	534
Copper	7/14	948	11,968	948
Cadmium	7/14	26.8	31.2	26.8
Chromium	14/14	295	412	295
Iron	14/14	22,500	9,414	9,410
Lead	14/14	1,890	21,600	1,890
Mercury	8/14	8.8	26.3	8.8
Silver	8/14	154	590	154

[1] Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
[2] 95% upper confidence limit (UCL) of the arithmetic mean is calculated using all samples. One-half the contract-required quantitation limit/contract-required detection limit is used as a surrogate for nondetects.
[3] Exposure point concentration is the lower of either the 95% UCL concentration or maximum detected concentration.
[4] Exposure Point Concentrations were calculated using data collected prior to the Interim Remedial Action.
Notes: % = percent.
PCB = polychlorinated biphenyl.
µg/kg = micrograms per kilogram.
mg/kg = milligrams per kilogram.

Table 6-9
Exposure Point Concentrations for Human Health Chemicals of Potential Concern for Surface Soil at Sites 31E and 31F

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Maximum Detected Concentration	95% UCL[2]	Exposure Point Concentration[3]
Inorganic Analytes (mg/kg)				
Manganese	13/13	456	376	376

[1] Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
[2] 95% upper confidence limit (UCL) of the arithmetic mean is calculated using all samples. One-half the contract-required quantitation limit/contract-required detection limit is used as a surrogate for nondetects.
[3] Exposure point concentration is the lower of either the 95% UCL concentration or maximum detected concentration.
Notes: % = percent.
mg/kg = milligrams per kilogram.

Table 6-10
Exposure Point Concentrations for Human Health Chemicals of Potential Concern for Groundwater at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Maximum Detected Concentration	Arithmetic Mean[2]	Exposure Point Concentration[3]
Volatile Organic Compounds (µg/l)				
Trichloroethene	1/6	2	4.5	2

[1] Frequency of detection is the number of samples in which the analyte was detected over the total number of samples analyzed (excluding rejected values).
Excluding rejected values).
[2] Arithmetic mean of all samples calculated using one-half the contract-required quantitation limit/contract-required detection limit for nondetects.
[3] Exposure point concentration is the lower of either the mean concentration or maximum detected concentration.

Note: µg/l = micrograms per liter.

As required by USEPA Region IV guidance (USEPA, 1989a, 1995b), risks associated with dermal exposures are evaluated using CSFs that are specific to dermally-absorbed doses. Most oral CSFs are based on administered doses rather than absorbed doses (trichloroethene's CSF is a notable exception). It is, therefore, necessary to adjust those toxicity values based on administered doses before they are used for evaluation of absorbed doses. For dermal exposures, the toxicity values are adjusted as follows:

$$(CSF_{adjusted} = \frac{CSF_{oral}}{ABSEFF_{oral}})$$

ABSEFForal is the absorption efficiency in the study that is the basis of the oral toxicity value. If there is no information available on oral absorption efficiency, the conservative default values of 80 percent for volatiles, 50 percent for SVOCs, and 20 percent for inorganics are used (USEPA, 1995b).

Noncancer Toxicity Values. The reference dose (RfD) is an estimate of a daily human intake, including sensitive subpopulations, that is likely to be without appreciable risk of deleterious noncarcinogenic effects during a lifetime. Most RfDs are obtained from IRIS or HEAST. If these sources do not have an RfD value for a specific chemical, then the USEPA Region IV and FDEP risk assessors will be contacted to arrange for a provisional value.

As required by USEPA Region IV guidance (USEPA, 1995b), risks associated with dermal exposures are evaluated using RfDs that are specific to absorbed doses. Most oral RfDs are based on an administered dose rather than on an absorbed dose. It is, therefore, necessary to adjust those toxicity values based on administered doses before they can be used for evaluation of absorbed doses. For dermal exposures, the toxicity values are adjusted as follows:

$$RfD_{adjusted} = RfD_{oral} \times ABSEFF_{oral}$$

ABSEFForal is the absorption efficiency in the study that is the basis of the oral toxicity value. If there is no information available on oral absorption efficiency, the conservative default values of 80 percent for volatiles, 50 percent for SVOCs, and 20 percent for inorganics are used (USEPA, 1995b).

IRIS and HEAST provide inhalation RfD and reference concentration (RfC) values. The RfC is a medium-specific concentration that is unlikely to cause deleterious noncarcinogenic effects over a lifetime. RfCs may be converted to inhalation RfDs to quantify risks from an inhaled dose.

Separate sets of RfDs have been developed for several chemicals for evaluating chronic and subchronic exposures. When available, subchronic RfDs are used for evaluating exposures with a duration of less than 7 years but more than 2 weeks (such as for an excavation worker). Chronic RfDs are used when subchronic values are unavailable and when the exposure duration was greater than 7 years. One exception to this rule is the resident child. Although the default child exposure duration is 6 years, chronic RfDs are used with this scenario. There are no analogous reference values for evaluating acute exposures (i.e., those lasting less than 2 weeks). Appendix F to this report contains brief toxicity summaries for HHCOPCs identified in surface soil and groundwater at Site 31. Appendix F to this report also contains dose-response information for the HHCOPCs (Tables F-4 through F-9). Dose-response values used in this HHRA were current as of December 2000 for Integrated Risk Information System (IRIS) (USEPA, 2000) and July 1997 for Health Effects Assessment Summary Tables (USEPA, 1997b).

6.5 RISK CHARACTERIZATION.

Risk characterization is the final step in the risk assessment process. This step involves the integration of the exposure and toxicity assessments into a qualitative or quantitative expression of potential human health risks associated with contaminant exposure. Quantitative estimates of both carcinogenic and noncarcinogenic risks are made for each HHCOPC and each complete exposure pathway identified in the exposure assessment. The risk characterization methodology is described in Subsection 2.5.5 of the GIR (HLA, 1998).

Carcinogenic Risks. Carcinogenic risks associated with exposure to individual chemicals are estimated by multiplying the chemical intake for each carcinogen by its CSF. This value represents an upper bound of the probability of an individual developing cancer over a lifetime as the result of exposure to a chemical. For each exposure pathway, the chemical-specific risks for all carcinogenic compounds are summed to determine the pathway-specific lifetime cancer risk. The following equations are used to estimate the chemical- and pathway-specific cancer risks:

$$Risk_i = CDI_i \times SF_i$$

where:

$Risk_i$ = unitless probability of an individual developing cancer as the result of exposure to a chemical i,

CDI_i = chronic daily intake of chemical i averaged over 70 years (milligrams per kilogram per day [mg/kg day]), and

SF_i = USEPA cancer slope factor for chemical i $(mg/kg\text{-}day)^{-1}$.

Pathway-Specific Incremental Lifetime Cancer Risk

$$Risk_t = \Sigma Risk_i$$

where:

$Risk_T$ = unitless probability of an individual developing cancer as the result of multiple chemical exposures and

$Risk_i$ = unitless cancer risk estimate for the ith chemical associated with an exposure pathway.

Noncarcinogenic Risks. Noncarcinogenic risk estimates are calculated by dividing specific chemical intakes by the appropriate RfD. The result is called the HQ. The HQs for individual compounds within an exposure pathway are summed to obtain the HI for that particular pathway.

Following are the equations used to determine the HQs and HIs:

Hazard Quotient

$$HQ_i = I_i / RfD_i$$

where:

HQ_i = HQ of chemical i,

I_i = intake of chemical i averaged over the exposure period (mg/kg-day), and

RfD_i = reference dose for chemical i corresponding to the same exposure duration as the intake (mg/kg-day).

Hazard Index

$$HI = \Sigma HQ_i$$

where:

HI = potential for noncarcinogenic effects from multiple chemical exposures and

HQ_i = HQ for i^{th} chemical associated with an exposure pathway.

Risk estimates for hypothetical exposures to surface soil and groundwater under current and hypothetical future land-use scenarios are discussed below in Subsections 6.5.1 through 6.5.4. These risk estimates are then compared to Federal USEPA and FDEP carcinogenic and noncarcinogenic target risk levels.

The USEPA guidelines, established in the NCP, indicate the total lifetime cancer risk due to exposure to the HHCOPCs at a site, by each complete exposure pathway, should not exceed a range of 1 in 1,000,000 ($1\times10\text{-}^{6}$) to 1 in 10,000 (1×10^{-4}) (USEPA, 1990). FDEP has indicated chemical-specific risks greater than one in one million (1×10^{-6}) warrant further consideration.

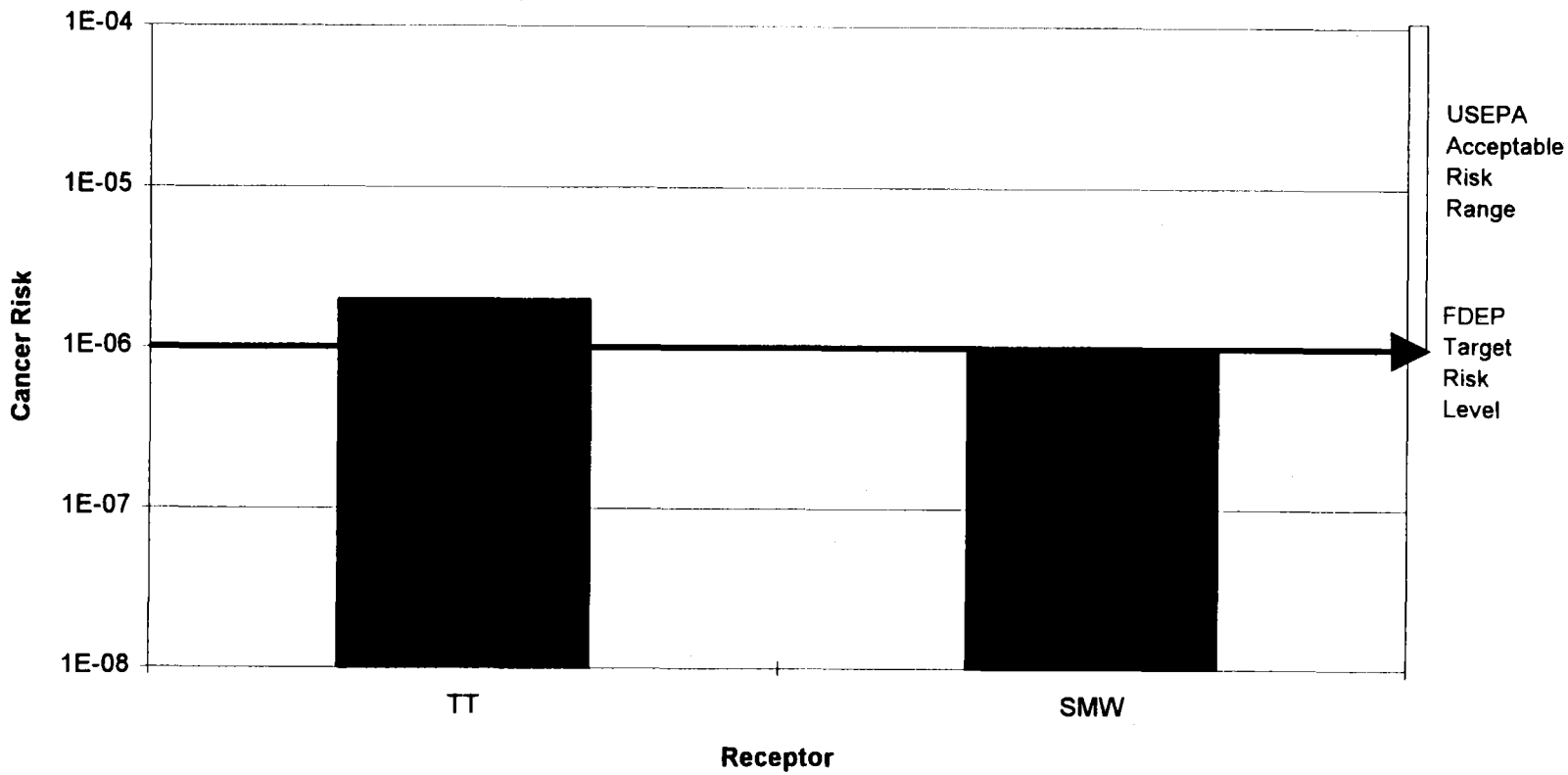
An HQ less than 1 indicates noncarcinogenic toxic effects are not expected to occur; however, a cumulative hazard index (HI) greater than 1 may be indicative of possible noncarcinogenic toxic effects, but the circumstances must be evaluated on a case-by-case basis (USEPA, 1989b). As the HI increases, so does the likelihood of adverse effects associated with exposure. Both USEPA and FDEP believe HIs greater than 1 warrant an evaluation of the noncarcinogenic effects.

Tables 6-11 and 6-12 summarize the cancer and noncancer risk under current and hypothetical future land-use scenarios for Site 31C, based upon data collected during the RI. It should be noted that removal of contaminated soil during the IRA eliminates the potential for exposure to HHCOPCs at Site 31C. Tables 6-13 and 6-14 summarize the cancer and noncancer risk under current and hypothetical future land-use scenarios, respectively, for Sites 31E and 31F.

6.5.1 Surface Soil

6.5.1.1 Site 31C Surface Soil It should be noted that removal of contaminated soil during the IRA eliminates concentrations of HHCOPCs at Site 31C that may pose a health risk in excess of regulatory limits. This is discussed in greater detail in Section 6.8. Risk calculations for surface soil exposure, based upon data collected during the RI, are shown in Tables F-10 through F-23 in Appendix F to this report. For the current land-use scenario, the cancer risks associated with exposure to surface soil (ingestion, dermal contact, and fugitive dust inhalation) are 7×10^{-7} for an aggregate (combined adult and adolescent) trespasser, and 3×10^{-7} for a site maintenance worker. Both receptors' cancer risk values are below the USEPA acceptable cancer risk range of 1 in 10,000 to 1 in 1,000,000 and the Florida level of concern of 1×10^{-6}. The noncancer risks associated with surface soil ingestion, dermal contact, and fugitive dust inhalation under current land use (adolescent trespasser, adult trespasser, and site worker) are below USEPA's target HI of 1. Figures 6-2 and 6-3 present summaries of cancer risks and HIs, respectively, associated with exposure scenarios under current land use.

The cancer risks associated with exposure to surface soil ingestion, dermal contact, and fugitive dust inhalation under hypothetical future land use are 1×10^{-5} for an aggregate resident (combined adult and child), 7×10^{-7} for an aggregate trespasser (combined adult and adolescent), 2×10^{-6} for an occupational worker, 3×10^{-7} for a site maintenance worker, and 5×10^{-8} for an excavation worker under hypothetical future land use. Figure 6-4 presents a summary of cancer risk associated with exposure scenarios under future land use. All of these hypothetical future receptor risks are within or below the USEPA acceptable cancer risk range; however, the



NOTES:
USEPA = U.S. Environmental Protection Agency
FDEP = Florida Department of Environmental Protection
TT = Total trespasser
SMW = Site maintenance worker

FIGURE 6-2
CANCER RISK SUMMARY
CURRENT LAND USE FOR SURFACE SOIL AT SITE 31C

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

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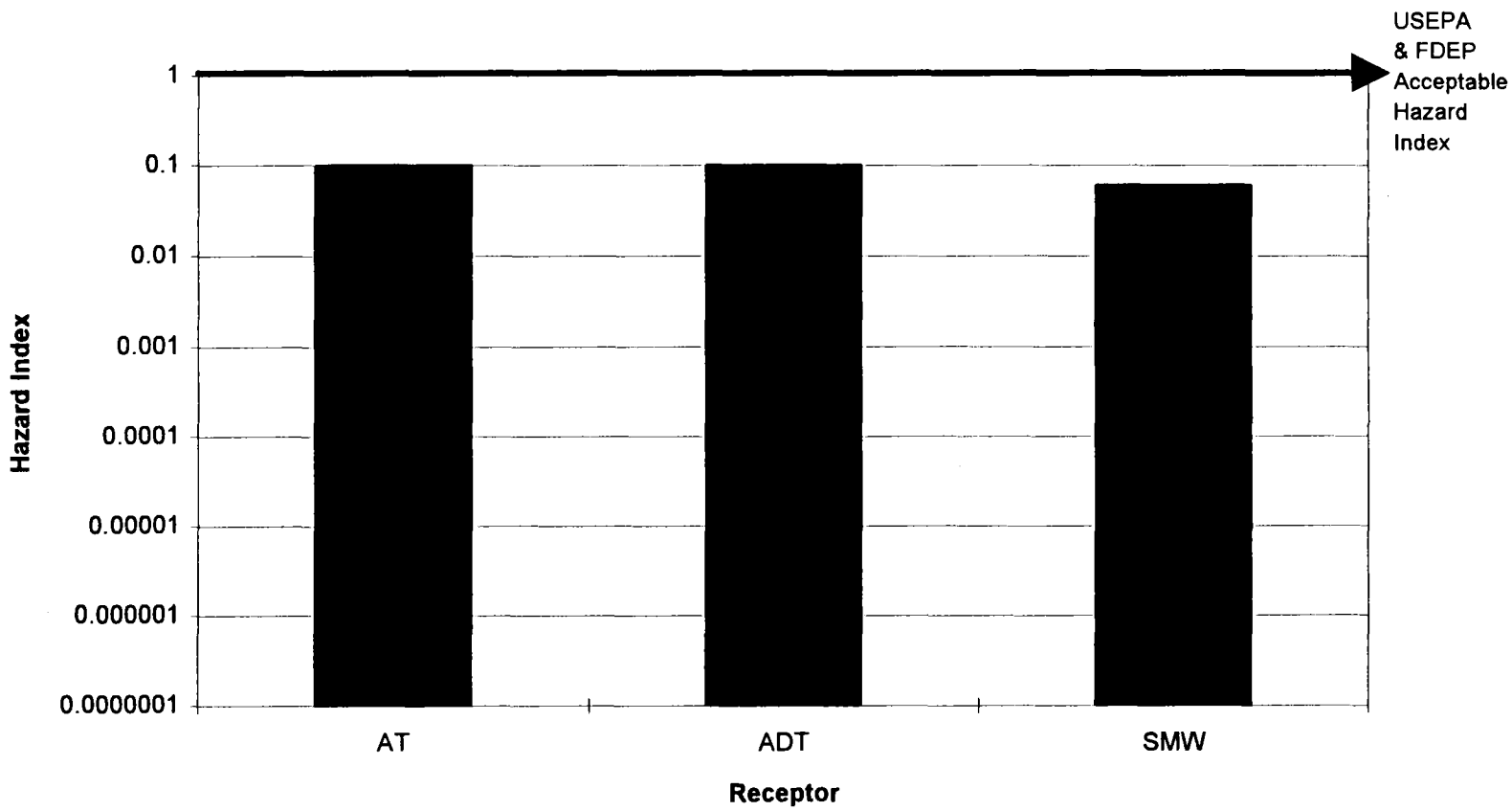


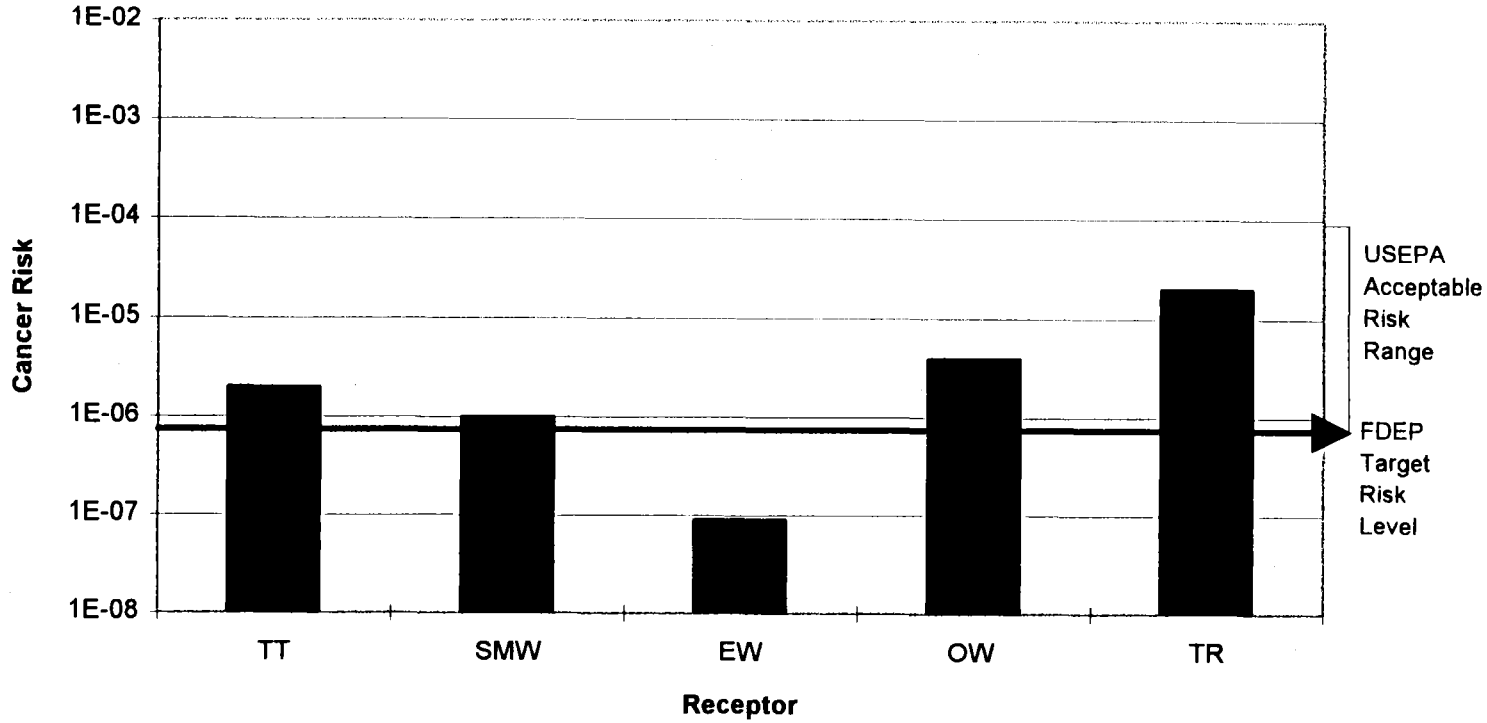
NOTES:
USEPA = U.S. Environmental Protection Agency
FDEP = Florida Department of Environmental Protection
AT = Adult trespasser
ADT = Adolescent trespasser
SMW = Site maintenance worker

FIGURE 6-3
NONCANCER RISK SUMMARY
CURRENT LAND USE FOR SURFACE SOIL AT SITE 31C

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

H:\HETD\WHITING\SITE31\FIG6-3 PM5 FIGS31B.XLS 050498HAS



NOTES:
USEPA = U.S. Environmental Protection Agency
FDEP = Florida Department of Environmental Protection
TT = Total trespasser
SMW = Site maintenance worker
EW = Excavation worker
OW = Occupational worker
TR = Total resident

FIGURE 6-4
CANCER RISK SUMMARY
FUTURE LAND USE FOR SURFACE SOIL AT SITE 31C

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

H:\HEIDI\WHITING\SITE31\FIG6-4.PM5 FIGS31B.XLS 050498HAS

Table 6-11
Risk Summary, Current Land Use at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Receptor	Exposure Route	HI[1]	ELCR[1]
Current Land Use			
Surface Soil			
Adult Trespasser:	Incidental ingestion	0.05	2×10^{-7}
	Dermal contact	0.07	2×10^{-7}
	Inhalation of particulates	0.00007	2×10^{-8}
	Total Adult Trespasser:	0.1	4×10^{-7}
Adolescent Trespasser:	Incidental ingestion	0.08	2×10^{-7}
	Dermal contact	0.08	1×10^{-7}
	Inhalation of particulates	0.00009	1×10^{-8}
	Total Adolescent Trespasser:	0.2	3×10^{-7}
	Total Risk to Trespasser (Adult and Adolescent) Exposed to Surface Soil:	NC	7×10^{-7}
Site Maintenance Worker:	Incidental ingestion	0.02	1×10^{-7}
	Dermal contact	0.04	2×10^{-7}
	Inhalation of particulates	0.0003	8×10^{-8}
	Total Site Maintenance Worker:	0.06	3×10^{-7}

[1] Receptor totals may vary from spreadsheets due to rounding algorithm.

Notes: HI = hazard index.
ELCR = excess lifetime cancer risk.
NC = not calculated because child and adult HIs are not additive.

Table 6-12
Risk Summary, Future Land Use at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Receptor	Exposure Route	HI[1]	ELCR[1]
Future Land Use			
Surface Soil			
Adult Trespasser:	Incidental ingestion	0.05	2×10^{-7}
	Dermal contact	0.07	2×10^{-7}
	Inhalation of particulates	0.00007	2×10^{-8}
	Total Adult Trespasser:	0.1	4×10^{-7}
Adolescent Trespasser:	Incidental ingestion	0.08	2×10^{-7}
	Dermal contact	0.08	1×10^{-7}
	Inhalation of particulates	0.00009	1×10^{-8}
	Total Adolescent Trespasser:	0.2	3×10^{-7}
	Total Risk to Trespasser (Adult and Adolescent) Exposed to Surface Soil:	NC	7×10^{-7}
Adult Resident:	Incidental ingestion	0.4	2×10^{-6}
	Dermal contact	0.3	2×10^{-6}
	Inhalation of particulates	0.002	6×10^{-7}
	Total Adult Resident:	0.7	5×10^{-6}
Child Resident:	Incidental ingestion	4	5×10^{-6}
	Dermal contact	0.8	7×10^{-7}
	Inhalation of particulates	0.01	8×10^{-7}
	Total Child Resident:	5	6×10^{-6}
	Total Risk to Resident (Adult and Child) Exposed to Surface Soil:	NC	1×10^{-5}
Occupational Worker:	Incidental ingestion	0.2	8×10^{-7}
	Dermal contact	0.2	5×10^{-7}
	Inhalation of particulates	0.0008	2×10^{-7}
	Total Occupational Worker:	0.4	2×10^{-6}

See notes at end of table.

Table 6-12 (Continued)
Risk Summary, Future Land Use at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Receptor	Exposure Route	HI[1]	ELCR[1]
Future Land Use (Continued)			
Site Maintenance Worker:	Incidental ingestion	0.02	1×10^{-7}
	Dermal contact	0.04	2×10^{-7}
	Inhalation of particulates	0.0003	8×10^{-8}
	Total Site Maintenance Worker:	0.06	3×10^{-7}
Excavation Worker:	Incidental ingestion	0.1	4×10^{-8}
	Dermal contact	0.03	7×10^{-9}
	Inhalation of particulates	0.0003	3×10^{-9}
	Total Excavation Worker:	0.1	5×10^{-8}
Groundwater:			
Adult Resident:	Ingestion of groundwater as drinking water	0.009	2×10^{-7}
	Inhalation of volatiles while showering	ND	5×10^{-8}
	Total Adult Resident:	0.009	3×10^{-7}
Child Resident:	Ingestion of groundwater as drinking water	0.02	1×10^{-7}
	Total Child Resident:	0.02	1×10^{-7}
	Total Risk to Resident (Adult and Child) Exposed to Groundwater:	NC	4×10^{-7}
	Total Risk to Resident (Adult and Child) Exposed to Groundwater and Surface Soil:	NC	1×10^{-5}

[1] Receptor totals may vary from spreadsheets due to rounding algorithm.

Notes: HI = hazard index.
ELCR = excess lifetime cancer risk.
NC = not calculated because child and adult HIs are not additive.
ND = no dose-response data for this exposure route were available for human health chemicals of potential concern in this medium.

Table 6-13
Risk Summary, Current Land Use at Sites 31E and 31F

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Receptor	Exposure Route	HI[1]	ELCR[1]
Current Land Use			
Surface Soil			
Adult Trespasser:	Incidental ingestion	0.001	NE
	Dermal contact	0.002	NE
	Inhalation of particulates	0.0001	NE
	Total Adult Trespasser:	0.003	NE
Adolescent Trespasser:	Incidental ingestion	0.002	NE
	Dermal contact	0.002	NE
	Inhalation of particulates	0.0001	NE
	Total Adolescent Trespasser:	0.005	NE
	Total Risk to Trespasser (Adult and Adolescent) Exposed to Surface Soil:	NC	NE
Site Maintenance Worker:	Incidental ingestion	0.0005	NE
	Dermal contact	0.001	NE
	Inhalation of particulates	0.0005	NE
	Total Site Maintenance Worker:	0.002	NE

[1] Receptor totals may vary from spreadsheets due to rounding algorithm.

Notes: HI = hazard index.
ELCR = excess lifetime cancer risk.
NE = not evaluated; no carcinogenic human health chemical of potential concern selected.
NC = not calculated because child and adult HIs are not additive.

Table 6-14
Risk Summary, Future Land Use at Sites 31E and 31F

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Receptor	Exposure Route	HI[1]	ELCR[1]
Future Land Use			
Surface Soil			
Adult Trespasser:	Incidental ingestion	0.001	NE
	Dermal contact	0.002	NE
	Inhalation of particulates	0.0001	NE
	Total Adult Trespasser:	0.003	NE
Adolescent Trespasser:	Incidental ingestion	0.002	NE
	Dermal contact	0.002	NE
	Inhalation of particulates	0.0001	NE
	Total Adolescent Trespasser:	0.005	NE
	Total Risk to Trespasser (Adult and Adolescent) Exposed to Surface Soil:	NC	NE
Adult Resident:	Incidental ingestion	0.01	NE
	Dermal contact	0.02	NE
	Inhalation of particulates	0.004	NE
	Total Adult Resident:	0.03	NE
Child Resident:	Incidental ingestion	0.1	NE
	Dermal contact	0.02	NE
	Inhalation of particulates	0.02	NE
	Total Child Resident:	0.1	NE
	Total Risk to Resident (Adult and Child) Exposed to Surface Soil:	NC	NE
Occupational Worker:	Incidental ingestion	0.004	NE
	Dermal contact	0.004	NE
	Inhalation of particulates	0.001	NE
	Total Occupational Worker:	0.008	NE

See notes at end of table.

Table 6-14 (Continued)
Risk Summary, Future Land Use at Sites 31E and 31F

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Receptor	Exposure Route	HI[1]	ELCR[1]
Future Land Use (Continued)			
Site Maintenance Worker:	Incidental ingestion	0.0005	NE
	Dermal contact	0.001	NE
	Inhalation of particulates	0.0005	NE
	Total Site Maintenance Worker:	0.002	NE
Excavation Worker:	Incidental ingestion	0.005	NE
	Dermal contact	0.001	NE
	Inhalation of particulates	0.0005	NE
	Total Excavation Worker:	0.006	NE

[1] Receptor totals may vary from spreadsheets due to rounding algorithm.

Notes: HI = hazard index.
ELCR = excess lifetime cancer risk.
NE = not evaluated; no carcinogenic human health chemical of potential concern selected.
NC = not calculated because child and adult HIs are not additive.

hypothetical future residential and occupational worker risk exceeds the Florida level of concern of 1×10^{-6} (due to Aroclor-1260 and dieldrin).

Noncancer risks associated with surface soil ingestion, dermal contact, and fugitive dust inhalation under future land use for all hypothetical future receptors are below USEPA's target HI of 1, except for the child resident. The child resident (HI of 5) exceeds the USEPA's and the FDEP's target HI of 1, although no individual HHCOPCs exceed this threshold. The major contributors to this HI are Aroclor-1260, aluminum, cadmium, chromium, iron, mercury, and silver. Figure 6-5 presents a summary of HIs associated with exposure scenarios under future land use.

The lead EPC in Site 31C soil exceeded the OSWER directive lead cleanup level for residential properties of 400 mg/kg. However, the remedial activities undertaken at Site 31C have addressed elevated lead in these soils.

6.5.1.2 Sites 31E and 31F Surface Soil The risk calculations for surface soil exposure are shown in Tables F-24 through F-37 in Appendix F to this report. Since there are no carcinogenic HHCOPCs selected for surface soil, there is no potential future receptor carcinogenic risk summary figure.

Noncancer risks associated with surface soil ingestion, dermal contact, and fugitive dust inhalation under future land use for all hypothetical future receptors are below USEPA's target HI of 1. Figures 6-6 and 6-7 present a summary of HIs associated with exposure scenarios under current and future land use, respectively.

6.5.2 Site 31C Groundwater

The risk calculations for groundwater exposure are shown in Tables F-38 and F-41 in Appendix F to this report. Currently, there are no potable supply wells at the site, thus, there is no human exposure to groundwater. Therefore, risk was not evaluated for the current land-use scenario.

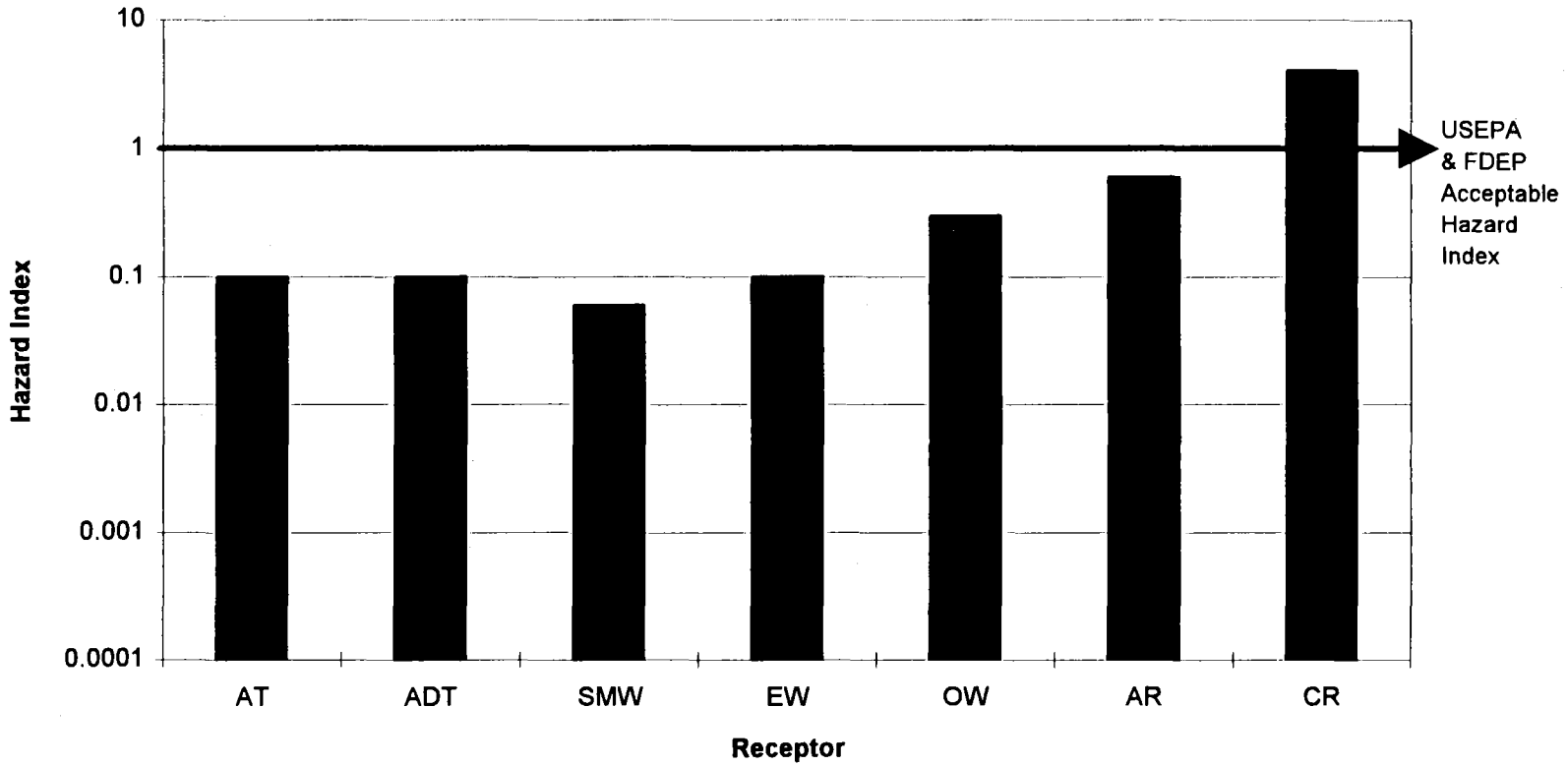
The cancer risks associated with exposure to groundwater ingestion under hypothetical future land use are 4×10^{-7} for an aggregate resident (combined adult and child). Figure 6-8 presents a summary of cancer risk associated with exposure scenarios under future land use. The hypothetical future residential receptor risk is below both the USEPA acceptable cancer risk range and the Florida level of concern of 1×10^{-6}. The hypothetical future residential noncancer risk is below the USEPA and FDEP target threshold of 1. Figure 6-9 presents a summary of the hypothetical future noncancer risks.

6.5.3 Cumulative Risk Summary

USEPA Region IV guidance requires an assessment of a cumulative receptor risk. In this HHRA, the hypothetical future and current trespasser could potentially be exposed to all Site 31 soil exposure areas and the hypothetical future residential receptor could potentially be exposed to Site 31 surface soils and groundwater. The cumulative trespasser risk is equal to the risk from Site 31C (7×10^{-7}) because no carcinogenic HHCOPCs were identified at Sites 31E and 31F. The cumulative risk to hypothetical future residents of 1×10^{-5} is within the USEPA acceptable cancer risk range; however, it exceeds the FDEP target level of concern. This risk exceedance is primarily due to surface soil.

6.6 UNCERTAINTY ANALYSIS.

General uncertainties associated with the collection, analysis, and evaluation of data; exposure assessment; toxicity assessment; and the risk estimation process are discussed in Paragraph 2.5.5.1 and Table 2-10 of the GIR (HLA, 1998). Site-specific uncertainties that are important for the interpretation of the calculated risk estimates for surface soil, and groundwater at Site 31 are discussed below.



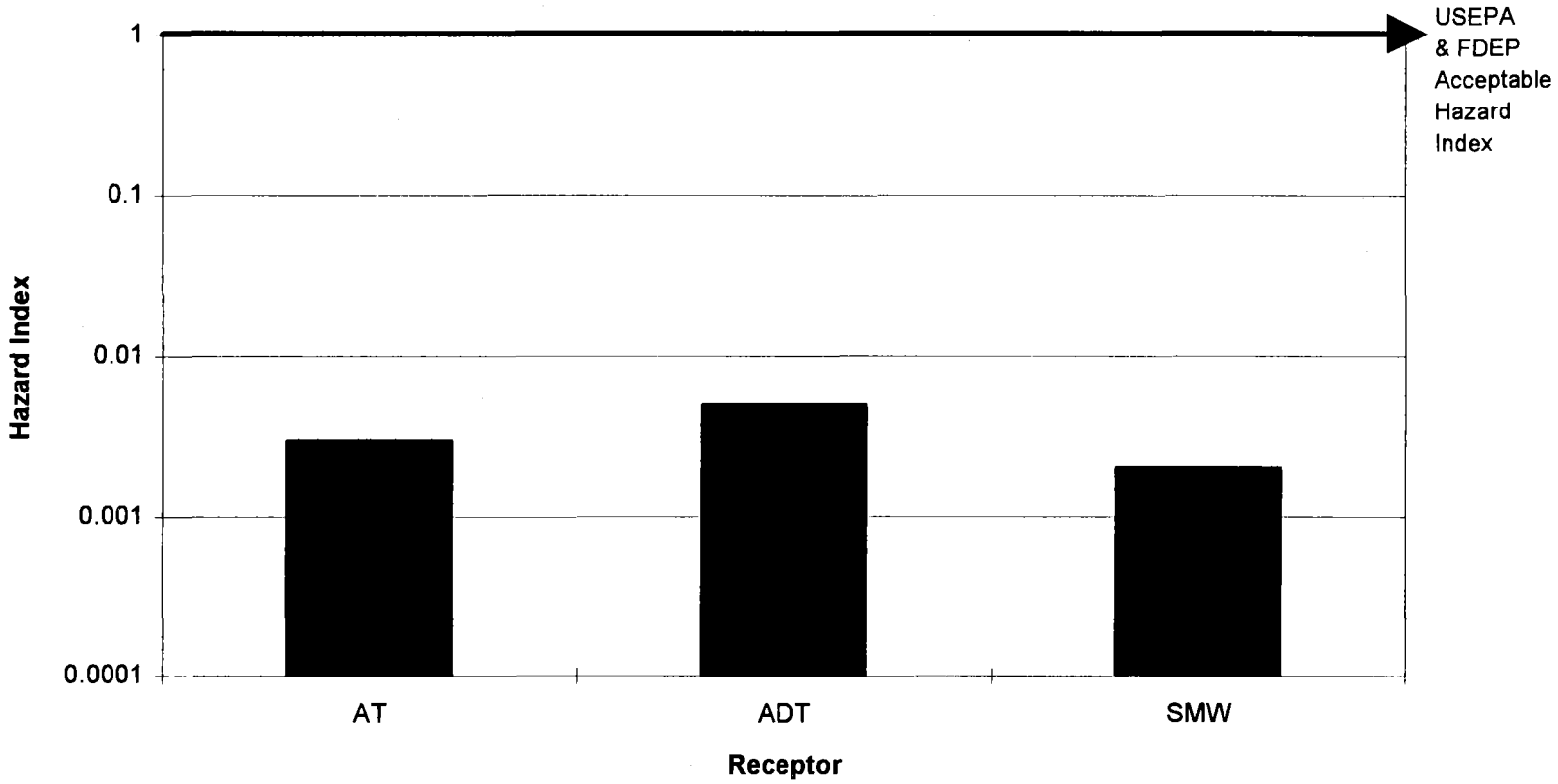
NOTES:
USEPA = U.S. Environmental Protection Agency
FDEP = Florida Department of Environmental Protection
AT = Adult trespasser
ADT = Adolescent trespasser
SMW = Site maintenance worker
EW = Excavation worker
OW = Occupational worker
AR = Adult resident
CR = Child resident

FIGURE 6-5
NONCANCER RISK SUMMARY
FUTURE LAND USE FOR SURFACE SOIL AT SITE 31C

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

H:\HEID\WHITING\SITE31\FIG6-5 PM5 FIGS31B.XLS 050498HAS



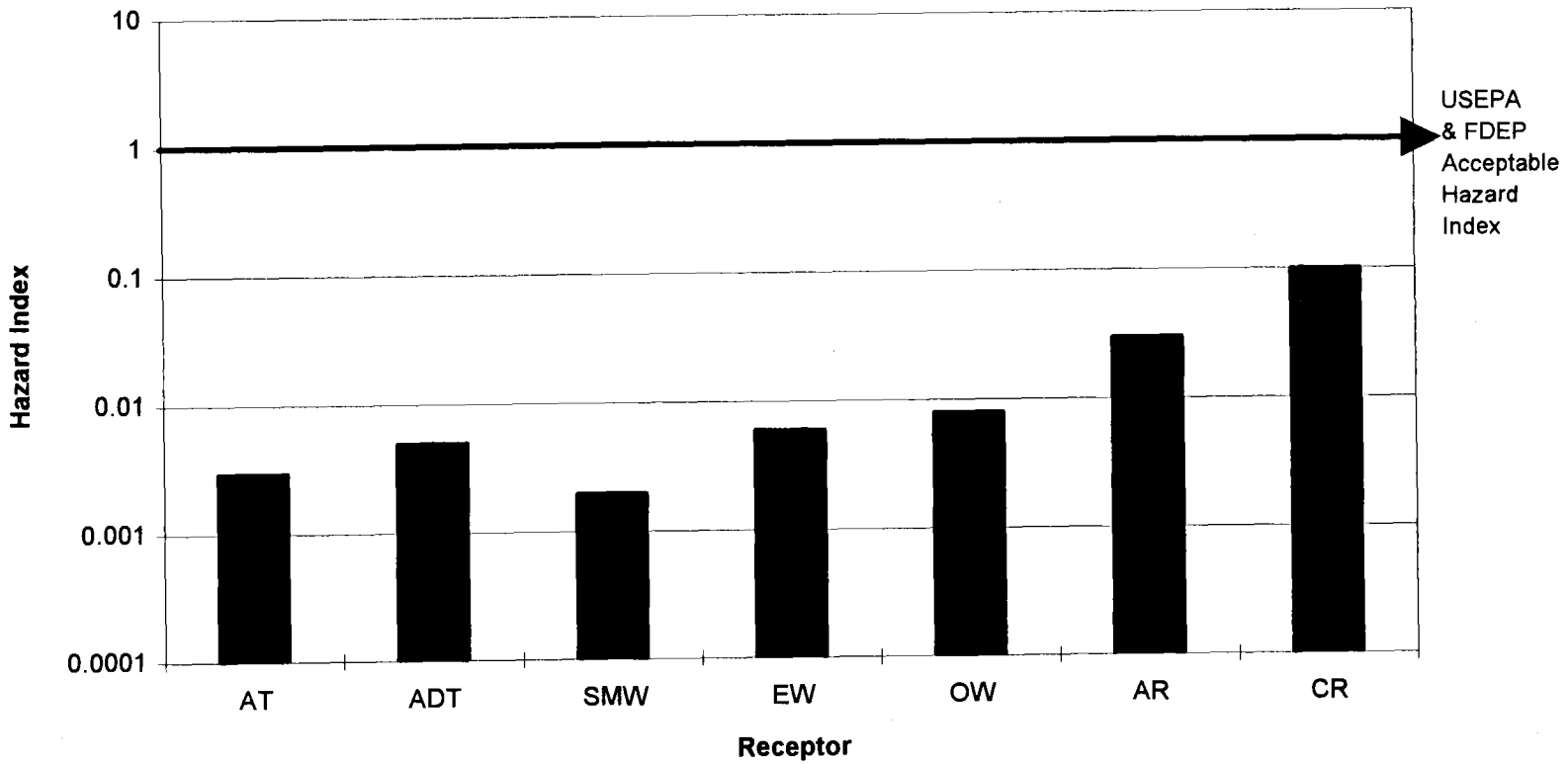
NOTES:
USEPA = U.S. Environmental Protection Agency
FDEP = Florida Department of Environmental Protection
AT = Adult trespasser
ADT = Adolescent trespasser
SMW = Site maintenance worker

FIGURE 6-6
NONCANCER RISK SUMMARY
CURRENT LAND USE FOR SURFACE SOIL
AT SITES 31E AND 31F

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

H:\HEIDI\WHITING\SITE31\FIG6-6.PM5 GW31b2.XLS 090998HAS



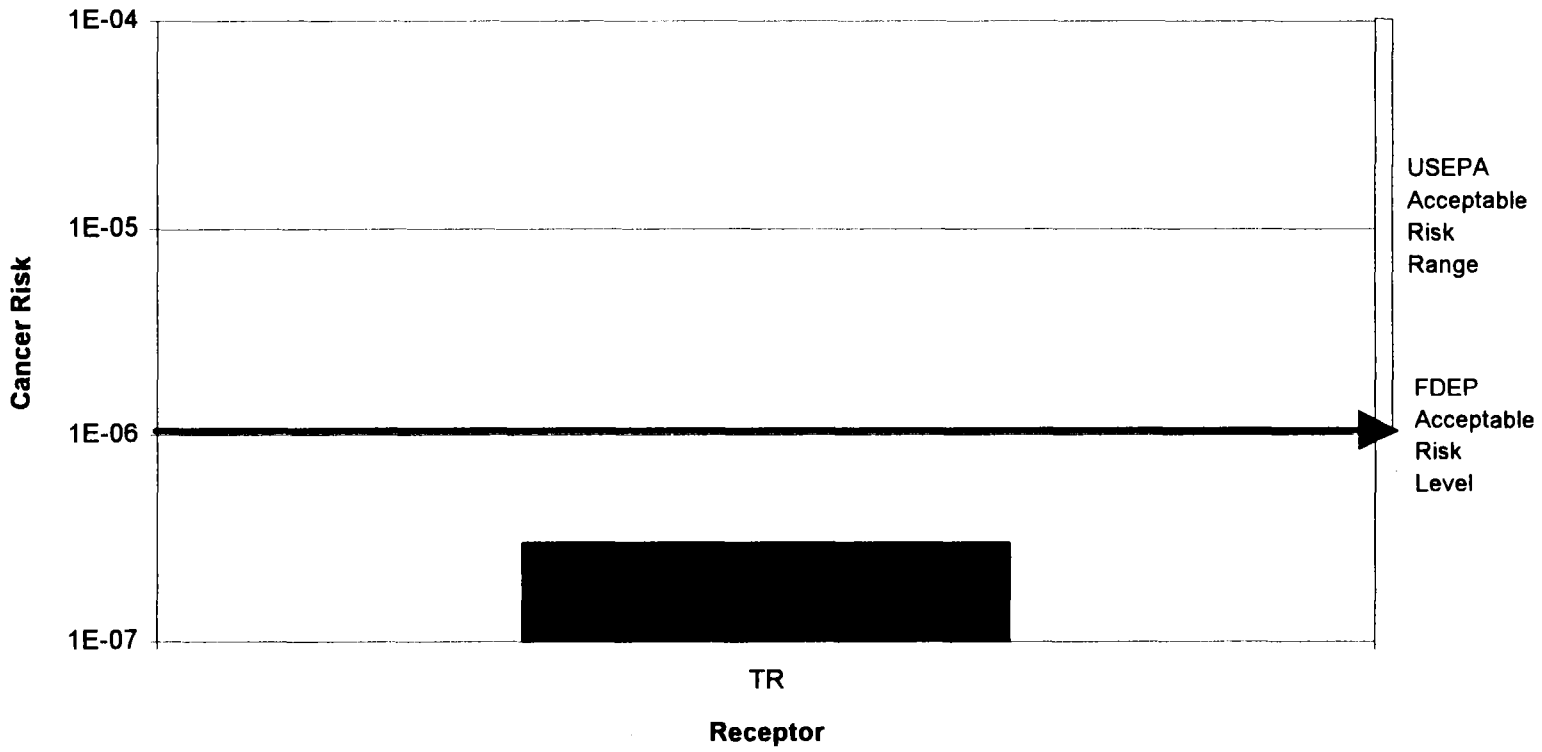
NOTES:
USEPA = U.S. Environmental Protection Agency
FDEP = Florida Department of Environmental Protection
AT = Adult trespasser
ADT = Adolescent trespasser
SMW = Site maintenance worker
EW = Excavation worker
OW = Occupational worker
AR = Adult resident
CR = Child resident

FIGURE 6-7
NONCANCER RISK SUMMARY
FUTURE LAND USE FOR SURFACE SOIL
AT SITES 31E AND 31F

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

H:\HEID\WHITING\SITE31\FIG8-7.PM5 GW31b2.XLS 09108BHAS



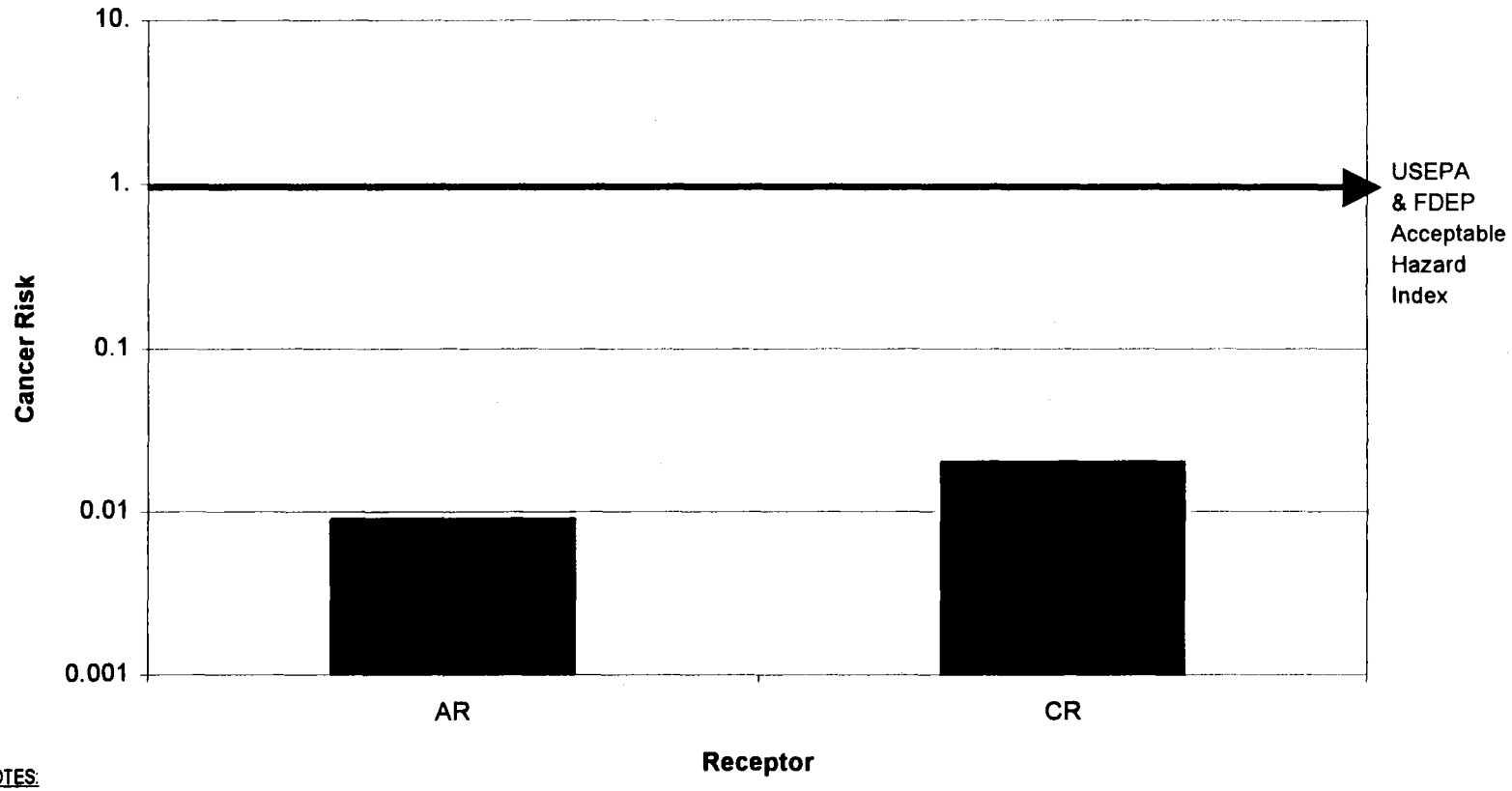
NOTES:
USEPA = U.S. Environmental Protection Agency
FDEP = Florida Department of Environmental Protection
TR = Total resident

FIGURE 6-8
CANCER RISK SUMMARY
FUTURE LAND USE FOR GROUNDWATER
AT SITE 31C

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

H:\HEID\WHITING\SITE31\FIG6-8 PM5 GW31b.XLS 050498HAS



NOTES:
USEPA = U.S. Environmental Protection Agency
FDEP = Florida Department of Environmental Protection
AR = Adult resident
CR = Child resident

FIGURE 6-9
NONCANCER RISK SUMMARY
FUTURE LAND USE FOR GROUNDWATER
AT SITE 31C

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

H:\HEID\WHITING\SITE31\FIG6-9 PM5 GW31b.XLS 050498HAS

The lack of inhalation reference doses for the HHCOPCs in surface soil may have resulted in underestimates of the HIs associated with exposure to surface soil at Site 31; however, these noncancer risks are not likely to be significant when compared to oral risks that are fully characterized. The SQLs were compared to the risk-based screening criteria and Florida and State regulatory guidelines for all analytes not selected as HHCOPCs to assess whether or not the detection limits were adequate to detect analytes at levels of concern (SQLs of analytes with 100 percent frequency of detection were not evaluated). The analytes with a SQL exceeding its screening criteria are antimony (Site 31C), Aroclor-1260 (Site 31C), arsenic (Site 31A), benzo(b)fluoranthene (Site 31C), benzo(k)fluoranthene (Site 31C), chlordane (Site 31C), dieldrin (Site 31C) in surface soil, and aluminum, methylene chloride, TCE, and vanadium in groundwater. However, because the laboratory equipment was able to detect below the SQL for all these chemicals, the SQLs were considered adequate for this HHRA.

- Some uncertainty is associated with the representativeness of the groundwater data used to complete the risk evaluation at Site 31. Generally, because the low-flow purging and sampling method was used, turbidity in the unfiltered groundwater samples was minimal. However, the analytical results for some of the unfiltered samples may be biased high for inorganic constituents as a result of suspended solids.

- Central tendency (CT) carcinogenic risk to hypothetical future receptors with risks exceeding Florida levels of concern was evaluated using the UCL of the mean concentration (as discussed in Section 6.3.3) and reasonable, but less conservative exposure parameters (including lower ingestion rate, adherence factor, and exposure duration) designed to provide a probable risk level (USEPA, 1995b).

- The hypothetical future occupational workers as well as future residents carcinogenic risk exceeded the FDEP target of 1×10^{-6}. The CT carcinogenic risk results for hypothetical future residential and occupational receptors and the CT exposure parameters are presented in Tables F-42 through F-44 in Appendix F of this report. Only CT ingestion and dermal exposures were characterized, because the contribution from inhalation was insignificant compared to the total risk. The CT aggregate residential risk exposed to surface soil is 1×10^{-6}.

- The CT aggregate trespasser risk exposed to surface soil is 1×10^{-7}. The CT occupational worker risk exposed to surface soil is 3×10^{-7}.

- The risk range 1×10^{-6} to 1×10^{-5} presented by the reasonable maximum exposure (RME) and CT exposure scenarios for hypothetical future residential receptors are useful as information to provide perspective for the risk manager and compliance with Agency guidance (USEPA, 1995a).

- There are no dose response data available for lead. The lead EPC in Site 31C soil (1,890 mg/kg) exceeded the OSWER directive lead cleanup level for residential properties of 400 mg/kg. However, the remedial activities undertaken at Site 31C have addressed elevated lead in these soils.

6.7 RISK REDUCTION RESULTING FROM IRA.

All identified areas of contaminated surface soil at Site 31C were removed during the IRA. Confirmatory sample data indicate there are no remaining HHCOPCs in surface soil at Site 31C. Trichloroethene in groundwater at Site 31C are the only remaining HHCOPCs.

In consideration of the above, the risk characterization for current and future soil incidental ingestion, dermal exposure, and inhalation of particle exposure routes at Site 31C are no longer applicable to current or future receptors. There is no current exposure route to groundwater, therefore, only a future land-use scenario involving ingestion and inhalation of volatiles from groundwater would apply to Site 31C. The maximum total risk to a resident child receptor in this scenario would be $2x\ 10^{-7}$.

Because manganese at Sites 31E and 31F did not pose a non-cancer risk in excess of an HI of 1, remedial actions to address manganese were not required. Therefore, the risks estimated in this HHRA for manganese at Sites 31E and 31F (the highest HI is 0.1 for a future child resident) have not changed as a result of remedial actions performed at Site 31.

6.8 REMEDIAL GOAL OPTIONS.

Remedial goal option (RGOs) tables are presented for each medium with a total excess lifetime cancer risk (ELCR) greater than 1×10^{-6} (Florida target risk level) or an HI greater than 1. The RGO concentrations are calculated using the scenario representing the highest estimated risk for a given medium (USEPA, 1995b). Based on the above criteria, RGOs are developed for each chemical with a total ELCR greater than 1×10^{-6} or an HQ greater than 0.1. Analytes whose EPCs exceed Florida standards are also presented in the RGO tables.

RGOs and available Federal regulatory and FDEP risk-based criteria are intended to provide the basis for the development of remedial alternatives in the FS. The RGO values are not actual or proposed cleanup levels, but are provided to assist risk-management decision making in the FS.

Table 6-15 presents the RGOs for surface soil for Site 31C. RGOs are presented for Aroclor-1260, and dieldrin based on cancer risks for the adult and child resident at Site 31C. Aroclor-1260, aluminum, cadmium, chromium, iron, mercury, and silver are presented based on noncancer risk. Arsenic, barium, copper, and lead are presented because the maximum detected concentration exceeded the Florida soil cleanup goal for a residential scenario. Data presented in the IRA Completion Report for Site 31C indicate that the most conservative remedial goals (an ELCR of less than 10^{-6} and an HI of less than 1) for surface soil at Site 31C have been achieved by the IRA.

Table 6-16 presents RGOs for surface soils for Sites 31E and 31F. RGOs are presented for manganese based on non-cancer risk (HI for child resident = 0.13).

6.9 SUMMARY OF HHRA FOR SITE 31.

The following conclusions were drawn based on the HHRA for Site 31:

- HHCOPCs detected in surface soil samples collected during the RI do not pose unacceptable carcinogenic risks to the receptors evaluated, based on USEPA guidelines and target risk range. However, the total ELCR at Site 31C exceeded Florida's target risk level of concern for exposure scenarios involving the ingestion of soil by a hypothetical future resident or occupational worker. The ELCR is due primarily to Aroclor-1260 and dieldrin. The CT risks to a hypothetical future trespasser, hypothetical future resident, and occupational worker were equal to or below the Florida level of concern (1×10^{-6}) for Site 31C.
- Data presented in the IRA Completion Report for Site 31C indicate all identified areas of surface soil containing HHCOPCs at concentrations in excess of their respective background screening criteria and the RBC or Florida Residential SCTL have been excavated and removed from site, thereby eliminating potential risks.
- Manganese was detected at concentrations in excess of the Whiting Field Background screening concentration and the USEPA Residential RBC at Sites 31E and 31F; however, the noncancer risks associated with surface soil ingestion dermal contact and fugitive dust inhalation under a future land use for all hypothetical future receptors are below USEPAs target HI of 1.

Cancer and noncancer risk levels for subsurface soil and groundwater at Site 31 are below USEPA and FDEP target levels of concern.

Table 6-15
Summary of Remedial Goal Options for Surface Soil at Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Range of Detected Concentrations	Exposure Point Concentration	Total Excess Lifetime Cancer Risk (Based on Risk to Resident [adult and child])			Total Hazard Index (Based on Risk to Child Resident)			Florida Soil Cleanup Target Levels (Residential)[1]	Florida Soil Cleanup Target Levels (Leaching)[1]	Background Screening Concentration
			10^{-4}	10^{-5}	10^{-6}	3	1	0.1			
Pesticides and PCBs (µg/kg)											
Aroclor-1260	340 to 1,400	1,350	NR	NR	250	NR	NR	142	500	17,000	NA
Dieldrin	2.1 to 120	118	NR	NR	26.8	NA	NA	NA	70	40	NA
Inorganics (mg/kg)											
Aluminum	1,670 to 16,800	7,480	NA	NA	NA	NR	NR	7,480	72,000	NC	7,800
Arsenic	0.59 to 1.7	1.7	NA	NA	NA	NA	NA	NA	0.8	29	3.2
Cadmium	0.22 to 26.8	26.8	NA	NA	NA	NR	NR	4	75	8	0.58
Barium	2.7 to 534	534	NA	NA	NA	NR	NR	485	110	1600	23.2
Chromium	1.4 to 295	295	NA	NA	NA	NR	NR	36	210	38	11
Copper	29.8 to 948	948	NA	NA	NA	NC	NC	NC	110	NC	9.4
Iron	645 to 22,500	9,410	NA	NA	NA	NR	NR	1,590	NSC	NC	8,632
Lead	1.8 to 1,890	1,890	NA	NA	NA	NA	NA	NA	400	NC	11.4
Mercury	0.13 to 8.8	8.8	NA	NA	NA	NR	NR	2.3	3.4	2.1	0.12
Silver	0.97 to 154	154	NA	NA	NA	NR	NR	38	390	17	0.7

[1] Chapter 62-777 Florida Administrative Code.

Notes: PCB = polychlorinated biphenyl.
µg/kg = micrograms per kilogram.
NR = not reported because the calculated remedial goal option exceeds the exposure point concentration.
NA = not applicable.
mg/kg = milligrams per kilograms.
NC = not calculated.
NSC = no screening concentration available.

Table 6-16
Summary of Remedial Goal Options for Surface Soil at Sites 31E and 31F

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Range of Detected Concentrations	Exposure Point Concentration	Total Excess Lifetime Cancer Risk (Based on Risk to Resident [adult and child])			Total Hazard Index (Based on Risk to Child Resident)			Florida Soil Cleanup Target Levels (Residential)[1]	Florida Soil Cleanup Target Levels (Leaching)[2]	Background Screening Concentration
			10^{-4}	10^{-5}	10^{-6}	3	1	0.1			
Inorganic Analytes (mg/kg)											
Manganese	60.3 to 456	376	NA	NA	NA	NR	NR	290	1600	NC	392

[1] Chapter 62-777 Florida Administrative Code.

Notes: mg/kg = milligrams per kilograms.
NA = not applicable.
NR = not reported because the calculated remedial goal option exceeds the exposure point concentration.
NC = not calculated.

7.0 ECOLOGICAL RISK ASSESSMENT

The ERA evaluates actual and potential adverse effects to ecological receptors associated with exposure to chemicals from Site 31, the Sludge Drying Beds and Disposal Areas, at NAS Whiting Field. Site 31 includes the Sludge Drying Beds (Site 31A) and five additional disposal areas (Sites 31B, 31C, 31D, 31E, and 31F) located along the South Field Perimeter Road. Contaminant fate and transport are discussed in Chapter 8.0.

An IRA involving the removal and offsite disposal of contaminated surface soil was completed at Site 31C to reduce human health and ecological risks. Figures showing the extent of soil removed during the IRA, and analytical laboratory data tables for IRA screening, delineation and confirmatory samples, are attached as Appendix I. Only the data collected during the RI have been evaluated for the purpose of this ERA.

The ERA for Site 31 follows the methodologies described in the NAS Whiting Field GIR (HLA, 1998), and current guidance materials for ERAs at Superfund sites including the following:

- Risk Assessment Guidance for Superfund Environmental Evaluation Manual (USEPA, 1989d)
- Ecological Assessment of Hazardous Waste Sites: A Field and Laboratory Reference (USEPA, 1989c)
- Framework for Ecological Risk Assessment (USEPA, 1992b)
- Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments (USEPA, 1997c)
- Supplemental Guidance to RAGS: Region 4 Bulletins, Ecological Risk Assessment (USEPA, 1995a)
- Proposed Guidelines for Ecological Risk Assessment (USEPA, 1996c)

Additional risk assessment guidance included in the ERA are the USEPA "ECO Update" bulletins (1991d, 1992e, and 1992f) and recent publications (e.g., Maughan, 1993; Suter, 1993).

This ERA was conducted to determine if ecological receptors are potentially exposed to contaminants from Site 31 at concentrations that could cause adverse ecological effects. The Site 31 ERA consists of the following eight sections:

- Site Characterization (Section 7.1) describes current ecological conditions at the sites,
- Problem Formulation (Section 7.2) establishes the goals and focus of the assessment and identifies major factors to be considered,
- Hazard Assessment and Selection of Ecological Chemicals of Potential Concern (ECOPCs) (Section 7.3) reviews the analytical data and identifies chemicals present at the sites that may pose ecological risks,
- Exposure Assessment (Section 7.4) identifies complete exposure pathways and quantifies the magnitude and frequency of exposure,
- Ecological Effects Assessment (Section 7.5) identifies potential adverse effects to ecological receptors associated with the chemicals of concern identified in Section 7.3,
- Risk Characterization (Section 7.6) integrates exposure and concentration-toxicity response information to derive a likelihood estimate of adverse effects,
- Uncertainty Section (Section 7.7) identifies assumptions of the ERA process that may influence the risk assessment conclusions, and
- Summary of Ecological Risk (Section 7.8).

7.1 SITE CHARACTERIZATION.

As previously mentioned, NAS Whiting Field Site 31 encompasses six separate areas including Site 31A, the Sludge Drying Beds, and Sites 31B through 31F sludge disposal areas. Table 2-1 summarizes the Site 31 designations and their locations.

Site 31A is a sludge drying bed unit located near the wastewater treatment plant (Figure 2-1). The unit, which is approximately 0.2 acres in size (92 feet long by 80 feet wide), consists of four sludge drying beds surrounded by containment walls 2.5 to 3.0 feet high. The area surrounding Site 31A is characterized as maintained field (Figure 7-1).

Sites 31B, 31C, and 31D are located on the southwestern slopes of the South Field Runway (Figure 2-2). Because these areas are adjacent to the runway, the slopes have been contoured with surface water retention berms to reduce soil erosion, and the grasses are periodically mowed to a height of 6 to 8 inches. All three areas are characterized as maintained field (Figure 7-2). Site 31C contains areas of stressed vegetation, primarily in the southern and central portions of the site. These areas of stressed vegetation were observed by HLA ecologists during a 1995 site characterization of NAS Whiting Field and are identified in Subsection 3.4.3 of the GIR (HLA, 1998).

Site 31C is located southwest of South Field Runway just east of the man-made "W" drainage ditch (Figure 2-2). Sites 31E and 31F are located northeast of Runway 4 along the eastern boundary of NAS Whiting Field. Sites 31E and 31F are characterized as maintained field (Figure 7-3).

As shown in the vegetative cover maps for Sites 31B through 31F (Figures 7-2 and 7-3), each site consists primarily of maintained areas. The regular mowing of the grass at the sites prevents ecological succession of vegetative communities; however, the following herbaceous species were observed during the 1995 site characterization: buttermint (*Hyptis mutabilis*), morning glory (*Ipomoea cordatotriloba*), lantana (*lantana* sp.), mimosa (*Mimosa strigillosa*), cut-leaf evening primrose (*Oenothera laciniata*), prickly-pear cactus (*Opuntia* sp.), yellow wood sorrel (*Oxalis sticta*), goldenaster (*Pityopsis graminifolia*), southern plantain (*Plantago virginica*), rustweed (*Polypremum procumbens*), ragweed (*Ambrosia* sp.), broomsedge (*Andropogon* sp.), silvery aster (*Aster concolor*), partridge pea (*Chamaecrista fasciculata*), goldenaster (*Chrysopsis* sp.), rattlebox (*Crotalaria lanceolata*), dog fennel (*Eupatorium capillifolium*), pineweed (*Hypericum gentianoides*), Mexican clover (*Richardia brasiliensis*), blackberry vine (*Rubus* sp.), and greenbrier (*Smilax* sp.). A complete list of the vegetative species occurring at Sites 31B through F is provided in Appendix G of this report and Appendix G of the GIR (HLA, 1998). No plants were observed in the sludge drying beds of Site 31A.

The only ecological habitat at Site 31 is mowed grass. Given the limited cover provided by the maintained fields and the site's proximity to the south field taxiway, Perimeter Road, and the wastewater treatment plant, the occurrence of ecological receptors foraging in these areas is expected to be minimal. Large predatory mammals (e.g., foxes, owls, and hawks) are not expected to occur in the vicinity of the sites; however, small mammals and birds may be found foraging at the sites. Although large predatory mammals are not expected to inhabit the site, they may use the maintained fields as forage area early in the morning and late in the afternoon. Consequently, this trophic level was also evaluated in the ERA.

With the exception of a gopher tortoise burrow, which was found near Site 31E, no evidence of terrestrial wildlife including mammals and birds was observed during the 1995 site characterization. Small mammals and birds that may occur in the maintained grassy areas of Site 31 include the eastern cottontail rabbit (*Sylvilagus floridanus*), the hispid cotton rat (*Sigmodon hispidus*), cotton mouse (*Peromyscus gossypinus*), short-tailed shrew (*Blarina brevicauda*), American robin (*Turdus migratorius*), eastern meadowlark (*Sturnella magna*), and the mourning dove (*Zenaida macroura*).

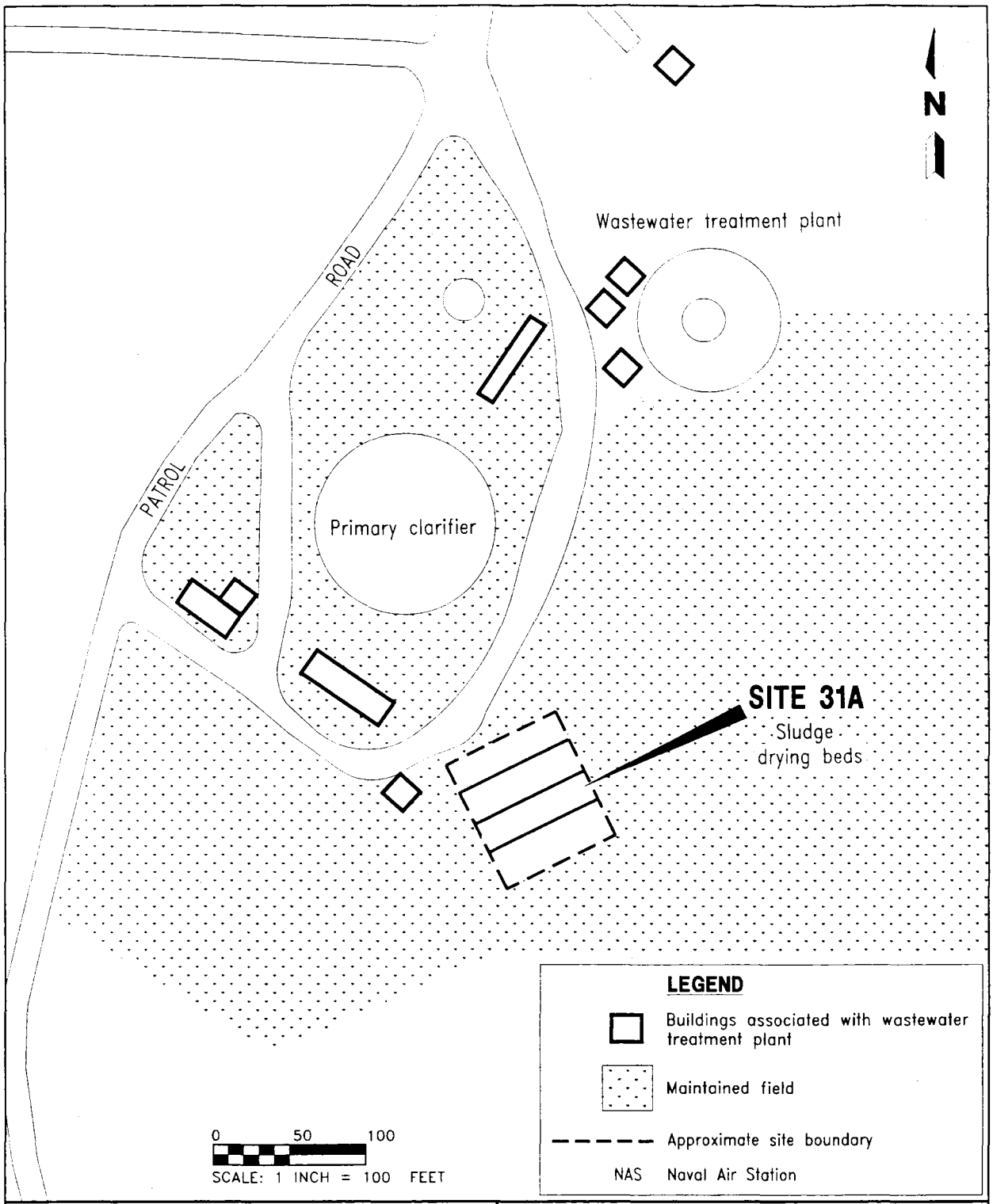


FIGURE 7-1
SITE 31A, SLUDGE DRYING BEDS, VEGETATIVE COVER MAP

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REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA

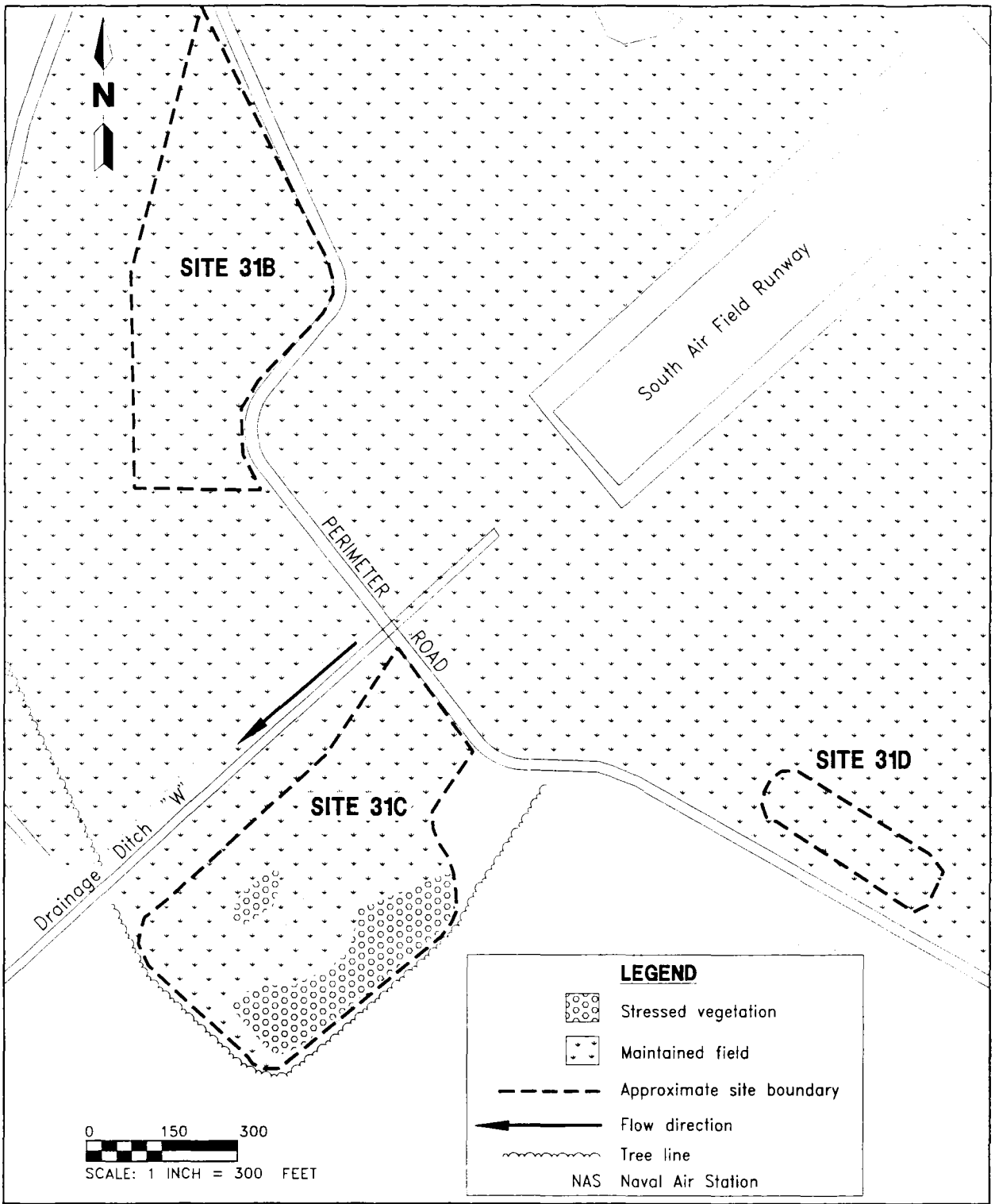

FIGURE 7-2
SITES 31B, 31C, AND 31D
VEGETATIVE COVER MAP

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS
AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA

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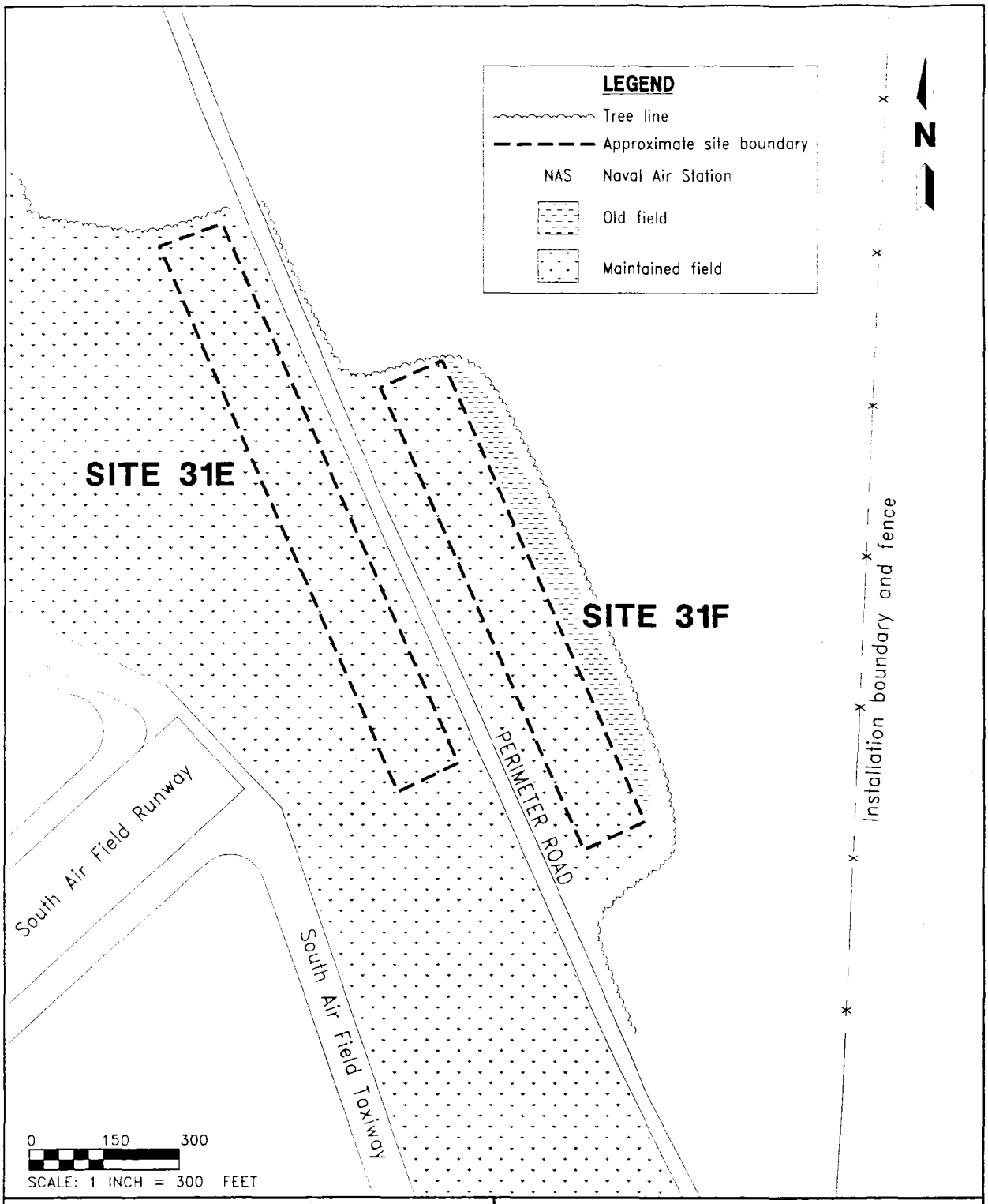

FIGURE 7-3
SITES 31E AND 31F, VEGETATIVE COVER MAP

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA

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Although no aquatic habitat is present at any of the Site 31 areas, groundwater from Sites 31A, 31B, 31C, and 31D may discharge off site into Clear Creek, and groundwater from Sites 31E and 31F may discharge off site into Big Coldwater Creek. The depth to groundwater is 75 to 100 feet below land surface at Site 31, and it has not been determined whether groundwater from the site is discharging to a surface water body. Analytes detected in groundwater from Site 31 were not detected at elevated concentrations, and would decrease with further groundwater mixing and natural attenuation prior to discharging to any surface water body. All groundwater at NAS Whiting Field is being investigated under a single groundwater operable unit. Results of this evaluation are currently unavailable, as the investigation is ongoing at this time. Any ecological risks from exposure to groundwater discharging to surface water will be addressed in this evaluation. Currently, groundwater data are available only for Site 31C. Preliminary evaluation suggests detected concentrations of contaminants in Site 31C groundwater are low enough that they are not a concern for current and future discharges to surface water. Except for methylene chloride (1 μg/l) and trichloroethene (2 μg/l) (both chemicals were detected only once), no other organic constituent was detected in groundwater. Most inorganic constituents were detected at concentrations below the background screening values. Background screening values are equal to twice the average detected inorganic concentration in background samples and are presented in Section 3.3 of the GIR (HLA, 1998).

7.2 PROBLEM FORMULATION.

The problem formulation is the initial step of the ERA process. Problem formulation consists of identification of receptors, identification of exposure pathways for those receptors, and selection of assessment and measurement endpoints based on information gathered during the site characterization.

7.2.1 Identification of Receptors

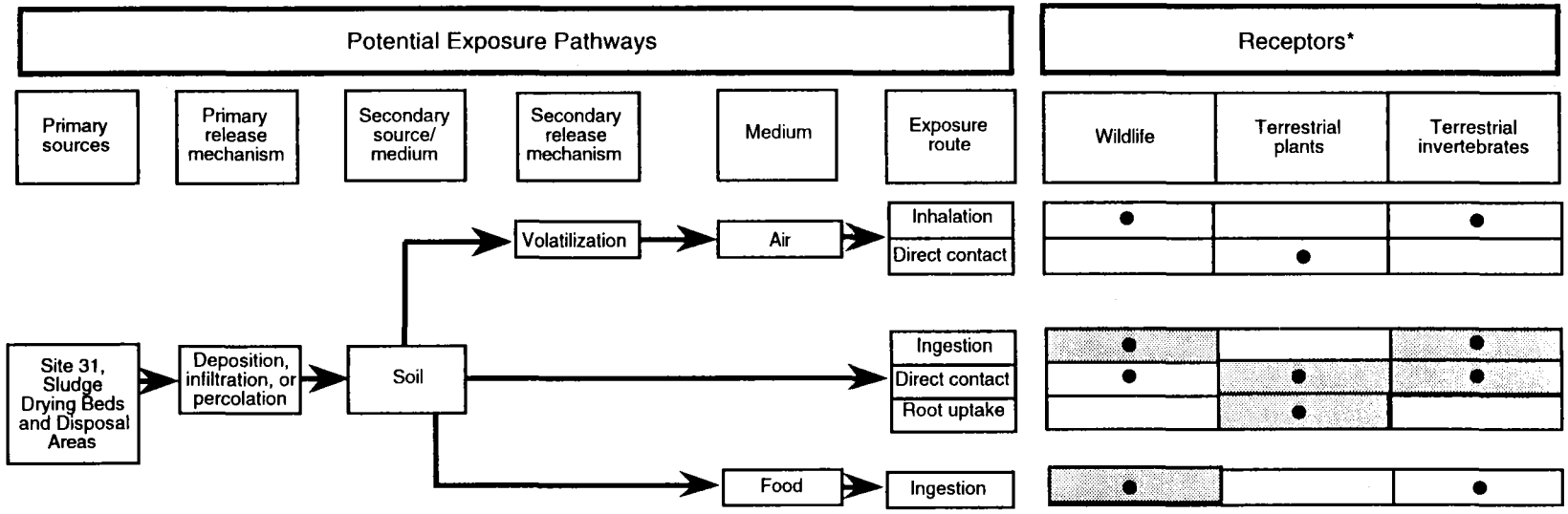
Ecological receptors potentially utilizing the available maintained grassy field habitat at Site 31 include terrestrial wildlife (i.e., mammals, birds, reptiles, and adult amphibians), terrestrial plants, and invertebrates. Terrestrial flora and fauna potentially using NAS Whiting Field are identified in Appendix G and H of the GIR (HLA, 1998). Aquatic receptors are not evaluated in the ERA because no aquatic habitats exist at Site 31.

Certain species potentially residing at NAS Whiting Field are protected by Federal and/or State laws. A list of state and federally protected species is provided in the GIR (HLA, 1998). During the 1995 site characterization of Site 31, a gopher tortoise burrow was observed at Site 31E. These observations were confirmed during an ecological survey of NAS Whiting Field (Nature Conservancy, 1997). The gopher tortoise is the only state or federally listed rare, threatened, or endangered species or species of concern known or likely to inhabit Site 31.

7.2.2 Identification of Exposure Pathways

Exposure pathways are identified for three groups of receptors (terrestrial wildlife, terrestrial plants, and soil invertebrates). A complete exposure pathway includes a source of contamination, an exposure route, and a receptor. A conceptual model of the exposure pathways from source to ecological receptors is depicted in the contaminant pathway model on Figure 7-4.

All potential routes of exposure are considered in the ERA and are presented in the contaminant pathway model. The model differentiates between those exposure routes quantitatively evaluated and those qualitatively discussed. This limitation is necessary to focus the risk evaluation on those pathways with the highest contaminant exposures or the pathways most likely to occur. Those pathways that cannot be quantitatively evaluated, due to a lack of toxicological information, are qualitatively discussed and addressed



NOTES:
NAS = Naval Air Station
ERA = ecological risk assessment

* Shading indicates the exposure pathways that are quantitatively evaluated for receptors in Site 31 ERA. Nonshaded pathways are evaluated qualitatively. They were not evaluated quantitatively due to the lack of toxicity information or because they were not considered a significant pathway.

FIGURE 7-4
CONTAMINANT PATHWAY MODEL FOR SITE 31 ECOLOGICAL RECEPTORS

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NAS WHITING FIELD
MILTON, FLORIDA

2534-09 SITE31 FIG 7-4 FINAL 061898HAS

as uncertainties. The general approach used to identify exposure pathways for the three groups of receptors is explained below.

Terrestrial Wildlife. Terrestrial wildlife is potentially exposed to contaminants in surface soil and food items contaminated as a result of ingestion, dermal adsorption, and inhalation of fugitive dust and volatile emissions. Because surface water is not present at Site 31, only terrestrial wildlife exposures associated with ingestion of surface soil and potentially contaminated foods are evaluated in the Site 31 ERA.

Dermal adsorption is considered a negligible exposure pathway because the presence of fur, feathers, or chitinous exoskeleton is likely to prevent contamination from coming in direct contact with the skin (personal communication with Ted Simon, USEPA Region IV, September 1997). In addition, soil trapped in the fur or feathers is potentially ingested during grooming or preening activities and is evaluated during the ERA as part of the direct ingestion exposure pathway.

Exposure via inhalation of fugitive dust is also not likely to be a significant exposure pathway because the vegetation at Site 31 would limit the release of fugitive dust. Although volatile constituents were detected in the surface soil of Site 31, exposures associated with VOCs are not evaluated in the ERA because of the low frequency and concentration detected in the surface soil.

Potential contaminant exposures for reptiles and adult amphibians exist at NAS Whiting Field; however, ingestion toxicity data and bioaccumulation factors (BAFs) are generally not available for these receptors. Therefore, potential risks associated with ingestion of affected surface soil and food items to reptiles and amphibians will be qualitatively addressed in the Uncertainties Section (Section 7.7) of the ERA.

Terrestrial Plants and Invertebrates. Terrestrial plants and soil invertebrates may be exposed to contamination in surface soil by direct contact with and root uptake (plants) or ingestion (invertebrates) of soil. The ingestion exposure routes include the ingestion of soil and food items containing chemicals accumulated from Site 31 surface soil. The inhalation exposure route is not evaluated for terrestrial plants and invertebrates due to the reasons discussed above for terrestrial wildlife. Because the depth to groundwater is approximately 75 to 100 feet bls, well below the root zone of Site 31 plants, it is unlikely that terrestrial plants will be exposed to potential groundwater contamination.

7.2.3 Identification of Endpoints

The assessment and measurement endpoints selected for the Site 31 ERA are listed in Table 7-1. Assessment endpoints represent the ecological component to be protected, whereas the measurement endpoints approximate or provide a measure of the achievement of the assessment endpoint. One of the assessment endpoints selected for the Site 31 ERA is survival and maintenance of receptor populations and communities at Site 31. The measurement endpoints used to gauge the likelihood of terrestrial wildlife population- and community-level effects for Sites 31A through 31F are chemicalspecific toxicological benchmark values. These benchmark values are obtained from the literature and are based on laboratory-measured survival, growth, and reproductive effects. For terrestrial plants and invertebrates at Sites 31A, 31B, 31D, 31E, and 31F, the assessment endpoints are benchmark values derived from the literature. For terrestrial plants and invertebrates at Site 31C, the assessment endpoints are based on the survival and growth of earthworms *(Eisenia foetida)* and germination rates of lettuce seeds (*Lactuca sativa)* in tests using surface soil samples from Site 31C. Table 7-1 presents the assessment endpoint, endpoint species, measurement endpoint, and decision point (i.e., the level at which additional evaluation is warranted).

Four hypotheses were developed to gauge potential risks associated with exposure to Site 31 surface soil. These hypotheses are designed for multiple species and trophic levels and represent both individual and community dynamics. Hypotheses for the Site 31 ERA are listed below.

Table 7-1
Endpoints Selected for Site 31 Ecological Risk Assessment

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Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Assessment Endpoint	Receptor	Measurement Endpoint	Decision Point
· Reduction in the biomass of terrestrial plants used as forage material.	Terrestrial plants	Chemical concentrations (mg/kg) in surface soil that result in adverse effects on growth, reproduction, or survival to terrestrial plants.	The reasonable maximum exposure concentration (mg/kg) of an ECOPC in surface soil is greater than the terrestrial plant RTV.
· Survival and growth of plant communities.		Germination of lettuce seeds exposed to surface soil samples from Site 31C in laboratory toxicity tests.	Significant differences ($p \geq 0.05$) in germination of lettuce seeds exposed to Site 31C surface soil samples as compared to control samples.
· Reduction in the abundance of earthworms used as forage material.	Terrestrial invertebrates	Chemical concentrations (mg/kg) in surface soil that result in adverse effects on survival (e.g., LC_{50} studies) or measured adverse effects on reproduction and growth to terrestrial invertebrates.	The reasonable maximum exposure concentration (mg/kg) in surface soil is greater than the terrestrial invertebrate RTV.
· Survival and growth of terrestrial invertebrate communities.		Survival and growth of earthworms exposed to surface soil samples from Site 31C in laboratory toxicity tests.	Significant differences ($p \geq 0.05$) in survival and/or growth of earthworms exposed to Site 31C surface soil samples as compared to control samples.
· Survival and maintenance of wildlife populations.	Wildlife species	Oral chemical doses (mg/kg BW/day) based on measured adverse effects on growth, reproduction, or survival (e.g., NOAEL, LOAEL, and LD_{50} studies) of mammalian and avian laboratory test populations.	Comparison of potential dietary exposures in mammalian and avian wildlife with literature-derived RTVs. HQs >1 indicate potential risk.

Notes:
mg/kg = milligrams per kilogram.
ECOPC = ecological chemical of potential concern.
RTV = relative toxicity value.
p = probability.
≥ = greater than or equal to.
LC_{50} = lethal concentration to 50 percent of a test population.
BW/day = body weight per day.
NOAEL = no observable adverse effect level.
LOAEL = lowest observed adverse effect level.
LD_{50} = lethal dose to 50 percent of a test population.
HQ = hazard quotient.
> = greater than.

1. Are ECOPCs present in the surface soil at concentrations sufficiently high as to reduce plant or soil invertebrate biomass or plant cover availability such that small mammal and bird populations could be affected?

2. Are ECOPCs present in the surface soil at concentrations sufficiently high as to reduce the survivability and growth of terrestrial plants and soil invertebrates?

3. Are ECOPC concentrations in plants and invertebrates sufficiently high as to adversely affect foraging by small mammal or bird populations following consumption of contaminated prey?

4. Are bioaccumulating chemicals sufficiently high as to reduce survivability, growth, or reproduction in top predators (i.e., foxes and owls)?

7.3 HAZARD ASSESSMENT AND SELECTION OF ECOPCs.

The hazard assessment includes a review of analytical data and selection of ECOPCs. ECOPCs represent analytes detected in environmental media (i.e., surface soil) that are considered in the ERA and could present a potential risk for ecological receptors. The process for selecting ECOPCs is depicted on Figure 7-5. Additional details regarding the ECOPC selection process are provided in Subsection 2.4.2 of the GIR (HLA, 1998). Analytical data for Site 31 were evaluated for use in risk assessment pursuant to national guidance, *Guidance for Data Useability in Risk Assessment (Parts A and B)* (USEPA, 1992c).

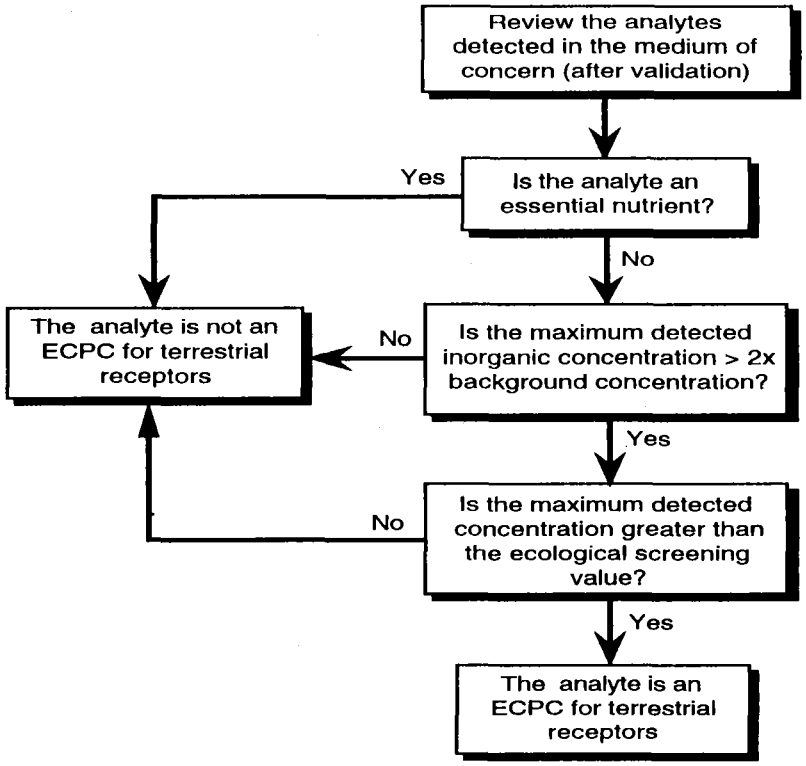
Due to similarities in the ecological habitat, disposal practices, and proximity of the sites, the surface soil analytical data for several of the Site 31 areas were combined to create a single data set. Analytical data from Sites 31B and 31D and Sites 31E and 31F were combined for the ERA. Analytical data from Sites 31A and 31C were evaluated individually because of differences in the types and concentrations of detected constituents and habitat types (i.e., Site 31A is the Sludge Drying Bed Area and Site 31C contains areas of stressed vegetation). In summary, ecological risks were evaluated for the following four areas:

- Site 31A,
- Sites 31B and 31D,
- Site 31C, and
- Sites 31E and 31F.

Calcium, iron, magnesium, potassium, and sodium were excluded as ECOPCs for surface soil. These analytes are considered essential nutrients and not toxic. The rationale for eliminating essential nutrients as ECOPCs is provided in Subsection 2.4.2 of the GIR (HLA, 1998).

Inorganic chemicals representative of background conditions are not selected as ECOPCs. In accordance with USEPA Region IV guidance (USEPA, 1991c), an inorganic analyte is not selected as an ECOPC if the maximum detected concentration is less than twice the average detected inorganic concentration in background samples. Background screening consists of comparing the maximum detected concentration for each analyte detected at the site against a representative site-specific background surface soil concentration (twice the average background concentration).

A site-specific background investigation of surface soil was conducted at NAS Whiting Field, and the findings are presented in Subsections 3.3.1 and 3.3.3 of the GIR, respectively (HLA, 1998). The site-specific background study used to establish background screening values for Site 31 surface soil consists of eight surface soil samples (BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00401, and BKS00501) and one duplicate sample (BKS00201D) collected from the Troup Loamy Sand



NOTES:
ECPC = ecological chemical of potential concern
> = greater than
x = times

FIGURE 7-5
ECOLOGICAL CHEMICAL OF POTENTIAL CONCERN SELECTION PROCESS

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NAVAL AIR STATION WHITING FIELD
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soil type. Background soil at Site 31B and 31D included one additional sample (BKS00301) from an area containing Dothan/Lucy/Bonifay soil types, which are also present at Site 31B.

Analytes that exceed background screening concentrations and are not essential nutrients are also screened against ecological screening values for surface soil. The surface soil ecological screening values used in the ERA are the Dutch Soil Criteria "A", which refer to background concentrations in surface soil issued by the U.S. Fish and Wildlife Service (Beyer, 1990). If the maximum detected concentration of an analyte exceeds the surface soil ecological screening value, the analyte is retained as an ECOPC for terrestrial wildlife, terrestrial plants, and soil invertebrates.

Tables 7-2 through 7-5 present a summary of the respective surface soil analytical data for Site 31A, Sites 31B and 31D, Site 31C, and Sites 31E and 31F and include the following information: frequency of detection, range of detection limits, range of detected concentrations, average of detected concentrations, background screening concentrations, ecological screening values, 95 percent UCLs (if 10 or more samples were collected), and selected ECOPCs.

7.3.1 Site 31A

Eight samples (31-SL-17 through 31-SL-24) were collected from the sludge drying beds at Site 31A (see Figure 3-1). As shown in Table 7-2, only one inorganic constituent (silver) was selected as an ECOPC for Site 31A.

7.3.2 Sites 31B and 31D

A total of eight samples (31-SL-09, 31-SL-10, 31-SL-11, 31-SL-16, 31S00101, 31S00201, 31S00301, and 31S01401) was collected at Sites 31B and 31D (see Figure 3-2). As shown in Table 7-3, only one inorganic constituent (silver) was selected as an ECOPC for Sites 31B and 31D.

7.3.3 Site 31C

Fourteen samples (31-SL-12 through 31-SL-15 and 31SS00401 through 31S01301) were collected at Site 31C during the RI (see Figure 3-3). Table 7-4 presents the ECOPCs selected for the surface soil samples collected at Site 31C. ECOPCs for Site 31C include three VOCs (acetone, carbon disulfide, and methylene chloride), four SVOCs (benzo(b)fluoranthene, benzo(k)fluoranthene, butylbenzylphthalate, and bis(2-ethylhexyl)phthalate), three pesticides and PCBs (Aroclor-1260, dieldrin, and 4,4'-DDE), and twelve inorganic constituents (aluminum, barium, beryllium, cadmium, chromium, copper, cyanide, lead, mercury, selenium, silver, and zinc).

Data collected during the IRA were not evaluated for this ERA.

7.3.4 Sites 31E and 31F

A total of thirteen samples (31-SL-01 through 31-SL-08 and 31S01501 through 31S01901) was collected at Sites 31F and 31F (see Figure 3-4). Table 7-5 presents the ECOPCs selected for the surface soil samples collected at Site 31E and 31F. ECOPCs for Sites 31E and 31F include two VOCs (2-hexanone and carbon disulfide), two SVOCs (di-*n*-octylphthalate and bis(2-ethylhexyl)phthalate), and three inorganic constituents (manganese, selenium, and silver).

7.4 EXPOSURE ASSESSMENT.

The purpose of the ecological exposure assessment is to estimate or measure the amount of an ECOPC to which an ecological receptor may

Table 7-2
Selection of Ecological Chemicals of Potential Concern
for Surface Soil Associated with Site 31A

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Analyte	Frequency of Detection[1]	Reporting Limit Range	Detected Concentration Range[2]	Average of Detected Concentrations[3]	Background Screening Concentration[4]	Ecological Screening Value[5]	Chemical of Ecological Concern[6]	Average of All Samples[7]	Exposure Point Concentration	
									RME[8]	CT[9]
Volatiles Organic Compounds (µg/kg)										
1,1-Dichloroethene	1/8	5	2.25*	2.3	ND	100	No[10]			
Benzene	1/8	5	1.75*	1.8	ND	100	No[10]			
Chlorobenzene	1/8	5	1.75*	1.8	ND	50	No[10]			
Toluene	1/8	5	2.25*	2.3	ND	50	No[10]			
Trichloroethene	1/8	5	2.25*	2.3	ND	100	No[10]			
Xylenes (total)	6/8	5	1 to 6	3	ND	50	No[10]			
Pesticides and PCBs (µg/kg)										
4,4-DDD	1/8	16 to 17	1.6	1.6	ND	100	No[10]			
4,4-DDE	1/8	16 to 17	3.2	3.2	ND	100	No[10]			
Dieldrin	1/8	16 to 17	1.3	1.3	ND	100	No[10]			
alpha-Chlordane	2/8	82 to 84	1.7 to 1.9	1.8	ND	100	No[10]			
gamma-Chlordane	2/8	82 to 84	2.3 to 4	3.2	ND	100	No[10]			
Inorganic Analytes (mg/kg)										
Aluminum	8/8	40	154 to 307	242	15,848	NA	No[11]			
Barium	8/8	40	1.2 to 4.95*	2.8	23.2	200	No[10,11]			
Calcium	7/8	109.15 to 1,000	68 to 135	84.8	396	NA	No[11,12]			
Chromium	7/8	1.95 to 2	0.75 to 2.2	1.4	11	100	No[10,11]			
Copper	8/8	4.7 to 5	3.1 to 7	4.9	9.4	50	No[10,11]			
Iron	8/8	20	284 to 576	495	8,832	NA	No[11,12]			
Lead	7/8	1 to 5.8	2.7 to 10.8	5.7	11.4	50	No[10]			

See notes at end of table.

Table 7-2 (Continued)
Selection of Ecological Chemicals of Potential Concern for Surface Soil Associated with Site 31A

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Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
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Analyte	Frequency of Detection[1]	Reporting Limit Range	Detected Concentration Range[2]	Average of Detected Concentrations[3]	Background Screening Concentration[4]	Ecological Screening Value[5]	Chemical of Ecological Concern[6]	Average of All Samples[7]	Exposure Point Concentration	
									RME[8]	CT[9]
Inorganic Analytes (mg/kg) (Continued)										
Magnesium	7/8	10 to 1,000	13.2 to 17	14.5	268	NA	No[11,12]			
Manganese	8/8	3	0.92* to 2.6	1.6	392	NA	No[11]			
Mercury	1/8	0.04 to 0.1	0.14	0.14	0.12	0.5	No[10]			
Nickel	1/8	2.2 to 8	6	6	7.2	50	No[10,11]			
Silver	7/8	0.74 to 2	0.39 to 1.3	0.85	0.7	NA	Yes	0.79	1.3	0.79
Sodium	7/8	149 to 1,000	123 to 189	149	406	NA	No[11,12]			
Thallium	1/8	0.33 to 2	0.36	0.36	1.16	NA	No[11]			
Vanadium	6/8	0.27 to 10	0.33 to 1	0.53	21.8	NA	No[11]			
Zinc	7/8	4 to 6.15	4.3 to 27.1	8.9	15.4	200	No[10]			

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] The value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect value, one-half of the detection limit is used as a surrogate for the nondetect value.
[3] The average of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.
[4] The background screening value is twice the average of detected concentrations for inorganic analytes in background samples. Background screening values for organic analyte values are one times the average of detected concentrations. Organic values are included for comparison purposes only (i.e., not used to select ecological chemicals of potential concern).
[5] The ecological screening values are the Dutch Soil Criteria as reported in the U.S. Fish and Wildlife Service, *Biological Report* 90(2), "Evaluating Soil Contamination" (Beyer, 1990).
[6] These chemicals are retained for further evaluation in the ecological risk assessment.
[7] The average of all samples assigns a value of one-half of the detection limit as a surrogate concentration for nondetect values.
[8] The RME exposure point concentration (EPC) is equal to the maximum detected concentration.
[9] The CT EPC is equal to the lesser of the average of all samples or the reasonable maximum EPC.
[10] The maximum detected concentration is less than the ecological screening value.
[11] The maximum detected concentration is less than the background screening concentration.
[12] The analyte is an essential nutrient and not considered toxic.
(Notes continued on following page.)

Table 7-2 (Continued)
Selection of Ecological Chemicals of Potential Concern
for Surface Soil Associated with Site 31A

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Notes: Samples: 31-SL-17, 31-SL-18, 31-SL-19, 31-SL-20, 31-SL-21, 31-SL-22, 31-SL-23, and 31-SL-24.
Duplicate samples: 31-SL-22A
Background samples: BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00401, and BKS00501.
Background duplicate samples: BKS00201D.

RME = reasonable maximum exposure.
CT = central tendency
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
ND = not detected in any background sample.
PCB = polychlorinated biphenyl.
DDD = dichlorodiphenyldichloroethane.
DDE = dichlorodiphenyldichloroethene.
mg/kg = milligrams per kilogram.
NA = not available.

Table 7-3
Selection of Ecological Chemicals of Potential Concern for Surface Soil Associated with Sites 31B and 31D

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
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Analyte	Frequency of Detection[1]	Reporting Limit Range	Detected Concentration Range[2]	Average of Detected Concentrations[3]	Background Screening Concentration[4]	Ecological Screening Value[5]	Chemical of Ecological Concern[6]	Average of All Samples[7]	Exposure Point Concentration	
									RME[8]	CT[9]
Volatile Organic Compounds (µg/kg)										
Xylenes (total)	3/8	5 to 11	2 to 4	3	ND	50	No[10]			
Pesticides and PCBs (µg/kg)										
4,4-DDD	1/8	3.6 to 35	4.9	4.9	ND	100	No[10]			
4,4-DDT	1/8	3.6 to 35	10	10	ND	100	No[10]			
Inorganic Analytes (mg/kg)										
Aluminum	8/8	40	4,360 to 10,900	7,478	15,334	NA	No[11]			
Arsenic	8/8	2	0.66 to 2.3	1.3	3.1	20	No[10,11]			
Barium	8/8	40	4.6 to 16.8	9.7	23.7	200	No[10,11]			
Beryllium	4/8	1	0.07 to 0.15	0.1	0.36	NA	No[11]			
Calcium	8/8	1,000	43.2 to 354	222	404	NA	No[11,12]			
Chromium	8/8	2	3.6 to 8.9	5.7	10.7	100	No[10,11]			
Cobalt	5/8	0.34 to 10	0.67 to 1.2	0.87	2.87	20	No[10,11]			
Copper	4/8	5	3.7 to 13.1	6.7	9.4	50	No[10]			
Iron	8/8	20	2,590 to 6,290	4,019	8,588	NA	No[11,12]			
Lead	8/8	0.6 to 1	2.9 to 7.1	4.2	11.5	50	No[10,11]			
Magnesium	8/8	1,000	86.6 to 250	146	258	NA	No[11,12]			
Manganese	8/8	3	33.1 to 250	148	403	NA	No[11]			
Mercury	6/8	0.05 to 0.1	0.01 to 0.37	0.09	0.12	0.5	No[10]			
Nickel	3/8	2.3 to 8	3.2 to 5.1	4.3	7.2	50	No[10,11]			
Potassium	2/8	129 to 1,000	168 to 183	176	177	NA	No[12]			
Selenium	1/8	0.45 to 1	0.37	0.37	0.44	NA	No[11]			

See notes at end of table.

Table 7-3 (Continued)
Selection of Ecological Chemicals of Potential Concern for Surface Soil Associated with Sites 31B and 31D

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
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Analyte	Frequency of Detection[1]	Reporting Limit Range	Detected Concentration Range[2]	Average of Detected Concentrations[3]	Background Screening Concentration[4]	Ecological Screening Value[5]	Chemical of Ecological Concern[6]	Average of All Samples[7]	Exposure Point Concentration	
									RME[8]	CT[9]
Inorganic Analytes (mg/kg) (Continued)										
Silver	3/8	0.33 to 2	3.6 to 5.9	4.6	0.7	NA	Yes	2.2	5.9	2.2
Sodium	4/8	1,000	127 to 202	167	388	NA	No[11,12]			
Vanadium	8/8	10	6.6 to 18.7	10.5	21.2	NA	No[11]			
Zinc	8/8	4	3.8 to 12	7.5	15.4	200	No[10,11]			

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] For duplicate samples having one nondetect value, one-half of the detection limit is used as a surrogate for the nondetect value.
[3] The average of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.
[4] The background screening value is twice the average of detected concentrations for inorganic analytes in background samples. Because the soil types at Sites 31B and 31D are different, the lesser of the background screening values from the two soil types was used to select ecological chemicals of potential concern (ECOPCs). Background screening values for organic analyte values are one times the average of detected concentrations. Organic values are included for comparison purposes only (i.e., not used to select ECOPCs).
[5] The ecological screening values are the Dutch Soil Criteria as reported in the U.S. Fish and Wildlife Service, *Biological Report* 90(2), "Evaluating Soil Contamination," (Beyer, 1990).
[6] These chemicals are retained for further evaluation in the ecological risk assessment.
[7] The average of all samples assigns a value of one-half of the detection limit as a surrogate concentration for nondetect values.
[8] The reasonable maximum exposure (RME) exposure point concentration (EPC) is equal to the maximum detected concentration.
[9] The central tendency (CT) EPC is equal to the lesser of the average of all samples or the RME concentration.
[10] The maximum detected concentration is less than the ecological screening value.
[11] The maximum detected concentration is less than the background screening concentration.
[12] The analyte is an essential nutrient and not considered toxic.

Notes: The average of a sample and its duplicate is used for all table calculations.

Samples: 31-SL-09, 31-SL-10, 31-SL-11, 31-SL-16, 31S00101, 31S00201, 31S00301, and 31S01401.
Duplicate samples: None.
Background samples for Site 31 (Troup and Dothan/Lucy/Bonifay soil types): BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00301, BKS00401, and BKS00501.

µg/kg = micrograms per kilogram.
ND = not detected in any background sample.
PCB = polychlorinated biphenyl.
DDD = dichlorodiphenyldichloroethane.
DDT = dichlorodiphenyltrichloroethane.
mg/kg = milligrams per kilogram
NA = not available.

Table 7-4
Selection of Ecological Chemicals of Potential Concern for Surface Soil Associated with Site 31C

Remedial Investigation Report
Site 31, Sludge Drying Beds And Disposal Areas
Naval Air Station Whiting Field
Milton, Florida

Analyte	Frequency of Detection[1]	Reporting Limit Range	Detected Concentration Range[2]	Average of Detected Concentrations[3]	Background Screening Concentration[4]	Ecological Screening Value[5]	Chemical of Ecological Concern[6]	95% UCL[7]	Average of All Samples[8]	Exposure Point Concentration	
										RME[9]	CT[10]
Volatile Organic Compounds (µg/kg)											
Acetone	1/14	11 to 17	11*	11	ND	NA	Yes	7.3	6.5	7.3	6.5
Carbon disulfide	4/14	6 to 12	3* to 26*	14.1	ND	NA	Yes	10.9	8	10.9	8
Methylene chloride	4/14	6 to 68.5	112.5* to 475*	209	ND	100	Yes	351	63.8	351	63.8
Toluene	1/14	6 to 12	1	1	ND	50	No[11]				
Xylenes (total)	4/14	6 to 12	5* to 10*	7.1	ND	50	No[11]				
Semivolatile Organic Compounds (µg/kg)											
Benzo(b)fluoranthene	1/14	360 to 11,000	100	100	ND	[12]100	Yes	1,541	784	100	100
Benzo(k)fluoranthene	1/14	360 to 11,000	110	110	ND	[12]100	Yes	1,525	785	110	110
Butylbenzylphthalate	1/14	360 to 11,000	39	39	ND	NA	Yes	1,772	779	39	39
bis(2-Ethylhexyl)phthalate	9/14	360 to 11,000	42 to 2,600	816	80.3	NA	Yes	1,808	589	1,808	589
Pesticides and PCBs (µg/kg)											
4,4-DDE	6/14	3.6 to 270	2.3 to 100	43.6	ND	100	Yes	98.5	19.7	98.5	19.7
Aroclor-1260	4/14	36 to 2,700	340 to 1,400	738	ND	50	Yes	1,353	224	1,353	224
Dieldrin	6/14	3.6 to 270	2.1 to 120	47.4	ND	100	Yes	118	21.4	118	21.4
alpha-Chlordane	6/14	1.8 to 1,300	1.3 to 68	29.2	ND	100	No[11]				
gamma-Chlordane	5/14	1.8 to 1,300	1.4 to 76	34.1	ND	100	No[11]				
Inorganic Analytes (mg/kg)											
Aluminum	14/14	40	1,670 to 16,800	4,818	15,848	NA	Yes	7,480	4,818	7,480	4,818
Antimony	4/14	12	3.1 to 7.1	5.1	8	NA	No[13]				
Arsenic	14/14	2	0.59 to 1.7	1.1	3.2	20	No[11,13]				
Barium	14/14	40	2.7 to 534	83.2	23.2	200	Yes	765	83.2	534	83.2

See notes at end of table.

Table 7-4 (Continued)
Selection of Ecological Chemicals of Potential Concern for Surface Soil Associated with Site 31C

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Site 31, Sludge Drying Beds And Disposal Areas
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Milton, Florida

Analyte	Frequency of Detection[1]	Reporting Limit Range	Detected Concentration Range[2]	Average of Detected Concentrations[3]	Background Screening Concentration[4]	Ecological Screening Value[5]	Chemical of Ecological Concern[6]	95% UCL[7]	Average of All Samples[8]	Exposure Point Concentration	
										RME[9]	CT[10]
Inorganic Analytes (mg/kg) (Continued)											
Beryllium	4/14	1	0.3 to 1.3	0.65	0.36	NA	Yes	0.63	0.54	0.63	0.54
Cadmium	7/14	1	0.22 to 26.8	9.6	0.58	1	Yes	31.2	5.1	26.8	5.1
Calcium	14/14	1,000	93.3 to 4,160	825	396	NA	No[14]				
Chromium	14/14	2	1.4 to 295	46	11	100	Yes	412	46	295	46
Cobalt	8/14	10	0.83 to 3.1*	1.3	3	20	No[11]				
Copper	7/14	5	29.8 to 948	307	9.4	50	Yes	11,968	155	948	155
Cyanide	14/14	0.5 to 1	0.09 to 1.1	0.3	0.28	NA	Yes	0.54	0.3	0.54	0.3
Iron	14/14	20	645 to 22,500	4,704	8,832	NA	No[14]				
Lead	14/14	0.6 to 1	1.8 to 1,890	277	11.4	50	Yes	21,590	277	1,890	277
Magnesium	14/14	1,000	40.3 to 1,120	247	268	NA	No[14]				
Manganese	14/14	3	1.9 to 170	51.7	392	NA	No[13]				
Mercury	8/14	0.1	0.13 to 8.8	2.7	0.12	0.5	Yes	26.3	1.6	8.8	1.6
Nickel	8/14	8	1.5 to 8.6	4	7.2	50	No[11]				
Potassium	9/14	134 to 1,000	73.5 to 134	94.9	177	NA	No[14]				
Selenium	10/14	1	0.15 to 4.9	1.2	0.46	NA	Yes	2	1	2	1
Silver	8/14	2	0.97 to 154	51.8	0.7	NA	Yes	590	30	154	30
Sodium	14/14	1,000	179 to 294	202	406	NA	No[14]				
Vanadium	14/14	10	2.3 to 12.1	5.4	21.8	NA	No[13]				
Zinc	12/14	4	3.6 to 346	99.6	15.4	200	Yes	1,339	85.6	346	85.6

See notes at end of table.

Table 7-4 (Continued)
Selection of Ecological Chemicals of Potential Concern for Surface Soil Associated with Site 31C

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[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] The value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect value, one-half of the detection limit is used as a surrogate for the nondetect value.
[3] The average of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.
[4] The background screening value is twice the average of detected concentrations for inorganic analytes in background samples. Background screening values for organic analyte values are one times the average of detected concentrations. Organic values are included for comparison purposes only (i.e., not used to select ecological chemicals of potential concern).
[5] The ecological screening values are the Dutch Soil Criteria as reported in the U.S. Fish and Wildlife Service, *Biological Report* 90(2), "Evaluating Soil Contamination," (Beyer, 1990).
[6] These chemicals are retained for further evaluation in the ecological risk assessment.
[7] The 95 percent upper confidence limit (UCL) is calculated on the log-transformed average of all samples using the formula provided in the U.S. Environmental Protection Agency (USEPA) *Supplemental Guidance to RAGS: Calculating the Concentration Term.* (USEPA, 1992d)
[8] The average of all samples assigns a value of one-half of the detection limit as a surrogate concentration for nondetect values.
[9] The reasonable maximum exposure (RME) exposure point concentration (EPC) is equal to the lesser of the maximum detected concentration or the 95 percent UCL.
[10] The central tendency (CT) EPC is equal to the lesser of the average of all samples or the RME concentration.
[11] The maximum detected concentration is less than the ecological screening value.
[12] The ecological screening value of benzo (a) pyrene is used as a surrogate value.
[13] The maximum detected concentration is less than the background screening concentration.
[14] The analyte is an essential nutrient and not considered toxic.

Notes: Samples: 31-SL-12 through 31-SL-15 and 31S00401 through 31S01301.
Duplicate samples: 31S00501D.
Background samples: BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00401, and BKS00501.
Background duplicate samples: BKS00201D.

% = percent.
µg/kg = micrograms per kilogram.
* = average of a sample and its duplicate.
ND = not detected in any background sample.
NA = not available.
PCB = polychlorinated biphenyl.
DDE = dichlorodiphenyldichloroethene.
mg/kg = milligrams per kilogram.

Table 7-5
Selection of Ecological Chemicals of Potential Concern for Surface Soil Associated with Sites 31E and 31F

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Milton, Florida

Analyte	Frequency of Detection[1]	Reporting Limit Range	Detected Concentration Range[2]	Average of Detected Concentrations[3]	Background Screening Concentration[4]	Ecological Screening Value[5]	Chemical of Ecological Concern[6]	95% UCL[7]	Average of All Samples[8]	Exposure Point Concentration	
										RME[9]	CT[10]
Volatiles Organic Compounds (µg/kg)											
2-Hexanone	1/13	11	1	1	ND	NA	Yes	7.2	5.2	1	1
Carbon disulfide	2/13	5 to 11	2* to 3.5*	2.8	ND	NA	Yes	4.8	3.7	3.5	3.5
Xylenes (total)	5/13	5 to 11	2 to 3.5*	2.5	ND	50	No[11]				
Semivolatile Organic Compounds (µg/kg)											
Di-*n*-octylphthalate	1/13	360 to 380	220 to 220	220	ND	NA	Yes	NC	186	220	186
bis(2-Ethylhexyl)phthalate	3/13	360 to 380	81 to 230	167	ND	NA	Yes	206	181	206	181
Inorganic Analytes (mg/kg)											
Aluminum	13/13	40	5,010 to 10,700	7,250	15,848	NA	No[12]				
Arsenic	13/13	2	0.7 to 1.9	1.2	3.2	20	No[11,12]				
Barium	13/13	40	7.2 to 24.5	14.1	23.2	200	No[11]				
Beryllium	8/13	1	0.08 to 0.15	0.1	0.36	NA	No[12]				
Calcium	13/13	1,000	78.7 to 962	214	396	NA	No[13]				
Chromium	13/13	2	3.9 to 7.1	5.1	11	100	No[11,12]				
Cobalt	11/13	10	0.66 to 1.4	0.98	3	20	No[11,12]				
Copper	9/13	5	4 to 17.9	6.3	9.4	50	No[11]				
Iron	13/13	20	2,580 to 5,380	3,640	8,832	NA	No[13]				
Lead	13/13	0.6 to 1	2.9 to 6.4	4.8	11.4	50	No[11,12]				
Magnesium	13/13	1,000	98.6 to 549	156	268	NA	No[13]				
Manganese	13/13	3	60.3 to 456	252	392	NA	Yes	376	252	376	252
Mercury	4/13	0.04 to 0.1	0.01* to 0.02	0.02	0.12	0.5	No[11,12]				
Nickel	8/13	2.3 to 8	1.8* to 6.9	3.9	7.2	50	No[11,12]				

See notes at end of table

Table 7-5 (Continued)
Selection of Ecological Chemicals of Potential Concern for Surface Soil Associated with Sites 31E and 31F

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Naval Air Station Whiting Field
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Analyte	Frequency of Detection[1]	Reporting Limit Range	Detected Concentration Range[2]	Average of Detected Concentrations[3]	Background Screening Concentration[4]	Ecological Screening Value[5]	Chemical of Ecological Concern[6]	95% UCL[7]	Average of All Samples[8]	Exposure Point Concentration	
										RME[9]	CT[10]
Inorganic Analytes (mg/kg) (Continued)											
Potassium	3/13	128 to 1,000	106* to 348.5*	201	177	NA	No[13]				
Selenium	1/13	0.46 to 1	0.52	0.52	0.46	NA	Yes	0.45	0.36	0.45	0.36
Silver	7/13	0.33 to 2	0.68 to 4.6*	3	0.7	NA	Yes	6.1	1.9	4.6	1.9
Sodium	8/13	1,000	133 to 233	173	406	NA	No[12,13]				
Vanadium	13/13	10	6.5 to 14.2	9.5	21.8	NA	No[12]				
Zinc	12/13	4	3.5 to 23.1	8.2	15.4	200	No[11]				

[1] Frequency of detection is the number of samples in which the analyte was detected divided by the total number of samples analyzed (excluding rejected values).
[2] The value indicated by an asterisk is the average of a sample and its duplicate. For duplicate samples having one nondetect value, one-half of the detection limit is used as a surrogate for the nondetect value.
[3] The average of detected concentrations is the arithmetic mean of all samples in which the analyte was detected. It does not include those samples with "R", "U", or "UJ" validation qualifiers.
[4] The background screening value is twice the average of detected concentrations for inorganic analytes in background samples. Background screening values for organic analyte values are one times the average of detected concentrations. Organic values are included for comparison purposes only (i.e., not used to select ecological chemicals of potential concern).
[5] The ecological screening values are the Dutch Soil Criteria as reported in the U.S. Fish and Wildlife Service, *Biological Report* 90(2), "Evaluating Soil Contamination," (Beyer, 1990).
[6] These chemicals are retained for further evaluation in the ecological risk assessment.
[7] The 95th percent upper confidence limit (UCL) is calculated on the log-transformed average of all samples using the formula provided in the U.S. Environmental Protection Agency (USEPA) "Supplemental Guidance to RAGS: Calculating the Concentration Term." (USEPA,1992d)
[8] The average of all samples assigns a value of one-half of the detection limit as a surrogate concentration for nondetect values.
[9] The reasonable maximum exposure (RME) exposure point concentration (EPC) is equal to the lesser of the maximum detected concentration or the 95th percent UCL.
[10] The central tendency (CT) EPC is equal to the lesser of the average of all samples or the maximum exposure point concentration.
[11] The maximum detected concentration is less than the ecological screening value.
[12] The maximum detected concentration is less than the background screening concentration.
[13] The analyte is an essential nutrient and not considered toxic.
(Notes continued on following page.)

Table 7-5 (Continued)
Selection of Ecological Chemicals of Potential Concern
for Surface Soil Associated with Sites 31E and 31F

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Milton, Florida

Notes: Samples: 31-SL-01 through 31-SL-08, 31S01501, 31S01601, 31S01701, 31S01801, and 31S01901.
Duplicate samples: 31-SL-07D and 31S01501D.
Background samples: BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00401, and BKS00501.
Background duplicate samples: BKS00201D.

% = percent.
µg/kg = micrograms per kilogram.
ND = not detected in any background sample.
NA = not available.
* = average of a sample and its duplicate.
mg/kg = milligrams per kilogram.

be exposed. The following subsections briefly describe how contaminant exposures are estimated or measured for wildlife, terrestrial plants, and invertebrates at Site 31. The contaminant pathway model (Figure 7-4) provides a summary of the potential exposure pathways that exist at Site 31 for each group of receptors. Additional details regarding the exposure assessment are provided in Subsection 2.4.3 of the GIR (HLA, 1998).

7.4.1 Calculation of EPCs

The EPC is a representative concentration used for evaluating risks throughout this ERA. RME and CT concentrations are derived for each ECOPC. If the sample size for the surface soil data set is ten or greater (i.e., Sites 31C and Sites 31E and 31F), the RME value is equal to the lesser of the maximum detected concentration and the 95 percent UCL calculated on the log-transformed arithmetic mean (USEPA, 1992c). For a sample having no reported analyte concentration, one-half of the detection limit is used as a surrogate concentration to calculate the 95 percent UCL. If the sample size for the surface soil data set is less than ten (i.e., Site 31A and Sites 31B and 31D), the RME value is equal to the maximum detected concentration. If potential risks are predicted based on the RME scenario, then the CT exposure scenario is also evaluated. The CT exposure concentration is represented by the arithmetic mean of all samples collected during the RI. One-half of the detection limit is used as a surrogate value for a sample with an analytical result that is below the detection limit. Tables 7-2 through 7-5 presents the RME and CT EPCs for selected surface soil ECOPCs.

7.4.2 Terrestrial Wildlife

Exposure routes for wildlife receptors include direct and indirect ingestion of soil and ingestion of food items containing site-related chemicals. The actual amount of an ECOPC taken in by wildlife species (i.e., ingestion dose in mg/kg per day depends on a number of factors. A potential dietary exposure (PDE) model is used to estimate exposure to representative wildlife species. The PDE (or body dose) is calculated for each ECOPC in surface soil using the equations presented in Table 7-6 and the methodologies described in the GIR (HLA, 1998).

A PDE was estimated for each representative wildlife species for each ECPOC in all media according to the equations presented in Table 7-6. The PDE was calculated based on the estimated concentrations of the ECPOCs in food items that the species would consume; the amount of soil that it would ingest; the relative amount of different food items in its diet; body weight; and food ingestion rates.

Wildlife species from different trophic guilds that may be present at Site 31 were selected for the PDE model. The model uses species-specific feeding and habitat characteristics to estimate chemical exposures to wildlife species respective to their position in the food chain. Terrestrial receptors were chosen to represent the trophic levels typically found in the open maintained fields at Site 31. The representative wildlife species considered in the ERA are summarized in Table 7-7 and discussed below.

- **Cotton mouse** (*Peromyscus gossypinus*). The cotton mouse represents a small mammalian herbivore that could potentially be exposed to contamination in soil and in plant tissue (accumulated from the soil). The cotton mouse home range is estimated at 0.147 acres. The cotton mouse represents the small mammal herbivore community at Site 31.

- **Short-tailed shrew** (*Blarina brevicauda*). The short-tailed shrew finds suitable habitat in forests, fields, marshes, and brush. It primarily feeds on earthworms, snails, centipedes, insects, small vertebrates, and slugs (DeGraaf and Rudis, 1986). Insectivorous species may receive relatively high chemical doses of bioaccumulating compounds because of their voracious appetites. The shrew represents the small omnivorous mammals that may be found in the open fields of Site 31.

Table 7-6
Estimation of Potential Chemical Exposures for Representative Wildlife Species

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Naval Air Station Whiting Field
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Estimation of Chemical Exposures Related to Surface Soil

Scope:	Estimates the amount (dose) of a chemical ingested and accumulated by a species via incidental ingestion of surface soil and food items containing site-related chemicals.
Soil Chemical Concentration:	The maximum detected concentration of the ecological chemicals of potential concern (ECOPCs) is used when the sample size is ≤ 9, and the lesser of the maximum detected concentration or the 95th percent upper confidence limit (UCL) of the mean is used when the sample size is ≥ 10.
Soil Exposure Concentration:	$\text{Soil Exposure (mg/kg)} = (\text{\% of Diet as Soil} \times \text{Soil Concentration (mg/kg)})$
Primary Prey Item Concentration (T_N):	$\text{Primary Prey Item Concentration (mg/kg)} = (BAF_{inv\ or\ plant} \times \text{Soil Concentration (mg/kg)})$
Secondary Prey Item Concentration (T_N):	$\text{Secondary Prey Item Concentration (mg/kg)} = (BAF_{mam\ or\ bird} \times \text{Tissue Concentration of Primary Prey Items}^{*}\text{ (mg/kg)})$
	where BAF = Bioaccumulation Factor (mg/kg fresh weight tissue over mg/kg dry weight soil for invertebrates and plants, and mg/kg fresh weight tissue over mg/kg fresh weight food for small mammals and small birds).
	For a discussion of the weighted chemical concentration in prey items, see the explanation of the PDE term below and in the *General Information Report* (Harding Lawson Associates, 1998).

See notes at end of table.

Table 7-6 (Continued)
Estimation of Potential Chemical Exposures for Representative Wildlife Species

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Milton, Florida

Estimation of Chemical Exposures Related to Surface Soil

Total Exposure Related to Surface Soil:

$$\frac{PDE}{(mg/kgBW\text{ - }day)} = \frac{[P_1 x T_1 + ... + P_N x T_N + \frac{soil}{exposure}] x IR_{Diet} x SFF x ED}{BW}$$

where PDE = Potential Dietary Exposure (mg/kg BW-day),
P_N = percent of diet composed of food item N,
T_N = tissue concentration in food item of species N (mg/kg),
N = species of concern,
IRDiet = food ingestion rate of receptor (kg of food or dietary item per day),
BW = body weight (kg) of receptor,
SFF = site foraging frequency (site area [acres] divided by home range [acres]), assumed to be equal to 1 for lethal exposure scenario, and
ED = exposure duration (fraction of year species is expected to occur on site).

Notes: ≤ = less than or equal to.
≥ = greater than or equal to.
mg/kg = milligrams per kilogram.
% = percent.
BAF = bioaccumulation factors.
inv = invertebrate species.
mam = mammal species.
mg/kg BW-day = milligrams per kilogram of body weight per day.
kg = kilograms.

Table 7-7
Ecological Receptors Evaluated For Surface Soil

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Naval Air Station Whiting Field
Milton, Florida

Receptor Evaluated		Method of Evaluation
Common Name	Scientific Name	
Terrestrial plants	NA	Benchmark comparison for Sites 31A, 31B, 31D, 31E, and 31F. Toxicity testing using germination rates of lettuce seeds exposed to Site 31C soil.
Terrestrial invertebrate	NA	Benchmark comparison for Sites 31A, 31B, 31D, 31E, and 31F. Toxicity testing using survival and growth of earthworms exposed to Site 31C soil.
Cotton mouse	*Peromyscus gossypinus*	Food-web model
Short-tailed shrew	*Blarina brevicauda*	Food-web model
Mourning dove	*Zenaida marcroura*	Food-web model
Eastern meadowlark	*Sturnella magna*	Food-web model
Red fox	*Vulpes vulpes*	Food-web model
Red-tailed hawk	*Buteo jamaicensis*	Food-web model

Notes: NA = not applicable.

- **Mourning dove** (*Zenaida macroura*). The mourning dove forages by ground-gleaning in railroad right-of-ways, roadsides, and open fields with scattered shrubs and trees. It feeds almost entirely on seeds, with an occasional insect or snail. Gravel is sometimes ingested to facilitate seed digestion (Terres, 1980). The mourning dove will nest in a variety of man-made or natural structures. The mourning dove estimated home range is 5 acres. The dove represents herbivorous avian receptors at Site 31.

- **Eastern meadowlark** (*Sturnella magna*). The eastern meadowlark is most commonly found in open pastures, prairies, farms, and meadows, and has a home range of approximately 5 acres. The meadowlark feeds primarily on invertebrates, although its diet is supplemented with plants. The meadowlark represents insectivorous avian receptors found in the open areas of Site 31.

- **Red Fox** (*Vulpes vulpes*). This omnivorous mammal prefers open woodlands and grassy fields and is most active at night and twilight. It is an opportunistic forager, feeding on small mammals, birds, amphibians, reptiles, invertebrates, berries, and other fruits (Burt and Grossenheider, 1976). The red fox has an estimated home range of approximately 250 acres and represents the large predatory mammal guild at Site 31.

- **Red-tailed Hawk** (*Buteo jamaicensis*). The red-tailed hawk forages in open country, particularly if woodland edges are present. It consumes primarily small mammals, but its diet may also include invertebrates, reptiles, and small birds. Red-tailed hawks are year-round residents in the Southeast and are frequently seen perched adjacent to open fields (DeGraaf and Rudis, 1986). The hawk may reside in the forested areas adjacent to Site 31 and feed on species that have been exposed to surface soil ECOPCs at Site 31.

Parameters for quantitatively evaluating exposures to wildlife include body weight, food ingestion rates, home range, and relative consumption of food items. Exposure assumptions for each of the representative wildlife species for Site 31 are provided in Table 7-8 and Tables G-6, G-10, G-14, G-21 in Appendix G. In addition to these parameters, the species foraging habits and bioaccumulation of ECOPCs in food items are also considered.

The site foraging frequency (SFF) is an adjustment term that accounts for the frequency a receptor feeds within the site area. The SFF is based on the site area (reported in acres) relative to the receptor's home range multiplied by the fraction of the year the receptor would be exposed to site-related chemicals (i.e., the exposure duration). By definition, the SFF cannot exceed 1. Because all representative wildlife species are expected to actively forage at the site year round, it is assumed that the exposure durations for these organisms are 1.

BAFs are used in the wildlife exposure model to estimate the transfer of chemicals between soil and plants or soil invertebrates, and between these organisms and primary consumer species. To estimate the PDE, tissue concentrations of ECOPCs in prey items are estimated using BAFs for surface soil. BAFs for most receptors are extrapolated from literature values or estimated using regression equations from scientific literature. Based on the evidence provided in several reference materials (Suter, 1993; Maughan, 1993), the ERA assumes that VOCs do not bioaccumulate in prey tissue. The general approach used to select BAFs for Site 31 is summarized in Table 7-9.

BAFs for invertebrate and plant food items are defined as the ratio of the ECOPC concentration in plant or invertebrate tissue (mg chemical/kg tissue wet-weight) to the ECOPC concentration in surface soil (mg chemical/kg dry-weight soil). BAFs reported in the scientific literature for avian and mammalian receptors are the reported ratios of ECOPC concentrations in the tissues of these receptors (mg chemical/kg tissue wet-weight) to the concentrations of ECOPCs in their food items (mg chemical/kg tissue wet-weight). BAFs for each ECOPC evaluated at Site 31 are included in Table G-1 in Appendix G.

Table 7-8
Exposure Parameters for Representative Wildlife Species Selected for Site 31

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Representative Wildlife Species	Body Weight (kg)	Reported Diet	Assumed Diet for Terrestrial Exposure Assessment (% of diet)	Food Ingestion Rate (kg/day)	Home Range (acres)
Cotton mouse [a] (*Peromyscus gossypinus*)	0.021 [b]	Seeds and some insects. [c]	88% Plants 10% Invertebrates 2% Soil [d]	0.0029 [e]	0.147 [f]
Short-tailed shrew (*Blarina brevicauda*)	0.017 [g]	Earthworms, slugs & snails, fungi, insects, and vegetation. [c]	78% Invertebrates 12% Plants 10% Soil [c]	0.0024 [e]	0.96 ± 0.09 [c]
Mourning dove (*Zenaida marcroura*)	0.13 [h]	Seeds, waste grains from agriculture, some insects, and occasionally snails. [i]	94% plants 1% Invertebrates 5% Soil [h]	0.0154 [j]	5 [i]
Eastern meadowlark (*Sturnella magna*)	0.087 [h]	Weed seeds, grass seeds, and invertebrates including beetles, grubs, bugs, grasshoppers, crickets, ants, and spiders. [h]	75% Invertebrates 20% Plants 5% Soil [h]	0.0119 [j]	5 [h]
Red fox (*Vulpes vulpes*)	4.69 [c]	Small mammals, birds, and invertebrates, as well as berries and other fruits. [c]	57% Small mammals 20% Invertebrates 10% Small birds 10% Plants 3% Soil [c]	0.24 [e]	250 [c]
Red-tailed hawk (*Buteo jamaicensis*)	1.02 [i]	Primarily small mammals; also birds, snakes, turtles, frogs, crickets, beetles, crayfish, and carp. [c]	70% Small mammals 27% Small birds 3% Soil [c]	0.113 [j]	800 [c]

See notes at end of table.

Table 7-8 (Continued)
Exposure Parameters for Representative Wildlife Species Selected for Site 31

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[a] Values for the deer mouse were used for the cotton mouse (U.S. Environmental Protection Agency [USEPA], 1993b).
[b] Average of adult male and female deer mice in North America (USEPA, 1993b).
[c] Wildlife Exposure Factors Handbook (USEPA, 1993b).
[d] Deer mouse value used for cotton mouse based on similarities in diet. Other values were based on diet composition (USEPA 1993b).
[e] Calculated using the mammal equation based on body weight (Wt.) in kg. Food ingestion (kg/day) = $0.0687 \times Wt^{0.822}$ (kg) (USEPA, 1993b).
[f] Average for male and female deer mice, Virginia/mixed deciduous forest (USEPA, 1993b).
[g] Mean of means reported for male and female shrews in summer and fall (USEPA, 1993b).
[h] Terres (1980).
[i] DeGraaf and Rudis (1986).
[j] Calculated using the bird equation based on body weight (Wt.) in kg. Food ingestion (kg/day) = $0.0582 \times Wt^{0.651}$ (kg) (USEPA, 1993b).

Notes: kg = kilogram.
% = percent.
kg/day = kilograms per day.

Table 7-9
Estimation of Bioaccumulation Factors

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Receptor Group	Nature of Approach	General Approach
Terrestrial Plants		
Unit: mg/kg wet tissue per mg/kg dry soil	Literature Values	When available, literature values were used to estimate plant bio-accumulation factors (BAFs).
	Structural Activities Relationship (SAR)	When literature values were not available, plant BAFs for semivolatile organic compounds (SVOCs) were calculated using a regression equation based on the relationship between plant bioconcentration factors and the *n*-octanol-water partition coefficient for soil (K_{ow}s) of analytes (Travis and Arms, 1988).[1] The study found that bioconcentration factors for vegetation are inversely proportional to the square root of the K_{ow}s of an analyte.
	Extrapolation and Empirical Data	When literature values were not available, plant BAFs for inorganic compounds were obtained from Baes et al. (1984).[2]
	Assumption	Although evidence suggests that plants may transport organic analytes with log K_{ow}s < 5 (i.e., volatile organic compounds [VOCs]) from the roots into leafy portions (Briggs et al., 1982; Briggs et al., 1983), bioaccumulation data for VOCs is generally lacking in the scientific literature. In addition, evidence in the literature (Suter, 1993; Maughan, 1993) suggests that analytes with log K_{ow}s < 3.5 are not bioaccumulated into animal tissue. Therefore, it was assumed that transfer of VOCs from plant tissue to animal tissue does not occur.
Terrestrial Invertebrates		
Unit : mg/kg wet tissue per mg/kg dry soil	Literature Values	When no specific values were available, literature values were used to estimate BAFs for invertebrates.
	SAR	When literature values were not available for SVOCs, BAFs for soil invertebrates were estimated using a regression equation based on the uptake of organic chemicals into beef tissue from Travis and Arms (1988).[1]
	Assumption	Bioaccumulation data for VOCs is generally lacking in the scientific literature. In addition, evidence in the literature (Suter, 1993; Maughan, 1993) suggests that analytes with log K_{ow}s < 3.5 are not bioaccumulated into animal tissue. Therefore, it was assumed that soil invertebrates do not bioaccumulate VOCs.
Small Mammals		
Unit : mg/kg wet tissue per mg/kg wet food	Literature Values	When available, literature values were used to estimate BAFs for small mammals.
	SAR	When literature values were not available for SVOCs, BAFs for small mammals were estimated using a regression equation based on the uptake of organic chemicals into beef tissue from Travis and Arms (1988).[1]
	Extrapolation and Empirical Data	When literature values were not available, BAFs for small mammals for inorganics were derived from ingestion-to-beef biotransfer factors (BTFs) presented in Baes et al. (1984).[2]
	Assumption	Bioaccumulation data for VOCs are generally lacking in the scientific literature. In addition, evidence in the literature (Suter, 1993; Maughan, 1993) suggests that analytes with log K_{ow}s < 3.5 are not bioaccumulated into animal tissue. Therefore, it was assumed that small mammals do not bioaccumulate VOCs.

See notes at end of table.

Table 7-9 (Continued)
Estimation of Bioaccumulation Factors

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Receptor Group	Nature of Approach	General Approach
Small Birds		
Unit: mg/kg wet tissue per mg/kg wet food	Literature Values	When available, literature values were used to estimate BAFs for small birds.
	Assumption	Bioaccumulation data for VOCs are generally lacking in the scientific literature. In addition, evidence in the literature (Suter, 1993; Maughan, 1993) suggests that analytes with log K_{ow}s < 3.5 are not bioaccumulated into animal tissue. Therefore, it was assumed that birds do not bioaccumulate VOCs.
	No Information	BAFs were not obtained for SVOCs or for inorganic compounds as there is little bioaccumulation data available for birds. It was assumed that small birds do not accumulate VOCs.

[1] BTFs were converted to a BAFs (mg/kg tissue divided by mg/kg food) by multiplying by a food ingestion rate of 12 kg (dry weight) per day (average intake for lactating and nonlactating cattle reported in Travis and Arms, 1988).
[2] BAFs derived from Baes et al., 1984. Values are based on analysis of literature references, correlations with other chemical and physical parameters, or comparisons of observed and predicted elemental concentrations in vegetative and reproductive plant material and soil. Data are based on dry weight and were converted to a fresh weight basis assuming that plants are 80 percent water. This is generally consistent with the water content of berries (82 to 87 percent water) and leafy vegetables (87 to 95 percent water), presented in Suter, 1993. Grains contain a much lower percentage of water (approximately 10 percent); therefore, this assumption likely underestimates exposure to graminivores.

Notes: mg/kg = milligrams per kilogram.
log K_{ow} = logarithmic expression of the octanol-water partition coefficient.
< = less than.
kg = kilogram.

7.4.3 Terrestrial Plants and Invertebrates

Terrestrial plants and invertebrates may be exposed to ECOPCs via direct contact with and root uptake (plants) or ingestion (invertebrates) of ECOPCs measured in Site 31 surface soil. The Site 31 ERA assumes that exposures to terrestrial plants and invertebrates occur within the top one-foot interval of surface soil. Exposure of terrestrial plants to groundwater is not evaluated because the depth to the water table is approximately 68 to 105 feet bls (see hydrogeological discussion in Chapter 5 of this report).

7.5 ECOLOGICAL EFFECTS ASSESSMENT.

The ecological effects assessment discusses what measurement endpoints were used to evaluate potential adverse impacts to the assessment endpoints (i.e., the maintenance of receptor populations). The methods used for identifying and characterizing ecological effects for ECOPCs in surface soil and groundwater are described in the following subsections and in greater detail in Subsection 2.4.2 of the GIR (HLA, 1998).

Wildlife receptors, terrestrial plants, and terrestrial invertebrates are potentially exposed to ECOPCs in surface soil at Site 31. The measures of adverse ecological effects for these receptors are discussed separately.

7.5.1 Terrestrial Wildlife

As identified in the problem formulation, the assessment endpoint selected for terrestrial wildlife is the survival and maintenance of wildlife populations and communities present within the open areas of Site 31. Because no long-term wildlife population data are available at NAS Whiting Field, a direct measurement of this assessment endpoint is not possible. The literature-derived results of laboratory toxicity studies that relate the dose of a chemical in an oral exposure with an adverse response to growth, reproduction, or survival of a test population (avian or mammalian species) are used as a measure of the assessment endpoint. Wildlife ingestion toxicity data are presented in Tables G-2 in Appendix G.

Reference toxicity values (RTVs) are derived for each ECOPC and representative wildlife species according to the data hierarchy presented in *Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments,* Interim Final (USEPA, 1997c). The RTV represents the highest exposure level (e.g., concentration in the diet) not shown to produce adverse effects (e.g., reduced growth, impaired reproduction, increased mortality). For each ECOPC, two RTVs representing lethal and sublethal effects are selected for each representative wildlife species. Lethal effects are those that result in mortality while sublethal effects include those that impair or prevent reproduction or growth. The RTVs are assumed to be a measure of the assessment endpoints that are protective of survival, growth, and reproduction of terrestrial wildlife populations. Lethal RTVs are developed using the following data hierarchy discussed in items 1, 2, and 3, while sublethal RTVs are derived using the methodology discussed in items 1 and 2:

1. For contaminants with well-documented adverse effects, the highest reported exposure level not resulting in significant adverse effects (i.e., a no observable adverse effect level [NOAEL]) was selected as the RTV.

2. Generally, one-tenth of the lowest observed adverse effect level (LOAEL) was selected as the RTV for analytes lacking an NOAEL value. However, application of the 10-fold uncertainty factor was based on consideration of the exposure duration, type of toxicity test, and the relationship between the selected measurement and assessment endpoints.

3. The lowest reported oral LD_{50} (oral dose [in mg/kg body weight-day] lethal to 50 percent of a test population) was used to derive the lethal RTV if an NOAEL or LOAEL value (based on lethal effects) was not available. The lethal RTV is one-fifth of the lowest reported LD_{50} value for the species most

closely related to the representative wildlife receptor. One-fifth of an oral LD_{50} value is considered to be protective against lethal effects for 99.9 percent of individuals in a test population (USEPA, 1986a). An assumption is made that the value represented by one-fifth of an oral LD_{50} would be protective of 99.9 percent of the individuals within the terrestrial wildlife populations and represents a level of acceptable risk.

A summary of lethal and sublethal RTVs selected from the ingestion toxicity data is provided in Table G-3 in Appendix G.

If neither lethal nor sublethal toxicity information were available for a taxonomic group, no RTVs were identified and risks associated with the respective ECOPC were not quantitatively evaluated. However, the absence of specific data for a taxonomic group does not imply that there is no toxicological effect associated with contaminant exposure by these receptors; therefore, potential risks to these taxonomic groups are qualitatively discussed in the Uncertainties Section (Section 7.7).

7.5.2 Terrestrial Plants and Invertebrates

The assessment endpoints selected for terrestrial plants and soil invertebrates at Sites 31A, 31B, 31D, 31E, and 31F are reduction in the biomass of terrestrial plants and abundance of soil invertebrates. Site-specific toxicity data for plants and invertebrates at these areas are not available; therefore, the results of toxicity studies from the literature relating the soil concentrations of a contaminant with adverse effects to growth, reproduction, or survival of a test population are used as a measure of the assessment endpoint. These study results are summarized for each ECOPC in Appendix G, Tables G-4 (plants) and G-5 (invertebrates).

The assessment endpoints selected for terrestrial plants and soil invertebrates at Site 31C are survival and growth of these communities. The toxicity of surface soil at Site 31C was measured using two laboratory toxicity tests: a 14-day survival and a 30-day growth test with earthworms (*E. foetida*) and a 120-hour lettuce seed (*L. sativa*) germination test.

Surface soil samples were collected for toxicity testing from two locations at Site 31C (31N01201 and 31N01301) and two reference soil samples collected from uncontaminated areas at NAS Whiting Field (BKN00101 and BKN00301 and its duplicate BKN00301D). Toxicity test samples for Site 31C and reference surface soil samples were collected concurrently with surface soil samples (31S01201, 31S01301, BKS00101, and BKS00301, respectively) collected for chemical analyses and represent split samples. Therefore, the results of the chemical analyses can be used to establish contaminant exposure concentrations and provide the means to interpret responses in the bioassays. If adverse effects were observed in the bioassays, simple linear regressions were completed to determine if a correlation(s) exists between the concentration of an analyte and the adverse response measured in the bioassay.

The results of the earthworm and lettuce seed toxicity tests using surface soil samples from Site 31C are presented in Table 7-10. Additional information on the toxicity tests using Site 31C surface soil with *E. foetida* and *L. sativa* is included in Appendix F of the GIR (HLA, 1998).

Site-related toxicity data were evaluated by a statistical comparison of mean survival, growth (as wet weight), or germination rates with the reference samples (BKN00101 and the average of BKN00301 and its duplicate BKN00301D) and the two Site 31C samples (31N01201 and 31N01301).

Table 7-10
Results of Site 31C Surface Soil Toxicity Testing

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Sample Location	Earthworms (*Eisenia foetida*)		Lettuce seed (*Lactuca sativa*)
	Survival After 14 days (30 days) (%)	Weight Change (%)[1]	Germination After 120 Hours (%)
31N01201	100 (100)	30.8	[2]77
31N01301	100 (100)	18.6	[2]60
Laboratory Control[3]	100 (100)	13	[3]91
BKN00301 (Reference)	100 (100)	10.9	97
BKN00301D (Reference)	100 (100)	5.0	90
BKN00101 (Reference)	100 (100)	29.1	[2]43

[1] Growth of *E. foetida* is expressed as mean individual wet weight.
[2] Significantly different ($p \leq 0.05$) from the laboratory control group and reference BKN00301.
[3] The laboratory control results present the average of several laboratory control samples.

Notes: % = percent.
p = probability
≤ = less than or equal to.

In the two surface soil samples collected from Site 31C, survival of *E. foetida* after 14 and 30 days was 100 percent, indicating no acute or chronic lethal toxicity. Growth rates of *E. foetida* in the laboratory control and reference samples (BKN00301 and its duplicate) were not significantly different ($P \leq 0.05$) from growth rates in soil from Site 31C, indicating that surface soil from 31C is unlikely to have adverse effects on soil invertebrates.

Soil collected from both Site 31C locations inhibited germination of lettuce seeds. Germination of lettuce seeds, *L. sativa*, in the laboratory control and reference sample, BKN00301, was significantly different ($P \leq 0.05$) from surface soil collected from Site 31C locations 31N01201 and 31N01301. Germination in the reference samples was 97 and 90 percent (for samples BKN00301 and BKN00301D, respectively) as compared to 77 percent in sample 31N01201 and 60 percent in sample 31N01301.

7.6 RISK CHARACTERIZATION.

This section presents the risk characterization for ecological receptors exposed to surface soil at Site 31. Potential risks associated with exposures to ECOPCs in surface soil at Site 31 are discussed separately for wildlife, terrestrial plants, and soil invertebrates.

Risks to wildlife are characterized by comparing the PDE concentrations (based on RME and CT exposure concentrations) for each surface soil ECOPC with its respective RTV (estimated threshold dose for toxicity). Risks for terrestrial plants and soil invertebrates for Sites 31A, 31B, 31D, 31E and 31F are evaluated by comparing toxicity benchmark values to RME and CT exposure concentrations. Risks for terrestrial plants and soil invertebrates for 31C are evaluated using results from site-specific toxicity tests.

7.6.1 Terrestrial Wildlife

Risks for the representative wildlife species associated with ingestion and bioaccumulation of ECOPCs in surface soil and prey items were quantitatively evaluated using HQs. HQs are calculated for each ECOPC by dividing the PDE concentration by the selected lethal and sublethal RTV. HIs were determined for each

receptor by summing the HQs for all ECOPCs. When the estimated PDE is less than the RTV (i.e., the HQ < 1), it is assumed that chemical exposures are not associated with adverse effects to receptors and risks to wildlife populations are unlikely to be significant. For instance, if the PDE, calculated using the RME concentration, is less than the lethal RTV, then it is assumed that adverse effects to the survival of wildlife populations are unlikely to occur. Similarly, if the reasonable maximum PDE is less than the sublethal RTV, then it is assumed that adverse effects to wildlife populations related to growth and reproduction are unlikely to occur. When an HI is greater than 1, a discussion of the ecological significance of the HQs comprising the HI is completed and risks from exposure to CT concentrations of ECOPCs are evaluated.

This hazard ranking scheme evaluates potential ecological effects to individual organisms and does not evaluate potential populationwide effects. Contaminants may cause population reductions by affecting birth and mortality rates, immigration, and emigration (USEPA, 1989a). In many circumstances, lethal or sublethal effects may occur to individual organisms with little population- or community-level impacts; however, as the number of individual organisms experiencing toxic effects increases, the probability that population effects will occur also increases. The number of affected individuals in a population presumably increases with increasing HQ or HI values; therefore, the likelihood of population-level effects occurring is generally expected to increase with higher HQ or HI values.

The HQs and HIs based on lethal and sublethal RTVs were calculated for each ECOPC and each representative wildlife species. Tables G-6 through G-24 in Appendix G present the HQ and HI calculations. A summary of calculated risks to representative wildlife receptors for Site 31A, 31B and 31D, 31C, and 31E and 31F is provided in Tables 7-11 through 7-14, respectively.

Summary HIs for representative wildlife species exposed to Site 31A, 31B and 31D, and 31E and 31F surface soil RME concentrations of ECOPCs for lethal and sublethal effects are less than 1; therefore, risks are not predicted for these receptors (i.e., bioaccumulating chemicals are not sufficiently high as to reduce survivability, growth, or reproduction in terrestrial wildlife populations at these sites).

Except for the cotton mouse and the short-tailed shrew, HIs for all representative wildlife species exposed to Site 31C RME and CT concentrations of ECOPCs for lethal effects are less than 1. Although HIs based on RME concentrations exceeded 1 for both the cotton mouse (RME HI of 5) and the short-tailed shrew (RME HI of 3.6), HIs based on CT exposure concentrations are less than 1. The primary risk driver for the lethal RME HI is cadmium. As shown in Table 7-15, further examination of the Site 31C surface soil data show elevated concentrations of cadmium ranging from 11.6 to 26.8 mg/kg were detected in the four Phase I samples collected in August 1992. The Phase I samples were collected from areas believed to have received the most disposal material. The more recent Phase II surface soil data collected in January 1996 show cadmium was detected in only three of ten samples at concentrations ranging from 0.22 to 1.6 mg/kg. These samples were collected on a modified grid pattern to best characterize site conditions. Because Phase II characterize non-hot-spot conditions at Site 31C, the Phase II samples were used to recalculate risk exposure representative of post hot-spot removal conditions. Recalculated HIs based on the maximum detected concentration of cadmium in the ten Phase II samples are less than 1 for all representative wildlife species. The recalculated HI values are presented in Tables G-25 through G-28 of Appendix G. Because lethal HI values based on the 1996 Phase II data are well below 1, it is unlikely that the survivability of terrestrial wildlife populations would be reduced at Site 31C.

Table 7-11
Summary of Hazard Indices for Terrestrial Wildlife[1]
Associated with Exposure to Site 31A Surface Soil

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Ecological Receptors	Lethal Effects from Exposure to Reasonable Maximum EPCs	Sublethal Effects from Exposure to Reasonable Maximum EPCs
Cotton mouse	0.0028	NA
Mourning dove	NA	NA
Short-tailed shrew	0.0012	NA
Eastern meadowlark	NA	NA
Red fox	0.00000058	NA
Red-tailed hawk	NA	NA

[1] Hazard indices are presented in Tables G-6 through G-9 in Appendix G.

Notes: EPC = exposure point concentration.
NA = not available

Table 7-12
Summary of Hazard Indices for Terrestrial Wildlife[1]
Associated with Exposure to Site 31B and 31D Surface Soil

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Ecological Receptors	Lethal Effects from Exposure to Reasonable Maximum EPCs	Sublethal Effects from Exposure to Reasonable Maximum EPCs
Cotton mouse	0.013	NA
Mourning dove	NA	NA
Short-tailed shrew	0.027	NA
Eastern meadowlark	NA	NA
Red fox	0.000051	NA
Red-tailed hawk	NA	NA

[1] Hazard indices are presented in Tables G-10 through G-13 in Appendix G.

Notes: EPC = exposure point concentration.
NA = not available

Table 7-13
Summary of Hazard Indices for Terrestrial Wildlife[1]
Associated with Exposure to Site 31C Surface Soil

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Ecological Receptors	Lethal Effects from Exposure to Reasonable Maximum EPCs	Lethal Effects from Exposure to Central Tendency EPCs	Sublethal Effects from Exposure to Reasonable Maximum EPCs	Sublethal Effects from Exposure to Central Tendency EPCs
Cotton mouse	5	0.97	69	13
Mourning dove	0.55	0.23	77	14
Short-tailed shrew	3.6	0.75	31	5.9
Eastern meadowlark	0.96	0.31	49	9.2
Red fox	0.41	0.0038	7.5	1.3
Red-tailed hawk	0.003	0.00066	0.38	0.072

[1] Hazard indices are presented in Tables G-14 through G-20 in Appendix G.

Note: EPC = exposure point concentration.

Table 7-14
Summary of Hazard Indices for Terrestrial Wildlife[1]
Associated with Exposure to Site 31E and 31F Surface Soil

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Ecological Receptors	Lethal Effects from Exposure to Reasonable Maximum EPCs	Sublethal Effects from Exposure to Reasonable Maximum EPCs
Cotton mouse	0.086	0.25
Mourning dove	0.013	0.0098
Short-tailed shrew	0.16	0.44
Eastern meadowlark	0.14	0.11
Red fox	0.0011	0.0031
Red-tailed hawk	0.00076	0.00057

[1] Hazard indices are presented in Tables G-21 through G-24 in Appendix G.

Note: EPC = exposure point concentration.

Table 7-15
Comparison of Phase I and Phase II Site 31C Surface Soil Data

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Risk Drivers	1992 Phase I Data		1996 Phase II Data	
	FOD	Range of Detected Concentrations (mg/kg)	FOD	Range of Detected Concentrations (mg/kg)
Aroclor-1260	4/4	0.34 to 1.4	0/10	ND
Cadmium	4/4	11.6 to 26.8	3/10	0.22 to 1.6
Copper	4/4	248 to 948	3/10	29.8 to 118
Lead	4/4	344 to 1890	10/10	2.9 to 28.5
Mercury	4/4	2.4 to 8.8	4/10	0.13 to 0.64
Zinc	4/4	186 to 346	8/10	3.6 to 50

Notes: FOD = frequency of detection.
mg/kg = milligrams per kilogram.
ND = not detected.

With the exception of the red-tailed hawk, the sublethal HIs for Site 31C RME and CT concentrations are greater than 1. A summary of the sublethal HIs for representative wildlife species at Site 31C is provided in Table 7-13. The primary risk drivers for small mammals include Aroclor-1260, dieldrin, cadmium, copper, lead, and zinc. For small birds, the risk drivers are cadmium, lead, and mercury. Aroclor-1260 is the only risk driver for the fox. As shown in Table 7-15, further examination of the 1992 Phase I and 1996 Phase II Site 31C surface soil data indicates detected concentrations of all of the primary sublethal risk drivers are significantly lower in the samples collected in 1996 as compared to those collected in 1992. Detected concentrations of the primary risk contributors in the 1996 Phase II samples are generally less than their respective ecological screening values. As shown in Tables G-25 through G-28 of Appendix G, recalculated sublethal HI values based on the maximum detected concentration of ECOPCs in the ten Phase II surface soil samples continue to exceed 1 for the cotton mouse (HI of 5), short-tailed shrew (HI of 2.5), mourning dove (HI of 4.8), and eastern meadowlark (HI of 3). The primary risk drivers for small mammals are cadmium and copper. For small birds, cadmium and mercury are the primary risk contributors. Based on the 1996 Phase II surface soil data, reductions in the growth and reproduction of small mammal and bird populations at Site 31C are possible.

It should be noted that the IRA conducted at Site 31C, in response to potential human health and ecological concerns, removed surface soil from all identified "hot spots" and areas of visibly distressed vegetation.

7.6.2 Terrestrial Plants

Risks for terrestrial plants at Sites 31A, 31B and 31D, and 31E and 31F are evaluated by comparing the selected phytotoxicity RTVs to the RME and CT exposure concentrations. The results of this comparison are summarized in Tables 7-16 through 7-18 and are discussed in Paragraphs 7.6.2.1, 7.6.2.2, and 7.6.2.4, respectively. Risks to plants at Site 31C are evaluated based on the results from site-specific toxicity tests using the germination rates of lettuce seeds. Paragraph 7.6.2.3 discusses potential risks to terrestrial plants at 31C.

Table 7-16
Ecological Risk for Plants and Invertebrates in Surface Soil at Site 31A

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Analyte	Exposure Point Concentration[1]		RTV		RTV Exceeded? (by RME/by CT)	
	Reasonable Maximum Exposure	Central Tendency Exposure	Plant[2]	Invertebrate[2]	Plant[3]	Invertebrate[3]
Inorganic Analytes (mg/kg)						
Silver	1.3	0.79	2	NA	No/No	NA

[1] Exposure Point Concentrations (EPCs) are presented in Table 7-2. The RME EPCs are equal to the maximum detected concentration and CT EPCs are equal to the mean of all concentrations. When the mean is greater than the RME EPC, then the RME EPC is used for both the RME and CT concentrations.
[2] Plant and invertebrate RTVs are presented in Appendix G, Table G-4 and G-5, respectively. Generally, the plant RTVs are the lowest observed effect concentration from among growth studies on plants in solid media. Invertebrate RTVs are the lowest concentration lethal to 50 percent of a test population (i.e., *Eisenia foetida*). A conservative factor of 0.2 was applied to invertebrate RTVs; the resultant value should be protective of 99.9 percent of the population from acute effects (Neuhauser et. al., 1986).
[3] Comparison shown is RME EPC to RTV over CT EPC to RTV.

Notes: RTV = reference toxicity value.
RME = reasonable maximum exposure.
CT = central tendency.
mg/kg = milligrams per kilogram.
NA = not available.

Table 7-17
Ecological Risk for Plants and Invertebrates in Surface Soil at Sites 31B and 31D

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Analyte	Exposure Point Concentration[1]		RTV		RTV Exceeded? (by RME/by CT)	
	Reasonable Maximum Exposure	Central Tendency Exposure	Plant[2]	Invertebrate[2]	Plant[3]	Invertebrate[3]
Inorganic Analytes (mg/kg)						
Silver	5.9	2.2	2	NA	Yes/Yes	NA

[1] Exposure Point Concentrations (EPCs) are presented in Table 7-3. The RME EPCs are equal to the maximum detected concentration and CT EPCs are equal to the mean of all concentrations. When the mean is greater than the RME EPC, then the RME EPC is used for both the RME and CT concentrations.
[2] Plant and invertebrate RTVs are presented in Appendix G, Table G-4 and G-5, respectively. Generally, the plant RTVs are the lowest observed effect concentration from among growth studies on plants in solid media. Invertebrate RTVs are the lowest concentration lethal to 50 percent of a test population (i.e., *Eisenia foetida*). A conservative factor of 0.2 was applied to invertebrate RTVs; the resultant value should be protective of 99.9 percent of the population from acute effects (Neuhauser et. al., 1986).
[3] Comparison shown is RME EPC to RTV over CT EPC to RTV.

Notes: RTV = reference toxicity value.
RME = reasonable maximum exposure.
CT = central tendency.
mg/kg = milligrams per kilogram.
NA = not available.
= shading indicates exceedances.

Table 7-18
Ecological Risk for Plants and Invertebrates in Surface Soil at Sites 31E and 31F

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Milton, Florida

Analyte	Exposure Point Concentration[1]		RTV		RTV Exceeded? (by RME/by CT)	
	Reasonable Maximum Exposure	Central Tendency Exposure	Plant[2]	Invertebrate[2]	Plant[3]	Invertebrate[3]
Volatile Organic Compounds (mg/kg)						
2-Hexanone	0.001	0.001	NA	NA	NA	NA
Carbon disulfide	0.0035	0.0035	NA	NA	NA	NA
Semivolatile Organic Compounds (mg/kg)						
Di-*n*-octylphthalate	0.22	0.186	200	478	No/No	No/No
bis(2-Ethylhexyl)phthalate	0.206	0.181	1000	478	No/No	No/No
Inorganic Analytes (mg/kg)						
Manganese	376	252	500	NA	No/No	NA
Selenium	0.45	0.36	1	NA	No/No	NA
Silver	4.6	1.9	2	NA	Yes/No	NA

[1] Exposure Point Concentrations (EPCs) are presented in Table 7-5. The RME EPCs are equal to the lesser of the maximum detected concentration and the 95 percent upper confidence limit. CT EPCs are equal to the mean of all concentrations. When the mean is greater than the RME EPC, then the RME EPC is used for both the RME and CT concentrations.
[2] Plant and invertebrate RTVs are presented in Appendix G, Table G-4 and G-5, respectively. Generally, the plant RTVs are the lowest observed effect concentration from among growth studies on plants in solid media. Invertebrate RTVs are the lowest concentration lethal to 50 percent of a test population (i.e., *Eisenia foetida*). A conservative factor of 0.2 was applied to invertebrate RTVs; the resultant value should be protective of 99.9 percent of the population from acute effects (Neuhauser et. al., 1986).
[3] Comparison shown is RME EPC to RTV over CT EPC to RTV.

Notes: RTV = reference toxicity value.
RME = reasonable maximum exposure.
CT = central tendency.
mg/kg = milligrams per kilogram.
NA = not available.
= shading indicates exceedances.

7.6.2.1 Site 31A Silver was the only ECOPC identified at Site 31A. As shown in Table 7-16, the silver RME concentration (1.3 mg/kg) is less than the phytotoxicity benchmark value, indicating no reduction in plant biomass and/or plant cover is expected at Site 31A.

7.6.2.2 Sites 31B and 31D Silver, which was the only ECOPC identified at Sites 31B and 31D, was detected at Site 31B only in three out of eight samples. Although the RME (RME of 5.9 mg/kg) and CT (CT of 2.2 mg/kg) concentrations slightly exceed the RTV of 2 mg/kg, the occurrence of silver in only three samples at Site 31B suggests detected concentrations of silver may be localized. Also, if should be noted that Will and Suter (Will and Suter, 1995) expressed a low confidence in the silver phytotoxicity benchmark value of 2 mg/kg because it is based on a single report that did not indicate the type of toxic effect observed. In addition, the RME silver concentration at Sites 31B and 31D is less than the Site 31C RME concentration of 154 mg/kg, where site-specific toxicity tests were performed. Due to the close proximity and similarities in soil types between Sites 31B and 31D and Site 31C, the results of the Site 31C toxicity tests are used to support the assessment endpoint of reduction in plant biomass. The results of the toxicity test show no correlation between silver concentrations at Site 31C and plant germination and growth rates. Because detected concentrations of silver are substantially less at Site 31B as compared

to Site 31C, and the results of the toxicity tests from Site 31C show no correlation between detected concentrations of silver in surface soil and adverse effects to lettuce seeds, it is unlikely that detected concentrations of silver would cause a reduction in plant biomass and/or plant cover at Site 31B. In addition, no areas of stressed vegetation were observed at Sites 31B or 31D during the site characterization.

7.6.2.3 Site 31C Two surface soil samples were collected for toxicity testing from areas having visually stressed vegetation. The results of the toxicity tests show surface soil from sampling locations 31N01201 and 31N01301 inhibited germination of lettuce seed, as compared to the reference sample, BKN00301, and laboratory control. Appendix H presents a series of simple linear regression analyses evaluating the statistical relationships between biological effects observed in the surface soil bioassays and concentrations of selected analytes in Site 31C surface soil. Although germination of lettuce seeds was slightly inhibited by the two Site 31 surface soil samples, no correlation between germination inhibition and ECOPC concentrations was observed (Appendix H). It is possible that the reduced germination observed at 31N01201 and 31N01301 was either the result of synergistic effects of multiple contaminants or not related to site contamination. Nonmeasured physical, biological, or chemical factors may be responsible for the observed reduction in lettuce seed germination rates (i.e., ECOPC exposure concentrations may not be responsible for the observed effect). The total area of stressed vegetation at Site 31C is relatively small, suggesting localized or limited reduction in plant biomass or cover. Given the small area of stressed vegetation, it is unlikely that ECOPCs in surface soil at Site 31C are present in concentrations sufficiently high to reduce plant biomass or plant cover variability such that small mammals and bird populations would be affected. In addition, surface soil from all areas of visibly stressed vegetation were removed during the IRA.

7.6.2.4 Sites 31E and 31F A comparison of phytotoxicity benchmark values and RME and CT exposure concentrations are provided for Site 31E and 31F in Table 7-18. Phytotoxicity RTVs are not available for 2-hexanone and carbon disulfide. With the exception of silver, RME and CT exposure concentrations of all other surface soil ECOPCs at Site 31E and 31F are well below their respective phytotoxicity benchmark values. The silver RME concentration of 4.6 mg/kg exceeds the 2 mg/kg phytotoxicity RTV; however, the CT exposure concentration of 1.9 mg/kg is less than the benchmark value. As previously discussed, the results of the toxicity tests at Site 31C indicate no correlation between lettuce seed germination and silver concentrations detected in surface soil. The RME concentration of silver at Site 31C is 154 mg/kg as compared to 4.6 mg/kg at Sites 31E and 31F. Because detected concentrations of silver are substantially less at Sites 31E and 31F as compared to Site 31C, and the results of the toxicity tests from Site 31C show no correlation between detected concentrations of silver in surface soil and adverse effects to lettuce seeds, it is unlikely that detected concentrations of silver would cause a reduction in plant biomass and/or plant cover at

Sites 31E and 31F. In addition, no areas of stressed vegetation were observed at Sites 31E or 31F during the site characterization.

7.6.3 Terrestrial Invertebrates

Risks for terrestrial invertebrates at Sites 31A, 31B and 31D, and 31E and 31F are evaluated by comparing invertebrate toxicity benchmark values to RME and CT exposure concentrations. The results of this comparison are presented in Tables 7-16 through 7-18 and are summarized in Paragraphs 7.6.3.1, 7.6.3.2, and 7.6.3.4, respectively. Risks to soil invertebrates at Site 31C are evaluated based on the results of site-specific toxicity tests using earthworm survival and growth rates. Paragraph 7.6.3.3 discusses potential risks to soil invertebrates at Site 31C.

7.6.3.1 Site 31A Invertebrate toxicity benchmark values are not available for silver; therefore, risks of terrestrial invertebrates exposure to silver in Site 31A surface soil can not be quantified. However, given the close proximity and similarities in soil type between Site 31A and Site 31C, the results of the Site 31C toxicity tests are used to qualitatively evaluate potential risks to terrestrial invertebrates at Site 31A. As discussed below in Paragraph 7.6.3.3, no mortality or reduction in earthworm growth rates was observed in the Site 31C toxicity study. The RME concentration of silver at Site 31A is 1.3 mg/kg, well below the Site 31C RME concentration of 154 mg/kg; therefore, a reduction in invertebrate biomass at Site 31A is not expected to occur.

7.6.3.2 Sites 31B and 31D. As previously discussed, the results of the Site 31C toxicity tests show no mortality or reduction in the growth rate of earthworms exposed to RME silver concentrations of 154 mg/kg. Because the RME concentration of silver at Sites 31B and 31D is 5.9 mg/kg, well below the RME concentration at Site 31C, reduction in invertebrate biomass at Sites 31B and 31D is not expected to occur.

7.6.3.3 Site 31C The results of the toxicity testing show surface soil samples collected from Site 31C are unlikely to affect the survival of terrestrial invertebrate communities. After 14 and 30 days of exposure to Site 31 surface soil, survival of earthworms in the toxicity test was 100 percent. Also, after 30 days of exposure to Site 31C surface soil, earthworm growth rates, as measured by percent weight change, were not significantly different ($P \leq 0.05$) from the laboratory control and reference sample BKN00301. Therefore, exposure to Site 31C surface soil is unlikely to impact the survival and growth of the terrestrial invertebrate community at Site 31C. Surface soil was removed from all areas of visibly stressed vegetation at Site 31C.

7.6.3.4 Site 31E and 31F Seven ECOPCs (2-hexanone, carbon disulfide, di-*n*-octylphthalate, bis(2-ethylhexyl)phthalate, manganese, selenium, and silver) were identified at Sites 31E and 31F. Invertebrate benchmark values are available for only di-*n*-octylphthalate and bis(2-ethylhexyl)phthalate. The RME and CT concentrations for these phthalates are below the RTV concentrations, indicating a reduction in earthworm biomass is unlikely. Three of the remaining five ECOPCs, carbon disulfide, selenium, and silver, were also identified as ECOPCs at Site 31C. The RME and CT concentrations for each of the chemicals were much lower at Sites 31E and 31F than at Site 31C. As discussed in Paragraph 7.6.3.3, there was no mortality or reduction in growth rates in the invertebrate toxicity tests performed using surface soil from Site 31C, indicating carbon disulfide, selenium, and silver concentrations at Site 31E and 31F are unlikely to result in a reduction in earthworm biomass. Because 2-hexanone was detected in only one out of thirteen samples, reduction in invertebrate biomass at Site 31E and 31F is unlikely. The RME concentration of manganese (376 mg/kg) is less than the background screening concentration, suggesting the manganese concentrations at Sites 31E and 31F are approximately the same as the background concentration, thus they are unlikely to adversely affect soil invertebrates. In summary, ECOPCs in the surface soil at Sites 31E and 31F are unlikely to cause a reduction in the biomass of terrestrial invertebrate communities.

7.7 UNCERTAINTY ANALYSIS.

The objective of the uncertainty analysis is to discuss the assumptions of the ERA process that may influence the risk assessment results and conclusions. Table 2-5 of the GIR presents several general uncertainties inherent in the risk assessment process. (HLA, 1998).

Specific uncertainties associated with exposure to surface soil at Site 31 include the following:

- Risks to avian species may have been underestimated because bioaccumulation and toxicity data for this taxonomic group are generally lacking in the literature. As a result, potential risks associated with several ECOPCs were not evaluated for avian species. If the toxicological and contaminant transport data obtained from studies conducted on mammals were used to estimate risks to avian species, then risk estimates for birds would be higher. However, there is also uncertainty in assuming that the metabolic functions of mammals and birds are similar enough to use intertaxonomic surrogates.

- Risks to adult amphibians and reptiles species were not estimated for surface soil ECOPCs because bio-accumulation and toxicity data for this taxonomic group are generally lacking in the literature. As a result, potential risks associated with ECOPCs are uncertain for these species. Intertaxonomic surrogates were not used to calculate dietary risks to reptiles because of the uncertainty associated with extrapolation of data from endothermic to essentially ectothermic species.

- Site-specific toxicity data for Sites 31A, 31B, 31D, 31E, and 31F surface soil are not available. Phytotoxicity and invertebrate benchmark values used in the risk assessment for these sites were designed for risk screening purposes only and may not be relevant to the specific conditions of the surface soil at Site 31. The conservative nature of these screening tools may overestimate the actual risk to terrestrial plants and invertebrates at Site 31. However, plant and invertebrate benchmark values for several analytes are not available, potentially resulting in an underestimation of risk for terrestrial plants and soil invertebrates.

- As previously discussed , site-specific toxicity data for Sites 31A, 31B, 31D, 31E, and 31F are not available. Invertebrate and plant benchmark values were also not available for several ECOPCs in surface soil; therefore the results of the earthworm and lettuce seed germination toxicity tests from Site 31C were used to draw conclusion regarding the risk characterization for terrestrial invertebrates and plants at other sites. If surface soil conditions at 31C are not similar to Sites 31A, 31B, 31D, 31E, or 31F, the risks to terrestrial invertebrates and plants may be underestimated.

- An assumption has been made that organisms evaluated in the toxicity tests are representative of species at the site. Depending on the sensitivities of terrestrial plants and invertebrates occurring at Site 31C, risks may be over or underestimated.

- The RTV for mercury was selected assuming that this constituent is present in its most toxic form at Site 31C. Although chemical speciation of this ECOPC was not conducted, the available evidence suggests that site conditions are unlikely to result in the conversion of inorganic mercury to organic mercury (e.g., methyl mercury). Methylation of mercury commonly occurs in aquatic environments, which are not present at Site 31C. Therefore, risks to terrestrial wildlife associated with exposures to mercury may be overestimated.

- BAFs for plant material are based on the assumption that plants are 80 percent water. This assumption applies to terrestrial and leafy vegetables, but does not apply to grains, which have a moisture content of only 10 percent. Since the diet of the cotton mouse and the mourning dove consists primarily of grains, the risks to these receptors may be underestimated.

- There is uncertainty associated with the ingestion toxicity data derived from the IRIS and Registry of Toxic Effects of Chemical Substances (RTECS) database. The IRIS and RTECS data were obtained in 1993 and 1995, respectively, and the primary literature citation was not provided; therefore, the primary literature for these studies was not reviewed. This may have resulted in the selection of RTVs that may overestimate or underestimate potential risks to wildlife receptors. RTVs for carbon disulfide and di-*n*-octylphthalate were obtained from IRIS, and RTVs for 2-hexanone, acetone, methyl chloride, butylbenzylphthalate, bis(2-ethylhexyl)phthalate, cadmium, and lead were obtained from RTECS.

- The data set used to evaluate ecological risks at Site 31C is composed of surface soil collected from 1992 and 1996. The 1992 data set represents areas containing the highest concentrations and may be suitable for removal. The Phase II sample locations, collected in 1996, were selected on a grid and represent conditions similar those that will remain after remediation. It is believed that inclusion of the 1992 surface soil data into the data set used to evaluate potential effects to terrestrial wildlife may result in an over estimation of exposure concentrations. Therefore, HI values were recalculated using only the ten samples collected in 1996 and conclusion of the risk characterization for terrestrial wildlife at Site 31C was based on the more recent data.

7.8 SUMMARY OF ECOLOGICAL ASSESSMENT FOR SITE 31.

Potential risks for ecological receptors were evaluated for ECOPCs in surface soil at Site 31. Site 31 consists of six different areas identified as Sites 31A through 31F. Sites that are similar in geology and analytes detected are discussed together and are presented in the following grouping of sites: 31A, 31B and 31D, 31C, and 31E and 31F.

Risks associated with exposures to ECOPCs in Site 31 surface soil were evaluated for terrestrial wildlife based on a model that estimates the amount of contaminant exposure obtained via the diet and incidental ingestion of surface soil. Comparison of estimated doses for wildlife species with reference toxicity doses representing thresholds for lethal and sublethal effects is the basis of wildlife risk evaluation. Risks were not identified for terrestrial wildlife resulting from exposure to ECOPCs in surface soil at Sites 31A, 31B, 31D, 31E, and 31F; therefore, reductions in the survivability, growth, and reproduction of wildlife receptor populations at these locations are not expected to occur.

Lethal and sublethal risks were identified for representative wildlife species at Site 31C based on the combined surface soil data collected for the RI in 1992 and 1996. Four surface soil samples were collected in 1992 to represent the potential hot- spot areas. Ten additional samples were collected in 1996 along a modified grid pattern and represent non-hot spot areas. Further examination of the data indicates detected concentrations of the primary risk drivers (cadmium, copper, lead, mercury, zinc, and Aroclor-1260) are, on the average, an order of magnitude lower in those samples collected in 1996, as compared to those collected in 1992. The spatial distribution of the 1996 surface soil samples at Site 31C covers the site area and is believed to be more representative of current site conditions than the four samples collected in 1992. Therefore, lethal and sublethal HI values were recalculated to represent non-hot spot site conditions. The recalculated lethal HI values were less than 1 for all representative wildlife species, indicating reductions in the survivability of terrestrial wildlife populations at Site 31C are not expected to occur. However, sublethal risks (i.e., reductions in growth and reproduction) to small mammal and bird populations at Site 31C are possible. The likelihood for sublethal risks has been further reduced by the removal of contaminated soils during the IRA.

Risks for terrestrial plants at Sites 31A, 31B and 31D, and 31E and 31F were evaluated by comparing the selected phytotoxicity benchmark values to RME and CT exposure concentrations. Risks to plants at Site 31C were evaluated based on the results of site-specific toxicity tests using lettuce seed germination rates as the endpoint.

Based on the results of the benchmark comparison and interpretation of the site-specific toxicity tests, reduction in plant biomass and/or plant cover is not expected at Sites 31A, 31B and 31C, and 31E and 31F. Site-specific toxicity tests were completed on two samples collected from Site 31C in areas showing stressed vegetation. The results of the toxicity tests showed a reduction in lettuce seed germination; however, there was no significant correlation between lettuce seed germination rates and concentrations of ECOPCs detected in the surface soil from Site 31C. This suggests that other nonmeasured physical, biological, or chemical factors or a combination of factors may be responsible for the observed reduction in lettuce seed germination. The total area of stressed vegetation at Site 31C is relatively small, suggesting localized or limited reduction in plant biomass or cover. In addition, all areas of visibly stressed vegetation were excavated to a depth of 6 inches to 1 foot bls, during the IRA. Given the small area of stressed vegetation, it is unlikely that ECOPCs in surface soil at Site 31C are present in concentrations sufficiently high as to reduce plant biomass or plant cover availability such that small mammal and bird populations would be affected.

Risks for soil invertebrates at Sites 31A, 31B and 31D, and 31E and 31F were evaluated by comparing invertebrate toxicity benchmark values to RME and CT exposure concentrations. Risks to soil invertebrates at Site 31C were evaluated based on the results of site-specific toxicity tests using earthworm survival and growth rates as endpoints. Based on the results of the benchmark comparison and interpretation of the site-specific toxicity tests, reduction in the abundance of earthworms used as forage material is not expected at Sites 31A, 31B and 31C, and 31E and 31F. The results of the site-specific toxicity tests at Site 31C show no mortality or reduction in growth rate of earthworms; therefore, reduction in the survival and growth of terrestrial invertebrate communities at Site 31C is not expected.

In summary, the results of the ERA suggest reductions in the growth and reproduction of small mammal and bird populations at Site 31C are possible. However, the likelihood for sublethal risks has been further reduced by the removal of contaminated soils during the IRA. The other assessment endpoints discussed in Subsection 7.2.3 (i.e., reduction in the survivability of terrestrial wildlife populations, reduction in the biomass of plants/invertebrates, or reduction in plant cover availability) are not expected to be impacted at any of the Site 31 areas.

8.0 CONTAMINANT FATE AND TRANSPORT

This chapter discusses the fate and transport of human health and ecological chemicals of potential concern detected in soil and groundwater samples at Site 31. Fate, in the context of this chapter, refers to the ultimate disposition of a given COPC following its release into the environment. Transport refers to the mechanism(s) by which a given chemical released into the environment will arrive at its fate. Explanation of the fate and transport of chemicals in the environment can be very complicated or very simple, depending on the physical, chemical, and biological characteristics of the compound or metal considered and the environment into which that compound is released. Transport may be effected by meteorogical conditions (Section 1.4.3 of the GIR).

Several organic compounds and inorganics were detected in soil and groundwater sampled at Site 31. Because of the number of potential chemicals detected and the myriad fate and transport scenarios possible for those chemicals in the media, this discussion will focus only on those chemicals that may pose adverse risk to human or ecological receptors, as identified by the HHRA (Chapter 6.0) and the ERA (Chapter 7.0) in this report.

The following discussion of contaminant fate and transport is divided into two sections. Section 8.1 discusses potential migration routes of a chemical(s) in the media evaluated and does not focus specifically on media found to be of concern at Site 31. The site-specific persistence, fate, and transport of those compounds and elements found to pose a potential risk to human health or the environment are discussed in Section 8.2.

8.1 POTENTIAL ROUTES OF MIGRATION.

Several routes of migration are possible for a contaminant in the various media: air, soil, surface water, groundwater, and biota. These routes are summarized below.

Air. Gases and particulate material can be transported in the atmosphere. Organic compounds, metals, and metal complexes that exist as gases at surface temperature and pressure may disperse or diffuse into the air and particulates may become entrained in air and thereby migrate. The extent to which gaseous constituents and particulate material remain airborne is a function of the level of excitation of the air (wind and temperature) and fate processes acting on the constituent and, for particulates, their density. Particulate material as discussed herein consists of organic compounds and inorganic material that would otherwise not be present in a gaseous medium under atmospheric conditions.

Soil. The primary agents of migration acting on soil include wind, rainwater, running water, biological activity, and human activity. Wind commonly transports soil in the form of particulate material. Rainwater may cause soil to migrate either by washing soil particles downward into the subsurface or by carrying soil particles over land to surface water bodies or other areas of deposition. The amount and type of vegetative cover and surface disturbance affects the degree to which wind and water cause soil to migrate.

Surface Water. The mechanisms for migration of constituents in surface water are dissolution and suspension. Several organic compounds and metals are soluble in water and can be transported in the aqueous phase. Other organic compounds and elements are not soluble in water, but may be transported by surface water via suspension. The amount of suspended particulate material in surface water is largely a function of the water's energy; as that energy decreases, suspended material will settle and become part of the soil or sediment. Colloidal material may remain in suspension (by electrochemical forces) in water of very low energy (e.g., standing water).

Sediment. Saltation, traction, suspension, biological action, and human action are the primary mechanisms of migration for sediment. Physical, chemical, and biological processes affecting a constituent will determine where and how migration from sediment will occur.

Groundwater. Groundwater is a liquid medium capable of transporting constituents as colloidal forms, as complexes, as pure-phase liquids, or as dissolved-phase liquids. Organic compounds and elements generally reach groundwater either by being placed directly into the water table (e.g., disposal pits) or by being leached from soil or solid waste to the water table by physical or chemical processes. Groundwater may discharge to the land surface, surface water bodies, other aquifers, or pumping wells. The migration of constituents from groundwater upon discharge depends on the chemical and/or physical processes acting upon that individual constituent in the medium to which it is discharged.

Biota. Biota may be considered a medium for migration of certain organic compounds and inorganics. Several compounds and elements are known to accumulate in the tissues of organisms at various levels in the food chain. As these organisms are consumed by other organisms, compounds and elements are accumulated in their tissue and passed on to organisms higher in the food chain. In this manner, contaminants may be transported by biota. Additionally, some organisms disturb bed sediments in streams and rivers. This disturbance can cause organic compounds and elements to be transported downstream as suspended material in surface water.

8.2 CONTAMINANT PERSISTENCE AND FATE.

The discussion of contaminant persistence and fate in the environment is divided into three subsections. Subsection 8.2.1 discusses the processes controlling the persistence and fate of organic compounds and inorganics in the environment. Subsection 8.2.2 discusses the primary persistence and fate characteristics of the constituents detected at Site 31. Subsection 8.2.3 discusses contaminant transport for Site 31.

8.2.1 Processes

The persistence and fate of chemical constituents in the environment depend on various chemical, physical, and biological processes. The predominant processes affecting the environmental persistence and fate of chemical constituents include solubility, photolysis, volatilization, hydrolysis, oxidation, chemical speciation, complexation, precipitation or coprecipitation, cationic exchange, sorption, biodegradation or biotransformation, and bioaccumulation. These processes are briefly summarized below.

Solubility. The solubility of chemical constituents in water is important in assessing their mobility in the environment. This is particularly important for the transport and ultimate fate of chemicals from soil and sediment to water (i.e., groundwater and/or surface water). Generally for organic compounds, aqueous solubility is a function of molecular size, molecular polarity, temperature, and the presence of other dissolved organic cosolvents. For metals and other inorganic parameters, solubility is generally controlled by chemical speciation, pH, redox potential (Eh), oxygen content, and the presence of dissolved and/or colloidal organic compounds (e.g., humic and fulvic acids) or other inorganic ion species (e.g., hydroxides and sulfates) (USEPA, 1979). Increased solubility is usually directly related to increased environmental mobility with groundwater and/or surface water being the principal transport medium. Therefore, solubility is a significant factor affecting the fate of a compound or element in the water environment.

Photolysis. Many chemical constituents, particularly organic compounds, are susceptible to photolytic degradation either directly or indirectly. Direct photolysis involves a splitting of the chemical compound by light, whereas indirect photolysis occurs when another compound is transformed by light into a reactive species (i.e., usually an hydroxyl radical) that reacts with and modifies the original compound. In general, photolysis primarily occurs within the atmosphere, although it may also occur to a limited extent in surface water and/or soil under certain environmental conditions (USEPA, 1979).

Volatilization. Volatilization of organic chemicals from soil or water to the atmosphere is an important pathway for chemicals with high vapor pressures. For organic compounds, volatilization is a function of partial pressure gradients, temperature, and molecular size and is more likely to occur for compounds with

low molecular weights. In addition, certain metals such as mercury, arsenic, and lead are capable of undergoing biologically mediated transformation (i.e., alkylation) that forms volatile end products. Volatilization is important for the transport of certain chemical constituents from surface soil (i.e., vadose zone), sediment, and surface water and is evaluated using Henry's law and other associated chemical-specific rate constants.

Hydrolysis. Hydrolysis involves the decomposition of a chemical compound by its reaction with water. The rate of reaction may be promoted by acid (hydronium ion, $[H_3O^+]$) and/or base (hydroxyl ion, $[OH^-]$) compounds. In general, most organic compounds are resistant to hydrolytic reactions unless they contain a functional group (or groups) capable of reacting with water. Metallic compounds, however, generally dissociate readily in water depending upon the aqueous environmental conditions (e.g., pH and ionic strength). For metals, hydrolytic dissociation is an indirect process affecting the primary fate and transport mechanism of aqueous solubility.

Oxidation. The direct oxidation of organic compounds in natural environmental matrices may occur, but this is generally a slow, insignificant transformation mechanism of minimal importance (USEPA, 1979). However, some inorganic compounds may be rapidly oxidized under naturally occurring environmental conditions when the surrounding environment changes from anaerobic to aerobic conditions.

Chemical Speciation. Chemical speciation is important primarily for metals that may exist in multiple forms in the environment, particularly within aqueous matrices. In general, the aqueous speciation of metals depends primarily upon the relative stabilities of individual valence states (which are element- specific), oxygen content, pH and Eh condition, and the presence of available complexing agents and/or other cations and anions (USEPA, 1979). Because various metallic species exhibit differential aqueous solubilities and differential mobilities within soils and/or sediments (USEPA, 1979), the particular speciation of an individual metal will greatly affect its environmental mobility.

Complexation. For metals, complexation with various ligands is an important process because these complexes may be highly soluble in water. Complexation may, therefore, greatly enhance mobility within environmental matrices, particularly in groundwater and surface water, depending upon the aqueous solubility of the resulting complex. Complexation depends upon numerous factors such as pH, Eh, type and concentration of complexing ligands, and other ions present (USEPA, 1979).

Most metals are capable of forming numerous organic and/or inorganic complexes in the natural environment (USEPA, 1979). Metals may form organo-metallic complexes, especially with naturally occurring organic acids (i.e., humic and fulvic acids). In some cases, these metallic species may exhibit varying affinities for different organic ligands (i.e., mercury and arsenic for amino acids and their derivatives) (USEPA, 1979). Metals may also form metallo-inorganic complexes with inorganic ligands such as carbonate, halogens (usually chlorine), hydroxyl, and sulfate (USEPA, 1979). However, organo-metallic complex formation is usually favored over metallo-inorganic complexes.

Precipitation and Coprecipitation. Both chemical precipitation and co-precipitation are important removal mechanisms, particularly for metals and metallo-cyanides in the environment. Precipitation and/or coprecipitation reactions depend on numerous aqueous environmental conditions such as pH, Eh, organic ligands present, oxygen content, and cationic and anionic species present (USEPA, 1979). Depending on the specific conditions, the removal of aqueous metallic species and metallo-cyanides from groundwater and/or surface water can greatly affect a metal's environmental mobility, hence, its ultimate fate and transport.

Cation Exchange. Cation exchange is important primarily for metals and other ions that may substitute with other cations of similar charge and size within the lattice structure of clay minerals in soil and/or sediment

(USEPA, 1979). This process, therefore, can significantly affect the mobility of an aqueous metal cation by removing it from solution under certain environmental conditions.

Sorption. The sorption of chemical constituents by inorganic particulate matter (i.e., soil or sediment) and organic compounds is an important process that affects mobility in the environment. This process is particularly important for the fate and transport of chemicals from soil or sediment to water (i.e., groundwater and surface water). In general, most metals exhibit a potential for adsorption to inorganic particulate matter and organic compounds (USEPA, 1979). Organic compounds also exhibit sorptive capability, but show greater variability in their ability to sorb to particulate or organic matter. The tendency for organic compounds to sorb to soils or sediment is reflected in their organic carbon partitioning coefficients (K_{oc}). K_{oc} is a measure of relative adsorption potential. The normal range of K_{oc} values is from 1 to 10^7 with higher values indicating greater sorption potential. Actual adsorption is chemical specific and is largely dependent on the organic content of the soil. The fraction of organic carbon, f_{oc}, in soil times the K_{oc} is defined as the distribution coefficient (K_d). The K_d is a ratio of the concentration adsorbed to the concentration partitioned to water.

Regardless of chemical class, sorption is a reversible process whereby desorption can be favored over sorption under certain environmental conditions (e.g., low pH for metals). For organic compounds in general, as the molecular weight increases and the aqueous solubility decreases (i.e., low polarity and high hydrophobicity), the sorptive binding affinity increases (i.e., K_{oc} increases). The tendency for chemical constituents to adsorb to inorganic particulate and/or organic compounds is a particularly important process because sorption to soils and/or sediments can effectively reduce a chemical constituent's mobility.

Biodegradation or Biotransformation. Biodegradation is a result of the enzyme-catalyzed transformation of chemicals. Organisms require energy, carbon, and essential nutrients from the environment for their growth and maintenance. In the process, chemicals from the environment will be transformed by enzymes into a form that can be used by the organism. The biodegradation rate is the rate by which contaminants will be degraded. The rate is a function of microbial biomass and a chemical's concentration under given environmental conditions. When a pollutant is introduced into the environment, there is often a lag time before biodegradation begins as the organism generates an enzyme capable of digesting the chemical. Cometabolism occurs when a pollutant can be biotransformed only in the presence of another compound that serves as a carbon and energy source (USEPA, 1979).

Bioaccumulation. Bioconcentration and bioaccumulation data are important when evaluating the impact of chemicals in the aquatic environment. The process is characterized by hydrophobic chemicals that can be partitioned into fat and lipid tissues and inorganic chemicals that can be partitioned into bone marrow. The bioconcentration factor is a measure of the concentration of a chemical in tissue (on a dry-weight basis) divided by the concentration in water and is a commonly used parameter to quantify bioconcentration (USEPA, 1979). The process is significant because bioaccumulation magnifies up through the food chain.

8.2.2 Persistence and Fate of Site 31 COPCs

This section discusses the persistence and fate characteristics for COPCs detected at Site 31. To focus the discussion of persistence and fate characteristics, only those constituents that were (1) identified by the human health or ERAs (presented in Chapters 6.0 and 7.0, respectively) as COPCs and (2) present above relevant standards will be addressed. These constituents are summarized below by medium for Site 31.

Human Health Assessment Constituents

- Surface soil: Aroclor-1260, dieldrin, aluminum, beryllium, cadmium, chromium, iron, lead, manganese, mercury, and silver

- Groundwater: TCE

Ecological Assessment Constituents

- Surface soil: Acetone, carbon disulfide, methylene chloride, 2-hexanone, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, di-*n*-octylphthalate, Aroclor-1260, 4,4'-DDE, dieldrin, aluminum, barium, beryllium, cadmium, chromium, copper, cyanide, lead, manganese, mercury, selenium, silver, and zinc.

The fate and persistence characteristics of these constituents is summarized below by analytical fraction.

VOCs. Acetone is very mobile in the environment and can move easily from soil to water or air. Acetone's solubility in water is infinite (i.e., it is miscible in water) and it does not partition strongly onto soil. The primary fate of acetone released into the environment is migration to water or volatilization into the atmosphere (if water is not present in soil). In water, acetone is highly susceptible to biodegradation and will also volatilize. Acetone is not persistent in the environment (Howard, 1990).

Carbon disulfide is a natural product of anaerobic biodegradation and is released to the atmosphere from oceans and land masses. Geothermal sources also contribute to carbon disulfide emissions. It may also be released as emissions and in wastewater during its production and use, in the production of viscose rayon, cellophane, and carbon tetrachloride, and as a solvent and fumigant. If released on land, carbon disulfide will be primarily lost by volatilization. It may adsorb to the soil and biodegrade. It may also readily leach into the ground where it may biodegrade. If released into water, carbon disulfide will be primarily lost due to volatilization. Adsorption to sediment and bioconcentration in fish should not be significant. In the atmosphere, carbon disulfide degrades by reacting with oxygen and photochemically produced hydroxyl radicals.

Volatilization is the major transport process for removal of methylene chloride from aquatic systems. Once in the troposphere, methylene chloride is attacked by hydroxyl radicals with the subsequent formation of carbon dioxide, carbon monoxide, and phosgene as principal, initial products. Any unreacted methylene chloride that reaches the stratosphere will undergo photodissociation (USEPA, 1979).

2-Hexanone is known by the synonyms butyl methyl ketone, methyl butyl ketone, and propyl acetone. It is a colorless liquid that is soluble in alcohol and ether and slightly soluble in water. Production data for 2-hexanone are limited and it may not be currently manufactured on an industrial scale in the United States. 2-Hexanone is used as a medium-evaporating solvent for nitrocellulose, acrylates, vinyl, and alkyd coatings.

2-Hexanone appears to be readily degradable in air, water, and soil; it is not likely to be a persistent environmental contaminant. If released to the atmosphere, 2-hexanone is expected to exist in the vapor phase where it will degrade by reaction with the sunlight-formed HO radical. If released to the aquatic environment, 2-hexanone may degrade by biodegradation or be physically removed by volatilization.

Volatilization is the major transport process for removal of TCE from aquatic systems. Once in the troposphere, TCE is attacked by hydroxyl radicals with the subsequent formation of dichloroacetyl chloride and phosgene as principal, initial products. Due to the relatively high reactivity of TCE with hydroxyl radicals in the troposphere, it is unlikely that unreacted TCE will reach the stratosphere. Although volatilization appears to be the most significant transport process of TCE, there is some evidence of bioaccumulation of TCE in marine organisms, but no evidence for biomagnification in food chains. In addition, no evidence was found of selective concentrations of TCE in marine sediments, thus indicating that adsorption may not be an important transport process (USEPA, 1979).

SVOCs. Three esters of phthalic acid were identified as COPCs. These phthalates are bis(2-ethylhexyl)phthalate, butylbenzylphthalate, and di-*n*-octylphthalate. Phthalates are principally used as plasticizers in the production of polyvinyl chloride (PVC) and vinyl chloride resins. PVC is used in many common household items such as toys, vinyl upholstery, shower curtains, adhesives, and as a component of paper and paperboard. Phthalate have also been used as a solvent, an acaracide in orchards, and as an inert ingredient in pesticide products (Agency for Toxic Substances and Disease Registry [ATSDR], 1991a).

Phthalates are widely used chemicals that enter the environment primarily through the disposal of industrial and municipal wastes in landfills. Phthalates tend to adsorb strongly to soil and sediments and to bioconcentrate in aquatic organisms. Sorption, bioaccumulation, and biodegradation are likely to be competing processes, with the dominant fate being determined by local environmental conditions (ATSDR, 1991a).

Phthalates have a strong tendency to be adsorbed to atmospheric particulate matter, soils, and sediments. Phthalate biodegradation in soil is slow since strong adsorption reduces the availability for degradation. Biodegradation is expected to occur under aerobic conditions. Phthalates may slowly volatilize into air. In air, direct photolysis and photooxidation are not likely (ATSDR, 1991a).

Phthalates are relatively insoluble; however, they may leach to the groundwater in the presence of common organic solvents such as alcohols and ketones. Phthalates in the water will undergo biodegradation under aerobic conditions. Chemical hydrolysis occurs too slowly to be important (ATSDR, 1991a).

It should be noted that since many phthalates are ubiquitous laboratory contaminants, it is very difficult to accurately determine the low levels of this compound that are usually present in the environment. Laboratory contamination often undermines the credibility of the data, and reported concentrations of many phthalates in environmental samples must be viewed with caution (ATSDR, 1991a).

Two polynuclear aromatic hydrocarbons (PAHs) were identified as COPCs (benzo(b)-fluoranthene and benzo(k)fluoranthene) at Site 31. PAHs are a group of chemicals that are formed during the incomplete burning of coal, oil, gas, wood, garbage, or other organic substances. PAHs can either be man-made or occur naturally. A few of the PAHs are used in medicines and to make dyes, plastics, and pesticides, while others are contained in asphalt used in road construction. There are more than 100 different PAH compounds (ATSDR, 1993).

In air, PAHs are found sorbed to particulates and as gases. Particle-bound PAHs can be transported long distances and are removed from the atmosphere through precipitation and dry deposition. PAHs are transported in surface water by volatilization and sorption to settling particles. The compounds are transformed in surface water by photooxidation, chemical oxidation, and microbial metabolism. Sorption of PAHs to soil and sediment increases with increasing organic content and is also directly dependant upon particle size. Microbial metabolism is the major process for degradation of PAHs in soil environments. PAHs have relatively low solubilities, but if transported through soils by either leaching or colloidal movement, PAHs can enter groundwater and be transported within an aquifer (ATSDR, 1993).

Pesticides and PCBs. Dieldrin ($C_{12}H_8C_{16}O$) was first produced with aldrin in the United States in 1948. It was used as an insecticide by direct application to soils in the corn and citrus industry, in preservation and termite-proofing of wood, and in termite-proofing of plastic and rubber coverings for electrical and telecommunications cables. It was also inserted directly into the subsurface soil for termite control. It was not produced in the United States after 1974 and was only imported for limited applications until 1985. Aldrin and dieldrin have not been used since 1985 (ATSDR, 1991b).

Aldrin is readily converted to dieldrin in the environment. Dieldrin is ubiquitous in the environment and found at low concentrations in all media since it is resistant to biotransformation and degradation. Past agricultural uses have resulted in the wide and persistent presence of dieldrin and uptake in a wide range of crops. Dieldrin bioconcentrates through various food chains. Dieldrin is present in many homes due to its use as a termicide (ATSDR, 1991b).

Like chlordane, dieldrin readily binds to the soil and is usually transported while bound to particulates in the atmosphere or to sediments in surface water runoff. Dieldrin does not move through subsurface soils very well and does not leach to groundwater. Dieldrin has a relatively low volatilization rate from soils due to its low vapor pressure (ATSDR, 1991b).

4,4'-DDE was first synthesized in 1874 along with DDT but not used as an insecticide until 1939. DDE and DDT were used extensively to control insect transmitted diseases such as malaria and typhus and as an insecticide in agriculture. In the United States, it was used mainly on cotton crops and to some extent on peanut and soybean crops as an insecticide. DDE and DDT were not used after 1972 except in cases of public health emergencies to control insect- transmitted diseases. U.S. companies no longer manufacture DDE and DDT; however, it is still manufactured and used in other parts of the world (ATSDR, 1992a).

In the U.S., large amounts of DDE and DDT were released to the soil by direct application of the pesticide or by direct or indirect releases during manufacture, formulation, storage, or disposal. DDE and DDT have also been released directly to surface water during the control of insect-transmitted diseases. A large source of DDE and DDT release to air occurred during these applications. There is a continued source of DDE and DDT into the air from other areas of the world where its use is substantial (ATSDR, 1992a).

DDE and DDT may be transported from one medium to another by the process of solubilization, adsorption, bioaccumulation, or volatilization. DDE and DDT have a prolonged persistence in soil and adsorb extensively to soil particles. DDE and DDT are only slightly soluble in water. Once bound to the soil, DDE and DDT are not easily displaced from the area of application except by erosion. DDE and DDT do not leach to groundwater and are most likely to move via transport of sediments to which they are bound. There, they are available for ingestion by organisms, such as bottom feeders. Volatilization of DDE and DDT can occur in soil and surface water to release it into the atmosphere. Particulates can also carry DDE and DDT or their degradation products through the atmosphere until they are removed by precipitation (ATSDR, 1992a).

Aroclor-1260 is a trade name for one of the many mixtures classified as PCBs. PCBs are a class of compounds in which 1-10 chlorine atoms are attached to the biphenyl structure. Aroclor-1260 (mostly $C_{12}H_4Cl_6$ and $C_{12}H_3Cl_7$)is a PCB mixture with a chlorine content of 60 percent (ATSDR, 1991c).

PCBs were produced commercially in the United States from 1929 until 1977. PCBs were used in electrical components such as capacitors and transformers and also used in plasticizers, surface coatings, inks, adhesives, pesticide extenders, and carbonless duplicating paper. PCBs still have a limited use as a slide-mounting medium for microscopes (ATSDR, 1991c).

The production of PCBs in the U.S. is prohibited and the use of PCB-containing materials still in service is restricted. In the past, Aroclor production has caused some PCB releases to air, municipal sewers, and land. Transformer and capacitor producers also discharged PCB-containing wastes. Currently, hazardous waste sites with PCB contaminated soils and disposal of electrical components containing PCBs represent the greatest sources of PCBs to the environment. PCBs are disposed of by incineration or placement in an off-site chemical-waste landfill (ATSDR, 1991c).

PCBs adsorb strongly to the soil and sediment and usually persist in the environment. Leaching of PCBs is very slow; however, they are very soluble in organic compounds. PCBs resist chemical and biological

degradation in the environment. Volatilization and biodegradation, while slow, account for the major route of removal of PCBs from water and soil. PCBs are especially persistent in the atmosphere and will transport far. Vapor-phase PCBs are removed from the atmosphere by photolysis and particulate-phase PCBs are removed by wet and dry deposition (ATSDR, 1991c).

Inorganics. Aluminum is the third most common element in the environment, though it not generally found in elevated concentrations in groundwater. Aluminum is known to complex readily, however, and high concentrations present in groundwater are generally due to silt-sized particles of aluminum-containing compounds often present as clays or aluminum hydroxides. Complexing and polymerization of the most common valence state of aluminum, Al^{+3}, represent the predominant transport mechanisms for aluminum in the environment (USEPA, 1979).

Barium is a dense alkaline earth metal that occurs naturally in ore deposits and makes up 0.05 percent of the earth's crust. Barium is found in igneous rocks, sandstone, shale, and coal. Barium enters the environment naturally through the weathering of rocks and minerals and is found in most soils and surface water (ATSDR, 1990).

Barium and its compounds may be found in nature or produced industrially for various uses. The largest natural source of barium is barite ore. Barite ore is utilized in paint, glass, and rubber products. Barium compounds are also used in the brick, ceramic, photographic, and chemical manufacturing industries (ATSDR, 1990).

Under natural conditions, barium is stable in the +2 valence state and is found primarily in the form of inorganic complexes. Conditions such as pH, Eh, cation exchange capacity, and the presence of sulfate, carbonate, and metal oxides will affect the partitioning of barium and its compounds in the environment. The major features of the biogeochemical cycle of barium include wet and dry deposition to land and surface water, leaching from geological formations to groundwater, adsorption to soil and sediment particulates, and biomagnification in terrestrial and aquatic food chains (ATSDR, 1990).

Beryllium has a very low solubility and is probably adsorbed onto soils as rainwater water moves downward through the vadose zone. Complexing agents may solubilize beryllium, but water quality data suggest that the concentration of this metal in heavily polluted water is low. Beryllium is generally found in the environment in particulate rather than dissolved form (USEPA, 1979). Though little information is available regarding the bioaccumulation of beryllium, studies have shown the beryllium does bioaccumulate at relatively low rates (USEPA, 1979).

Cadmium is relatively mobile in the environment compared to other heavy metals and is commonly transported by complexes, both organic and inorganic, or by hydrated cations. When available to the environment, cadmium is generally sorbed to sediment and soils, carried in solution by complexes, or bio-accumulated. Cadmium is generally present in the Cd^{+2} valence state when dissolved in water, thus the Eh potential has relatively little influence on the fate of dissolved cadmium. The pH of the system does effect the rate and nature of the complexing of cadmium, specifically with reference to humic acids (USEPA, 1979).

The nature of the sorption of cadmium is important in determining the disposition of cadmium to remobilization in the environment. Cadmium sorbed to carbonate minerals, precipitated as a stable solid compound, or coprecipitated with hydrous iron oxides is less likely to be mobilized by resuspension of sediments or biological activity. Cadmium sorbed to mineral surfaces or organic materials is more easily bioaccumulated or released in the dissolved state when sediments are disturbed (USEPA, 1979). Cadmium also is known to bioaccumulate to relatively high concentrations as compared to ambient concentrations in groundwater or surface water.

Chromium is present in minerals predominantly as Cr^{3+}. Dissolved chromium may be present as trivalent cations or as anions in which the oxidation state is Cr^{6+} (hexavalent). Six different ionic forms of chromium are considered to be stable in aqueous systems. The reduced forms are Cr^{3+}, $CrOH^{2+}$, $CrOH^{2+}$, $Cr(OH)_2^+$, and $Cr(OH)^{4-}$. Anionic forms present under oxidizing conditions include dichromate $Cr_2O_7^{2-}$ and chromate CrO_4^{2-}. The dissolved forms that predominate in reduced systems between pH 5 and pH 9 probably are $CrOH^{2+}$ and $Cr(OH)_2^+$. Concentrations of chromium in natural waters that have not been affected by waste disposal are commonly less than 10 µg/l (Hem, 1992).

Copper occurs naturally in the Earth's crust as the free native metal, Cu^0, or in Cu^+ or Cu^{2+} minerals. Copper forms rather stable sulfide minerals. Copper may occur in solution in either Cu^{2+} or Cu^{1+} oxidation states, but the redox conditions in oxygenated water and the tendency of Cu^+ to disproportionate ($2Cu^+$_$Cu^0 + Cu^{2+}$) favor the more oxidized form. Cupric ions form complexes with many different ligands. Concentrations of copper in groundwater are generally below predicted levels as a result of coprecipitation by oxides or adsorption on mineral surfaces (Hem, 1992).

Cyanide is represented by a diverse group of compounds whose fate in the environment may vary widely. Hydrogen cyanide, the most common and most toxic form of cyanide, may biodegrade, volatilize or adsorb to sediment. Once in solution, photodecomposition of the cyanide may occur. Cyanide also may be adsorbed by sediment, primarily clay, biological solids, and activated carbon (USEPA, 1979); however, cyanide appears to be fairly mobile in soil, indicating that adsorption may not pose a significant control on mobility. Volatilization of cyanide has been shown to be the dominant fate in activated sludge treatment systems (USEPA, 1979). Biodegradation of cyanide also is a common fate in natural waters. The importance of this process varies according to the concentration of cyanide present, pH, temperature, the concentration and acclimation of microbes to cyanide, and the availability of nutrients (USEPA, 1979). In organisms, cyanide interferes with the enzymes associated with cellular oxidation, thus cyanide is quickly metabolized or the organism dies; therefore, little potential for bioaccumulation of hydrogen cyanide exists.

Iron is the second most abundant element in the environment, though dissolved concentrations present in groundwater are generally low. The chemical behavior of iron and its solubility depend upon the oxidation intensity and pH of the environmental system in which it is found. Iron exists in two valence states Fe^{2+} and Fe^{3+}, with the Fe^{2+} or ferrous form the most common form of iron found in solution in the reducing conditions within the groundwater environment. Dissolved iron generally sorbs to sediment and may precipitate as iron hydroxide or may oxidize to form iron oxides and iron oxyhydroxides (USEPA, 1979). Iron also may complex with organic molecules, especially fluvic and humic acids. Aerated or flowing water with a pH in the range of 6.5 to 8.5 should contain little dissolved iron.

The predominant fate of lead in the environment is adsorption to inorganic solids, hydrous iron and manganese oxides, and organic material in sediments and soils. Adsorption represents a major sink for lead in the environment and tends to increase lead concentrations in sediments and soils. Sorbed lead may be remobilized by biomethylation, which generates tetramethyl lead. This lead compound may be volatilized or oxidized. The predominant form of lead in the environment is in the Pb^{+2} valence state; this form of lead readily complexes with OH^- and CO_3^{+2} ligands (USEPA, 1979). Bioaccumulation also is a common fate process for lead.

Manganese concentrations of all chemical species are reduced through the natural processes of dilution and dispersion. The common oxyhydroxide form of Mn^{+4} forms a precipitate that can be trapped by intergranular filtration in groundwater while Mn^{+2} readily forms organic complexes. In addition, significant activity coefficient depression with increased concentrations allows a solution to carry a higher concentration than thermodynamically predicted (Hem, 1992). Adsorption and desorption onto mineral grains and organic material moderate quick swings in manganese concentrations, but these are reversible reactions. Dissolution

and precipitation also are reversible reactions that can change the form of manganese in the system, but not the total amount.

Oxidation-reduction reactions tend to reach equilibrium slower with manganese than similar iron reactions, potentially due to the effects of organic complexes of manganese and bacterial influences. Manganese readily forms complexes with organic materials, though no reports of correlation between Mn^{+2} manganese concentrations and organic color exist (Hem, 1992).

Mercury occurs naturally as a mineral and is distributed throughout the environment. Mercury has three valence states and is found in the environment in the form of various inorganic and organic complexes and as the elemental metal. The major features of the biogeochemical cycle of mercury include degassing of mineral mercury from the lithosphere and hydrosphere, long-range transport in the atmosphere, wet and dry deposition to land and water surface, sorption to soil and sediment particulates, and bioaccumulation in terrestrial and aquatic food chains (ATSDR, 1992b).

Selenium is considered to be a nonmetal, and it is a member of the group IV elements. Selenium occurs in igneous rocks in concentrations of approximately 0.05 parts per million (ppm); in shale, 0.6 ppm; in sandstone, 0.05 ppm; and in limestone, 0.08 ppm. Most of the selenium found in natural waters results from the weathering of seleniferous rock.

Selenium exists in the environment in four oxidation states (elemental form, +6, +4, and -2) depending on the Eh or pH. In aerobic waters, selenium is present in the selenite or selenate oxidation state of +4 or +6. These chemical species are very soluble, and most of the selenium discharged into the aquatic environment is probably transported in these forms to the oceans. Under reducing conditions, selenium can form metal selenides either by direct reaction with metals or through substitution of sulfur in metal sulfides. Most of the metal selenides have a very low solubility in water (USEPA, 1979).

Selenium has a sorptive affinity for hydrous metal oxides, clays, and organic materials. Sorption by bed sediments or suspended solids can result in enrichment of selenium concentrations in the bed sediments. Sorption or precipitation with hydrous iron oxides is probably the major control on mobility of selenium in aerobic waters (USEPA, 1979).

Selenium can be methylated by a variety of organisms, including benthic microflora. In a reducing environment, hydrogen selenide may be formed. Methylated selenide and hydrogen selenide are both volatile and may escape into the atmosphere. Formation of volatile selenium compounds in the sediments can remobilize sorbed selenium (USEPA, 1979).

Silver is a rare element occurring in concentrations of about 0.1 ppm in the Earth's crust. Silver occurs primarily in the form of the sulfide (argentite), or is intimately associated with other metal sulfides, especially those of lead and copper. Silver is also commonly associated in nature with gold.

Sorption and precipitation processes are effective in reducing the concentration of dissolved silver and result in higher concentrations in the sediments than in the water. Sorption by manganese dioxide and precipitation with halides are probably the dominant controls on the mobility of silver in the aquatic environment. Organic materials also adsorb silver. Some silver is bioaccumulated, and the remainder is transported in solution to the oceans (USEPA, 1979).

Zinc is a natural element found in soil. Zinc is also deposited in soils by atmospheric deposition. It is released to the atmosphere as dust and fumes from zinc production facilities, lead smelters, brass works, automobile emissions, fuel combustion, incineration, and soil erosion. Zinc occurs in the environment in the +2 oxidation state. The relative mobility of zinc in soil is determined by the solubility of the compound, soil type, and pH and salinity of the soil (ATSDR, 1988).

8.2.3 Transport of Contaminants

This section discusses the transport of chemicals in various media at Site 31. All media, surface soil, subsurface soil, surface water, sediment, and groundwater will be discussed.

Surface Soil. Transport of the COPCs in soil is dependent on several factors, as discussed in Section 8.1. The primary agents of migration acting on soil include wind, water, and human activity. Soil can also act as a source medium from which the COPCs are transported to other media. Transport of the COPCs from soil via wind is not expected to be a major transport mechanism because of the vegetation present at Sites 31B, 31C, 31D, 31E, and 31F. Vegetative cover is an effective means of limiting wind erosion of soil. There is some potential for transport via wind at Site 31A because the drying beds have little or no vegetation; however, wind transport is unlikely because a 3.5-foot-high concrete wall surrounds each drying bed. Humans are effective at moving soil and can greatly affect the transport of soil-bound chemicals at hazardous waste sites. Under the current use of the areas associated with Site 31, human activity is not a major transport mechanism for the COPCs in soils. This condition may change based on the future use of each area associated with Site 31.

Water can cause the transport of soil, and therefore the COPCs in soil, via the mechanisms of physical transport of soil or the leaching of constituents from the soil to groundwater. Soil erosion, the physical transport of soil via surface water runoff, is currently not considered a major mechanism for the transport of the COPCs in soil at Site 31A because the drying beds are surrounded by concrete walls to contain the sludge during drying. Soil erosion is considered a major potential mechanism for the transport of the COPCs in soil at Sites 31B, 31C, and 31D because of the high grade (slope) of the land surface at these sites and the nature of the constituents remaining in the soil at the sites.

During the period of reported active disposal (1940 to 1990) at Sites 31B, 31C, and 31D, the potential for physical transport of both soil and COPCs via runoff does appear to be a significant mechanism for transport. These sites have a strong slope toward the Clear Creek Floodplain. Erosion control measures (terracing and grass seeding) have been taken at these sites to minimize runoff away from the sites.

Soil erosion is currently not considered a major mechanism for the transport of the COPCs in soil at Sites 31E and 31F because of (1) the low grade (slope) of the land surface at the site, (2) the heavy vegetation at the site, and (3) the nature of the constituents remaining in the soil at the site.

The majority of the inorganic analytes detected in the soil at Site 31 are likely to remain attached to the soil because most metal analytes adsorb readily to or are natural constituents of clays and other minerals.

Surface Water. There are no permanent surface water bodies associated with Site 31. Infiltration directly into the soil is presumed to occur during all rain events at Sites 31A, 31E, and 31F.

Currently, transport of the COPCs at Sites 31B, 31C, and 31D via runoff is considered possible because of the high slope of the land surface at these site; however, erosion control measures, the high infiltration capacity of soil at the site, the vegetation cover at the sites, and the tendency of the surface soil contaminants to remain attached to clays in the soil may reduce runoff.

Sediment. The transport of sediment at Site 31 by the action of humans is not currently a significant transport mechanism, as very little human activity occurs on the site. Transport of sediment in water (by saltation, traction, and suspension) are unlikely means of sediment transport at Site 31.

Groundwater. The groundwater samples collected during Phase IIB are thought to be representative of groundwater conditions at Site 31C. It is probable that particulate material of larger than colloidal size does

not easily move through the matrix of the aquifer. Colloid-sized material may be transported through the aquifer matrix at flow rates present in the surficial aquifer system at Site 31.

Hydrogeology at Site 31 is discussed in Section 5.4 of this report. The aquifer present at the site is the surficial (sand and gravel) aquifer. The COPC identified for groundwater is associated with the surficial aquifer system. Recharge of the surficial aquifer at Site 31 occurs primarily by rainfall on the site. Groundwater flow direction in the surficial aquifer at Sites 31A, 31B, 31C, and 31D is primarily to the southwest. Clear Creek acts as a point of discharge west of Site 31A (1,400 feet), Site 31B (2,600 feet), Site 31C (2,000 feet), and Site 31D (2,700 feet). Groundwater flow direction in the surficial aquifer at Sites 31E and 31F is primarily to the east-southeast. Big Coldwater Creek acts as a point of discharge approximately 9,000 feet east of Sites 31E and 31F.

Hydraulic data from a well cluster (WHF-31-4D and WHF-31-4S) completed at Site 31C indicate vertical gradient in this area was downward during the August 1997 survey. Hydraulic data from well clusters completed near Sites 31A, 31B, 31D, 31E and 31F indicate the vertical gradient in these areas changes over time in intensity and direction. The upper (approximately) 144 feet of material is a sand with varying amounts of silt and clay and also several significant clay layers, which may not act as a single hydraulic unit.

Horizontal hydraulic gradient estimates have been developed for the areas associated with Site 31. The gradient was calculated for the period between January 1997 and August 1997 and averaged (Table 5-22). The average hydraulic gradient in the surficial aquifer is 0.0061 ft/ft in a west-southwest direction for the Southwest Disposal Area, which is thought to be representative of Sites 31A, 31B, 31C, and 31D. The hydraulic gradient measured at Site 31C in August 1997 was 0.00063 ft/ft. The average hydraulic gradient in the surficial aquifer is 0.0030 ft/ft in a south-southeast direction for the Southeast Disposal Area, which is thought to be representative of Sites 31E and 31F.

Hydraulic conductivity testing was completed on monitoring wells in the Southwest Disposal Area near Sites 31A, 31B, 31C, and 31D. The average hydraulic conductivity value for this area is 0.0080 feet per minute (ft/min) or 11.45 ft/day (Table 5-4).

Hydraulic conductivity testing was completed on monitoring wells in the Southeast Disposal Area near Sites 31E and 31F. The average hydraulic conductivity value for this area is 0.0058 ft/min or 8.38 ft/day (Table 5-24).

Horizontal groundwater seepage velocity calculations have been completed for the surficial aquifer system at Site 31 using available hydraulic information (Section 5.2). A seepage velocity of 84 ft/yr was calculated using the average hydraulic conductivity from monitoring wells in the Southwest Disposal Area (0.23 ft/day), an average horizontal gradient of 0.0061 ft/ft for these monitoring wells, and an estimated effective porosity of 0.35. Disposal activities at Sites 31A, 31B, 31C, and 31D may have begun releasing contaminants to the aquifer approximately 50 years ago. Using the seepage velocity calculated above and a 50-year time frame, the total distance of potential contaminant migration was estimated to be approximately 4,200 feet.

A seepage velocity of 29 ft/yr was calculated using the average hydraulic conductivity from monitoring wells in the Southeast Disposal Area (0.08 ft/day), an average horizontal gradient of 0.0030 ft/ft for these monitoring wells, and an estimated effective porosity of 0.35. Disposal activities at Sites 31E and 31F may have begun releasing contaminants to the aquifer approximately 50 years ago. Using the seepage velocity calculated above and a 50-year time frame, the total distance of potential contaminant migration was estimated to be approximately 1,450 feet.

The use of the seepage velocity or the calculated distance presented above would most likely overestimate the transport of potential contaminants from the sites because it does not account for dilution, advection,

dispersion, or adsorption. Dividing either the seepage velocity or the distance by a correction factor of 1.4 (USEPA, 1988b) may provide a more accurate estimate for potential contaminant migration of 3,000 feet for Sites 31A, 31B, 31C, and 31D. Similarly, potential contaminant migration of 1,036 feet is estimated for Sites 31E and 31F.

The calculated estimate of 3,000 feet (Sites 31A through 31D) and 1,036 feet (Sites 31E and 31F) of migration relies on hydraulic conductivity values derived from slug test data. Slug tests provide a rough estimate of hydraulic conductivity that can be more accurately measured using pumping tests. Slug data may differ by up to a factor of 10 (Bouwer, 1989). If the hydraulic conductivity value used in the calculation was decreased by an order of magnitude, a total migration of only 300 feet (Sites 31A through 31D) and 103 feet (Sites 31E and 31F) would be expected for the 50-year history of the sites.

Clear Creek is likely the final point of discharge for groundwater from the surficial aquifer at Sites 31A, 31B, 31C, and 31D. Clear Creek is located approximately 1,400 to 2,700 feet west of the areas associated with Site 31. Big Coldwater Creek is likely the final point of discharge for groundwater from the surficial aquifer at Sites 31E and 31F. Big Coldwater Creek is located approximately 9,000 feet east of Sites 31E and 31F.

Surface water and sediment samples collected during Phase I of the RI from sampling locations located upstream and downstream of the expected groundwater discharge points from Sites 31A, 31B, 31C, and 31D do not conclusively support any impact to surface water quality of Clear Creek from past Site 31 activities (ABB-ES, 1992). The results of surface water and sediment sampling are presented in the RI/FS *Technical Memorandum No. 4, Surface Water and Sediments* (ABB-ES, 1992) and will also be presented in the concurrent Remedial Investigation Report for Site 39, Clear Creek Floodplain.

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APPENDIX A

SOIL ANALYTICAL DATA

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SOIL BORING AND MONITORING WELL LITHOLOGIC DATA

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Toxicity Analysis of Soil Samples at NAS Whiting Field

Plant Species at NAS Whiting Field

List of Rare, Endagered, and Threatened Species

TOXICITY ANALYSIS OF SOIL SAMPLES AT NAS WHITING FIELD

FINAL REPORT

TOXICITY ANALYSIS OF SOIL SAMPLES FROM NAS WHITING FIELD, MILTON, FLORIDA

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EXECUTIVE SUMMARY

Whole soil toxicity tests were conducted with the earthworm, *Eisenia foetida*, and lettuce seed, *Lactuca sativa* on soil samples collected from NAS Whiting Field, Milton, Florida. The effect criteria for the tests were survival and growth for *E. foetida* and percent germination for *L. sativa*. A total of 22 soils, including a laboratory control and 2 reference soils, were used in the toxicity tests. After 14 days of exposure, survival of *Eisenia foetida* in the laboratory control was not significantly different ($P \leq 0.05$) from survival in the 2 reference soils (BKN00101 and BKN00301). After 30 days of exposure, survivorship of *Eisenia foetida* in the laboratory control was not significantly different ($P \leq 0.05$) from the reference soil (BKN00301). Survival of *Eisenia foetida* in the reference soil, BKN00301, was significantly different ($P \leq 0.05$) from soils from sample station 11N00201, and the other reference, BKN00101. There were no significant differences ($P \leq 0.05$) in growth of *E. foetida* between the reference, BKN00301, and the laboratory control. Growth of *E. foetida* in the reference, BKN00301, was significantly different from growth in soil from sample station 10N00301. The bioaccumulation potential of the soils in the earthworm tests was determined by freezing the organisms and transporting them to an analytical laboratory for chemical analyses. Germination potential of lettuce seed, *Lactuca sativa*, in the laboratory control soil was not significantly different ($P \leq 0.05$) from the reference soil, BKN00301. Germination potential of lettuce seed, *Lactuca sativa*, in the reference sample, BKN00301, was significantly different ($P \leq 0.05$) from soils from sample stations 10N00201, 10N00501, 12N00201, 12N00501, 16N01201, 31N01201, 31N01301 and BKN00101.

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Appendix A: Chain-of-Custody and Traffic Information

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1.0 INTRODUCTION

Whole soil bioassays were conducted at Environmental Science & Engineering, Inc., (ESE), on samples collected from NAS Whiting Field, Milton, Florida, to determine the potential toxicity of the test samples. Test organisms used for toxicity tests were the earthworm, *Eisenia foetida*, and lettuce seed, *Lactuca sativa* (Buttercrunch variety). The criteria for effect for the *E. foetida* tests were mortality and growth, and the effect criterion for *L. sativa* was percent germination.

The tests were conducted in accordance with the U.S. Environmental Protection Agency methods and protocols entitled *Protocols for Short Term Toxicity Screening of Hazardous Waste Sites* (EPA/600/3-88/029, July 1988). All raw data related to this study are maintained at Environmental Science & Engineering, Inc., 14220 West Newberry Road, Gainesville, Florida.

2.0 SAMPLE RECEIPT

Test samples, including 3 reference soils from an uncontaminated site, were collected by ABB Environmental Service, Inc. (ABB-ES) personnel between January 5 and 9, 1996, and were delivered on ice to the ESE Gainesville Toxicology Laboratory between January 6 and 10, 1996. The grab soil samples were received in quantities of approximately 2 kilograms each. Samples used for the bioassays were identified as 10N00201, 10N00301, 10N00501, 11N00201, 11N00301, 11N00401, 11N00501, 12N00201, 12N00401, 12N00501, 16N00201, 16N00301, 16N00301D, 16N00601, 16N00801, 16N01201, 16N01301, 31N01201, 31N01301, BKN00301, BKN00301D and BKN00101. The reference soils BKN00301 and BKN00301D are duplicates of the same sample and were analyzed to determine the variability in the sampling and/or testing conditions. The results for this reference were, therefore, considered as one sample for the statistical analyses. Chain-of-custody and other traffic information pertaining to the samples are presented in Appendix A. Laboratory control soil for the earthworm bioassays was artificial soil comprising 10% sphagnum peat (Alachua County Feed and Seed Store, Gainesville, FL), 20% kaolinite clay, and 70% grade 70 silica sand (both from Feldspar Corporation, Edgar, FL), and

that for the lettuce seed test was 20-mesh silica sand obtained from Feldspar Corporation, Edgar, FL. All samples were stored in a refrigerator at 4 ± 2 °C prior to, and during the testing period. The tests were initiated from January 6 through 11, 1996 and terminated by February 10, 1996.

3.0 BIOASSAY PROCEDURES

3.1 TEST ORGANISMS

The earthworm, *E. foetida*, and the lettuce seed, *L. sativa*, were used as test species for the soil bioassays. *E. foetida* were obtained from Environmental Earthworm Projects, Inc. (Orlando, Florida) and *L. sativa* were obtained from Alachua County Feed and Seed Store (Gainesville, FL). *E. foetida*, obtained from the same culture batch, were > 60 day old adults, each weighing between 300 - 500 mg, and fully clitellate at test initiation. The supplier's breeding and holding conditions were similar to those of the testing conditions therefore earthworms were held <24 hours prior to test initiation. *L. sativa* seeds were of the Buttercrunch variety. The seeds (Lot # 48.1800-31642), supplied by Bakker Brothers of Idaho, Inc., Twin Falls, Idaho, were not treated with fungicides or repellents. According to records provided by the supplier, the seeds had a germination rate of 99.0% (January 1995).

3.2 DETERMINATION OF THE MOISTURE FRACTION, WATER HOLDING CAPACITY AND HYDRATION OF TEST SOILS

3.2.1 Moisture Fraction Determination

Upon receipt of soil samples, a 20 gram subsample of each soil was removed from the receiving container and placed in a dried, preweighed, numbered aluminum pan. The subsample was dried in a Blue-M oven at 100 °C for approximately 24 hours. The final dry weight (x) was subtracted from the initial wet weight (y) of the subsample and divided by the subsample weight (20 grams) to obtain the moisture fraction of the soil subsample (equation: y-x grams/20 grams).

3.2.2 Water Holding Capacity

Subsamples (10 grams) of the dry soils were placed in a 30 mL beaker, and an equal weight of deionized water were added and mixed into a slurry. A crepe paper filter, folded into quarters, was placed in a plastic funnel and evenly hydrated with deionized water. The weight of the funnel and hydrated paper was measured (x grams). The funnel was then set on a beaker and the soil slurry poured into the funnel; a minimal amount of deionized water was used to lightly rinse any remaining soil from the beaker and stir rod. An aluminum cover was placed over the funnel and the system was allowed to drain for 3 hours at room temperature. The final weight of the funnel was measured (y grams) and the water holding capacity was determined (equation: x grams - y grams).

3.2.3 Hydration of Soil Samples

Test soils for the earthworm tests were hydrated to 75 percent of water holding capacity, and those for the lettuce seed tests were hydrated to 85 percent of water holding capacity with deionized water. The amount of deionized water added to each individual test soil was determined according to the following equation:

Hydration water to be added (mL/100 g) = THW - EHW

THW (total hydration water desired, mL/100 g) =
$PHYD \times [(PAS \times WHC_{as} + (PWS \times WHC_{ts})]$

EHW (existing hydration water, mL/100 g) =
$[(PAS \times MF_{as}) + (PWS \times MF_{ts})] \times 100$

where PHYD = proportion of hydration required (eg. 0.75)
PAS = proportion of artificial soil in test soil (eg. 0.5)
WHC_{as} = water holding capacity of the artificial soil in mL/100 g
PWS = proportion of waste sample (dilution) in the test soil
WHC_{ts} = water holding capacity of the test sample in mL/100 g
MF_{as} = moisture fraction of the artificial soil
MF_{ts} = moisture fraction of the test sample

Soil samples with excess moisture content were allowed to air-dry at room temperature prior to use in the toxicity tests.

3.3 *EISENIA FOETIDA* TEST DESIGN

Eisenia foetida tests were 30-day survival, growth, and bioaccumulation potential bioassays using test soils from all the sample stations referenced above. The site soils in section 2.0, reference and the laboratory control soils were used without dilution. Approximately 200 grams of a thoroughly homogenized soil, hydrated to 75 percent of its water holding capacity, were placed into each of three replicate test chambers. Test chambers were 500 mL Mason glass canning jars with two airholes punched in the lid to allow for gas exchange. To initiate the tests, ten worms, weighed to the nearest 0.01 g, were randomly loaded on top of each test, control or reference soil and the lid was fastened in place. The worms in each exposure jar were then observed for 24 hours for any unusual behavior (e.g. lack of burrowing, inactive posture on surface) and pathological symptoms (e.g. hemorrhaging, swelling, elongation). The tests were conducted at room temperature, 20 ± 2 °C, with a daily photoperiod of continuous laboratory illumination. Test temperature was measured continuously by placing the probe of a Supco continuous temperature monitor into a replicate jar containing 200 grams of hydrated control soil. Soil pH was measured on day 0 and day 30 by evenly mixing 5 grams of test, reference, or control soil with 25 grams of deionized water. The pH was measured using an Orion SA 290 pH meter with an Orion 91-57 triode.

At 7- to 8-day intervals, the contents of each replicate chamber were emptied onto a glass pan to observe and enumerate the test organisms. The worms were counted and observed for mortality, hemorrhaging, swelling, and elongation; the presence of eggs and/or young was also noted. The earthworms were considered to be dead if they did not respond to a gentle mechanical stimulus (e.g. touch with a small spatula at the anterior end). The soil was rehydrated, when necessary, returned to the test chamber, and the worms reloaded on top of the

soil. Test organisms were not fed during the initial 13 days of testing, however, on days 14 and 22, approximately 3 grams of aged, ground alfalfa pellets (Alachua County Feed and Seed Store, Gainesville, FL) were added to each replicate test and control chamber following observation of the test organisms. On day 30, all organisms were removed from the test chambers, observed, counted, and weighed. The organisms were rinsed with deionized water, blotted dry, and kept on wet filter paper for approximately 24 hours to purge their gut contents.

The earthworms were prepared for shipment to the analytical laboratory for chemical analyses. Test organisms from each replicate chamber were placed into separate Ziploc® bags, labeled with the sample identification number, date, sponsor's name and replicate letter. The test organisms were stored frozen at -10 °C until shipment.

3.4 *LACTUCA SATIVA* TEST DESIGN

Lettuce seed, *Lactuca sativa*, tests were 120-hour whole soil germination tests. Approximately, 100 grams of the thoroughly homogenized test or control soil (20-mesh, washed silica sand Feldspar Corporation, Edgar, FL) hydrated to 85 percent of its water holding capacity, were placed in each of the three replicate chambers. Test chambers comprised of 150 x 20 mm glass petri dishes. Forty seeds were added to each replicate dish, spacing seeds at least 0.5 inches from the side of the dish. The seeds were lightly pressed into the soil with the bottom of a clean beaker. Ninety grams of a 16-mesh cover sand were spread over the seeds and hydrated test soil. Each petri dish was placed in the bottom of a 30 x 30 cm plastic Ziploc® bag and the bags were sealed leaving as much air space as possible.

The initial 48-hours of the seed germination tests were conducted in complete darkness and the final 72 hours were conducted under a photoperiod of 16 hours of light and 8 hours of darkness. The tests were conducted in an isolated room to maintain a daily temperature of 24 ± 2 °C. The temperature was measured continuously throughout the test by placing the probe of a Supco

continuous temperature monitor into a replicate petri dish containing control soil. The soil pH was measured on day 0 and day 5 by evenly mixing 5 grams of test, reference, or control soil with 25 g of deionized water. The pH was measured using an SA 290 Orion pH meter with an Orion 91-57 triode. The number of seeds that germinated were counted at test termination. Any seedling that protruded above the soil surface was counted as a germinated seed.

4.0 STATISTICAL ANALYSIS

All toxicity data were evaluated by a statistical comparison of mean survival, growth (as wet weight) or germination in the test samples with the reference and/or control samples using appropriate statistical procedures. Analysis of variance followed by the Duncan's Multiple Range Test (Snedecor and Cochran, 1980) and Dunnett's t-test (EPA/600/4-89/001) were used to determine statistical significance. Data were first checked for normality and homogeneity of variance using Shapiro-Wilk's and Bartlett's tests, respectively. If either of these assumptions were not met, data was transformed using a square-root arcsine transformation and checked for normality and homogeneity of variance prior to statistical analysis. For the purposes of this test, no data transformation was required.

5.0 RESULTS AND DISCUSSION

Soil temperature and pH remained within acceptable ranges throughout the duration of the soil bioassays. Soil pH ranged from 4.7 to 8.5 throughout the duration of the earthworm and lettuce seed toxicity tests (Table 2). Soil temperature for the *E. foetida* tests ranged from 21 to 22 °C and that of the *L. sativa* test remained at 24 ± 1 °C throughout the duration of the test. Light intensity ranged from 560 to 600 and 4300 to 4400 Lux for the *E. foetida* and *L. sativa* exposures, respectively.

Observations documented included egg production, reproductive behavior, and lethargy in the *E. foetida* exposure vessels. Survival and growth data for the soil bioassays with *E. foetida* are

presented in Table 3. Survival of *E. foetida* after 14 days was 100% in the all the site, 2 reference and the laboratory control soils, indicating no acute toxicity. After 30 days of exposure, survival for *E. foetida* in the reference soil, BKN00301, was not significantly different ($P \leq 0.05$) from survival in the laboratory control. Survivorship in the laboratory control was low due to possible dehydration of the artificial control soil in one set of controls. After 30 days of exposure, survival for *E. foetida* in the reference soil, BKN00301, and the laboratory control was significantly different ($P \leq 0.05$) from survival in soil from sample station 10N00201 and the second reference, BKN00101 (Table 3).

There were no significant differences ($P \leq 0.05$) in growth of *E. foetida* between the reference (BKN00301) and the laboratory control samples after 30 days of exposure. Growth of *E. foetida* in the reference sample, BKN00301 was significantly different ($P \leq 0.05$) from growth in soil from sample station 10N00301 (Table 3).

There were no significant differences ($P \leq 0.05$) in germination of *L. sativa* between the laboratory control and the reference soil, BKN00301. The mean germination rate in the laboratory control was 91 percent which was lower than the supplier's claim of 99 percent. The differences in germination rates between the laboratory control soil (sand) and the seed manufacturers' is not statistically significant. They may be attributed to the type of soil used in the laboratory (clean sand) as opposed to the supplier (rich soil) and the age of the seeds used in the test. The lettuce seed germination in the laboratory control and reference BKN00301, was significantly different from reference soil, BKN00101. Statistical significant difference ($P \leq 0.05$) in germination potential was determined between the reference BKN00301 soil and 7 site soils from sample stations 10N00201, 10N00501, 12N00201, 12N00501, 16N01201, 31N01201, and 31N01301. All the other soils supported normal germination of *L. sativa* (Table 4).

6.0 CONCLUSION

The 14-day soil bioassay test results indicated not acute toxicity of the site, reference and laboratory control soils to the earthworms. Chronic effects were observed after 30 days of exposure. Survivorship of *Eisenia foetida* in the laboratory control was not significantly different ($P \leq 0.05$) from the reference soil (BKN00301) after 30 days. Survival of *Eisenia foetida* in the reference soil, BKN00301, was significantly different ($P \leq 0.05$) from survival in soils from sample station 11N00201, and the other reference, BKN00101. Growth of *E. foetida* in the reference soil, BKN00301 was not significantly different from the laboratory control soil. Growth of *E. foetida* in the reference soil, BKN00301, was significantly different from growth in soil from sample station 10N00301.

Germination of *L. sativa* in the laboratory control soil was not significantly different ($P \leq 0.05$) from the reference soil, BKN00301. Germination of *L. sativa* in the reference soil, BKN00301, was significantly different ($P \leq 0.05$) from germination in soils from sample stations 10N00201, 10N00501, 12N00201, 12N00501, 16N01201, 31N01201, 31N01301 and BKN00101.

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Table 1. Summary of Whole Soil Bioassays Conducted with Samples from NAS Whiting Field, Milton, Florida (Page 1 of 2)

NAS WHITING FIELD, MILTON, FLORIDA - TOXICITY DATA SUMMARY			
Sample ID	***Eisenia foetida* % Survival After 14 days (30 days)**	***Eisenia foetida* % Growth[a] After 30 days**	***Lactuca sativa* % Germination After 120 hours**
CONTROL[b]	100 (81)	13	91[b]
10N00201	100 (100)	3.2	60*
10N00301	100 (100)	-5.0*	95
10N00501	100 (100)	6.2	83*
11N00201	100 (23)*	11.8	94
11N00301	100 (100)	4.6	91
11N00401	100 (100)	5.2	91
11N00501	100 (100)	7.2	86
12N00201	100 (100)	6.7	76*
12N00401	100 (100)	8.8	86
12N00501	100 (100)	0	72*
16N00201	100 (100)	27.6	96
16N00301	100 (100)	8.3	91
16N00301D	100 (100)	-4.8	89
16N00601	100 (100)	12.3	94
16N00801	100 (100)	-1.6	97
16N01201	100 (100)	2.3	56*
16N01301	100 (100)	9.4	92
31N01201	100 (100)	30.8	77*
31N01301	100 (100)	18.6	60*
BKN00301(REF)	100 (100)	10.9	97
BKN00301D(REF)	100 (100)	5.0	90
BKN00101(REF)	100 (63)*	29.1	43*

Table 1. Summary of Whole Soil Bioassays Conducted with Samples from NAS Whiting Field, Milton, Florida (Page 2 of 2)

[a]Growth of *E. foetida*, as mean individual wet weight, is expressed in grams.
* = Significantly different from the laboratory controls ([b] Pooled controls) and reference BKN00301.

Source: ESE 1996

Table 2. pH of Soil Samples from NAS Whiting Field, Milton, Florida During a Toxicity Test with the earthworm, *Eisenia foetida* and the lettuce seed, *Lactuca sativa* (Page 1 of 2)

	Eisenia foetida		*Lactuca sativa*	
Sample ID	Day 0	Day 30	Day 0	Day 5
CONTROL	7.0	7.2	7.0	6.8
10N00201	7.2	7.2	7.2	7.5
10N00301	7.3	7.4	7.3	6.6
10N00501	6.5	6.6	6.5	6.1
11N00201	6.4	6.5	6.4	6.4
11N00301	6.1	6.8	6.1	6.0
11N00401	6.3	6.6	6.3	6.2
11N00501	6.2	6.7	6.2	6.1
12N00201	6.7	6.9	6.7	6.4
12N00401	6.8	6.7	6.8	6.4
12N00501	7.3	7.4	7.3	6.8
16N00201	6.3	6.6	6.3	6.0
16N00301	5.9	6.4	5.9	5.9
16N00301D	5.6	6.0	5.6	5.9
16N00601	6.0	6.6	6.0	6.2
16N00801	5.6	6.7	5.6	5.7
16N01201	5.9	6.7	5.9	6.3
16N01301	6.2	7.1	6.2	6.2

Table 2. pH of Soil Samples from NAS Whiting Field, Milton, Florida During a Toxicity Test with the earthworm, *Eisenia foetida* and the lettuce seed, *Lactuca sativa* (Page 2 of 2)

	Eisenia foetida		*Lactuca sativa*	
Sample ID	Day 0	Day 30	Day 0	Day 5
31N01201	5.0	6.5	5.0	5.2
31N01301	5.0	6.9	5.0	5.1
BKN00301	5.7	6.3	5.7	5.7
BKN00301D	5.6	6.4	5.6	5.8
BKN00101	4.7	8.5	4.7	5.0

Source: ESE, 1996.

Table 3. Survival and Growth of the Earthworm, *Eisenia foetida*, After 30 Days of Exposure to Whole Soil Samples Collected from NAS Whiting Field, Milton, Florida (Page 1 of 2)

SAMPLE ID	NUMBER ALIVE (PERCENT SURVIVAL)[a]				GROWTH[b] (PERCENT)
	DAY 7	DAY 14	DAY 22	DAY 30	
CONTROL	30 (100)	30 (100)	30 (100)	24 (81)	13.0
10N00201	30 (100)	30 (100)	30 (100)	30 (100)	3.2
10N00301	30 (100)	30 (100)	30 (100)	30 (100)	-5.0*
10N00501	30 (100)	30 (100)	30 (100)	30 (100)	6.2
11N00201	30 (100)	30 (100)	8 (27)	7 (23)*	11.8
11N00301	30 (100)	30 (100)	30 (100)	30 (100)	4.6
11N00401	30 (100)	30 (100)	30 (100)	30 (100)	5.2
11N00501	30 (100)	30 (100)	30 (100)	30 (100)	7.2
12N00201	30 (100)	30 (100)	30 (100)	30 (100)	6.7
12N00401	30 (100)	30 (100)	30 (100)	30 (100)	8.8
12N00501	30 (100)	30 (100)	30 (100)	30 (100)	0
16N00201	30 (100)	30 (100)	30 (100)	30 (100)	27.6
16N00301	30 (100)	30 (100)	30 (100)	30 (100)	8.3
16N00301D	30 (100)	30 (100)	30 (100)	30 (100)	-4.8
16N00601	30 (100)	30 (100)	30 (100)	30 (100)	12.3
16N00801	30 (100)	30 (100)	30 (100)	30 (100)	-1.6
16N01201	30 (100)	30 (100)	30 (100)	30 (100)	2.3

Table 3. Survival and Growth of the Earthworm, *Eisenia foetida*, After 30 Days of Exposure of Whole Soil Samples Collected from NAS Whiting Field, Milton, Florida (Page 2 of 2)

SAMPLE ID	NUMBER ALIVE (PERCENT SURVIVAL)[a]				GROWTH[b] (PERCENT)
	DAY 7	DAY 14	DAY 22	DAY 30	
16N01301	30 (100)	30 (100)	30 (100)	30 (100)	9.4
31N01201	30 (100)	30 (100)	30 (100)	30 (100)	30.8
31N01301	30 (100)	30 (100)	30 (100)	30 (100)	18.6
BKN00301 (REF)[c]	30 (100)	30 (100)	30 (100)	30 (100)	10.9
BKN00301D (REF)	30 (100)	30 (100)	30 (100)	30 (100)	5.0
BKN00101 (REF)	30 (100)	30 (100)	30 (100)	19 (63)*	29.9

[a] Three replicates of 10 organisms each used. Percent survival = Number Alive/Number Exposed x 100.
[b] Growth (Individual Final Weight - Individual Original Weight/Individual Original Weight x 100).
[c] REF = Reference sample.
* = Significantly different from the laboratory controls (pooled controls) and reference BKN00301.

Source: ESE, 1996.

Table 4. Germination of lettuce seed, *Lactuca sativa*, After 120 Hours of Exposure to Whole Soil Samples Collected from NAS Whiting Field, Milton, Florida (Page 1 of 2)

SAMPLE ID	NUMBER EXPOSED[a]	NUMBER GERMINATED	PERCENT GERMINATION[b]
CONTROL[c]	120	109	91
10N00201	120	72	60*
10N00301	120	114	95
10N00501	120	100	83*
11N00201	120	113	94
11N00301	120	109	91
11N00401	120	109	91
11N00501	120	103	86
12N00201	120	91	76*
12N00401	120	103	86
12N00501	120	86	72*
16N00201	120	115	96
16N00301	120	109	91
16N00301D	120	106	89
16N00601	120	116	97
16N00801	120	113	94
16N01201	120	67	56*

Table 4. Germination of lettuce seed, *Lactuca sativa*, After 120 Hours of Exposure of Whole Soil Samples Collected from NAS Whiting Field, Milton, Florida (Page 2 of 2)

SAMPLE ID	NUMBER EXPOSED[a]	NUMBER GERMINATED	PERCENT GERMINATION[b]
16N01301	120	110	92
31N01201	120	92	77*
31N01301	120	71	60*
BKN00301 (REF)[d]	120	116	97
BKN00301D (REF)	120	108	90
BKN00101 (REF)	120	51	43*

[a] Three replicates of 40 organisms each used.
[b] Percent germination = Number germinated/Number Exposed x 100.
[c] Pooled controls.
[d] REF = Reference sample.
* = Significantly different from the laboratory controls ([b] Pooled controls) and reference BKN00301.

Source: ESE, 1996.

APPENDIX A - CHAIN-OF-CUSTODY AND TRAFFIC INFORMATION

Environmental Science and Engineering
Aquatic Toxicology Department
Gainesville, Florida

Page: 2
Form: 063
Effective: December 1989

SAMPLE CHAIN-OF-CUSTODY LOG SHEET

Facility: NAS WHITING FIELD
Location: BACKGROUND AREAS
NPDES Number: _____ Outfall Number: _____

Field Parameters:
Temperature _____ Salinity/Conductivity _____ pH _____
DO _____ Total Residual Chlorine (if chlorinated) _____
Receiving Body of Water: _____ Salinity of Water Body: _____
Observations/Remarks: _____

Field Measurements by (Signature): _____
Date: _____ Time: _____
Sampling Point (Description): _____
Samples Collected by (Signature): _____
Date: _____ Time: _____

Sample ID	Sample Type Grab	Sample Type Comp	Date	Time	Remarks
BKN00301	X		1/9/96	15:15	
BKN00301D	X		1/9/96	15:15	
BKN00101	X		1/9/96	15:50	
Total # of Samples	3				

Relinquished by (Signature)	Received by (Signature)	Date/Time
[illegible]		1/9/96 1730
Relinquished by (Signature)	Received by (Signature)	Date/Time
Relinquished by (Signature)	Received by (Signature)	Date/Time
Relinquished to Carrier (Please list carrier) Federal Express	Received from Carrier [illegible]	Date/Time 1/10/96/1100
Relinquished by (Signature)	Received by (Signature)	Date/Time

FORM: CHAIN

Environmental Science and Engineering
Aquatic Toxicology Department
Gainesville, Florida

Page: 1
Form: 063
Effective: December 1989

SAMPLE CHAIN-OF-CUSTODY LOG SHEET

Facility: NAS WHITING FIELD
Location: SITE 16
NPDES Number: _____ Outfall Number: _____

Field Parameters:
Temperature _____ Salinity/Conductivity _____ pH _____
DO _____ Total Residual Chlorine (if chlorinated) _____
Receiving Body of Water: _____ Salinity of Water Body: _____
Observations/Remarks: _____

Field Measurements by (Signature): _____
Date: _____ Time: _____
Sampling Point (Description): _____
Samples Collected by (Signature): _____
Date: _____ Time: _____

Sample ID	Sample Type Grab	Sample Type Comp	Date	Time	Remarks
16N00201	X		1/9/96	0855	
16N00301	X		1/9/96	0935	
16N00301D	X		1/9/96	0935	
16N00801	X		1/9/96	1015	
16N00601	X		1/9/96	1110	
16N01201	X		1/9/96	1145	
16N01301	X		1/9/96	1230	
Total # of Samples	7				

Relinquished by (Signature)	Received by (Signature)	Date/Time
Felix Rizk		1/9/96 16:50
Relinquished by (Signature)	Received by (Signature)	Date/Time
Relinquished by (Signature)	Received by (Signature)	Date/Time
Relinquished to Carrier (Please list carrier) Federal Express	Received from Carrier Nicolas P. Keyla	Date/Time 1/10/96/1100
Relinquished by (Signature)	Received by (Signature)	Date/Time

FORM: CHAIN

CHARLES DURANT
ABB-ES
(904)-656-1293

Environmental Science and Engineering
Aquatic Toxicology Department
Gainesville, Florida

Page: 1
Form: 063
Effective: December 1989

SAMPLE CHAIN-OF-CUSTODY LOG SHEET

Facility: NAS WHITING FIELD, MILTON, FL
Location: Sites 10/12
NPDES Number: — Outfall Number: —

Field Parameters:
Temperature _____ Salinity/Conductivity _____ pH _____
DO _____ Total Residual Chlorine (if chlorinated) _____
Receiving Body of Water: _____ Salinity of Water Body: _____
Observations/Remarks: _____

Field Measurements by (Signature): _____
Date: _____ Time: _____
Sampling Point (Description): _____
Samples Collected by (Signature): _____
Date: _____ Time: _____

Sample ID	Sample Type Grab	Sample Type Comp	Date	Time	Remarks
10N00201	✓		01-05-96	13:30	
10N00301	✓		01-05-96	14:50 ~~02:40~~ JR.	
10N00501	✓		01-05-96	02:40	
12N00201	✓		01-05-96	03:40	
12N00401	✓		01-05-96	15:45	
12N00501	✓		01-05-96	16:30	
—	—		—		
Total # of Samples	6				

Relinquished by (Signature)	Received by (Signature)	Date/Time
Felix Ryle		
Relinquished by (Signature)	Received by (Signature)	Date/Time
Relinquished by (Signature)	Received by (Signature)	Date/Time
Relinquished to Carrier (Please list carrier) Felix Ryle, Federal Express	Received from Carrier FedEx # 7043239232 Max Overman	Date/Time 1/06/96 1300
Relinquished by (Signature)	Received by (Signature)	Date/Time

FORM: CHAIN

Environmental Science and Engineering
Aquatic Toxicology Department
Gainesville, Florida

Page: 1
Form: 063
Effective: December 1989

SAMPLE CHAIN-OF-CUSTODY LOG SHEET

Facility: ABB-ES
Location: NAS Whiting - Milton Fl.
NPDES Number: _____ Outfall Number: _____

Field Parameters:
Temperature _____ Salinity/Conductivity _____ pH _____
DO _____ Total Residual Chlorine (if chlorinated) _____
Receiving Body of Water: _____ Salinity of Water Body: _____
Observations/Remarks: _____

Field Measurements by (Signature): _____
Date: _____ Time: _____
Sampling Point (Description): _____
Samples Collected by (Signature): _____
Date: _____ Time: _____

Sample ID	Sample Type Grab	Sample Type Comp	Date	Time	Remarks
11N00501	X		1/6/96	13:40	
11N00201	X		1/6/96	10:45	
11N00301	X		1/7/96	10:45	
11N00401	X		1/7/96	9:45	
31N01201	X		1/8/96	08:55	
31N01301	X		1/8/96	09:35	

Total # of Samples: 6

Relinquished by (Signature)	Received by (Signature)	Date/Time
Felix Rizk		1/8/96 1830
Relinquished by (Signature)	Received by (Signature)	Date/Time
Relinquished by (Signature)	Received by (Signature)	Date/Time
Relinquished to Carrier (Please list carrier) Federal Express	Received from Carrier	Date/Time
Relinquished by (Signature) FED-EX	Received by (Signature) C Nesto	Date/Time 1-9-96/1130

FORM: CHAIN

APPENDIX B - RELEVANT RAW DATA

Project: 3196400-0100-3100

DAILY LOG

1/06/96 1315 MO — 6 soil samples received; the samples were identified as 10N00201, 10N00301, 10N00501, 12N00201, 12N00401, and 12N00501.

For each sample, a 20 g subsample was removed, placed in a weigh pan, and placed in a drying oven set at 100°C. Calculations of moisture fraction follow. All samples stored at 4 ± 2°C.

BATCH II

Moisture fraction:

Sample	Initial weight (g)	Final Dry weight (g)	% Moisture
Control	22.7080	19.8589	0.142
10N00201	21.1029	18.8899	0.111
10N00301	21.0915	18.5126	0.129
10N00501	21.1093	19.1515	0.098
12N00201	21.1113	19.2473	0.093
12N00401	21.1188	19.2312	0.094
12N00501	21.1056	19.3373	0.088

Weigh pans with soil placed in drying oven on 1/6/96 1400.

1/07/96 - Weigh pans were removed from oven at 0810 and placed in dessicator for 30 minutes to cool. Pans were then weighed and final wt. was recorded

Project: 3196400 - ~~0300~~ 0100 - 3100
Hi Cl Wcg.

DAILY LOG

01-07-96 NJK - WATER HOLDING CAPACITY

10g of dried sample was placed into a 30-mL beaker. 10mL of DI water was added to each sample + mixed thoroughly with a glass rod. This slurry was added to a pre-weighed funnel and hydrated filter paper. The funnel was placed in an Erlenmeyer flask and the top of the funnel was covered with foil. The sample was then left to drain for 3 hours at room temperature. The funnel, containing the hydrated filter paper and sample was then weighed and the water holding capacity determined.

SAMPLE	PRE-WEIGHT (filter funnel + hydrated filter paper)	FINAL WT. (g)	WHC
CONTROL	22.9186 g	47.5100	24.5924 ~~24.59~~ mo 1/7/96 (PO)
10N00201	22.9590 g	36.2888	13.33 ~~13.33~~
10N00301	23.0530 g	36.7238	13.67 ~~13.67~~
10N00501	22.8009 g	36.2720	13.47 ~~13.47~~
12N00201	22.9615 g	36.5398	13.58 ~~13.58~~
12N00401	23.0850 g	36.5547	13.47 ~~13.47~~
12N00501	22.7549 g	36.3039	13.55 ~~13.55~~

Project: 31964000-0100-3100

DAILY LOG

1-7-96 NJK - WORM WEIGHTS (GROUP) (g)

CONTROL - A ~~14.4~~ ~~18.7~~ 18.4 12N00501 - A 25.8
B ~~13.5~~ 19.9 B 19.2
C ~~16.9~~ 18.7 C 19.3

10N00201 - A 13.2
B 12.1
C 14.3

10N00301 - A ~~16.8~~ 15.4
B 15.8
C 15.0

10N00501 - A 16.7
B 17.5
C 18.7

12N00201 - A 17.9
B 20.4
C 20.7

12N00401 - A 24.0
B 20.5
C 22.5

Project: 3196400-0100-3100

DAILY LOG

1-7-95 CH HYDRATION: water added (mL/100g) = (%MOISTURE)(WHC$_{wt}$) − (HF$_{wt}$)(100)
THW$_{wt}$ − EHW$_{wt}$

(Earthworms 75% WHC LETTUCE 85% WHC)

Sample	DI water added (mL/100g) EARTHWORM	LETTUCE SEED
CTRL	4.24	6.7
10N-201	-1.10*	0.23
10N-301	-2.65*	-1.28*
10N-501	0.30	1.65
10N-201	0.89	2.24
12N-401	0.70	2.05
12N-301	1.36	2.72

* samples dried at room temp. from 1-6-95 thru 1-7-95 (until test initiation).

EARTHWORM TEST SET UP: 200g of each (hydrated) sample was placed into 3 replicate chambers (1 pint glass jars). The pre-weighed worms were placed in the jars (10 worms/replicate). Lids with 2 air-holes were screwed onto containers. The test chambers were placed in area #8. Light intensity = 600 Lux. CTM-6 placed in area & probe inserted into control blank. Organisms will not be fed until day 14. Organisms appear in normal condition.

Project: 3196400.0100-3100

DAILY LOG

1-7-95 CR (cont'd) LETTUCE SEED TEST SET-UP.
100g of hydrated sample was placed into 3 replicate chambers + leveled. 40 seeds were placed on the soil, well-spaced + 0.5 in. from the side of the glass petri dish edge + pressed into the soil. 90 g ~~ref~~ of over sand (16mm mesh) was evenly distributed over the seeds in each replicate chamber. The dishes were then placed in 12x12 in ziplock® bags + sealed, leaving as much airspace as possible. The test chambers were placed in bath # under complete darkness for ~~24~~ 48 hrs. CTM placed in bath + probe placed in control blank. Before use in test all seeds were inspected for damage + size uniformity. Seeds appear in normal condition. Light intensity = 0 Lux.

Project: 3196400-0100-3100

DAILY LOG

1/6/96 CR Soils checked in. weigh pans taken from the oven (after 24hrs @ 100°C) and placed in dessicator for 30 mins to cool. Pans weighed & 15-20 g of each soil placed in approximately labeled pan & put in Blue-M oven to dry @ 124°C

BATCH 2

	Sample	Initial pan + soil	final dry wt	% MOISTURE
20	11N00201	21.1160	19.3279	0.0994
20	11N00301	21.1950	18.7886	0.1203
20	11N00101	21.2383	18.7812	0.1229
20	11N00501	21.5320	18.1495	0.1691
14.5	31S01201	20.6183	18.6859	0.0991
15	31S01301	19.6137	17.7833	0.1220
		1-9-96 CR	1-10-96 CR	1-10-96 CR

Sample 11N00501 left out to dry, remaining samples placed in frig @ 4±2°C.

Tests for 1ST set of earthworm samples restarted due to test organisms exceeding 300-500 limit. SEE BELOW FOR WORM WTS (GRP)

Sample		g.					
CTRL	A	4.9	10N301	A	4.5	12N00201	A 4.9
	B	4.8		B	5.0		B 4.0
	C	4.3		C	4.8		C 4.6
10N-201	A	4.4	10N501	A	5.1	12N-401	A 4.0
	B	4.3		B	4.5		B 5.0
	C	4.3		C	~~5.0~~ 4.9 1-8-96		C 4.6
12N-501	A	5.2	12N-501	B	4.0	12N-501	C 5.0

Project: 3196400-0100-3100

DAILY LOG

1/09/96 CR Light photoperiod of 16hl : 8hD began at 1530. Light intensity = 4300 LUX. Temperature maintaining ~~25~~ 24±1°C at this time.

(BATCH 1)

Earthworm replicate jars checked. All worms buried. Temp = 22°C.

1/10/96 CR Weigh pans removed from oven & placed in dessicator to cool, before weighing. MF determined. 10 grams of the dried samples then used in determining WHC for each sample (see pg 3) @ 930-WHC start 1230-WHC det.

(BATCH 2)

SAMPLE	PREWEIGHT	FINAL WT	WHC
11W-201	25.8875	38.7516	12.86
11W-301	25.8735	39.2590	13.39
11W-401	25.6226	38.8728 / 39.2640 CR	13.25
11W-501	25.7522	39.1376	13.39
31-1201	26.2848	39.5828	13.30
31-1301	25.8652	39.4858	13.62

1/10/96 CR HYDRATION (BATCH 2) → DI water added (mL/100g)

	EARTHWORM	LETTUCE SEED
11W-201	0.71	1.99
11W-301	-1.99	-0.65
11W-401	-2.35	-1.03
11W-501	-6.87	-5.53
31-1201	0.07	1.40
31-1301	-1.98	-0.62

Project: 31964000-0000-3100

DAILY LOG

1/10/96 CR Tests with samples from batch #2 initiated @ 1530. with hydrated samples

1/11/96 CR WHC (BATCH #3)

	PREWEIGHT	FINAL WT	WHC
16N201	26.1702	39.2116	13.04
16N-301	25.8221	40.7461	14.92
16N-301D	26.2299	40.4428	14.21
16N-801	25.7858	40.1077	14.32
16N-601	25.4681	39.7432	14.96
16N-1201	26.0169	no improv 40.4299	13.73
16N-1301	25.6958	39.2633	13.57
BICN-301	26.0097	39.7236	13.71
BICN-301D	25.8726	39.8859	14.01
BKN-101	25.7587	38.8492	13.09

HYDRATION (DI H_2O / 100g)	EARTHWORM	LETTUCE SEED
16N-201	-0.33	0.97
16N-301	-10.97	-9.48
16N-301D	-12.92	-11.50
16N-801	-3.98	-2.55
16N-1201	-13.36	-11.99
16N-1301	1.07	2.42
BICN-301	-1.54	-0.17
BICN-301D	-1.29	0.11
BKN-101	1.83	3.15
16N-601	-7.63	-6.13

Project: 3196400-0100-3100

DAILY LOG

1/10/96 CR GROUP WORM WEIGHTS (g) - BATCH 2

11N-201	A 3.78	31S-1201	A 4.31
	B 4.98		B 4.97
	C 4.65		C 4.64
11N-301	A 4.49	31S-1301	A 4.97
	B 4.87		B 4.59
	C ~~4.34~~ 4.89		C 4.92
11N-401	A 4.43	CTRL	A 4.37
	B 4.78		B 4.96
	C 4.67		C 4.95
11N-501	A 4.90		
	B 4.72		
	C 4.47		

1/10/96 CR. BATCH 3 arrived & checked in. 20g subsample taken & placed in dried weigh pan & placed in Blue-M oven @ 1145 16N1201 left out to dry

Sample	Initial wt	Final weight	% MOISTURE
16N-201	21.1272	19.1059	0.1011
16N-301	21.1095	16.6770	0.2216
16N-301D	21.1145	16.3982	0.2358
16N-801	21.1494	18.2047	0.1472
16N-601	21.1053	17.3354	0.1885
16N-1201	21.1952	16.4640	0.2366
16N-1301	21.0917	19.2696	0.0911
BKN-301	21.1400	18.7753	0.1182
BKN-301D	21.1371	18.7762	0.1180
BKN-101	21.1411	19.5461	0.0798

Project: 31964400-0100-3100

DAILY LOG

1-11-96 NJK GROUP WORM WEIGHTS (g) BATCH 3

16N201-A	4.09	16N1301-A	4.40
B	3.99	B	4.65
C	3.68	C	3.76
16N301-A	4.33	BKN301-A	4.20
B	4.67	B	4.47
C	4.39	C	4.33
16N301D-A	4.62	BKN301D-A	4.69
B	4.42	B	4.70
C	4.61	C	4.52
16N601-A	4.60	BKN101-A	4.11
B	4.64	B	4.13
C	4.46	C	4.23
16N801-A	4.09	CTRL-A	3.91
B	4.58	B	4.71
C	4.13	C	4.24
16N1201-A	4.16		
B	4.54		
C	4.40		

1-11-96 CL Tests initiated with BATCH 3 samples @1530 with hydrated samples

Project: 3196400-0100-3100

DAILY LOG

1-12-96 CR Temperature: Earthworm test 22°C
Lettuce seed test 24°C
Lettuce seed test with batch 1 samples ended. Seeds that germinated counted. pH for each sample determined by mixing 5 grams of soil with 25mL of DI water & stirring while measuring the pH value. LETTUCE SEED: LUX → 4375 EARTHWORM: LUX → 560

1-13-96 MO Temperature: Earthworms: 22°C; Lettuce seeds: 25°C

1-14-96 MO Temperature: Earthworms: 22°C; Lettuce seeds: 24°C

1-15-96 CR Temperature: Earthworm 22°C; Lettuce 24°C
Lettuce seed tests with batch ~~3~~ 2 samples ended. Seeds (germinated) counted. pH determined.
NOTE: All batches were tested in the same testing area. Batch 2 & 3 were isolated the initial 48 hours in seperate chambers within the same room. LETTUCE SEED: LUX → 4460

1-16-96 CR BATCH 1 earthworm test soils rehydrated if necessary and test organisms observed. Organisms were not fed. TEMP: 21°C. Batch 3 Lettuce seed test ended

1-17-96 CR BATCH 2 earthworm test soils re-hydrated, if necessary & test organisms observed. Organisms not fed. TEMP 22°C

Project: 319640C- 0CC0-3100

DAILY LOG

H8-96CR Batch 3 earthworm test soils rehydrated if necessary + test organisms observed. Organisms not fed. TEMP = 22°C. NOTE Earthworms in BKD-101 seem lethargic.

1-19-96 CR TEMP = 22°C

1-20-96 CR TEMP = 22°C

1-21-96 CR TEMP = 21°C

1-22-96 CR TEMP = 21°C

1-23-96 CR BATCH 1 Earthworm test soils rehydrated if necessary + test organisms observed. Organisms fed 4.0 g of aged ground alfalfa per rep. TEMP = 21°C

1-24-96 CR BATCH 2 worms observed + soils rehydrated if necessary. Organisms fed 4.0 g of aged ground alfalfa per rep. TEMP = 21°C

1-25-96 CR BATCH 3 worms observed + soils rehydrated if necessary. Organisms fed 4.0 g of aged ground alfalfa per rep. TEMP = 22°C

1-26-96 CR TEMP = 22°C ; LUX (EARTHWORM) → BKD

1-27-96 CR TEMP = 22°C

1-28-96 CR TEMP = 22°C

1-29-96 CR TEMP = 22°C

1-30-96 CR TEMP = 21°C

1-31-96 CR TEMP = 22°C ; BATCH 1 EARTHWORM TEST soils rehydrated if necessary + test organisms observed. Each replicate fed 3.0 g

Project:

DAILY LOG

of aged dried alfalfa
2-1-96 CR BATCH 2 E.W. test soils rehydrated if necessary and worms observed. fed 3.0g of aged dried alfalfa per replicate TEMP=22°
2-2-96 CR BATCH 3 E.W test soils rehydrated if necessary and worms observed. fed 3.0g of aged, dried alfalfa per rep. TEMP=22°
2-3-96 TEMP → 22°C
2-4-96 TEMP → 22°C
2-5-96 TEMP → 22°C
2-6-96 TEMP → 22°C
2-7-96 TEMP → 22°C
2-8-96 BATCH 1 TESTS ENDED. Earthworms counted & observed. Crap weights for each replicate were taken using a Sartorius QS4000 scale (same scale used for initial weights). All soils appeared to be well hydrated. Earthworms were then placed in replicate Ziploc® bags on wet filter paper and allowed to purge for ~5 hours. All ziploc® bags containing the earthworms were placed in the sample freezer @ -10°C until shipment to the chemistry lab TEMP 22°C
2-9-96 Batch 2 Tests Ended (see above) TEMP. 22°C
2-10-96 Batch 3 Tests ended (see above) TEMP 22°C

Environmental Science & Engineering, Inc.
Aquatic Toxicology Department
Gainesville, Florida

Page: _____
QA From: 105A
Effective: AUG 1994

SUBJECT: SHORT-TERM TOXICITY TEST: L. sativa

Sponsor: ABB/Huntingfield Project Number: 3196400~~6200~~ 0100
WC CL 1-12-96

SAMPLE	pH - DAY 0	pH - DAY 5	GERMINATION rep.	# germ	% germ
CTRL 1	7.0	6.8	A	38	95
			B	36	90
			C	38	95
			–	–	–
10N-201	7.2	7.5	A	22	55
			B	25	63
			C	25	63
			–	–	–
10N-301	7.3	6.6	A	~~30~~ 38	~~75~~ 95
			B	39	98
			C	37	93
			–	–	–
10N-~~401~~ 501 MO 1-12-96 (WP)	6.5	6.1	A	32	80
			B	WC CL 1-12-96 ~~22~~ 36	~~56~~ 90
			C	32	80
			–	–	–
12N-201	6.7	6.4	A	~~38~~ 30	~~95~~ 75
			B	30	75
			C	31	78
			–	–	–
12N-401	6.8	6.4	A	WC CL 1-12-96 ~~27~~ 34	~~68~~ 85
			B	35	88
			C	34	85
			–	–	–
12N-501	7.3	6.8	A	30	75
			B	30	75
			C	MO 1-12-96 ~~32~~ 26 (WP)	65
			–	–	–

KEY:	Technician:	Technician:	Technician:
germ = germination	CR	MO	MO
	Date: 1-7-96	Date: 1-12-96	Date: 1-12-96
	Time: 1530	Time: 1600	Time: 1530
	Meter: SA290-A	Meter: SA290-A	

COMMENTS : 40 seeds per replicate

⊗ MO 1-12-96 (WP)

Environmental Science & Engineering, Inc.
Aquatic Toxicology Department
Gainesville, Florida

Page: _____
QA From: 105A
Effective: AUG 1994

SUBJECT: SHORT-TERM TOXICITY TEST: L. sativa

Sponsor: ABB Whitingfield Project Number: 319640~~0200~~ 0100

SAMPLE	pH - DAY 0	pH - DAY 5	GERMINATION rep.	# germ	% germ
C12L2	7.0	6.8	A	37	93
			B	36	90
			C	35	88
			—	—	—
11N-201	6.4	6.4	A	39	98
			B	36	90
			C	38	95
			—	—	—
11N-301	6.1	6.0	A	38	95
			B	37	93
			C	34	85
			—	—	—
11N-401	6.3	6.2	A	38	95
			B	36	90
			C	35	88
			—	—	—
11N-501	6.2	6.1	A	34	85
			B	35	88
			C	34	85
			—	—	—
31S-1201	5.0	5.2	A	28	70
			B	32	80
			C	32	80
			—	—	—
31S-1301	5.0	5.1	A	25	63
			B	21	53
			C	25	63
			—	—	—

KEY:
germ = germination

Technician: CR
Date: 1-10-96
Time: 15
Meter: SA290A

Technician: MO
Date: 1-15-96
Time: 1600
Meter: SA290A

Technician: MO
Date: 1-15-96
Time: 1530

COMMENTS : 40 seeds per replicate

Environmental Science & Engineering, Inc.
Aquatic Toxicology Department
Gainesville, Florida

Page: _____
QA From: 105A
Effective: AUG 1994

SUBJECT: SHORT-TERM TOXICITY TEST: L. sativa

Sponsor: ABB-Whiting Field

Project Number: 3196400-~~0200~~ 0100-3100
WI QL
HIGH

SAMPLE	pH - DAY 0	pH - DAY 5	GERMINATION rep.	# germ	% germ
Control	7.0	6.9	A	38	95
			B	35	88
			C	34	85
			–	–	–
16N-201	6.3	6.0	A	39	98
			B	36	90
			C	40	100
			–	–	–
16N-301	5.9	5.9	A	36	90
			B	39	98
			C	34	85
			–	–	–
16N-301D	5.6	5.9	A	34	85
			B	37	93
			C	35	88
			–	–	–
16N-801	5.6	5.7	A	36	90
			B	37	93
			C	40	100
			–	–	–
16N-601	6.0	6.2	A	37	93
			B	39	98
			C	40	100
			–	–	–
16N-1201	5.9	6.3	A	26	65
			B	20	50
			C	21	53
			–	–	–
16N-1301	6.2	6.2	A	36	90
			B	37	93
			C	37	93
			–	–	–
BKN-301	5.7	5.7	A	38	95
			B	40	100
			C	38	95
			–	–	–

KEY:
germ = germination

Technician: NJK
Date: 1-11-96
Time: 1500
Meter: SA290-A

Technician: MO
Date: 1-16-96
Time: 1600
Meter: SA290-A

Technician: MO/CL
Date: 1-16-96
Time: 1500

COMMENTS : 40 seeds per replicate

Environmental Science & Engineering, Inc.
Aquatic Toxicology Department
Gainesville, Florida

Page: _____
QA From: 105A
Effective: AUG 1994

SUBJECT: SHORT-TERM TOXICITY TEST: L. sativa

Sponsor: ABB- Whiting Field

Project Number: 3196400-~~0200~~ 0100-3100 MO CR 1-9-96

SAMPLE	pH - DAY 0	pH - DAY 5	GERMINATION rep.	# germ	% germ
BKN-301D	5.6	5.8	A	36	90
			B	37	93
			C	35	88
			—	—	—
BKN-101	4.7	5.0	A	19	48
			B	17	43
			C	15	38
			—	—	—

KEY:

germ = germination

Technician: MJK
Date: 1-11-96
Time: 1500
Meter: SA 220 ★

Technician: MO
Date: 1-16-96
Time: 1600
Meter:

Technician: MO/CR
Date: 1-16-96
Time: 1500

COMMENTS : 40 seeds per replicate

JPY 1/16/96

HIT LS
ile: yes Transform: NO TRANSFORM

ANOVA TABLE

OURCE	DF	SS	MS	F
etween	6	2781.238	463.540	29.860
ithin (Error)	14	217.333	15.524	
otal	20	2998.571		

Critical F value = 2.85 (0.05,6,14)
Since F > Critical F REJECT Ho:All groups equal

HIT LS
ile: yes Transform: NO TRANSFORM

BONFERRONI T-TEST - TABLE 1 OF 2 Ho:Control<Treatment

ROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	93.333	93.333		
2	10N201	60.333	60.333	10.258	*
3	10N301	95.333	95.333	-0.622	
4	10N501	83.333	83.333	3.108	*
5	12N201	76.000	76.000	5.388	*
6	12N401	86.000	86.000	2.280	
7	12N501	71.667	71.667	6.735	*

onferroni T table value = 2.72 (1 Tailed Value, P=0.05, df=14,6)

HIT LS
ile: yes Transform: NO TRANSFORM

BONFERRONI T-TEST - TABLE 2 OF 2 Ho:Control<Treatment

ROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	3			
2	10N201	3	8.744	9.4	33.000
3	10N301	3	8.744	9.4	-2.000
4	10N501	3	8.744	9.4	10.000
5	12N201	3	8.744	9.4	17.333
6	12N401	3	8.744	9.4	7.333
7	12N501	3	8.744	9.4	21.667

JDY 1/16/96

WHIT LS2
File: yes1 Transform: NO TRANSFORMATION

t-test of Solvent and Blank Controls Ho:GRP1 MEAN = GRP2 MEAN

GRP1 (SOLVENT CRTL) MEAN =	90.3333	CALCULATED t VALUE =	-1.4552
GRP2 (BLANK CRTL) MEAN =	94.3333	DEGREES OF FREEDOM =	4
DIFFERENCE IN MEANS =	-4.0000		

TABLE t VALUE (0.05 (2), 4) = 2.776 NO significant difference at alpha=0.05
TABLE t VALUE (0.01 (2), 4) = 4.604 NO significant difference at alpha=0.01

WHIT LS2
File: yes1 Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	6	2683.905	447.317	23.484
Within (Error)	14	266.667	19.048	
Total	20	2950.571		

Critical F value = 2.85 (0.05,6,14)
Since F > Critical F REJECT Ho:All groups equal

WHIT LS2
File: yes1 Transform: NO TRANSFORM

BONFERRONI T-TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	90.333	90.333		
2	11N201	94.333	94.333	-1.122	
3	11N301	91.000	91.000	-0.187	
4	11N401	91.000	91.000	-0.187	
5	11N501	86.000	86.000	1.216	
6	31N1201	76.667	76.667	3.835	*
7	31N1301	59.667	59.667	8.606	*

Bonferroni T table value = 2.72 (1 Tailed Value, P=0.05, df=14,6)

WHIT LS2
File: yes1 Transform: NO TRANSFORM

BONFERRONI T-TEST - TABLE 2 OF 2 Ho:Control<Treatment

-91964006-0100-3100

JOY 1/16/96

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	control	3			
2	11N201	3	9.686	10.7	-4.000
3	11N301	3	9.686	10.7	-0.667
4	11N401	3	9.686	10.7	-0.667
5	11N501	3	9.686	10.7	4.333
6	31N1201	3	9.686	10.7	13.667
7	31N1301	3	9.686	10.7	30.667

JY 1/16/96

HITING FIELD
ile: yes3 Transform: NO TRANSFORMATION

ro Wilks test for normality

= 467.333

= 0.963

ritical W (P = 0.05) (n = 30) = 0.927
ritical W (P = 0.01) (n = 30) = 0.900

---

ata PASS normality test at P=0.01 level. Continue analysis.

HITING FIELD
ile: yes3 Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
etween	9	3912.133	434.681	18.603
in (Error)	20	467.333	23.367	
Total	29	4379.467		

Critical F value = 2.39 (0.05,9,20)
Since F > Critical F REJECT Ho:All groups equal

HITING FIELD
File: yes3 Transform: NO TRANSFORM

BONFERRONI T-TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	89.333	89.333		
2	16N201	96.000	96.000	-1.689	
3	16N301	91.000	91.000	-0.422	
4	16N301D	88.667	88.667	0.169	
5	16N801	94.333	94.333	-1.267	
6	16N601	97.000	97.000	-1.942	
7	16N1201	56.000	56.000	8.446	*
	16N1301	92.000	92.000	-0.676	
	BKN301	96.667	96.667	-1.858	
10	BKN301D	90.333	90.333	-0.253	

Bonferroni T table value = 2.80 (1 Tailed Value, P=0.05, df=20,9)

ITING FIELD
le: yes4 Transform: NO TRANSFORM

ANOVA TABLE

URCE	DF	SS	MS	F
tween	2	4388.222	2194.111	114.145
thin (Error)	6	115.333	19.222	
tal	8	4503.556		

Critical F value = 5.14 (0.05,2,6)
Since F > Critical F REJECT Ho:All groups equal

ITING FIELD
le: yes4 Transform: NO TRANSFORM

BONFERRONI T-TEST - TABLE 1 OF 2 Ho:Control<Treatment

ROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	Control	89.333	89.333		
2	BKN301D	90.333	90.333	-0.279	
3	BKN101	43.000	43.000	12.943	*

onferroni T table value = 2.45 (1 Tailed Value, P=0.05, df=6,2)

ITING FIELD
ile: yes4 Transform: NO TRANSFORM

BONFERRONI T-TEST - TABLE 2 OF 2 Ho:Control<Treatment

ROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	Control	3			
2	BKN301D	3	8.760	9.8	-1.000
3	BKN101	3	8.760	9.8	46.333

TTING FIELD
: yes3 Transform: NO TRANSFORM

BONFERRONI T-TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	CONTROL	3			
2	16N201	3	11.043	12.4	-6.667
3	16N301	3	11.043	12.4	-1.667
4	16N301D	3	11.043	12.4	0.667
5	16N801	3	11.043	12.4	-5.000
6	16N601	3	11.043	12.4	-7.667
7	16N1201	3	11.043	12.4	33.333
8	16N1301	3	11.043	12.4	-2.667
9	BKN301	3	11.043	12.4	-7.333
10	BKN301D	3	11.043	12.4	-1.000

WHITING FIELD
File: yes3 Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	9	3912.133	434.681	18.603
Within (Error)	20	467.333	23.367	
Total	29	4379.467		

Critical F value = 2.39 (0.05,9,20)
Since F > Critical F REJECT Ho:All groups equal

WHITING FIELD
File: yes3 Transform: NO TRANSFORM

DUNNETTS TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	CONTROL	89.333	89.333		
	16N201	96.000	96.000	-1.689	
3	16N301	91.000	91.000	-0.422	
4	16N301D	88.667	88.667	0.169	
5	16N801	94.333	94.333	-1.267	
6	16N601	97.000	97.000	-1.942	

7	16N1201	56.000	56.000	8.446	*
8	16N1301	92.000	92.000	-0.676	
9	BKN301	96.667	96.667	-1.858	
10	BKN301D	90.333	90.333	-0.253	

Dunnett table value = 2.60 (1 Tailed Value, P=0.05, df=20,9)

WHITING FIELD
File: yes3 Transform: NO TRANSFORM

DUNNETTS TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	CONTROL	3			
2	16N201	3	10.262	11.5	-6.667
3	16N301	3	10.262	11.5	-1.667
4	16N301D	3	10.262	11.5	0.667
5	16N801	3	10.262	11.5	-5.000
6	16N601	3	10.262	11.5	-7.667
7	16N1201	3	10.262	11.5	33.333
8	16N1301	3	10.262	11.5	-2.667
9	BKN301	3	10.262	11.5	-7.333
10	BKN301D	3	10.262	11.5	-1.000

Environmental Science & Engineering, Inc.
Toxicology Laboratory
Gainesville, Florida

ESE Project No: 3196 4000-0100
ESE QA Form Number: 1123
Effective Date: January 1996

SUBJECT: TOXICITY DATA SHEET — **SPECIES: *Eisenia foetida***

DAY		0	30	DAY 0 1-9-96	30		DAY 0		DAY 7		DAY 14		DAY 22		DAY 30	
DATE		1-9-96	2-8-96	1-9-96	2-8-96		1-9-96		1-16-96		1-23-96		1-31-96		2-8-96	
FEEDING		NO	NO	NO	NO		NONE		NONE		ALF (40g)		ALF (20g)		NONE	
TIME		1400	1600 ~~1400~~	1430	1500		1500		1200		1100		1400		1500	
DATA BY		CR	MO	CR	NICK		CR		CR		CR		CR		CR	
SAMPLE ID	**REP**	**pH (su) Init.**	**pH (su) Final**	**WEIGHT (g) Init.**	**WEIGHT (g) Final**	**Temp (°C)**	**No. Alive**	**OBS**	**No. Alive**	**OBS**	**No. Alive**	**OBS**	**No. Alive**	**OBS**	**No. Alive**	**OBS**
CTRL	A	7.0	7.2	4.9	4.7	22	10	N	10	N	10	N	10	N	9	1 NF 1 LETH
	B	~~7.2~~	–	4.8	5.6	–	10	N	10	N	10	N	10	N	10	2 LETH
	C	~~7.3~~	–	4.3	2.8	–	10	N	10	N	10	N	10	N	6	INF STRAY 4 LETH
10N-201	A	7.2	7.2	4.4	4.4	–	10	N	10	N	10	N	10	N	10	N
	B	–	–	4.3	4.6	–	10	N	10	N	10	N	10	REMOD. BEHAV	10	EGG PRCD
	C	–	–	4.3	4.4	–	10	N	10	N	10	N	10	N	10	EGG PRCD
10N-301	A	7.3	7.4	4.5	4.0	–	10	N	10	N	10	N	10	N	10	EGG PRCD
	B	–	–	5.0	4.8	–	10	N	10	N	10	N	10	REMOD. BEHAV	10	EGG PRCD
	C	–	–	4.8	4.8	–	10	N	10	N	10	N	10	N	10	N
10N-501	A	6.5	6.6	5.1	5.5	–	10	N	10	N	10	N	10	N	10	N
	B	–	–	4.5	4.8	–	10	N	10	N	10	N	10	N	10	N
	C	–	–	4.9	5.1	–	10	N	10	N	10	N	10	N	10	N

*CR WP 1-9-96

KEY: OBS = OBSERVATION; LE = LETHARGIC; REP = REPLICATE; ALF = ALFALFA; A = ALIVE; D = DEAD; SW = SWELLING; NF = NOT FOUND; EL = ELONGATION; SU = STANDARD UNITS; HE = HEMORRHAGING; N=NONE

Environmental Science & Engineering, Inc.
Toxicology Laboratory
Gainesville, Florida

ESE Project No: 3196400G-0100-3100
ESE QA Form Number: 1123
Effective Date: January 1996

SUBJECT: TOXICITY DATA SHEET																	SPECIES: *Eisenia foetida*					
DAY		0	30	0	30	–	DAY 0		DAY 7		DAY 14		DAY 22		DAY 30	
DATE		1-9-96	2-8-96	1-9-96	2-8-96		1-9-96		1/16/96		1-23-96		1-31-96		2-8-96	
FEEDING		NO	NO	NO	NO		NONE		NO		ALF (40g)		ALF (80g)		none	
TIME		1400	1600	1430	1500		1500		1430		1100		1400		1500	
DATA BY		CR	MO	CR	CR/MO		CR		MO/CR		CR		CR		CR	
SAMPLE ID	REP	pH (su) Init.	pH (su) Final	WEIGHT (g) Init.	WEIGHT (g) Final	Temp (°C)	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS
12N-201	A	6.7	6.9	4.9	4.6	–	10	N	10	N	10	N SW HE	10	N	10	N
	B	–	–	4.0	4.5	–	10	N	10	N	10	N	10	N	10	N
	C	–	–	4.6	5.3	–	10	N	10	N	10	N	10	N	10	N
12N-401	A	6.8	6.7	4.6	4.8	–	10	N	10	N	10	N	10	REPLACED DEAD (1)	10	N
	B	–	–	5.0	5.2	–	10	N	10	N	10	N	10	N	10	N
	C	–	–	4.6	4.8	–	10	N	10	N	10	N	10	N	10	N
12N-501	A	7.3	7.4	5.2	5.2	–	10	N	10	N	10	N	10	N	10	N
	B	–	–	4.0	4.3	–	10	N	10	N	10	N	10	REPLACED DEAD (1)	10	N
	C	–	–	5.0	4.7	–	10	N	10	N	10	N	10	N	10	N
	A															
	B															
	C															

KEY: OBS = OBSERVATION REP = REPLICATE A = ALIVE SW = SWELLING EL = ELONGATION HE = HEMORRHAGING
LE = LETHARGIC ALF = ALFALFA D = DEAD NF = NOT FOUND SU = STANDARD UNITS

Environmental Science & Engineering, Inc.
Toxicology Laboratory
Gainesville, Florida

ESE Project No: 3196000 0200 0.00 CR 1-17-96
ESE QA Form Number: 1123
Effective Date: January 1996

SUBJECT: TOXICITY DATA SHEET											SPECIES: *Eisenia foetida*					
DAY		0	30	0	30		DAY 0		DAY 7		DAY 14		DAY 22		DAY 30	
DATE		1-10-96	2-9-96	1-10-96	2-9-96		1-10-96		1-17-96		1-24-96		2-1-96		2-9-96	
FEEDING		N	NO	NO	NO		NO		NO		ALF (1 cup)		AF+ALF		NONE	
TIME		1430	1500	1500	1500		1530		1430		1100		1430		1500	
DATA BY		CR	mo	CR	mo/CR		CR		mo/CR		CR		CR		CR	
SAMPLE ID	REP	pH (su) Init.	pH (su) Final	WEIGHT (g) Init.	WEIGHT (g) Final	Temp (°C)	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS
Control	A	7.0	6.0	~~4.43~~ 4.37	5.4	22	10	N	10	N	10	N	10	N	10	N
	B	—	—	4.96	5.2	—	10	N	10	N	10	N	10	N	10	N
	C	—	—	4.95	5.1	—	10	N	10	N	10	N	10	N	10	N
11N-201	A	6.4	6.5	3.78	—	—	10	N	10	N	10	N	0	10 DEAD	0	N
	B	—	—	4.98	—	—	10	N	10	N	10	N	1	1 NF 8 DEAD	0	1 DEAD
	C	—	—	4.65	3.5	—	10	N	10	N	10	N	7	2 LETH 3 DEAD	7	N
11N-301	A	6.1	6.8	4.49	4.6	—	10	N	10	N	10	N	10	N	10	[illegible]
	B	—	—	4.87	5.0	—	10	N	10	N	10	N	10	N	10	NOT DEAD BEH
	C	—	—	4.89	5.3	—	10	N	10	N	10	N	10	N	10	EGGS
11N-401	A	6.3	6.6	4.43	4.8	—	10	N	10	N	10	N	10	N	10	N
	B	—	—	4.78	4.9	—	10	N	10	N	10	N	10	N	10	N
	C	—	—	4.67	4.9	—	10	N	10	N	10	N	10	N	10	N

KEY: OBS = OBSERVATION REP = REPLICATE A = ALIVE SW = SWELLING EL = ELONGATION HE = HEMORRHAGING
LE = LETHARGIC ALF = ALFALFA D = DEAD NF = NOT FOUND SU = STANDARD UNITS N = NONE

Environmental Science & Engineering, Inc.
Toxicology Laboratory
Gainesville, Florida

ESE Project No: 31964006 ~~0200~~ 6100 CR 1-19-96
ESE QA Form Number: 1123
Effective Date: January 1996

SUBJECT: TOXICITY DATA SHEET																SPECIES: *Eisenia foetida*	
DAY		0	30	0	30		DAY 0		DAY 7		DAY 14		DAY 22		DAY 30		
DATE		1-10-96	2-9-96	1-10-96	2-9-96		1-10-96		1-17-96		1-24-96		2-1-96		2-9-96		
FEEDING		NO	NO	NO	NO		NO		NO		ALF (40g)		~~ALF~~ ALF (5g)		NONE		
TIME		1430	1500	1500	1500		1530		1430		1100		1430		1500		
DATA BY		CR	mo	CR	CR/mo		CR		mo/CR		CR		CR		CR		
SAMPLE ID	REP	pH (su) Init.	pH (su) Final	WEIGHT (g) Init.	WEIGHT (g) Final	Temp (°C)	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	
11N-501	A	6.2	6.7	4.90	5.2	—	10	N	10	N	10	N	10	N	10	EGG PRCD	
	B	—	—	4.72	5.1	—	10	N	10	N	10	N	10	N	10	EGG PRCD	
	C	—	—	4.47	4.8	—	10	N	10	N	10	N	10	N	10	EGG PRCD	
31S-1201	A	5.0	6.5	4.31	5.7	—	10	N	10	N	10	N	10	N	10	N	
	B	—	—	4.97	6.3	—	10	N	10	N	10	N	10	Repro CQ Exit (2)	10	N	
	C	—	—	4.64	6.2	—	10	N	10	N	10	N	10	N	10	N	
31S-1301	A	5.0	6.9	4.97	5.2	—	10	N	10	N	10	N	10	N	10	N	
	B	—	—	4.59	5.7	—	10	N	10	N	10	N	10	N	10	N	
	C	—	—	4.92	5.3	—	10	N	10	N	10	N	10	N	10	N	
	A																
	B																
	C																

KEY: OBS = OBSERVATION REP = REPLICATE A = ALIVE SW = SWELLING EL = ELONGATION HE = HEMORRHAGING
LE = LETHARGIC ALF = ALFALFA D = DEAD NF = NOT FOUND SU = STANDARD UNITS

Environmental Science & Engineering, Inc.
Toxicology Laboratory
Gainesville, Florida

ESE Project No: 396400G - 0100
ESE QA Form Number: 1123
Effective Date: January 1996

SUBJECT: TOXICITY DATA SHEET																	SPECIES: *Eisenia foetida*
DAY		0	30	0	30		DAY 0		DAY 7		DAY 14		DAY 22		DAY 30		
DATE		1-11-96	2-10-96	1-11-96	2-10-96		1-11-96		1-18-96		1-25-96		2-2-96		2-10-96		
FEEDING		NO	NO	NO	NO		NO		NO		ALF (10g)		ALF (3.0g)		NONE		
TIME		1430	1430	1500	1500		1530		1200		1100		1430		1500		
DATA BY		CR	MO	CR	CR/MO		CR		CR		CR		CR/MO		CR		
SAMPLE ID	REP	pH (su) Init.	pH (su) Final	WEIGHT (g) Init.	WEIGHT (g) Final	Temp (°C)	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	
CTRL	A	7.0	6.0	3.91	1.6	22	10	N	10	N	10	N	9	INF 3 LETH	4	6 DEAD	
	B	—	—	4.71	5.9	—	10	N	10	N	10	N	10	N	10	N	
	C	—	—	4.24	2.1	—	10	N	10	N	10	N	7	3 DEAD	4	6 DEAD	
16N-201	A	6.3	6.6	4.09	5.3	—	10	N	10	N	10	N	10	N	10	N LE	WPCR
	B	—	—	3.99	5.0	—	10	N	10	N	10	N	10	N	10	N	
	C	—	—	3.68	4.7	—	10	N	10	N	10	N	10	N	10	N	
16N-301	A	5.4	6.4	4.33	4.6	—	10	N	10	N	10	N	10	N	10	EGGS PRCD	
	B	—	—	4.67	5.2	—	10	N	10	N	10	N	10	N	10	EGGS PRCD	
	C	—	—	4.39	4.7	—	10	N	10	N	10	N	10	N	10	EGGS PRCD	
16N-301D	A	5.6	6.0	4.62	4.7	—	10	N	10	N	10	N	10	N	10	REPROD EGGS	
	B	—	—	4.42	4.5	—	10	N	10	N	10	N	10	N	10	EGGS	
	C	—	—	4.61	3.8	—	10	N	10	N	10	N	10	N	10	REPROD EGGS	

KEY: OBS = OBERVATION REP = REPLICATE A = ALIVE SW = SWELLING EL = ELONGATION HE = HEMORRHAGING
LE = LETHARGIC ALF = ALFALFA D = DEAD NF = NOT FOUND SU = STANDARD UNITS

Environmental Science & Engineering, Inc.
Toxicology Laboratory
Gainesville, Florida

ESE Project No: 3194A000-0100
ESE QA Form Number: 1123
Effective Date: January 1996

SUBJECT: TOXICITY DATA SHEET																	SPECIES: *Eisenia foetida*
DAY		0	30	0	30			DAY 0		DAY 7		DAY 14		DAY 22		DAY 30	
DATE		1-11-96	2-10-96	1-11-96	2-10-96			1-11-96		1-18-96		1-25-96		2-2-96		2-10-96	
FEEDING		No	No	No	No			NO		NO		ALF (4.0g)		ALF (3.0g)		NONE	
TIME		1430	1430	1500	1500			1530		1200		1100		1430		1500	
DATA BY		CR	MO	CR	CR/MO			CR		CR		CR		CR/MO		CR	
SAMPLE ID	REP	pH (su) Init.	pH (su) Final	WEIGHT (g) Init.	WEIGHT (g) Final	Temp (°C)	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	
16N-601	A	6.0	6.6	4.60	5.3	—	10	N	10	N	10	N	10	N	10	EGGS	
	B	—	—	4.61	5.4	—	10	N	10	N	10	N	10	N	10	EGGS	
	C	—	—	4.46	4.7	—	10	N	10	N	10	N	10	N	10	EGGS	
16N-801	A	5.6	6.7	4.09	4.1	—	10	N	10	N	10	N	10	N	10	EGGS	
	B	—	—	4.58	4.6	—	10	N	10	N	10	N	10	N	10	PERIED BEH	
	C	—	—	4.13	3.9	—	10	N	10	N	10	N	10	N	10	REPRD BEH	
16N-1201	A	5.4	6.7	4.16	4.5	—	10	N	10	N	10	N	10	N	10	N	
	B	—	—	4.54	4.6	—	10	N	10	N	10	N	10	N	10	N	
	C	—	—	4.40	4.3	—	10	N	10	N	10	N	10	N	10	N	
16N-1301	A	6.2	7.1	4.40	4.6	—	10	N	10	N	10	N	10	N	10	N	
	B	—	—	4.65	5.1	—	10	N	10	N	10	N	10	N	10	N	
	C	—	—	3.76	4.3	—	10	N	10	N	10	N	10	N	10	N	

KEY: OBS = OBERVATION REP = REPLICATE A = ALIVE SW = SWELLING EL = ELONGATION HE = HEMORRHAGING
LE = LETHARGIC ALF = ALFALFA D = DEAD NF = NOT FOUND SU = STANDARD UNITS

Environmental Science & Engineering, Inc.
Toxicology Laboratory
Gainesville, Florida

ESE Project No: 31964CC6-0100
ESE QA Form Number: 1123
Effective Date: January 1996

SUBJECT: TOXICITY DATA SHEET																	SPECIES: *Eisenia foetida*	
DAY		0	30	0	30		DAY 0		DAY 7		DAY 14		DAY 22		DAY 30			
DATE		1-11-96	2-10-96	1-11-96	2-10-96		1-11-96		1-18-96		1-25-96		2-1-96		2-10-96			
FEEDING		NO	NO	NO	NO		NO		NO		ALF(40g)		ALF(30g)		NO			
TIME		1430	1430	1500	1500		1530		1200		1100		1430		1500			
DATA BY		CR	MO	CR	CR/MC		CR		CR		CR		CR/MC		CR			
SAMPLE ID	REP	pH (su) Init.	pH (su) Final	WEIGHT (g) Init.	WEIGHT (g) Final	Temp (°C)	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS	No. Alive	OBS		
BKN101	A	4.7	8.5	4.11	—	—	10	N	10	N	10	N	10	N	0	10 DEAD		
	B	—	—	4.13	4.8	—	10	N	10	N	10	N	10	N	9	3 LETH 1 DEAD		
	C	—	—	4.23	5.4	—	10	N	10	N	0	N	10	N	10	1 LETH		
BKN-301	A	5.7	6.3	4.20	4.8	—	10	N	10	N	10	N	10	N	10	EGG PRCD		
	B	—	—	4.47	4.8	—	10	N	10	N	10	N	10	N	10	EGG PRCD		
	C	—	—	4.33	4.8	—	10	N	10	N	10	N	10	N	10	EGG PRCD		
BKN-301D	A	5.6	6.4	4.69	4.9	—	10	N	10	N	10	N	10	N	10	EGG PRCD		
	B	—	—	4.70	4.9	—	10	N	10	N	10	N	10	N	10	EGGS PRPR		
	C	—	—	4.52	4.8	—	10	N	10	N	10	N	10	N	10	EGG PRCD		
	A																	
	B																	
	C																	

KEY: OBS = OBERVATION REP = REPLICATE A = ALIVE SW = SWELLING EL = ELONGATION HB = HEMORRHAGING
LE = LETHARGIC ALF = ALFALFA D = DEAD NF = NOT FOUND SU = STANDARD UNITS

JM 9/4/96

Whiting Field Earthworm Weights

File: weight4 Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	1	0.000	0.000	0.066
Within (Error)	4	0.004	0.001	
Total	5	0.004		

Critical F value = 7.71 (0.05,1,4)

Since F < Critical F FAIL TO REJECT Ho: All equal

JY 91496

Whiting Field Earthworm Weights

File: weight4 Transform: NO TRANSFORM

DUNNETT'S TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	BKN301	0.083	0.083		
2	16N1301	0.090	0.090	-0.256	

Dunnett table value = 76.15 (1 Tailed Value, P=0.05, df=4,1)

Whiting Field Earthworm Weights

File: weight4 Transform: NO TRANSFORM

DUNNETT'S TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	BKN301	3			
2	16N1301	3	1.983	2379.0	-0.007

JY 9/4/96

Whiting Earthworm Weights

File: lengthl Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	9	0.049	0.005	1.504
Within (Error)	20	0.072	0.004	
Total	29	0.120		

Critical F value = 2.39 (0.05,9,20)

Since F < Critical F FAIL TO REJECT Ho: All equal

JY 9/14/96

Whiting Earthworm Weights

File: length1 Transform: NO TRANSFORM

DUNNETT'S TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	BKN301	0.083	0.083		
2	10N201	0.030	0.030	1.091	
3	10N301	-0.050	-0.050	2.727	*
4	10N501	0.063	0.063	0.409	
5	12N201	0.073	0.073	0.205	
6	12N401	0.093	0.093	-0.205	
7	12N501	0.007	0.007	1.568	
8	11N201	0.020	0.020	1.295	
9	11N301	0.040	0.040	0.886	
10	11N401	0.050	0.050	0.682	

Dunnett table value = 2.60 (1 Tailed Value, P=0.05, df=20,9)

Whiting Earthworm Weights

File: length1 Transform: NO TRANSFORM

DUNNETT'S TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	BKN301	3			
2	10N201	3	0.127	152.6	0.053
3	10N301	3	0.127	152.6	0.133
4	10N501	3	0.127	152.6	0.020
5	12N201	3	0.127	152.6	0.010
6	12N401	3	0.127	152.6	-0.010
7	12N501	3	0.127	152.6	0.077
8	11N201	3	0.127	152.6	0.063
9	11N301	3	0.127	152.6	0.043
10	11N401	3	0.127	152.6	0.033

JY 9/4/96

Whiting Earthworm Weights

File: weight3 Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	9	0.303	0.034	9.236
Within (Error)	20	0.073	0.004	
Total	29	0.376		

Critical F value = 2.39 (0.05,9,20)

Since F > Critical F REJECT Ho: All equal

JY 9/4/96

Whiting Earthworm Weights
File: weight3 Transform: NO TRANSFORM

DUNNETT'S TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	BKN301	0.083	0.083		
2	11N501	0.073	0.073	0.203	
3	31S1201	0.250	0.250	-3.382	
4	31S1301	0.189	0.189	-2.144	
5	16N201	0.270	0.270	-3.788	
6	16N301	0.083	0.083	0.000	
7	16N301D	-0.043	-0.043	2.571	
8	16N601	0.120	0.120	-0.744	
9	16N801	-0.017	-0.017	2.029	
10	16N1201	0.023	0.023	1.218	

Dunnett table value = 2.60 (1 Tailed Value, P=0.05, df=20,9)

Whiting Earthworm Weights
File: weight3 Transform: NO TRANSFORM

DUNNETT'S TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL
1	BKN301	3			
2	11N501	3	0.128	153.7	0.010
3	31S1201	3	0.128	153.7	-0.167
4	31S1301	3	0.128	153.7	-0.106
5	16N201	3	0.128	153.7	-0.187
6	16N301	3	0.128	153.7	0.000
7	16N301D	3	0.128	153.7	0.127
8	16N601	3	0.128	153.7	-0.037
9	16N801	3	0.128	153.7	0.100
10	16N1201	3	0.128	153.7	0.060

JY 9/4/96

Whiting Field Earthworm Weights
File: length Transform: NO TRANSFORM

ANOVA TABLE

SOURCE	DF	SS	MS	F
Between	2	0.018	0.009	0.940
Within (Error)	6	0.059	0.010	
Total	8	0.077		

Critical F value = 5.14 (0.05,2,6)
Since F < Critical F FAIL TO REJECT Ho: All equal

Whiting Field Earthworm Weights
File: length Transform: NO TRANSFORM

DUNNETT'S TEST - TABLE 1 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	TRANSFORMED MEAN	MEAN CALCULATED IN ORIGINAL UNITS	T STAT	SIG
1	control	0.127	0.127		
2	BKN301	0.083	0.083	0.536	
3	BKN101	0.193	0.193	-0.825	

Dunnett table value = 2.34 (1 Tailed Value, P=0.05, df=6,2)

Whiting Field Earthworm Weights
File: length Transform: NO TRANSFORM

DUNNETT'S TEST - TABLE 2 OF 2 Ho:Control<Treatment

GROUP	IDENTIFICATION	NUM OF REPS	Minimum Sig Diff (IN ORIG. UNITS)	% of CONTROL	DIFFERENCE FROM CONTROL

1	control	3			
2	BKN301	3	0.189	149.3	0.043
3	BKN101	3	0.189	149.3	-0.067

JY 9/4/96

PLANT SPECIES AT NAS WHITING FIELD

Appendix G
Plant List for NAS Whiting Field

Common Names	Scientific Names	Site 1	Site 2	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 31B	Site 31 C	Site 31 E	Site 31F
Red maple	Acer rubrum										X						
Pea	Aeschynomene americana					X											
Agalinis	Agalinis fasciculata					X		X									
Agalinis	Agalinis setacea				X			X					X				
Ragweed	Ambrosia sp	X	X		X	X		X		X	X					X	X
Pepper vine	Ampelopsis arborea	X				X											
Broom sedge	Andropogon sp			X	X	X		X		X	X		X	X	X		X
Burdock	Arctium sp.					X											
Silvery aster	Aster concolor																X
White-topped aster	Aster umbellatus					X		X									
Groundsel tree	Baccharis halimifolia					X		X	X								
Bahia grass	Bahia sp.				X								X				
Yellow buttons	Balduina angustifolia										X	X	X				
Bamboo	Bambusa sp		X														
Spanish needles	Bidens bipinnata										X						
Beauty berry	Callicarpa americana	X				X	X				X						
Carex sedge	Carex sp											X					
Hickory	Carya sp					X											
Sandspur	Cenchrus sp		X														
Partridge pea	Chamaecrista fasciculata		X			X		X		X							X
Goldenaster	Chrysopsis sp							X			X		X			X	
Ageratum	Conoclinium coelestinum		X		X	X		X	X				X				
Rattle box	Crotalaria lanceolata				X	X	X		X		X					X	
Summer farewell	Dalea pinnata	X			X												
Florida beggarweed	Desmodium tortuosum										X						
Panic grass	Dichanthelium sp.				X			X									
Poor Joe	Diodia teres											X					
Buttonweed	Diodia virginiana										X						
Persimmon	Diospyros virginiana	X				X		X		X							
Florida elephant's foot	Elephantopus elatus																X
Dog fennel	Eupatorium capillifolium	X		X	X	X		X	X	X						X	
Yellow jessamine	Gelsemium sempervirens										X						
Moss verbena	Glandularia pulchella		X		X	X		X			X		X				
Bladder-pod	Glottidium vesicarium		X		X	X		X			X						
Rabbit tobacco	Gnaphalium obtusifolium		X		X	X		X	X								
Cudweed	Gnaphalium pensylvanicum				X									X			
Cudweed	Gnaphalium sp.										X						X

Appendix G
Plant List for NAS Whiting Field

Common Names	Scientific Names	Site 1	Site 2	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 31B	Site 31 C	Site 31 E	Site 31F
Scratch daisy	Haplopappus divaricatus												X				
Hedyotis	Hedyotis uniflora							X									
Spanish daisy	Helenium amarum							X									
Pineweed	Hypericum gentianoides							X						X	X		
St. Andrew's Cross	Hypericum hypericoides							X		X							X
St. Peter's wort	Hypericum tetrapetalum					X											
Buttermint	Hyptis mutabilis		X			X	X	X			X			X			
Gallberry	Ilex coriacea			X													
Yaupon holly	Ilex vomitoria	X	X		X	X	X	X	X	X	X						X
Hairy indigo	Indigofera hirsuta									X							
Pea	Indigofera miniata		X														
Morning glory	Ipomoea cordatotriloba				X	X		X			X					X	
Cypress-vine	Ipomoea quamoclit										X						
Jacquemontia	Jacquemontia tamnifolia			X													
Red cedar	Juniperus virginiana					X	X	X			X						
Lantana	Lantana sp				X									X			
Lespedeza	Lespedeza sp	X															
Lespedeza	Lespedeza stuevii			X													
Blazing star	Liatris chapmanii	X			X					X							
Blazing star	Liatris sp							X									
Chinese Privet	Ligustrum sinense		X		X	X	X	X	X		X						
Lobelia	Lobelia sp					X											
Japanese Honeysuckle	Lonicera japonica	X			X	X					X						
Seed box	Ludwigia alternifolia							X.									
False Loosestrife	Ludwigia arcuata										X						
Ludwigia	Ludwigia octovalvis											X					
Staggerbush	Lyonia fruticosa									X							
Chinaberry	Melia azedarach		X														
Mimosa	Mimosa strigillosa				X	X	X									X	
False garlic	Nothoscordum bivalve					X											
Cut-leaf Evening Primro	Oenothera laciniata													X	X		
Primrose	Oenothera sp	X															
Prickly-pear cactus	Opuntia sp									X				X	X		
Yellow wood sorrel	Oxalis stricta					X				X	X			X		X	X
Timothy grass	Phleum sp		X														
Pokeweed	Phytolacca americana					X		X									
Slash pine	Pinus elliottii					X		X	X	X	X						

Appendix G
Plant List for NAS Whiting Field

Common Names	Scientific Names	Site 1	Site 2	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 31B	Site 31 C	Site 31 E	Site 31F
Longleaf pine	Pinus palustris			X	X			X	X								
Goldenaster	Pityopsis graminifolia	X		X	X	X	X		X	X	X					X	
Southern plantain	Plantago virginica																X
Camphorweed	Pluchea odorata					X											
Wireweed	Polygonella gracilis										X						
Joint weed	Polygonella polygama							X									
Smartweed	Polygonum sp							X									
Rustweed	Polypremum procumbens	X	X			X		X		X				X		X	
Cherry Tree	Prunus sp					X	X			X	X						
Bracken fern	Pteridium aquilinum			X													
Kudzu	Pueraria lobata		X														
Pyracantha	Pyracantha sp.																
Turkey oak	Quercus laevis						X									X	
Laural oak	Quercus laurifolia															X	
Oaks	Quercus sp	X		X						X	X			X	X		X
Winged sumac	Rhus copallina	X				X				X							
Mexican clover	Richardia brasiliensis	X			X	X		X			X	X	X	X		X	X
Black berry vine	Rubus sp		X			X	X	X	X	X	X	X	X	X	X		X
Blackeyed Susan	Rudbeckia hirta																X
Gentian	Sabatia sp								X								
Willow tree	Salix sp				X			X			X	X					
Blue Sage	Salvia azurea								X			X					X
Sage	Salvia riparia																
Popcorn tree	Sapium sebiferum							X									
Sicklepod	Senna obtusifolia												X				
Greenbrier	Smilax sp	X		X					X	X	X			X		X	
Common nightshade	Solanum americanum										X						
Goldenrod	Solidago sp	X	X		X	X		X			X						X
Madder	Spermacoce prostrata	X	X														
Poison ivy	Toxicodendron radicans									X	X						
Blue-curls	Trichostema dichotomum		X											X			
Blueberry	Vaccinium sp									X							
Verbena	Verbena brasiliensis	X	X			X		X			X						X
Verbena	Verbena officinalis		X	X													
Skunk daisy	Verbesina encelioides										X						
Grape vine	Vitis sp	X									X						
Yucca	Yucca filamentosa	X				X											

Appendix G
Plant List for NAS Whiting Field

Common Names	Scientific Names	Site 1	Site 2	Site 9	Site 10	Site 11	Site 12	Site 13	Site 14	Site 15	Site 16	Site 17	Site 18	Site 31B	Site 31 C	Site 31 E	Site 31F
Centipede grass		X			X			X					X				

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Wildflowers of the Southeastern United States, W.H. Duncan, L.E. Foote, University of Georgia Press, Athens, Georgia,1975

The Guide to Florida Wildflowers, Taylor, Taylor Publishing Co. Dallas Texas, 1992

Wetland and Transition Plants of Peninsular Florida, R.H. Mohlenbrock, Wetland Training Institute, Inc., Poolesville, Maryland, 1993

Identification Manual for Wetland Plant Species of Florida, R.L. Dressler, D.W. Hall, K.D. Perkins, N.H. Williams, Institute of Food and Agricultural Sciences, Gainsville, Florida, 1991

The Tress of Florida, Gil Nelson, Pineapple Press, Inc. Sarasota, Florida, 1994

The Audubon Society Field Guide to North American Wildflowers Eastern Region, W.A. Niering, N.C. Olmstead, Alfred Knopf, N.Y., N.Y. 1979

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LIST OF RARE, ENDAGERED, AND THREATENED SPECIES

Lindera subcoriacea	bog spicebush	G2	S1	C2 [1]	LE	
Linum westii	West's flax	G2	S2	C2 [1]	LE	
Litsea aestivalis	pondspice	G3	S2	C2 [1]	LE	
Lupinus westianus	gulf coast lupine	G2	S2	C2 [1]	LT	
Macranthera flammea	hummingbird flower	G3	S2	N	LE	
Magnolia acuminata	cucumber magnolia	G5	S2	N	LE	
Magnolia ashei	Ashe's magnolia	G3	S2	C2 [1]	LE	
Magnolia pyramidata	pyramid magnolia	G4	S2	N	LE	
Magnolia tripetala	umbrella magnolia	G5	S1	N	N	
Malaxis unifolia	green adder's-mouth	G5	S3	N	LE	
Matelea alabamensis	Alabama spiny-pod	G1	S1	C2 [1]	LE	
Medeola virginiana	indian cucumber-root	G5	S2	N	LE	
Monotropa hypopithys	pinesap	G5	S1	N	LE	
Myriophyllum laxum	piedmont water-milfoil	G3	S2S3	C2 [1]	N	
Nuphar lutea ssp. ulvacea	west Florida cowlily	G5T2	S2	C2 [1]	N	
Panicum nudicaule	naked-stemmed panic grass	G3?	S2?	C2 [1]	N	
Peltandra sagittifolia	spoon-flower	G3G4	S3	N	N	
Pinguicula planifolia	Champman's butterwort	G3?	S2	C2 [1]	LT	
Pinguicula primuliflora	primrose-flowered butterwort	G4		N	LE	floodplain swamp
Platanthera blephariglottis	white-fringed orchid	G4G5		N	LT	
Platanthera ciliaris	yellow-fringed orchid	G5		N	LT	
Platanthera clavellata	little club-spur orchid	G5	S1	N	N	
Platanthera cristata	crested fringed orchid	G5		N	LT	
Platanthera integra	yellow fringeless orchid	G4	S3S4	3C [1]	LE	
Platanthera nivea	snowy orchid	G5		N	LT	
Pogonia ophioglossoides	rose pogonia	G5		N	LT	floodplain swamp
Polygonella macrophylla	large-leaved jointweed	G2	S2	C2 [1]	LT	
Potamogeton floridanus	Florida pondweed	G1G2	S1S2	C2 [1]	N	
Quercus arkansana	Arkansas oak	G3	S1S2	3C [1]	N	
Rhexia parviflora	small-flowered meadowbeauty	G2	S2	C2 [1]	LE	
Rhexia salicifolia	panhandle meadowbeauty	G2	S2	C2 [1]	N	
Rhododendron austrinum	orange azalea	G3G4	S3	3C [1]	LE	
Rhynchospora crinipes	hairy-peduncled beakrush	G1	S1	C2 [1]	N	
Rhynchospora decurrens	decurrent beakrush	G3G4	S2	C2 [1]	N	
Rhynchospora stenophylla	narrow-leaved beakrush	G4	S2S3	N	N	
Sarracenia leucophylla	white-top pitcher-plant	G3	S3	C2 [1]	LE	floodplain swamp
Sarracenia psitticina	parrot pitcher-plant	G4		N	LT	

Sarracenia purpurea	purple pitcher-plant	G5		N	LT	
Sarracenia rubra	sweet pitcher-plant	G3	S2	N	LT	
Selaginella ludoviciana	gulf spikemoss	G3G4	S3S4	N	N	
Sideroxylon lycioides	buckthorn	G5	S2	N	LT	
Spiranthes laciniata	lace-lip ladies tresses	G4G5		N	LT	
Spiranthes ovalis	lesser ladies tresses	G5		N	LE	
Stewartia malacodendron	silky camellia	G4	S3	N	LE	
Tephrosia mohrii	pineland hoary-pea	G2?Q	S1	C2 [1]	N	
Thalictrum subrotundum	reclined meadowrue	G1G2	S1	C2 [1]	N	
Woodsia obtusa	blunt-lobed cliff fern	G5	S3S4	N	LT	
Xanthorhiza simplicissima	yellow-root	G5	S1	N	LE	
Xyris chapmanii	Chapman's yellow-eyed grass	G3	S1	N	N	
Xyris drummondii	Drummond's yellow-eyed grass	G3	S2	C2 [1]	N	
Xyris longisepala	karst pond xyris	G2	S2	C2 [1]	LE	
Xyris louisianica	Kral's yellow-eyed grass	G3?	S1	N	N	
Xyris scabrifolia	Harper's yellow-eyed grass	G3	S1	C2 [1]	LT	
FISH						
Etheostoma proeliare	cypress darter	G5	S2	N	N	
Fundulus dispar blairae	southern starhead topminnow	G3G4Q	S1S2	N	N	
Fundulus jenkinsi	saltmarsh topminnow	G3	S2	N	LS	
Hybognathus hayi	cypress minnow	G5	S1S2	N	N	
Notropis melanostomus	blackmouth shiner	G1G2	S1	C2 [1]	LE	
Percina austroperca	southern logperch	G3	S2	N	N	
Pteronotropis welaka	bluenose shiner	G4	S4	N	LS	
AMPHIBIANS						
Ambystoma cingulatum	flatwoods salamander	G2G3	S2S3	C2 [1]	N	
Ambystoma tigrinum	tiger salamander	G5	S3	N	N	
Amphiuma pholeter	one-toed amphiuma	G3	S3	N	N	
Rana capito	gopher frog	G4	S3	C2 [1]	LS	
REPTILES						
Alligator mississippiensis	American alligator	G5	S4	T(S/A)	LS	
Crotalus adamanteus	eastern diamondback rattlesnake	G5	S?	N	N	pine plantation
Drymarchon corais couperi	eastern indigo snake	G4T3	S3	LT	LT	
Eumeces anthracinus	coal skink	G5	S3	N	N	

G#Q = Rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above.
G#T#Q = Same as above, but validity as subspecies or variety is questioned.
G? = Not yet ranked (temporary)

FNAI State Rank
Definition parallels global rank: substitute "S" for "G" and "in Florida" for "globally" in above global ranks.

Federal Status - U.S. Fish and Wildlife Service (USFWS)
LE = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species which is in danger of extinction throughout all or a significant portion of its range.
LT = Listed as Threatened Species. Defined as any species which is likely to become an endangered species within the forseeable future throughout all or a significant portion of its range.
C1 = Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants, Category 1. Taxa for which the USFWS currently has substantial information on hand to support the biological appropriateness of proposing to list the species as endangered or threatened.
C2 = Candidate Species, Category 2. Taxa for which information now in possession of the USFWS indicates that proposing to list the species as endangered or threatened is possibly appropriate, but for which conclusive data on biological vulnerability and threat(s) are not currently available to support proposed rules at this time.
3C = Category 3C. Taxa that have proven to be more abundant or widespread than was previously believed and/or those that are not subject to any identifiable threat.
N = Not currently listed, nor currently being considered for listing.

State Status
Animals - Florida Game and Fresh Water Fish Commission (FGFWFC)
LE = Listed as Endangered Species by the FGFWFC. Defined as species, subspecies, or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any aritificial or natural factors that it is in immediate danger of extinction or extirpation from the state, or which may attain such a status within the immediate future.
LT = Listed as Threatened Species by the FGFWFC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the forseeable future.
LS = Listed as Species of Special Concern by the FGFWFC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modificaiton, environmental alteration, human disturbance, or substantial human exploitation which, in the forseeable future, may result in its becoming a threatened species.
N = Not currently listed, nor currently being considered for listing.

Plants - Florida Department of Agriculture and Consumer Services (FDACS)

LE = Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973, as amended.

LT = Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in number of plants within the state, but which have not so decreased in such number as to cause them to be endangered.

N = Not currently listed, nor currently being considered for listing.

APPENDIX H

STATISTICAL ANALYSIS OF BIOLOGICAL AND CHEMICAL DATA

APPENDIX I

FIGURES, TEXT AND DATA TABLES, RELEVANT TO SITE 31C, FROM THE DRAFT INTERIM REMEDIAL ACTION REPORT

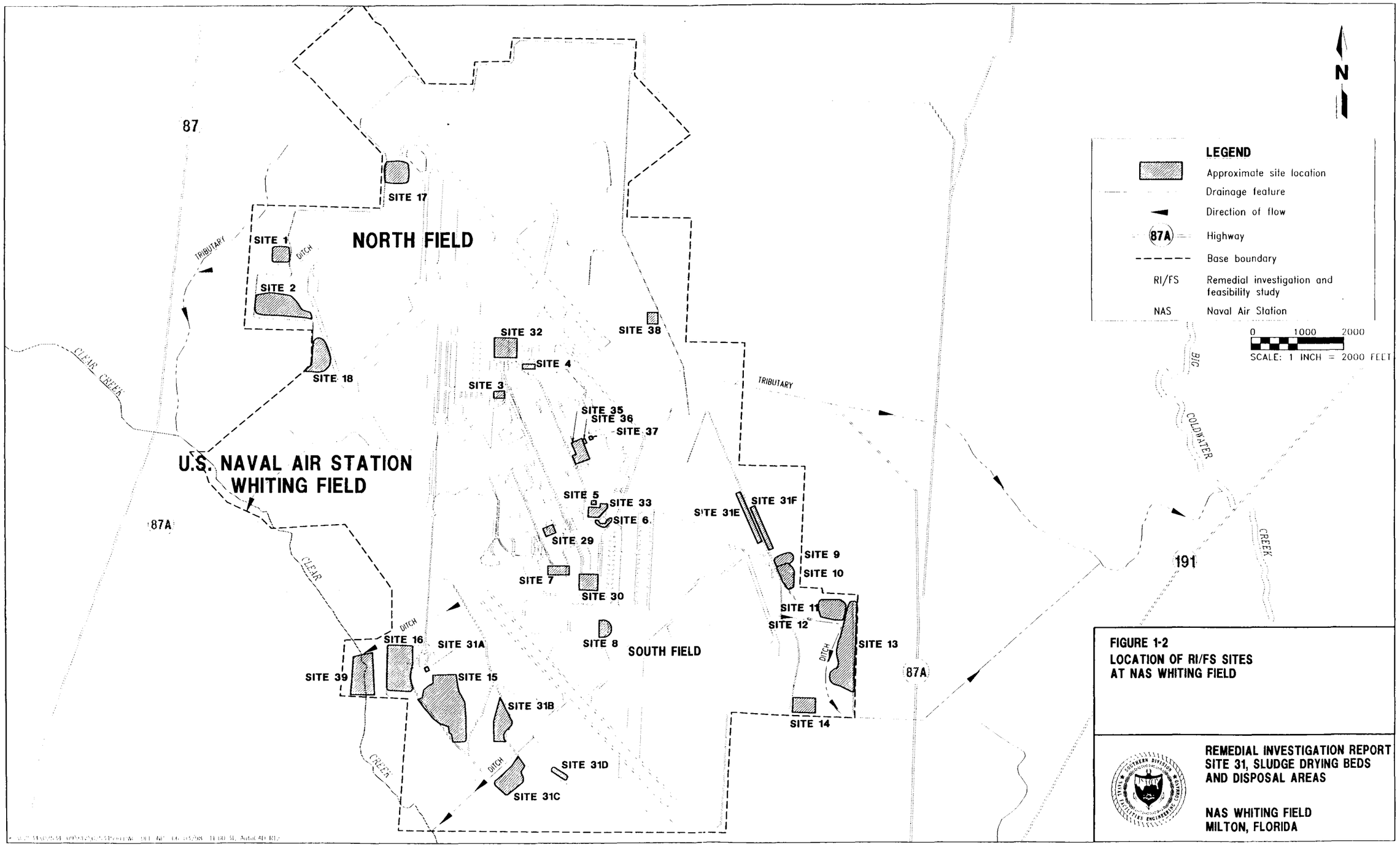
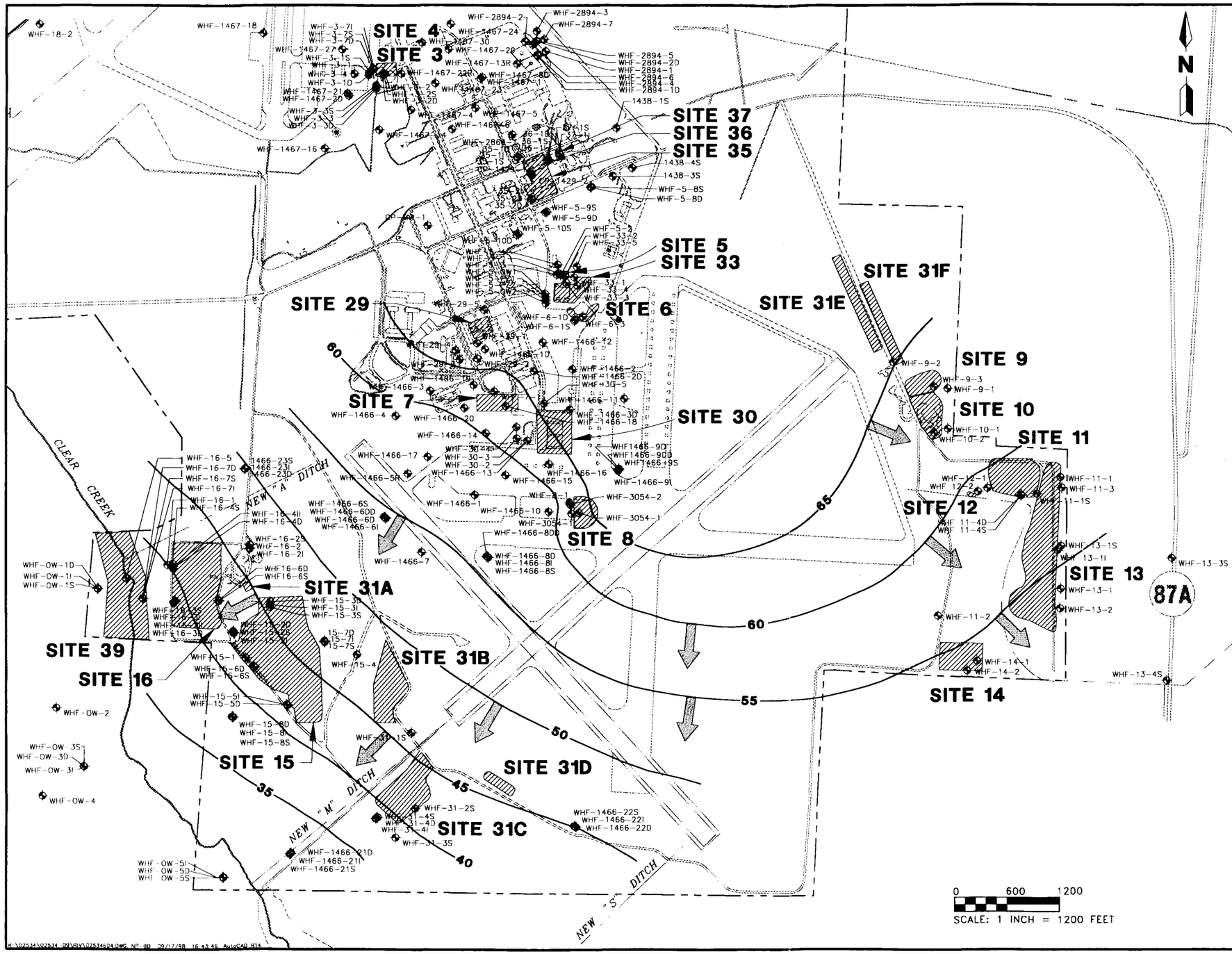


FIGURE 1-2
LOCATION OF RI/FS SITES
AT NAS WHITING FIELD

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS
AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA



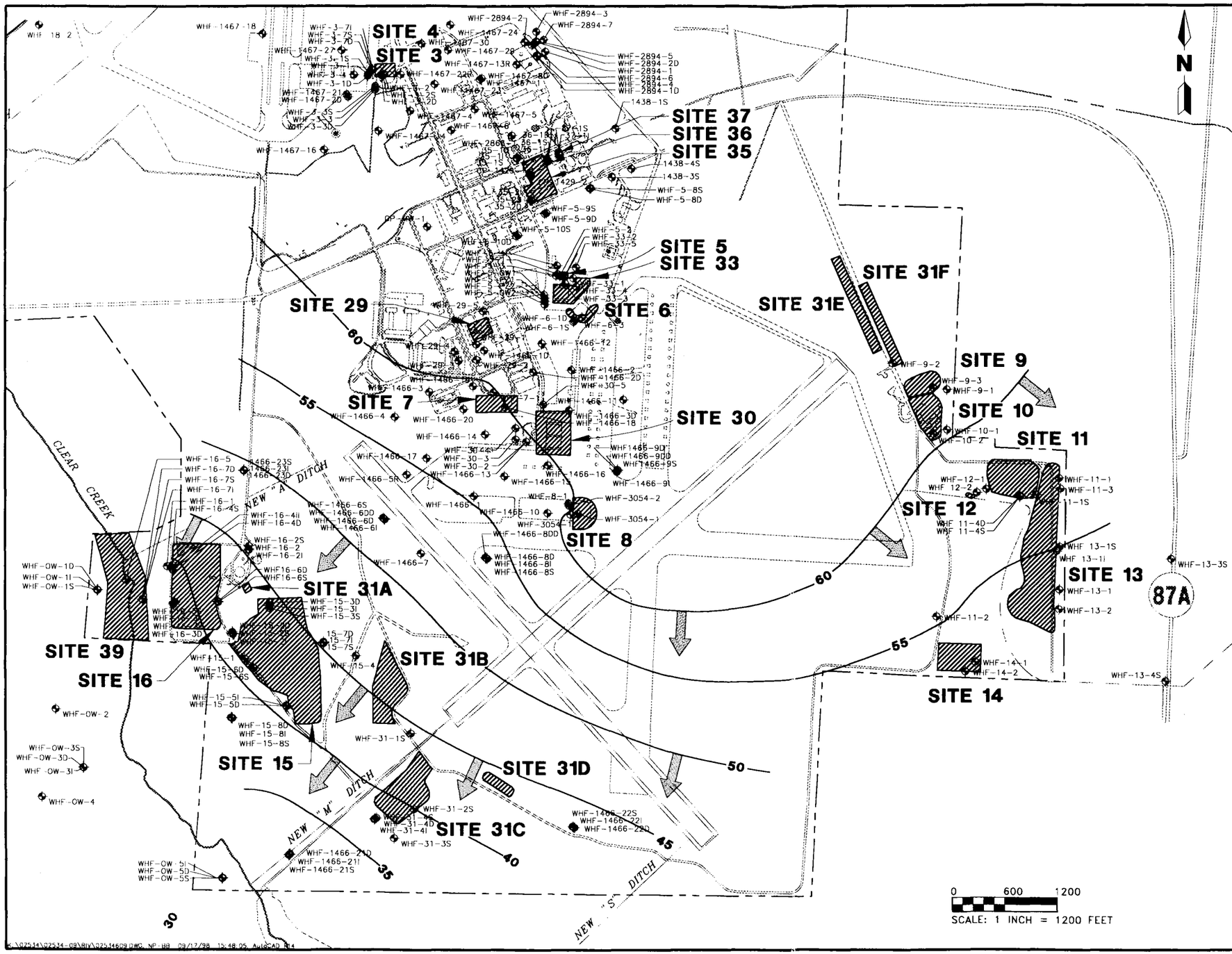
LEGEND

WHF-1466-17	Monitoring well location and designation
	Site location
	Facility boundary
	Groundwater flow direction
—50—	Inferred groundwater elevation contour in feet above mean sea level, contour interval = 5 feet
NAS	Naval Air Station

FIGURE 5-1
POTENTIOMETRIC SURFACE MAP OF THE WATER TABLE IN THE SAND-AND-GRAVEL AQUIFER, SOUTH FIELD AREA, JANUARY 1997

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA



LEGEND

WHF-1466-17	Monitoring well location and designation
	Site location
	Facility boundary
	Groundwater flow direction
—50—	Inferred groundwater elevation contour in feet above mean sea level, contour interval = 5 feet
NAS	Naval Air Station

FIGURE 5-2
POTENTIOMETRIC SURFACE MAP OF THE WATER TABLE IN THE SAND-AND-GRAVEL AQUIFER, SOUTH FIELD AREA, AUGUST 1997

REMEDIAL INVESTIGATION REPORT
SITE 31, SLUDGE DRYING BEDS AND DISPOSAL AREAS

NAS WHITING FIELD
MILTON, FLORIDA

APPENDIX A

SOIL ANALYTICAL DATA

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515001				22515001				22515001R				22527002			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-01				31-SL-01				31-SL-01_R				31-SL-02			
Collect Date:		17-AUG-92				17-AUG-93				17-AUG-92				18-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	U	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	11	UJ	ug/kg	11
Bromomethane		11	U	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	11	UJ	ug/kg	11
Vinyl chloride		11	U	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	11	UJ	ug/kg	11
Chloroethane		11	U	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	11	UJ	ug/kg	11
Methylene chloride		46	UJ	ug/kg	6	-		ug/kg		42	UJ	ug/kg	6	70	UJ	ug/kg	5
Acetone		11	UJ	ug/kg	11	-		ug/kg		19	UJ	ug/kg	11	21	UJ	ug/kg	11
Carbon disulfide		6	U	ug/kg	6	-		ug/kg		1	J	ug/kg	6	3	J	ug/kg	5
1,1-Dichloroethene		6	U	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
1,1-Dichloroethane		6	U	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
1,2-Dichloroethene (total)		6	U	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Chloroform		6	U	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
1,2-Dichloroethane		6	U	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
2-Butanone		11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	11	UJ	ug/kg	11
1,1,1-Trichloroethane		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Carbon tetrachloride		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Bromodichloromethane		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
1,2-Dichloropropane		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
cis-1,3-Dichloropropene		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Trichloroethene		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Dibromochloromethane		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
1,1,2-Trichloroethane		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Benzene		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
trans-1,3-Dichloropropene		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Bromoform		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
4-Methyl-2-pentanone		11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	11	UJ	ug/kg	11
2-Hexanone		11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	11	UJ	ug/kg	11
Tetrachloroethene		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Toluene		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
1,1,2,2-Tetrachloroethane		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Chlorobenzene		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Ethylbenzene		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Styrene		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	5	UJ	ug/kg	5
Xylenes (total)		6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	3	J	ug/kg	5
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
bis(2-Chloroethyl) ether		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2-Chlorophenol		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
1,3-Dichlorobenzene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
1,4-Dichlorobenzene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
1,2-Dichlorobenzene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2-Methylphenol		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,2-oxybis(1-Chloropropane)		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Methylphenol		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
N-Nitroso-di-n-propylamine		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Hexachloroethane		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Nitrobenzene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Isophorone		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2-Nitrophenol		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4-Dimethylphenol		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515001				22515001				22515001R				22527002			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-01				31-SL-01				31-SL-01_R				31-SL-02			
Collect Date:		17-AUG-92				17-AUG-93				17-AUG-92				18-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
bis(2-Chloroethoxy) methane		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4-Dichlorophenol		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
1,2,4-Trichlorobenzene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Naphthalene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Chloroaniline		370	UJ	ug/kg	370	-		ug/kg		-		ug/kg		370	UJ	ug/kg	370
Hexachlorobutadiene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Chloro-3-methylphenol		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2-Methylnaphthalene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Hexachlorocyclopentadiene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4,6-Trichlorophenol		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4,5-Trichlorophenol		1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	UJ	ug/kg	1800
2-Chloronaphthalene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2-Nitroaniline		1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	U	ug/kg	1800
Dimethylphthalate		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Acenaphthylene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,6-Dinitrotoluene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
3-Nitroaniline		1800	UJ	ug/kg	1800	-		ug/kg		-		ug/kg		1800	UJ	ug/kg	1800
Acenaphthene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4-Dinitrophenol		1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	UJ	ug/kg	1800
4-Nitrophenol		1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	U	ug/kg	1800
Dibenzofuran		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4-Dinitrotoluene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Diethylphthalate		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Chlorophenyl-phenylether		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Fluorene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Nitroaniline		1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	UJ	ug/kg	1800
4,6-Dinitro-2-methylphenol		1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	UJ	ug/kg	1800
N-Nitrosodiphenylamine		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Bromophenyl-phenylether		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Hexachlorobenzene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Pentachlorophenol		1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	U	ug/kg	1800
Phenanthrene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Anthracene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Carbazole		-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
Di-n-butylphthalate		370	UJ	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Fluoranthene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Pyrene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Butylbenzylphthalate		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
3,3-Dichlorobenzidine		730	UJ	ug/kg	730	-		ug/kg		-		ug/kg		730	U	ug/kg	730
Benzo (a) anthracene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Chrysene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
bis(2-Ethylhexyl) phthalate		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Di-n-octylphthalate		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Benzo (b) fluoranthene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Benzo (k) fluoranthene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Benzo (a) pyrene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Indeno (1,2,3-cd) pyrene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Dibenzo (a,h) anthracene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Benzo (g,h,i) perylene		370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		-		ug/kg		8.9	U	ug/kg	8.9	-		ug/kg		8.9	U	ug/kg	8.9

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515001				22515001				22515001R				22527002			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-01				31-SL-01				31-SL-01_R				31-SL-02			
Collect Date:		17-AUG-92				17-AUG-93				17-AUG-92				18-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
beta-BHC		-		ug/kg		8.9	U	ug/kg	8.9	-		ug/kg		8.9	U	ug/kg	8.9
delta-BHC		-		ug/kg		8.9	U	ug/kg	8.9	-		ug/kg		8.9	U	ug/kg	8.9
gamma-BHC (Lindane)		-		ug/kg		8.9	U	ug/kg	8.9	-		ug/kg		8.9	U	ug/kg	8.9
Heptachlor		-		ug/kg		8.9	U	ug/kg	8.9	-		ug/kg		8.9	U	ug/kg	8.9
Aldrin		-		ug/kg		8.9	U	ug/kg	8.9	-		ug/kg		8.9	U	ug/kg	8.9
Heptachlor epoxide		-		ug/kg		8.9	U	ug/kg	8.9	-		ug/kg		8.9	U	ug/kg	8.9
Endosulfan I		-		ug/kg		8.9	U	ug/kg	8.9	-		ug/kg		8.9	U	ug/kg	8.9
Dieldrin		-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
4,4-DDE		-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
Endrin		-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
Endosulfan II		-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
4,4-DDD		-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
Endosulfan sulfate		-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
4,4-DDT		-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
Methoxychlor		-		ug/kg		89	U	ug/kg	89	-		ug/kg		89	U	ug/kg	89
Endrin ketone		-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
Endrin aldehyde		-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane		-		ug/kg		89	U	ug/kg	89	-		ug/kg		89	U	ug/kg	89
gamma-Chlordane		-		ug/kg		89	U	ug/kg	89	-		ug/kg		89	U	ug/kg	89
Toxaphene		-		ug/kg		180	U	ug/kg	180	-		ug/kg		180	U	ug/kg	180
Aroclor-1016		-		ug/kg		89	U	ug/kg	89	-		ug/kg		89	U	ug/kg	89
Aroclor-1221		-		ug/kg		89	U	ug/kg	89	-		ug/kg		89	U	ug/kg	89
Aroclor-1232		-		ug/kg		89	U	ug/kg	89	-		ug/kg		89	U	ug/kg	89
Aroclor-1242		-		ug/kg		89	U	ug/kg	89	-		ug/kg		89	U	ug/kg	89
Aroclor-1248		-		ug/kg		89	U	ug/kg	89	-		ug/kg		89	U	ug/kg	89
Aroclor-1254		-		ug/kg		180	U	ug/kg	180	-		ug/kg		180	U	ug/kg	180
Aroclor-1260		-		ug/kg		180	U	ug/kg	180	-		ug/kg		180	U	ug/kg	180
CLP METALS AND CYANIDE	mg/kg																
Aluminum		10700		mg/kg	40	-		mg/kg		-		mg/kg		9930		mg/kg	40
Antimony		2.8	U	mg/kg	12	-		mg/kg		-		mg/kg		2.7	U	mg/kg	12
Arsenic		1.9	J	mg/kg	2	-		mg/kg		-		mg/kg		1.3	J	mg/kg	2
Barium		24.5	J	mg/kg	40	-		mg/kg		-		mg/kg		21.1	J	mg/kg	40
Beryllium		.15	J	mg/kg	1	-		mg/kg		-		mg/kg		.11	J	mg/kg	1
Cadmium		.61	U	mg/kg	1	-		mg/kg		-		mg/kg		.6	U	mg/kg	1
Calcium		216	J	mg/kg	1000	-		mg/kg		-		mg/kg		126	J	mg/kg	1000
Chromium		7.1		mg/kg	2	-		mg/kg		-		mg/kg		5.8		mg/kg	2
Cobalt		1.1	J	mg/kg	10	-		mg/kg		-		mg/kg		1.4	J	mg/kg	10
Copper		5.6	J	mg/kg	5	-		mg/kg		-		mg/kg		17.9	J	mg/kg	5
Iron		5380		mg/kg	20	-		mg/kg		-		mg/kg		4800		mg/kg	20
Lead		6.4		mg/kg	1	-		mg/kg		-		mg/kg		5.5		mg/kg	1
Magnesium		164	J	mg/kg	1000	-		mg/kg		-		mg/kg		154	J	mg/kg	1000
Manganese		456		mg/kg	3	-		mg/kg		-		mg/kg		410		mg/kg	3
Mercury		.07	U	mg/kg	.1	-		mg/kg		-		mg/kg		.05	U	mg/kg	.1
Nickel		2.4	U	mg/kg	8	-		mg/kg		-		mg/kg		6.9	J	mg/kg	8
Potassium		135	U	mg/kg	1000	-		mg/kg		-		mg/kg		132	U	mg/kg	1000
Selenium		.47	U	mg/kg	1	-		mg/kg		-		mg/kg		.46	U	mg/kg	1
Silver		2.4		mg/kg	2	-		mg/kg		-		mg/kg		.33	U	mg/kg	2
Sodium		183	J	mg/kg	1000	-		mg/kg		-		mg/kg		133	J	mg/kg	1000
Thallium		.36	U	mg/kg	2	-		mg/kg		-		mg/kg		.35	U	mg/kg	2
Vanadium		14.2		mg/kg	10	-		mg/kg		-		mg/kg		12.3		mg/kg	10
Zinc		9.9		mg/kg	4	-		mg/kg		-		mg/kg		23.1		mg/kg	4

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515001				22515001				22515001R				22527002			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-01				31-SL-01				31-SL-01_R				31-SL-02			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				18-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Cyanide	.25	U	mg/kg	1	-		mg/kg		-		mg/kg		.24	U	mg/kg	1

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22527002R				22515004				22515004				22515003			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-02_R				31-SL-03				31-SL-03				31-SL-04			
Collect Date:		18-AUG-92				17-AUG-92				17-AUG-93				17-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	U	ug/kg	11	11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Bromomethane		11	U	ug/kg	11	11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Vinyl chloride		11	U	ug/kg	11	11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Chloroethane		11	U	ug/kg	11	11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Methylene chloride		38	UJ	ug/kg	5	10	UJ	ug/kg	5	-		ug/kg		16	UJ	ug/kg	5
Acetone		32	UJ	ug/kg	11	11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11
Carbon disulfide		4	J	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,1-Dichloroethene		5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,1-Dichloroethane		5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,2-Dichloroethene (total)		5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Chloroform		5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,2-Dichloroethane		5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
2-Butanone		11	U	ug/kg	11	11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11
1,1,1-Trichloroethane		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Carbon tetrachloride		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Bromodichloromethane		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,2-Dichloropropane		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
cis-1,3-Dichloropropene		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Trichloroethene		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Dibromochloromethane		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,1,2-Trichloroethane		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Benzene		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
trans-1,3-Dichloropropene		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Bromoform		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
4-Methyl-2-pentanone		11	UJ	ug/kg	11	11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11
2-Hexanone		11	UJ	ug/kg	11	11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11
Tetrachloroethene		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Toluene		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,1,2,2-Tetrachloroethane		5	UJ	ug/kg	5	5	UJ	ug/kg	5	-		ug/kg		5	UJ	ug/kg	5
Chlorobenzene		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Ethylbenzene		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Styrene		5	UJ	ug/kg	5	5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Xylenes (total)		4	J	ug/kg	5	5	U	ug/kg	5	-		ug/kg		2	J	ug/kg	5
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
bis(2-Chloroethyl) ether		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2-Chlorophenol		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
1,3-Dichlorobenzene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
1,4-Dichlorobenzene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22527002R				22515004				22515004				22515003			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-02_R				31-SL-03				31-SL-03				31-SL-04			
Collect Date:	18-AUG-92				17-AUG-92				17-AUG-93				17-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2-Methylphenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2,2-oxybis(1-Chloropropane)	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
4-Methylphenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
N-Nitroso-di-n-propylamine	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Hexachloroethane	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Nitrobenzene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Isophorone	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2-Nitrophenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2,4-Dimethylphenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
bis(2-Chloroethoxy) methane	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2,4-Dichlorophenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
1,2,4-Trichlorobenzene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Naphthalene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
4-Chloroaniline	-		ug/kg		360	UJ	ug/kg	360	-		ug/kg		360	UJ	ug/kg	360
Hexachlorobutadiene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
4-Chloro-3-methylphenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2-Methylnaphthalene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Hexachlorocyclopentadiene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2,4,6-Trichlorophenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2,4,5-Trichlorophenol	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700
2-Chloronaphthalene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2-Nitroaniline	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700
Dimethylphthalate	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Acenaphthylene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2,6-Dinitrotoluene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
3-Nitroaniline	-		ug/kg		1700	UJ	ug/kg	1700	-		ug/kg		1700	UJ	ug/kg	1700
Acenaphthene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2,4-Dinitrophenol	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700
4-Nitrophenol	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700
Dibenzofuran	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
2,4-Dinitrotoluene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Diethylphthalate	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
4-Chlorophenyl-phenylether	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Fluorene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
4-Nitroaniline	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700
4,6-Dinitro-2-methylphenol	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700
N-Nitrosodiphenylamine	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
4-Bromophenyl-phenylether	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Hexachlorobenzene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Pentachlorophenol	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700
Phenanthrene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Anthracene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Carbazole	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
Di-n-butylphthalate	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	UJ	ug/kg	360
Fluoranthene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Pyrene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Butylbenzylphthalate	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
3,3-Dichlorobenzidine	-		ug/kg		720	UJ	ug/kg	720	-		ug/kg		720	UJ	ug/kg	720
Benzo (a) anthracene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Chrysene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
bis(2-Ethylhexyl) phthalate	-		ug/kg		81	J	ug/kg	360	-		ug/kg		230	J	ug/kg	360

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22527002R				22515004				22515004				22515003			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-02_R				31-SL-03				31-SL-03				31-SL-04			
Collect Date:		18-AUG-92				17-AUG-92				17-AUG-93				17-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Benzo (b) fluoranthene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Benzo (k) fluoranthene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Benzo (a) pyrene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Indeno (1,2,3-cd) pyrene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Dibenzo (a,h) anthracene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
Benzo (g,h,i) perylene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		-		ug/kg		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg	
beta-BHC		-		ug/kg		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg	
delta-BHC		-		ug/kg		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg	
gamma-BHC (Lindane)		-		ug/kg		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg	
Heptachlor		-		ug/kg		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg	
Aldrin		-		ug/kg		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg	
Heptachlor epoxide		-		ug/kg		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg	
Endosulfan I		-		ug/kg		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg	
Dieldrin		-		ug/kg		-		ug/kg		17	U	ug/kg	17	-		ug/kg	
4,4-DDE		-		ug/kg		-		ug/kg		17	U	ug/kg	17	-		ug/kg	
Endrin		-		ug/kg		-		ug/kg		17	U	ug/kg	17	-		ug/kg	
Endosulfan II		-		ug/kg		-		ug/kg		17	U	ug/kg	17	-		ug/kg	
4,4-DDD		-		ug/kg		-		ug/kg		17	U	ug/kg	17	-		ug/kg	
Endosulfan sulfate		-		ug/kg		-		ug/kg		17	U	ug/kg	17	-		ug/kg	
4,4-DDT		-		ug/kg		-		ug/kg		17	U	ug/kg	17	-		ug/kg	
Methoxychlor		-		ug/kg		-		ug/kg		87	U	ug/kg	87	-		ug/kg	
Endrin ketone		-		ug/kg		-		ug/kg		17	U	ug/kg	17	-		ug/kg	
Endrin aldehyde		-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane		-		ug/kg		-		ug/kg		87	U	ug/kg	87	-		ug/kg	
gamma-Chlordane		-		ug/kg		-		ug/kg		87	U	ug/kg	87	-		ug/kg	
Toxaphene		-		ug/kg		-		ug/kg		170	U	ug/kg	170	-		ug/kg	
Aroclor-1016		-		ug/kg		-		ug/kg		87	U	ug/kg	87	-		ug/kg	
Aroclor-1221		-		ug/kg		-		ug/kg		87	U	ug/kg	87	-		ug/kg	
Aroclor-1232		-		ug/kg		-		ug/kg		87	U	ug/kg	87	-		ug/kg	
Aroclor-1242		-		ug/kg		-		ug/kg		87	U	ug/kg	87	-		ug/kg	
Aroclor-1248		-		ug/kg		-		ug/kg		87	U	ug/kg	87	-		ug/kg	
Aroclor-1254		-		ug/kg		-		ug/kg		170	U	ug/kg	170	-		ug/kg	
Aroclor-1260		-		ug/kg		-		ug/kg		170	U	ug/kg	170	-		ug/kg	
CLP METALS AND CYANIDE	mg/kg																
Aluminum		-		mg/kg		6600		mg/kg	40	-		mg/kg		5800		mg/kg	40
Antimony		-		mg/kg		2.6	U	mg/kg	12	-		mg/kg		2.7	U	mg/kg	12
Arsenic		-		mg/kg		.7	J	mg/kg	2	-		mg/kg		.98	J	mg/kg	2
Barium		-		mg/kg		11.2	J	mg/kg	40	-		mg/kg		13.4	J	mg/kg	40
Beryllium		-		mg/kg		.08	J	mg/kg	1	-		mg/kg		.09	J	mg/kg	1
Cadmium		-		mg/kg		.58	U	mg/kg	1	-		mg/kg		.6	U	mg/kg	1
Calcium		-		mg/kg		962	J	mg/kg	1000	-		mg/kg		138	J	mg/kg	1000
Chromium		-		mg/kg		4.6		mg/kg	2	-		mg/kg		3.9		mg/kg	2
Cobalt		-		mg/kg		.66	J	mg/kg	10	-		mg/kg		.93	J	mg/kg	10
Copper		-		mg/kg		4.6	J	mg/kg	5	-		mg/kg		5.5		mg/kg	5
Iron		-		mg/kg		3060		mg/kg	20	-		mg/kg		2850		mg/kg	20
Lead		-		mg/kg		2.9		mg/kg	1	-		mg/kg		4.5		mg/kg	1
Magnesium		-		mg/kg		549	J	mg/kg	1000	-		mg/kg		98.6	J	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22527002R				22515004				22515004				22515003			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-02_R				31-SL-03				31-SL-03				31-SL-04			
Collect Date:	18-AUG-92				17-AUG-92				17-AUG-93				17-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	-		mg/kg		290		mg/kg	3	-		mg/kg		295		mg/kg	3
Mercury	-		mg/kg		.06	U	mg/kg	.1	-		mg/kg		.09	U	mg/kg	.1
Nickel	-		mg/kg		2.3	U	mg/kg	8	-		mg/kg		2.3	U	mg/kg	8
Potassium	-		mg/kg		128	U	mg/kg	1000	-		mg/kg		131	U	mg/kg	1000
Selenium	-		mg/kg		.52	J	mg/kg	1	-		mg/kg		.46	U	mg/kg	1
Silver	-		mg/kg		4.1		mg/kg	2	-		mg/kg		3.7		mg/kg	2
Sodium	-		mg/kg		190	J	mg/kg	1000	-		mg/kg		233	J	mg/kg	1000
Thallium	-		mg/kg		.34	U	mg/kg	2	-		mg/kg		.35	U	mg/kg	2
Vanadium	-		mg/kg		8.3	J	mg/kg	10	-		mg/kg		7.3	J	mg/kg	10
Zinc	-		mg/kg		7.9	J	mg/kg	4	-		mg/kg		7.9	J	mg/kg	4
Cyanide	-		mg/kg		.23	U	mg/kg	1	-		mg/kg		.24	U	mg/kg	1

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515003				22515005				22515005				22527003			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-04				31-SL-05				31-SL-05				31-SL-06			
Collect Date:		17-AUG-93				17-AUG-92				17-AUG-93				18-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		-		ug/kg		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Bromomethane		-		ug/kg		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Vinyl chloride		-		ug/kg		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Chloroethane		-		ug/kg		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Methylene chloride		-		ug/kg		18	UJ	ug/kg	5	-		ug/kg		13	UJ	ug/kg	5
Acetone		-		ug/kg		11	UJ	ug/kg	11	-		ug/kg		20	UJ	ug/kg	11
Carbon disulfide		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,1-Dichloroethene		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,1-Dichloroethane		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,2-Dichloroethene (total)		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Chloroform		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,2-Dichloroethane		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
2-Butanone		-		ug/kg		11	UJ	ug/kg	11	-		ug/kg		11	U	ug/kg	11
1,1,1-Trichloroethane		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Carbon tetrachloride		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Bromodichloromethane		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,2-Dichloropropane		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
cis-1,3-Dichloropropene		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Trichloroethene		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Dibromochloromethane		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,1,2-Trichloroethane		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Benzene		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
trans-1,3-Dichloropropene		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Bromoform		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
4-Methyl-2-pentanone		-		ug/kg		11	UJ	ug/kg	11	-		ug/kg		11	U	ug/kg	11
2-Hexanone		-		ug/kg		11	UJ	ug/kg	11	-		ug/kg		1	J	ug/kg	11
Tetrachloroethene		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Toluene		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
1,1,2,2-Tetrachloroethane		-		ug/kg		5	UJ	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Chlorobenzene		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Ethylbenzene		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Styrene		-		ug/kg		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5
Xylenes (total)		-		ug/kg		5	U	ug/kg	5	-		ug/kg		3	J	ug/kg	5
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
bis(2-Chloroethyl) ether		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2-Chlorophenol		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
1,3-Dichlorobenzene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
1,4-Dichlorobenzene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515003				22515005				22515005				22527003			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-04				31-SL-05				31-SL-05				31-SL-06			
Collect Date:	17-AUG-93				17-AUG-92				17-AUG-93				18-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2-Methylphenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2,2-oxybis(1-Chloropropane)	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
4-Methylphenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
N-Nitroso-di-n-propylamine	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Hexachloroethane	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Nitrobenzene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Isophorone	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2-Nitrophenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2,4-Dimethylphenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
bis(2-Chloroethoxy) methane	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2,4-Dichlorophenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
1,2,4-Trichlorobenzene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Naphthalene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
4-Chloroaniline	-		ug/kg		360	UJ	ug/kg	360	-		ug/kg		370	UJ	ug/kg	370
Hexachlorobutadiene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
4-Chloro-3-methylphenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2-Methylnaphthalene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Hexachlorocyclopentadiene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2,4,6-Trichlorophenol	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2,4,5-Trichlorophenol	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg		1800	UJ	ug/kg	1800
2-Chloronaphthalene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2-Nitroaniline	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg		1800	U	ug/kg	1800
Dimethylphthalate	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Acenaphthylene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2,6-Dinitrotoluene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
3-Nitroaniline	-		ug/kg		1800	UJ	ug/kg	1800	-		ug/kg		1800	UJ	ug/kg	1800
Acenaphthene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2,4-Dinitrophenol	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg		1800	UJ	ug/kg	1800
4-Nitrophenol	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg		1800	U	ug/kg	1800
Dibenzofuran	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
2,4-Dinitrotoluene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Diethylphthalate	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
4-Chlorophenyl-phenylether	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Fluorene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
4-Nitroaniline	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg		1800	UJ	ug/kg	1800
4,6-Dinitro-2-methylphenol	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg		1800	UJ	ug/kg	1800
N-Nitrosodiphenylamine	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
4-Bromophenyl-phenylether	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Hexachlorobenzene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Pentachlorophenol	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg		1800	U	ug/kg	1800
Phenanthrene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Anthracene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Carbazole	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
Di-n-butylphthalate	-		ug/kg		360	UJ	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Fluoranthene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Pyrene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Butylbenzylphthalate	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
3,3-Dichlorobenzidine	-		ug/kg		730	UJ	ug/kg	730	-		ug/kg		730	U	ug/kg	730
Benzo (a) anthracene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Chrysene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
bis(2-Ethylhexyl) phthalate	-		ug/kg		190	J	ug/kg	360	-		ug/kg		370	U	ug/kg	370

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515003				22515005				22515005				22527003			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-04				31-SL-05				31-SL-05				31-SL-06			
Collect Date:		17-AUG-93				17-AUG-92				17-AUG-93				18-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Benzo (b) fluoranthene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Benzo (k) fluoranthene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Benzo (a) pyrene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Indeno (1,2,3-cd) pyrene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Dibenzo (a,h) anthracene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
Benzo (g,h,i) perylene		-		ug/kg		360	U	ug/kg	360	-		ug/kg		370	U	ug/kg	370
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		8.7	U	ug/kg	8.7	-		ug/kg		8.8	U	ug/kg	8.8	8.9	U	ug/kg	8.9
beta-BHC		8.7	U	ug/kg	8.7	-		ug/kg		8.8	U	ug/kg	8.8	8.9	U	ug/kg	8.9
delta-BHC		8.7	U	ug/kg	8.7	-		ug/kg		8.8	U	ug/kg	8.8	8.9	U	ug/kg	8.9
gamma-BHC (Lindane)		8.7	U	ug/kg	8.7	-		ug/kg		8.8	U	ug/kg	8.8	8.9	U	ug/kg	8.9
Heptachlor		8.7	U	ug/kg	8.7	-		ug/kg		8.8	U	ug/kg	8.8	8.9	U	ug/kg	8.9
Aldrin		8.7	U	ug/kg	8.7	-		ug/kg		8.8	U	ug/kg	8.8	8.9	U	ug/kg	8.9
Heptachlor epoxide		8.7	U	ug/kg	8.7	-		ug/kg		8.8	U	ug/kg	8.8	8.9	U	ug/kg	8.9
Endosulfan I		8.7	U	ug/kg	8.7	-		ug/kg		8.8	U	ug/kg	8.8	8.9	U	ug/kg	8.9
Dieldrin		17	U	ug/kg	17	-		ug/kg		18	U	ug/kg	18	18	U	ug/kg	18
4,4-DDE		17	U	ug/kg	17	-		ug/kg		18	U	ug/kg	18	18	U	ug/kg	18
Endrin		17	U	ug/kg	17	-		ug/kg		18	U	ug/kg	18	18	U	ug/kg	18
Endosulfan II		17	U	ug/kg	17	-		ug/kg		18	U	ug/kg	18	18	U	ug/kg	18
4,4-DDD		17	U	ug/kg	17	-		ug/kg		18	U	ug/kg	18	18	U	ug/kg	18
Endosulfan sulfate		17	U	ug/kg	17	-		ug/kg		18	U	ug/kg	18	18	U	ug/kg	18
4,4-DDT		17	U	ug/kg	17	-		ug/kg		18	U	ug/kg	18	18	U	ug/kg	18
Methoxychlor		87	U	ug/kg	87	-		ug/kg		88	U	ug/kg	88	89	U	ug/kg	89
Endrin ketone		17	U	ug/kg	17	-		ug/kg		18	U	ug/kg	18	18	U	ug/kg	18
Endrin aldehyde		-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane		87	U	ug/kg	87	-		ug/kg		88	U	ug/kg	88	89	U	ug/kg	89
gamma-Chlordane		87	U	ug/kg	87	-		ug/kg		88	U	ug/kg	88	89	U	ug/kg	89
Toxaphene		170	U	ug/kg	170	-		ug/kg		180	U	ug/kg	180	180	U	ug/kg	180
Aroclor-1016		87	U	ug/kg	87	-		ug/kg		88	U	ug/kg	88	89	U	ug/kg	89
Aroclor-1221		87	U	ug/kg	87	-		ug/kg		88	U	ug/kg	88	89	U	ug/kg	89
Aroclor-1232		87	U	ug/kg	87	-		ug/kg		88	U	ug/kg	88	89	U	ug/kg	89
Aroclor-1242		87	U	ug/kg	87	-		ug/kg		88	U	ug/kg	88	89	U	ug/kg	89
Aroclor-1248		87	U	ug/kg	87	-		ug/kg		88	U	ug/kg	88	89	U	ug/kg	89
Aroclor-1254		170	U	ug/kg	170	-		ug/kg		180	U	ug/kg	180	180	U	ug/kg	180
Aroclor-1260		170	U	ug/kg	170	-		ug/kg		180	U	ug/kg	180	180	U	ug/kg	180
CLP METALS AND CYANIDE	mg/kg																
Aluminum		-		mg/kg		9190		mg/kg	40	-		mg/kg		7870		mg/kg	40
Antimony		-		mg/kg		2.7	U	mg/kg	12	-		mg/kg		2.7	U	mg/kg	12
Arsenic		-		mg/kg		1.6	J	mg/kg	2	-		mg/kg		1.1	J	mg/kg	2
Barium		-		mg/kg		10.7	J	mg/kg	40	-		mg/kg		22.8	J	mg/kg	40
Beryllium		-		mg/kg		.1	J	mg/kg	1	-		mg/kg		.1	J	mg/kg	1
Cadmium		-		mg/kg		.6	U	mg/kg	1	-		mg/kg		.61	U	mg/kg	1
Calcium		-		mg/kg		107	J	mg/kg	1000	-		mg/kg		281	J	mg/kg	1000
Chromium		-		mg/kg		6.6		mg/kg	2	-		mg/kg		4		mg/kg	2
Cobalt		-		mg/kg		.97	J	mg/kg	10	-		mg/kg		.95	J	mg/kg	10
Copper		-		mg/kg		5.4	J	mg/kg	5	-		mg/kg		4	J	mg/kg	5
Iron		-		mg/kg		4490		mg/kg	20	-		mg/kg		3980		mg/kg	20
Lead		-		mg/kg		5.6		mg/kg	1	-		mg/kg		4.4		mg/kg	1
Magnesium		-		mg/kg		104	J	mg/kg	1000	-		mg/kg		119	J	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515003				22515005				22515005				22527003			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-04				31-SL-05				31-SL-05				31-SL-06			
Collect Date:	17-AUG-93				17-AUG-92				17-AUG-93				18-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	-		mg/kg		194		mg/kg	3	-		mg/kg		399		mg/kg	3
Mercury	-		mg/kg		.08	U	mg/kg	.1	-		mg/kg		.05	U	mg/kg	.1
Nickel	-		mg/kg		2.3	U	mg/kg	8	-		mg/kg		3.6	J	mg/kg	8
Potassium	-		mg/kg		132	U	mg/kg	1000	-		mg/kg		133	U	mg/kg	1000
Selenium	-		mg/kg		.46	U	mg/kg	1	-		mg/kg		.46	U	mg/kg	1
Silver	-		mg/kg		2.8		mg/kg	2	-		mg/kg		.33	U	mg/kg	2
Sodium	-		mg/kg		180	J	mg/kg	1000	-		mg/kg		135	J	mg/kg	1000
Thallium	-		mg/kg		.35	U	mg/kg	2	-		mg/kg		.35	U	mg/kg	2
Vanadium	-		mg/kg		12.2		mg/kg	10	-		mg/kg		9.9	J	mg/kg	10
Zinc	-		mg/kg		8	J	mg/kg	4	-		mg/kg		6		mg/kg	4
Cyanide	-		mg/kg		.24	U	mg/kg	1	-		mg/kg		.24	U	mg/kg	1

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515007				22515007				22515008				22515008		
Site		WHITING				WHITING				WHITING				WHITING		
Locator		31-SL-07				31-SL-07				31-SL-07A				31-SL-07A		
Collect Date:		17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93		
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg
Bromomethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg
Vinyl chloride		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg
Chloroethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg
Methylene chloride		16	UJ	ug/kg	5	-		ug/kg		18	UJ	ug/kg	5	-		ug/kg
Acetone		11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg
Carbon disulfide		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
1,1-Dichloroethene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
1,1-Dichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
1,2-Dichloroethene (total)		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
Chloroform		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
1,2-Dichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
2-Butanone		11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg
1,1,1-Trichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
Carbon tetrachloride		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
Bromodichloromethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
1,2-Dichloropropane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
cis-1,3-Dichloropropene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
Trichloroethene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
Dibromochloromethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
1,1,2-Trichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
Benzene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
trans-1,3-Dichloropropene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
Bromoform		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
4-Methyl-2-pentanone		11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg
2-Hexanone		11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg
Tetrachloroethene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
Toluene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
1,1,2,2-Tetrachloroethane		5	UJ	ug/kg	5	-		ug/kg		5	UJ	ug/kg	5	-		ug/kg
Chlorobenzene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
Ethylbenzene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
Styrene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg
Xylenes (total)		2	J	ug/kg	5	-		ug/kg		2	J	ug/kg	5	-		ug/kg
CLP SEMIVOLATILES 90-SOW	ug/kg															
Phenol		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg
bis(2-Chloroethyl) ether		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg
2-Chlorophenol		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg
1,3-Dichlorobenzene		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg
1,4-Dichlorobenzene		360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515007				22515007				22515008				22515008			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-07				31-SL-07				31-SL-07A				31-SL-07A			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2-Methylphenol	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2,2-oxybis(1-Chloropropane)	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
4-Methylphenol	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
N-Nitroso-di-n-propylamine	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Hexachloroethane	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Nitrobenzene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Isophorone	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2-Nitrophenol	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2,4-Dimethylphenol	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
bis(2-Chloroethoxy) methane	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2,4-Dichlorophenol	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
1,2,4-Trichlorobenzene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Naphthalene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
4-Chloroaniline	360	UJ	ug/kg	360	-		ug/kg		360	UJ	ug/kg	360	-		ug/kg	
Hexachlorobutadiene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
4-Chloro-3-methylphenol	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2-Methylnaphthalene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Hexachlorocyclopentadiene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2,4,6-Trichlorophenol	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2,4,5-Trichlorophenol	1800	U	ug/kg	1800	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg	
2-Chloronaphthalene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2-Nitroaniline	1800	U	ug/kg	1800	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg	
Dimethylphthalate	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Acenaphthylene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2,6-Dinitrotoluene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
3-Nitroaniline	1800	UJ	ug/kg	1800	-		ug/kg		1800	UJ	ug/kg	1800	-		ug/kg	
Acenaphthene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2,4-Dinitrophenol	1800	U	ug/kg	1800	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg	
4-Nitrophenol	1800	U	ug/kg	1800	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg	
Dibenzofuran	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
2,4-Dinitrotoluene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Diethylphthalate	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
4-Chlorophenyl-phenylether	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Fluorene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
4-Nitroaniline	1800	U	ug/kg	1800	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg	
4,6-Dinitro-2-methylphenol	1800	U	ug/kg	1800	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg	
N-Nitrosodiphenylamine	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
4-Bromophenyl-phenylether	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Hexachlorobenzene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Pentachlorophenol	1800	U	ug/kg	1800	-		ug/kg		1800	U	ug/kg	1800	-		ug/kg	
Phenanthrene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Anthracene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Carbazole	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
Di-n-butylphthalate	360	UJ	ug/kg	360	-		ug/kg		360	UJ	ug/kg	360	-		ug/kg	
Fluoranthene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Pyrene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Butylbenzylphthalate	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
3,3-Dichlorobenzidine	730	UJ	ug/kg	730	-		ug/kg		730	UJ	ug/kg	730	-		ug/kg	
Benzo (a) anthracene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Chrysene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
bis(2-Ethylhexyl) phthalate	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515007				22515007				22515008				22515008			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-07				31-SL-07				31-SL-07A				31-SL-07A			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Benzo (b) fluoranthene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Benzo (k) fluoranthene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Benzo (a) pyrene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Indeno (1,2,3-cd) pyrene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Dibenzo (a,h) anthracene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
Benzo (g,h,i) perylene	360	U	ug/kg	360	-		ug/kg		360	U	ug/kg	360	-		ug/kg	
CLP PESTICIDES/PCBS 90-SOW ug/kg																
alpha-BHC	-		ug/kg		8.8	U	ug/kg	8.8	-		ug/kg		8.8	U	ug/kg	8.8
beta-BHC	-		ug/kg		8.8	U	ug/kg	8.8	-		ug/kg		8.8	U	ug/kg	8.8
delta-BHC	-		ug/kg		8.8	U	ug/kg	8.8	-		ug/kg		8.8	U	ug/kg	8.8
gamma-BHC (Lindane)	-		ug/kg		8.8	U	ug/kg	8.8	-		ug/kg		8.8	U	ug/kg	8.8
Heptachlor	-		ug/kg		8.8	U	ug/kg	8.8	-		ug/kg		8.8	U	ug/kg	8.8
Aldrin	-		ug/kg		8.8	U	ug/kg	8.8	-		ug/kg		8.8	U	ug/kg	8.8
Heptachlor epoxide	-		ug/kg		8.8	U	ug/kg	8.8	-		ug/kg		8.8	U	ug/kg	8.8
Endosulfan I	-		ug/kg		8.8	U	ug/kg	8.8	-		ug/kg		8.8	U	ug/kg	8.8
Dieldrin	-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
4,4-DDE	-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
Endrin	-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
Endosulfan II	-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
4,4-DDD	-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
Endosulfan sulfate	-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
4,4-DDT	-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
Methoxychlor	-		ug/kg		88	U	ug/kg	88	-		ug/kg		88	U	ug/kg	88
Endrin ketone	-		ug/kg		18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
Endrin aldehyde	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane	-		ug/kg		88	U	ug/kg	88	-		ug/kg		88	U	ug/kg	88
gamma-Chlordane	-		ug/kg		88	U	ug/kg	88	-		ug/kg		88	U	ug/kg	88
Toxaphene	-		ug/kg		180	U	ug/kg	180	-		ug/kg		180	U	ug/kg	180
Aroclor-1016	-		ug/kg		88	U	ug/kg	88	-		ug/kg		88	U	ug/kg	88
Aroclor-1221	-		ug/kg		88	U	ug/kg	88	-		ug/kg		88	U	ug/kg	88
Aroclor-1232	-		ug/kg		88	U	ug/kg	88	-		ug/kg		88	U	ug/kg	88
Aroclor-1242	-		ug/kg		88	U	ug/kg	88	-		ug/kg		88	U	ug/kg	88
Aroclor-1248	-		ug/kg		88	U	ug/kg	88	-		ug/kg		88	U	ug/kg	88
Aroclor-1254	-		ug/kg		180	U	ug/kg	180	-		ug/kg		180	U	ug/kg	180
Aroclor-1260	-		ug/kg		180	U	ug/kg	180	-		ug/kg		180	U	ug/kg	180
CLP METALS AND CYANIDE mg/kg																
Aluminum	6550		mg/kg	40	-		mg/kg		6480		mg/kg	40	-		mg/kg	
Antimony	2.7	U	mg/kg	12	-		mg/kg		2.7	U	mg/kg	12	-		mg/kg	
Arsenic	.89	J	mg/kg	2	-		mg/kg		.99	J	mg/kg	2	-		mg/kg	
Barium	12.2	J	mg/kg	40	-		mg/kg		12.5	J	mg/kg	40	-		mg/kg	
Beryllium	.09	J	mg/kg	1	-		mg/kg		.11	J	mg/kg	1	-		mg/kg	
Cadmium	.6	U	mg/kg	1	-		mg/kg		.6	U	mg/kg	1	-		mg/kg	
Calcium	169	J	mg/kg	1000	-		mg/kg		188	J	mg/kg	1000	-		mg/kg	
Chromium	4.4		mg/kg	2	-		mg/kg		5		mg/kg	2	-		mg/kg	
Cobalt	.68	J	mg/kg	10	-		mg/kg		1.2	J	mg/kg	10	-		mg/kg	
Copper	5.4	J	mg/kg	5	-		mg/kg		4.8	J	mg/kg	5	-		mg/kg	
Iron	2980		mg/kg	20	-		mg/kg		3010		mg/kg	20	-		mg/kg	
Lead	4.2		mg/kg	1	-		mg/kg		5.7		mg/kg	1	-		mg/kg	
Magnesium	121	J	mg/kg	1000	-		mg/kg		119	J	mg/kg	1000	-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515007				22515007				22515008				22515008			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-07				31-SL-07				31-SL-07A				31-SL-07A			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	212		mg/kg	3	-		mg/kg		210		mg/kg	3	-		mg/kg	
Mercury	.08	U	mg/kg	.1	-		mg/kg		.09	U	mg/kg	.1	-		mg/kg	
Nickel	2.4	U	mg/kg	8	-		mg/kg		2.4	J	mg/kg	8	-		mg/kg	
Potassium	132	U	mg/kg	1000	-		mg/kg		146	J	mg/kg	1000	-		mg/kg	
Selenium	.46	U	mg/kg	1	-		mg/kg		.46	U	mg/kg	1	-		mg/kg	
Silver	6.6		mg/kg	2	-		mg/kg		2.6		mg/kg	2	-		mg/kg	
Sodium	142	J	mg/kg	1000	-		mg/kg		179	J	mg/kg	1000	-		mg/kg	
Thallium	.35	U	mg/kg	2	-		mg/kg		.35	U	mg/kg	2	-		mg/kg	
Vanadium	8.1	J	mg/kg	10	-		mg/kg		8.6	J	mg/kg	10	-		mg/kg	
Zinc	10.6		mg/kg	4	-		mg/kg		7.8	J	mg/kg	4	-		mg/kg	
Cyanide	.24	U	mg/kg	1	-		mg/kg		.24	U	mg/kg	1	-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515009				22515009				22515011				22515011		
Site		WHITING				WHITING				WHITING				WHITING		
Locator		31-SL-08				31-SL-08				31-SL-09				31-SL-09		
Collect Date:		17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93		
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg	
Bromomethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg	
Vinyl chloride		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg	
Chloroethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg	
Methylene chloride		45	UJ	ug/kg	5	-		ug/kg		16	UJ	ug/kg	5	-		ug/kg	
Acetone		11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg	
Carbon disulfide		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
1,1-Dichloroethene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
1,1-Dichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
1,2-Dichloroethene (total)		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
Chloroform		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
1,2-Dichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
2-Butanone		11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg	
1,1,1-Trichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
Carbon tetrachloride		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
Bromodichloromethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
1,2-Dichloropropane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
cis-1,3-Dichloropropene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
Trichloroethene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
Dibromochloromethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
1,1,2-Trichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
Benzene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
trans-1,3-Dichloropropene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
Bromoform		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
4-Methyl-2-pentanone		11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg	
2-Hexanone		11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg	
Tetrachloroethene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
Toluene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
1,1,2,2-Tetrachloroethane		5	UJ	ug/kg	5	-		ug/kg		5	UJ	ug/kg	5	-		ug/kg	
Chlorobenzene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
Ethylbenzene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
Styrene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	-		ug/kg	
Xylenes (total)		2	J	ug/kg	5	-		ug/kg		4	J	ug/kg	5	-		ug/kg	
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
bis(2-Chloroethyl) ether		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2-Chlorophenol		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
1,3-Dichlorobenzene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
1,4-Dichlorobenzene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515009				22515009				22515011				22515011			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-08				31-SL-08				31-SL-09				31-SL-09			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2-Methylphenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,2-oxybis(1-Chloropropane)	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Methylphenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
N-Nitroso-di-n-propylamine	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Hexachloroethane	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Nitrobenzene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Isophorone	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2-Nitrophenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4-Dimethylphenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
bis(2-Chloroethoxy) methane	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4-Dichlorophenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
1,2,4-Trichlorobenzene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Naphthalene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Chloroaniline	360	UJ	ug/kg	360	-		ug/kg		350	UJ	ug/kg	350	-		ug/kg	
Hexachlorobutadiene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Chloro-3-methylphenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2-Methylnaphthalene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Hexachlorocyclopentadiene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4,6-Trichlorophenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4,5-Trichlorophenol	1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
2-Chloronaphthalene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2-Nitroaniline	1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
Dimethylphthalate	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Acenaphthylene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,6-Dinitrotoluene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
3-Nitroaniline	1700	UJ	ug/kg	1700	-		ug/kg		1700	UJ	ug/kg	1700	-		ug/kg	
Acenaphthene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4-Dinitrophenol	1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
4-Nitrophenol	1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
Dibenzofuran	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4-Dinitrotoluene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Diethylphthalate	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Chlorophenyl-phenylether	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Fluorene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Nitroaniline	1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
4,6-Dinitro-2-methylphenol	1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
N-Nitrosodiphenylamine	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Bromophenyl-phenylether	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Hexachlorobenzene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Pentachlorophenol	1700	U	ug/kg	1700	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
Phenanthrene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Anthracene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Carbazole	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
Di-n-butylphthalate	360	UJ	ug/kg	360	-		ug/kg		350	UJ	ug/kg	350	-		ug/kg	
Fluoranthene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Pyrene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Butylbenzylphthalate	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
3,3-Dichlorobenzidine	720	UJ	ug/kg	720	-		ug/kg		710	UJ	ug/kg	710	-		ug/kg	
Benzo (a) anthracene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Chrysene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
bis(2-Ethylhexyl) phthalate	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515009				22515009				22515011				22515011			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-08				31-SL-08				31-SL-09				31-SL-09			
Collect Date:		17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Benzo (b) fluoranthene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Benzo (k) fluoranthene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Benzo (a) pyrene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Indeno (1,2,3-cd) pyrene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Dibenzo (a,h) anthracene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Benzo (g,h,i) perylene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg		8.6	U	ug/kg	8.6
beta-BHC		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg		8.6	U	ug/kg	8.6
delta-BHC		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg		8.6	U	ug/kg	8.6
gamma-BHC (Lindane)		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg		8.6	U	ug/kg	8.6
Heptachlor		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg		8.6	U	ug/kg	8.6
Aldrin		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg		8.6	U	ug/kg	8.6
Heptachlor epoxide		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg		8.6	U	ug/kg	8.6
Endosulfan I		-		ug/kg		8.7	U	ug/kg	8.7	-		ug/kg		8.6	U	ug/kg	8.6
Dieldrin		-		ug/kg		17	U	ug/kg	17	-		ug/kg		17	U	ug/kg	17
4,4-DDE		-		ug/kg		17	U	ug/kg	17	-		ug/kg		17	U	ug/kg	17
Endrin		-		ug/kg		17	U	ug/kg	17	-		ug/kg		17	U	ug/kg	17
Endosulfan II		-		ug/kg		17	U	ug/kg	17	-		ug/kg		17	U	ug/kg	17
4,4-DDD		-		ug/kg		17	U	ug/kg	17	-		ug/kg		17	U	ug/kg	17
Endosulfan sulfate		-		ug/kg		17	U	ug/kg	17	-		ug/kg		17	U	ug/kg	17
4,4-DDT		-		ug/kg		17	U	ug/kg	17	-		ug/kg		17	U	ug/kg	17
Methoxychlor		-		ug/kg		87	U	ug/kg	87	-		ug/kg		86	U	ug/kg	86
Endrin ketone		-		ug/kg		17	U	ug/kg	17	-		ug/kg		17	U	ug/kg	17
Endrin aldehyde		-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane		-		ug/kg		87	U	ug/kg	87	-		ug/kg		86	U	ug/kg	86
gamma-Chlordane		-		ug/kg		87	U	ug/kg	87	-		ug/kg		86	U	ug/kg	86
Toxaphene		-		ug/kg		170	U	ug/kg	170	-		ug/kg		170	U	ug/kg	170
Aroclor-1016		-		ug/kg		87	U	ug/kg	87	-		ug/kg		86	U	ug/kg	86
Aroclor-1221		-		ug/kg		87	U	ug/kg	87	-		ug/kg		86	U	ug/kg	86
Aroclor-1232		-		ug/kg		87	U	ug/kg	87	-		ug/kg		86	U	ug/kg	86
Aroclor-1242		-		ug/kg		87	U	ug/kg	87	-		ug/kg		86	U	ug/kg	86
Aroclor-1248		-		ug/kg		87	U	ug/kg	87	-		ug/kg		86	U	ug/kg	86
Aroclor-1254		-		ug/kg		170	U	ug/kg	170	-		ug/kg		170	U	ug/kg	170
Aroclor-1260		-		ug/kg		170	U	ug/kg	170	-		ug/kg		170	U	ug/kg	170
CLP METALS AND CYANIDE	mg/kg																
Aluminum		6840		mg/kg	40	-		mg/kg		10900		mg/kg	40	-		mg/kg	
Antimony		2.7	U	mg/kg	12	-		mg/kg		2.7	U	mg/kg	12	-		mg/kg	
Arsenic		.87	J	mg/kg	2	-		mg/kg		1.9	J	mg/kg	2	-		mg/kg	
Barium		11	J	mg/kg	40	-		mg/kg		12.5	J	mg/kg	40	-		mg/kg	
Beryllium		.09	J	mg/kg	1	-		mg/kg		.15	J	mg/kg	1	-		mg/kg	
Cadmium		.6	U	mg/kg	1	-		mg/kg		.59	U	mg/kg	1	-		mg/kg	
Calcium		168	J	mg/kg	1000	-		mg/kg		229	J	mg/kg	1000	-		mg/kg	
Chromium		5.2		mg/kg	2	-		mg/kg		7.8		mg/kg	2	-		mg/kg	
Cobalt		1.1	J	mg/kg	10	-		mg/kg		.81	J	mg/kg	10	-		mg/kg	
Copper		4.4	J	mg/kg	5	-		mg/kg		5.3	J	mg/kg	5	-		mg/kg	
Iron		3270		mg/kg	20	-		mg/kg		5980		mg/kg	20	-		mg/kg	
Lead		4		mg/kg	1	-		mg/kg		4.8		mg/kg	1	-		mg/kg	
Magnesium		109	J	mg/kg	1000	-		mg/kg		117	J	mg/kg	1000	-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515009				22515009				22515011				22515011			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-08				31-SL-08				31-SL-09				31-SL-09			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	279		mg/kg	3	-		mg/kg		154		mg/kg	3	-		mg/kg	
Mercury	.04	U	mg/kg	.1	-		mg/kg		.06	U	mg/kg	.1	-		mg/kg	
Nickel	2.3	U	mg/kg	8	-		mg/kg		2.3	U	mg/kg	8	-		mg/kg	
Potassium	131	U	mg/kg	1000	-		mg/kg		129	U	mg/kg	1000	-		mg/kg	
Selenium	.46	U	mg/kg	1	-		mg/kg		.45	U	mg/kg	1	-		mg/kg	
Silver	2.5		mg/kg	2	-		mg/kg		5.9		mg/kg	2	-		mg/kg	
Sodium	166	J	mg/kg	1000	-		mg/kg		202	J	mg/kg	1000	-		mg/kg	
Thallium	.35	U	mg/kg	2	-		mg/kg		.34	U	mg/kg	2	-		mg/kg	
Vanadium	8.8	J	mg/kg	10	-		mg/kg		15.8		mg/kg	10	-		mg/kg	
Zinc	8.4		mg/kg	4	-		mg/kg		12		mg/kg	4	-		mg/kg	
Cyanide	.24	U	mg/kg	1	-		mg/kg		.24	U	mg/kg	1	-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515012				22515012				22515013				22515013			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-10				31-SL-10				31-SL-11				31-SL-11			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW ug/kg																
Chloromethane	11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg	
Bromomethane	11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg	
Vinyl chloride	11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg	
Chloroethane	11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11	-		ug/kg	
Methylene chloride	25	UJ	ug/kg	6	-		ug/kg		13	UJ	ug/kg	6	-		ug/kg	
Acetone	11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg	
Carbon disulfide	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
1,1-Dichloroethene	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
1,1-Dichlorcethane	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
1,2-Dichloroethene (total)	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
Chloroform	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
1,2-Dichloroethane	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
2-Butanone	11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg	
1,1,1-Trichloroethane	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
Carbon tetrachloride	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
Bromodichloromethane	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
1,2-Dichloropropane	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
cis-1,3-Dichloropropene	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
Trichloroethene	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
Dibromochloromethane	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
1,1,2-Trichloroethane	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
Benzene	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
trans-1,3-Dichloropropene	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
Bromoform	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
4-Methyl-2-pentanone	11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg	
2-Hexanone	11	UJ	ug/kg	11	-		ug/kg		11	UJ	ug/kg	11	-		ug/kg	
Tetrachloroethene	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
Toluene	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
1,1,2,2-Tetrachloroethane	6	UJ	ug/kg	6	-		ug/kg		6	UJ	ug/kg	6	-		ug/kg	
Chlorobenzene	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
Ethylbenzene	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
Styrene	6	U	ug/kg	6	-		ug/kg		6	U	ug/kg	6	-		ug/kg	
Xylenes (total)	6	U	ug/kg	6	-		ug/kg		2	J	ug/kg	6	-		ug/kg	
CLP SEMIVOLATILES 90-SOW ug/kg																
Phenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
bis(2-Chloroethyl) ether	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2-Chlorophenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
1,3-Dichlorobenzene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
1,4-Dichlorobenzene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515012				22515012				22515013				22515013			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-10				31-SL-10				31-SL-11				31-SL-11			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2-Methylphenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,2-oxybis(1-Chloropropane)	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Methylphenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
N-Nitroso-di-n-propylamine	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Hexachloroethane	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Nitrobenzene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Isophorone	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2-Nitrophenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4-Dimethylphenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
bis(2-Chloroethoxy) methane	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4-Dichlorophenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
1,2,4-Trichlorobenzene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Naphthalene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Chloroaniline	360	UJ	ug/kg	360	-		ug/kg		350	UJ	ug/kg	350	-		ug/kg	
Hexachlorobutadiene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Chloro-3-methylphenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2-Methylnaphthalene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Hexachlorocyclopentadiene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4,6-Trichlorophenol	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4,5-Trichlorophenol	1800	U	ug/kg	1800	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
2-Chloronaphthalene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2-Nitroaniline	1800	U	ug/kg	1800	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
Dimethylphthalate	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Acenaphthylene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,6-Dinitrotoluene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
3-Nitroaniline	1800	UJ	ug/kg	1800	-		ug/kg		1700	UJ	ug/kg	1700	-		ug/kg	
Acenaphthene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4-Dinitrophenol	1800	U	ug/kg	1800	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
4-Nitrophenol	1800	U	ug/kg	1800	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
Dibenzofuran	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
2,4-Dinitrotoluene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Diethylphthalate	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Chlorophenyl-phenylether	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Fluorene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Nitroaniline	1800	U	ug/kg	1800	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
4,6-Dinitro-2-methylphenol	1800	U	ug/kg	1800	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
N-Nitrosodiphenylamine	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
4-Bromophenyl-phenylether	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Hexachlorobenzene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Pentachlorophenol	1800	U	ug/kg	1800	-		ug/kg		1700	U	ug/kg	1700	-		ug/kg	
Phenanthrene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Anthracene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Carbazole	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
Di-n-butylphthalate	360	UJ	ug/kg	360	-		ug/kg		350	UJ	ug/kg	350	-		ug/kg	
Fluoranthene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Pyrene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Butylbenzylphthalate	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
3,3-Dichlorobenzidine	730	UJ	ug/kg	730	-		ug/kg		700	UJ	ug/kg	700	-		ug/kg	
Benzo (a) anthracene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Chrysene	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
bis(2-Ethylhexyl) phthalate	360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515012				22515012				22515013				22515013			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-10				31-SL-10				31-SL-11				31-SL-11			
Collect Date:		17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Benzo (b) fluoranthene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Benzo (k) fluoranthene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Benzo (a) pyrene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Indeno (1,2,3-cd) pyrene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Dibenzo (a,h) anthracene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
Benzo (g,h,i) perylene		360	U	ug/kg	360	-		ug/kg		350	U	ug/kg	350	-		ug/kg	
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		-		ug/kg		18	U	ug/kg	18	-		ug/kg		8.5	U	ug/kg	8.5
beta-BHC		-		ug/kg		18	U	ug/kg	18	-		ug/kg		8.5	U	ug/kg	8.5
delta-BHC		-		ug/kg		18	U	ug/kg	18	-		ug/kg		8.5	U	ug/kg	8.5
gamma-BHC (Lindane)		-		ug/kg		18	U	ug/kg	18	-		ug/kg		8.5	U	ug/kg	8.5
Heptachlor		-		ug/kg		18	U	ug/kg	18	-		ug/kg		8.5	U	ug/kg	8.5
Aldrin		-		ug/kg		18	U	ug/kg	18	-		ug/kg		8.5	U	ug/kg	8.5
Heptachlor epoxide		-		ug/kg		18	U	ug/kg	18	-		ug/kg		8.5	U	ug/kg	8.5
Endosulfan I		-		ug/kg		18	U	ug/kg	18	-		ug/kg		8.5	U	ug/kg	8.5
Dieldrin		-		ug/kg		35	U	ug/kg	35	-		ug/kg		17	U	ug/kg	17
4,4-DDE		-		ug/kg		35	U	ug/kg	35	-		ug/kg		17	U	ug/kg	17
Endrin		-		ug/kg		35	U	ug/kg	35	-		ug/kg		17	U	ug/kg	17
Endosulfan II		-		ug/kg		35	U	ug/kg	35	-		ug/kg		17	U	ug/kg	17
4,4-DDD		-		ug/kg		35	U	ug/kg	35	-		ug/kg		17	U	ug/kg	17
Endosulfan sulfate		-		ug/kg		35	U	ug/kg	35	-		ug/kg		17	U	ug/kg	17
4,4-DDT		-		ug/kg		35	U	ug/kg	35	-		ug/kg		17	U	ug/kg	17
Methoxychlor		-		ug/kg		180	U	ug/kg	180	-		ug/kg		85	U	ug/kg	85
Endrin ketone		-		ug/kg		35	U	ug/kg	35	-		ug/kg		17	U	ug/kg	17
Endrin aldehyde		-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane		-		ug/kg		180	U	ug/kg	180	-		ug/kg		85	U	ug/kg	85
gamma-Chlordane		-		ug/kg		180	U	ug/kg	180	-		ug/kg		85	U	ug/kg	85
Toxaphene		-		ug/kg		350	U	ug/kg	350	-		ug/kg		170	U	ug/kg	170
Aroclor-1016		-		ug/kg		180	U	ug/kg	180	-		ug/kg		85	U	ug/kg	85
Aroclor-1221		-		ug/kg		180	U	ug/kg	180	-		ug/kg		85	U	ug/kg	85
Aroclor-1232		-		ug/kg		180	U	ug/kg	180	-		ug/kg		85	U	ug/kg	85
Aroclor-1242		-		ug/kg		180	U	ug/kg	180	-		ug/kg		85	U	ug/kg	85
Aroclor-1248		-		ug/kg		180	U	ug/kg	180	-		ug/kg		85	U	ug/kg	85
Aroclor-1254		-		ug/kg		350	U	ug/kg	350	-		ug/kg		170	U	ug/kg	170
Aroclor-1260		-		ug/kg		350	U	ug/kg	350	-		ug/kg		170	U	ug/kg	170
CLP METALS AND CYANIDE	mg/kg																
Aluminum		8700		mg/kg	40	-		mg/kg		6700		mg/kg	40	-		mg/kg	
Antimony		2.7	U	mg/kg	12	-		mg/kg		2.7	U	mg/kg	12	-		mg/kg	
Arsenic		1.6	J	mg/kg	2	-		mg/kg		1.2	J	mg/kg	2	-		mg/kg	
Barium		7.1	J	mg/kg	40	-		mg/kg		7	J	mg/kg	40	-		mg/kg	
Beryllium		.08	J	mg/kg	1	-		mg/kg		.09	J	mg/kg	1	-		mg/kg	
Cadmium		.59	U	mg/kg	1	-		mg/kg		.59	U	mg/kg	1	-		mg/kg	
Calcium		237	J	mg/kg	1000	-		mg/kg		354	J	mg/kg	1000	-		mg/kg	
Chromium		5.9		mg/kg	2	-		mg/kg		4.5		mg/kg	2	-		mg/kg	
Cobalt		.67	J	mg/kg	10	-		mg/kg		1.2	J	mg/kg	10	-		mg/kg	
Copper		4.5	J	mg/kg	5	-		mg/kg		13.1		mg/kg	5	-		mg/kg	
Iron		4520		mg/kg	20	-		mg/kg		3440		mg/kg	20	-		mg/kg	
Lead		3.7		mg/kg	1	-		mg/kg		3.4		mg/kg	1	-		mg/kg	
Magnesium		97.1	J	mg/kg	1000	-		mg/kg		250	J	mg/kg	1000	-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515012				22515012				22515013				22515013			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-10				31-SL-10				31-SL-11				31-SL-11			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	117		mg/kg	3	-		mg/kg		143		mg/kg	3	-		mg/kg	
Mercury	.37		mg/kg	.1	-		mg/kg		.08	J	mg/kg	.1	-		mg/kg	
Nickel	2.3	U	mg/kg	8	-		mg/kg		2.3	U	mg/kg	8	-		mg/kg	
Potassium	130	U	mg/kg	1000	-		mg/kg		129	U	mg/kg	1000	-		mg/kg	
Selenium	.45	U	mg/kg	1	-		mg/kg		.45	U	mg/kg	1	-		mg/kg	
Silver	4.2		mg/kg	2	-		mg/kg		3.6		mg/kg	2	-		mg/kg	
Sodium	161	J	mg/kg	1000	-		mg/kg		176	J	mg/kg	1000	-		mg/kg	
Thallium	.34	U	mg/kg	2	-		mg/kg		.34	U	mg/kg	2	-		mg/kg	
Vanadium	11.6		mg/kg	10	-		mg/kg		8.4	J	mg/kg	10	-		mg/kg	
Zinc	11.3		mg/kg	4	-		mg/kg		9.6		mg/kg	4	-		mg/kg	
Cyanide	.24	U	mg/kg	1	-		mg/kg		.24	U	mg/kg	1	-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515014				22515014				22515014R				22515015			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-12				31-SL-12				31-SL-12_R				31-SL-13			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW ug/kg																
Chloromethane	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14	11	UJ	ug/kg	11
Bromomethane	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14	11	UJ	ug/kg	11
Vinyl chloride	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14	11	UJ	ug/kg	11
Chloroethane	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14	11	UJ	ug/kg	11
Methylene chloride	160	J	ug/kg	7	-		ug/kg		130	UJ	ug/kg	7	120	J	ug/kg	6
Acetone	16	UJ	ug/kg	14	-		ug/kg		14	J	ug/kg	14	11	UJ	ug/kg	11
Carbon disulfide	6	J	ug/kg	7	-		ug/kg		22	J	ug/kg	7	3	J	ug/kg	6
1,1-Dichloroethene	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
1,1-Dichloroethane	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
1,2-Dichloroethene (total)	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Chloroform	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
1,2-Dichloroethane	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
2-Butanone	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14	11	UJ	ug/kg	11
1,1,1-Trichloroethane	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Carbon tetrachloride	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Bromodichloromethane	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
1,2-Dichloropropane	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
cis-1,3-Dichloropropene	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Trichloroethene	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Dibromochloromethane	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
1,1,2-Trichloroethane	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Benzene	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
trans-1,3-Dichloropropene	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Bromoform	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
4-Methyl-2-pentanone	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14	11	UJ	ug/kg	11
2-Hexanone	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14	11	UJ	ug/kg	11
Tetrachloroethene	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Toluene	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
1,1,2,2-Tetrachloroethane	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Chlorobenzene	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Ethylbenzene	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Styrene	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7	6	UJ	ug/kg	6
Xylenes (total)	4	J	ug/kg	7	-		ug/kg		8	J	ug/kg	7	4	J	ug/kg	6
CLP SEMIVOLATILES 90-SOW ug/kg																
Phenol	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
bis(2-Chloroethyl) ether	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2-Chlorophenol	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
1,3-Dichlorobenzene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
1,4-Dichlorobenzene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515014				22515014				22515014R				22515015			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-12				31-SL-12				31-SL-12_R				31-SL-13			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2-Methylphenol	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,2-oxybis(1-Chloropropane)	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Methylphenol	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
N-Nitroso-di-n-propylamine	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Hexachloroethane	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Nitrobenzene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Isophorone	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2-Nitrophenol	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4-Dimethylphenol	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
bis(2-Chloroethoxy) methane	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4-Dichlorophenol	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
1,2,4-Trichlorobenzene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Naphthalene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Chloroaniline	370	UJ	ug/kg	370	-		ug/kg		-		ug/kg		370	UJ	ug/kg	370
Hexachlorobutadiene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Chloro-3-methylphenol	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2-Methylnaphthalene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Hexachlorocyclopentadiene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4,6-Trichlorophenol	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4,5-Trichlorophenol	1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	U	ug/kg	1800
2-Chloronaphthalene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2-Nitroaniline	1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	U	ug/kg	1800
Dimethylphthalate	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Acenaphthylene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,6-Dinitrotoluene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
3-Nitroaniline	1800	UJ	ug/kg	1800	-		ug/kg		-		ug/kg		1800	UJ	ug/kg	1800
Acenaphthene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4-Dinitrophenol	1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	U	ug/kg	1800
4-Nitrophenol	1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	U	ug/kg	1800
Dibenzofuran	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
2,4-Dinitrotoluene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Diethylphthalate	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Chlorophenyl-phenylether	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Fluorene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Nitroaniline	1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	U	ug/kg	1800
4,6-Dinitro-2-methylphenol	1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	U	ug/kg	1800
N-Nitrosodiphenylamine	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
4-Bromophenyl-phenylether	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Hexachlorobenzene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Pentachlorophenol	1800	U	ug/kg	1800	-		ug/kg		-		ug/kg		1800	U	ug/kg	1800
Phenanthrene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Anthracene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Carbazole	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
Di-n-butylphthalate	370	UJ	ug/kg	370	-		ug/kg		-		ug/kg		370	UJ	ug/kg	370
Fluoranthene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Pyrene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Butylbenzylphthalate	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
3,3-Dichlorobenzidine	740	UJ	ug/kg	740	-		ug/kg		-		ug/kg		730	UJ	ug/kg	730
Benzo (a) anthracene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Chrysene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
bis(2-Ethylhexyl) phthalate	1300		ug/kg	370	-		ug/kg		-		ug/kg		1300		ug/kg	370

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515014				22515014				22515014R				22515015			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-12				31-SL-12				31-SL-12_R				31-SL-13			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Benzo (b) fluoranthene	100	J	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Benzo (k) fluoranthene	110	J	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Benzo (a) pyrene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Indeno (1,2,3-cd) pyrene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Dibenzo (a,h) anthracene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
Benzo (g,h,i) perylene	370	U	ug/kg	370	-		ug/kg		-		ug/kg		370	U	ug/kg	370
CLP PESTICIDES/PCBS 90-SOW ug/kg																
alpha-BHC	-		ug/kg		18	U	ug/kg	18	-		ug/kg		-		ug/kg	
beta-BHC	-		ug/kg		18	U	ug/kg	18	-		ug/kg		-		ug/kg	
delta-BHC	-		ug/kg		18	U	ug/kg	18	-		ug/kg		-		ug/kg	
gamma-BHC (Lindane)	-		ug/kg		18	U	ug/kg	18	-		ug/kg		-		ug/kg	
Heptachlor	-		ug/kg		18	U	ug/kg	18	-		ug/kg		-		ug/kg	
Aldrin	-		ug/kg		18	U	ug/kg	18	-		ug/kg		-		ug/kg	
Heptachlor epoxide	-		ug/kg		18	U	ug/kg	18	-		ug/kg		-		ug/kg	
Endosulfan I	-		ug/kg		18	U	ug/kg	18	-		ug/kg		-		ug/kg	
Dieldrin	-		ug/kg		27	J	ug/kg	36	-		ug/kg		-		ug/kg	
4,4-DDE	-		ug/kg		28	J	ug/kg	36	-		ug/kg		-		ug/kg	
Endrin	-		ug/kg		36	U	ug/kg	36	-		ug/kg		-		ug/kg	
Endosulfan II	-		ug/kg		36	U	ug/kg	36	-		ug/kg		-		ug/kg	
4,4-DDD	-		ug/kg		36	U	ug/kg	36	-		ug/kg		-		ug/kg	
Endosulfan sulfate	-		ug/kg		36	U	ug/kg	36	-		ug/kg		-		ug/kg	
4,4-DDT	-		ug/kg		36	U	ug/kg	36	-		ug/kg		-		ug/kg	
Methoxychlor	-		ug/kg		180	U	ug/kg	180	-		ug/kg		-		ug/kg	
Endrin ketone	-		ug/kg		36	U	ug/kg	36	-		ug/kg		-		ug/kg	
Endrin aldehyde	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane	-		ug/kg		25	J	ug/kg	180	-		ug/kg		-		ug/kg	
gamma-Chlordane	-		ug/kg		27	J	ug/kg	180	-		ug/kg		-		ug/kg	
Toxaphene	-		ug/kg		360	U	ug/kg	360	-		ug/kg		-		ug/kg	
Aroclor-1016	-		ug/kg		180	U	ug/kg	180	-		ug/kg		-		ug/kg	
Aroclor-1221	-		ug/kg		180	U	ug/kg	180	-		ug/kg		-		ug/kg	
Aroclor-1232	-		ug/kg		180	U	ug/kg	180	-		ug/kg		-		ug/kg	
Aroclor-1242	-		ug/kg		180	U	ug/kg	180	-		ug/kg		-		ug/kg	
Aroclor-1248	-		ug/kg		180	U	ug/kg	180	-		ug/kg		-		ug/kg	
Aroclor-1254	-		ug/kg		360	U	ug/kg	360	-		ug/kg		-		ug/kg	
Aroclor-1260	-		ug/kg		350	J	ug/kg	360	-		ug/kg		-		ug/kg	
CLP METALS AND CYANIDE mg/kg																
Aluminum	6520		mg/kg	40	-		mg/kg		-		mg/kg		5030		mg/kg	40
Antimony	3.1	J	mg/kg	12	-		mg/kg		-		mg/kg		3.7	J	mg/kg	12
Arsenic	.96	J	mg/kg	2	-		mg/kg		-		mg/kg		.67	J	mg/kg	2
Barium	147		mg/kg	40	-		mg/kg		-		mg/kg		155		mg/kg	40
Beryllium	.42	J	mg/kg	1	-		mg/kg		-		mg/kg		.3	J	mg/kg	1
Cadmium	11.6		mg/kg	1	-		mg/kg		-		mg/kg		12		mg/kg	1
Calcium	2000		mg/kg	1000	-		mg/kg		-		mg/kg		1520		mg/kg	1000
Chromium	84.9		mg/kg	2	-		mg/kg		-		mg/kg		86.3		mg/kg	2
Cobalt	.91	J	mg/kg	10	-		mg/kg		-		mg/kg		.83	J	mg/kg	10
Copper	248		mg/kg	5	-		mg/kg		-		mg/kg		279		mg/kg	5
Iron	7080		mg/kg	20	-		mg/kg		-		mg/kg		6220		mg/kg	20
Lead	635		mg/kg	1	-		mg/kg		-		mg/kg		344		mg/kg	1
Magnesium	493	J	mg/kg	1000	-		mg/kg		-		mg/kg		438	J	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515014				22515014				22515014R				22515015			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-12				31-SL-12				31-SL-12_R				31-SL-13			
Collect Date:	17-AUG-92				17-AUG-93				17-AUG-92				17-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	170		mg/kg	3	-		mg/kg		-		mg/kg		64		mg/kg	3
Mercury	2.6		mg/kg	.1	-		mg/kg		-		mg/kg		2.4		mg/kg	.1
Nickel	4.9	J	mg/kg	8	-		mg/kg		-		mg/kg		7.8	J	mg/kg	8
Potassium	134	U	mg/kg	1000	-		mg/kg		-		mg/kg		134	U	mg/kg	1000
Selenium	1.5	J	mg/kg	1	-		mg/kg		-		mg/kg		1.4	J	mg/kg	1
Silver	73.7		mg/kg	2	-		mg/kg		-		mg/kg		48.1		mg/kg	2
Sodium	193	J	mg/kg	1000	-		mg/kg		-		mg/kg		232	J	mg/kg	1000
Thallium	.35	U	mg/kg	2	-		mg/kg		-		mg/kg		.35	U	mg/kg	2
Vanadium	6.1	J	mg/kg	10	-		mg/kg		-		mg/kg		4.1	J	mg/kg	10
Zinc	276		mg/kg	4	-		mg/kg		-		mg/kg		287		mg/kg	4
Cyanide	.57	J	mg/kg	1	-		mg/kg		-		mg/kg		.5	J	mg/kg	1

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515015				22515015R				22515016				22515016		
Site		WHITING				WHITING				WHITING				WHITING		
Locator		31-SL-13				31-SL-13_R				31-SL-14				31-SL-14		
Collect Date:		17-AUG-93				17-AUG-92				17-AUG-92				17-AUG-93		
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		-		ug/kg		11	UJ	ug/kg	11	15	U	ug/kg	15	-		ug/kg	
Bromomethane		-		ug/kg		11	UJ	ug/kg	11	15	U	ug/kg	15	-		ug/kg	
Vinyl chloride		-		ug/kg		11	UJ	ug/kg	11	15	U	ug/kg	15	-		ug/kg	
Chloroethane		-		ug/kg		11	UJ	ug/kg	11	15	U	ug/kg	15	-		ug/kg	
Methylene chloride		-		ug/kg		120	J	ug/kg	6	240	J	ug/kg	7	-		ug/kg	
Acetone		-		ug/kg		11	UJ	ug/kg	11	15	UJ	ug/kg	15	-		ug/kg	
Carbon disulfide		-		ug/kg		3	J	ug/kg	6	8		ug/kg	7	-		ug/kg	
1,1-Dichloroethene		-		ug/kg		6	UJ	ug/kg	6	7	U	ug/kg	7	-		ug/kg	
1,1-Dichloroethane		-		ug/kg		6	UJ	ug/kg	6	7	U	ug/kg	7	-		ug/kg	
1,2-Dichloroethene (total)		-		ug/kg		6	UJ	ug/kg	6	7	U	ug/kg	7	-		ug/kg	
Chloroform		-		ug/kg		6	UJ	ug/kg	6	7	U	ug/kg	7	-		ug/kg	
1,2-Dichloroethane		-		ug/kg		6	UJ	ug/kg	6	7	U	ug/kg	7	-		ug/kg	
2-Butanone		-		ug/kg		11	UJ	ug/kg	11	15	UJ	ug/kg	15	-		ug/kg	
1,1,1-Trichloroethane		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
Carbon tetrachloride		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
Bromodichloromethane		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
1,2-Dichloropropane		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
cis-1,3-Dichloropropene		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
Trichloroethene		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
Dibromochloromethane		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
1,1,2-Trichloroethane		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
Benzene		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
trans-1,3-Dichloropropene		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
Bromoform		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
4-Methyl-2-pentanone		-		ug/kg		11	UJ	ug/kg	11	15	UJ	ug/kg	15	-		ug/kg	
2-Hexanone		-		ug/kg		11	UJ	ug/kg	11	15	UJ	ug/kg	15	-		ug/kg	
Tetrachloroethene		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
Toluene		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
1,1,2,2-Tetrachloroethane		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
Chlorobenzene		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
Ethylbenzene		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
Styrene		-		ug/kg		6	UJ	ug/kg	6	7	UJ	ug/kg	7	-		ug/kg	
Xylenes (total)		-		ug/kg		6	J	ug/kg	6	5	J	ug/kg	7	-		ug/kg	
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
bis(2-Chloroethyl) ether		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2-Chlorophenol		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
1,3-Dichlorobenzene		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
1,4-Dichlorobenzene		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515015				22515015R				22515016				22515016			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-13				31-SL-13_R				31-SL-14				31-SL-14			
Collect Date:	17-AUG-93				17-AUG-92				17-AUG-92				17-AUG-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2-Methylphenol	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2,2-oxybis(1-Chloropropane)	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
4-Methylphenol	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
N-Nitroso-di-n-propylamine	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Hexachloroethane	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Nitrobenzene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Isophorone	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2-Nitrophenol	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2,4-Dimethylphenol	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
bis(2-Chloroethoxy) methane	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2,4-Dichlorophenol	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
1,2,4-Trichlorobenzene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Naphthalene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
4-Chloroaniline	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Hexachlorobutadiene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
4-Chloro-3-methylphenol	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2-Methylnaphthalene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Hexachlorocyclopentadiene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2,4,6-Trichlorophenol	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2,4,5-Trichlorophenol	-		ug/kg		-		ug/kg		53000	UJ	ug/kg	53000	-		ug/kg	
2-Chloronaphthalene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2-Nitroaniline	-		ug/kg		-		ug/kg		53000	UJ	ug/kg	53000	-		ug/kg	
Dimethylphthalate	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Acenaphthylene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2,6-Dinitrotoluene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
3-Nitroaniline	-		ug/kg		-		ug/kg		53000	UJ	ug/kg	53000	-		ug/kg	
Acenaphthene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2,4-Dinitrophenol	-		ug/kg		-		ug/kg		53000	UJ	ug/kg	53000	-		ug/kg	
4-Nitrophenol	-		ug/kg		-		ug/kg		53000	UJ	ug/kg	53000	-		ug/kg	
Dibenzofuran	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
2,4-Dinitrotoluene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Diethylphthalate	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
4-Chlorophenyl-phenylether	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Fluorene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
4-Nitroaniline	-		ug/kg		-		ug/kg		53000	UJ	ug/kg	53000	-		ug/kg	
4,6-Dinitro-2-methylphenol	-		ug/kg		-		ug/kg		53000	UJ	ug/kg	53000	-		ug/kg	
N-Nitrosodiphenylamine	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
4-Bromophenyl-phenylether	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Hexachlorobenzene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Pentachlorophenol	-		ug/kg		-		ug/kg		53000	UJ	ug/kg	53000	-		ug/kg	
Phenanthrene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Anthracene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Carbazole	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
Di-n-butylphthalate	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Fluoranthene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Pyrene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Butylbenzylphthalate	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
3,3-Dichlorobenzidine	-		ug/kg		-		ug/kg		22000	UJ	ug/kg	22000	-		ug/kg	
Benzo (a) anthracene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Chrysene	-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
bis(2-Ethylhexyl) phthalate	-		ug/kg		-		ug/kg		2600	J	ug/kg	11000	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515015				22515015R				22515016				22515016			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-13				31-SL-13_R				31-SL-14				31-SL-14			
Collect Date:		17-AUG-93				17-AUG-92				17-AUG-92				17-AUG-93			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Benzo (b) fluoranthene		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Benzo (k) fluoranthene		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Benzo (a) pyrene		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Indeno (1,2,3-cd) pyrene		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Dibenzo (a,h) anthracene		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
Benzo (g,h,i) perylene		-		ug/kg		-		ug/kg		11000	UJ	ug/kg	11000	-		ug/kg	
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		18	U	ug/kg	18	-		ug/kg		-		ug/kg		130	U	ug/kg	130
beta-BHC		18	U	ug/kg	18	-		ug/kg		-		ug/kg		130	U	ug/kg	130
delta-BHC		18	U	ug/kg	18	-		ug/kg		-		ug/kg		130	U	ug/kg	130
gamma-BHC (Lindane)		18	U	ug/kg	18	-		ug/kg		-		ug/kg		130	U	ug/kg	130
Heptachlor		18	U	ug/kg	18	-		ug/kg		-		ug/kg		130	U	ug/kg	130
Aldrin		18	U	ug/kg	18	-		ug/kg		-		ug/kg		130	U	ug/kg	130
Heptachlor epoxide		18	U	ug/kg	18	-		ug/kg		-		ug/kg		130	U	ug/kg	130
Endosulfan I		18	U	ug/kg	18	-		ug/kg		-		ug/kg		130	U	ug/kg	130
Dieldrin		33	J	ug/kg	36	-		ug/kg		-		ug/kg		99	J	ug/kg	270
4,4-DDE		28	J	ug/kg	36	-		ug/kg		-		ug/kg		99	J	ug/kg	270
Endrin		36	U	ug/kg	36	-		ug/kg		-		ug/kg		270	U	ug/kg	270
Endosulfan II		36	U	ug/kg	36	-		ug/kg		-		ug/kg		270	U	ug/kg	270
4,4-DDD		36	U	ug/kg	36	-		ug/kg		-		ug/kg		270	U	ug/kg	270
Endosulfan sulfate		36	U	ug/kg	36	-		ug/kg		-		ug/kg		270	U	ug/kg	270
4,4-DDT		36	U	ug/kg	36	-		ug/kg		-		ug/kg		270	U	ug/kg	270
Methoxychlor		180	U	ug/kg	180	-		ug/kg		-		ug/kg		1300	U	ug/kg	1300
Endrin ketone		36	U	ug/kg	36	-		ug/kg		-		ug/kg		270	U	ug/kg	270
Endrin aldehyde		-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane		14	J	ug/kg	180	-		ug/kg		-		ug/kg		68	J	ug/kg	1300
gamma-Chlordane		17	J	ug/kg	180	-		ug/kg		-		ug/kg		76	J	ug/kg	1300
Toxaphene		360	U	ug/kg	360	-		ug/kg		-		ug/kg		2700	U	ug/kg	2700
Aroclor-1016		180	U	ug/kg	180	-		ug/kg		-		ug/kg		1300	U	ug/kg	1300
Aroclor-1221		180	U	ug/kg	180	-		ug/kg		-		ug/kg		1300	U	ug/kg	1300
Aroclor-1232		180	U	ug/kg	180	-		ug/kg		-		ug/kg		1300	U	ug/kg	1300
Aroclor-1242		180	U	ug/kg	180	-		ug/kg		-		ug/kg		1300	U	ug/kg	1300
Aroclor-1248		180	U	ug/kg	180	-		ug/kg		-		ug/kg		1300	U	ug/kg	1300
Aroclor-1254		360	U	ug/kg	360	-		ug/kg		-		ug/kg		2700	U	ug/kg	2700
Aroclor-1260		340	J	ug/kg	360	-		ug/kg		-		ug/kg		1400	J	ug/kg	2700
CLP METALS AND CYANIDE	mg/kg																
Aluminum		-		mg/kg		-		mg/kg		16800		mg/kg	40	-		mg/kg	
Antimony		-		mg/kg		-		mg/kg		7.1	J	mg/kg	12	-		mg/kg	
Arsenic		-		mg/kg		-		mg/kg		1.7	J	mg/kg	2	-		mg/kg	
Barium		-		mg/kg		-		mg/kg		534		mg/kg	40	-		mg/kg	
Beryllium		-		mg/kg		-		mg/kg		1.3	J	mg/kg	1	-		mg/kg	
Cadmium		-		mg/kg		-		mg/kg		26.8		mg/kg	1	-		mg/kg	
Calcium		-		mg/kg		-		mg/kg		4160		mg/kg	1000	-		mg/kg	
Chromium		-		mg/kg		-		mg/kg		295		mg/kg	2	-		mg/kg	
Cobalt		-		mg/kg		-		mg/kg		2.2	J	mg/kg	10	-		mg/kg	
Copper		-		mg/kg		-		mg/kg		948		mg/kg	5	-		mg/kg	
Iron		-		mg/kg		-		mg/kg		22500		mg/kg	20	-		mg/kg	
Lead		-		mg/kg		-		mg/kg		1890		mg/kg	1	-		mg/kg	
Magnesium		-		mg/kg		-		mg/kg		1120	J	mg/kg	1000	-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515015				22515015R				22515016				22515016			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-13				31-SL-13_R				31-SL-14				31-SL-14			
Collect Date:	17-AUG-93				17-AUG-92				17-AUG-92				17-AUG-93			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	-		mg/kg		-		mg/kg		76.7		mg/kg	3	-		mg/kg	
Mercury	-		mg/kg		-		mg/kg		8.8		mg/kg	.1	-		mg/kg	
Nickel	-		mg/kg		-		mg/kg		8.6	J	mg/kg	8	-		mg/kg	
Potassium	-		mg/kg		-		mg/kg		199	U	mg/kg	1000	-		mg/kg	
Selenium	-		mg/kg		-		mg/kg		4.9		mg/kg	1	-		mg/kg	
Silver	-		mg/kg		-		mg/kg		154		mg/kg	2	-		mg/kg	
Sodium	-		mg/kg		-		mg/kg		294	J	mg/kg	1000	-		mg/kg	
Thallium	-		mg/kg		-		mg/kg		.53	U	mg/kg	2	-		mg/kg	
Vanadium	-		mg/kg		-		mg/kg		12.1	J	mg/kg	10	-		mg/kg	
Zinc	-		mg/kg		-		mg/kg		346		mg/kg	4	-		mg/kg	
Cyanide	-		mg/kg		-		mg/kg		1.1	J	mg/kg	1	-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515016R				22515017				22515017				22515017R			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-14_R				31-SL-15				31-SL-15				31-SL-15_R			
Collect Date:		17-AUG-92				17-AUG-92				17-AUG-93				17-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		15	UJ	ug/kg	15	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14
Bromomethane		15	UJ	ug/kg	15	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14
Vinyl chloride		15	UJ	ug/kg	15	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14
Chloroethane		15	UJ	ug/kg	15	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14
Methylene chloride		710	J	ug/kg	7	160	J	ug/kg	7	-		ug/kg		100	J	ug/kg	7
Acetone		15	UJ	ug/kg	15	14	UJ	ug/kg	14	-		ug/kg		17	UJ	ug/kg	14
Carbon disulfide		19	J	ug/kg	7	39	J	ug/kg	7	-		ug/kg		13	J	ug/kg	7
1,1-Dichloroethene		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
1,1-Dichloroethane		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
1,2-Dichloroethene (total)		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Chloroform		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
1,2-Dichloroethane		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
2-Butanone		15	UJ	ug/kg	15	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14
1,1,1-Trichloroethane		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Carbon tetrachloride		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Bromodichloromethane		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
1,2-Dichloropropane		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
cis-1,3-Dichloropropene		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Trichloroethene		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Dibromochloromethane		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
1,1,2-Trichloroethane		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Benzene		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
trans-1,3-Dichloropropene		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Bromoform		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
4-Methyl-2-pentanone		15	UJ	ug/kg	15	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14
2-Hexanone		15	UJ	ug/kg	15	14	UJ	ug/kg	14	-		ug/kg		14	UJ	ug/kg	14
Tetrachloroethene		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Toluene		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
1,1,2,2-Tetrachloroethane		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Chlorobenzene		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Ethylbenzene		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Styrene		7	UJ	ug/kg	7	7	UJ	ug/kg	7	-		ug/kg		7	UJ	ug/kg	7
Xylenes (total)		10	J	ug/kg	7	11	J	ug/kg	7	-		ug/kg		9	J	ug/kg	7
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		-		ug/kg		6700	U	ug/kg	6700	-		ug/kg		-		ug/kg	
bis(2-Chloroethyl) ether		-		ug/kg		6700	U	ug/kg	6700	-		ug/kg		-		ug/kg	
2-Chlorophenol		-		ug/kg		6700	U	ug/kg	6700	-		ug/kg		-		ug/kg	
1,3-Dichlorobenzene		-		ug/kg		6700	U	ug/kg	6700	-		ug/kg		-		ug/kg	
1,4-Dichlorobenzene		-		ug/kg		6700	U	ug/kg	6700	-		ug/kg		-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515016R			22515017				22515017				22515017R			
Site	WHITING			WHITING				WHITING				WHITING			
Locator	31-SL-14_R			31-SL-15				31-SL-15				31-SL-15_R			
Collect Date:	17-AUG-92			17-AUG-92				17-AUG-93				17-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
2-Methylphenol		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
2,2-oxybis(1-Chloropropane)		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
4-Methylphenol		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
N-Nitroso-di-n-propylamine		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Hexachloroethane		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Nitrobenzene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Isophorone		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
2-Nitrophenol		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
2,4-Dimethylphenol		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
bis(2-Chloroethoxy) methane		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
2,4-Dichlorophenol		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
1,2,4-Trichlorobenzene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Naphthalene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
4-Chloroaniline		-	ug/kg		6700	UJ	ug/kg	6700		-	ug/kg			-	ug/kg	
Hexachlorobutadiene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
4-Chloro-3-methylphenol		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
2-Methylnaphthalene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Hexachlorocyclopentadiene		-	ug/kg		6700	UJ	ug/kg	6700		-	ug/kg			-	ug/kg	
2,4,6-Trichlorophenol		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
2,4,5-Trichlorophenol		-	ug/kg		32000	UJ	ug/kg	32000		-	ug/kg			-	ug/kg	
2-Chloronaphthalene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
2-Nitroaniline		-	ug/kg		32000	U	ug/kg	32000		-	ug/kg			-	ug/kg	
Dimethylphthalate		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Acenaphthylene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
2,6-Dinitrotoluene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
3-Nitroaniline		-	ug/kg		32000	UJ	ug/kg	32000		-	ug/kg			-	ug/kg	
Acenaphthene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
2,4-Dinitrophenol		-	ug/kg		32000	UJ	ug/kg	32000		-	ug/kg			-	ug/kg	
4-Nitrophenol		-	ug/kg		32000	U	ug/kg	32000		-	ug/kg			-	ug/kg	
Dibenzofuran		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
2,4-Dinitrotoluene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Diethylphthalate		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
4-Chlorophenyl-phenylether		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Fluorene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
4-Nitroaniline		-	ug/kg		32000	UJ	ug/kg	32000		-	ug/kg			-	ug/kg	
4,6-Dinitro-2-methylphenol		-	ug/kg		32000	UJ	ug/kg	32000		-	ug/kg			-	ug/kg	
N-Nitrosodiphenylamine		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
4-Bromophenyl-phenylether		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Hexachlorobenzene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Pentachlorophenol		-	ug/kg		32000	U	ug/kg	32000		-	ug/kg			-	ug/kg	
Phenanthrene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Anthracene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Carbazole		-	ug/kg		-		ug/kg			-	ug/kg			-	ug/kg	
Di-n-butylphthalate		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Fluoranthene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Pyrene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Butylbenzylphthalate		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
3,3-Dichlorobenzidine		-	ug/kg		13000	UJ	ug/kg	13000		-	ug/kg			-	ug/kg	
Benzo (a) anthracene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
Chrysene		-	ug/kg		6700	U	ug/kg	6700		-	ug/kg			-	ug/kg	
bis(2-Ethylhexyl) phthalate		-	ug/kg		720	J	ug/kg	6700		-	ug/kg			-	ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22515016R				22515017				22515017				22515017R			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-14_R				31-SL-15				31-SL-15				31-SL-15_R			
Collect Date:		17-AUG-92				17-AUG-92				17-AUG-93				17-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		-		ug/kg		6700	U	ug/kg	6700	-		ug/kg		-		ug/kg	
Benzo (b) fluoranthene		-		ug/kg		6700	U	ug/kg	6700	-		ug/kg		-		ug/kg	
Benzo (k) fluoranthene		-		ug/kg		6700	U	ug/kg	6700	-		ug/kg		-		ug/kg	
Benzo (a) pyrene		-		ug/kg		6700	U	ug/kg	6700	-		ug/kg		-		ug/kg	
Indeno (1,2,3-cd) pyrene		-		ug/kg		6700	UJ	ug/kg	6700	-		ug/kg		-		ug/kg	
Dibenzo (a,h) anthracene		-		ug/kg		6700	UJ	ug/kg	6700	-		ug/kg		-		ug/kg	
Benzo (g,h,i) perylene		-		ug/kg		6700	UJ	ug/kg	6700	-		ug/kg		-		ug/kg	
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		-		ug/kg		-		ug/kg		110	U	ug/kg	110	-		ug/kg	
beta-BHC		-		ug/kg		-		ug/kg		110	U	ug/kg	110	-		ug/kg	
delta-BHC		-		ug/kg		-		ug/kg		110	U	ug/kg	110	-		ug/kg	
gamma-3HC (Lindane)		-		ug/kg		-		ug/kg		110	U	ug/kg	110	-		ug/kg	
Heptachlor		-		ug/kg		-		ug/kg		110	U	ug/kg	110	-		ug/kg	
Aldrin		-		ug/kg		-		ug/kg		110	U	ug/kg	110	-		ug/kg	
Heptachlor epoxide		-		ug/kg		-		ug/kg		110	U	ug/kg	110	-		ug/kg	
Endosulfan I		-		ug/kg		-		ug/kg		110	U	ug/kg	110	-		ug/kg	
Dieldrin		-		ug/kg		-		ug/kg		120	J	ug/kg	220	-		ug/kg	
4,4-DDE		-		ug/kg		-		ug/kg		100	J	ug/kg	220	-		ug/kg	
Endrin		-		ug/kg		-		ug/kg		220	U	ug/kg	220	-		ug/kg	
Endosulfan II		-		ug/kg		-		ug/kg		220	U	ug/kg	220	-		ug/kg	
4,4-DDD		-		ug/kg		-		ug/kg		220	U	ug/kg	220	-		ug/kg	
Endosulfan sulfate		-		ug/kg		-		ug/kg		220	U	ug/kg	220	-		ug/kg	
4,4-DDT		-		ug/kg		-		ug/kg		220	U	ug/kg	220	-		ug/kg	
Methoxychlor		-		ug/kg		-		ug/kg		1100	U	ug/kg	1100	-		ug/kg	
Endrin ketone		-		ug/kg		-		ug/kg		220	U	ug/kg	220	-		ug/kg	
Endrin aldehyde		-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane		-		ug/kg		-		ug/kg		65	J	ug/kg	1100	-		ug/kg	
gamma-Chlordane		-		ug/kg		-		ug/kg		49	J	ug/kg	1100	-		ug/kg	
Toxaphene		-		ug/kg		-		ug/kg		2200	U	ug/kg	2200	-		ug/kg	
Aroclor-1016		-		ug/kg		-		ug/kg		1100	U	ug/kg	1100	-		ug/kg	
Aroclor-1221		-		ug/kg		-		ug/kg		1100	U	ug/kg	1100	-		ug/kg	
Aroclor-1232		-		ug/kg		-		ug/kg		1100	U	ug/kg	1100	-		ug/kg	
Aroclor-1242		-		ug/kg		-		ug/kg		1100	U	ug/kg	1100	-		ug/kg	
Aroclor-1248		-		ug/kg		-		ug/kg		1100	U	ug/kg	1100	-		ug/kg	
Aroclor-1254		-		ug/kg		-		ug/kg		2200	U	ug/kg	2200	-		ug/kg	
Aroclor-1260		-		ug/kg		-		ug/kg		860	J	ug/kg	2200	-		ug/kg	
CLP METALS AND CYANIDE	mg/kg																
Aluminum		-		mg/kg		9260		mg/kg	40	-		mg/kg		-		mg/kg	
Antimony		-		mg/kg		6.5	J	mg/kg	12	-		mg/kg		-		mg/kg	
Arsenic		-		mg/kg		1.3	J	mg/kg	2	-		mg/kg		-		mg/kg	
Barium		-		mg/kg		232		mg/kg	40	-		mg/kg		-		mg/kg	
Beryllium		-		mg/kg		.56	J	mg/kg	1	-		mg/kg		-		mg/kg	
Cadmium		-		mg/kg		13.6		mg/kg	1	-		mg/kg		-		mg/kg	
Calcium		-		mg/kg		2320		mg/kg	1000	-		mg/kg		-		mg/kg	
Chromium		-		mg/kg		130		mg/kg	2	-		mg/kg		-		mg/kg	
Cobalt		-		mg/kg		1.1	J	mg/kg	10	-		mg/kg		-		mg/kg	
Copper		-		mg/kg		468		mg/kg	5	-		mg/kg		-		mg/kg	
Iron		-		mg/kg		11200		mg/kg	20	-		mg/kg		-		mg/kg	
Lead		-		mg/kg		912		mg/kg	1	-		mg/kg		-		mg/kg	
Magnesium		-		mg/kg		695	J	mg/kg	1000	-		mg/kg		-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22515016R				22515017				22515017				22515017R			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-14_R				31-SL-15				31-SL-15				31-SL-15_R			
Collect Date:	17-AUG-92				17-AUG-92				17-AUG-93				17-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	-		mg/kg		46		mg/kg	3	-		mg/kg		-		mg/kg	
Mercury	-		mg/kg		6.7		mg/kg	.1	-		mg/kg		-		mg/kg	
Nickel	-		mg/kg		3.9	J	mg/kg	8	-		mg/kg		-		mg/kg	
Potassium	-		mg/kg		156	U	mg/kg	1000	-		mg/kg		-		mg/kg	
Selenium	-		mg/kg		2.6		mg/kg	1	-		mg/kg		-		mg/kg	
Silver	-		mg/kg		128		mg/kg	2	-		mg/kg		-		mg/kg	
Sodium	-		mg/kg		205	J	mg/kg	1000	-		mg/kg		-		mg/kg	
Thallium	-		mg/kg		.41	U	mg/kg	2	-		mg/kg		-		mg/kg	
Vanadium	-		mg/kg		9.6	J	mg/kg	10	-		mg/kg		-		mg/kg	
Zinc	-		mg/kg		186		mg/kg	4	-		mg/kg		-		mg/kg	
Cyanide	-		mg/kg		.52	J	mg/kg	1	-		mg/kg		-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22527004				22527005				22527006				22527007			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-16				31-SL-17				31-SL-18				31-SL-19			
Collect Date:		18-AUG-92				18-AUG-92				18-AUG-92				18-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	U	ug/kg	11	10	U	ug/kg	10	10	U	ug/kg	10	11	U	ug/kg	11
Bromomethane		11	U	ug/kg	11	10	U	ug/kg	10	10	U	ug/kg	10	11	U	ug/kg	11
Vinyl chloride		11	U	ug/kg	11	10	U	ug/kg	10	10	U	ug/kg	10	11	U	ug/kg	11
Chloroethane		11	U	ug/kg	11	10	U	ug/kg	10	10	U	ug/kg	10	11	U	ug/kg	11
Methylene chloride		21	UJ	ug/kg	5	13	UJ	ug/kg	5	12	UJ	ug/kg	5	18	UJ	ug/kg	5
Acetone		27	UJ	ug/kg	11	22	UJ	ug/kg	10	18	UJ	ug/kg	10	24	UJ	ug/kg	11
Carbon disulfide		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
1,1-Dichloroethene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
1,1-Dichloroethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
1,2-Dichloroethene (total)		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Chloroform		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
1,2-Dichloroethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
2-Butanone		11	U	ug/kg	11	10	U	ug/kg	10	10	U	ug/kg	10	11	U	ug/kg	11
1,1,1-Trichloroethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Carbon tetrachloride		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Bromodichloromethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
1,2-Dichloropropane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
cis-1,3-Dichloropropene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Trichloroethene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Dibromochloromethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
1,1,2-Trichloroethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Benzene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
trans-1,3-Dichloropropene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Bromoform		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
4-Methyl-2-pentanone		11	U	ug/kg	11	10	U	ug/kg	10	10	U	ug/kg	10	11	U	ug/kg	11
2-Hexanone		11	U	ug/kg	11	10	U	ug/kg	10	10	U	ug/kg	10	11	U	ug/kg	11
Tetrachloroethene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Toluene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
1,1,2,2-Tetrachloroethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Chlorobenzene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Ethylbenzene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Styrene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
Xylenes (total)		3	J	ug/kg	5	6		ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
bis(2-Chloroethyl) ether		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2-Chlorophenol		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
1,3-Dichlorobenzene		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
1,4-Dichlorobenzene		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22527004				22527005				22527006				22527007			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-16				31-SL-17				31-SL-18				31-SL-19			
Collect Date:	18-AUG-92				18-AUG-92				18-AUG-92				18-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2-Methylphenol	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2,2-oxybis(1-Chloropropane)	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
4-Methylphenol	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
N-Nitroso-di-n-propylamine	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Hexachloroethane	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Nitrobenzene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Isophorone	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2-Nitrophenol	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2,4-Dimethylphenol	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
bis(2-Chloroethoxy) methane	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2,4-Dichlorophenol	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
1,2,4-Trichlorobenzene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Naphthalene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
4-Chloroaniline	360	UJ	ug/kg	360	340	UJ	ug/kg	340	340	UJ	ug/kg	340	350	UJ	ug/kg	350
Hexachlorobutadiene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
4-Chloro-3-methylphenol	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2-Methylnaphthalene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Hexachlorocyclopentadiene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2,4,6-Trichlorophenol	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2,4,5-Trichlorophenol	1800	UJ	ug/kg	1800	1600	UJ	ug/kg	1600	1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700
2-Chloronaphthalene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2-Nitroaniline	1800	U	ug/kg	1800	1600	U	ug/kg	1600	1700	U	ug/kg	1700	1700	U	ug/kg	1700
Dimethylphthalate	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Acenaphthylene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2,6-Dinitrotoluene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
3-Nitroaniline	1800	UJ	ug/kg	1800	1600	UJ	ug/kg	1600	1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700
Acenaphthene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2,4-Dinitrophenol	1800	UJ	ug/kg	1800	1600	UJ	ug/kg	1600	1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700
4-Nitrophenol	1800	U	ug/kg	1800	1600	U	ug/kg	1600	1700	U	ug/kg	1700	1700	U	ug/kg	1700
Dibenzofuran	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
2,4-Dinitrotoluene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Diethylphthalate	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
4-Chlorophenyl-phenylether	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Fluorene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
4-Nitroaniline	1800	UJ	ug/kg	1800	1600	UJ	ug/kg	1600	1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700
4,6-Dinitro-2-methylphenol	1800	UJ	ug/kg	1800	1600	UJ	ug/kg	1600	1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700
N-Nitrosodiphenylamine	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
4-Bromophenyl-phenylether	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Hexachlorobenzene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Pentachlorophenol	1800	U	ug/kg	1800	1600	U	ug/kg	1600	1700	U	ug/kg	1700	1700	U	ug/kg	1700
Phenanthrene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Anthracene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Carbazole	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
Di-n-butylphthalate	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Fluoranthene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Pyrene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Butylbenzylphthalate	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
3,3-Dichlorobenzidine	730	U	ug/kg	730	680	U	ug/kg	680	690	U	ug/kg	690	690	U	ug/kg	690
Benzo (a) anthracene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Chrysene	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
bis(2-Ethylhexyl) phthalate	360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22527004				22527005				22527006				22527007			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-16				31-SL-17				31-SL-18				31-SL-19			
Collect Date:		18-AUG-92				18-AUG-92				18-AUG-92				18-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Benzo (b) fluoranthene		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Benzo (k) fluoranthene		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Benzo (a) pyrene		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Indeno (1,2,3-cd) pyrene		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Dibenzo (a,h) anthracene		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
Benzo (g,h,i) perylene		360	U	ug/kg	360	340	U	ug/kg	340	340	U	ug/kg	340	350	U	ug/kg	350
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		8.8	U	ug/kg	8.8	8.2	U	ug/kg	8.2	8.3	U	ug/kg	8.3	8.4	U	ug/kg	8.4
beta-BHC		8.8	U	ug/kg	8.8	8.2	U	ug/kg	8.2	8.3	U	ug/kg	8.3	8.4	U	ug/kg	8.4
delta-BHC		8.8	U	ug/kg	8.8	8.2	U	ug/kg	8.2	8.3	U	ug/kg	8.3	8.4	U	ug/kg	8.4
gamma-BHC (Lindane)		8.8	U	ug/kg	8.8	8.2	U	ug/kg	8.2	8.3	U	ug/kg	8.3	8.4	U	ug/kg	8.4
Heptachlor		8.8	U	ug/kg	8.8	8.2	U	ug/kg	8.2	8.3	U	ug/kg	8.3	8.4	U	ug/kg	8.4
Aldrin		8.8	U	ug/kg	8.8	8.2	U	ug/kg	8.2	8.3	U	ug/kg	8.3	8.4	U	ug/kg	8.4
Heptachlor epoxide		8.8	U	ug/kg	8.8	8.2	U	ug/kg	8.2	8.3	U	ug/kg	8.3	8.4	U	ug/kg	8.4
Endosulfan I		8.8	U	ug/kg	8.8	8.2	U	ug/kg	8.2	8.3	U	ug/kg	8.3	8.4	U	ug/kg	8.4
Dieldrin		18	U	ug/kg	18	16	U	ug/kg	16	17	U	ug/kg	17	17	U	ug/kg	17
4,4-DDE		18	U	ug/kg	18	16	U	ug/kg	16	17	U	ug/kg	17	17	U	ug/kg	17
Endrin		18	U	ug/kg	18	16	U	ug/kg	16	17	U	ug/kg	17	17	U	ug/kg	17
Endosulfan II		18	U	ug/kg	18	16	U	ug/kg	16	17	U	ug/kg	17	17	U	ug/kg	17
4,4-DDD		18	U	ug/kg	18	16	U	ug/kg	16	17	U	ug/kg	17	17	U	ug/kg	17
Endosulfan sulfate		18	U	ug/kg	18	16	U	ug/kg	16	17	U	ug/kg	17	17	U	ug/kg	17
4,4-DDT		18	U	ug/kg	18	16	U	ug/kg	16	17	U	ug/kg	17	17	U	ug/kg	17
Methoxychlor		88	U	ug/kg	88	82	U	ug/kg	82	83	U	ug/kg	83	84	U	ug/kg	84
Endrin ketone		18	U	ug/kg	18	16	U	ug/kg	16	17	U	ug/kg	17	17	U	ug/kg	17
Endrin aldehyde		-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane		88	U	ug/kg	88	82	U	ug/kg	82	83	U	ug/kg	83	84	U	ug/kg	84
gamma-Chlordane		88	U	ug/kg	88	82	U	ug/kg	82	83	U	ug/kg	83	84	U	ug/kg	84
Toxaphene		180	U	ug/kg	180	160	U	ug/kg	160	170	U	ug/kg	170	170	U	ug/kg	170
Aroclor-1016		88	U	ug/kg	88	82	U	ug/kg	82	83	U	ug/kg	83	84	U	ug/kg	84
Aroclor-1221		88	U	ug/kg	88	82	U	ug/kg	82	83	U	ug/kg	83	84	U	ug/kg	84
Aroclor-1232		88	U	ug/kg	88	82	U	ug/kg	82	83	U	ug/kg	83	84	U	ug/kg	84
Aroclor-1242		88	U	ug/kg	88	82	U	ug/kg	82	83	U	ug/kg	83	84	U	ug/kg	84
Aroclor-1248		88	U	ug/kg	88	82	U	ug/kg	82	83	U	ug/kg	83	84	U	ug/kg	84
Aroclor-1254		180	U	ug/kg	180	160	U	ug/kg	160	170	U	ug/kg	170	170	U	ug/kg	170
Aroclor-1260		180	U	ug/kg	180	160	U	ug/kg	160	170	U	ug/kg	170	170	U	ug/kg	170
CLP METALS AND CYANIDE	mg/kg																
Aluminum		4360		mg/kg	40	154		mg/kg	40	240		mg/kg	40	167		mg/kg	40
Antimony		2.7	U	mg/kg	12	2.6	U	mg/kg	12	2.6	U	mg/kg	12	2.6	U	mg/kg	12
Arsenic		.66	J	mg/kg	2	.21	U	mg/kg	2	.21	U	mg/kg	2	.21	U	mg/kg	2
Barium		4.6	J	mg/kg	40	1.2	J	mg/kg	40	2.9	J	mg/kg	40	2.6	J	mg/kg	40
Beryllium		.07	J	mg/kg	1	.05	U	mg/kg	1	.05	U	mg/kg	1	.05	U	mg/kg	1
Cadmium		.6	U	mg/kg	1	.57	U	mg/kg	1	.57	U	mg/kg	1	.58	U	mg/kg	1
Calcium		248	J	mg/kg	1000	73.8	J	mg/kg	1000	77.3	J	mg/kg	1000	90.5	J	mg/kg	1000
Chromium		3.6		mg/kg	2	.75	J	mg/kg	2	2.2		mg/kg	2	1.6	J	mg/kg	2
Cobalt		.34	U	mg/kg	10	.32	U	mg/kg	10	.32	U	mg/kg	10	.33	U	mg/kg	10
Copper		3.7	J	mg/kg	5	3.1	J	mg/kg	5	6.1		mg/kg	5	7	J	mg/kg	5
Iron		2590		mg/kg	20	576		mg/kg	20	541		mg/kg	20	284		mg/kg	20
Lead		4.4		mg/kg	1	3.4		mg/kg	1	7		mg/kg	1	4		mg/kg	1
Magnesium		86.6	J	mg/kg	1000	10	U	mg/kg	1000	14.7	J	mg/kg	1000	13.2	J	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22527004				22527005				22527006				22527007			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-16				31-SL-17				31-SL-18				31-SL-19			
Collect Date:	18-AUG-92				18-AUG-92				18-AUG-92				18-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	33.1		mg/kg	3	1.6	J	mg/kg	3	1.8	J	mg/kg	3	2.6	J	mg/kg	3
Mercury	.05	U	mg/kg	.1	.04	U	mg/kg	.1	.04	U	mg/kg	.1	.04	U	mg/kg	.1
Nickel	2.3	U	mg/kg	8	2.2	U	mg/kg	8	2.2	U	mg/kg	8	2.3	U	mg/kg	8
Potassium	131	U	mg/kg	1000	125	U	mg/kg	1000	125	U	mg/kg	1000	127	U	mg/kg	1000
Selenium	.46	U	mg/kg	1	.43	U	mg/kg	1	.43	U	mg/kg	1	.44	U	mg/kg	1
Silver	.33	U	mg/kg	2	.62	J	mg/kg	2	1.1	J	mg/kg	2	.39	J	mg/kg	2
Sodium	127	J	mg/kg	1000	134	J	mg/kg	1000	123	J	mg/kg	1000	164	J	mg/kg	1000
Thallium	.35	U	mg/kg	2	.33	U	mg/kg	2	.33	U	mg/kg	2	.36	J	mg/kg	2
Vanadium	6.6	J	mg/kg	10	.64	J	mg/kg	10	.42	J	mg/kg	10	.38	J	mg/kg	10
Zinc	8.6		mg/kg	4	4.3		mg/kg	4	5.8		mg/kg	4	8.1		mg/kg	4
Cyanide	.24	U	mg/kg	1	.23	U	mg/kg	1	.23	U	mg/kg	1	.23	U	mg/kg	1

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22527008				22527009				22528001				22528001		
Site		WHITING				WHITING				WHITING				WHITING		
Locator		31-SL-20				31-SL-21				31-SL-22				31-SL-22		
Collect Date:		18-AUG-92				18-AUG-92				18-AUG-92				18-SEP-92		
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		10	U	ug/kg	10	10	U	ug/kg	10	10	U	ug/kg	10	-		ug/kg	
Bromomethane		10	U	ug/kg	10	10	U	ug/kg	10	10	U	ug/kg	10	-		ug/kg	
Vinyl chloride		10	U	ug/kg	10	10	U	ug/kg	10	10	U	ug/kg	10	-		ug/kg	
Chloroethane		10	U	ug/kg	10	10	U	ug/kg	10	10	U	ug/kg	10	-		ug/kg	
Methylene chloride		10	UJ	ug/kg	5	9	UJ	ug/kg	5	12	UJ	ug/kg	5	-		ug/kg	
Acetone		10	UJ	ug/kg	10	40	UJ	ug/kg	10	40	UJ	ug/kg	10	-		ug/kg	
Carbon disulfide		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
1,1-Dichloroethene		5	U	ug/kg	5	5	U	ug/kg	5	2	J	ug/kg	5	-		ug/kg	
1,1-Dichloroethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
1,2-Dichloroethene (total)		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
Chloroform		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
1,2-Dichloroethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
2-Butanone		10	U	ug/kg	10	10	U	ug/kg	10	10	U	ug/kg	10	-		ug/kg	
1,1,1-Trichloroethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
Carbon tetrachloride		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
Bromodichloromethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
1,2-Dichloropropane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
cis-1,3-Dichloropropene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
Trichloroethene		5	U	ug/kg	5	5	U	ug/kg	5	2	J	ug/kg	5	-		ug/kg	
Dibromochloromethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
1,1,2-Trichloroethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
Benzene		5	U	ug/kg	5	5	U	ug/kg	5	1	J	ug/kg	5	-		ug/kg	
trans-1,3-Dichloropropene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
Bromoform		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
4-Methyl-2-pentanone		10	U	ug/kg	10	10	U	ug/kg	10	10	U	ug/kg	10	-		ug/kg	
2-Hexanone		10	U	ug/kg	10	10	U	ug/kg	10	10	U	ug/kg	10	-		ug/kg	
Tetrachloroethene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
Toluene		5	U	ug/kg	5	5	U	ug/kg	5	2	J	ug/kg	5	-		ug/kg	
1,1,2,2-Tetrachloroethane		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
Chlorobenzene		5	U	ug/kg	5	5	U	ug/kg	5	1	J	ug/kg	5	-		ug/kg	
Ethylbenzene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
Styrene		5	U	ug/kg	5	5	U	ug/kg	5	5	U	ug/kg	5	-		ug/kg	
Xylenes (total)		3	J	ug/kg	5	3	J	ug/kg	5	3	J	ug/kg	5	-		ug/kg	
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
bis(2-Chloroethyl) ether		340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2-Chlorophenol		340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
1,3-Dichlorobenzene		340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
1,4-Dichlorobenzene		340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22527008				22527009				22528001				22528001			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-20				31-SL-21				31-SL-22				31-SL-22			
Collect Date:	18-AUG-92				18-AUG-92				18-AUG-92				18-SEP-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2-Methylphenol	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2,2-oxybis(1-Chloropropane)	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
4-Methylphenol	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
N-Nitroso-di-n-propylamine	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Hexachloroethane	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Nitrobenzene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Isophorone	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2-Nitrophenol	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2,4-Dimethylphenol	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
bis(2-Chloroethoxy) methane	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2,4-Dichlorophenol	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
1,2,4-Trichlorobenzene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Naphthalene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
4-Chloroaniline	340	UJ	ug/kg	340	340	UJ	ug/kg	340	340	UJ	ug/kg	340	-		ug/kg	
Hexachlorobutadiene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
4-Chloro-3-methylphenol	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2-Methylnaphthalene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Hexachlorocyclopentadiene	340	U	ug/kg	340	340	U	ug/kg	340	340	UJ	ug/kg	340	-		ug/kg	
2,4,6-Trichlorophenol	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2,4,5-Trichlorophenol	1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700	1600	UJ	ug/kg	1600	-		ug/kg	
2-Chloronaphthalene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2-Nitroaniline	1700	U	ug/kg	1700	1700	U	ug/kg	1700	1600	U	ug/kg	1600	-		ug/kg	
Dimethylphthalate	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Acenaphthylene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2,6-Dinitrotoluene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
3-Nitroaniline	1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700	1600	UJ	ug/kg	1600	-		ug/kg	
Acenaphthene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2,4-Dinitrophenol	1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700	1600	UJ	ug/kg	1600	-		ug/kg	
4-Nitrophenol	1700	U	ug/kg	1700	1700	U	ug/kg	1700	1600	U	ug/kg	1600	-		ug/kg	
Dibenzofuran	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
2,4-Dinitrotoluene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Diethylphthalate	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
4-Chlorophenyl-phenylether	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Fluorene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
4-Nitroaniline	1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700	1600	UJ	ug/kg	1600	-		ug/kg	
4,6-Dinitro-2-methylphenol	1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700	1600	UJ	ug/kg	1600	-		ug/kg	
N-Nitrosodiphenylamine	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
4-Bromophenyl-phenylether	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Hexachlorobenzene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Pentachlorophenol	1700	U	ug/kg	1700	1700	U	ug/kg	1700	1600	U	ug/kg	1600	-		ug/kg	
Phenanthrene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Anthracene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Carbazole	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
Di-n-butylphthalate	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Fluoranthene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Pyrene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Butylbenzylphthalate	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
3,3-Dichlorobenzidine	690	U	ug/kg	690	690	U	ug/kg	690	680	UJ	ug/kg	680	-		ug/kg	
Benzo (a) anthracene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Chrysene	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
bis(2-Ethylhexyl) phthalate	340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22527008				22527009				22528001				22528001			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-20				31-SL-21				31-SL-22				31-SL-22			
Collect Date:		18-AUG-92				18-AUG-92				18-AUG-92				18-SEP-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Benzo (b) fluoranthene		340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Benzo (k) fluoranthene		340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Benzo (a) pyrene		340	U	ug/kg	340	340	U	ug/kg	340	340	U	ug/kg	340	-		ug/kg	
Indeno (1,2,3-cd) pyrene		340	U	ug/kg	340	340	U	ug/kg	340	340	UJ	ug/kg	340	-		ug/kg	
Dibenzo (a,h) anthracene		340	U	ug/kg	340	340	U	ug/kg	340	340	UJ	ug/kg	340	-		ug/kg	
Benzo (g,h,i) perylene		340	U	ug/kg	340	340	U	ug/kg	340	340	UJ	ug/kg	340	-		ug/kg	
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		8.3	U	ug/kg	8.3	8.3	U	ug/kg	8.3	8.2	U	ug/kg	8.2	-		ug/kg	
beta-BHC		8.3	U	ug/kg	8.3	8.3	U	ug/kg	8.3	8.2	U	ug/kg	8.2	-		ug/kg	
delta-BHC		8.3	U	ug/kg	8.3	8.3	U	ug/kg	8.3	8.2	U	ug/kg	8.2	-		ug/kg	
gamma-BHC (Lindane)		8.3	U	ug/kg	8.3	8.3	U	ug/kg	8.3	8.2	U	ug/kg	8.2	-		ug/kg	
Heptachlor		8.3	U	ug/kg	8.3	8.3	U	ug/kg	8.3	8.2	U	ug/kg	8.2	-		ug/kg	
Aldrin		8.3	U	ug/kg	8.3	8.3	U	ug/kg	8.3	8.2	U	ug/kg	8.2	-		ug/kg	
Heptachlor epoxide		8.3	U	ug/kg	8.3	8.3	U	ug/kg	8.3	8.2	U	ug/kg	8.2	-		ug/kg	
Endosulfan I		8.3	U	ug/kg	8.3	8.3	U	ug/kg	8.3	8.2	U	ug/kg	8.2	-		ug/kg	
Dieldrin		17	U	ug/kg	17	17	U	ug/kg	17	16	U	ug/kg	16	-		ug/kg	
4,4-DDE		17	U	ug/kg	17	17	U	ug/kg	17	16	U	ug/kg	16	-		ug/kg	
Endrin		17	U	ug/kg	17	17	U	ug/kg	17	16	U	ug/kg	16	-		ug/kg	
Endosulfan II		17	U	ug/kg	17	17	U	ug/kg	17	16	U	ug/kg	16	-		ug/kg	
4,4-DDD		17	U	ug/kg	17	17	U	ug/kg	17	16	U	ug/kg	16	-		ug/kg	
Endosulfan sulfate		17	U	ug/kg	17	17	U	ug/kg	17	16	U	ug/kg	16	-		ug/kg	
4,4-DDT		17	U	ug/kg	17	17	U	ug/kg	17	16	U	ug/kg	16	-		ug/kg	
Methoxychlor		83	U	ug/kg	83	83	U	ug/kg	83	82	U	ug/kg	82	-		ug/kg	
Endrin ketone		17	U	ug/kg	17	17	U	ug/kg	17	16	U	ug/kg	16	-		ug/kg	
Endrin aldehyde		-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane		83	U	ug/kg	83	83	U	ug/kg	83	82	U	ug/kg	82	-		ug/kg	
gamma-Chlordane		83	U	ug/kg	83	83	U	ug/kg	83	82	U	ug/kg	82	-		ug/kg	
Toxaphene		170	U	ug/kg	170	170	U	ug/kg	170	160	U	ug/kg	160	-		ug/kg	
Aroclor-1016		83	U	ug/kg	83	83	U	ug/kg	83	82	U	ug/kg	82	-		ug/kg	
Aroclor-1221		83	U	ug/kg	83	83	U	ug/kg	83	82	U	ug/kg	82	-		ug/kg	
Aroclor-1232		83	U	ug/kg	83	83	U	ug/kg	83	82	U	ug/kg	82	-		ug/kg	
Aroclor-1242		83	U	ug/kg	83	83	U	ug/kg	83	82	U	ug/kg	82	-		ug/kg	
Aroclor-1248		83	U	ug/kg	83	83	U	ug/kg	83	82	U	ug/kg	82	-		ug/kg	
Aroclor-1254		170	U	ug/kg	170	170	U	ug/kg	170	160	U	ug/kg	160	-		ug/kg	
Aroclor-1260		170	U	ug/kg	170	170	U	ug/kg	170	160	U	ug/kg	160	-		ug/kg	
CLP METALS AND CYANIDE	mg/kg																
Aluminum		293		mg/kg	40	307		mg/kg	40	-		mg/kg		178		mg/kg	40
Antimony		2.6	U	mg/kg	12	2.6	U	mg/kg	12	-		mg/kg		2.6	U	mg/kg	12
Arsenic		.21	U	mg/kg	2	.21	U	mg/kg	2	-		mg/kg		.21	U	mg/kg	2
Barium		2.1	J	mg/kg	40	2.5	J	mg/kg	40	-		mg/kg		3	J	mg/kg	40
Beryllium		.05	U	mg/kg	1	.05	U	mg/kg	1	-		mg/kg		.05	U	mg/kg	1
Cadmium		.57	U	mg/kg	1	.57	U	mg/kg	1	-		mg/kg		.57	U	mg/kg	1
Calcium		68	J	mg/kg	1000	135	J	mg/kg	1000	-		mg/kg		86.3	UJ	mg/kg	1000
Chromium		1.5	J	mg/kg	2	.98	J	mg/kg	2	-		mg/kg		2.6	UJ	mg/kg	2
Cobalt		.32	U	mg/kg	10	.33	U	mg/kg	10	-		mg/kg		.32	U	mg/kg	10
Copper		4.1	J	mg/kg	5	4.5	J	mg/kg	5	-		mg/kg		5.2		mg/kg	5
Iron		522		mg/kg	20	528		mg/kg	20	-		mg/kg		609		mg/kg	20
Lead		2.7		mg/kg	1	7.2		mg/kg	1	-		mg/kg		5.2	UJ	mg/kg	1
Magnesium		17	J	mg/kg	1000	13.7	J	mg/kg	1000	-		mg/kg		10	U	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22527008				22527009				22528001				22528001			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-20				31-SL-21				31-SL-22				31-SL-22			
Collect Date:	18-AUG-92				18-AUG-92				18-AUG-92				18-SEP-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	1.5	J	mg/kg	3	1.4	J	mg/kg	3	-		mg/kg		1	J	mg/kg	3
Mercury	.04	U	mg/kg	.1	.04	U	mg/kg	.1	-		mg/kg		.04	UJ	mg/kg	.1
Nickel	2.2	U	mg/kg	8	2.2	U	mg/kg	8	-		mg/kg		2.2	U	mg/kg	8
Potassium	125	U	mg/kg	1000	126	U	mg/kg	1000	-		mg/kg		124	U	mg/kg	1000
Selenium	.43	U	mg/kg	1	.44	U	mg/kg	1	-		mg/kg		.43	U	mg/kg	1
Silver	.82	J	mg/kg	2	.39	J	mg/kg	2	-		mg/kg		.88	UJ	mg/kg	2
Sodium	180	J	mg/kg	1000	127	J	mg/kg	1000	-		mg/kg		144	UJ	mg/kg	1000
Thallium	.33	U	mg/kg	2	.33	U	mg/kg	2	-		mg/kg		.33	U	mg/kg	2
Vanadium	1	J	mg/kg	10	.33	J	mg/kg	10	-		mg/kg		.67	UJ	mg/kg	10
Zinc	4.4		mg/kg	4	5.3		mg/kg	4	-		mg/kg		6.5	UJ	mg/kg	4
Cyanide	.23	U	mg/kg	1	.23	U	mg/kg	1	-		mg/kg		.23	U	mg/kg	1

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22528002				22528002				22527010				22527011			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-22A				31-SL-22A				31-SL-23				31-SL-24			
Collect Date:		18-AUG-92				18-SEP-92				18-AUG-92				18-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		10	U	ug/kg	10	-		ug/kg		10	U	ug/kg	10	10	U	ug/kg	10
Bromomethane		10	U	ug/kg	10	-		ug/kg		10	U	ug/kg	10	10	U	ug/kg	10
Vinyl chloride		10	U	ug/kg	10	-		ug/kg		10	U	ug/kg	10	10	U	ug/kg	10
Chloroethane		10	U	ug/kg	10	-		ug/kg		10	U	ug/kg	10	10	U	ug/kg	10
Methylene chloride		9	UJ	ug/kg	5	-		ug/kg		6	UJ	ug/kg	5	7	UJ	ug/kg	5
Acetone		27	UJ	ug/kg	10	-		ug/kg		10	UJ	ug/kg	10	15	UJ	ug/kg	10
Carbon disulfide		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
1,1-Dichloroethene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
1,1-Dichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
1,2-Dichloroethene (total)		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Chloroform		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
1,2-Dichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
2-Butanone		10	U	ug/kg	10	-		ug/kg		10	U	ug/kg	10	10	U	ug/kg	10
1,1,1-Trichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Carbon tetrachloride		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Bromodichloromethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
1,2-Dichloropropane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
cis-1,3-Dichloropropene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Trichloroethene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Dibromochloromethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
1,1,2-Trichloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Benzene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
trans-1,3-Dichloropropene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Bromoform		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
4-Methyl-2-pentanone		10	U	ug/kg	10	-		ug/kg		10	U	ug/kg	10	10	U	ug/kg	10
2-Hexanone		10	U	ug/kg	10	-		ug/kg		10	U	ug/kg	10	10	U	ug/kg	10
Tetrachloroethene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Toluene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
1,1,2,2-Tetrachloroethane		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Chlorobenzene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Ethylbenzene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Styrene		5	U	ug/kg	5	-		ug/kg		5	U	ug/kg	5	5	U	ug/kg	5
Xylenes (total)		3	J	ug/kg	5	-		ug/kg		2	J	ug/kg	5	1	J	ug/kg	5
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
bis(2-Chloroethyl) ether		340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2-Chlorophenol		340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
1,3-Dichlorobenzene		340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
1,4-Dichlorobenzene		340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22528002				22528002				22527010				22527011			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-22A				31-SL-22A				31-SL-23				31-SL-24			
Collect Date:	18-AUG-92				18-SEP-92				18-AUG-92				18-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2-Methylphenol	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2,2-oxybis(1-Chloropropane)	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
4-Methylphenol	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
N-Nitroso-di-n-propylamine	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Hexachloroethane	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Nitrobenzene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Isophorone	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2-Nitrophenol	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2,4-Dimethylphenol	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
bis(2-Chloroethoxy) methane	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2,4-Dichlorophenol	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
1,2,4-Trichlorobenzene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Naphthalene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
4-Chloroaniline	340	UJ	ug/kg	340	-		ug/kg		350	UJ	ug/kg	350	350	UJ	ug/kg	350
Hexachlorobutadiene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
4-Chloro-3-methylphenol	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2-Methylnaphthalene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Hexachlorocyclopentadiene	340	UJ	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2,4,6-Trichlorophenol	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2,4,5-Trichlorophenol	1600	UJ	ug/kg	1600	-		ug/kg		1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700
2-Chloronaphthalene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2-Nitroaniline	1600	U	ug/kg	1600	-		ug/kg		1700	U	ug/kg	1700	1700	U	ug/kg	1700
Dimethylphthalate	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Acenaphthylene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2,6-Dinitrotoluene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
3-Nitroaniline	1600	UJ	ug/kg	1600	-		ug/kg		1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700
Acenaphthene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2,4-Dinitrophenol	1600	UJ	ug/kg	1600	-		ug/kg		1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700
4-Nitrophenol	1600	U	ug/kg	1600	-		ug/kg		1700	U	ug/kg	1700	1700	U	ug/kg	1700
Dibenzofuran	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
2,4-Dinitrotoluene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Diethylphthalate	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
4-Chlorophenyl-phenylether	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Fluorene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
4-Nitroaniline	1600	UJ	ug/kg	1600	-		ug/kg		1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700
4,6-Dinitro-2-methylphenol	1600	UJ	ug/kg	1600	-		ug/kg		1700	UJ	ug/kg	1700	1700	UJ	ug/kg	1700
N-Nitrosodiphenylamine	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
4-Bromophenyl-phenylether	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Hexachlorobenzene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Pentachlorophenol	1600	U	ug/kg	1600	-		ug/kg		1700	U	ug/kg	1700	1700	U	ug/kg	1700
Phenanthrene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Anthracene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Carbazole	-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
Di-n-butylphthalate	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Fluoranthene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Pyrene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Butylbenzylphthalate	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
3,3-Dichlorobenzidine	680	UJ	ug/kg	680	-		ug/kg		690	U	ug/kg	690	690	U	ug/kg	690
Benzo (a) anthracene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Chrysene	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
bis(2-Ethylhexyl) phthalate	340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		22528002				22528002				22527010				22527011			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31-SL-22A				31-SL-22A				31-SL-23				31-SL-24			
Collect Date:		18-AUG-92				18-SEP-92				18-AUG-92				18-AUG-92			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Benzo (b) fluoranthene		340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Benzo (k) fluoranthene		340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Benzo (a) pyrene		340	U	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Indeno (1,2,3-cd) pyrene		340	UJ	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Dibenzo (a,h) anthracene		340	UJ	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
Benzo (g,h,i) perylene		340	UJ	ug/kg	340	-		ug/kg		350	U	ug/kg	350	350	U	ug/kg	350
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		8.2	U	ug/kg	8.2	-		ug/kg		8.4	U	ug/kg	8.4	8.4	U	ug/kg	8.4
beta-BHC		8.2	U	ug/kg	8.2	-		ug/kg		8.4	U	ug/kg	8.4	8.4	U	ug/kg	8.4
delta-BHC		8.2	U	ug/kg	8.2	-		ug/kg		8.4	U	ug/kg	8.4	8.4	U	ug/kg	8.4
gamma-BHC (Lindane)		8.2	U	ug/kg	8.2	-		ug/kg		8.4	U	ug/kg	8.4	8.4	U	ug/kg	8.4
Heptachlor		8.2	U	ug/kg	8.2	-		ug/kg		8.4	U	ug/kg	8.4	8.4	U	ug/kg	8.4
Aldrin		8.2	U	ug/kg	8.2	-		ug/kg		8.4	U	ug/kg	8.4	8.4	U	ug/kg	8.4
Heptachlor epoxide		8.2	U	ug/kg	8.2	-		ug/kg		8.4	U	ug/kg	8.4	8.4	U	ug/kg	8.4
Endosulfan I		8.2	U	ug/kg	8.2	-		ug/kg		8.4	U	ug/kg	8.4	8.4	U	ug/kg	8.4
Dieldrin		16	U	ug/kg	16	-		ug/kg		1.3	J	ug/kg	17	17	U	ug/kg	17
4,4-DDE		16	U	ug/kg	16	-		ug/kg		3.2	J	ug/kg	17	17	U	ug/kg	17
Endrin		16	U	ug/kg	16	-		ug/kg		17	U	ug/kg	17	17	U	ug/kg	17
Endosulfan II		16	U	ug/kg	16	-		ug/kg		17	U	ug/kg	17	17	U	ug/kg	17
4,4-DDD		16	U	ug/kg	16	-		ug/kg		1.6	J	ug/kg	17	17	U	ug/kg	17
Endosulfan sulfate		16	U	ug/kg	16	-		ug/kg		17	U	ug/kg	17	17	U	ug/kg	17
4,4-DDT		16	U	ug/kg	16	-		ug/kg		17	U	ug/kg	17	17	U	ug/kg	17
Methoxychlor		82	U	ug/kg	82	-		ug/kg		84	U	ug/kg	84	84	U	ug/kg	84
Endrin ketone		16	U	ug/kg	16	-		ug/kg		17	U	ug/kg	17	17	U	ug/kg	17
Endrin aldehyde		-		ug/kg		-		ug/kg		-		ug/kg		-		ug/kg	
alpha-Chlordane		82	U	ug/kg	82	-		ug/kg		1.7	J	ug/kg	84	1.9	J	ug/kg	84
gamma-Chlordane		82	U	ug/kg	82	-		ug/kg		2.3	J	ug/kg	84	4	J	ug/kg	84
Toxaphene		160	U	ug/kg	160	-		ug/kg		170	U	ug/kg	170	170	U	ug/kg	170
Aroclor-1016		82	U	ug/kg	82	-		ug/kg		84	U	ug/kg	84	84	U	ug/kg	84
Aroclor-1221		82	U	ug/kg	82	-		ug/kg		84	U	ug/kg	84	84	U	ug/kg	84
Aroclor-1232		82	U	ug/kg	82	-		ug/kg		84	U	ug/kg	84	84	U	ug/kg	84
Aroclor-1242		82	U	ug/kg	82	-		ug/kg		84	U	ug/kg	84	84	U	ug/kg	84
Aroclor-1248		82	U	ug/kg	82	-		ug/kg		84	U	ug/kg	84	84	U	ug/kg	84
Aroclor-1254		160	U	ug/kg	160	-		ug/kg		170	U	ug/kg	170	170	U	ug/kg	170
Aroclor-1260		160	U	ug/kg	160	-		ug/kg		170	U	ug/kg	170	170	U	ug/kg	170
CLP METALS AND CYANIDE	mg/kg																
Aluminum		-		mg/kg		184		mg/kg	40	298		mg/kg	40	296		mg/kg	40
Antimony		-		mg/kg		2.6	U	mg/kg	12	2.6	U	mg/kg	12	2.6	U	mg/kg	12
Arsenic		-		mg/kg		.21	U	mg/kg	2	.21	U	mg/kg	2	.21	U	mg/kg	2
Barium		-		mg/kg		6.9	J	mg/kg	40	2.9	J	mg/kg	40	2.9	J	mg/kg	40
Beryllium		-		mg/kg		.05	U	mg/kg	1	.05	U	mg/kg	1	.05	U	mg/kg	1
Cadmium		-		mg/kg		.57	U	mg/kg	1	.57	U	mg/kg	1	.58	U	mg/kg	1
Calcium		-		mg/kg		132	UJ	mg/kg	1000	76.7	J	mg/kg	1000	72.3	J	mg/kg	1000
Chromium		-		mg/kg		1.3	UJ	mg/kg	2	1.5	J	mg/kg	2	1.5	J	mg/kg	2
Cobalt		-		mg/kg		.32	U	mg/kg	10	.33	U	mg/kg	10	.33	U	mg/kg	10
Copper		-		mg/kg		4.4	UJ	mg/kg	5	5.9		mg/kg	5	5.1	J	mg/kg	5
Iron		-		mg/kg		479		mg/kg	20	536		mg/kg	20	431		mg/kg	20
Lead		-		mg/kg		6.4	UJ	mg/kg	1	10.8		mg/kg	1	4.7		mg/kg	1
Magnesium		-		mg/kg		26.3	J	mg/kg	1000	13.2	J	mg/kg	1000	14	J	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	22528002				22528002				22527010				22527011			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31-SL-22A				31-SL-22A				31-SL-23				31-SL-24			
Collect Date:	18-AUG-92				18-SEP-92				18-AUG-92				18-AUG-92			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	-		mg/kg		.84	J	mg/kg	3	1.7	J	mg/kg	3	1.2	J	mg/kg	3
Mercury	-		mg/kg		.04	UJ	mg/kg	.1	.05	U	mg/kg	.1	.14		mg/kg	.1
Nickel	-		mg/kg		2.2	U	mg/kg	8	2.2	U	mg/kg	8	6	J	mg/kg	8
Potassium	-		mg/kg		125	U	mg/kg	1000	126	U	mg/kg	1000	127	U	mg/kg	1000
Selenium	-		mg/kg		.43	UJ	mg/kg	1	.44	U	mg/kg	1	.44	U	mg/kg	1
Silver	-		mg/kg		.6	UJ	mg/kg	2	1.3	J	mg/kg	2	1.3	J	mg/kg	2
Sodium	-		mg/kg		154	UJ	mg/kg	1000	189	J	mg/kg	1000	124	J	mg/kg	1000
Thallium	-		mg/kg		.33	UJ	mg/kg	2	.33	U	mg/kg	2	.33	U	mg/kg	2
Vanadium	-		mg/kg		.36	UJ	mg/kg	10	.38	J	mg/kg	10	.27	U	mg/kg	10
Zinc	-		mg/kg		5.8	UJ	mg/kg	4	7.4		mg/kg	4	27.1		mg/kg	4
Cyanide	-		mg/kg		.23	U	mg/kg	1	.23	U	mg/kg	1	.23	U	mg/kg	1

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		G8924001				G8924002				G8924003				RA855010			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31S00101				31S00201				31S00301				31S00401			
Collect Date:		12-DEC-95				12-DEC-95				12-DEC-95				07-JAN-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromomethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Vinyl chloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Methylene chloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Acetone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Carbon disulfide		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethene (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chloroform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
2-Butanone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,1-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Carbon tetrachloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromodichloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloropropane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
cis-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Trichloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Dibromochloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,2-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Benzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
trans-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromoform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
4-Methyl-2-pentanone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
2-Hexanone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	UJ	ug/kg	11
Tetrachloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Toluene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,2,2-Tetrachloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chlorobenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Ethylbenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Styrene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Xylenes (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
bis(2-Chloroethyl) ether		360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2-Chlorophenol		360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
1,3-Dichlorobenzene		360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
1,4-Dichlorobenzene		360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	G8924001				G8924002				G8924003				RA855010			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31S00101				31S00201				31S00301				31S00401			
Collect Date:	12-DEC-95				12-DEC-95				12-DEC-95				07-JAN-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2-Methylphenol	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2,2-oxybis(1-Chloropropane)	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
4-Methylphenol	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
N-Nitroso-di-n-propylamine	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Hexachloroethane	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Nitrobenzene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Isophorone	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2-Nitrophenol	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2,4-Dimethylphenol	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
bis(2-Chloroethoxy) methane	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2,4-Dichlorophenol	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
1,2,4-Trichlorobenzene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Naphthalene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
4-Chloroaniline	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Hexachlorobutadiene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
4-Chloro-3-methylphenol	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2-Methylnaphthalene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Hexachlorocyclopentadiene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2,4,6-Trichlorophenol	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2,4,5-Trichlorophenol	900	U	ug/kg	900	960	U	ug/kg	960	900	U	ug/kg	900	940	U	ug/kg	940
2-Chloronaphthalene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2-Nitroaniline	900	U	ug/kg	900	960	U	ug/kg	960	900	U	ug/kg	900	940	U	ug/kg	940
Dimethylphthalate	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Acenaphthylene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2,6-Dinitrotoluene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
3-Nitroaniline	900	U	ug/kg	900	960	U	ug/kg	960	900	U	ug/kg	900	940	U	ug/kg	940
Acenaphthene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2,4-Dinitrophenol	900	U	ug/kg	900	960	U	ug/kg	960	900	U	ug/kg	900	940	U	ug/kg	940
4-Nitrophenol	900	UJ	ug/kg	900	960	UJ	ug/kg	960	900	UJ	ug/kg	900	940	U	ug/kg	940
Dibenzofuran	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
2,4-Dinitrotoluene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Diethylphthalate	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
4-Chlorophenyl-phenylether	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Fluorene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
4-Nitroaniline	900	U	ug/kg	900	960	U	ug/kg	960	900	U	ug/kg	900	940	U	ug/kg	940
4,6-Dinitro-2-methylphenol	900	U	ug/kg	900	960	U	ug/kg	960	900	U	ug/kg	900	940	U	ug/kg	940
N-Nitrosodiphenylamine	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
4-Bromophenyl-phenylether	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Hexachlorobenzene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Pentachlorophenol	900	U	ug/kg	900	960	U	ug/kg	960	900	U	ug/kg	900	940	U	ug/kg	940
Phenanthrene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Anthracene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Carbazole	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Di-n-butylphthalate	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Fluoranthene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Pyrene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Butylbenzylphthalate	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
3,3-Dichlorobenzidine	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Benzo (a) anthracene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Chrysene	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
bis(2-Ethylhexyl) phthalate	360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		G8924001				G8924002				G8924003				RA855010			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31S00101				31S00201				31S00301				31S00401			
Collect Date:		12-DEC-95				12-DEC-95				12-DEC-95				07-JAN-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Benzo (b) fluoranthene		360	UJ	ug/kg	360	380	UJ	ug/kg	380	360	UJ	ug/kg	360	370	U	ug/kg	370
Benzo (k) fluoranthene		360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Benzo (a) pyrene		360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Indeno (1,2,3-cd) pyrene		360	UJ	ug/kg	360	380	UJ	ug/kg	380	360	UJ	ug/kg	360	370	U	ug/kg	370
Dibenzo (a,h) anthracene		360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
Benzo (g,h,i) perylene		360	U	ug/kg	360	380	U	ug/kg	380	360	U	ug/kg	360	370	U	ug/kg	370
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		1.8	UJ	ug/kg	1.8	2	UJ	ug/kg	2	1.8	UJ	ug/kg	1.8	1.9	U	ug/kg	1.9
beta-BHC		1.8	UJ	ug/kg	1.8	2	U	ug/kg	2	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9
delta-BHC		1.8	UJ	ug/kg	1.8	2	U	ug/kg	2	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9
gamma-BHC (Lindane)		1.8	UJ	ug/kg	1.8	2	U	ug/kg	2	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9
Heptachlor		1.8	UJ	ug/kg	1.8	2	U	ug/kg	2	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9
Aldrin		1.8	UJ	ug/kg	1.8	2	U	ug/kg	2	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9
Heptachlor epoxide		1.8	UJ	ug/kg	1.8	2	U	ug/kg	2	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9
Endosulfan I		1.8	UJ	ug/kg	1.8	2	U	ug/kg	2	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9
Dieldrin		3.5	UJ	ug/kg	3.5	3.8	U	ug/kg	3.8	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
4,4-DDE		3.5	UJ	ug/kg	3.5	3.8	U	ug/kg	3.8	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
Endrin		3.5	UJ	ug/kg	3.5	3.8	U	ug/kg	3.8	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
Endosulfan II		3.5	UJ	ug/kg	3.5	3.8	U	ug/kg	3.8	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
4,4-DDD		4.9	J	ug/kg	4	3.8	U	ug/kg	3.8	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
Endosulfan sulfate		3.5	UJ	ug/kg	3.5	3.8	U	ug/kg	3.8	3.6	U	ug/kg	3.6	3.6	UJ	ug/kg	3.6
4,4-DDT		10	J	ug/kg	4	3.8	U	ug/kg	3.8	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
Methoxychlor		18	U	ug/kg	18	20	U	ug/kg	20	18	U	ug/kg	18	19	U	ug/kg	19
Endrin ketone		3.5	U	ug/kg	3.5	3.8	U	ug/kg	3.8	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
Endrin aldehyde		3.5	U	ug/kg	3.5	3.8	U	ug/kg	3.8	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
alpha-Chlordane		1.8	U	ug/kg	1.8	2	U	ug/kg	2	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9
gamma-Chlordane		1.8	U	ug/kg	1.8	2	U	ug/kg	2	1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9
Toxaphene		180	U	ug/kg	180	200	U	ug/kg	200	180	U	ug/kg	180	190	U	ug/kg	190
Aroclor-1016		35	U	ug/kg	35	38	U	ug/kg	38	36	U	ug/kg	36	36	U	ug/kg	36
Aroclor-1221		72	U	ug/kg	72	77	U	ug/kg	77	73	U	ug/kg	73	74	U	ug/kg	74
Aroclor-1232		35	U	ug/kg	35	38	U	ug/kg	38	36	U	ug/kg	36	36	U	ug/kg	36
Aroclor-1242		35	U	ug/kg	35	38	U	ug/kg	38	36	U	ug/kg	36	36	U	ug/kg	36
Aroclor-1248		35	U	ug/kg	35	38	U	ug/kg	38	36	U	ug/kg	36	36	U	ug/kg	36
Aroclor-1254		35	U	ug/kg	35	38	U	ug/kg	38	36	U	ug/kg	36	36	U	ug/kg	36
Aroclor-1260		35	U	ug/kg	35	38	U	ug/kg	38	36	U	ug/kg	36	36	U	ug/kg	36
CLP METALS AND CYANIDE	mg/kg																
Aluminum		5710		mg/kg	40	10400		mg/kg	40	7430		mg/kg	40	4840		mg/kg	40
Antimony		12	UJ	mg/kg	12	12	UJ	mg/kg	12	12	UJ	mg/kg	12	12	UJ	mg/kg	12
Arsenic		1.1	J	mg/kg	2	2.3		mg/kg	2	.97	J	mg/kg	2	1.4	J	mg/kg	2
Barium		5.3	J	mg/kg	40	16.8	J	mg/kg	40	13.4	J	mg/kg	40	6.1	J	mg/kg	40
Beryllium		1	UJ	mg/kg	1	1	UJ	mg/kg	1	1	UJ	mg/kg	1	1	U	mg/kg	1
Cadmium		1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1
Calcium		43.2	J	mg/kg	1000	279	J	mg/kg	1000	227	J	mg/kg	1000	154	J	mg/kg	1000
Chromium		3.9		mg/kg	2	8.9		mg/kg	2	7		mg/kg	2	3.6		mg/kg	2
Cobalt		10	U	mg/kg	10	10	U	mg/kg	10	.95	J	mg/kg	10	10	U	mg/kg	10
Copper		5	UJ	mg/kg	5	5	UJ	mg/kg	5	5	UJ	mg/kg	5	5	UJ	mg/kg	5
Iron		3000		mg/kg	20	6290		mg/kg	20	3670		mg/kg	20	2640		mg/kg	20
Lead		2.9		mg/kg	.6	7.1		mg/kg	.6	3.6		mg/kg	.6	2.9		mg/kg	.6
Magnesium		100	J	mg/kg	1000	217	J	mg/kg	1000	163	J	mg/kg	1000	104	J	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	G8924001				G8924002				G8924003				RA855010			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31S00101				31S00201				31S00301				31S00401			
Collect Date:	12-DEC-95				12-DEC-95				12-DEC-95				07-JAN-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	86.2		mg/kg	3	206		mg/kg	3	250		mg/kg	3	61.4		mg/kg	3
Mercury	.02	J	mg/kg	.1	.02	J	mg/kg	.1	.02	J	mg/kg	.1	.1	U	mg/kg	.1
Nickel	8	U	mg/kg	8	4.5	J	mg/kg	8	5.1	J	mg/kg	8	1.9	J	mg/kg	8
Potassium	1000	U	mg/kg	1000	1000	U	mg/kg	1000	168	J	mg/kg	1000	74.5	J	mg/kg	1000
Selenium	1	U	mg/kg	1	.37	J	mg/kg	1	1	U	mg/kg	1	.29	J	mg/kg	1
Silver	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2
Sodium	1000	UJ	mg/kg	1000	1000	UJ	mg/kg	1000	1000	UJ	mg/kg	1000	179	J	mg/kg	1000
Thallium	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2
Vanadium	7.1	J	mg/kg	10	18.7		mg/kg	10	9.1	J	mg/kg	10	6.8	J	mg/kg	10
Zinc	3.8	J	mg/kg	4	4.2	J	mg/kg	4	6.1		mg/kg	4	6.9		mg/kg	4
Cyanide	.5	U	mg/kg	.5	.5	U	mg/kg	.5	.5	U	mg/kg	.5	.12	J	mg/kg	.5

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		RA855011				RA855012				RA855013				RA855014			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31S00501				31S00501D				31S00601				31S00701			
Collect Date:		07-JAN-96				07-JAN-96				07-JAN-96				07-JAN-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Bromomethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Vinyl chloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Chloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	UJ	ug/kg	11	12	UJ	ug/kg	12
Methylene chloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Acetone		11	U	ug/kg	11	11	U	ug/kg	11	11	UJ	ug/kg	11	12	UJ	ug/kg	12
Carbon disulfide		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,1-Dichloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,1-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,2-Dichloroethene (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Chloroform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,2-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	UJ	ug/kg	11	12	UJ	ug/kg	12
2-Butanone		11	U	ug/kg	11	11	U	ug/kg	11	11	UJ	ug/kg	11	12	UJ	ug/kg	12
1,1,1-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Carbon tetrachloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Bromodichloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,2-Dichloropropane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
cis-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Trichloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Dibromochloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,1,2-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Benzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
trans-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Bromoform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
4-Methyl-2-pentanone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
2-Hexanone		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Tetrachloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Toluene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,1,2,2-Tetrachloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Chlorobenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Ethylbenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Styrene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Xylenes (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
bis(2-Chloroethyl) ether		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2-Chlorophenol		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
1,3-Dichlorobenzene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
1,4-Dichlorobenzene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	RA855011				RA855012				RA855013				RA855014			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31S00501				31S00501D				31S00601				31S00701			
Collect Date:	07-JAN-96				07-JAN-96				07-JAN-96				07-JAN-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2-Methylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2,2-oxybis(1-Chloropropane)	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
4-Methylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
N-Nitroso-di-n-propylamine	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Hexachloroethane	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Nitrobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Isophorone	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2-Nitrophenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2,4-Dimethylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
bis(2-Chloroethoxy) methane	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2,4-Dichlorophenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
1,2,4-Trichlorobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Naphthalene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
4-Chloroaniline	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Hexachlorobutadiene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
4-Chloro-3-methylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2-Methylnaphthalene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Hexachlorocyclopentadiene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2,4,6-Trichlorophenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2,4,5-Trichlorophenol	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900	990	U	ug/kg	990
2-Chloronaphthalene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2-Nitroaniline	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900	990	U	ug/kg	990
Dimethylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Acenaphthylene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2,6-Dinitrotoluene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
3-Nitroaniline	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900	990	U	ug/kg	990
Acenaphthene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2,4-Dinitrophenol	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900	990	U	ug/kg	990
4-Nitrophenol	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900	990	U	ug/kg	990
Dibenzofuran	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
2,4-Dinitrotoluene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Diethylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
4-Chlorophenyl-phenylether	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Fluorene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
4-Nitroaniline	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900	990	U	ug/kg	990
4,6-Dinitro-2-methylphenol	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900	990	U	ug/kg	990
N-Nitrosodiphenylamine	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
4-Bromophenyl-phenylether	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Hexachlorobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Pentachlorophenol	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900	990	U	ug/kg	990
Phenanthrene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Anthracene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Carbazole	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Di-n-butylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Fluoranthene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Pyrene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Butylbenzylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
3,3-Dichlorobenzidine	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Benzo (a) anthracene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Chrysene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
bis(2-Ethylhexyl) phthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	42	J	ug/kg	390

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		RA855011				RA855012				RA855013				RA855014			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31S00501				31S00501D				31S00601				31S00701			
Collect Date:		07-JAN-96				07-JAN-96				07-JAN-96				07-JAN-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Benzo (b) fluoranthene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Benzo (k) fluoranthene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Benzo (a) pyrene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Indeno (1,2,3-cd) pyrene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Dibenzo (a,h) anthracene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
Benzo (g,h,i) perylene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	390	U	ug/kg	390
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
beta-BHC		1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
delta-BHC		1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
gamma-BHC (Lindane)		1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Heptachlor		1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Aldrin		1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Heptachlor epoxide		1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Endosulfan I		1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Dieldrin		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
4,4-DDE		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
Endrin		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
Endosulfan II		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
4,4-DDD		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
Endosulfan sulfate		3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.9	UJ	ug/kg	3.9
4,4-DDT		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
Methoxychlor		18	U	ug/kg	18	18	U	ug/kg	18	18	U	ug/kg	18	20	U	ug/kg	20
Endrin ketone		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
Endrin aldehyde		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.9	U	ug/kg	3.9
alpha-Chlordane		1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
gamma-Chlordane		1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Toxaphene		180	U	ug/kg	180	180	U	ug/kg	180	180	U	ug/kg	180	200	U	ug/kg	200
Aroclor-1016		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	39	U	ug/kg	39
Aroclor-1221		73	U	ug/kg	73	73	U	ug/kg	73	73	U	ug/kg	73	80	U	ug/kg	80
Aroclor-1232		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	39	U	ug/kg	39
Aroclor-1242		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	39	U	ug/kg	39
Aroclor-1248		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	39	U	ug/kg	39
Aroclor-1254		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	39	U	ug/kg	39
Aroclor-1260		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	39	U	ug/kg	39
CLP METALS AND CYANIDE	mg/kg																
Aluminum		4500		mg/kg	40	6050		mg/kg	40	4870		mg/kg	40	1670		mg/kg	40
Antimony		12	UJ	mg/kg	12	12	UJ	mg/kg	12	12	UJ	mg/kg	12	12	UJ	mg/kg	12
Arsenic		1.3	J	mg/kg	2	1.2	J	mg/kg	2	1.3	J	mg/kg	2	.59	J	mg/kg	2
Barium		6.6	J	mg/kg	40	8.6	J	mg/kg	40	7.2	J	mg/kg	40	5.4	J	mg/kg	40
Beryllium		1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1
Cadmium		1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1
Calcium		143	J	mg/kg	1000	146	J	mg/kg	1000	160	J	mg/kg	1000	152	J	mg/kg	1000
Chromium		2.8		mg/kg	2	3.8		mg/kg	2	4.4		mg/kg	2	2.4		mg/kg	2
Cobalt		10	U	mg/kg	10	1.2	J	mg/kg	10	.84	J	mg/kg	10	10	U	mg/kg	10
Copper		5	UJ	mg/kg	5	5	UJ	mg/kg	5	5	UJ	mg/kg	5	5	UJ	mg/kg	5
Iron		2470		mg/kg	20	2840		mg/kg	20	2520		mg/kg	20	645		mg/kg	20
Lead		3.2		mg/kg	.6	2.9		mg/kg	.6	2.9		mg/kg	.6	11.6		mg/kg	.6
Magnesium		80.1	J	mg/kg	1000	138	J	mg/kg	1000	93.2	J	mg/kg	1000	40.3	J	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	RA855011				RA855012				RA855013				RA855014			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31S00501				31S00501D				31S00601				31S00701			
Collect Date:	07-JAN-96				07-JAN-96				07-JAN-96				07-JAN-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	87		mg/kg	3	95.3		mg/kg	3	139		mg/kg	3	1.9	J	mg/kg	3
Mercury	.1	U	mg/kg	.1	.1	U	mg/kg	.1	.1	U	mg/kg	.1	.1	U	mg/kg	.1
Nickel	1.9	J	mg/kg	8	2.2	J	mg/kg	8	8	U	mg/kg	8	8	U	mg/kg	8
Potassium	81.9	J	mg/kg	1000	115	J	mg/kg	1000	122	J	mg/kg	1000	73.5	J	mg/kg	1000
Selenium	.18	J	mg/kg	1	1	U	mg/kg	1	.15	J	mg/kg	1	1	U	mg/kg	1
Silver	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2
Sodium	192	J	mg/kg	1000	175	J	mg/kg	1000	187	J	mg/kg	1000	201	J	mg/kg	1000
Thallium	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2
Vanadium	5.9	J	mg/kg	10	7.2	J	mg/kg	10	6	J	mg/kg	10	3.5	J	mg/kg	10
Zinc	3.9	J	mg/kg	4	5.2		mg/kg	4	4.8		mg/kg	4	4	UJ	mg/kg	4
Cyanide	.09	J	mg/kg	.5	.5	U	mg/kg	.5	.09	J	mg/kg	.5	.09	J	mg/kg	.5

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		RA855018				RA855017				RA855015				RA855016			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31S00801				31S00901				31S01001				31S01101			
Collect Date:		07-JAN-96				07-JAN-96				07-JAN-96				07-JAN-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	U	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11
Bromomethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Vinyl chloride		11	U	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11
Chloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Methylene chloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Acetone		11	U	ug/kg	11	17	UJ	ug/kg	17	13	UJ	ug/kg	13	11	UJ	ug/kg	11
Carbon disulfide		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethene (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chloroform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethane		11	U	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11
2-Butanone		11	U	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11
1,1,1-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Carbon tetrachloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromodichloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloropropane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
cis-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Trichloroethene		11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Dibromochloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,2-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Benzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
trans-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromoform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
4-Methyl-2-pentanone		11	U	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11
2-Hexanone		11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Tetrachloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Toluene		11	U	ug/kg	11	11	U	ug/kg	11	1	J	ug/kg	11	11	U	ug/kg	11
1,1,2,2-Tetrachloroethane		11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chlorobenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Ethylbenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Styrene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Xylenes (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
bis(2-Chloroethyl) ether		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2-Chlorophenol		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
1,3-Dichlorobenzene		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
1,4-Dichlorobenzene		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	RA855018				RA855017				RA855015				RA855016			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31S00801				31S00901				31S01001				31S01101			
Collect Date:	07-JAN-96				07-JAN-96				07-JAN-96				07-JAN-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2-Methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,2-oxybis(1-Chloropropane)	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
N-Nitroso-di-n-propylamine	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Hexachloroethane	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Nitrobenzene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Isophorone	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2-Nitrophenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dimethylphenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
bis(2-Chloroethoxy) methane	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dichlorophenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
1,2,4-Trichlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Naphthalene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Chloroaniline	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Hexachlorobutadiene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Chloro-3-methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2-Methylnaphthalene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Hexachlorocyclopentadiene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4,6-Trichlorophenol	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4,5-Trichlorophenol	920	U	ug/kg	920	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900
2-Chloronaphthalene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2-Nitroaniline	920	U	ug/kg	920	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900
Dimethylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Acenaphthylene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,6-Dinitrotoluene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
3-Nitroaniline	920	U	ug/kg	920	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900
Acenaphthene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dinitrophenol	920	U	ug/kg	920	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900
4-Nitrophenol	920	U	ug/kg	920	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900
Dibenzofuran	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dinitrotoluene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Diethylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Chlorophenyl-phenylether	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Fluorene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Nitroaniline	920	U	ug/kg	920	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900
4,6-Dinitro-2-methylphenol	920	U	ug/kg	920	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900
N-Nitrosodiphenylamine	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Bromophenyl-phenylether	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Hexachlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Pentachlorophenol	920	U	ug/kg	920	910	U	ug/kg	910	900	U	ug/kg	900	900	U	ug/kg	900
Phenanthrene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Anthracene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Carbazole	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Di-n-butylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Fluoranthene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Pyrene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Butylbenzylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
3,3-Dichlorobenzidine	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Benzo (a) anthracene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Chrysene	370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
bis(2-Ethylhexyl) phthalate	60	J	ug/kg	370	570		ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		RA855018				RA855017				RA855015				RA855016			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31S00801				31S00901				31S01001				31S01101			
Collect Date:		07-JAN-96				07-JAN-96				07-JAN-96				07-JAN-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Benzo (b) fluoranthene		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Benzo (k) fluoranthene		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Benzo (a) pyrene		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Indeno (1,2,3-cd) pyrene		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Dibenzo (a,h) anthracene		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Benzo (g,h,i) perylene		370	U	ug/kg	370	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		1.9	U	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
beta-BHC		1.9	U	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
delta-BHC		1.9	U	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
gamma-BHC (Lindane)		1.9	U	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
Heptachlor		1.9	U	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
Aldrin		1.9	U	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
Heptachlor epoxide		1.9	U	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
Endosulfan I		1.9	U	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
Dieldrin		3.7	U	ug/kg	3.7	2.1	J	ug/kg	4	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
4,4-DDE		3.7	U	ug/kg	3.7	2.3	J	ug/kg	4	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
Endrin		3.7	U	ug/kg	3.7	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
Endosulfan II		3.7	U	ug/kg	3.7	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
4,4-DDD		3.7	U	ug/kg	3.7	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
Endosulfan sulfate		3.7	UJ	ug/kg	3.7	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6
4,4-DDT		3.7	U	ug/kg	3.7	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
Methoxychlor		19	U	ug/kg	19	19	UJ	ug/kg	19	18	U	ug/kg	18	18	U	ug/kg	18
Endrin ketone		3.7	U	ug/kg	3.7	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
Endrin aldehyde		3.7	U	ug/kg	3.7	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6
alpha-Chlordane		1.9	U	ug/kg	1.9	1.3	J	ug/kg	2	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
gamma-Chlordane		1.9	U	ug/kg	1.9	1.4	J	ug/kg	2	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
Toxaphene		190	U	ug/kg	190	190	UJ	ug/kg	190	180	U	ug/kg	180	180	U	ug/kg	180
Aroclor-1016		37	U	ug/kg	37	36	UJ	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36
Aroclor-1221		74	U	ug/kg	74	74	UJ	ug/kg	74	73	U	ug/kg	73	73	U	ug/kg	73
Aroclor-1232		37	U	ug/kg	37	36	UJ	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36
Aroclor-1242		37	U	ug/kg	37	36	UJ	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36
Aroclor-1248		37	U	ug/kg	37	36	UJ	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36
Aroclor-1254		37	U	ug/kg	37	36	UJ	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36
Aroclor-1260		37	U	ug/kg	37	36	UJ	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36
CLP METALS AND CYANIDE	mg/kg																
Aluminum		2460		mg/kg	40	2010		mg/kg	40	1970		mg/kg	40	2260		mg/kg	40
Antimony		12	UJ	mg/kg	12	12	UJ	mg/kg	12	12	UJ	mg/kg	12	12	UJ	mg/kg	12
Arsenic		1.2	J	mg/kg	2	.77	J	mg/kg	2	.74	J	mg/kg	2	1.1	J	mg/kg	2
Barium		5.1	J	mg/kg	40	19.3	J	mg/kg	40	2.7	J	mg/kg	40	2.7	J	mg/kg	40
Beryllium		1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1
Cadmium		1	U	mg/kg	1	1.6		mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1
Calcium		188	J	mg/kg	1000	277	J	mg/kg	1000	93.3	J	mg/kg	1000	116	J	mg/kg	1000
Chromium		3.6		mg/kg	2	9.4		mg/kg	2	1.4	J	mg/kg	2	1.7	J	mg/kg	2
Cobalt		10	U	mg/kg	10	10	U	mg/kg	10	.94	J	mg/kg	10	10	U	mg/kg	10
Copper		5	UJ	mg/kg	5	57.4		mg/kg	5	5	UJ	mg/kg	5	5	UJ	mg/kg	5
Iron		2200		mg/kg	20	1920		mg/kg	20	1080		mg/kg	20	1310		mg/kg	20
Lead		11.1		mg/kg	.6	19.5		mg/kg	.6	1.8		mg/kg	.6	2.5		mg/kg	.6
Magnesium		53.4	J	mg/kg	1000	76.1	J	mg/kg	1000	52.7	J	mg/kg	1000	45.7	J	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	RA855018				RA855017				RA855015				RA855016			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31S00801				31S00901				31S01001				31S01101			
Collect Date:	07-JAN-96				07-JAN-96				07-JAN-96				07-JAN-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	34.2		mg/kg	3	8.9		mg/kg	3	5.2		mg/kg	3	8.2		mg/kg	3
Mercury	.13		mg/kg	.1	.64		mg/kg	.1	.1	U	mg/kg	.1	.1	U	mg/kg	.1
Nickel	8	U	mg/kg	8	8	U	mg/kg	8	8	U	mg/kg	8	1.5	J	mg/kg	8
Potassium	73.8	J	mg/kg	1000	101	J	mg/kg	1000	1000	U	mg/kg	1000	94.4	J	mg/kg	1000
Selenium	1	U	mg/kg	1	.28	J	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1
Silver	.97	J	mg/kg	2	3.3		mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2
Sodium	192	J	mg/kg	1000	189	J	mg/kg	1000	197	J	mg/kg	1000	182	J	mg/kg	1000
Thallium	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2
Vanadium	5.9	J	mg/kg	10	3	J	mg/kg	10	2.3	J	mg/kg	10	2.9	J	mg/kg	10
Zinc	12.4		mg/kg	4	50		mg/kg	4	4	UJ	mg/kg	4	3.6	J	mg/kg	4
Cyanide	.09	J	mg/kg	.5	.22	J	mg/kg	.5	.09	J	mg/kg	.5	.09	J	mg/kg	.5

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		RA855019				RA855019R				RA855020				G8924004			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31S01201				31S01201R				31S01301				31S01401			
Collect Date:		08-JAN-96				08-JAN-96				08-JAN-96				12-DEC-95			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromomethane		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Vinyl chloride		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chloroethane		11	R	ug/kg	11	11	U	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11
Methylene chloride		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Acetone		13	R	ug/kg	13	11	U	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11
Carbon disulfide		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethene		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethane		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethene (total)		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chloroform		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethane		11	R	ug/kg	11	11	U	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11
2-Butanone		11	R	ug/kg	11	11	U	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11
1,1,1-Trichloroethane		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Carbon tetrachloride		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromodichloromethane		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloropropane		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
cis-1,3-Dichloropropene		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Trichloroethene		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Dibromochloromethane		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,2-Trichloroethane		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Benzene		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
trans-1,3-Dichloropropene		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromoform		11	R	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
4-Methyl-2-pentanone		11	R	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
2-Hexanone		11	R	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Tetrachloroethene		11	R	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Toluene		11	R	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,2,2-Tetrachloroethane		11	R	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chlorobenzene		11	R	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Ethylbenzene		11	R	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Styrene		11	R	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Xylenes (total)		11	R	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
bis(2-Chloroethyl) ether		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2-Chlorophenol		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
1,3-Dichlorobenzene		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
1,4-Dichlorobenzene		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	RA855019				RA855019R				RA855020				G8924004			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31S01201				31S01201R				31S01301				31S01401			
Collect Date:	08-JAN-96				08-JAN-96				08-JAN-96				12-DEC-95			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2-Methylphenol	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2,2-oxybis(1-Chloropropane)	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
4-Methylphenol	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
N-Nitroso-di-n-propylamine	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Hexachloroethane	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Nitrobenzene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Isophorone	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2-Nitrophenol	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2,4-Dimethylphenol	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
bis(2-Chloroethoxy) methane	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2,4-Dichlorophenol	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
1,2,4-Trichlorobenzene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Naphthalene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
4-Chloroaniline	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Hexachlorobutadiene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
4-Chloro-3-methylphenol	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2-Methylnaphthalene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Hexachlorocyclopentadiene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2,4,6-Trichlorophenol	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2,4,5-Trichlorophenol	950	U	ug/kg	950	-		ug/kg		920	U	ug/kg	920	920	U	ug/kg	920
2-Chloronaphthalene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2-Nitroaniline	950	U	ug/kg	950	-		ug/kg		920	U	ug/kg	920	920	U	ug/kg	920
Dimethylphthalate	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Acenaphthylene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2,6-Dinitrotoluene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
3-Nitroaniline	950	U	ug/kg	950	-		ug/kg		920	U	ug/kg	920	920	U	ug/kg	920
Acenaphthene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2,4-Dinitrophenol	950	U	ug/kg	950	-		ug/kg		920	U	ug/kg	920	920	U	ug/kg	920
4-Nitrophenol	950	U	ug/kg	950	-		ug/kg		920	U	ug/kg	920	920	UJ	ug/kg	920
Dibenzofuran	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
2,4-Dinitrotoluene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Diethylphthalate	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
4-Chlorophenyl-phenylether	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Fluorene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
4-Nitroaniline	950	U	ug/kg	950	-		ug/kg		920	U	ug/kg	920	920	U	ug/kg	920
4,6-Dinitro-2-methylphenol	950	U	ug/kg	950	-		ug/kg		920	U	ug/kg	920	920	U	ug/kg	920
N-Nitrosodiphenylamine	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
4-Bromophenyl-phenylether	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Hexachlorobenzene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Pentachlorophenol	950	U	ug/kg	950	-		ug/kg		920	U	ug/kg	920	920	U	ug/kg	920
Phenanthrene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Anthracene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Carbazole	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Di-n-butylphthalate	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Fluoranthene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Pyrene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Butylbenzylphthalate	39	J	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
3,3-Dichlorobenzidine	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Benzo (a) anthracene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Chrysene	380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
bis(2-Ethylhexyl) phthalate	540		ug/kg	380	-		ug/kg		210	J	ug/kg	370	370	U	ug/kg	370

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		RA855019				RA855019R				RA855020				G8924004			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31S01201				31S01201R				31S01301				31S01401			
Collect Date:		08-JAN-96				08-JAN-96				08-JAN-96				12-DEC-95			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Benzo (b) fluoranthene		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	UJ	ug/kg	370
Benzo (k) fluoranthene		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Benzo (a) pyrene		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Indeno (1,2,3-cd) pyrene		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	UJ	ug/kg	370
Dibenzo (a,h) anthracene		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
Benzo (g,h,i) perylene		380	U	ug/kg	380	-		ug/kg		370	U	ug/kg	370	370	U	ug/kg	370
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		2	UJ	ug/kg	2	-		ug/kg		1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9
beta-BHC		2	UJ	ug/kg	2	-		ug/kg		1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
delta-BHC		2	UJ	ug/kg	2	-		ug/kg		1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
gamma-BHC (Lindane)		2	UJ	ug/kg	2	-		ug/kg		1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Heptachlor		2	UJ	ug/kg	2	-		ug/kg		1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Aldrin		2	UJ	ug/kg	2	-		ug/kg		1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Heptachlor epoxide		2	UJ	ug/kg	2	-		ug/kg		1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Endosulfan I		2	UJ	ug/kg	2	-		ug/kg		1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Dieldrin		3.5	J	ug/kg	4	-		ug/kg		3.7	UJ	ug/kg	3.7	3.6	U	ug/kg	3.6
4,4-DDE		4.1	J	ug/kg	4	-		ug/kg		3.7	UJ	ug/kg	3.7	3.6	U	ug/kg	3.6
Endrin		3.8	UJ	ug/kg	3.8	-		ug/kg		3.7	UJ	ug/kg	3.7	3.6	U	ug/kg	3.6
Endosulfan II		3.8	UJ	ug/kg	3.8	-		ug/kg		3.7	UJ	ug/kg	3.7	3.6	U	ug/kg	3.6
4,4-DDD		3.8	UJ	ug/kg	3.8	-		ug/kg		3.7	UJ	ug/kg	3.7	3.6	U	ug/kg	3.6
Endosulfan sulfate		3.8	UJ	ug/kg	3.8	-		ug/kg		3.7	UJ	ug/kg	3.7	3.6	U	ug/kg	3.6
4,4-DDT		3.8	UJ	ug/kg	3.8	-		ug/kg		3.7	UJ	ug/kg	3.7	3.6	U	ug/kg	3.6
Methoxychlor		20	UJ	ug/kg	20	-		ug/kg		19	UJ	ug/kg	19	19	U	ug/kg	19
Endrin ketone		3.8	UJ	ug/kg	3.8	-		ug/kg		3.7	UJ	ug/kg	3.7	3.6	U	ug/kg	3.6
Endrin aldehyde		3.8	UJ	ug/kg	3.8	-		ug/kg		3.7	UJ	ug/kg	3.7	3.6	U	ug/kg	3.6
alpha-Chlordane		2	J	ug/kg	2	-		ug/kg		1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
gamma-Chlordane		2	UJ	ug/kg	2	-		ug/kg		1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Toxaphene		200	UJ	ug/kg	200	-		ug/kg		190	UJ	ug/kg	190	190	U	ug/kg	190
Aroclor-1016		38	UJ	ug/kg	38	-		ug/kg		37	UJ	ug/kg	37	36	U	ug/kg	36
Aroclor-1221		77	UJ	ug/kg	77	-		ug/kg		74	UJ	ug/kg	74	74	U	ug/kg	74
Aroclor-1232		38	UJ	ug/kg	38	-		ug/kg		37	UJ	ug/kg	37	36	U	ug/kg	36
Aroclor-1242		38	UJ	ug/kg	38	-		ug/kg		37	UJ	ug/kg	37	36	U	ug/kg	36
Aroclor-1248		38	UJ	ug/kg	38	-		ug/kg		37	UJ	ug/kg	37	36	U	ug/kg	36
Aroclor-1254		38	UJ	ug/kg	38	-		ug/kg		37	UJ	ug/kg	37	36	U	ug/kg	36
Aroclor-1260		38	UJ	ug/kg	38	-		ug/kg		37	UJ	ug/kg	37	36	U	ug/kg	36
CLP METALS AND CYANIDE	mg/kg																
Aluminum		1960		mg/kg	40	-		mg/kg		2520		mg/kg	40	5620		mg/kg	40
Antimony		12	UJ	mg/kg	12	-		mg/kg		12	UJ	mg/kg	12	12	UJ	mg/kg	12
Arsenic		.89	J	mg/kg	2	-		mg/kg		.91	J	mg/kg	2	.87	J	mg/kg	2
Barium		31.1	J	mg/kg	40	-		mg/kg		9	J	mg/kg	40	10.6	J	mg/kg	40
Beryllium		1	U	mg/kg	1	-		mg/kg		1	U	mg/kg	1	1	UJ	mg/kg	1
Cadmium		1.4		mg/kg	1	-		mg/kg		.22	J	mg/kg	1	1	U	mg/kg	1
Calcium		145	J	mg/kg	1000	-		mg/kg		115	J	mg/kg	1000	156	J	mg/kg	1000
Chromium		12.9		mg/kg	2	-		mg/kg		4.9		mg/kg	2	3.9		mg/kg	2
Cobalt		.83	J	mg/kg	10	-		mg/kg		10	U	mg/kg	10	.7	J	mg/kg	10
Copper		118		mg/kg	5	-		mg/kg		29.8		mg/kg	5	5	UJ	mg/kg	5
Iron		2090		mg/kg	20	-		mg/kg		1790		mg/kg	20	2660		mg/kg	20
Lead		28.5		mg/kg	.6	-		mg/kg		6.7		mg/kg	.6	3.6		mg/kg	.6
Magnesium		56.7	J	mg/kg	1000	-		mg/kg		78.9	J	mg/kg	1000	141	J	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	RA855019				RA855019R				RA855020				G8924004			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31S01201				31S01201R				31S01301				31S01401			
Collect Date:	08-JAN-96				08-JAN-96				08-JAN-96				12-DEC-95			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	7.4		mg/kg	3	-		mg/kg		10.2		mg/kg	3	196		mg/kg	3
Mercury	.24		mg/kg	.1	-		mg/kg		.15		mg/kg	.1	.01	J	mg/kg	.1
Nickel	1.6	J	mg/kg	8	-		mg/kg		8	U	mg/kg	8	3.2	J	mg/kg	8
Potassium	134	J	mg/kg	1000	-		mg/kg		82	J	mg/kg	1000	183	J	mg/kg	1000
Selenium	.41	J	mg/kg	1	-		mg/kg		.29	J	mg/kg	1	1	U	mg/kg	1
Silver	5.1		mg/kg	2	-		mg/kg		1.1	J	mg/kg	2	2	U	mg/kg	2
Sodium	201	J	mg/kg	1000	-		mg/kg		196	J	mg/kg	1000	1000	UJ	mg/kg	1000
Thallium	2	U	mg/kg	2	-		mg/kg		2	U	mg/kg	2	2	U	mg/kg	2
Vanadium	3.1	J	mg/kg	10	-		mg/kg		3.8	J	mg/kg	10	6.8	J	mg/kg	10
Zinc	11.3		mg/kg	4	-		mg/kg		6.4		mg/kg	4	4.4	J	mg/kg	4
Cyanide	.27	J	mg/kg	.5	-		mg/kg		.23	J	mg/kg	.5	.5	U	mg/kg	.5

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		G8938002				G8938003				G8938004				G8938005			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31S01501				31S01501D				31S01601				31S01701			
Collect Date:		13-DEC-95				13-DEC-95				13-DEC-95				13-DEC-95			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromomethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Vinyl chloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Methylene chloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Acetone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Carbon disulfide		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethene (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chloroform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
2-Butanone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,1-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Carbon tetrachloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromodichloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloropropane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
cis-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Trichloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Dibromochloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,2-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Benzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
trans-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromoform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
4-Methyl-2-pentanone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
2-Hexanone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Tetrachloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Toluene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,2,2-Tetrachloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chlorobenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Ethylbenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Styrene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Xylenes (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
bis(2-Chloroethyl) ether		370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2-Chlorophenol		370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
1,3-Dichlorobenzene		370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
1,4-Dichlorobenzene		370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	G8938002				G8938003				G8938004				G8938005			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31S01501				31S01501D				31S01601				31S01701			
Collect Date:	13-DEC-95				13-DEC-95				13-DEC-95				13-DEC-95			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2-Methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2,2-oxybis(1-Chloropropane)	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
4-Methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
N-Nitroso-di-n-propylamine	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Hexachloroethane	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Nitrobenzene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Isophorone	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2-Nitrophenol	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2,4-Dimethylphenol	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
bis(2-Chloroethoxy) methane	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2,4-Dichlorophenol	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
1,2,4-Trichlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Naphthalene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
4-Chloroaniline	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Hexachlorobutadiene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
4-Chloro-3-methylphenol	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2-Methylnaphthalene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Hexachlorocyclopentadiene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2,4,6-Trichlorophenol	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2,4,5-Trichlorophenol	920	U	ug/kg	920	900	U	ug/kg	900	920	U	ug/kg	920	920	U	ug/kg	920
2-Chloronaphthalene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2-Nitroaniline	920	U	ug/kg	920	900	U	ug/kg	900	920	U	ug/kg	920	920	U	ug/kg	920
Dimethylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Acenaphthylene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2,6-Dinitrotoluene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
3-Nitroaniline	920	U	ug/kg	920	900	U	ug/kg	900	920	U	ug/kg	920	920	U	ug/kg	920
Acenaphthene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2,4-Dinitrophenol	920	U	ug/kg	920	900	U	ug/kg	900	920	U	ug/kg	920	920	U	ug/kg	920
4-Nitrophenol	920	UJ	ug/kg	920	900	UJ	ug/kg	900	920	UJ	ug/kg	920	920	UJ	ug/kg	920
Dibenzofuran	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
2,4-Dinitrotoluene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Diethylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
4-Chlorophenyl-phenylether	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Fluorene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
4-Nitroaniline	920	U	ug/kg	920	900	U	ug/kg	900	920	U	ug/kg	920	920	U	ug/kg	920
4,6-Dinitro-2-methylphenol	920	U	ug/kg	920	900	U	ug/kg	900	920	U	ug/kg	920	920	U	ug/kg	920
N-Nitrosodiphenylamine	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
4-Bromophenyl-phenylether	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Hexachlorobenzene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Pentachlorophenol	920	U	ug/kg	920	900	U	ug/kg	900	920	U	ug/kg	920	920	U	ug/kg	920
Phenanthrene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Anthracene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Carbazole	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Di-n-butylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Fluoranthene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Pyrene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Butylbenzylphthalate	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
3,3-Dichlorobenzidine	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Benzo (a) anthracene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Chrysene	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
bis(2-Ethylhexyl) phthalate	370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		G8938002				G8938003				G8938004				G8938005			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31S01501				31S01501D				31S01601				31S01701			
Collect Date:		13-DEC-95				13-DEC-95				13-DEC-95				13-DEC-95			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Benzo (b) fluoranthene		370	UJ	ug/kg	370	360	UJ	ug/kg	360	370	UJ	ug/kg	370	370	UJ	ug/kg	370
Benzo (k) fluoranthene		370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Benzo (a) pyrene		370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Indeno (1,2,3-cd) pyrene		370	UJ	ug/kg	370	360	UJ	ug/kg	360	370	UJ	ug/kg	370	370	UJ	ug/kg	370
Dibenzo (a,h) anthracene		370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
Benzo (g,h,i) perylene		370	U	ug/kg	370	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9
beta-BHC		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9
delta-BHC		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9
gamma-BHC (Lindane)		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9
Heptachlor		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9
Aldrin		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9
Heptachlor epoxide		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9
Endosulfan I		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9
Dieldrin		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7
4,4-DDE		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7
Endrin		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7
Endosulfan II		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7
4,4-DDD		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7
Endosulfan sulfate		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7
4,4-DDT		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7
Methoxychlor		19	U	ug/kg	19	19	U	ug/kg	19	19	U	ug/kg	19	19	U	ug/kg	19
Endrin ketone		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7
Endrin aldehyde		3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7
alpha-Chlordane		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9
gamma-Chlordane		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9
Toxaphene		190	U	ug/kg	190	190	U	ug/kg	190	190	U	ug/kg	190	190	U	ug/kg	190
Aroclor-1016		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37
Aroclor-1221		74	U	ug/kg	74	74	U	ug/kg	74	74	U	ug/kg	74	74	U	ug/kg	74
Aroclor-1232		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37
Aroclor-1242		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37
Aroclor-1248		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37
Aroclor-1254		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37
Aroclor-1260		36	U	ug/kg	36	36	U	ug/kg	36	36	U	ug/kg	36	37	U	ug/kg	37
CLP METALS AND CYANIDE	mg/kg																
Aluminum		9620		mg/kg	40	8270		mg/kg	40	5920		mg/kg	40	5010		mg/kg	40
Antimony		12	UJ	mg/kg	12	12	UJ	mg/kg	12	12	UJ	mg/kg	12	12	UJ	mg/kg	12
Arsenic		1.4	J	mg/kg	2	1.9	J	mg/kg	2	1.5	J	mg/kg	2	1.1	J	mg/kg	2
Barium		14.6	J	mg/kg	40	12.2	J	mg/kg	40	7.2	J	mg/kg	40	10.6	J	mg/kg	40
Beryllium		1	UJ	mg/kg	1	1	UJ	mg/kg	1	1	UJ	mg/kg	1	1	UJ	mg/kg	1
Cadmium		1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1
Calcium		112	J	mg/kg	1000	103	J	mg/kg	1000	122	J	mg/kg	1000	223	J	mg/kg	1000
Chromium		6.7		mg/kg	2	6		mg/kg	2	5.4		mg/kg	2	5		mg/kg	2
Cobalt		.8	J	mg/kg	10	1.2	J	mg/kg	10	10	U	mg/kg	10	.71	J	mg/kg	10
Copper		5.5	J	mg/kg	5	5	UJ	mg/kg	5	5	UJ	mg/kg	5	5	UJ	mg/kg	5
Iron		4730		mg/kg	20	4380		mg/kg	20	3010		mg/kg	20	2580		mg/kg	20
Lead		5.3		mg/kg	.6	5.4		mg/kg	.6	5.2		mg/kg	.6	4.4		mg/kg	.6
Magnesium		154	J	mg/kg	1000	114	J	mg/kg	1000	105	J	mg/kg	1000	134	J	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	G8938002				G8938003				G8938004				G8938005			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31S01501				31S01501D				31S01601				31S01701			
Collect Date:	13-DEC-95				13-DEC-95				13-DEC-95				13-DEC-95			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	183		mg/kg	3	172		mg/kg	3	60.3		mg/kg	3	231		mg/kg	3
Mercury	.01	J	mg/kg	.1	.01	J	mg/kg	.1	.1	U	mg/kg	.1	.01	J	mg/kg	.1
Nickel	3.9	J	mg/kg	8	3.4	J	mg/kg	8	4.1	J	mg/kg	8	3.2	J	mg/kg	8
Potassium	1000	U	mg/kg	1000	197	J	mg/kg	1000	149	J	mg/kg	1000	1000	U	mg/kg	1000
Selenium	1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1
Silver	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2
Sodium	1000	UJ	mg/kg	1000	1000	UJ	mg/kg	1000	1000	UJ	mg/kg	1000	1000	UJ	mg/kg	1000
Thallium	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2
Vanadium	12.8		mg/kg	10	11.3		mg/kg	10	8.6	J	mg/kg	10	6.5	J	mg/kg	10
Zinc	6.8		mg/kg	4	5		mg/kg	4	3.6	J	mg/kg	4	4.7		mg/kg	4
Cyanide	.5	U	mg/kg	.5	.5	U	mg/kg	.5	.5	U	mg/kg	.5	.5	U	mg/kg	.5

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		G8938006				G8938007				G8938006			
Site		WHITING				WHITING				WHITING			
Locator		31S01801				31S01901				31S01901			
Collect Date:		13-DEC-95				13-DEC-95				13-DEC-95			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg												
Chloromethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Bromomethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Vinyl chloride		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Chloroethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Methylene chloride		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Acetone		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Carbon disulfide		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
1,1-Dichloroethene		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
1,1-Dichloroethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
1,2-Dichloroethene (total)		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Chloroform		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
1,2-Dichloroethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
2-Butanone		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
1,1,1-Trichloroethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Carbon tetrachloride		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Bromodichloromethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
1,2-Dichloropropane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
cis-1,3-Dichloropropene		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Trichloroethene		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Dibromochloromethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
1,1,2-Trichloroethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Benzene		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
trans-1,3-Dichloropropene		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Bromoform		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
4-Methyl-2-pentanone		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
2-Hexanone		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Tetrachloroethene		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Toluene		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
1,1,2,2-Tetrachloroethane		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Chlorobenzene		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Ethylbenzene		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Styrene		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
Xylenes (total)		11	U	ug/kg	11	-		ug/kg		11	U	ug/kg	11
CLP SEMIVOLATILES 90-SOW	ug/kg												
Phenol		380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
bis(2-Chloroethyl) ether		380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2-Chlorophenol		380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
1,3-Dichlorobenzene		380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
1,4-Dichlorobenzene		380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	G8938006				G8938007				G8938006			
Site	WHITING				WHITING				WHITING			
Locator	31S01801				31S01901				31S01901			
Collect Date:	13-DEC-95				13-DEC-95				13-DEC-95			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2-Methylphenol	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2,2-oxybis(1-Chloropropane)	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
4-Methylphenol	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
N-Nitroso-di-n-propylamine	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Hexachloroethane	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Nitrobenzene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Isophorone	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2-Nitrophenol	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2,4-Dimethylphenol	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
bis(2-Chloroethoxy) methane	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2,4-Dichlorophenol	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
1,2,4-Trichlorobenzene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Naphthalene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
4-Chloroaniline	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Hexachlorobutadiene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
4-Chloro-3-methylphenol	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2-Methylnaphthalene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Hexachlorocyclopentadiene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2,4,6-Trichlorophenol	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2,4,5-Trichlorophenol	960	U	ug/kg	960	960	U	ug/kg	960	-		ug/kg	
2-Chloronaphthalene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2-Nitroaniline	960	U	ug/kg	960	960	U	ug/kg	960	-		ug/kg	
Dimethylphthalate	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Acenaphthylene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2,6-Dinitrotoluene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
3-Nitroaniline	960	U	ug/kg	960	960	U	ug/kg	960	-		ug/kg	
Acenaphthene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2,4-Dinitrophenol	960	U	ug/kg	960	960	U	ug/kg	960	-		ug/kg	
4-Nitrophenol	960	UJ	ug/kg	960	960	UJ	ug/kg	960	-		ug/kg	
Dibenzofuran	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
2,4-Dinitrotoluene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Diethylphthalate	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
4-Chlorophenyl-phenylether	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Fluorene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
4-Nitroaniline	960	U	ug/kg	960	960	U	ug/kg	960	-		ug/kg	
4,6-Dinitro-2-methylphenol	960	U	ug/kg	960	960	U	ug/kg	960	-		ug/kg	
N-Nitrosodiphenylamine	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
4-Bromophenyl-phenylether	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Hexachlorobenzene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Pentachlorophenol	960	U	ug/kg	960	960	U	ug/kg	960	-		ug/kg	
Phenanthrene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Anthracene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Carbazole	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Di-n-butylphthalate	380	U	ug/kg	380	400	U	ug/kg	400	-		ug/kg	
Fluoranthene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Pyrene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Butylbenzylphthalate	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
3,3-Dichlorobenzidine	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Benzo (a) anthracene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Chrysene	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
bis(2-Ethylhexyl) phthalate	380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:		G8938006				G8938007				G8938006			
Site		WHITING				WHITING				WHITING			
Locator		31S01801				31S01901				31S01901			
Collect Date:		13-DEC-95				13-DEC-95				13-DEC-95			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		220	J	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Benzo (b) fluoranthene		380	UJ	ug/kg	380	380	UJ	ug/kg	380	-		ug/kg	
Benzo (k) fluoranthene		380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Benzo (a) pyrene		380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Indeno (1,2,3-cd) pyrene		380	UJ	ug/kg	380	380	UJ	ug/kg	380	-		ug/kg	
Dibenzo (a,h) anthracene		380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
Benzo (g,h,i) perylene		380	U	ug/kg	380	380	U	ug/kg	380	-		ug/kg	
CLP PESTICIDES/PCBS 90-SOW	ug/kg												
alpha-BHC		2	UJ	ug/kg	2	2	UJ	ug/kg	2	-		ug/kg	
beta-BHC		2	U	ug/kg	2	2	U	ug/kg	2	-		ug/kg	
delta-BHC		2	U	ug/kg	2	2	U	ug/kg	2	-		ug/kg	
gamma-BHC (Lindane)		2	U	ug/kg	2	2	U	ug/kg	2	-		ug/kg	
Heptachlor		2	U	ug/kg	2	2	U	ug/kg	2	-		ug/kg	
Aldrin		2	U	ug/kg	2	2	U	ug/kg	2	-		ug/kg	
Heptachlor epoxide		2	U	ug/kg	2	2	U	ug/kg	2	-		ug/kg	
Endosulfan I		2	U	ug/kg	2	2	U	ug/kg	2	-		ug/kg	
Dieldrin		3.9	U	ug/kg	3.9	3.8	U	ug/kg	3.8	-		ug/kg	
4,4-DDE		3.9	U	ug/kg	3.9	3.8	U	ug/kg	3.8	-		ug/kg	
Endrin		3.9	U	ug/kg	3.9	3.8	U	ug/kg	3.8	-		ug/kg	
Endosulfan II		3.9	U	ug/kg	3.9	3.8	U	ug/kg	3.8	-		ug/kg	
4,4-DDD		3.9	U	ug/kg	3.9	3.8	U	ug/kg	3.8	-		ug/kg	
Endosulfan sulfate		3.9	U	ug/kg	3.9	3.8	U	ug/kg	3.8	-		ug/kg	
4,4-DDT		3.9	U	ug/kg	3.9	3.8	U	ug/kg	3.8	-		ug/kg	
Methoxychlor		20	U	ug/kg	20	20	U	ug/kg	20	-		ug/kg	
Endrin ketone		3.9	U	ug/kg	3.9	3.8	U	ug/kg	3.8	-		ug/kg	
Endrin aldehyde		3.9	U	ug/kg	3.9	3.8	U	ug/kg	3.8	-		ug/kg	
alpha-Chlordane		2	U	ug/kg	2	2	U	ug/kg	2	-		ug/kg	
gamma-Chlordane		2	U	ug/kg	2	2	U	ug/kg	2	-		ug/kg	
Toxaphene		200	U	ug/kg	200	200	U	ug/kg	200	-		ug/kg	
Aroclor-1016		39	U	ug/kg	39	38	U	ug/kg	38	-		ug/kg	
Aroclor-1221		79	U	ug/kg	79	77	U	ug/kg	77	-		ug/kg	
Aroclor-1232		39	U	ug/kg	39	38	U	ug/kg	38	-		ug/kg	
Aroclor-1242		39	U	ug/kg	39	38	U	ug/kg	38	-		ug/kg	
Aroclor-1248		39	U	ug/kg	39	38	U	ug/kg	38	-		ug/kg	
Aroclor-1254		39	U	ug/kg	39	38	U	ug/kg	38	-		ug/kg	
Aroclor-1260		39	U	ug/kg	39	38	U	ug/kg	38	-		ug/kg	
CLP METALS AND CYANIDE	mg/kg												
Aluminum		5490		mg/kg	40	-		mg/kg		5490		mg/kg	40
Antimony		12	UJ	mg/kg	12	-		mg/kg		12	UJ	mg/kg	12
Arsenic		.72	J	mg/kg	2	-		mg/kg		.72	J	mg/kg	2
Barium		12.8	J	mg/kg	40	-		mg/kg		12.8	J	mg/kg	40
Beryllium		1	UJ	mg/kg	1	-		mg/kg		1	UJ	mg/kg	1
Cadmium		1	U	mg/kg	1	-		mg/kg		1	U	mg/kg	1
Calcium		78.7	J	mg/kg	1000	-		mg/kg		78.7	J	mg/kg	1000
Chromium		4.1		mg/kg	2	-		mg/kg		4.1		mg/kg	2
Cobalt		.97	J	mg/kg	10	-		mg/kg		10	U	mg/kg	10
Copper		5	UJ	mg/kg	5	-		mg/kg		5	UJ	mg/kg	5
Iron		3180		mg/kg	20	-		mg/kg		3180		mg/kg	20
Lead		4.8		mg/kg	.6	-		mg/kg		4.8		mg/kg	.6
Magnesium		113	J	mg/kg	1000	-		mg/kg		130	J	mg/kg	1000

NAS Whiting Field, Milton, Florida
Site 31 Surface Soil Data

Lab Sample Number:	G8938006				G8938007				G8938006			
Site	WHITING				WHITING				WHITING			
Locator	31S01801				31S01901				31S01901			
Collect Date:	13-DEC-95				13-DEC-95				13-DEC-95			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	122		mg/kg	3	-		mg/kg		150		mg/kg	3
Mercury	.02	J	mg/kg	.1	-		mg/kg		.02	J	mg/kg	.1
Nickel	4	J	mg/kg	8	-		mg/kg		4	J	mg/kg	8
Potassium	1000	U	mg/kg	1000	-		mg/kg		1000	U	mg/kg	1000
Selenium	1	U	mg/kg	1	-		mg/kg		1	U	mg/kg	1
Silver	2	U	mg/kg	2	-		mg/kg		.68	J	mg/kg	2
Sodium	1000	UJ	mg/kg	1000	-		mg/kg		1000	UJ	mg/kg	1000
Thallium	2	U	mg/kg	2	-		mg/kg		2	U	mg/kg	2
Vanadium	7.8	J	mg/kg	10	-		mg/kg		7.8	J	mg/kg	10
Zinc	3.5	J	mg/kg	4	-		mg/kg		4	UJ	mg/kg	4
Cyanide	.5	U	mg/kg	.5	-		mg/kg		.5	U	mg/kg	.5

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RA870016				RA870014				RA870015				RA870013			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00101				31B00201				31B00201D				31B00301			
Collect Date:		11-JAN-96				11-JAN-96				11-JAN-96				11-JAN-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Bromomethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Vinyl chloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Chloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Methylene chloride		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	12	U	ug/kg	12
Acetone		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	12	U	ug/kg	12
Carbon disulfide		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	12	UJ	ug/kg	12
1,1-Dichloroethene		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	12	UJ	ug/kg	12
1,1-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,2-Dichloroethene (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Chloroform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,2-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
2-Butanone		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	12	U	ug/kg	12
1,1,1-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Carbon tetrachloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Bromodichloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,2-Dichloropropane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
cis-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Trichloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Dibromochloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,1,2-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Benzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
trans-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Bromoform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
4-Methyl-2-pentanone		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	12	U	ug/kg	12
2-Hexanone		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	12	U	ug/kg	12
Tetrachloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Toluene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,1,2,2-Tetrachloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Chlorobenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Ethylbenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Styrene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Xylenes (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
bis(2-Chloroethyl) ether		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2-Chlorophenol		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
1,3-Dichlorobenzene		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
1,4-Dichlorobenzene		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
1,2-Dichlorobenzene		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2-Methylphenol		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2,2-oxybis(1-Chloropropane)		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
4-Methylphenol		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
N-Nitroso-di-n-propylamine		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Hexachloroethane		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Nitrobenzene		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Isophorone		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2-Nitrophenol		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2,4-Dimethylphenol		360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RA870016				RA870014				RA870015				RA870013			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00101				31B00201				31B00201D				31B00301			
Collect Date:	11-JAN-96				11-JAN-96				11-JAN-96				11-JAN-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
bis(2-Chloroethoxy) methane	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2,4-Dichlorophenol	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
1,2,4-Trichlorobenzene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Naphthalene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
4-Chloroaniline	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Hexachlorobutadiene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
4-Chloro-3-methylphenol	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2-Methylnaphthalene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Hexachlorocyclopentadiene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2,4,6-Trichlorophenol	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2,4,5-Trichlorophenol	910	U	ug/kg	910	930	U	ug/kg	930	920	U	ug/kg	920	970	U	ug/kg	970
2-Chloronaphthalene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2-Nitroaniline	910	U	ug/kg	910	930	U	ug/kg	930	920	U	ug/kg	920	970	U	ug/kg	970
Dimethylphthalate	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Acenaphthylene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2,6-Dinitrotoluene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
3-Nitroaniline	910	U	ug/kg	910	930	U	ug/kg	930	920	U	ug/kg	920	970	U	ug/kg	970
Acenaphthene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2,4-Dinitrophenol	910	U	ug/kg	910	930	U	ug/kg	930	920	U	ug/kg	920	970	U	ug/kg	970
4-Nitrophenol	910	U	ug/kg	910	930	UJ	ug/kg	930	920	U	ug/kg	920	970	UJ	ug/kg	970
Dibenzofuran	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
2,4-Dinitrotoluene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Diethylphthalate	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
4-Chlorophenyl-phenylether	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Fluorene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
4-Nitroaniline	910	UJ	ug/kg	910	930	U	ug/kg	930	920	UJ	ug/kg	920	970	U	ug/kg	970
4,6-Dinitro-2-methylphenol	910	U	ug/kg	910	930	U	ug/kg	930	920	U	ug/kg	920	970	U	ug/kg	970
N-Nitrosodiphenylamine	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
4-Bromophenyl-phenylether	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Hexachlorobenzene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Pentachlorophenol	910	UJ	ug/kg	910	930	U	ug/kg	930	920	UJ	ug/kg	920	970	U	ug/kg	970
Phenanthrene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Anthracene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Carbazole	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Di-n-butylphthalate	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Fluoranthene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Pyrene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Butylbenzylphthalate	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
3,3-Dichlorobenzidine	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Benzo (a) anthracene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Chrysene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
bis(2-Ethylhexyl) phthalate	52	J	ug/kg	360	370	U	ug/kg	370	48	J	ug/kg	370	380	U	ug/kg	380
Di-n-octylphthalate	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Benzo (b) fluoranthene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Benzo (k) fluoranthene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Benzo (a) pyrene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Indeno (1,2,3-cd) pyrene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Dibenzo (a,h) anthracene	360	U	ug/kg	360	370	U	ug/kg	370	370	U	ug/kg	370	380	U	ug/kg	380
Benzo (g,h,i) perylene	360	UJ	ug/kg	360	370	U	ug/kg	370	370	UJ	ug/kg	370	380	U	ug/kg	380
CLP PESTICIDES/PCBS 90-SOW ug/kg																
alpha-BHC	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	2	U	ug/kg	2

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RA870016				RA870014				RA870015				RA870013			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00101				31B00201				31B00201D				31B00301			
Collect Date:		11-JAN-96				11-JAN-96				11-JAN-96				11-JAN-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
beta-BHC		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	2	U	ug/kg	2
delta-BHC		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	2	U	ug/kg	2
gamma-BHC (Lindane)		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	2	U	ug/kg	2
Heptachlor		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	2	U	ug/kg	2
Aldrin		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	2	U	ug/kg	2
Heptachlor epoxide		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	2	U	ug/kg	2
Endosulfan I		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	2	U	ug/kg	2
Dieldrin		3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	3.7	U	ug/kg	3.7	3.8	U	ug/kg	3.8
4,4-DDE		3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	3.7	U	ug/kg	3.7	3.8	U	ug/kg	3.8
Endrin		3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	3.7	U	ug/kg	3.7	3.8	U	ug/kg	3.8
Endosulfan II		3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	3.7	U	ug/kg	3.7	3.8	U	ug/kg	3.8
4,4-DDD		3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	3.7	U	ug/kg	3.7	3.8	U	ug/kg	3.8
Endosulfan sulfate		3.6	UJ	ug/kg	3.6	3.7	UJ	ug/kg	3.7	3.7	UJ	ug/kg	3.7	3.8	UJ	ug/kg	3.8
4,4-DDT		3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	3.7	U	ug/kg	3.7	3.8	U	ug/kg	3.8
Methoxychlor		19	U	ug/kg	19	19	U	ug/kg	19	19	U	ug/kg	19	20	U	ug/kg	20
Endrin ketone		3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	3.7	U	ug/kg	3.7	3.8	U	ug/kg	3.8
Endrin aldehyde		3.6	U	ug/kg	3.6	3.7	U	ug/kg	3.7	3.7	U	ug/kg	3.7	3.8	U	ug/kg	3.8
alpha-Chlordane		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	2	U	ug/kg	2
gamma-Chlordane		1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	1.9	U	ug/kg	1.9	2	U	ug/kg	2
Toxaphene		190	U	ug/kg	190	190	U	ug/kg	190	190	U	ug/kg	190	200	U	ug/kg	200
Aroclor-1016		36	U	ug/kg	36	37	U	ug/kg	37	37	U	ug/kg	37	38	U	ug/kg	38
Aroclor-1221		74	U	ug/kg	74	75	U	ug/kg	75	74	U	ug/kg	74	78	U	ug/kg	78
Aroclor-1232		36	U	ug/kg	36	37	U	ug/kg	37	37	U	ug/kg	37	38	U	ug/kg	38
Aroclor-1242		36	U	ug/kg	36	37	U	ug/kg	37	37	U	ug/kg	37	38	U	ug/kg	38
Aroclor-1248		36	U	ug/kg	36	37	U	ug/kg	37	37	U	ug/kg	37	38	U	ug/kg	38
Aroclor-1254		36	U	ug/kg	36	37	U	ug/kg	37	37	U	ug/kg	37	38	U	ug/kg	38
Aroclor-1260		36	U	ug/kg	36	37	U	ug/kg	37	37	U	ug/kg	37	38	U	ug/kg	38
CLP METALS AND CYANIDE	mg/kg																
Aluminum		3720	J	mg/kg	40	4360	J	mg/kg	40	4050	J	mg/kg	40	6010	J	mg/kg	40
Antimony		12	UJ	mg/kg	12	12	UJ	mg/kg	12	12	UJ	mg/kg	12	12	UJ	mg/kg	12
Arsenic		1.2	J	mg/kg	2	1	J	mg/kg	2	1.2	J	mg/kg	2	2.9		mg/kg	2
Barium		5.7	J	mg/kg	40	4.7	J	mg/kg	40	4.3	J	mg/kg	40	6.6	J	mg/kg	40
Beryllium		.05	J	mg/kg	1	.05	J	mg/kg	1	1	U	mg/kg	1	.05	J	mg/kg	1
Cadmium		.32	J	mg/kg	1	.21	J	mg/kg	1	.34	J	mg/kg	1	1	U	mg/kg	1
Calcium		137	J	mg/kg	1000	107	J	mg/kg	1000	121	J	mg/kg	1000	133	J	mg/kg	1000
Chromium		2.4		mg/kg	2	2.6		mg/kg	2	2.1	J	mg/kg	2	3.9		mg/kg	2
Cobalt		10	U	mg/kg	10	.76	J	mg/kg	10	10	U	mg/kg	10	10	U	mg/kg	10
Copper		10.9		mg/kg	5	8.5		mg/kg	5	8.4		mg/kg	5	8		mg/kg	5
Iron		2560		mg/kg	20	2960		mg/kg	20	2750		mg/kg	20	3690		mg/kg	20
Lead		3.2		mg/kg	.6	2.9		mg/kg	.6	2.9		mg/kg	.6	4.1		mg/kg	.6
Magnesium		79	J	mg/kg	1000	81.1	J	mg/kg	1000	72	J	mg/kg	1000	118	J	mg/kg	1000
Manganese		7.8		mg/kg	3	8		mg/kg	3	7.5		mg/kg	3	13.8		mg/kg	3
Mercury		.1	J	mg/kg	.1	.04	J	mg/kg	.1	.04	J	mg/kg	.1	.03	R	mg/kg	.1
Nickel		1.5	J	mg/kg	8	1.8	J	mg/kg	8	1.6	J	mg/kg	8	1.7	J	mg/kg	8
Potassium		1000	U	mg/kg	1000	88.8	J	mg/kg	1000	114	J	mg/kg	1000	127	J	mg/kg	1000
Selenium		1	U	mg/kg	1	1	U	mg/kg	1	1	U	mg/kg	1	.17	J	mg/kg	1
Silver		.43	J	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2
Sodium		192	J	mg/kg	1000	175	J	mg/kg	1000	183	J	mg/kg	1000	179	J	mg/kg	1000
Thallium		.13	J	mg/kg	2	2	U	mg/kg	2	2	U	mg/kg	2	.19	J	mg/kg	2
Vanadium		5.2	J	mg/kg	10	6	J	mg/kg	10	5.3	J	mg/kg	10	8.8	J	mg/kg	10
Zinc		9.3		mg/kg	4	7.1		mg/kg	4	6.4		mg/kg	4	6.6		mg/kg	4

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RA870016				RA870014				RA870015				RA870013			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00101				31B00201				31B00201D				31B00301			
Collect Date:	11-JAN-96				11-JAN-96				11-JAN-96				11-JAN-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Cyanide	.5	U	mg/kg	.5	.5	U	mg/kg	.5	.5	U	mg/kg	.5	.5	U	mg/kg	.5

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RA870012				RA870017				RB592001				RB592006			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00401				31B00501				31B00601				31B00601D			
Collect Date:		11-JAN-96				11-JAN-96				21-MAY-96				21-MAY-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11
Bromomethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Vinyl chloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Methylene chloride		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Acetone		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Carbon disulfide		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethene		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethene (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chloroform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
2-Butanone		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,1-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Carbon tetrachloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromodichloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloropropane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
cis-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Trichloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Dibromochloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,2-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Benzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
trans-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromoform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
4-Methyl-2-pentanone		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
2-Hexanone		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Tetrachloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Toluene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,2,2-Tetrachloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chlorobenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Ethylbenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Styrene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Xylenes (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
bis(2-Chloroethyl) ether		370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2-Chlorophenol		370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
1,3-Dichlorobenzene		370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
1,4-Dichlorobenzene		370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RA870012				RA870017				RB592001				RB592006			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00401				31B00501				31B00601				31B00601D			
Collect Date:	11-JAN-96				11-JAN-96				21-MAY-96				21-MAY-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2-Methylphenol	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2,2-oxybis(1-Chloropropane)	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
4-Methylphenol	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
N-Nitroso-di-n-propylamine	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Hexachloroethane	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Nitrobenzene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Isophorone	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2-Nitrophenol	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2,4-Dimethylphenol	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
bis(2-Chloroethoxy) methane	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2,4-Dichlorophenol	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
1,2,4-Trichlorobenzene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Naphthalene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
4-Chloroaniline	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Hexachlorobutadiene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
4-Chloro-3-methylphenol	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2-Methylnaphthalene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Hexachlorocyclopentadiene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2,4,6-Trichlorophenol	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2,4,5-Trichlorophenol	940	U	ug/kg	940	890	U	ug/kg	890	870	U	ug/kg	870	870	U	ug/kg	870
2-Chloronaphthalene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2-Nitroaniline	940	U	ug/kg	940	890	U	ug/kg	890	870	U	ug/kg	870	870	U	ug/kg	870
Dimethylphthalate	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Acenaphthylene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2,6-Dinitrotoluene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
3-Nitroaniline	940	U	ug/kg	940	890	U	ug/kg	890	870	U	ug/kg	870	870	U	ug/kg	870
Acenaphthene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2,4-Dinitrophenol	940	U	ug/kg	940	890	U	ug/kg	890	870	U	ug/kg	870	870	U	ug/kg	870
4-Nitrophenol	940	UJ	ug/kg	940	890	U	ug/kg	890	870	U	ug/kg	870	870	U	ug/kg	870
Dibenzofuran	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
2,4-Dinitrotoluene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Diethylphthalate	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
4-Chlorophenyl-phenylether	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Fluorene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
4-Nitroaniline	940	U	ug/kg	940	890	UJ	ug/kg	890	870	U	ug/kg	870	870	U	ug/kg	870
4,6-Dinitro-2-methylphenol	940	U	ug/kg	940	890	U	ug/kg	890	870	U	ug/kg	870	870	U	ug/kg	870
N-Nitrosodiphenylamine	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
4-Bromophenyl-phenylether	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Hexachlorobenzene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Pentachlorophenol	940	U	ug/kg	940	890	UJ	ug/kg	890	870	U	ug/kg	870	870	U	ug/kg	870
Phenanthrene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Anthracene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Carbazole	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Di-n-butylphthalate	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Fluoranthene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Pyrene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Butylbenzylphthalate	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
3,3-Dichlorobenzidine	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Benzo (a) anthracene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Chrysene	370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
bis(2-Ethylhexyl) phthalate	38	J	ug/kg	380	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RA870012				RA870017				RB592001				RB592006			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00401				31B00501				31B00601				31B00601D			
Collect Date:		11-JAN-96				11-JAN-96				21-MAY-96				21-MAY-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Benzo (b) fluoranthene		370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Benzo (k) fluoranthene		370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Benzo (a) pyrene		370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Indeno (1,2,3-cd) pyrene		370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Dibenzo (a,h) anthracene		370	U	ug/kg	370	350	U	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
Benzo (g,h,i) perylene		370	U	ug/kg	370	350	UJ	ug/kg	350	350	U	ug/kg	350	350	U	ug/kg	350
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
beta-BHC		1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
delta-BHC		1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
gamma-BHC (Lindane)		1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
Heptachlor		1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
Aldrin		1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
Heptachlor epoxide		1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
Endosulfan I		1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
Dieldrin		3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5
4,4-DDE		3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5
Endrin		3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5
Endosulfan II		3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5
4,4-DDD		3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5
Endosulfan sulfate		3.7	UJ	ug/kg	3.7	3.5	UJ	ug/kg	3.5	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5
4,4-DDT		3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5
Methoxychlor		19	U	ug/kg	19	18	U	ug/kg	18	18	U	ug/kg	18	18	U	ug/kg	18
Endrin ketone		3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5	3.5	U	ug/kg	3.5
Endrin aldehyde		3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.5	UJ	ug/kg	3.5	3.5	UJ	ug/kg	3.5
alpha-Chlordane		1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8	1.8	U	ug/kg	1.8
gamma-Chlordane		1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	1.5	J	ug/kg	2	1.1	J	ug/kg	2
Toxaphene		190	U	ug/kg	190	180	U	ug/kg	180	180	U	ug/kg	180	180	U	ug/kg	180
Aroclor-1016		37	U	ug/kg	37	35	U	ug/kg	35	35	U	ug/kg	35	35	U	ug/kg	35
Aroclor-1221		76	U	ug/kg	76	72	U	ug/kg	72	71	U	ug/kg	71	71	U	ug/kg	71
Aroclor-1232		37	U	ug/kg	37	35	U	ug/kg	35	35	U	ug/kg	35	35	U	ug/kg	35
Aroclor-1242		37	U	ug/kg	37	35	U	ug/kg	35	35	U	ug/kg	35	35	U	ug/kg	35
Aroclor-1248		37	U	ug/kg	37	35	U	ug/kg	35	35	U	ug/kg	35	35	U	ug/kg	35
Aroclor-1254		37	U	ug/kg	37	35	U	ug/kg	35	35	U	ug/kg	35	35	U	ug/kg	35
Aroclor-1260		37	U	ug/kg	37	35	U	ug/kg	35	35	U	ug/kg	35	35	U	ug/kg	35
CLP METALS AND CYANIDE	mg/kg																
Aluminum		3740	J	mg/kg	40	5620	J	mg/kg	40	1580		mg/kg		1760		mg/kg	
Antimony		12	UJ	mg/kg	12	12	UJ	mg/kg	12	1.8	U	mg/kg		1.8	U	mg/kg	
Arsenic		.93	J	mg/kg	2	1.3	J	mg/kg	2	.44	J	mg/kg		.29	J	mg/kg	
Barium		9.3	J	mg/kg	40	11.2	J	mg/kg	40	7.4	J	mg/kg		9.6	J	mg/kg	
Beryllium		.05	J	mg/kg	1	.05	J	mg/kg	1	.07	J	mg/kg		.07	J	mg/kg	
Cadmium		1	U	mg/kg	1	.21	J	mg/kg	1	.52	J	mg/kg		.68	J	mg/kg	
Calcium		139	J	mg/kg	1000	643	J	mg/kg	1000	237	J	mg/kg		297	J	mg/kg	
Chromium		3.3		mg/kg	2	3.8		mg/kg	2	3.9		mg/kg		5.4		mg/kg	
Cobalt		1.2	J	mg/kg	10	.9	J	mg/kg	10	.48	U	mg/kg		.48	U	mg/kg	
Copper		5	UJ	mg/kg	5	5	UJ	mg/kg	5	11.4		mg/kg		13.6		mg/kg	
Iron		2850		mg/kg	20	3490		mg/kg	20	1120		mg/kg		1310		mg/kg	
Lead		5.3		mg/kg	.6	3.5		mg/kg	.6	6.3	J	mg/kg		7	J	mg/kg	
Magnesium		74.1	J	mg/kg	1000	137	J	mg/kg	1000	83.5	J	mg/kg		98.7	J	mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RA870012				RA870017				RB592001				RB592006			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00401				31B00501				31B00601				31B00601D			
Collect Date:	11-JAN-96				11-JAN-96				21-MAY-96				21-MAY-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	70.9		mg/kg	3	155		mg/kg	3	9.2		mg/kg		11.3		mg/kg	
Mercury	.04	J	mg/kg	.1	.05	J	mg/kg	.1	.07		mg/kg		.08		mg/kg	
Nickel	2.4	J	mg/kg	8	3.5	J	mg/kg	8	1.5	U	mg/kg		1.5	U	mg/kg	
Potassium	96.1	J	mg/kg	1000	129	J	mg/kg	1000	66.6	UJ	mg/kg		66.5	UJ	mg/kg	
Selenium	.16	J	mg/kg	1	1	U	mg/kg	1	.14	J	mg/kg		.13	U	mg/kg	
Silver	2	U	mg/kg	2	2	U	mg/kg	2	1.1	J	mg/kg		1.7	J	mg/kg	
Sodium	177	J	mg/kg	1000	168	J	mg/kg	1000	23.5	U	mg/kg		26.3	U	mg/kg	
Thallium	2	U	mg/kg	2	2	U	mg/kg	2	.13	U	mg/kg		.13	U	mg/kg	
Vanadium	5.7	J	mg/kg	10	7.7	J	mg/kg	10	2.2	J	mg/kg		2.4	J	mg/kg	
Zinc	4	UJ	mg/kg	4	8.5		mg/kg	4	11		mg/kg		15.9		mg/kg	
Cyanide	.5	U	mg/kg	.5	.5	U	mg/kg	.5	.1	J	mg/kg		.08	U	mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RB592002				RB592003				RB592004				RB592005			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00602				31B00603				31B00604				31B00605			
Collect Date:		21-MAY-96				21-MAY-96				21-MAY-96				21-MAY-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11	11	UJ	ug/kg	11
Bromomethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Vinyl chloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Methylene chloride		2	J	ug/kg	11	1	J	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Acetone		11	U	ug/kg	11	28	U	ug/kg	28	26	U	ug/kg	26	49	U	ug/kg	49
Carbon disulfide		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethene (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chloroform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
2-Butanone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,1-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Carbon tetrachloride		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromodichloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,2-Dichloropropane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
cis-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Trichloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Dibromochloromethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,2-Trichloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Benzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
trans-1,3-Dichloropropene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Bromoform		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
4-Methyl-2-pentanone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
2-Hexanone		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Tetrachloroethene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Toluene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
1,1,2,2-Tetrachloroethane		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Chlorobenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Ethylbenzene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Styrene		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
Xylenes (total)		11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11	11	U	ug/kg	11
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
bis(2-Chloroethyl) ether		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2-Chlorophenol		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
1,3-Dichlorobenzene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
1,4-Dichlorobenzene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RB592002				RB592003				RB592004				RB592005			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00602				31B00603				31B00604				31B00605			
Collect Date:	21-MAY-96				21-MAY-96				21-MAY-96				21-MAY-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2-Methylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,2-oxybis(1-Chloropropane)	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Methylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
N-Nitroso-di-n-propylamine	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Hexachloroethane	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Nitrobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Isophorone	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2-Nitrophenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dimethylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
bis(2-Chloroethoxy) methane	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dichlorophenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
1,2,4-Trichlorobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Naphthalene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Chloroaniline	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Hexachlorobutadiene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Chloro-3-methylphenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2-Methylnaphthalene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Hexachlorocyclopentadiene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4,6-Trichlorophenol	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4,5-Trichlorophenol	900	U	ug/kg	900	910	U	ug/kg	910	910	U	ug/kg	910	910	U	ug/kg	910
2-Chloronaphthalene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2-Nitroaniline	900	U	ug/kg	900	910	U	ug/kg	910	910	U	ug/kg	910	910	U	ug/kg	910
Dimethylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Acenaphthylene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,6-Dinitrotoluene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
3-Nitroaniline	900	U	ug/kg	900	910	U	ug/kg	910	910	U	ug/kg	910	910	U	ug/kg	910
Acenaphthene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dinitrophenol	900	U	ug/kg	900	910	U	ug/kg	910	910	U	ug/kg	910	910	U	ug/kg	910
4-Nitrophenol	900	U	ug/kg	900	910	U	ug/kg	910	910	U	ug/kg	910	910	U	ug/kg	910
Dibenzofuran	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
2,4-Dinitrotoluene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Diethylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Chlorophenyl-phenylether	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Fluorene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Nitroaniline	900	U	ug/kg	900	910	U	ug/kg	910	910	U	ug/kg	910	910	U	ug/kg	910
4,6-Dinitro-2-methylphenol	900	U	ug/kg	900	910	U	ug/kg	910	910	U	ug/kg	910	910	U	ug/kg	910
N-Nitrosodiphenylamine	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
4-Bromophenyl-phenylether	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Hexachlorobenzene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Pentachlorophenol	900	U	ug/kg	900	910	U	ug/kg	910	910	U	ug/kg	910	910	U	ug/kg	910
Phenanthrene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Anthracene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Carbazole	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Di-n-butylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Fluoranthene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Pyrene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Butylbenzylphthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
3,3-Dichlorobenzidine	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Benzo (a) anthracene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Chrysene	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
bis(2-Ethylhexyl) phthalate	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RB592002				RB592003				RB592004				RB592005			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00602				31B00603				31B00604				31B00605			
Collect Date:		21-MAY-96				21-MAY-96				21-MAY-96				21-MAY-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Benzo (b) fluoranthene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Benzo (k) fluoranthene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Benzo (a) pyrene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Indeno (1,2,3-cd) pyrene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Dibenzo (a,h) anthracene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
Benzo (g,h,i) perylene		360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360	360	U	ug/kg	360
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		1.8	U	ug/kg	1.8	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
beta-BHC		1.8	U	ug/kg	1.8	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
delta-BHC		1.8	U	ug/kg	1.8	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
gamma-BHC (Lindane)		1.8	U	ug/kg	1.8	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Heptachlor		1.8	U	ug/kg	1.8	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Aldrin		1.8	U	ug/kg	1.8	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Heptachlor epoxide		1.8	U	ug/kg	1.8	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Endosulfan I		1.8	U	ug/kg	1.8	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Dieldrin		3.6	U	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6
4,4-DDE		3.6	U	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6
Endrin		3.6	U	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6
Endosulfan II		3.6	U	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6
4,4-DDD		3.6	U	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6
Endosulfan sulfate		3.6	U	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6
4,4-DDT		3.6	U	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6
Methoxychlor		18	U	ug/kg	18	19	UJ	ug/kg	19	19	UJ	ug/kg	19	19	U	ug/kg	19
Endrin ketone		3.6	U	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	U	ug/kg	3.6
Endrin aldehyde		3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6	3.6	UJ	ug/kg	3.6
alpha-Chlordane		1.8	U	ug/kg	1.8	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
gamma-Chlordane		1.8	U	ug/kg	1.8	1.9	UJ	ug/kg	1.9	1.9	UJ	ug/kg	1.9	1.9	U	ug/kg	1.9
Toxaphene		180	U	ug/kg	180	190	UJ	ug/kg	190	190	UJ	ug/kg	190	190	U	ug/kg	190
Aroclor-1016		36	U	ug/kg	36	36	UJ	ug/kg	36	36	UJ	ug/kg	36	36	U	ug/kg	36
Aroclor-1221		73	U	ug/kg	73	74	UJ	ug/kg	74	74	UJ	ug/kg	74	74	U	ug/kg	74
Aroclor-1232		36	U	ug/kg	36	36	UJ	ug/kg	36	36	UJ	ug/kg	36	36	U	ug/kg	36
Aroclor-1242		36	U	ug/kg	36	36	UJ	ug/kg	36	36	UJ	ug/kg	36	36	U	ug/kg	36
Aroclor-1248		36	U	ug/kg	36	36	UJ	ug/kg	36	36	UJ	ug/kg	36	36	U	ug/kg	36
Aroclor-1254		36	U	ug/kg	36	36	UJ	ug/kg	36	36	UJ	ug/kg	36	36	U	ug/kg	36
Aroclor-1260		36	U	ug/kg	36	36	UJ	ug/kg	36	36	UJ	ug/kg	36	36	U	ug/kg	36
CLP METALS AND CYANIDE	mg/kg																
Aluminum		1500		mg/kg		2260		mg/kg		587		mg/kg		1690		mg/kg	
Antimony		1.9	U	mg/kg		1.9	U	mg/kg		1.9	U	mg/kg		1.9	U	mg/kg	
Arsenic		.5	J	mg/kg		.22	J	mg/kg		.11	J	mg/kg		.13	J	mg/kg	
Barium		7.2	J	mg/kg		3.2	J	mg/kg		2.1	J	mg/kg		2.1	J	mg/kg	
Beryllium		.1	J	mg/kg		.07	J	mg/kg		.08	J	mg/kg		.07	U	mg/kg	
Cadmium		.61	J	mg/kg		.26	U	mg/kg		.26	U	mg/kg		.26	U	mg/kg	
Calcium		253	J	mg/kg		225	J	mg/kg		215	J	mg/kg		184	J	mg/kg	
Chromium		7.4		mg/kg		5.3		mg/kg		7		mg/kg		5.8		mg/kg	
Cobalt		.5	U	mg/kg		.51	U	mg/kg		.5	U	mg/kg		.5	U	mg/kg	
Copper		11.6		mg/kg		2.3	U	mg/kg		1.1	U	mg/kg		.68	U	mg/kg	
Iron		1210		mg/kg		1030		mg/kg		413		mg/kg		782		mg/kg	
Lead		6.2	J	mg/kg		1.1	J	mg/kg		1	J	mg/kg		.61	J	mg/kg	
Magnesium		73.5	J	mg/kg		64.4	J	mg/kg		50.7	J	mg/kg		55.9	J	mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RB592002				RB592003				RB592004				RB592005			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00602				31B00603				31B00604				31B00605			
Collect Date:	21-MAY-96				21-MAY-96				21-MAY-96				21-MAY-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	8.6		mg/kg		4.2		mg/kg		2.9	J	mg/kg		2	J	mg/kg	
Mercury	.08		mg/kg		.03	U	mg/kg		.03	U	mg/kg		.03	U	mg/kg	
Nickel	1.7	J	mg/kg		1.6	U	mg/kg		1.9	J	mg/kg		1.6	U	mg/kg	
Potassium	69	UJ	mg/kg		69.5	UJ	mg/kg		69.2	UJ	mg/kg		69.1	UJ	mg/kg	
Selenium	.13	U	mg/kg		.13	U	mg/kg		.13	U	mg/kg		.13	U	mg/kg	
Silver	1.1	J	mg/kg		.55	U	mg/kg		.55	U	mg/kg		.55	U	mg/kg	
Sodium	23.5	U	mg/kg		36.5	U	mg/kg		20.6	U	mg/kg		23	U	mg/kg	
Thallium	.13	U	mg/kg		.13	U	mg/kg		.13	U	mg/kg		.13	U	mg/kg	
Vanadium	3.1	J	mg/kg		4	J	mg/kg		1.7	J	mg/kg		3.6	J	mg/kg	
Zinc	17		mg/kg		3.8	U	mg/kg		1.3	U	mg/kg		2	U	mg/kg	
Cyanide	.13	J	mg/kg		.08	U	mg/kg		.1	J	mg/kg		.08	U	mg/kg	

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Site 31 Sub-Surface Soil Data

Lab Sample Number:		RB592010				RB592011				RB592012				RB592013			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00701				31B00702				31B00703				31B00704			
Collect Date:		22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		10	UJ	ug/kg	10	11	UJ	ug/kg	11	11	UJ	ug/kg	11	12	UJ	ug/kg	12
Bromomethane		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Vinyl chloride		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Chloroethane		10	UJ	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Methylene chloride		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Acetone		130	U	ug/kg	130	16	U	ug/kg	16	11	U	ug/kg	11	63	U	ug/kg	63
Carbon disulfide		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,1-Dichloroethene		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,1-Dichloroethane		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,2-Dichloroethene (total)		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Chloroform		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,2-Dichloroethane		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
2-Butanone		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,1,1-Trichloroethane		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Carbon tetrachloride		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Bromodichloromethane		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,2-Dichloropropane		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
cis-1,3-Dichloropropene		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Trichloroethene		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Dibromochloromethane		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,1,2-Trichloroethane		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Benzene		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
trans-1,3-Dichloropropene		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Bromoform		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
4-Methyl-2-pentanone		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
2-Hexanone		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Tetrachloroethene		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Toluene		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
1,1,2,2-Tetrachloroethane		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Chlorobenzene		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Ethylbenzene		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Styrene		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
Xylenes (total)		10	U	ug/kg	10	11	U	ug/kg	11	11	U	ug/kg	11	12	U	ug/kg	12
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
bis(2-Chloroethyl) ether		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2-Chlorophenol		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
1,3-Dichlorobenzene		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
1,4-Dichlorobenzene		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390

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Lab Sample Number:	RB592010				RB592011				RB592012				RB592013			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00701				31B00702				31B00703				31B00704			
Collect Date:	22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2-Methylphenol	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2,2-oxybis(1-Chloropropane)	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
4-Methylphenol	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
N-Nitroso-di-n-propylamine	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Hexachloroethane	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Nitrobenzene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Isophorone	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2-Nitrophenol	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2,4-Dimethylphenol	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
bis(2-Chloroethoxy) methane	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2,4-Dichlorophenol	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
1,2,4-Trichlorobenzene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Naphthalene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
4-Chloroaniline	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Hexachlorobutadiene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
4-Chloro-3-methylphenol	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2-Methylnaphthalene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Hexachlorocyclopentadiene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2,4,6-Trichlorophenol	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2,4,5-Trichlorophenol	860	U	ug/kg	860	940	U	ug/kg	940	890	U	ug/kg	890	980	U	ug/kg	980
2-Chloronaphthalene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2-Nitroaniline	860	U	ug/kg	860	940	U	ug/kg	940	890	U	ug/kg	890	980	U	ug/kg	980
Dimethylphthalate	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Acenaphthylene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2,6-Dinitrotoluene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
3-Nitroaniline	860	U	ug/kg	860	940	U	ug/kg	940	890	U	ug/kg	890	980	U	ug/kg	980
Acenaphthene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2,4-Dinitrophenol	860	U	ug/kg	860	940	U	ug/kg	940	890	U	ug/kg	890	980	U	ug/kg	980
4-Nitrophenol	860	U	ug/kg	860	940	U	ug/kg	940	890	U	ug/kg	890	980	U	ug/kg	980
Dibenzofuran	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
2,4-Dinitrotoluene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Diethylphthalate	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
4-Chlorophenyl-phenylether	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Fluorene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
4-Nitroaniline	860	U	ug/kg	860	940	U	ug/kg	940	890	U	ug/kg	890	980	U	ug/kg	980
4,6-Dinitro-2-methylphenol	860	U	ug/kg	860	940	U	ug/kg	940	890	U	ug/kg	890	980	U	ug/kg	980
N-Nitrosodiphenylamine	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
4-Bromophenyl-phenylether	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Hexachlorobenzene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Pentachlorophenol	860	U	ug/kg	860	940	U	ug/kg	940	890	U	ug/kg	890	980	U	ug/kg	980
Phenanthrene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Anthracene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Carbazole	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Di-n-butylphthalate	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Fluoranthene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Pyrene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Butylbenzylphthalate	340	UJ	ug/kg	340	370	UJ	ug/kg	370	350	UJ	ug/kg	350	390	UJ	ug/kg	390
3,3-Dichlorobenzidine	340	UJ	ug/kg	340	370	UJ	ug/kg	370	350	UJ	ug/kg	350	390	UJ	ug/kg	390
Benzo (a) anthracene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Chrysene	340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
bis(2-Ethylhexyl) phthalate	340	UJ	ug/kg	340	370	UJ	ug/kg	370	350	UJ	ug/kg	350	390	UJ	ug/kg	390

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Lab Sample Number:		RB592010				RB592011				RB592012				RB592013			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00701				31B00702				31B00703				31B00704			
Collect Date:		22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Benzo (b) fluoranthene		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Benzo (k) fluoranthene		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Benzo (a) pyrene		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Indeno (1,2,3-cd) pyrene		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Dibenzo (a,h) anthracene		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
Benzo (g,h,i) perylene		340	U	ug/kg	340	370	U	ug/kg	370	350	U	ug/kg	350	390	U	ug/kg	390
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	2	U	ug/kg	2
beta-BHC		1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	2	U	ug/kg	2
delta-BHC		1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	2	U	ug/kg	2
gamma-BHC (Lindane)		1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Heptachlor		1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Aldrin		1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Heptachlor epoxide		1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Endosulfan I		1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Dieldrin		3.4	U	ug/kg	3.4	3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.9	U	ug/kg	3.9
4,4-DDE		3.4	U	ug/kg	3.4	3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.9	U	ug/kg	3.9
Endrin		3.4	U	ug/kg	3.4	3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.9	U	ug/kg	3.9
Endosulfan II		3.4	U	ug/kg	3.4	3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.9	U	ug/kg	3.9
4,4-DDD		3.4	U	ug/kg	3.4	3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.9	U	ug/kg	3.9
Endosulfan sulfate		3.4	U	ug/kg	3.4	3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.9	U	ug/kg	3.9
4,4-DDT		3.4	U	ug/kg	3.4	3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.9	U	ug/kg	3.9
Methoxychlor		18	U	ug/kg	18	19	U	ug/kg	19	18	U	ug/kg	18	20	U	ug/kg	20
Endrin ketone		3.4	U	ug/kg	3.4	3.7	U	ug/kg	3.7	3.5	U	ug/kg	3.5	3.9	U	ug/kg	3.9
Endrin aldehyde		3.4	UJ	ug/kg	3.4	3.7	UJ	ug/kg	3.7	3.5	UJ	ug/kg	3.5	3.9	UJ	ug/kg	3.9
alpha-Chlordane		1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	2	U	ug/kg	2
gamma-Chlordane		1.8	U	ug/kg	1.8	1.9	U	ug/kg	1.9	1.8	U	ug/kg	1.8	2	U	ug/kg	2
Toxaphene		180	U	ug/kg	180	190	U	ug/kg	190	180	U	ug/kg	180	200	U	ug/kg	200
Aroclor-1016		34	U	ug/kg	34	37	U	ug/kg	37	35	U	ug/kg	35	39	U	ug/kg	39
Aroclor-1221		70	U	ug/kg	70	76	U	ug/kg	76	72	U	ug/kg	72	79	U	ug/kg	79
Aroclor-1232		34	U	ug/kg	34	37	U	ug/kg	37	35	U	ug/kg	35	39	U	ug/kg	39
Aroclor-1242		34	U	ug/kg	34	37	U	ug/kg	37	35	U	ug/kg	35	39	U	ug/kg	39
Aroclor-1248		34	U	ug/kg	34	37	U	ug/kg	37	35	U	ug/kg	35	39	U	ug/kg	39
Aroclor-1254		34	U	ug/kg	34	37	U	ug/kg	37	35	U	ug/kg	35	39	U	ug/kg	39
Aroclor-1260		34	U	ug/kg	34	37	U	ug/kg	37	35	U	ug/kg	35	39	U	ug/kg	39
CLP METALS AND CYANIDE	mg/kg																
Aluminum		940		mg/kg		5800		mg/kg		5060		mg/kg		1410		mg/kg	
Antimony		1.8	U	mg/kg		2	U	mg/kg		1.8	U	mg/kg		2	U	mg/kg	
Arsenic		.29	J	mg/kg		2	J	mg/kg		.58	J	mg/kg		.21	J	mg/kg	
Barium		3.6	J	mg/kg		9.5	J	mg/kg		4.8	J	mg/kg		3.9	J	mg/kg	
Beryllium		.06	U	mg/kg		.16	J	mg/kg		.06	U	mg/kg		.07	U	mg/kg	
Cadmium		.25	U	mg/kg		.78	J	mg/kg		.26	U	mg/kg		.28	U	mg/kg	
Calcium		191	U	mg/kg		274	U	mg/kg		194	U	mg/kg		223	U	mg/kg	
Chromium		3.1	U	mg/kg		13.1		mg/kg		9.6	U	mg/kg		6.8	U	mg/kg	
Cobalt		.48	U	mg/kg		.59	U	mg/kg		.49	U	mg/kg		.54	U	mg/kg	
Copper		.96	U	mg/kg		9.8		mg/kg		3	J	mg/kg		1.1	U	mg/kg	
Iron		697		mg/kg		5440		mg/kg		2200		mg/kg		643		mg/kg	
Lead		9.5	J	mg/kg		12.8	J	mg/kg		2.8	J	mg/kg		1.9	J	mg/kg	
Magnesium		65.6	U	mg/kg		103	J	mg/kg		73	J	mg/kg		56.5	U	mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RB592010				RB592011				RB592012				RB592013			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00701				31B00702				31B00703				31B00704			
Collect Date:	22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	6.7		mg/kg		19.9		mg/kg		5.8		mg/kg		4.8		mg/kg	
Mercury	.03	U	mg/kg		.09		mg/kg		.03	U	mg/kg		.03	U	mg/kg	
Nickel	1.5	U	mg/kg		1.8	J	mg/kg		1.6	U	mg/kg		1.7	U	mg/kg	
Potassium	65.6	UJ	mg/kg		72.1	UJ	mg/kg		67.6	UJ	mg/kg		92.1	J	mg/kg	
Selenium	.12	U	mg/kg		.14	U	mg/kg		.13	U	mg/kg		.14	U	mg/kg	
Silver	.52	U	mg/kg		2.5		mg/kg		.53	U	mg/kg		.59	U	mg/kg	
Sodium	25.2	U	mg/kg		26.7	U	mg/kg		25.3	U	mg/kg		26.4	U	mg/kg	
Thallium	.12	U	mg/kg		.14	U	mg/kg		.13	U	mg/kg		.14	U	mg/kg	
Vanadium	1.4	J	mg/kg		16.3		mg/kg		7.5	J	mg/kg		4.5	J	mg/kg	
Zinc	3.9	U	mg/kg		15.8		mg/kg		4.4	U	mg/kg		2.6	U	mg/kg	
Cyanide	1.1		mg/kg		.28	J	mg/kg		.16	J	mg/kg		.09	U	mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RB592014				RB592015				RB592015DL				RB592016			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00705				31B00801				31B00801DL				31B00802			
Collect Date:		22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		12	UJ	ug/kg	12	10	UJ	ug/kg	10	1200	R	ug/kg	13	10	UJ	ug/kg	10
Bromomethane		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Vinyl chloride		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Chloroethane		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Methylene chloride		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Acetone		19	U	ug/kg	19	970	J	ug/kg	10	1400	R	ug/kg	1400	170	U	ug/kg	170
Carbon disulfide		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
1,1-Dichloroethene		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
1,1-Dichloroethane		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
1,2-Dichloroethene (total)		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Chloroform		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
1,2-Dichloroethane		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
2-Butanone		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
1,1,1-Trichloroethane		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Carbon tetrachloride		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Bromodichloromethane		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
1,2-Dichloropropane		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
cis-1,3-Dichloropropene		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Trichloroethene		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Dibromochloromethane		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
1,1,2-Trichloroethane		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Benzene		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
trans-1,3-Dichloropropene		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Bromoform		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
4-Methyl-2-pentanone		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
2-Hexanone		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Tetrachloroethene		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Toluene		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
1,1,2,2-Tetrachloroethane		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Chlorobenzene		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Ethylbenzene		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Styrene		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg	13	10	U	ug/kg	10
Xylenes (total)		12	U	ug/kg	12	10	U	ug/kg	10	1200	R	ug/kg		10	U	ug/kg	10
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
bis(2-Chloroethyl) ether		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2-Chlorophenol		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
1,3-Dichlorobenzene		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
1,4-Dichlorobenzene		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RB592014				RB592015				RB592015DL				RB592016			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00705				31B00801				31B00801DL				31B00802			
Collect Date:	22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2-Methylphenol	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2,2-oxybis(1-Chloropropane)	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
4-Methylphenol	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
N-Nitroso-di-n-propylamine	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Hexachloroethane	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Nitrobenzene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Isophorone	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2-Nitrophenol	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2,4-Dimethylphenol	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
bis(2-Chloroethoxy) methane	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2,4-Dichlorophenol	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
1,2,4-Trichlorobenzene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Naphthalene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
4-Chloroaniline	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Hexachlorobutadiene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
4-Chloro-3-methylphenol	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2-Methylnaphthalene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Hexachlorocyclopentadiene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2,4,6-Trichlorophenol	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2,4,5-Trichlorophenol	1000	U	ug/kg	1000	860	U	ug/kg	860	-		ug/kg		860	U	ug/kg	860
2-Chloronaphthalene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2-Nitroaniline	1000	U	ug/kg	1000	860	U	ug/kg	860	-		ug/kg		860	U	ug/kg	860
Dimethylphthalate	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Acenaphthylene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2,6-Dinitrotoluene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
3-Nitroaniline	1000	U	ug/kg	1000	860	U	ug/kg	860	-		ug/kg		860	U	ug/kg	860
Acenaphthene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2,4-Dinitrophenol	1000	U	ug/kg	1000	860	U	ug/kg	860	-		ug/kg		860	U	ug/kg	860
4-Nitrophenol	1000	U	ug/kg	1000	860	U	ug/kg	860	-		ug/kg		860	U	ug/kg	860
Dibenzofuran	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
2,4-Dinitrotoluene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Diethylphthalate	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
4-Chlorophenyl-phenylether	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Fluorene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
4-Nitroaniline	1000	U	ug/kg	1000	860	U	ug/kg	860	-		ug/kg		860	U	ug/kg	860
4,6-Dinitro-2-methylphenol	1000	U	ug/kg	1000	860	U	ug/kg	860	-		ug/kg		860	U	ug/kg	860
N-Nitrosodiphenylamine	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
4-Bromophenyl-phenylether	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Hexachlorobenzene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Pentachlorophenol	1000	U	ug/kg	1000	860	U	ug/kg	860	-		ug/kg		860	U	ug/kg	860
Phenanthrene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Anthracene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Carbazole	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Di-n-butylphthalate	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Fluoranthene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Pyrene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Butylbenzylphthalate	400	UJ	ug/kg	400	340	UJ	ug/kg	340	-		ug/kg		340	UJ	ug/kg	340
3,3-Dichlorobenzidine	400	UJ	ug/kg	400	340	UJ	ug/kg	340	-		ug/kg		340	UJ	ug/kg	340
Benzo (a) anthracene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Chrysene	400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
bis(2-Ethylhexyl) phthalate	400	UJ	ug/kg	400	340	UJ	ug/kg	340	-		ug/kg		340	UJ	ug/kg	340

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RB592014				RB592015				RB592015DL				RB592016			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00705				31B00801				31B00801DL				31B00802			
Collect Date:		22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Benzo (b) fluoranthene		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Benzo (k) fluoranthene		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Benzo (a) pyrene		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Indeno (1,2,3-cd) pyrene		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Dibenzo (a,h) anthracene		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
Benzo (g,h,i) perylene		400	U	ug/kg	400	340	U	ug/kg	340	-		ug/kg		340	U	ug/kg	340
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		2.1	U	ug/kg	2.1	1.8	U	ug/kg	1.8	-		ug/kg		1.8	U	ug/kg	1.8
beta-BHC		2.1	U	ug/kg	2.1	1.8	U	ug/kg	1.8	-		ug/kg		1.8	U	ug/kg	1.8
delta-BHC		2.1	U	ug/kg	2.1	1.8	U	ug/kg	1.8	-		ug/kg		1.8	U	ug/kg	1.8
gamma-BHC (Lindane)		2.1	U	ug/kg	2.1	1.8	U	ug/kg	1.8	-		ug/kg		1.8	U	ug/kg	1.8
Heptachlor		2.1	U	ug/kg	2.1	1.8	U	ug/kg	1.8	-		ug/kg		1.8	U	ug/kg	1.8
Aldrin		2.1	U	ug/kg	2.1	1.8	U	ug/kg	1.8	-		ug/kg		1.8	U	ug/kg	1.8
Heptachlor epoxide		2.1	U	ug/kg	2.1	1.8	U	ug/kg	1.8	-		ug/kg		1.8	U	ug/kg	1.8
Endosulfan I		2.1	U	ug/kg	2.1	1.8	U	ug/kg	1.8	-		ug/kg		1.8	U	ug/kg	1.8
Dieldrin		4	U	ug/kg	4	3.4	U	ug/kg	3.4	-		ug/kg		3.4	U	ug/kg	3.4
4,4-DDE		4	U	ug/kg	4	3.4	U	ug/kg	3.4	-		ug/kg		3.4	U	ug/kg	3.4
Endrin		4	U	ug/kg	4	3.4	U	ug/kg	3.4	-		ug/kg		3.4	U	ug/kg	3.4
Endosulfan II		4	U	ug/kg	4	3.4	U	ug/kg	3.4	-		ug/kg		3.4	U	ug/kg	3.4
4,4-DDD		4	U	ug/kg	4	3.4	U	ug/kg	3.4	-		ug/kg		3.4	U	ug/kg	3.4
Endosulfan sulfate		4	U	ug/kg	4	3.4	U	ug/kg	3.4	-		ug/kg		3.4	U	ug/kg	3.4
4,4-DDT		4	U	ug/kg	4	3.4	U	ug/kg	3.4	-		ug/kg		3.4	U	ug/kg	3.4
Methoxychlor		21	U	ug/kg	21	18	U	ug/kg	18	-		ug/kg		18	U	ug/kg	18
Endrin ketone		4	U	ug/kg	4	3.4	U	ug/kg	3.4	-		ug/kg		3.4	U	ug/kg	3.4
Endrin aldehyde		4	UJ	ug/kg	4	3.4	UJ	ug/kg	3.4	-		ug/kg		3.4	UJ	ug/kg	3.4
alpha-Chlordane		2.1	U	ug/kg	2.1	1.8	U	ug/kg	1.8	-		ug/kg		1.8	U	ug/kg	1.8
gamma-Chlordane		2.1	U	ug/kg	2.1	1.8	U	ug/kg	1.8	-		ug/kg		1.8	U	ug/kg	1.8
Toxaphene		210	U	ug/kg	210	180	U	ug/kg	180	-		ug/kg		180	U	ug/kg	180
Aroclor-1016		40	U	ug/kg	40	34	U	ug/kg	34	-		ug/kg		34	U	ug/kg	34
Aroclor-1221		82	U	ug/kg	82	69	U	ug/kg	69	-		ug/kg		70	U	ug/kg	70
Aroclor-1232		40	U	ug/kg	40	34	U	ug/kg	34	-		ug/kg		34	U	ug/kg	34
Aroclor-1242		40	U	ug/kg	40	34	U	ug/kg	34	-		ug/kg		34	U	ug/kg	34
Aroclor-1248		40	U	ug/kg	40	34	U	ug/kg	34	-		ug/kg		34	U	ug/kg	34
Aroclor-1254		40	U	ug/kg	40	34	U	ug/kg	34	-		ug/kg		34	U	ug/kg	34
Aroclor-1260		40	U	ug/kg	40	34	U	ug/kg	34	-		ug/kg		34	U	ug/kg	34
CLP METALS AND CYANIDE	mg/kg																
Aluminum		1300		mg/kg		1500		mg/kg		-		mg/kg		1500		mg/kg	
Antimony		2.1	U	mg/kg		1.8	U	mg/kg		-		mg/kg		1.8	U	mg/kg	
Arsenic		.2	J	mg/kg		.31	J	mg/kg		-		mg/kg		.29	J	mg/kg	
Barium		4.3	J	mg/kg		3.6	J	mg/kg		-		mg/kg		3.6	J	mg/kg	
Beryllium		.08	J	mg/kg		.06	U	mg/kg		-		mg/kg		.06	U	mg/kg	
Cadmium		.29	U	mg/kg		.25	U	mg/kg		-		mg/kg		.25	U	mg/kg	
Calcium		235	U	mg/kg		180	U	mg/kg		-		mg/kg		197	U	mg/kg	
Chromium		3.5	U	mg/kg		2.7	U	mg/kg		-		mg/kg		2	U	mg/kg	
Cobalt		.56	U	mg/kg		.48	U	mg/kg		-		mg/kg		.48	U	mg/kg	
Copper		.72	U	mg/kg		2.1	U	mg/kg		-		mg/kg		1.9	U	mg/kg	
Iron		376		mg/kg		935		mg/kg		-		mg/kg		897		mg/kg	
Lead		1.8	J	mg/kg		.64	J	mg/kg		-		mg/kg		1.3	J	mg/kg	
Magnesium		67.1	J	mg/kg		84.5	J	mg/kg		-		mg/kg		83.2	J	mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RB592014				RB592015				RB592015DL				RB592016			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00705				31B00801				31B00801DL				31B00802			
Collect Date:	22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	5.2		mg/kg		5.1		mg/kg		-		mg/kg		9		mg/kg	
Mercury	.03	U	mg/kg		.03	U	mg/kg		-		mg/kg		.03	U	mg/kg	
Nickel	1.8	U	mg/kg		1.5	U	mg/kg		-		mg/kg		1.5	U	mg/kg	
Potassium	77.2	UJ	mg/kg		65.4	UJ	mg/kg		-		mg/kg		65.6	UJ	mg/kg	
Selenium	.15	U	mg/kg		.12	U	mg/kg		-		mg/kg		.12	U	mg/kg	
Silver	.61	U	mg/kg		.52	U	mg/kg		-		mg/kg		.52	U	mg/kg	
Sodium	34.9	U	mg/kg		25	U	mg/kg		-		mg/kg		28.1	U	mg/kg	
Thallium	.15	U	mg/kg		.12	U	mg/kg		-		mg/kg		.12	U	mg/kg	
Vanadium	3.8	J	mg/kg		1.8	J	mg/kg		-		mg/kg		2	J	mg/kg	
Zinc	2.6	U	mg/kg		3.1	U	mg/kg		-		mg/kg		4.1	U	mg/kg	
Cyanide	.09	U	mg/kg		.08	U	mg/kg		-		mg/kg		.08	U	mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RB592017				RB592017DL				RB592018				RB592018DL			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00803				31B00803DL				31B00804				31B00804DL			
Collect Date:		22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg																
Chloromethane		12	UJ	ug/kg	12	60	R	ug/kg	60	12	UJ	ug/kg	12	30	R	ug/kg	30
Bromomethane		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Vinyl chloride		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Chloroethane		12	U	ug/kg	12	60	R	ug/kg	60	12	UJ	ug/kg	12	30	R	ug/kg	30
Methylene chloride		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Acetone		770	J	ug/kg	12	850	R	ug/kg	850	480	J	ug/kg	12	370	R	ug/kg	370
Carbon disulfide		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
1,1-Dichloroethene		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
1,1-Dichloroethane		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
1,2-Dichloroethene (total)		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Chloroform		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
1,2-Dichloroethane		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
2-Butanone		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
1,1,1-Trichloroethane		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Carbon tetrachloride		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Bromodichloromethane		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
1,2-Dichloropropane		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
cis-1,3-Dichloropropene		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Trichloroethene		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Dibromochloromethane		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
1,1,2-Trichloroethane		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Benzene		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
trans-1,3-Dichloropropene		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Bromoform		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
4-Methyl-2-pentanone		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
2-Hexanone		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Tetrachloroethene		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Toluene		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
1,1,2,2-Tetrachloroethane		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Chlorobenzene		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Ethylbenzene		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Styrene		12	U	ug/kg	12	60	R	ug/kg	60	12	U	ug/kg	12	30	R	ug/kg	30
Xylenes (total)		12	U	ug/kg	12	60	R	ug/kg		12	U	ug/kg	12	30	R	ug/kg	
CLP SEMIVOLATILES 90-SOW	ug/kg																
Phenol		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
bis(2-Chloroethyl) ether		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2-Chlorophenol		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
1,3-Dichlorobenzene		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
1,4-Dichlorobenzene		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RB592017				RB592017DL				RB592018				RB592018DL			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00803				31B00803DL				31B00804				31B00804DL			
Collect Date:	22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2-Methylphenol	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2,2-oxybis(1-Chloropropane)	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
4-Methylphenol	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
N-Nitroso-di-n-propylamine	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Hexachloroethane	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Nitrobenzene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Isophorone	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2-Nitrophenol	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2,4-Dimethylphenol	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
bis(2-Chloroethoxy) methane	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2,4-Dichlorophenol	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
1,2,4-Trichlorobenzene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Naphthalene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
4-Chloroaniline	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Hexachlorobutadiene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
4-Chloro-3-methylphenol	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2-Methylnaphthalene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Hexachlorocyclopentadiene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2,4,6-Trichlorophenol	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2,4,5-Trichlorophenol	990	U	ug/kg	990	-		ug/kg		1000	U	ug/kg	1000	-		ug/kg	
2-Chloronaphthalene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2-Nitroaniline	990	U	ug/kg	990	-		ug/kg		1000	U	ug/kg	1000	-		ug/kg	
Dimethylphthalate	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Acenaphthylene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2,6-Dinitrotoluene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
3-Nitroaniline	990	U	ug/kg	990	-		ug/kg		1000	U	ug/kg	1000	-		ug/kg	
Acenaphthene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2,4-Dinitrophenol	990	U	ug/kg	990	-		ug/kg		1000	U	ug/kg	1000	-		ug/kg	
4-Nitrophenol	990	U	ug/kg	990	-		ug/kg		1000	U	ug/kg	1000	-		ug/kg	
Dibenzofuran	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
2,4-Dinitrotoluene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Diethylphthalate	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
4-Chlorophenyl-phenylether	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Fluorene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
4-Nitroaniline	990	U	ug/kg	990	-		ug/kg		1000	U	ug/kg	1000	-		ug/kg	
4,6-Dinitro-2-methylphenol	990	U	ug/kg	990	-		ug/kg		1000	U	ug/kg	1000	-		ug/kg	
N-Nitrosodiphenylamine	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
4-Bromophenyl-phenylether	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Hexachlorobenzene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Pentachlorophenol	990	U	ug/kg	990	-		ug/kg		1000	U	ug/kg	1000	-		ug/kg	
Phenanthrene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Anthracene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Carbazole	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Di-n-butylphthalate	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Fluoranthene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Pyrene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Butylbenzylphthalate	390	UJ	ug/kg	390	-		ug/kg		400	UJ	ug/kg	400	-		ug/kg	
3,3-Dichlorobenzidine	390	UJ	ug/kg	390	-		ug/kg		400	UJ	ug/kg	400	-		ug/kg	
Benzo (a) anthracene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Chrysene	390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
bis(2-Ethylhexyl) phthalate	390	UJ	ug/kg	390	-		ug/kg		400	UJ	ug/kg	400	-		ug/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RB592017				RB592017DL				RB592018				RB592018DL			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31B00803				31B00803DL				31B00804				31B00804DL			
Collect Date:		22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Benzo (b) fluoranthene		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Benzo (k) fluoranthene		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Benzo (a) pyrene		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Indeno (1,2,3-cd) pyrene		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Dibenzo (a,h) anthracene		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
Benzo (g,h,i) perylene		390	U	ug/kg	390	-		ug/kg		400	U	ug/kg	400	-		ug/kg	
CLP PESTICIDES/PCBS 90-SOW	ug/kg																
alpha-BHC		2	U	ug/kg	2	-		ug/kg		2.1	U	ug/kg	2.1	-		ug/kg	
beta-BHC		2	U	ug/kg	2	-		ug/kg		2.1	U	ug/kg	2.1	-		ug/kg	
delta-BHC		2	U	ug/kg	2	-		ug/kg		2.1	U	ug/kg	2.1	-		ug/kg	
gamma-BHC (Lindane)		2	U	ug/kg	2	-		ug/kg		2.1	U	ug/kg	2.1	-		ug/kg	
Heptachlor		2	U	ug/kg	2	-		ug/kg		2.1	U	ug/kg	2.1	-		ug/kg	
Aldrin		2	U	ug/kg	2	-		ug/kg		2.1	U	ug/kg	2.1	-		ug/kg	
Heptachlor epoxide		2	U	ug/kg	2	-		ug/kg		2.1	U	ug/kg	2.1	-		ug/kg	
Endosulfan I		2	U	ug/kg	2	-		ug/kg		2.1	U	ug/kg	2.1	-		ug/kg	
Dieldrin		3.9	U	ug/kg	3.9	-		ug/kg		4	U	ug/kg	4	-		ug/kg	
4,4-DDE		3.9	U	ug/kg	3.9	-		ug/kg		4	U	ug/kg	4	-		ug/kg	
Endrin		3.9	U	ug/kg	3.9	-		ug/kg		4	U	ug/kg	4	-		ug/kg	
Endosulfan II		3.9	U	ug/kg	3.9	-		ug/kg		4	U	ug/kg	4	-		ug/kg	
4,4-DDD		3.9	U	ug/kg	3.9	-		ug/kg		4	U	ug/kg	4	-		ug/kg	
Endosulfan sulfate		3.9	U	ug/kg	3.9	-		ug/kg		4	U	ug/kg	4	-		ug/kg	
4,4-DDT		3.9	U	ug/kg	3.9	-		ug/kg		4	U	ug/kg	4	-		ug/kg	
Methoxychlor		20	U	ug/kg	20	-		ug/kg		21	U	ug/kg	21	-		ug/kg	
Endrin ketone		3.9	U	ug/kg	3.9	-		ug/kg		4	U	ug/kg	4	-		ug/kg	
Endrin aldehyde		3.9	UJ	ug/kg	3.9	-		ug/kg		4	UJ	ug/kg	4	-		ug/kg	
alpha-Chlordane		2	U	ug/kg	2	-		ug/kg		2.1	U	ug/kg	2.1	-		ug/kg	
gamma-Chlordane		2	U	ug/kg	2	-		ug/kg		2.1	U	ug/kg	2.1	-		ug/kg	
Toxaphene		200	U	ug/kg	200	-		ug/kg		210	U	ug/kg	210	-		ug/kg	
Aroclor-1016		39	U	ug/kg	39	-		ug/kg		40	U	ug/kg	40	-		ug/kg	
Aroclor-1221		80	U	ug/kg	80	-		ug/kg		82	U	ug/kg	82	-		ug/kg	
Aroclor-1232		39	U	ug/kg	39	-		ug/kg		40	U	ug/kg	40	-		ug/kg	
Aroclor-1242		39	U	ug/kg	39	-		ug/kg		40	U	ug/kg	40	-		ug/kg	
Aroclor-1248		39	U	ug/kg	39	-		ug/kg		40	U	ug/kg	40	-		ug/kg	
Aroclor-1254		39	U	ug/kg	39	-		ug/kg		40	U	ug/kg	40	-		ug/kg	
Aroclor-1260		39	U	ug/kg	39	-		ug/kg		40	U	ug/kg	40	-		ug/kg	
CLP METALS AND CYANIDE	mg/kg																
Aluminum		2120		mg/kg		-		mg/kg		1070		mg/kg		-		mg/kg	
Antimony		2	U	mg/kg		-		mg/kg		2.1	U	mg/kg		-		mg/kg	
Arsenic		.47	J	mg/kg		-		mg/kg		.36	J	mg/kg		-		mg/kg	
Barium		5.9	J	mg/kg		-		mg/kg		3.2	J	mg/kg		-		mg/kg	
Beryllium		.07	U	mg/kg		-		mg/kg		.07	U	mg/kg		-		mg/kg	
Cadmium		.28	U	mg/kg		-		mg/kg		.29	U	mg/kg		-		mg/kg	
Calcium		243	U	mg/kg		-		mg/kg		231	U	mg/kg		-		mg/kg	
Chromium		4.8	U	mg/kg		-		mg/kg		4.3	U	mg/kg		-		mg/kg	
Cobalt		.55	U	mg/kg		-		mg/kg		.56	U	mg/kg		-		mg/kg	
Copper		1.2	U	mg/kg		-		mg/kg		.67	U	mg/kg		-		mg/kg	
Iron		1260		mg/kg		-		mg/kg		479		mg/kg		-		mg/kg	
Lead		1.6	J	mg/kg		-		mg/kg		1.2	J	mg/kg		-		mg/kg	
Magnesium		80	J	mg/kg		-		mg/kg		73.9	J	mg/kg		-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RB592017				RB592017DL				RB592018				RB592018DL			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31B00803				31B00803DL				31B00804				31B00804DL			
Collect Date:	22-MAY-96				22-MAY-96				22-MAY-96				22-MAY-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	3.8	U	mg/kg		-		mg/kg		2.1	U	mg/kg		-		mg/kg	
Mercury	.05	J	mg/kg		-		mg/kg		.03	U	mg/kg		-		mg/kg	
Nickel	1.7	U	mg/kg		-		mg/kg		1.8	U	mg/kg		-		mg/kg	
Potassium	74.9	UJ	mg/kg		-		mg/kg		76.6	UJ	mg/kg		-		mg/kg	
Selenium	.14	U	mg/kg		-		mg/kg		.15	U	mg/kg		-		mg/kg	
Silver	.59	U	mg/kg		-		mg/kg		.61	U	mg/kg		-		mg/kg	
Sodium	33.9	U	mg/kg		-		mg/kg		52.1	U	mg/kg		-		mg/kg	
Thallium	.14	U	mg/kg		-		mg/kg		.15	U	mg/kg		-		mg/kg	
Vanadium	4.5	J	mg/kg		-		mg/kg		4	J	mg/kg		-		mg/kg	
Zinc	4.9	U	mg/kg		-		mg/kg		1.9	U	mg/kg		-		mg/kg	
Cyanide	.11	J	mg/kg		-		mg/kg		.09	U	mg/kg		-		mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RB592019			
Site		WHITING			
Locator		31B00805			
Collect Date:		22-MAY-96			
		VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/kg				
Chloromethane		11	UJ	ug/kg	11
Bromomethane		11	U	ug/kg	11
Vinyl chloride		11	U	ug/kg	11
Chloroethane		11	UJ	ug/kg	11
Methylene chloride		11	U	ug/kg	11
Acetone		17	U	ug/kg	17
Carbon disulfide		11	U	ug/kg	11
1,1-Dichloroethene		11	U	ug/kg	11
1,1-Dichloroethane		11	U	ug/kg	11
1,2-Dichloroethene (total)		11	U	ug/kg	11
Chloroform		11	U	ug/kg	11
1,2-Dichloroethane		11	U	ug/kg	11
2-Butanone		11	U	ug/kg	11
1,1,1-Trichloroethane		11	U	ug/kg	11
Carbon tetrachloride		11	U	ug/kg	11
Bromodichloromethane		11	U	ug/kg	11
1,2-Dichloropropane		11	U	ug/kg	11
cis-1,3-Dichloropropene		11	U	ug/kg	11
Trichloroethene		11	U	ug/kg	11
Dibromochloromethane		11	U	ug/kg	11
1,1,2-Trichloroethane		11	U	ug/kg	11
Benzene		11	U	ug/kg	11
trans-1,3-Dichloropropene		11	U	ug/kg	11
Bromoform		11	U	ug/kg	11
4-Methyl-2-pentanone		11	U	ug/kg	11
2-Hexanone		11	U	ug/kg	11
Tetrachloroethene		11	U	ug/kg	11
Toluene		11	U	ug/kg	11
1,1,2,2-Tetrachloroethane		11	U	ug/kg	11
Chlorobenzene		11	U	ug/kg	11
Ethylbenzene		11	U	ug/kg	11
Styrene		11	U	ug/kg	11
Xylenes (total)		11	U	ug/kg	11
CLP SEMIVOLATILES 90-SOW	ug/kg				
Phenol		380	U	ug/kg	380
bis(2-Chloroethyl) ether		380	U	ug/kg	380
2-Chlorophenol		380	U	ug/kg	380
1,3-Dichlorobenzene		380	U	ug/kg	380
1,4-Dichlorobenzene		380	U	ug/kg	380

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RB592019			
Site	WHITING			
Locator	31B00805			
Collect Date:	22-MAY-96			
	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	380	U	ug/kg	380
2-Methylphenol	380	U	ug/kg	380
2,2-oxybis(1-Chloropropane)	380	U	ug/kg	380
4-Methylphenol	380	U	ug/kg	380
N-Nitroso-di-n-propylamine	380	U	ug/kg	380
Hexachloroethane	380	U	ug/kg	380
Nitrobenzene	380	U	ug/kg	380
Isophorone	380	U	ug/kg	380
2-Nitrophenol	380	U	ug/kg	380
2,4-Dimethylphenol	380	U	ug/kg	380
bis(2-Chloroethoxy) methane	380	U	ug/kg	380
2,4-Dichlorophenol	380	U	ug/kg	380
1,2,4-Trichlorobenzene	380	U	ug/kg	380
Naphthalene	380	U	ug/kg	380
4-Chloroaniline	380	U	ug/kg	380
Hexachlorobutadiene	380	U	ug/kg	380
4-Chloro-3-methylphenol	380	U	ug/kg	380
2-Methylnaphthalene	380	U	ug/kg	380
Hexachlorocyclopentadiene	380	U	ug/kg	380
2,4,6-Trichlorophenol	380	U	ug/kg	380
2,4,5-Trichlorophenol	950	U	ug/kg	950
2-Chloronaphthalene	380	U	ug/kg	380
2-Nitroaniline	950	U	ug/kg	950
Dimethylphthalate	380	U	ug/kg	380
Acenaphthylene	380	U	ug/kg	380
2,6-Dinitrotoluene	380	U	ug/kg	380
3-Nitroaniline	950	U	ug/kg	950
Acenaphthene	380	U	ug/kg	380
2,4-Dinitrophenol	950	U	ug/kg	950
4-Nitrophenol	950	U	ug/kg	950
Dibenzofuran	380	U	ug/kg	380
2,4-Dinitrotoluene	380	U	ug/kg	380
Diethylphthalate	380	U	ug/kg	380
4-Chlorophenyl-phenylether	380	U	ug/kg	380
Fluorene	380	U	ug/kg	380
4-Nitroaniline	950	U	ug/kg	950
4,6-Dinitro-2-methylphenol	950	U	ug/kg	950
N-Nitrosodiphenylamine	380	U	ug/kg	380
4-Bromophenyl-phenylether	380	U	ug/kg	380
Hexachlorobenzene	380	U	ug/kg	380
Pentachlorophenol	950	U	ug/kg	950
Phenanthrene	380	U	ug/kg	380
Anthracene	380	U	ug/kg	380
Carbazole	380	U	ug/kg	380
Di-n-butylphthalate	380	U	ug/kg	380
Fluoranthene	380	U	ug/kg	380
Pyrene	380	U	ug/kg	380
Butylbenzylphthalate	380	UJ	ug/kg	380
3,3-Dichlorobenzidine	380	UJ	ug/kg	380
Benzo (a) anthracene	380	U	ug/kg	380
Chrysene	380	U	ug/kg	380
bis(2-Ethylhexyl) phthalate	380	UJ	ug/kg	380

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:		RB592019			
Site		WHITING			
Locator		31B00805			
Collect Date:		22-MAY-96			
		VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		380	U	ug/kg	380
Benzo (b) fluoranthene		380	U	ug/kg	380
Benzo (k) fluoranthene		380	U	ug/kg	380
Benzo (a) pyrene		380	U	ug/kg	380
Indeno (1,2,3-cd) pyrene		380	U	ug/kg	380
Dibenzo (a,h) anthracene		380	U	ug/kg	380
Benzo (g,h,i) perylene		380	U	ug/kg	380
CLP PESTICIDES/PCBS 90-SOW	ug/kg				
alpha-BHC		2	U	ug/kg	2
beta-BHC		2	U	ug/kg	2
delta-BHC		2	U	ug/kg	2
gamma-BHC (Lindane)		2	U	ug/kg	2
Heptachlor		2	U	ug/kg	2
Aldrin		2	U	ug/kg	2
Heptachlor epoxide		2	U	ug/kg	2
Endosulfan I		2	U	ug/kg	2
Dieldrin		3.8	U	ug/kg	3.8
4,4-DDE		3.8	U	ug/kg	3.8
Endrin		3.8	U	ug/kg	3.8
Endosulfan II		3.8	U	ug/kg	3.8
4,4-DDD		3.8	U	ug/kg	3.8
Endosulfan sulfate		3.8	U	ug/kg	3.8
4,4-DDT		3.8	U	ug/kg	3.8
Methoxychlor		20	U	ug/kg	20
Endrin ketone		3.8	U	ug/kg	3.8
Endrin aldehyde		3.8	UJ	ug/kg	3.8
alpha-Chlordane		2	U	ug/kg	2
gamma-Chlordane		2	U	ug/kg	2
Toxaphene		200	U	ug/kg	200
Aroclor-1016		38	U	ug/kg	38
Aroclor-1221		77	U	ug/kg	77
Aroclor-1232		38	U	ug/kg	38
Aroclor-1242		38	U	ug/kg	38
Aroclor-1248		38	U	ug/kg	38
Aroclor-1254		38	U	ug/kg	38
Aroclor-1260		38	U	ug/kg	38
CLP METALS AND CYANIDE	mg/kg				
Aluminum		1020		mg/kg	
Antimony		2	U	mg/kg	
Arsenic		.37	J	mg/kg	
Barium		3	J	mg/kg	
Beryllium		.07	U	mg/kg	
Cadmium		.27	U	mg/kg	
Calcium		218	U	mg/kg	
Chromium		5.4	U	mg/kg	
Cobalt		.53	U	mg/kg	
Copper		.67	U	mg/kg	
Iron		654		mg/kg	
Lead		1.1	J	mg/kg	
Magnesium		56.6	U	mg/kg	

NAS Whiting Field, Milton, Florida
Site 31 Sub-Surface Soil Data

Lab Sample Number:	RB592019			
Site	WHITING			
Locator	31B00805			
Collect Date:	22-MAY-96			
	VALUE	QUAL	UNITS	DL
Manganese	3.8	U	mg/kg	
Mercury	.03	U	mg/kg	
Nickel	1.7	U	mg/kg	
Potassium	72.2	UJ	mg/kg	
Selenium	.14	U	mg/kg	
Silver	.57	U	mg/kg	
Sodium	21.1	U	mg/kg	
Thallium	.14	U	mg/kg	
Vanadium	6.5	J	mg/kg	
Zinc	2.2	U	mg/kg	
Cyanide	.17	J	mg/kg	

APPENDIX B

SOIL BORING AND MONITORING WELL LITHOLOGIC LOGS

TITLE: NAVAL AIR STATION WHITING FIELD		**LOG of WELL:** WHF-31-1S	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 02534-09
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 02/07/97	**COMPLTD:** 02/07/97
METHOD: Hollow Stem Auger	**CASE SIZE:** 2 Inches	**SCREEN INT.:** 15 FT.	**PROTECTION LEVEL:** D
TOC ELEV.: 150.09 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 95FT.	**DPTH TO ∇** N/A FT.
LOGGED BY: C. King	**WELL DEVELOPMENT DATE:** 02/07/97		**SITE:** 31

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
							SW		
5									
10									
15									
20									
25									
30									
35									
40									
45									
50									
55									
60									

 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NAVAL AIR STATION WHITING FIELD		**LOG of WELL:** WHF-31-1S	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 02534-09
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 02/07/97	**COMPLTD:** 02/07/97
METHOD: Hollow Stem Auger	**CASE SIZE:** 2 Inches	**SCREEN INT.:** 15 FT.	**PROTECTION LEVEL:** D
TOC ELEV.: 150.09 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 95FT.	**DPTH TO ∇** N/A FT.
LOGGED BY: C. King	**WELL DEVELOPMENT DATE:** 02/07/97		**SITE:** 31

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					Continued from PAGE 1				
65							SW		
70									
75									
80									
85					85-87 Feet: SAND, fine to medium grain, slightly silty, scattered coarse grain, pinkish white with coarse grains, off-white, slightly damp.		CL	8,18,30,28	
90					90-92 Feet: SAND, coarse grain, slightly damp.			24,47,39,41	
95					95-97 Feet: SAND, fine to coarse, some very fine, pale red, slightly damp.			24,38,33,24	
100					100-102 Feet: SAND			22,38,40,40	
105					105-107 Feet: 75% CLAY, stiff, tacky, dark red with pinkish white mottling to 105.5 feet, with sand stringer at bottom 5 feet. SAND: Fine to medium with scattered coarse grain, dark red to pinkish white. Saturated in sand stringers, clay is very damp and plastic, to moist.		SW	25,27,50 30,34,50	
110							SM	10,6,8,10	
115					107-109 Feet: SAND, very fine to medium grained, scattered coarse, yellowish red, saturated. 110-112 Feet: SILTY SAND, very silty to very fine grained. White, saturated.				
120									

 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Naval Air Station Whiting Field		**LOG of WELL:** WHF-31-2S	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 02534.09
CONTRACTOR: ABB Environmental Services		**DATE STARTED:** 04/15/96	**COMPLTD:** 04/15/96
METHOD: Hollow Stem Auger	**CASE SIZE:** 2 inches	**SCREEN INT.:** 10 feet	**PROTECTION LEVEL:** D
TOC ELEV.: 122.38 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 86FT.	**DPTH TO ▽** FT.
LOGGED BY: F. Risk	**WELL DEVELOPMENT DATE:** 4/15/96		**SITE:** 31C

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1			0/0		0-0.7 feet: SAND, fine, poorly graded, moist, loose, dark gray.		SP		
2			0/0		0.7-1.2 feet: CLAY, silty, low plasticity, moist, yellowish orange.		CL		
3									
4			0/0		1.2-3.5 feet: SAND, fine, poorly, graded, some silt, moist, pale yellowish orange, loose.				
5			0/0						
6					3.5-5 feet: Same as above 1.2-3.5 feet below land surface.				
7									
8			0/0		5-6 feet: Same as above but 5-10 medium-sized gravels present.				
9									
10					6-10 feet: Same as above.				
11									
12			0/0		10-14 feet: Same as above.				
13									
14				0	14-15 feet: CLAY, light gray, plastic, medium stiff.				
15			0/0						
16			0/0		15-18 feet: SAND, gravels (5-10 millimeters) fine sand plus some silty, dark yellowish orange, damp, loose.		SP		
17									
18									
19			0/0		18-20 feet: SILT with some clay and little gravel (5-10 millimeters), loose, low plasticity, moderate reddish brown.		ML		
20				0					
21					20-25 feet: CLAY, moderate plasticity, stiff, moist, pale red.		CL		
22			0/0						
23									
24									
25					25-30 feet: No cuttings retrieved to surface, maybe a clay plug.				
26									
27			0/0						
28									
29									
30				0	30-35 feet: CLAY, silty, saturated, pale red.				
31									
32			0/0						
33									
34									
35			100/2		35-37 feet: 100% recovery.		ML	8,8,9,11	
36			0/0				CL	8,8,9,11	
37					35-35.2 feet: CLAY, some silt, pale gray.		ML	8,8,9,11	
38					35.2-35.8 feet: CLAY, moderate plasticity layered with color changing from pale gray to reddish brown.		CL		
39									
40			100/2				SW	6,7,9,7	
41			100/2	0	35.8-35.9 feet: SILT with some clay, pale yellowish orange.		OH	6,7,9,7	
42					35.9-36.6 feet: CLAY, same as 35.2-35.8 feet.		SM		
43									
44					36.6-37 feet: CLAY, soft, moist, grayish orange, fine laminations.				
45			100/2					5,6,8,6	
46			100/2		40-42 feet: Split spoon sample: 40-40.7 feet: SAND, fine to medium yellowish orange, saturated. 40.7-42 feet: CLAY, dark gray, stiff with high plasticity.		CL	5,7,9,7	
47									
48									
49									
50				0	45-47 feet: 100% recovery.			3,3,3,6	
51			10/2		45-45.7 feet: SAND, fine with clay and silt.				
52									
53					45.7-47 feet: CLAY, moderate reddish orange, medium stiff plastic, followed by stiff organic clay. The latter is dominant.				
54									
55					51.8-52 feet: CLAY, light gray, moderate plasticity, soft.				
56									
57									
58									
59									
60								4,8,11,16	

 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: Naval Air Station Whiting Field		**LOG of WELL:** WHF-31-2S	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 02534.09
CONTRACTOR: ABB Environmental Services		**DATE STARTED:** 04/15/96	**COMPLTD:** 04/15/96
METHOD: Hollow Stem Auger	**CASE SIZE:** 2 inches	**SCREEN INT.:** 10 feet	**PROTECTION LEVEL:** D
TOC ELEV.: 122.38 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 86FT.	**DPTH TO ∇** FT.
LOGGED BY: F. Risk	**WELL DEVELOPMENT DATE:** 4/15/96		**SITE:** 31C

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					Continued from PAGE 1				
61			100/2		Split spoon sample 60-62 feet.		CL	4,8,11,16	
62			100/2		60-60.7 feet: CLAY, medium to high plasticity, stiff, damp, pale gray to pale reddish brown. 60.7-62 feet: CLAY, with silt, moderate plasticity, medium stiff, yellowish orange.		CH		
63									
64									
65									
66									
67									
68									
69									
70					Split spoon sample 70-72 feet below land surface. 70-70.2 feet: No sediment recovered.			3,14,26,26	
71			92/1.80				SW	3,14,26,26	
72					70.2-70.7 feet: CLAY, medium to high plasticity, stiff (medium), pale gray to pale reddish brown.		SP		
73									
74									
75				0	70.7-72 feet: SAND, medium to fine, gravels (2-10 millimeters), colors vary from pale yellowish orange to dark reddish brown, dry.			20,20,20,30	
76			85/2						
77									
78					75-75.3 feet: No sediment recovered.		CH		
79									
80				0	75.3-77.0 feet: SAND, fine, laminated, very pale orange, saturated and dense.			3,3,20,20	
81			80/2	0			SP	3,3,20,20	
82					80.0-80.2 feet: No sediment recovered.				
83									
84					80.2-80.3 feet: CLAY, medium to high plasticity, medium stiff, pale gray to pale reddish brown.				
85									
86					80.3-82.0 feet: SAND, fine, saturated, very pale orange and dense.				
87									
88					END OF BORING AT 86 FEET BELOW LAND SURFACE.				
89									
90									
91									
92									
93									
94									
95									
96									
97									
98									
99									
100									
101									
102									
103									
104									
105									
106									
107									
108									
109									
110									
111									
112									
113									
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 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NAVAL AIR STATION WHITING FIELD		**LOG of WELL:** WHF-31-3S	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 02534-09
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 03/27/97	**COMPLTD:** 03/27/97
METHOD: Hollow Stem Auger	**CASE SIZE:** 2 Inches	**SCREEN INT.:** 15 FT.	**PROTECTION LEVEL:** D
TOC ELEV.: 105.49 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 52FT.	**DPTH TO ∇** 67.74 FT.
LOGGED BY: J. Williams	**WELL DEVELOPMENT DATE:** 03/27/97		**SITE:** 31

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
5–7			1.8/2	<1	5-7 Feet: CLAYEY SAND, orangish brown, low plastic, firm to medium, little trace clay, graded, no odor.		SC	3,3,3,5	
10–12			1.5/2	<1	10-12 Feet: CLAYEY SAND, as above, no odor.			4,7,8,14	
15–17			2/2	<1	15-17 Feet: SILTY SAND: Light orange-brown, firm to medium, trace clay, brown, firm to medium, trace clay, little silt, trace coarse sand, no odor.		SP	5,7,11,15	
20–22			2/2	0	20-22 Feet: SAND, light orange-brown, as above, no odor.			4,7,9,10	
25–27			1.8/2	<1	25-27 Feet: Top 20 inches are sand as above, bottom 2 inches are clayey sand, light gray and light orange-brown.			5,7,9,12	
30–32			1.6/2	23	30-32 Feet: Bottom 2-3 inches are clay, light orange and gray, high plastic, and clayey gravel, dark reddish purple, small gravel and coarse sand, little silt and clay. Upper 16-17 inches are orange-brown sand, mostly medium to coarse sand finning up to firm to medium sand, graded to poorly graded, wet, no odor.		CL	7,7,7,9	
35–37			2/2	0	35-37 Feet: Top 7-8 inches are orange-brown sand and sandy clay with dark red coarse sand and gravel at bottom. Then 2-3 inches of dark red and light gray mottled clay, high plastic, then light orange-brown to light brown medium coarse sand and firm to medium sand at the bottom, coarsening up, wet, no odor.		SC	2,2,7,9	
40–42			2/2	0	40-42 Feet: Top 14 inches are sandy clay, light orange-brown, light gray to light red, low to medium plastic, mottled, mostly firm to medium sand. Lower 10 inches are sand, light gray to white, fine sand, poorly graded, little medium sand, trace mica and dark minerals, no odor, wet.			5,7,15,20	
45–47			1.4/2	0	45-47 Feet: SAND, light gray, light red and yellow-orange, medium to firm sand, graded to poorly graded, trace coarse sand, silt, mica and dark minerals, no odor, wet.		SP	3,5,8,9	
50–52			.9/2	0	50-52 Feet: SAND, light gray to light brown, firm to medium, poorly graded, mica, dark minerals, no odor, wet.			7,12,18,17	

 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NAVAL AIR STATION WHITING FIELD	LOG of WELL: WHF-31-4S	BORING NO.
CLIENT: SOUTHNAVFACENGCOM		PROJECT NO: 02534-09
CONTRACTOR: Groundwater Protection Inc.	DATE STARTED: 06/19/96	COMPLTD: 06/19/96
METHOD: Hollow Stem Auger	CASE SIZE: 2 Inches	SCREEN INT.: 15 FT.	PROTECTION LEVEL: D
TOC ELEV.: 106.91 FT.	MONITOR INST.: OVA	TOT DPTH: 70FT.	DPTH TO ▽ 65.5 FT.
LOGGED BY: C. King	WELL DEVELOPMENT DATE: 06/19/96	SITE: 31

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1							SP		
2									
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 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NAVAL AIR STATION WHITING FIELD		**LOG of WELL:** WHF-31-4S	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 02534-09
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 06/19/96	**COMPLTD:** 06/19/96
METHOD: Hollow Stem Auger	**CASE SIZE:** 2 Inches	**SCREEN INT.:** 15 FT.	**PROTECTION LEVEL:** D
TOC ELEV.: 106.91 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 70FT.	**DPTH TO ▽** 65.5 FT.
LOGGED BY: C. King	**WELL DEVELOPMENT DATE:** 06/19/96		**SITE:** 31

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					Continued from PAGE 1				
61							SP		
62									
63									
64					64-66 Feet: Silty to fine SAND, saturated, moderate sorting.				
65									▽
66									
67									
68									
69					69-71 Feet: Fine SAND to fine to medium sand, scattered coarse grain throughout, some very coarse, poorly sorted, saturated.				
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TITLE: NAVAL AIR STATION WHITING FIELD		**LOG of WELL:** WHF-31-4I	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 02534-09
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 06/20/96	**COMPLTD:** 06/20/96
METHOD: Hollow Stem Auger	**CASE SIZE:** 2 Inches	**SCREEN INT.:** 15 FT.	**PROTECTION LEVEL:** D
TOC ELEV.: 107.36 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 100FT.	**DPTH TO ▽** 65.5 FT.
LOGGED BY: B. Svendsen	**WELL DEVELOPMENT DATE:** 06/20/96		**SITE:** 31

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1							SP		
2									
3									
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 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NAVAL AIR STATION WHITING FIELD		**LOG of WELL:** WHF-31-4I	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 02534-09
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 06/20/96	**COMPLTD:** 06/20/96
METHOD: Hollow Stem Auger	**CASE SIZE:** 2 Inches	**SCREEN INT.:** 15 FT.	**PROTECTION LEVEL:** D
TOC ELEV.: 107.36 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 100FT.	**DPTH TO ∇** 65.5 FT.
LOGGED BY: B. Svendsen	**WELL DEVELOPMENT DATE:** 06/20/96		**SITE:** 31

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					Continued from PAGE 1				
61							SP		
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68									
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94					94-96 Feet: SAND, fine to medium grained, dense, saturated, light brown.				
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TITLE: NAVAL AIR STATION WHITING FIELD	**LOG of WELL:** WHF-31-4D	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM		**PROJECT NO:** 02534-09
CONTRACTOR: Groundwater Protection Inc.	**DATE STARTED:** 06/20/96	**COMPLTD:** 06/20/96
METHOD: Hollow Stem Auger	**CASE SIZE:** 2 Inches	**SCREEN INT.:** 15 FT.	**PROTECTION LEVEL:** D
TOC ELEV.: 107.22 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 140FT.	**DPTH TO ▽** 68.17 FT.
LOGGED BY: B. Svendson	**WELL DEVELOPMENT DATE:** 06/20/96	**SITE:** 31

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
1							SP		
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 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NAVAL AIR STATION WHITING FIELD		**LOG of WELL:** WHF-31-4D	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 02534-09
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 06/20/96	**COMPLTD:** 06/20/96
METHOD: Hollow Stem Auger	**CASE SIZE:** 2 Inches	**SCREEN INT.:** 15 FT.	**PROTECTION LEVEL:** D
TOC ELEV.: 107.22 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 140FT.	**DPTH TO ∇** 68.17 FT.
LOGGED BY: B. Svendson	**WELL DEVELOPMENT DATE:** 06/20/96		**SITE:** 31

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					Continued from PAGE 1				
61							SP		
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 ABB ENVIRONMENTAL SERVICES, INC.

TITLE: NAVAL AIR STATION WHITING FIELD		**LOG of WELL:** WHF-31-4D	**BORING NO.**
CLIENT: SOUTHNAVFACENGCOM			**PROJECT NO:** 02534-09
CONTRACTOR: Groundwater Protection Inc.		**DATE STARTED:** 06/20/96	**COMPLTD:** 06/20/96
METHOD: Hollow Stem Auger	**CASE SIZE:** 2 Inches	**SCREEN INT.:** 15 FT.	**PROTECTION LEVEL:** D
TOC ELEV.: 107.22 FT.	**MONITOR INST.:** OVA	**TOT DPTH:** 140FT.	**DPTH TO ▽** 68.17 FT.
LOGGED BY: B. Svendson	**WELL DEVELOPMENT DATE:** 06/20/96		**SITE:** 31

DEPTH FT.	LABORATORY SAMPLE ID.	SAMPLE	RECOVERY	HEADSPACE (ppm)	SOIL/ROCK DESCRIPTION AND COMMENTS	LITHOLOGIC SYMBOL	SOIL CLASS	BLOWS/6-IN	WELL DATA
					Continued from PAGE 2				
121									
122									
123									
124					124-126 Feet: Top 12 inches are SANDY CLAY, mottled dark red to gray, fine grained, very stiff. Following 12 inches are silty clay, light gray, very stiff, fine grained.			12,14,16,15	
125			2/2						
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APPENDIX C

GROUNDWATER ANALYTICAL DATA

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:		ME241003				ME241003				ME241004				ME241004		
Site		WHITING				WHITING				WHITING				WHITING		
Locator		31G00101				31G00101				31G00101D				31G00101D		
Collect Date:		15-JUL-97				15-JUL-97				15-JUL-97				15-JUL-97		
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/l																
Chloromethane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Bromomethane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Vinyl chloride		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Chloroethane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Methylene chloride		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Acetone		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Carbon disulfide		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,1-Dichloroethene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,1-Dichloroethane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,2-Dichloroethene (total)		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Chloroform		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,2-Dichloroethane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2-Butanone		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,1,1-Trichloroethane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Carbon tetrachloride		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Bromodichloromethane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,2-Dichloropropane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
cis-1,3-Dichloropropene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Trichloroethene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Dibromochloromethane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,1,2-Trichloroethane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Benzene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
trans-1,3-Dichloropropene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Bromoform		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Methyl-2-pentanone		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2-Hexanone		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Tetrachloroethene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Toluene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,1,2,2-Tetrachloroethane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Chlorobenzene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Ethylbenzene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Styrene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Xylenes (total)		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
CLP SEMIVOLATILES 90-SOW	ug/l																
Phenol		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
bis(2-Chloroethyl) ether		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2-Chlorophenol		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,3-Dichlorobenzene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,4-Dichlorobenzene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,2-Dichlorobenzene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2-Methylphenol		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,2-oxybis(1-Chloropropane)		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Methylphenol		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
N-Nitroso-di-n-propylamine		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Hexachloroethane		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Nitrobenzene		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Isophorone		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2-Nitrophenol		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4-Dimethylphenol		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:	ME241003				ME241003				ME241004				ME241004			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31G00101				31G00101				31G00101D				31G00101D			
Collect Date:	15-JUL-97				15-JUL-97				15-JUL-97				15-JUL-97			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
bis(2-Chloroethoxy) methane	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4-Dichlorophenol	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
1,2,4-Trichlorobenzene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Naphthalene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Chloroaniline	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Hexachlorobutadiene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Chloro-3-methylphenol	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2-Methylnaphthalene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Hexachlorocyclopentadiene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4,6-Trichlorophenol	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4,5-Trichlorophenol	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
2-Chloronaphthalene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2-Nitroaniline	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
Dimethylphthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Acenaphthylene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,6-Dinitrotoluene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
3-Nitroaniline	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
Acenaphthene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4-Dinitrophenol	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
4-Nitrophenol	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
Dibenzofuran	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
2,4-Dinitrotoluene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Diethylphthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Chlorophenyl-phenylether	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Fluorene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Nitroaniline	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
4,6-Dinitro-2-methylphenol	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
N-Nitrosodiphenylamine	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
4-Bromophenyl-phenylether	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Hexachlorobenzene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Pentachlorophenol	25	U	ug/l	25	-		ug/l		25	U	ug/l	25	-		ug/l	
Phenanthrene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Anthracene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Carbazole	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Di-n-butylphthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Fluoranthene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Pyrene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Butylbenzylphthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
3,3-Dichlorobenzidine	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Benzo (a) anthracene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Chrysene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
bis(2-Ethylhexyl) phthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Di-n-octylphthalate	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Benzo (b) fluoranthene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Benzo (k) fluoranthene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Benzo (a) pyrene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Indeno (1,2,3-cd) pyrene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Dibenzo (a,h) anthracene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Benzo (g,h,i) perylene	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
CLP PESTICIDES/PCBS 90-SOW ug/l																
alpha-BHC	-		ug/l		.05	UJ	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:		ME241003				ME241003				ME241004				ME241004			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31G00101				31G00101				31G00101D				31G00101D			
Collect Date:		15-JUL-97				15-JUL-97				15-JUL-97				15-JUL-97			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
beta-BHC		-		ug/l		.05	UJ	ug/l	.05	-		ug/l		.05	U	ug/l	.05
delta-BHC		-		ug/l		.05	UJ	ug/l	.05	-		ug/l		.05	U	ug/l	.05
gamma-BHC (Lindane)		-		ug/l		.05	UJ	ug/l	.05	-		ug/l		.05	UJ	ug/l	.05
Heptachlor		-		ug/l		.05	UJ	ug/l	.05	-		ug/l		.05	U	ug/l	.05
Aldrin		-		ug/l		.05	UJ	ug/l	.05	-		ug/l		.05	U	ug/l	.05
Heptachlor epoxide		-		ug/l		.05	UJ	ug/l	.05	-		ug/l		.05	U	ug/l	.05
Endosulfan I		-		ug/l		.05	UJ	ug/l	.05	-		ug/l		.05	U	ug/l	.05
Dieldrin		-		ug/l		.1	UJ	ug/l	.1	-		ug/l		.1	U	ug/l	.1
4,4-DDE		-		ug/l		.1	UJ	ug/l	.1	-		ug/l		.1	U	ug/l	.1
Endrin		-		ug/l		.1	UJ	ug/l	.1	-		ug/l		.1	U	ug/l	.1
Endosulfan II		-		ug/l		.1	UJ	ug/l	.1	-		ug/l		.1	U	ug/l	.1
4,4-DDD		-		ug/l		.1	UJ	ug/l	.1	-		ug/l		.1	U	ug/l	.1
Endosulfan sulfate		-		ug/l		.1	UJ	ug/l	.1	-		ug/l		.1	U	ug/l	.1
4,4-DDT		-		ug/l		.1	UJ	ug/l	.1	-		ug/l		.1	U	ug/l	.1
Methoxychlor		-		ug/l		.5	UJ	ug/l	.5	-		ug/l		.5	U	ug/l	.5
Endrin ketone		-		ug/l		.1	UJ	ug/l	.1	-		ug/l		.1	U	ug/l	.1
Endrin aldehyde		-		ug/l		.1	UJ	ug/l	.1	-		ug/l		.1	U	ug/l	.1
alpha-Chlordane		-		ug/l		.05	UJ	ug/l	.05	-		ug/l		.05	U	ug/l	.05
gamma-Chlordane		-		ug/l		.05	UJ	ug/l	.05	-		ug/l		.05	U	ug/l	.05
Toxaphene		-		ug/l		5	UJ	ug/l	5	-		ug/l		5	U	ug/l	5
Aroclor-1016		-		ug/l		1	UJ	ug/l	1	-		ug/l		1	U	ug/l	1
Aroclor-1221		-		ug/l		2	UJ	ug/l	2	-		ug/l		2	U	ug/l	2
Aroclor-1232		-		ug/l		1	UJ	ug/l	1	-		ug/l		1	U	ug/l	1
Aroclor-1242		-		ug/l		1	UJ	ug/l	1	-		ug/l		1	U	ug/l	1
Aroclor-1248		-		ug/l		1	UJ	ug/l	1	-		ug/l		1	U	ug/l	1
Aroclor-1254		-		ug/l		1	UJ	ug/l	1	-		ug/l		1	U	ug/l	1
Aroclor-1260		-		ug/l		1	UJ	ug/l	1	-		ug/l		1	U	ug/l	1
CLP METALS AND CYANIDE	ug/l																
Aluminum		96	J	ug/l	200	-		ug/l		91.1	J	ug/l	200	-		ug/l	
Antimony		60	U	ug/l	60	-		ug/l		60	U	ug/l	60	-		ug/l	
Arsenic		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Barium		22.6	J	ug/l	200	-		ug/l		22.5	J	ug/l	200	-		ug/l	
Beryllium		5	U	ug/l	5	-		ug/l		5	U	ug/l	5	-		ug/l	
Cadmium		5	U	ug/l	5	-		ug/l		5	U	ug/l	5	-		ug/l	
Calcium		857	J	ug/l	5000	-		ug/l		851	J	ug/l	5000	-		ug/l	
Chromium		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Cobalt		50	U	ug/l	50	-		ug/l		50	U	ug/l	50	-		ug/l	
Copper		25	U	ug/l	25	-		ug/l		1.4	J	ug/l	25	-		ug/l	
Iron		120		ug/l	100	-		ug/l		103		ug/l	100	-		ug/l	
Lead		3	U	ug/l	3	-		ug/l		3	U	ug/l	3	-		ug/l	
Magnesium		662	J	ug/l	5000	-		ug/l		675	J	ug/l	5000	-		ug/l	
Manganese		9.7	J	ug/l	15	-		ug/l		9.9	J	ug/l	15	-		ug/l	
Mercury		.2	U	ug/l	.2	-		ug/l		.2	U	ug/l	.2	-		ug/l	
Nickel		40	U	ug/l	40	-		ug/l		40	U	ug/l	40	-		ug/l	
Potassium		1910	J	ug/l	5000	-		ug/l		2200	J	ug/l	5000	-		ug/l	
Selenium		5	U	ug/l	5	-		ug/l		5	U	ug/l	5	-		ug/l	
Silver		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Sodium		1760	J	ug/l	5000	-		ug/l		1890	J	ug/l	5000	-		ug/l	
Thallium		10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	
Vanadium		1.8	J	ug/l	50	-		ug/l		50	U	ug/l	50	-		ug/l	
Zinc		20	U	ug/l	20	-		ug/l		20	U	ug/l	20	-		ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:	ME241003				ME241003				ME241004				ME241004			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31G00101				31G00101				31G00101D				31G00101D			
Collect Date:	15-JUL-97				15-JUL-97				15-JUL-97				15-JUL-97			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Cyanide	10	U	ug/l	10	-		ug/l		10	U	ug/l	10	-		ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:		MC262005			ME305002			MC262006			MC284002		
Site		WHITING			WHITING			WHITING			WHITING		
Locator		31G00201			31G00201			31G00201F			31G00301		
Collect Date:		30-OCT-96			21-JUL-97			30-OCT-96			31-OCT-96		
		VALUE QUAL	UNITS	DL	VALUE QUAL	UNITS	DL	VALUE QUAL	UNITS	DL	VALUE QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/l												
Chloromethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Bromomethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Vinyl chloride		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Chloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Methylene chloride		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Acetone		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Carbon disulfide		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,1-Dichloroethene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,1-Dichloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,2-Dichloroethene (total)		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Chloroform		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,2-Dichloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
2-Butanone		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,1,1-Trichloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Carbon tetrachloride		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Bromodichloromethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,2-Dichloropropane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
cis-1,3-Dichloropropene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Trichloroethene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Dibromochloromethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,1,2-Trichloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Benzene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
trans-1,3-Dichloropropene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Bromoform		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
4-Methyl-2-pentanone		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
2-Hexanone		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Tetrachloroethene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Toluene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,1,2,2-Tetrachloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Chlorobenzene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Ethylbenzene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Styrene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Xylenes (total)		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
CLP SEMIVOLATILES 90-SOW	ug/l												
Phenol		10 U	ug/l	10	-	ug/l		-	ug/l		10 U	ug/l	10
bis(2-Chloroethyl) ether		10 U	ug/l	10	-	ug/l		-	ug/l		10 U	ug/l	10
2-Chlorophenol		10 U	ug/l	10	-	ug/l		-	ug/l		10 U	ug/l	10
1,3-Dichlorobenzene		10 U	ug/l	10	-	ug/l		-	ug/l		10 U	ug/l	10
1,4-Dichlorobenzene		10 UJ	ug/l	10	-	ug/l		-	ug/l		10 UJ	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:	MC262005				ME305002				MC262006				MC284002			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31G00201				31G00201				31G00201F				31G00301			
Collect Date:	30-OCT-96				21-JUL-97				30-OCT-96				31-OCT-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2-Methylphenol	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2,2-oxybis(1-Chloropropane)	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
4-Methylphenol	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
N-Nitroso-di-n-propylamine	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Hexachloroethane	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Nitrobenzene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Isophorone	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2-Nitrophenol	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2,4-Dimethylphenol	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
bis(2-Chloroethoxy) methane	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2,4-Dichlorophenol	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
1,2,4-Trichlorobenzene	10	UJ	ug/l	10	-		ug/l		-		ug/l		10	UJ	ug/l	10
Naphthalene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
4-Chloroaniline	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Hexachlorobutadiene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
4-Chloro-3-methylphenol	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2-Methylnaphthalene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Hexachlorocyclopentadiene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2,4,6-Trichlorophenol	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2,4,5-Trichlorophenol	25	U	ug/l	25	-		ug/l		-		ug/l		25	U	ug/l	25
2-Chloronaphthalene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2-Nitroaniline	25	U	ug/l	25	-		ug/l		-		ug/l		25	U	ug/l	25
Dimethylphthalate	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Acenaphthylene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2,6-Dinitrotoluene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
3-Nitroaniline	25	U	ug/l	25	-		ug/l		-		ug/l		25	U	ug/l	25
Acenaphthene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2,4-Dinitrophenol	25	U	ug/l	25	-		ug/l		-		ug/l		25	U	ug/l	25
4-Nitrophenol	25	U	ug/l	25	-		ug/l		-		ug/l		25	U	ug/l	25
Dibenzofuran	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
2,4-Dinitrotoluene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Diethylphthalate	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
4-Chlorophenyl-phenylether	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Fluorene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
4-Nitroaniline	25	U	ug/l	25	-		ug/l		-		ug/l		25	U	ug/l	25
4,6-Dinitro-2-methylphenol	25	U	ug/l	25	-		ug/l		-		ug/l		25	U	ug/l	25
N-Nitrosodiphenylamine	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
4-Bromophenyl-phenylether	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Hexachlorobenzene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Pentachlorophenol	25	U	ug/l	25	-		ug/l		-		ug/l		25	U	ug/l	25
Phenanthrene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Anthracene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Carbazole	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Di-n-butylphthalate	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Fluoranthene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Pyrene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Butylbenzylphthalate	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
3,3-Dichlorobenzidine	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Benzo (a) anthracene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Chrysene	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
bis(2-Ethylhexyl) phthalate	10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:		MC262005				ME305002				MC262006				MC284002			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31G00201				31G00201				31G00201F				31G00301			
Collect Date:		30-OCT-96				21-JUL-97				30-OCT-96				31-OCT-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		10	UJ	ug/l	10	-		ug/l		-		ug/l		10	UJ	ug/l	10
Benzo (b) fluoranthene		10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Benzo (k) fluoranthene		10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Benzo (a) pyrene		10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Indeno (1,2,3-cd) pyrene		10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Dibenzo (a,h) anthracene		10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
Benzo (g,h,i) perylene		10	U	ug/l	10	-		ug/l		-		ug/l		10	U	ug/l	10
CLP PESTICIDES/PCBS 90-SOW	ug/l																
alpha-BHC		.05	UJ	ug/l	.05	-		ug/l		-		ug/l		.05	UJ	ug/l	.05
beta-BHC		.05	U	ug/l	.05	-		ug/l		-		ug/l		.05	U	ug/l	.05
delta-BHC		.05	U	ug/l	.05	-		ug/l		-		ug/l		.05	U	ug/l	.05
gamma-BHC (Lindane)		.05	U	ug/l	.05	-		ug/l		-		ug/l		.05	U	ug/l	.05
Heptachlor		.05	U	ug/l	.05	-		ug/l		-		ug/l		.05	U	ug/l	.05
Aldrin		.05	U	ug/l	.05	-		ug/l		-		ug/l		.05	U	ug/l	.05
Heptachlor epoxide		.05	U	ug/l	.05	-		ug/l		-		ug/l		.05	U	ug/l	.05
Endosulfan I		.05	U	ug/l	.05	-		ug/l		-		ug/l		.05	U	ug/l	.05
Dieldrin		.1	U	ug/l	.1	-		ug/l		-		ug/l		.1	U	ug/l	.1
4,4-DDE		.1	U	ug/l	.1	-		ug/l		-		ug/l		.1	U	ug/l	.1
Endrin		.1	U	ug/l	.1	-		ug/l		-		ug/l		.1	U	ug/l	.1
Endosulfan II		.1	U	ug/l	.1	-		ug/l		-		ug/l		.1	U	ug/l	.1
4,4-DDD		.1	U	ug/l	.1	-		ug/l		-		ug/l		.1	U	ug/l	.1
Endosulfan sulfate		.1	U	ug/l	.1	-		ug/l		-		ug/l		.1	U	ug/l	.1
4,4-DDT		.1	U	ug/l	.1	-		ug/l		-		ug/l		.1	U	ug/l	.1
Methoxychlor		.5	U	ug/l	.5	-		ug/l		-		ug/l		.5	U	ug/l	.5
Endrin ketone		.1	U	ug/l	.1	-		ug/l		-		ug/l		.1	U	ug/l	.1
Endrin aldehyde		.1	U	ug/l	.1	-		ug/l		-		ug/l		.1	U	ug/l	.1
alpha-Chlordane		.05	U	ug/l	.05	-		ug/l		-		ug/l		.05	U	ug/l	.05
gamma-Chlordane		.05	U	ug/l	.05	-		ug/l		-		ug/l		.05	U	ug/l	.05
Toxaphene		5	U	ug/l	5	-		ug/l		-		ug/l		5	U	ug/l	5
Aroclor-1016		1	U	ug/l	1	-		ug/l		-		ug/l		1	U	ug/l	1
Aroclor-1221		2	U	ug/l	2	-		ug/l		-		ug/l		2	U	ug/l	2
Aroclor-1232		1	U	ug/l	1	-		ug/l		-		ug/l		1	U	ug/l	1
Aroclor-1242		1	U	ug/l	1	-		ug/l		-		ug/l		1	U	ug/l	1
Aroclor-1248		1	U	ug/l	1	-		ug/l		-		ug/l		1	U	ug/l	1
Aroclor-1254		1	U	ug/l	1	-		ug/l		-		ug/l		1	U	ug/l	1
Aroclor-1260		1	U	ug/l	1	-		ug/l		-		ug/l		1	U	ug/l	1
CLP METALS AND CYANIDE	ug/l																
Aluminum		114	U	ug/l		-		ug/l		90.2	U	ug/l		37.7	U	ug/l	
Antimony		3.4	U	ug/l		-		ug/l		3.4	U	ug/l		3.4	U	ug/l	
Arsenic		5.2	U	ug/l		-		ug/l		5.2	U	ug/l		5.2	U	ug/l	
Barium		55.4	J	ug/l		-		ug/l		53.9	J	ug/l		31.2	J	ug/l	
Beryllium		.12	U	ug/l		-		ug/l		.35	U	ug/l		.11	U	ug/l	
Cadmium		.38	U	ug/l		-		ug/l		.4	U	ug/l		.38	U	ug/l	
Calcium		2090	J	ug/l		-		ug/l		2060	J	ug/l		1960	J	ug/l	
Chromium		1.5	U	ug/l		-		ug/l		8.5	J	ug/l		.51	U	ug/l	
Cobalt		1.3	U	ug/l		-		ug/l		1.6	J	ug/l		.32	U	ug/l	
Copper		1.7	U	ug/l		-		ug/l		1.7	U	ug/l		1.7	U	ug/l	
Iron		31.8	U	ug/l		-		ug/l		57	J	ug/l		31.8	U	ug/l	
Lead		2	U	ug/l		-		ug/l		2	U	ug/l		2	U	ug/l	
Magnesium		1450	J	ug/l		-		ug/l		1470	J	ug/l		920	J	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:	MC262005				ME305002				MC262006				MC284002			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31G00201				31G00201				31G00201F				31G00301			
Collect Date:	30-OCT-96				21-JUL-97				30-OCT-96				31-OCT-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	20.9	J	ug/l		-		ug/l		22.2	J	ug/l		4.9	UJ	ug/l	
Mercury	.02	U	ug/l		-		ug/l		.01	U	ug/l		.02	U	ug/l	
Nickel	2	J	ug/l		-		ug/l		2.1	J	ug/l		1.2	U	ug/l	
Potassium	2790	U	ug/l		-		ug/l		2640	U	ug/l		2090	U	ug/l	
Selenium	3.9	U	ug/l		-		ug/l		3.9	U	ug/l		3.9	U	ug/l	
Silver	.85	U	ug/l		-		ug/l		.85	U	ug/l		.85	U	ug/l	
Sodium	949	U	ug/l		-		ug/l		1030	U	ug/l		1030	U	ug/l	
Thallium	1.9	U	ug/l		-		ug/l		1.9	U	ug/l		1.9	U	ug/l	
Vanadium	.58	U	ug/l		-		ug/l		.79	U	ug/l		.58	U	ug/l	
Zinc	9.4	J	ug/l		-		ug/l		8.2	J	ug/l		3.6	U	ug/l	
Cyanide	.83	U	ug/l		-		ug/l		-		ug/l		7.9		ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:		ME261005			ME261002			ME261002			MC284003		
Site		WHITING			WHITING			WHITING			WHITING		
Locator		31G00301			31G00401			31G00401			31G00402		
Collect Date:		16-JUL-97			16-JUL-97			16-JUL-97			31-OCT-96		
		VALUE QUAL	UNITS	DL	VALUE QUAL	UNITS	DL	VALUE QUAL	UNITS	DL	VALUE QUAL	UNITS	DL
CLP VOLATILES 90-SOW	ug/l												
Chloromethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Bromomethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Vinyl chloride		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Chloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Methylene chloride		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Acetone		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Carbon disulfide		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,1-Dichloroethene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,1-Dichloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,2-Dichloroethene (total)		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Chloroform		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,2-Dichloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
2-Butanone		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,1,1-Trichloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Carbon tetrachloride		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Bromodichloromethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,2-Dichloropropane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
cis-1,3-Dichloropropene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Trichloroethene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Dibromochloromethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,1,2-Trichloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Benzene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
trans-1,3-Dichloropropene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Bromoform		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
4-Methyl-2-pentanone		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
2-Hexanone		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Tetrachloroethene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Toluene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,1,2,2-Tetrachloroethane		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Chlorobenzene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Ethylbenzene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Styrene		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
Xylenes (total)		10 U	ug/l	10	10 U	ug/l	10	-	ug/l		10 U	ug/l	10
CLP SEMIVOLATILES 90-SOW	ug/l												
Phenol		-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
bis(2-Chloroethyl) ether		-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
2-Chlorophenol		-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,3-Dichlorobenzene		-	ug/l		10 U	ug/l	10	-	ug/l		10 U	ug/l	10
1,4-Dichlorobenzene		-	ug/l		10 U	ug/l	10	-	ug/l		10 UJ	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:	ME261005				ME261002				ME261002				MC284003			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31G00301				31G00401				31G00401				31G00402			
Collect Date:	16-JUL-97				16-JUL-97				16-JUL-97				31-OCT-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
1,2-Dichlorobenzene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2-Methylphenol	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2,2-oxybis(1-Chloropropane)	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
4-Methylphenol	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
N-Nitroso-di-n-propylamine	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Hexachloroethane	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Nitrobenzene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Isophorone	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2-Nitrophenol	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2,4-Dimethylphenol	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
bis(2-Chloroethoxy) methane	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2,4-Dichlorophenol	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
1,2,4-Trichlorobenzene	-		ug/l		10	U	ug/l	10	-		ug/l		10	UJ	ug/l	10
Naphthalene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
4-Chloroaniline	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Hexachlorobutadiene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
4-Chloro-3-methylphenol	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2-Methylnaphthalene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Hexachlorocyclopentadiene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2,4,6-Trichlorophenol	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2,4,5-Trichlorophenol	-		ug/l		25	U	ug/l	25	-		ug/l		25	U	ug/l	25
2-Chloronaphthalene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2-Nitroaniline	-		ug/l		25	U	ug/l	25	-		ug/l		25	U	ug/l	25
Dimethylphthalate	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Acenaphthylene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2,6-Dinitrotoluene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
3-Nitroaniline	-		ug/l		25	U	ug/l	25	-		ug/l		25	U	ug/l	25
Acenaphthene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2,4-Dinitrophenol	-		ug/l		25	U	ug/l	25	-		ug/l		25	U	ug/l	25
4-Nitrophenol	-		ug/l		25	U	ug/l	25	-		ug/l		25	U	ug/l	25
Dibenzofuran	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
2,4-Dinitrotoluene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Diethylphthalate	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
4-Chlorophenyl-phenylether	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Fluorene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
4-Nitroaniline	-		ug/l		25	U	ug/l	25	-		ug/l		25	U	ug/l	25
4,6-Dinitro-2-methylphenol	-		ug/l		25	U	ug/l	25	-		ug/l		25	U	ug/l	25
N-Nitrosodiphenylamine	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
4-Bromophenyl-phenylether	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Hexachlorobenzene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Pentachlorophenol	-		ug/l		25	U	ug/l	25	-		ug/l		25	U	ug/l	25
Phenanthrene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Anthracene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Carbazole	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Di-n-butylphthalate	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Fluoranthene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Pyrene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Butylbenzylphthalate	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
3,3-Dichlorobenzidine	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Benzo (a) anthracene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Chrysene	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
bis(2-Ethylhexyl) phthalate	-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:		ME261005				ME261002				ME261002				MC284003			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31G00301				31G00401				31G00401				31G00402			
Collect Date:		16-JUL-97				16-JUL-97				16-JUL-97				31-OCT-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		-		ug/l		10	U	ug/l	10	-		ug/l		10	UJ	ug/l	10
Benzo (b) fluoranthene		-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Benzo (k) fluoranthene		-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Benzo (a) pyrene		-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Indeno (1,2,3-cd) pyrene		-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Dibenzo (a,h) anthracene		-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
Benzo (g,h,i) perylene		-		ug/l		10	U	ug/l	10	-		ug/l		10	U	ug/l	10
CLP PESTICIDES/PCBS 90-SOW	ug/l																
alpha-BHC		-		ug/l		-		ug/l		.05	UJ	ug/l	.05	.05	UJ	ug/l	.05
beta-BHC		-		ug/l		-		ug/l		.05	U	ug/l	.05	.05	U	ug/l	.05
delta-BHC		-		ug/l		-		ug/l		.05	U	ug/l	.05	.05	U	ug/l	.05
gamma-BHC (Lindane)		-		ug/l		-		ug/l		.05	UJ	ug/l	.05	.05	U	ug/l	.05
Heptachlor		-		ug/l		-		ug/l		.05	U	ug/l	.05	.05	U	ug/l	.05
Aldrin		-		ug/l		-		ug/l		.05	U	ug/l	.05	.05	U	ug/l	.05
Heptachlor epoxide		-		ug/l		-		ug/l		.05	U	ug/l	.05	.05	U	ug/l	.05
Endosulfan I		-		ug/l		-		ug/l		.05	U	ug/l	.05	.05	U	ug/l	.05
Dieldrin		-		ug/l		-		ug/l		.1	U	ug/l	.1	.1	U	ug/l	.1
4,4-DDE		-		ug/l		-		ug/l		.1	U	ug/l	.1	.1	U	ug/l	.1
Endrin		-		ug/l		-		ug/l		.1	U	ug/l	.1	.1	U	ug/l	.1
Endosulfan II		-		ug/l		-		ug/l		.1	U	ug/l	.1	.1	U	ug/l	.1
4,4-DDD		-		ug/l		-		ug/l		.1	U	ug/l	.1	.1	U	ug/l	.1
Endosulfan sulfate		-		ug/l		-		ug/l		.1	U	ug/l	.1	.1	U	ug/l	.1
4,4-DDT		-		ug/l		-		ug/l		.1	U	ug/l	.1	.1	U	ug/l	.1
Methoxychlor		-		ug/l		-		ug/l		.5	U	ug/l	.5	.5	U	ug/l	.5
Endrin ketone		-		ug/l		-		ug/l		.1	U	ug/l	.1	.1	U	ug/l	.1
Endrin aldehyde		-		ug/l		-		ug/l		.1	U	ug/l	.1	.1	U	ug/l	.1
alpha-Chlordane		-		ug/l		-		ug/l		.05	U	ug/l	.05	.05	U	ug/l	.05
gamma-Chlordane		-		ug/l		-		ug/l		.05	U	ug/l	.05	.05	U	ug/l	.05
Toxaphene		-		ug/l		-		ug/l		5	U	ug/l	5	5	U	ug/l	5
Aroclor-1016		-		ug/l		-		ug/l		1	U	ug/l	1	1	U	ug/l	1
Aroclor-1221		-		ug/l		-		ug/l		2	U	ug/l	2	2	U	ug/l	2
Aroclor-1232		-		ug/l		-		ug/l		1	U	ug/l	1	1	U	ug/l	1
Aroclor-1242		-		ug/l		-		ug/l		1	U	ug/l	1	1	U	ug/l	1
Aroclor-1248		-		ug/l		-		ug/l		1	U	ug/l	1	1	U	ug/l	1
Aroclor-1254		-		ug/l		-		ug/l		1	U	ug/l	1	1	U	ug/l	1
Aroclor-1260		-		ug/l		-		ug/l		1	U	ug/l	1	1	U	ug/l	1
CLP METALS AND CYANIDE	ug/l																
Aluminum		-		ug/l		93.7	J	ug/l	200	-		ug/l		16.5	U	ug/l	
Antimony		-		ug/l		60	U	ug/l	60	-		ug/l		3.4	U	ug/l	
Arsenic		-		ug/l		10	U	ug/l	10	-		ug/l		5.2	U	ug/l	
Barium		-		ug/l		30.8	J	ug/l	200	-		ug/l		8.9	J	ug/l	
Beryllium		-		ug/l		5	U	ug/l	5	-		ug/l		.11	U	ug/l	
Cadmium		-		ug/l		5	U	ug/l	5	-		ug/l		.38	U	ug/l	
Calcium		-		ug/l		697	J	ug/l	5000	-		ug/l		545	J	ug/l	
Chromium		-		ug/l		10	U	ug/l	10	-		ug/l		.54	U	ug/l	
Cobalt		-		ug/l		50	U	ug/l	50	-		ug/l		.39	U	ug/l	
Copper		-		ug/l		3.8	J	ug/l	25	-		ug/l		1.7	U	ug/l	
Iron		-		ug/l		41.6	J	ug/l	100	-		ug/l		31.8	U	ug/l	
Lead		-		ug/l		3	U	ug/l	3	-		ug/l		2	U	ug/l	
Magnesium		-		ug/l		731	J	ug/l	5000	-		ug/l		335	J	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:	ME261005				ME261002				ME261002				MC284003			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31G00301				31G00401				31G00401				31G00402			
Collect Date:	16-JUL-97				16-JUL-97				16-JUL-97				31-OCT-96			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	-		ug/l		5.4	J	ug/l	15	-		ug/l		11.6	J	ug/l	
Mercury	-		ug/l		.2	U	ug/l	.2	-		ug/l		.02	U	ug/l	
Nickel	-		ug/l		40	U	ug/l	40	-		ug/l		1.2	U	ug/l	
Potassium	-		ug/l		5000	U	ug/l	5000	-		ug/l		745	U	ug/l	
Selenium	-		ug/l		5	U	ug/l	5	-		ug/l		3.9	U	ug/l	
Silver	-		ug/l		10	U	ug/l	10	-		ug/l		.85	U	ug/l	
Sodium	-		ug/l		1110	J	ug/l	5000	-		ug/l		1830	J	ug/l	
Thallium	-		ug/l		10	U	ug/l	10	-		ug/l		1.9	U	ug/l	
Vanadium	-		ug/l		50	U	ug/l	50	-		ug/l		.58	U	ug/l	
Zinc	-		ug/l		20	U	ug/l	20	-		ug/l		3	U	ug/l	
Cyanide	-		ug/l		10	U	ug/l	10	-		ug/l		1.3	J	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:		ME261003			MC284004			MC284003			ME261004		
Site		WHITING			WHITING			WHITING			WHITING		
Locator		31G00402			31G00403			31G00403			31G00403		
Collect Date:		16-JUL-97			01-NOV-96			01-NOV-96			16-JUL-97		
		VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
CLP VOLATILES 90-SOW	ug/l												
Chloromethane		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Bromomethane		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Vinyl chloride		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Chloroethane		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Methylene chloride		1	J ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Acetone		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Carbon disulfide		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
1,1-Dichloroethene		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
1,1-Dichloroethane		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
1,2-Dichloroethene (total)		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Chloroform		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
1,2-Dichloroethane		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
2-Butanone		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
1,1,1-Trichloroethane		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Carbon tetrachloride		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Bromodichloromethane		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
1,2-Dichloropropane		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
cis-1,3-Dichloropropene		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Trichloroethene		10	U ug/l	10	-	ug/l		10	U ug/l	10	2	J ug/l	10
Dibromochloromethane		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
1,1,2-Trichloroethane		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Benzene		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
trans-1,3-Dichloropropene		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Bromoform		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
4-Methyl-2-pentanone		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
2-Hexanone		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Tetrachloroethene		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Toluene		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
1,1,2,2-Tetrachloroethane		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Chlorobenzene		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Ethylbenzene		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Styrene		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
Xylenes (total)		10	U ug/l	10	-	ug/l		10	U ug/l	10	10	U ug/l	10
CLP SEMIVOLATILES 90-SOW	ug/l												
Phenol		-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
bis(2-Chloroethyl) ether		-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2-Chlorophenol		-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
1,3-Dichlorobenzene		-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
1,4-Dichlorobenzene		-	ug/l		-	ug/l		10	UJ ug/l	10	-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:	ME261003			MC284004			MC284003			ME261004		
Site	WHITING			WHITING			WHITING			WHITING		
Locator	31G00402			31G00403			31G00403			31G00403		
Collect Date:	16-JUL-97			01-NOV-96			01-NOV-96			16-JUL-97		
	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL	VALUE	QUAL UNITS	DL
1,2-Dichlorobenzene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2-Methylphenol	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2,2-oxybis(1-Chloropropane)	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
4-Methylphenol	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
N-Nitroso-di-n-propylamine	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Hexachloroethane	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Nitrobenzene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Isophorone	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2-Nitrophenol	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2,4-Dimethylphenol	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
bis(2-Chloroethoxy) methane	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2,4-Dichlorophenol	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
1,2,4-Trichlorobenzene	-	ug/l		-	ug/l		10	UJ ug/l	10	-	ug/l	
Naphthalene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
4-Chloroaniline	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Hexachlorobutadiene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
4-Chloro-3-methylphenol	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2-Methylnaphthalene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Hexachlorocyclopentadiene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2,4,6-Trichlorophenol	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2,4,5-Trichlorophenol	-	ug/l		-	ug/l		25	U ug/l	25	-	ug/l	
2-Chloronaphthalene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2-Nitroaniline	-	ug/l		-	ug/l		25	U ug/l	25	-	ug/l	
Dimethylphthalate	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Acenaphthylene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2,6-Dinitrotoluene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
3-Nitroaniline	-	ug/l		-	ug/l		25	U ug/l	25	-	ug/l	
Acenaphthene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2,4-Dinitrophenol	-	ug/l		-	ug/l		25	U ug/l	25	-	ug/l	
4-Nitrophenol	-	ug/l		-	ug/l		25	U ug/l	25	-	ug/l	
Dibenzofuran	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
2,4-Dinitrotoluene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Diethylphthalate	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
4-Chlorophenyl-phenylether	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Fluorene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
4-Nitroaniline	-	ug/l		-	ug/l		25	U ug/l	25	-	ug/l	
4,6-Dinitro-2-methylphenol	-	ug/l		-	ug/l		25	U ug/l	25	-	ug/l	
N-Nitrosodiphenylamine	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
4-Bromophenyl-phenylether	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Hexachlorobenzene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Pentachlorophenol	-	ug/l		-	ug/l		25	U ug/l	25	-	ug/l	
Phenanthrene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Anthracene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Carbazole	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Di-n-butylphthalate	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Fluoranthene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Pyrene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Butylbenzylphthalate	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
3,3-Dichlorobenzidine	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Benzo (a) anthracene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
Chrysene	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	
bis(2-Ethylhexyl) phthalate	-	ug/l		-	ug/l		10	U ug/l	10	-	ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:		ME261003				MC284004				MC284003				ME261004		
Site		WHITING				WHITING				WHITING				WHITING		
Locator		31G00402				31G00403				31G00403				31G00403		
Collect Date:		16-JUL-97				01-NOV-96				01-NOV-96				16-JUL-97		
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Di-n-octylphthalate		-		ug/l		-		ug/l		10	UJ	ug/l	10	-		ug/l	
Benzo (b) fluoranthene		-		ug/l		-		ug/l		10	U	ug/l	10	-		ug/l	
Benzo (k) fluoranthene		-		ug/l		-		ug/l		10	U	ug/l	10	-		ug/l	
Benzo (a) pyrene		-		ug/l		-		ug/l		10	U	ug/l	10	-		ug/l	
Indeno (1,2,3-cd) pyrene		-		ug/l		-		ug/l		10	U	ug/l	10	-		ug/l	
Dibenzo (a,h) anthracene		-		ug/l		-		ug/l		10	U	ug/l	10	-		ug/l	
Benzo (g,h,i) perylene		-		ug/l		-		ug/l		10	U	ug/l	10	-		ug/l	
CLP PESTICIDES/PCBS 90-SOW	ug/l																
alpha-BHC		-		ug/l		.05	UJ	ug/l	.05	-		ug/l		-		ug/l	
beta-BHC		-		ug/l		.05	U	ug/l	.05	-		ug/l		-		ug/l	
delta-BHC		-		ug/l		.05	U	ug/l	.05	-		ug/l		-		ug/l	
gamma-BHC (Lindane)		-		ug/l		.05	U	ug/l	.05	-		ug/l		-		ug/l	
Heptachlor		-		ug/l		.05	U	ug/l	.05	-		ug/l		-		ug/l	
Aldrin		-		ug/l		.05	U	ug/l	.05	-		ug/l		-		ug/l	
Heptachlor epoxide		-		ug/l		.05	U	ug/l	.05	-		ug/l		-		ug/l	
Endosulfan I		-		ug/l		.05	U	ug/l	.05	-		ug/l		-		ug/l	
Dieldrin		-		ug/l		.1	U	ug/l	.1	-		ug/l		-		ug/l	
4,4-DDE		-		ug/l		.1	U	ug/l	.1	-		ug/l		-		ug/l	
Endrin		-		ug/l		.1	U	ug/l	.1	-		ug/l		-		ug/l	
Endosulfan II		-		ug/l		.1	U	ug/l	.1	-		ug/l		-		ug/l	
4,4-DDD		-		ug/l		.1	U	ug/l	.1	-		ug/l		-		ug/l	
Endosulfan sulfate		-		ug/l		.1	U	ug/l	.1	-		ug/l		-		ug/l	
4,4-DDT		-		ug/l		.1	U	ug/l	.1	-		ug/l		-		ug/l	
Methoxychlor		-		ug/l		.5	U	ug/l	.5	-		ug/l		-		ug/l	
Endrin ketone		-		ug/l		.1	U	ug/l	.1	-		ug/l		-		ug/l	
Endrin aldehyde		-		ug/l		.1	U	ug/l	.1	-		ug/l		-		ug/l	
alpha-Chlordane		-		ug/l		.05	U	ug/l	.05	-		ug/l		-		ug/l	
gamma-Chlordane		-		ug/l		.05	U	ug/l	.05	-		ug/l		-		ug/l	
Toxaphene		-		ug/l		5	U	ug/l	5	-		ug/l		-		ug/l	
Aroclor-1016		-		ug/l		1	U	ug/l	1	-		ug/l		-		ug/l	
Aroclor-1221		-		ug/l		2	U	ug/l	2	-		ug/l		-		ug/l	
Aroclor-1232		-		ug/l		1	U	ug/l	1	-		ug/l		-		ug/l	
Aroclor-1242		-		ug/l		1	U	ug/l	1	-		ug/l		-		ug/l	
Aroclor-1248		-		ug/l		1	U	ug/l	1	-		ug/l		-		ug/l	
Aroclor-1254		-		ug/l		1	U	ug/l	1	-		ug/l		-		ug/l	
Aroclor-1260		-		ug/l		1	U	ug/l	1	-		ug/l		-		ug/l	
CLP METALS AND CYANIDE	ug/l																
Aluminum		-		ug/l		48.7	U	ug/l		-		ug/l		-		ug/l	
Antimony		-		ug/l		3.4	U	ug/l		-		ug/l		-		ug/l	
Arsenic		-		ug/l		5.2	U	ug/l		-		ug/l		-		ug/l	
Barium		-		ug/l		9.6	J	ug/l		-		ug/l		-		ug/l	
Beryllium		-		ug/l		.43	U	ug/l		-		ug/l		-		ug/l	
Cadmium		-		ug/l		.39	U	ug/l		-		ug/l		-		ug/l	
Calcium		-		ug/l		548	J	ug/l		-		ug/l		-		ug/l	
Chromium		-		ug/l		1.5	U	ug/l		-		ug/l		-		ug/l	
Cobalt		-		ug/l		.81	U	ug/l		-		ug/l		-		ug/l	
Copper		-		ug/l		1.7	U	ug/l		-		ug/l		-		ug/l	
Iron		-		ug/l		61.5	J	ug/l		-		ug/l		-		ug/l	
Lead		-		ug/l		2	U	ug/l		-		ug/l		-		ug/l	
Magnesium		-		ug/l		339	J	ug/l		-		ug/l		-		ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:	ME261003				MC284004				MC284003				ME261004			
Site	WHITING				WHITING				WHITING				WHITING			
Locator	31G00402				31G00403				31G00403				31G00403			
Collect Date:	16-JUL-97				01-NOV-96				01-NOV-96				16-JUL-97			
	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Manganese	-		ug/l		9.2	J	ug/l		-		ug/l		-		ug/l	
Mercury	-		ug/l		.05	U	ug/l		-		ug/l		-		ug/l	
Nickel	-		ug/l		1.4	J	ug/l		-		ug/l		-		ug/l	
Potassium	-		ug/l		1210	U	ug/l		-		ug/l		-		ug/l	
Selenium	-		ug/l		3.9	U	ug/l		-		ug/l		-		ug/l	
Silver	-		ug/l		.85	U	ug/l		-		ug/l		-		ug/l	
Sodium	-		ug/l		1930	J	ug/l		-		ug/l		-		ug/l	
Thallium	-		ug/l		1.9	U	ug/l		-		ug/l		-		ug/l	
Vanadium	-		ug/l		1.2	U	ug/l		-		ug/l		-		ug/l	
Zinc	-		ug/l		2.8	U	ug/l		-		ug/l		-		ug/l	
Cyanide	-		ug/l		.83	U	ug/l		-		ug/l		-		ug/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:		ME242001				MC263004				ME303001				MC283001			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31G00101				31G00201				31G00201				31G00301			
Collect Date:		15-JUL-97				30-OCT-96				21-JUL-97				31-OCT-96			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Groundwater Quality	mg/l																
Alkalinity as CaCO3		4		mg/l	3	3	<	mg/l	3	3	U	mg/l	3	3	<	mg/l	3
Ammonia-N		-		mg/l		.2	<	mg/l	.2	-		mg/l		.2	<	mg/l	.2
Chloride		2.7		mg/l	1	1.6		mg/l	1	1.8		mg/l	1	2.3		mg/l	1
Hardness as CaCO3		-		mg/l		22		mg/l	3	-		mg/l		14		mg/l	3
Nitrate-Nitrite		.31		mg/l	.05	1.68		mg/l	.05	1.53		mg/l	.05	1.41		mg/l	.05
Phosphorous-P, Total		-		mg/l		.05	<	mg/l	.05	-		mg/l		.05	<	mg/l	.05
Sulfate		2	U	mg/l	2	3.7		mg/l	2	6.2		mg/l	2	2	<	mg/l	2
Sulfide		.1	U	mg/l	.1	.1	<	mg/l	.1	.1	U	mg/l	.1	.1	<	mg/l	.1
Total Dissolved Solids		27		mg/l	10	18		mg/l	10	33		mg/l	10	14		mg/l	10
Total Kjeldahl Nitrogen		.2		mg/l	.1	.1	<	mg/l	.1	.1	U	mg/l	.1	.1	<	mg/l	.1
Total organic carbon		1	U	mg/l	1	-		mg/l		1	U	mg/l	1	-		mg/l	
Total petroleum hydrocarbons		-		mg/l		-		mg/l		-		mg/l		-		mg/l	
Dissolved Methane		-		mg/l		-		mg/l		-		mg/l		-		mg/l	
Dissolved Organic Carbon		-		mg/l		1	<	mg/l	1	-		mg/l		1.3		mg/l	1

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:		ME260004				ME260001				MC283002				ME260002			
Site		WHITING				WHITING				WHITING				WHITING			
Locator		31G00301				31G00401				31G00402				31G00402			
Collect Date:		16-JUL-97				16-JUL-97				31-OCT-96				16-JUL-97			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Groundwater Quality	mg/l																
Alkalinity as CaCO3		3	U	mg/l	3	4		mg/l	3	4		mg/l	3	18		mg/l	3
Ammonia-N		-		mg/l		-		mg/l		.2	<	mg/l	.2	-		mg/l	
Chloride		2.2		mg/l	1	2.5		mg/l	1	2.4		mg/l	1	2.2		mg/l	1
Hardness as CaCO3		-		mg/l		-		mg/l		12		mg/l	3	-		mg/l	
Nitrate-Nitrite		.98		mg/l	.05	.65		mg/l	.05	.37		mg/l	.05	.67		mg/l	.05
Phosphorous-P, Total		-		mg/l		-		mg/l		.05	<	mg/l	.05	-		mg/l	
Sulfate		2	U	mg/l	2	2	U	mg/l	2	2	<	mg/l	2	2	U	mg/l	2
Sulfide		.1	U	mg/l	.1	.1	U	mg/l	.1	.1	<	mg/l	.1	.1	U	mg/l	.1
Total Dissolved Solids		12		mg/l	10	17		mg/l	10	35		mg/l	10	16		mg/l	10
Total Kjeldahl Nitrogen		.3		mg/l	.1	.2		mg/l	.1	.1	<	mg/l	.1	.1	U	mg/l	.1
Total organic carbon		1		mg/l	1	1.8		mg/l	1	-		mg/l		1	U	mg/l	1
Total petroleum hydrocarbons		-		mg/l		-		mg/l		-		mg/l		-		mg/l	
Dissolved Methane		-		mg/l		-		mg/l		-		mg/l		-		mg/l	
Dissolved Organic Carbon		-		mg/l		-		mg/l		1	<	mg/l	1	-		mg/l	

Naval Air Station Whiting Field, Milton, Florida
Site 31 Groundwater Data

Lab Sample Number:		MC283003				ME260003			
Site		WHITING				WHITING			
Locator		31G00403				31G00403			
Collect Date:		01-NOV-96				16-JUL-97			
		VALUE	QUAL	UNITS	DL	VALUE	QUAL	UNITS	DL
Groundwater Quality	mg/l								
Alkalinity as CaCO3		4		mg/l	3	3	U	mg/l	3
Ammonia-N		.2	<	mg/l	.2	-		mg/l	
Chloride		2.3		mg/l	1	2.5		mg/l	1
Hardness as CaCO3		6		mg/l	3	-		mg/l	
Nitrate-Nitrite		.43		mg/l	.05	.46		mg/l	.05
Phosphorous-P, Total		.05	<	mg/l	.05	-		mg/l	
Sulfate		2	<	mg/l	2	2	U	mg/l	2
Sulfide		.1	<	mg/l	.1	.1	U	mg/l	.1
Total Dissolved Solids		14		mg/l	10	24		mg/l	10
Total Kjeldahl Nitrogen		.1	<	mg/l	.1	.1		mg/l	.1
Total organic carbon		-		mg/l		1	U	mg/l	1
Total petroleum hydrocarbons		-		mg/l		-		mg/l	
Dissolved Methane		-		mg/l		-		mg/l	
Dissolved Organic Carbon		2.9		mg/l	1	-		mg/l	

APPENDIX D

HYDROGEOLOGIC DATA

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1994 - UPDATED 2 APRIL 1997.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 9/30/93-10/1/93		Water Level 2/8/94-2/9/94		Water Level 6/22/94-6/24/94		Water Level 10/10/94-10/13/94		Cumulative Statistical Information	
					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
PRODUCTION WELLS														
W-N2	1209039.28	631869.70	N/A	190	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W-W2	1209376.90	630999.19	N/A	216	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W-S2	1209888.06	629926.01	N/A	210	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BACKGROUND WELLS														
WHF-BKG-1	1205079.54	638522.10	195.46	122	108.46	87.00	109.76	85.70	107.78	87.68	117.50	77.96	84.59	4.49
WHF-BKG-1I	1205060.00	638507.00	128.70	140										
WHF-BKG-1D	1205070.00	638516.00	128.68	179										
WHF-BKG-2	1209243.13	639722.35	180.24	109	96.82	83.42	98.74	81.50	100.14	80.10	97.76	82.48	81.88	1.42
WHF-BKG-2I	1209253.00	638507.00	128.70	144										
WHF-BKG-2D	1209262.00	639724.00	111.90	174										
WHF-BKG-3	1210627.97	635989.34	147.57	81	72.90	74.67	75.12	72.45	73.37	74.20	70.83	76.74	74.52	1.76
NORTH PERIMETER ROAD SITES														
SITE 1														
WHF-1-1	1203042.32	635143.15	142.62	123	64.70	77.92	66.00	76.62	66.26	76.36	64.15	78.47	77.34	1.02
WHF-1-1S	1203049.74	635151.60	143.08	75	64.40	78.68	65.84	77.24	66.11	76.97	63.92	79.16	78.01	1.07
WHF-1-2	1203118.26	635344.99	145.61	79	66.13	79.48	67.53	78.08	67.99	77.62	65.72	79.89	78.77	1.09
WHF-1-3	1203351.52	635188.25	155.50	87	76.68	78.82	78.02	77.48	78.51	76.99	76.23	79.27	78.14	1.08
WHF-1-4	1203203.00	635090.00	87.18	79										
SITE 2														
WHF-2-1	1202494.86	634086.86	150.80	87	77.96	72.84	79.18	71.62	79.00	71.80	76.94	73.86	72.53	1.04
WHF-2-2	1202865.00	633889.00	95.26	91										
WHF-2-3	1203282.00	633867.00	97.69	91										
SITE 17														
WHF-17-1S	1205336.67	637015.03	194.96	116	111.29	83.67	112.60	82.36	113.78	81.18	111.72	83.24	82.61	1.10
WHF-17-1	1205336.12	636993.08	194.71	159	111.10	83.61	112.39	82.32	113.56	81.15	111.49	83.22	82.58	1.09
WHF-17-2	1205453.92	636831.50	197.35	122	114.05	83.30	115.35	82.00	116.52	80.83	114.45	82.90	82.26	1.10
WHF-17-3	1205827.08	637196.16	201.21	127	117.52	83.69	117.12	84.09	117.53	83.68	123.65	77.56	82.26	3.14
SITE 18														
WHF-18-1	1203772.59	633090.33	163.57	120	93.29	70.28	94.53	69.04	94.61	68.96	92.28	71.29	69.89	1.11
WHF-18-2S	1203842.84	632763.09	164.75	108	95.82	68.93	97.04	67.71	98.03	66.72	94.76	69.99	68.34	1.43
WHF-18-3	1204225.03	633101.79	175.64	113	104.30	71.34	105.59	70.05	105.90	69.74	103.55	72.09	70.81	1.10
SOUTH PERIMETER ROAD SITES														
SITE 9														
WHF-9-1	1214219.01	628597.84	146.55	118	86.72	59.83	89.34	57.21	88.19	58.36	82.20	64.35	59.94	3.13
WHF-9-2	1213671.00	628836.00	161.07	124	100.03	61.04	102.69	58.38	101.95	59.12	95.49	65.58	61.03	3.23
WHF-9-3S	1214061.06	628618.01	150.85	108	90.78	60.07	93.35	57.50	92.28	58.57	86.16	64.69	60.21	3.17
SITE 10														
WHF-10-1	1214221.83	628137.54	146.73	118	88.12	58.61	90.62	56.11	89.60	57.13	83.45	63.28	58.78	3.17
WHF-10-2	1214063.81	628091.56	150.75	113	92.04	58.71	94.58	56.17	93.62	57.13	113.02	37.73	52.44	9.86

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1994 - UPDATED 2 APRIL 1997.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 9/30/93-10/1/93		Water Level 2/8/94-2/9/94		Water Level 6/22/94-6/24/94		Water Level 10/10/94-10/13/94		Cumulative Statistical Information	
					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
SITE 11														
WHF-11-1S	1215235.29	627392.24	116.65	54	45.50	71.15	45.99	70.66	44.63	72.02	43.56	73.09	71.73	1.07
WHF-11-1	1215504.26	627581.66	124.86	128	51.08	73.78	63.42	61.44	62.23	62.63	56.37	68.49	66.59	5.70
WHF-11-2	1214288.00	626575.17	148.12	126	93.50	54.62	95.93	52.19	94.97	53.15	88.79	59.33	54.82	3.17
WHF-11-3	1215520.53	627461.72	117.19	73	61.91	55.28	64.22	52.97	63.08	54.11	57.16	60.03	55.60	3.10
WHF-11-4S	1215055.00	627372.00	129.43	79										
WHF-11-4D	1215055.00	627382.00	125.79	109										
SITE 12														
WHF-12-1	1214670.02	627457.07	136.40	113	80.20	56.20	82.68	53.72	81.67	54.73	75.41	60.99	56.41	3.22
WHF-12-2	1214561.00	627418.00	135.56	85										
SITE 13														
WHF-13-1S	1215513.09	626794.39	108.97	61	55.25	53.72	57.59	51.38	56.45	52.52	50.29	58.68	54.08	3.22
WHF-13-1	1215509.34	626304.81	102.66	123	50.62	52.04	52.90	49.76	51.89	50.77	46.00	56.66	52.31	3.05
WHF-13-1I	1215474.00	626745.00	109.17	93										
WHF-13-2S	1215502.60	626080.86	102.86	72	51.61	51.25	53.85	49.01	52.93	49.93	47.00	55.86	51.51	3.04
SITE 14														
WHF-14-1	1214547.12	625482.71	139.69	153	88.49	51.20	90.79	48.90	90.12	49.57	83.88	55.81	51.37	3.11
WHF-14-2	1214432.70	625372.17	145.80	118	95.15	50.65	97.45	48.35	96.86	48.94	90.56	55.24	50.80	3.12
SITE 15														
WHF-15-1	1206206.41	625518.50	66.35	73	26.38	39.97	26.92	39.43	26.48	39.87	24.60	41.75	40.26	1.02
WHF-15-2S	1206067.73	625812.81	59.58	33	19.00	40.58	19.43	40.15	18.85	40.73	17.14	42.44	40.98	1.01
WHF-15-2I	1206070.85	625801.65	60.10	63	19.80	40.30	20.26	39.84	19.81	40.29	18.06	42.04	40.62	0.97
WHF-15-2D	1206064.49	625825.70	59.39	112	19.06	40.33	19.57	39.82	19.10	40.29	17.40	41.99	40.61	0.95
WHF-15-3S	1206488.88	626123.35	69.29	38	25.93	43.36	27.67	41.62	26.33	42.96	23.96	45.33	43.32	1.53
WHF-15-3I	1206488.15	626095.58	69.69	88	26.59	43.10	27.34	42.35	26.96	42.73	24.68	45.01	43.30	1.18
WHF-15-3D	1206490.28	626159.29	69.44	119	25.89	43.55	26.68	42.76	26.34	43.10	24.00	45.44	43.71	1.20
WHF-15-4S	1207477.30	625555.48	143.29	109	98.41	44.88	99.63	43.66	99.17	44.12	95.70	47.59	45.06	1.76
WHF-15-5S	1206671.97	624992.42	104.14	68	64.33	39.81	65.08	39.06	64.65	39.49	62.36	41.78	40.04	1.20
WHF-15-5I	1206675.00	624984.00	105.17	98										
WHF-15-5D	1206682.00	624976.00	106.11	129										
WHF-15-6S	1206299.12	625420.45	74.29	44	34.40	39.89	34.62	39.67	34.23	40.06	32.19	42.10	40.43	1.12
WHF-15-6D	1206306.83	625412.46	75.08	123	35.40	39.68	35.61	39.47	35.23	39.85	33.23	41.85	40.21	1.10
WHF-15-7S				89										
WHF-15-7I				120										
WHF-15-7D				148										
WHF-15-8S	1206065.00	624844.00	79.67	55										
WHF-15-8I	1206056.00	624846.00	79.48	85										
WHF-15-8D	1206047.00	624848.00	79.08	117										
SITE 16														
WHF-16-1	1205320.04	626578.67	50.04	43	11.35	38.69	11.61	38.43	11.28	38.76	10.34	39.70	38.90	0.56
WHF-16-2S	1206255.07	626763.39	83.66	50	38.91	44.75	39.73	43.93	39.45	44.21	37.28	46.38	44.82	1.10
WHF-16-2	1206257.07	626809.39	82.19	74	37.52	44.67	38.32	43.87	N/A	N/A	35.88	46.31	44.95	1.24
WHF-16-2I	1206255.90	626773.31	80.60	130	36.19	44.41	36.89	43.71	36.67	43.93	34.50	46.10	44.54	1.08
WHF-16-3S	1205407.34	626169.98	51.69	23	13.48	38.21	13.57	38.12	12.77	38.92	12.17	39.52	38.69	0.66
WHF-16-3I	1205401.59	626161.38	51.31	53	13.25	38.06	13.46	37.85	12.97	38.34	12.03	39.28	38.38	0.63

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1994 - UPDATED 2 APRIL 1997.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 9/30/93-10/1/93		Water Level 2/8/94-2/9/94		Water Level 6/22/94-6/24/94		Water Level 10/10/94-10/13/94		Cumulative Statistical Information	
					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
WHF-16-3II	1205396.39	626153.49	51.22	79	12.69	38.53	13.48	37.74	13.04	38.18	12.10	39.12	38.39	0.58
WHF-16-3D	1205391.36	626144.09	51.40	118	10.16	41.24	10.51	40.89	10.26	41.14	8.90	42.50	41.44	0.72
WHF-16-4S	1205379.57	626591.66	54.79	22	15.49	39.30	15.74	39.05	13.77	41.02	14.31	40.48	39.96	0.94
WHF-16-4II	1205381.03	626559.05	53.01	65	14.00	39.01	14.26	38.75	13.91	39.10	12.94	40.07	39.23	0.58
WHF-16-4D	1205382.49	626540.27	52.87	123	14.00	38.87	14.24	38.63	13.91	38.96	12.92	39.95	39.10	0.58
WHF-16-5	1204855.84	626431.26	37.54	14	N/A	N/A	N/A	N/A	3.50	34.04	3.50	34.04	34.04	0.00
WHF-16-6S	1205906.00	626167.00	56.57	22										
WHF-16-6I	1205905.00	626175.00	56.77	62										
WHF-16-7S	1205042.00	626188.00	38.27	15										
WHF-16-7I	1205039.00	626194.00	38.17	46										
WHF-16-7D	1205036.00	626201.00	38.05	75										
Stream Gage			30.73											
SITE 31														
WHF-31-1S				95										
WHF-31-2S	1208134.00	623800.00	122.38	88										
WHF-31-3S	1207909.00	623467.00	105.49	72										
WHF-31-4S				70										
WHF-31-4I				100										
WHF-31-4D				38										
WHF-31-5S				37										
WHF-31-5I				67										
MIDFIELD HANGER SITES														
SITE 5														
WHF-5-OW-1	1209620.00	629684.00	185.80	178	123.42	62.38	125.11	60.69	125.71	60.09	121.29	64.51	61.92	1.98
WHF-5-OW-2	1209628.16	629573.36	186.02	116	115.67	70.35	DRY	N/A	N/A	N/A	N/A	N/A	70.35	#DIV/0!
WHF-5-3	1209754.55	629900.98	182.02	151	120.01	62.01	121.77	60.25	N/A	N/A	N/A	N/A	61.13	1.24
WHF-5-8S	1210154.00	630901.55	177.44	128	110.91	66.53	112.47	64.97	113.08	64.36	109.91	67.53	65.85	1.45
WHF-5-8D	1210141.88	630896.23	177.86	174	111.99	65.87	113.73	64.13	114.09	63.77	108.92	68.94	65.68	2.36
WHF-5-9S	1209644.00	630618.86	175.55	129	111.02	64.53	112.83	62.72	113.23	62.32	109.47	66.08	63.91	1.74
WHF-5-9D	1209625.20	630611.55	175.97	180	111.47	64.50	113.21	62.76	N/A	N/A	109.87	66.10	64.45	1.67
WHF-5-10S	1209320.71	630364.77	184.11	145	120.28	63.83	122.03	62.08	122.51	61.60	118.75	65.36	63.22	1.72
WHF-5-10D	1209300.09	630355.03	184.32	183	120.72	63.60	122.39	61.93	122.76	61.56	119.36	64.96	63.01	1.57
WHF-5-PZ1	1209627.42	629645.68	186.00	137	123.52	62.48	125.18	60.82	126.25	59.75	122.04	63.96	61.75	1.85
WHF-5-PZ2	1209628.16	629611.68	185.90	152	122.79	63.11	124.49	61.41	125.52	60.38	120.93	64.97	62.47	2.01
SITE 6														
WHF-6-1S	1209957.06	629374.42	177.63	134	115.93	61.70	117.74	59.89	118.51	59.12	113.93	63.70	61.10	2.04
WHF-6-1D	1209966.98	629386.89	177.55	180	115.81	61.74	117.61	59.94	118.23	59.32	113.63	63.92	61.23	2.07
WHF-6-3	1210053.98	629425.27	175.72	123	113.27	62.45	115.14	60.58	115.96	59.76	111.08	64.64	61.86	2.17
SITE 33														
WHF-33-1	1209955.15	629870.00	180.58	127	116.99	63.59	118.79	61.79	119.91	60.67	114.83	65.75	62.95	2.22
WHF-33-2	1209851.60	629884.39	181.48	128	117.96	63.52	119.73	61.75	120.85	60.63	115.86	65.62	62.88	2.18
WHF-33-3	1209862.89	629812.25	181.79	128	118.36	63.43	120.14	61.65	121.25	60.54	116.22	65.57	62.80	2.20
WHF-33-4	1209990.96	629774.47	180.36	128	116.91	63.45	118.76	61.60	119.83	60.53	114.73	65.63	62.80	2.24
WHF-33-5	1209984.63	629993.81	178.39	126	114.59	63.80	116.40	61.99	117.52	60.87	114.23	64.16	62.71	1.55

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1994 - UPDATED 2 APRIL 1997.

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					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
WEST WELL SITES														
WHF-35-1S				116										
WHF-35-1I				146										
WHF-35-1D				176										
WHF-36-1S				116										
WHF-36-1S				146										
WHF-36-1S				173										
SOUTHFIELD HANGAR SITES														
SITE 7														
WHF-7-1	1209041.00	628569.46	187.75	143	129.96	57.79	130.58	57.17	130.72	57.03	128.66	59.09	57.77	0.94
SITE 8														
WHF-8-1	1209897.07	627295.25	173.14	181	117.20	55.94	119.36	53.78	119.15	53.99	114.31	58.83	55.64	2.34
SITE 29														
WHF-29-1	1208846.95	629118.96	193.53	139	127.06	66.47	127.77	65.76	128.35	65.18	127.31	66.22	65.91	0.57
WHF-29-2	1208849.75	628943.65	191.52	137	126.09	65.43	126.71	64.81	127.17	64.35	126.23	65.29	64.97	0.49
WHF-29-3	1208648.45	628931.16	194.02	140	128.24	65.78	128.88	65.14	129.43	64.59	128.45	65.57	65.27	0.53
WHF-29-4	1208603.43	629037.14	195.78	139	129.53	66.25	130.19	65.59	130.74	65.04	129.74	66.04	65.73	0.54
WHF-29-5	1208926.15	629497.33	193.47	132	123.48	69.99	124.14	69.33	124.62	68.85	123.61	69.86	69.51	0.52
SITE 30														
WHF-30-2	1209413.33	628006.85	177.27	130	N/A	N/A	120.18	57.09	121.11	56.16	118.00	59.27	57.51	1.60
WHF-30-3	1209292.06	628032.95	179.11	135	121.17	57.94	122.76	56.35	123.35	55.76	120.04	59.07	57.28	1.51
WHF-30-4	1209294.49	628161.98	181.49	135	123.90	57.59	125.43	56.06	126.00	55.49	122.23	59.26	57.10	1.69
WHF-30-5	1209609.14	628431.51	181.89	158	123.72	58.17	125.43	56.46	125.79	56.10	121.52	60.37	57.78	1.95
NORTHFIELD HANGAR SITES														
SITE 3														
WHF-3-1S	1207621.58	632209.35	172.97	123	103.63	69.34	104.78	68.19	105.52	67.45	102.40	70.57	68.89	1.36
WHF-3-1	1207611.51	632198.68	174.92	153	105.62	69.30	106.76	68.16	107.49	67.43	N/A	N/A	68.30	0.94
WHF-3-1D	1207610.04	632178.41	172.97	180	103.81	69.16	104.93	68.04	105.63	67.34	102.53	70.44	68.75	1.36
WHF-3-2S	1207782.86	632184.34	172.78	114	101.37	71.41	102.31	70.47	102.93	69.85	99.16	73.62	71.34	1.65
WHF-3-2I	1207795.00	632195.00	175.37	153	106.08	69.29	107.21	68.16	107.88	67.49	104.87	70.50	68.86	1.32
WHF-3-2D	1207765.16	632183.56	173.14	176	103.48	69.66	104.69	68.45	105.37	67.77	102.34	70.80	69.17	1.34
WHF-3-3S	1207695.36	632062.10	175.23	111	103.06	72.17	104.42	70.81	105.44	69.79	101.55	73.68	71.61	1.69
WHF-3-3I	1207693.62	632040.10	178.18	154	109.29	68.89	110.45	67.73	111.07	67.11	107.96	70.22	68.49	1.37
WHF-3-3D	1207693.53	632019.91	175.69	181	106.89	68.80	108.11	67.58	108.75	66.94	105.55	70.14	68.37	1.41
WHF-3-4	1207451.46	632194.59	174.38	121	105.02	69.36	106.15	68.23	106.91	67.47	103.99	70.39	68.86	1.28
WHF-3-7S	1207669.50	632251.08	173.27	124	103.80	69.47	104.89	68.38	105.61	67.66	102.53	70.74	69.06	1.34
WHF-3-7I	1207660.94	632251.58	173.25	140	103.77	69.48	104.89	68.36	105.59	67.66	102.52	70.73	69.06	1.34
WHF-3-7D	1207652.01	632252.07	173.29	181	103.86	69.43	104.96	68.33	105.67	67.62	102.57	70.72	69.03	1.35
SITE 4														
WHF-4-1	1208536.18	632766.31	172.45	153	101.72	70.73	103.55	68.90	103.19	69.26	100.47	71.98	70.22	1.42

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					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
SITE 32														
WHF-32-1	1208014.14	633106.04	171.88	110	98.92	72.96	100.24	71.64	101.09	70.79	N/A	N/A	71.80	1.09
WHF-32-2	1207885.48	633198.37	172.27	111	99.32	72.95	100.64	71.63	101.48	70.79	99.04	73.23	72.15	1.14
WHF-32-3	1207892.17	633060.18	172.01	110	99.74	72.27	N/A	N/A	N/A	N/A	N/A	N/A	72.27	#DIV/0!
WHF-32-4	1207990.17	632988.86	172.29	110	99.45	72.84	N/A	N/A	N/A	N/A	N/A	N/A	72.84	#DIV/0!
WHF-32-5	1208029.24	633294.89	172.15	110	98.60	73.55	99.94	72.21	100.83	71.32	N/A	N/A	72.36	1.12
UST SITES														
SITE 1466														
WHF-1466-1	1208816.54	627384.8	177.79	135			125.66	52.13	125.75	52.04	121.85	55.94	53.37	2.23
WHF-1466-1D	1208936.38	629050.5	191.24	163			134.46	56.78	134.71	56.53	131.00	60.24	57.85	2.07
WHF-1466-2	1209933.99	628823.41	180.72	120			109.25	71.47	109.35	71.37	109.00	71.72	71.52	0.18
WHF-1466-2D	1209494.21	628800.38	190.03	144			132.93	57.10	133.15	56.88	128.94	61.09	58.36	2.37
WHF-1466-3	1208314.69	628573.52	197.42	145			142.73	54.69	143.04	54.38	139.42	58.00	55.69	2.01
WHF-1466-3D	1209906.26	628363.88	179.75	149			123.35	56.40	123.67	56.08	119.19	60.56	57.68	2.50
WHF-1466-4	1207922.74	628288.48	190.37	151			136.79	53.58	137.00	53.37	133.34	57.03	54.66	2.06
WHF-1466-5R	1208056.79	627628.39	175.18	132			123.32	51.86	123.40	51.78	119.95	55.23	52.96	1.97
WHF-1466-6	1207829.83	627108.12	173.09	131			123.43	49.66	123.30	49.79	119.80	53.29	50.91	2.06
WHF-1466-6I	1207808.00	627114.00	173.06	160										
WHF-1466-6D	1207799.00	627121.00	173.05	190										
WHF-1466-6DD	1207789.00	627132.00	172.86	218										
WHF-1466-7	1208216.03	626725.15	172.26	131			N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.00
WHF-1466-8	1208990.92	626663.47	172.24	131			N/A	N/A	N/A	N/A	N/A	N/A	0.00	0.00
WHF-1466-8I	1208972.00	626670.00	172.58	171										
WHF-1466-8D	1208962.00	626675.00	172.28	190										
WHF-1466-8DD	1208952.00	626682.00	172.64	220										
WHF-1466-9	1210492.27	627644.67	173.20	116			102.22	70.98	101.91	71.29	100.15	73.05	71.77	1.12
WHF-1466-9I	1210489.00	627651.00	173.40	160										
WHF-1466-9D	1210493.00	627664.00	173.11	190										
WHF-1466-9DD	1210496.00	627675.00	173.44	220										
WHF-1466-10	1209657.23	627192.33	172.08	122			115.91	56.17	N/A	N/A	N/A	N/A	56.17	#DIV/0!
WHF-1466-11	1210525.94	628485.13	175.87	104			98.43	77.44	97.97	77.90	96.58	79.29	78.21	0.96
WHF-1466-12	1209594.71	629128.76	189.92	147			132.08	57.84	132.19	57.73	127.96	61.96	59.18	2.41
WHF-1466-13	1209414.18	628006.79	177.31	130			120.48	56.83	N/A	N/A	118.00	59.31	58.07	1.75
WHF-1466-14	1208944.85	628092.09	181.05	135			111.64	69.41	111.50	69.55	111.55	69.50	69.49	0.07
WHF-1466-15	1209166.19	627611.48	177.81	135			124.28	53.53	124.49	53.32	134.12	43.69	50.18	5.62
WHF-1466-16	1209662.19	627740.42	176.49	135			117.04	59.45	116.97	59.52	116.74	59.75	59.57	0.16
WHF-1466-17	1208283.50	627818.17	177.91	134			125.13	52.78	125.32	52.59	121.67	56.24	53.87	2.05
WHF-1466-18	1209171.17	628402.19	185.58	135			125.98	59.60	N/A	N/A	N/A	N/A	59.60	#DIV/0!
WHF-1466-19	1208807.94	628641.71	188.81	145			133.39	55.42	133.78	55.03	130.05	58.76	56.40	2.05
WHF-1466-20	1208702.50	628379.34	187.76	140			133.01	54.75	133.37	54.39	129.69	58.07	55.74	2.03
WHF-1466-21S	1206717.00	623285.00	62.39	40										
WHF-1466-21I	1206710.00	623280.00	61.75	69										
WHF-1466-21D	1206702.00	623273.00	61.44	96										
WHF-1466-22S	1209940.00	623603.00	139.36	108										
WHF-1466-22I	1209952.00	623596.00	139.23	140										

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					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
WHF-1466-22D	1209963.00	623591.00	139.11	167										
SITE 1467														
WHF-1467-1	1208880.11	632144.48	168.51	97			N/A	N/A	86.50	82.01	84.98	83.53	82.77	1.07
WHF-1467-2	1209133.86	632896.85	157.44	85			N/A	N/A	76.11	81.33	75.28	82.16	81.75	0.59
WHF-1467-2D	1207367.82	631970.72	174.29	124			104.09	70.20	103.90	70.39	104.72	69.57	70.05	0.43
WHF-1467-3	1209267.99	633301.90	157.25	95			84.19	73.06	84.80	72.45	81.98	75.27	73.59	1.48
WHF-1467-4	1208093.29	631782.58	174.64	103			94.36	80.28	94.39	80.25	92.76	81.88	80.80	0.93
WHF-1467-5	1208824.68	631802.78	173.27	100			90.31	82.96	90.34	82.93	88.74	84.53	83.47	0.92
WHF-1467-5D	1208046.38	633347.40	171.77	140			99.14	72.63	101.15	70.62	98.00	73.77	72.34	1.59
WHF-1467-6	1208559.81	631562.19	176.54	103			94.74	81.80	94.62	81.92	92.87	83.67	82.46	1.05
WHF-1467-6D	1208432.97	633067.31	166.23	102			91.27	74.96	92.00	74.23	90.21	76.02	75.07	0.90
WHF-1467-7	1209052.49	632855.16	157.48	85			N/A	N/A	76.05	81.43	75.01	82.47	81.95	0.74
WHF-1467-7D	1209074.01	633275.99	158.18	129			87.41	70.77	84.36	73.82	84.99	73.19	72.59	1.61
WHF-1467-8	1206877.55	633649.88	173.24	107			99.57	73.67	N/A	N/A	N/A	N/A	73.67	#DIV/0!
WHF-1467-8D	1208899.70	632156.47	168.85	127			N/A	N/A	101.33	67.52	98.50	70.35	68.94	2.00
WHF-1467-9	1208397.28	633980.16	162.99	100			88.55	74.44	89.36	73.63	86.86	76.13	74.73	1.28
WHF-1467-10			89.10	82										
WHF-1467-11	1209424.83	633512.23	156.49	90			83.80	72.69	83.70	72.79	80.90	75.59	73.69	1.65
WHF-1467-12			106.55	83										
WHF-1467-13R	1209301.78	632312.00	164.57	90			81.91	82.66	82.11	82.46	80.95	83.62	82.91	0.62
WHF-1467-14	1207731.96	631553.69	174.47	110			99.00	75.47	N/A	N/A	96.44	78.03	51.17	44.33
WHF-1467-16	1207111.19	631339.86	177.05	115			104.21	72.84	99.13	77.92	101.79	75.26	75.34	2.54
WHF-1467-17	1206345.83	631844.43	115.00	106			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WHF-1467-18	1206407.62	632661.19	175.12	115			105.49	69.63	106.16	68.96	103.24	71.88	70.16	1.53
WHF-1467-19	1207591.45	633994.12	169.33	105			95.83	73.50	N/A	N/A	93.42	75.91	74.71	1.70
WHF-1467-20	1207871.24	632957.17	172.26	110			N/A	N/A	102.15	70.11	99.44	72.82	35.73	41.28
WHF-1467-21	1207384.89	631942.66	173.93	111			107.14	66.79	107.82	66.11	101.94	71.99	69.05	4.16
WHF-1467-22R	1207981.96	632195.77	172.38	103			N/A	N/A	96.21	76.17	94.21	78.17	77.17	1.41
WHF-1467-23	1208368.59	632084.82	172.57	101			91.69	80.88	90.69	81.88	89.09	83.48	82.08	1.31
WHF-1467-24	1208544.22	632765.31	169.77	100			88.90	80.87	89.04	80.73	87.83	81.94	81.18	0.66
WHF-1467-25	1208691.16	633034.12	160.85	91			83.89	76.96	84.16	76.69	82.60	78.25	77.30	0.83
WHF-1467-26	1208423.02	633068.08	166.28	90			73.71	92.57	74.70	91.58	74.53	91.75	91.97	0.53
WHF-1467-27	1207310.26	632473.23	173.74	116			104.44	69.30	105.15	68.59	102.27	71.47	69.79	1.50
WHF-1467-28	1207602.58	632767.80	173.03	106			102.75	70.28	N/A	N/A	100.78	72.25	71.27	1.39
WHF-1467-29	1208520.49	632477.02	168.96	100			87.09	81.87	87.16	81.80	85.77	83.19	82.29	0.78
WHF-1467-30	1208220.74	632549.79	174.23	103			95.74	78.49	95.72	78.51	94.51	79.72	78.91	0.70
WHF-1467-31	1207346.22	633177.47	171.21	125			99.84	71.37	100.71	70.50	98.02	73.19	71.69	1.37
WHF-1467-32	1208624.59	633276.57	162.31	100			88.78	73.53	89.78	72.53	87.34	74.97	73.68	1.23
WHF-1467-33	1208203.66	633103.51	169.86	84			77.80	92.06	77.83	92.03	77.76	92.10	92.06	0.04
SITE 3054														
WHF-3054-1	1209921.73	627170.85	171.47	125			N/A	N/A	N/A	N/A	106.06	N/A	N/A	N/A
WHF-3054-2	1209907.63	627272.31	171.09	118			N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 9/30/93-10/1/93		Water Level 2/8/94-2/9/94		Water Level 6/22/94-6/24/94		Water Level 10/10/94-10/13/94		Cumulative Statistical Information	
					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
SITE 2894														
WHF-2894-1														
WHF-2894-1D														
WHF-2894-2														
WHF-2894-2D														
WHF-2894-3														
WHF-2894-4														
WHF-2894-5														
WHF-2894-6														
WHF-2894-7														

NOTES: Monitoring wells at UST sites 1466, 1467, 3054, and 2894 were not surveyed by licensed professional surveyors.

TOC - Top of Casing
Ft. - Feet
MSL - mean sea level (NVGD) 1927?
BTOC - below top of casing

NA - no access
PZ - piezometer
S - shallow aquifer monitoring well
I - intermediate aquifer monitoring well

II - deeper intermediate aquifer monitoring well
D - deep aquifer monitoring well
DD - deeper aquifer monitoring well
R - replacement monitoring well

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1995 - UPDATED 02 APRIL 1997.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/10/95-1/13/95		Water Level 4/19/95-4/20/95		Water Level 7/28/95-7/29/95		Water Level 10/12/95-10/14/95		Cumulative Statistical Information	
					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
PRODUCTION	**WELLS**													
W-N2	1209039.28	631869.70	N/A	190	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W-W2	1209376.90	630999.19	N/A	216	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W-S2	1209888.06	629926.01	N/A	210	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BACKGROUND	**WELLS**													
WHF-BKG-1	1205079.54	638522.10	195.46	122	105.50	89.96	105.38	90.08	103.66	91.80	103.21	92.25	72.82	1.17
WHF-BKG-1I	1205060.00	638507.00	128.70	140										
WHF-BKG-1D	1205070.00	638516.00	128.68	179										
WHF-BKG-2	1209243.13	639722.35	180.24	109	97.00	83.24	97.22	83.02	94.36	85.88	94.12	86.12	84.57	1.66
WHF-BKG-2I	1209253.00	638507.00	128.70	144										
WHF-BKG-2D	1209262.00	639724.00	111.90	174										
WHF-BKG-3	1210627.97	635989.34	147.57	81	71.31	76.26	70.28	77.29	69.28	78.29	68.60	78.97	77.70	1.18
NORTH PERIMETER ROAD SITES														
SITE 1														
WHF-1-1	1203042.32	635143.15	142.62	123	64.36	78.26	64.02	78.60	62.42	80.20	61.84	80.78	79.46	1.22
WHF-1-1S	1203049.74	635151.60	143.08	75	64.13	78.95	63.80	79.28	62.12	80.96	61.58	81.50	80.17	1.25
WHF-1-2	1203118.26	635344.99	145.61	79	65.91	79.70	65.57	80.04	63.86	81.75	63.27	82.34	80.96	1.29
WHF-1-3	1203351.52	635188.25	155.50	87	76.32	79.18	76.10	79.40	74.33	81.17	74.03	81.47	80.31	1.18
WHF-1-4	1203203.00	635090.00	87.18	79										
SITE 2														
WHF-2-1	1202494.86	634086.86	150.80	87	77.45	73.35	76.96	73.84	75.56	75.24	75.21	75.59	74.51	1.08
WHF-2-2	1202865.00	633889.00	95.26	91										
WHF-2-3	1203282.00	633867.00	97.69	91										
SITE 17														
WHF-17-1S	1205336.67	637015.03	194.96	116	111.15	83.81	111.17	83.79	109.39	85.57	109.05	85.91	84.77	1.13
WHF-17-1	1205336.12	636993.08	194.71	159	110.94	83.77	110.97	83.74	109.17	85.54	108.85	85.86	84.73	1.13
WHF-17-2	1205453.92	636831.50	197.35	122	113.89	83.46	113.92	83.43	112.13	85.22	111.80	85.55	84.42	1.13
WHF-17-3	1205827.08	637196.16	201.21	127	114.87	86.34	114.88	86.33	113.12	88.09	112.73	88.48	87.31	1.14
SITE 18														
WHF-18-1	1203772.59	633090.33	163.57	120	92.50	71.07	92.35	71.22	90.76	72.81	91.09	72.48	71.90	0.88
WHF-18-2S	1203842.84	632763.09	164.75	108	94.97	69.78	94.85	69.90	93.28	71.47	93.69	71.06	70.55	0.84
WHF-18-3	1204225.03	633101.79	175.64	113	103.48	72.16	103.46	72.18	101.93	73.71	102.13	73.51	72.89	0.84
SOUTH PERIMETER ROAD SITES														
SITE 9														
WHF-9-1	1214219.01	628597.84	146.55	118	82.82	63.73	82.73	63.82	82.01	64.54	82.27	64.28	64.09	0.38
WHF-9-2	1213671.00	628836.00	161.07	124	95.99	65.08	96.14	64.93	95.15	65.92	95.35	65.72	65.41	0.48
WHF-9-3S	1214061.06	628618.01	150.85	108	86.73	64.12	86.80	64.05	85.90	64.95	86.14	64.71	64.46	0.44
SITE 10														
WHF-10-1	1214221.83	628137.54	146.73	118	83.97	62.76	84.12	62.61	83.22	63.51	83.62	63.11	63.00	0.40
WHF-10-2	1214063.81	628091.56	150.75	113	88.00	62.75	88.10	62.65	87.15	63.60	87.55	63.20	63.05	0.44

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1995 - UPDATED 02 APRIL 1997.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/10/95-1/13/95		Water Level 4/19/95-4/20/95		Water Level 7/28/95-7/29/95		Water Level 10/12/95-10/14/95		Cumulative Statistical Information	
					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
SITE 11														
WHF-11-1S	1215235.29	627392.24	116.65	54	44.57	72.08	44.03	72.62	44.41	72.24	44.18	72.47	72.35	0.24
WHF-11-1	1215504.26	627581.66	124.86	128	57.17	67.69	56.92	67.94	56.49	68.37	56.96	67.90	67.98	0.29
WHF-11-2	1214288.00	626575.17	148.12	126	89.22	58.90	89.56	58.56	88.73	59.39	89.45	58.67	58.88	0.37
WHF-11-3	1215520.53	627461.72	117.19	73	57.97	59.22	57.74	59.45	57.31	59.88	57.81	59.38	59.48	0.28
WHF-11-4S	1215055.00	627372.00	129.43	79										
WHF-11-4D	1215055.00	627382.00	125.79	109										
SITE 12														
WHF-12-1	1214670.02	627457.07	136.40	113	76.06	60.34	76.22	60.18	75.38	61.02	75.99	60.41	60.49	0.37
WHF-12-2	1214561.00	627418.00	135.56	85										
SITE 13														
WHF-13-1S	1215513.09	626794.39	108.97	61	51.18	57.79	51.02	57.95	50.62	58.35	51.34	57.63	57.93	0.31
WHF-13-1	1215509.34	626304.81	102.66	123	46.73	55.93	46.61	56.05	46.19	56.47	46.93	55.73	56.05	0.31
WHF-13-1I	1215474.00	626745.00	109.17	93										
WHF-13-2S	1215502.60	626080.86	102.86	72	47.66	55.20	47.64	55.22	46.09	56.77	47.98	54.88	55.52	0.85
SITE 14														
WHF-14-1	1214547.12	625482.71	139.69	153	84.30	55.39	84.67	55.02	83.90	55.79	84.84	54.85	55.26	0.42
WHF-14-2	1214432.70	625372.17	145.80	118	90.93	54.87	91.41	54.39	90.55	55.25	91.55	54.25	54.69	0.46
SITE 15														
WHF-15-1	1206206.41	625518.50	66.35	73	24.94	41.41	24.72	41.63	24.75	41.60	23.90	42.45	41.77	0.46
WHF-15-2S	1206067.73	625812.81	59.58	33	17.68	41.90	17.15	42.43	17.55	42.03	15.63	43.95	42.58	0.94
WHF-15-2I	1206070.85	625801.65	60.10	63	18.43	41.67	18.20	41.90	18.28	41.82	17.25	42.85	42.06	0.54
WHF-15-2D	1206064.49	625825.70	59.39	112	17.73	41.66	17.52	41.87	17.61	41.78	16.60	42.79	42.03	0.52
WHF-15-3S	1206488.88	626123.35	69.29	38	24.24	45.05	24.08	45.21	23.95	45.34	23.08	46.21	45.45	0.52
WHF-15-3I	1206488.15	626095.58	69.69	88	24.93	44.76	24.81	44.88	24.68	45.01	23.88	45.81	45.12	0.47
WHF-15-3D	1206490.28	626159.29	69.44	119	24.20	45.24	24.11	45.33	23.96	45.48	23.26	46.18	45.56	0.43
WHF-15-4S	1207477.30	625555.48	143.29	109	95.92	47.37	96.32	46.97	95.39	47.90	95.95	47.34	47.40	0.38
WHF-15-5S	1206671.97	624992.42	104.14	68	62.62	41.52	62.50	41.64	62.33	41.81	62.07	42.07	41.76	0.24
WHF-15-5I	1206675.00	624984.00	105.17	98										
WHF-15-5D	1206682.00	624976.00	106.11	129										
WHF-15-6S	1206299.12	625420.45	74.29	44	32.50	41.79	32.28	42.01	32.31	41.98	31.45	42.84	42.16	0.47
WHF-15-6D	1206306.83	625412.46	75.08	123	33.53	41.55	33.35	41.73	32.33	42.75	32.59	42.49	42.13	0.58
WHF-15-7S				89										
WHF-15-7I				120										
WHF-15-7D				148										
WHF-15-8S	1206065.00	624844.00	79.67	55										
WHF-15-8I	1206056.00	624846.00	79.48	85										
WHF-15-8D	1206047.00	624848.00	79.08	117										
SITE 16														
WHF-16-1	1205320.04	626578.67	50.04	43	10.67	39.37	10.53	39.51	10.58	39.46	10.02	40.02	39.59	0.29
WHF-16-2S	1206255.07	626763.39	83.66	50	37.46	46.20	37.30	46.36	37.11	46.55	36.44	47.22	46.58	0.45
WHF-16-2	1206257.07	626809.39	82.19	74	36.05	46.14	35.89	46.30	35.68	46.51	35.03	47.16	46.53	0.45
WHF-16-2I	1206255.90	626773.31	80.60	130	34.96	45.64	34.52	46.08	34.33	46.27	33.72	46.88	46.22	0.51
WHF-16-3S	1205407.34	626169.98	51.69	23	12.64	39.05	12.45	39.24	12.70	38.99	11.84	39.85	39.28	0.39
WHF-16-3I	1205401.59	626161.38	51.31	53	12.43	38.88	12.25	39.06	12.38	38.93	11.66	39.65	39.13	0.35

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1995 - UPDATED 02 APRIL 1997.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/10/95-1/13/95		Water Level 4/19/95-4/20/95		Water Level 7/28/95-7/29/95		Water Level 10/12/95-10/14/95		Cumulative Statistical Information	
					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
WHF-16-3II	1205396.39	626153.49	51.22	79	12.49	38.73	12.32	38.90	12.44	38.78	11.74	39.48	38.97	0.35
WHF-16-3D	1205391.36	626144.09	51.40	118	9.06	42.34	8.95	42.45	8.96	42.44	8.28	43.12	42.59	0.36
WHF-16-4S	1205379.57	626591.66	54.79	22	14.69	40.10	14.08	40.71	14.55	40.24	11.95	42.84	40.97	1.27
WHF-16-4II	1205381.03	626559.05	53.01	65	13.24	39.77	13.09	39.92	13.14	39.87	12.56	40.45	40.00	0.30
WHF-16-4D	1205382.49	626540.27	52.87	123	13.22	39.65	13.08	39.79	13.11	39.76	12.56	40.31	39.88	0.29
WHF-16-5	1204855.84	626431.26	37.54	14	3.60	33.94	3.90	33.64	3.56	33.98	3.25	34.29	33.96	0.27
WHF-16-6S	1205906.00	626167.00	56.57	22										
WHF-16-6I	1205905.00	626175.00	56.77	62										
WHF-16-7S	1205042.00	626188.00	38.27	15										
WHF-16-7I	1205039.00	626194.00	38.17	46										
WHF-16-7D	1205036.00	626201.00	38.05	75										
Stream Gage			30.73											
SITE 31														
WHF-31-1S				95										
WHF-31-2S	1208134.00	623800.00	122.38	88										
WHF-31-3S	1207909.00	623467.00	105.49	72										
WHF-31-4S				70										
WHF-31-4I				100										
WHF-31-4D				38										
WHF-31-5S				37										
WHF-31-5I				67										
MIDFIELD HANGER SITES														
SITE 5														
WHF-5-OW-1	1209620.00	629684.00	185.80	178	124.30	61.50	121.08	64.72	120.21	65.59	119.72	66.08	64.47	2.06
WHF-5-OW-2	1209628.16	629573.36	186.02	116	114.76	71.26	114.95	71.07	114.78	71.24	114.68	71.34	71.23	0.11
WHF-5-3	1209754.55	629900.98	182.02	151	117.00	65.02	117.59	64.43	116.79	65.23	116.15	65.87	65.14	0.59
WHF-5-8S	1210154.00	630901.55	177.44	128	109.26	68.18	108.38	69.06	107.76	69.68	107.10	70.34	69.32	0.92
WHF-5-8D	1210141.88	630896.23	177.86	174	107.98	69.88	109.62	68.24	108.63	69.23	107.85	70.01	69.34	0.81
WHF-5-9S	1209644.00	630618.86	175.55	129	108.71	66.84	108.97	66.58	108.01	67.54	107.17	68.38	67.34	0.81
WHF-5-9D	1209625.20	630611.55	175.97	180	109.32	66.65	109.28	66.69	108.42	67.55	107.58	68.39	67.32	0.83
WHF-5-10S	1209320.71	630364.77	184.11	145	117.89	66.22	118.15	65.96	117.28	66.83	116.53	67.58	66.65	0.72
WHF-5-10D	1209300.09	630355.03	184.32	183	118.47	65.85	118.63	65.69	117.72	66.60	116.97	67.35	66.37	0.76
WHF-5-PZ1	1209627.42	629645.68	186.00	137	120.78	65.22	121.31	64.69	120.64	65.36	120.37	65.63	65.23	0.40
WHF-5-PZ2	1209628.16	629611.68	185.90	152	119.84	66.06	120.42	65.48	119.64	66.26	119.20	66.70	66.13	0.51
SITE 6														
WHF-6-1S	1209957.06	629374.42	177.63	134	112.84	64.79	113.50	64.13	112.64	64.99	112.17	65.46	64.84	0.55
WHF-6-1D	1209966.98	629386.89	177.55	180	113.03	64.52	113.32	64.23	112.40	65.15	111.94	65.61	64.88	0.62
WHF-6-3	1210053.98	629425.27	175.72	123	110.24	65.48	110.71	65.01	109.81	65.91	109.36	66.36	65.69	0.58
SITE 33														
WHF-33-1	1209955.15	629870.00	180.58	127	113.91	66.67	114.50	66.08	113.68	66.90	113.09	67.49	66.79	0.58
WHF-33-2	1209851.60	629884.39	181.48	128	114.91	66.57	115.51	65.97	114.68	66.80	114.06	67.42	66.69	0.60
WHF-33-3	1209862.89	629812.25	181.79	128	115.30	66.49	115.89	65.90	115.03	66.76	114.50	67.29	66.61	0.58
WHF-33-4	1209990.96	629774.47	180.36	128	113.83	66.53	114.32	66.04	113.59	66.77	113.04	67.32	66.67	0.53
WHF-33-5	1209984.63	629993.81	178.39	126	111.53	66.86	112.11	66.28	111.29	67.10	110.67	67.72	66.99	0.60

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					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
WEST WELL SITES														
WHF-35-1S				116										
WHF-35-1I				146										
WHF-35-1D				176										
WHF-36-1S				116										
WHF-36-1S				146										
WHF-36-1S				173										
SOUTHFIELD HANGAR SITES														
SITE 7														
WHF-7-1	1209041.00	628569.46	187.75	143	127.80	59.95	128.13	59.62	127.34	60.41	127.25	60.50	60.12	0.41
SITE 8														
WHF-8-1	1209897.07	627295.25	173.14	181	114.06	59.08	114.62	58.52	113.66	59.48	113.63	59.51	59.15	0.46
SITE 29														
WHF-29-1	1208846.95	629118.96	193.53	139	125.92	67.61	125.88	67.65	125.77	67.76	125.53	68.00	67.76	0.18
WHF-29-2	1208849.75	628943.65	191.52	137	125.05	66.47	125.14	66.38	124.93	66.59	124.73	66.79	66.56	0.18
WHF-29-3	1208648.45	628931.16	194.02	140	127.14	66.88	127.24	66.78	127.02	67.00	126.77	67.25	66.98	0.20
WHF-29-4	1208603.43	629037.14	195.78	139	128.48	67.30	128.48	67.30	128.25	67.53	128.00	67.78	67.48	0.23
WHF-29-5	1208926.15	629497.33	193.47	132	122.37	71.10	122.46	71.01	122.26	71.21	122.14	71.33	71.16	0.14
SITE 30														
WHF-30-2	1209413.33	628006.85	177.27	130	116.56	60.71	116.88	60.39	116.34	60.93	116.25	61.02	60.76	0.28
WHF-30-3	1209292.06	628032.95	179.11	135	118.68	60.43	119.07	60.04	118.43	60.68	118.33	60.78	60.48	0.33
WHF-30-4	1209294.49	628161.98	181.49	135	121.30	60.19	121.73	59.76	120.96	60.53	120.85	60.64	60.28	0.40
WHF-30-5	1209609.14	628431.51	181.89	158	120.91	60.98	121.42	60.47	120.48	61.41	120.27	61.62	61.12	0.51
NORTHFIELD HANGAR SITES														
SITE 3														
WHF-3-1S	1207621.58	632209.35	172.97	123	101.81	71.16	102.16	70.81	100.81	72.16	100.65	72.32	71.61	0.74
WHF-3-1	1207611.51	632198.68	174.92	153	103.79	71.13	104.14	70.78	102.79	72.13	102.59	72.33	71.59	0.75
WHF-3-1D	1207610.04	632178.41	172.97	180	101.95	71.02	102.30	70.67	100.96	72.01	100.77	72.20	71.48	0.75
WHF-3-2S	1207782.86	632184.34	172.78	114	101.66	71.12	99.05	73.73	98.15	74.63	98.96	73.82	73.33	1.52
WHF-3-2I	1207795.00	632195.00	175.37	153	104.18	71.19	104.55	70.82	103.20	72.17	102.97	72.40	71.65	0.76
WHF-3-2D	1207765.16	632183.56	173.14	176	98.61	74.53	102.21	70.93	100.69	72.45	100.50	72.64	72.64	1.48
WHF-3-3S	1207695.36	632062.10	175.23	111	101.04	74.19	101.45	73.78	100.47	74.76	100.50	74.73	74.37	0.47
WHF-3-3I	1207693.62	632040.10	178.18	154	107.36	70.82	107.76	70.42	106.41	71.77	106.19	71.99	71.25	0.75
WHF-3-3D	1207693.53	632019.91	175.69	181	104.96	70.73	105.38	70.31	104.13	71.56	103.83	71.86	71.12	0.72
WHF-3-4	1207451.46	632194.59	174.38	121	106.24	68.14	103.59	70.79	102.25	72.13	102.03	72.35	70.85	1.94
WHF-3-7S	1207669.50	632251.08	173.27	124	101.95	71.32	102.28	70.99	100.95	72.32	100.72	72.55	71.80	0.76
WHF-3-7I	1207660.94	632251.58	173.25	140	101.97	71.28	102.26	70.99	100.92	72.33	100.70	72.55	71.79	0.77
WHF-3-7D	1207652.01	632252.07	173.29	181	102.00	71.29	102.34	70.95	101.00	72.29	100.78	72.51	71.76	0.76
SITE 4														
WHF-4-1	1208536.18	632766.31	172.45	153	99.53	72.92	99.70	72.75	98.55	73.90	98.69	73.76	73.33	0.58

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					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
SITE 32														
WHF-32-1	1208014.14	633106.04	171.88	110	97.55	74.33	97.71	74.17	96.52	75.36	96.04	75.84	74.93	0.81
WHF-32-2	1207885.48	633198.37	172.27	111	97.98	74.29	98.14	74.13	96.95	75.32	96.49	75.78	74.88	0.80
WHF-32-3	1207892.17	633060.18	172.01	110	N/A	N/A	97.49	74.52	96.26	75.75	95.86	76.15	75.47	0.85
WHF-32-4	1207990.17	632988.86	172.29	110	N/A	N/A	98.46	73.83	97.23	75.06	96.80	75.49	74.79	0.86
WHF-32-5	1208029.24	633294.89	172.15	110	97.33	74.82	97.45	74.70	96.25	75.90	95.74	76.41	75.46	0.83
UST SITES														
SITE 1466														
WHF-1466-1	1208816.54	627384.8	177.79	135	121.21	56.58	121.81	55.98	120.95	56.84	121.10	56.69	56.52	0.38
WHF-1466-1D	1208936.38	629050.5	191.24	163	130.20	61.04	131.70	59.54	129.83	61.41	129.50	61.74	60.93	0.97
WHF-1466-2	1209933.99	628823.41	180.72	120	108.29	72.43	108.43	72.29	108.40	72.32	108.27	72.45	72.37	0.08
WHF-1466-2D	1209494.21	628800.38	190.03	144	128.01	62.02	128.73	61.30	127.81	62.22	127.53	62.50	62.01	0.51
WHF-1466-3	1208314.69	628573.52	197.42	145	138.84	58.58	139.18	58.24	138.28	59.14	138.28	59.14	58.78	0.44
WHF-1466-3D	1209906.26	628363.88	179.75	149	118.24	61.51	118.84	60.91	116.36	63.39	N/A	N/A	61.94	1.29
WHF-1466-4	1207922.74	628288.48	190.37	151	132.73	57.64	133.32	57.05	133.42	56.95	132.55	57.82	57.37	0.43
WHF-1466-5R	1208056.79	627628.39	175.18	132	119.32	55.86	119.88	55.30	119.05	56.13	119.21	55.97	55.82	0.36
WHF-1466-6	1207829.83	627108.12	173.09	131	119.44	53.65	119.89	53.20	119.13	53.96	119.34	53.75	53.64	0.32
WHF-1466-6I	1207808.00	627114.00	173.06	160										
WHF-1466-6D	1207799.00	627121.00	173.05	190										
WHF-1466-6DD	1207789.00	627132.00	172.86	218										
WHF-1466-7	1208216.03	626725.15	172.26	131	119.21	53.05	119.75	52.51	118.93	53.33	119.23	53.03	52.98	0.34
WHF-1466-8	1208990.92	626663.47	172.24	131	116.74	55.50	117.40	54.84	116.48	55.76	116.74	55.50	55.40	0.39
WHF-1466-8I	1208972.00	626670.00	172.58	171										
WHF-1466-8D	1208962.00	626675.00	172.28	190										
WHF-1466-8DD	1208952.00	626682.00	172.64	220										
WHF-1466-9	1210492.27	627644.67	173.20	116	100.23	72.97	100.91	72.29	100.52	72.68	100.71	72.49	72.61	0.29
WHF-1466-9I	1210489.00	627651.00	173.40	160										
WHF-1466-9D	1210493.00	627664.00	173.11	190										
WHF-1466-9DD	1210496.00	627675.00	173.44	220										
WHF-1466-10	1209657.23	627192.33	172.08	122	111.96	60.12	112.60	59.48	111.94	60.14	111.93	60.15	59.97	0.33
WHF-1466-11	1210525.94	628485.13	175.87	104	97.01	78.86	97.42	78.45	97.02	78.85	97.24	78.63	78.70	0.20
WHF-1466-12	1209594.71	629128.76	189.92	147	127.01	62.91	127.71	62.21	126.81	63.11	126.43	63.49	62.93	0.54
WHF-1466-13	1209414.18	628006.79	177.31	130	116.56	60.75	116.88	60.43	116.34	60.97	116.25	61.06	60.80	0.28
WHF-1466-14	1208944.85	628092.09	181.05	135	111.70	69.35	111.49	69.56	111.53	69.52	111.50	69.55	69.50	0.10
WHF-1466-15	1209166.19	627611.48	177.81	135	119.94	57.87	120.38	57.43	119.53	58.28	119.63	58.18	57.94	0.38
WHF-1466-16	1209662.19	627740.42	176.49	135	116.50	59.99	116.63	59.86	116.36	60.13	116.33	60.16	60.04	0.14
WHF-1466-17	1208283.50	627818.17	177.91	134	121.00	56.91	121.57	56.34	120.73	57.18	120.87	57.04	56.87	0.37
WHF-1466-18	1209171.17	628402.19	185.58	135	124.14	61.44	124.28	61.30	123.96	61.62	123.85	61.73	61.52	0.19
WHF-1466-19	1208807.94	628641.71	188.81	145	129.30	59.51	129.72	59.09	128.88	59.93	128.77	60.04	59.64	0.43
WHF-1466-20	1208702.50	628379.34	187.76	140	128.98	58.78	129.42	58.34	128.54	59.22	128.50	59.26	58.90	0.43
WHF-1466-21S	1206717.00	623285.00	62.39	40										
WHF-1466-21I	1206710.00	623280.00	61.75	69										
WHF-1466-21D	1206702.00	623273.00	61.44	96										
WHF-1466-22S	1209940.00	623603.00	139.36	108										
WHF-1466-22I	1209952.00	623596.00	139.23	140										

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WHF-1466-22D	1209963.00	623591.00	139.11	167										
SITE 1467														
WHF-1467-1	1208880.11	632144.48	168.51	97	84.35	84.16	84.88	83.63	84.24	84.27	84.47	84.04	84.03	0.28
WHF-1467-2	1209133.86	632896.85	157.44	85	74.96	82.48	75.13	82.31	74.81	82.63	75.07	82.37	82.45	0.14
WHF-1467-2D	1207367.82	631970.72	174.29	124	103.84	70.45	104.42	69.87	103.08	71.21	102.89	71.40	70.73	0.71
WHF-1467-3	1209267.99	633301.90	157.25	95	80.96	76.29	81.03	76.22	79.83	77.42	79.07	78.18	77.03	0.94
WHF-1467-4	1208093.29	631782.58	174.64	103	92.86	81.78	93.36	81.28	92.64	82.00	93.19	81.45	81.63	0.32
WHF-1467-5	1208824.68	631802.78	173.27	100	88.66	84.61	89.20	84.07	88.48	84.79	88.89	84.38	84.46	0.31
WHF-1467-5D	1208046.38	633347.40	171.77	140	96.56	75.21	96.96	74.81	95.95	75.82	95.30	76.47	75.58	0.73
WHF-1467-6	1208559.81	631562.19	176.54	103	92.81	83.73	93.39	83.15	92.66	83.88	93.14	83.40	83.54	0.33
WHF-1467-6D	1208432.97	633067.31	166.23	102	88.46	77.77	88.86	77.37	87.85	78.38	83.97	82.26	78.95	2.25
WHF-1467-7	1209052.49	632855.16	157.48	85	74.60	82.88	74.80	82.68	74.42	83.06	74.64	82.84	82.87	0.16
WHF-1467-7D	1209074.01	633275.99	158.18	129	84.14	74.04	84.27	73.91	83.12	75.06	82.35	75.83	74.71	0.91
WHF-1467-8	1206877.55	633649.88	173.24	107	97.08	76.16	97.41	75.83	95.98	77.26	95.60	77.64	76.72	0.86
WHF-1467-8D	1208899.70	632156.47	168.85	127	97.35	71.50	97.76	71.09	96.78	72.07	96.46	72.39	71.76	0.58
WHF-1467-9	1208397.28	633980.16	162.99	100	85.90	77.09	86.03	76.96	84.69	78.30	84.03	78.96	77.83	0.97
WHF-1467-10			89.10	82										
WHF-1467-11	1209424.83	633512.23	156.49	90	80.20	76.29	80.12	76.37	78.87	77.62	77.90	78.59	77.22	1.10
WHF-1467-12			106.55	83										
WHF-1467-13R	1209301.78	632312.00	164.57	90	80.02	84.55	80.41	84.16	79.92	84.65	80.11	84.46	84.46	0.21
WHF-1467-14	1207731.96	631553.69	174.47	110	96.21	78.26	97.02	77.45	96.03	78.44	96.48	77.99	78.04	0.43
WHF-1467-16	1207111.19	631339.86	177.05	115	101.86	75.19	102.39	74.66	101.79	75.26	102.21	74.84	74.99	0.29
WHF-1467-17	1206345.83	631844.43	115.00	106	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WHF-1467-18	1206407.62	632661.19	175.12	115	102.65	72.47	103.13	71.99	101.63	73.49	101.51	73.61	72.89	0.79
WHF-1467-19	1207591.45	633994.12	169.33	105	92.34	76.99	92.60	76.73	91.19	78.14	90.72	78.61	77.62	0.90
WHF-1467-20	1207871.24	632957.17	172.26	110	98.29	73.97	98.71	73.55	97.42	74.84	97.04	75.22	74.40	0.77
WHF-1467-21	1207384.89	631942.66	173.93	111	101.24	72.69	101.96	71.97	100.85	73.08	101.01	72.92	72.67	0.49
WHF-1467-22R	1207981.96	632195.77	172.38	103	93.58	78.80	94.24	78.14	93.49	78.89	93.64	78.74	78.64	0.34
WHF-1467-23	1208368.59	632084.82	172.57	101	88.78	83.79	89.34	83.23	88.66	83.91	88.97	83.60	83.63	0.30
WHF-1467-24	1208544.22	632765.31	169.77	100	87.03	82.74	87.45	82.32	86.88	82.89	86.94	82.83	82.70	0.26
WHF-1467-25	1208691.16	633034.12	160.85	91	81.60	79.25	N/A	N/A	81.17	79.68	80.88	79.97	53.07	0.36
WHF-1467-26	1208423.02	633068.08	166.28	90	74.17	92.11	74.27	92.01	74.15	92.13	74.18	92.10	92.09	0.05
WHF-1467-27	1207310.26	632473.23	173.74	116	101.36	72.38	101.83	71.91	100.54	73.20	100.20	73.54	72.76	0.75
WHF-1467-28	1207602.58	632767.80	173.03	106	99.82	73.21	100.30	72.73	99.01	74.02	98.68	74.35	73.58	0.74
WHF-1467-29	1208520.49	632477.02	168.96	100	85.08	83.88	85.62	83.34	84.95	84.01	85.20	83.76	83.75	0.29
WHF-1467-30	1208220.74	632549.79	174.23	103	93.88	80.35	94.35	79.88	93.93	80.30	93.84	80.39	80.23	0.24
WHF-1467-31	1207346.22	633177.47	171.21	125	97.07	74.14	97.48	73.73	96.28	74.93	95.81	75.40	74.55	0.75
WHF-1467-32	1208624.59	633276.57	162.31	100	86.00	76.31	86.20	76.11	85.08	77.23	84.41	77.90	76.89	0.83
WHF-1467-33	1208203.66	633103.51	169.86	84	77.38	92.48	77.44	92.42	77.38	92.48	77.35	92.51	92.47	0.04
SITE 3054														
WHF-3054-1	1209921.73	627170.85	171.47	125	105.97	N/A	106.44	N/A	106.18	N/A	106.05	N/A	N/A	N/A
WHF-3054-2	1209907.63	627272.31	171.09	118	106.36	N/A	106.84	N/A	106.55	N/A	106.51	N/A	N/A	N/A

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/10/95-1/13/95		Water Level 4/19/95-4/20/95		Water Level 7/28/95-7/29/95		Water Level 10/12/95-10/14/95		Cumulative Statistical Information	
					Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Depth Feet BTOC	Elevation Ft. above MSL	Mean Elevation Ft. above MSL	Standard Deviation (Ft.)
SITE 2894														
WHF-2894-1														
WHF-2894-1D														
WHF-2894-2														
WHF-2894-2D														
WHF-2894-3														
WHF-2894-4														
WHF-2894-5														
WHF-2894-6														
WHF-2894-7														

NOTES: Monitoring wells at UST sites 1466, 1467, 3054, and 2894 were not surveyed by licensed professional surveyors.

TOC - Top of Casing
Ft. - Feet
MSL - mean sea level (NVGD) 1927
BTOC - below top of casing
NA - no access
PZ - piezometer
S - shallow aquifer monitoring well
I - intermediate aquifer monitoring well
II - deeper intermediate aquifer monitoring well
D - deep aquifer monitoring well
DD - deeper aquifer monitoring well
R - replacement monitoring well

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1996-UPDATED 24 OCTOBER 1997.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/19/96-1/20/96 Depth Feet BTOC	Water Level 1/19/96-1/20/96 Elevation Ft. above MSL	Water Level 4/25-27/96 Depth Feet BTOC	Water Level 4/25-27/96 Elevation Ft. above MSL	Water Level 7/25-27/96 Depth Feet BTOC	Water Level 7/25-27/96 Elevation Ft. above MSL	Water Level 11/7-9/96 Depth Feet BTOC	Water Level 11/7-9/96 Elevation Ft. above MSL
PRODUCTION	**WELLS**											
W-N2	1209039.28	631869.70	N/A	190	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W-W2	1209376.90	630999.19	N/A	216	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
W-S2	1209888.06	629926.01	N/A	210	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
BACKGROUND	**WELLS**											
WHF-BKG-1	1205079.54	638522.10	195.46	122	99.32	96.14	97.76	97.70	96.87	98.59	97.85	97.61
WHF-BKG-1I	1205060.00	638507.00	128.70	140	NE		NE		96.70	32.00	97.70	31.00
WHF-BKG-1D	1205070.00	638516.00	128.68	179	NE		NE		96.86	31.82	97.87	30.81
WHF-BKG-2S	1209243.13	639722.35	180.24	109	89.03	91.21	88.11	92.13	87.46	92.78	89.39	90.85
WHF-BKG-2I	1209253.00	638507.00	128.70	144	NE		NE		87.52	41.18	89.46	39.24
WHF-BKG-2D	1209262.00	639724.00	111.90	174	NE		NE		NA		89.44	22.46
WHF-BKG-3	1210627.97	635989.34	147.57	81	64.16	83.41	62.81	84.76	63.16	84.41	65.56	82.01
NORTH PERIMETER ROAD SITES												
SITE 1												
WHF-1-1	1203042.32	635143.15	142.62	123	58.18	84.44	57.58	85.04	57.43	85.19	58.92	83.70
WHF-1-1S	1203049.74	635151.60	143.08	75	57.81	85.27	57.13	85.95	57.09	85.99	59.53	83.55
WHF-1-2	1203118.26	635344.99	145.61	79	59.59	86.02	58.78	86.83	58.76	86.85	60.18	85.43
WHF-1-3	1203351.52	635188.25	155.50	87	70.08	85.42	69.40	86.10	69.23	86.27	70.63	84.87
WHF-1-4	1203203.00	635090.00	87.18	79	NE		66.27	20.91	66.17	21.01	67.62	19.56
SITE 2												
WHF-2-1	1202494.86	634086.86	150.80	87	71.50	79.30	71.21	79.59	71.47	79.33	72.95	77.85
WHF-2-2	1202865.00	633889.00	95.26	91	NM		79.96	15.30	80.08	15.18	81.58	13.68
WHF-2-3	1203282.00	633867.00	97.69	91	NM		80.40	17.29	80.38	17.31	81.89	15.80
SITE 17												
WHF-17-1S	1205336.67	637015.03	194.96	116	105.09	89.87	103.44	91.52	103.82	91.14	104.16	90.80
WHF-17-1	1205336.12	636993.08	194.71	159	104.88	89.83	103.66	91.05	102.82	91.89	103.96	90.75
WHF-17-2	1205453.92	636831.50	197.35	122	107.87	89.48	106.40	90.95	105.73	91.62	106.91	90.44
WHF-17-3	1205827.08	637196.16	201.21	127	109.82	91.39	107.26	93.95	106.61	94.60	107.68	93.53
SITE 18												
WHF-18-1	1203772.59	633090.33	163.57	120	86.81	76.76	86.69	76.88	86.62	76.95	88.05	75.52
WHF-18-2S	1203842.84	632763.09	164.75	108	89.37	75.38	89.37	75.38	89.32	75.43	90.73	74.02
WHF-18-3	1204225.03	633101.79	175.64	113	97.58	78.06	97.57	78.07	97.51	78.13	98.70	76.94
SOUTH PERIMETER ROAD SITES												
SITE 9												
WHF-9-1	1214219.01	628597.84	146.55	118	76.91	69.64	75.99	70.56	77.44	69.11	80.85	65.70
WHF-9-2	1213671.00	628836.00	161.07	124	90.03	71.04	89.13	71.94	90.27	70.80	93.61	67.46
WHF-9-3S	1214061.06	628618.01	150.85	108	80.78	70.07	79.96	70.89	81.30	69.55	84.67	-3.37
SITE 10												
WHF-10-1	1214221.83	628137.54	146.73	118	78.33	68.40	77.49	69.24	78.82	67.91	82.18	64.55
WHF-10-2	1214063.81	628091.56	150.75	113	82.25	68.50	81.44	69.31	82.66	68.09	86.02	-3.36
SITE 11												
WHF-11-1S	1215235.29	627392.24	116.65	54	43.26	73.39	50.82	65.83	44.43	72.22	45.25	71.40
WHF-11-1	1215504.26	627581.66	124.86	128	51.85	73.01	50.82	74.04	52.98	71.88	56.17	68.69
WHF-11-2	1214288.00	626575.17	148.12	126	84.03	64.09	83.53	64.59	84.58	63.54	88.01	60.11
WHF-11-3	1215520.53	627461.72	117.19	73	52.69	64.50	50.82	66.37	53.78	63.41	57.03	60.16
WHF-11-4S	1215055.00	627372.00	129.43	79	NE		NE		NE		67.81	61.62
WHF-11-4D	1215055.00	627382.00	125.79	109	NE		NE		64.20	61.59	68.04	57.75

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1996-UPDATED 24 OCTOBER 1997.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/19/96-1/20/96 Depth Feet BTOC	Water Level 1/19/96-1/20/96 Elevation Ft. above MSL	Water Level 4/25-27/96 Depth Feet BTOC	Water Level 4/25-27/96 Elevation Ft. above MSL	Water Level 7/25-27/96 Depth Feet BTOC	Water Level 7/25-27/96 Elevation Ft. above MSL	Water Level 11/7-9/96 Depth Feet BTOC	Water Level 11/7-9/96 Elevation Ft. above MSL
SITE 12												
WHF-12-1	1214670.02	627457.07	136.40	113	70.61	65.79	69.90	66.50	71.37	65.03	74.75	61.65
WHF-12-2	1214561.00	627418.00	135.56	85	NE		NE		NE		NE	
SITE 13										0.00		
WHF-13-1S	1215513.09	626794.39	108.97	61	45.92	63.05	45.18	63.79	47.11	61.86	50.48	58.49
WHF-13-1	1215509.34	626304.81	102.66	123	41.87	60.79	41.14	61.52	42.84	59.82	46.17	56.49
WHF-13-1I	1215474.00	626745.00	109.17	93	NM		NM			109.17	51.45	57.72
WHF-13-2S	1215502.60	626080.86	102.86	72	42.91	59.95	42.26	60.60	43.88	58.98	47.13	55.73
SITE 14												
WHF-14-1	1214547.12	625482.71	139.69	153	79.60	60.09	79.14	60.55	80.19	59.50	63.65	76.04
WHF-14-2	1214432.70	625372.17	145.80	118	86.30	59.50	85.90	59.90	86.83	58.97	90.33	55.47
SITE 15												
WHF-15-1	1206206.41	625518.50	66.35	73	22.17	44.18	21.82	44.53	NM		23.90	42.45
WHF-15-2S	1206067.73	625812.81	59.58	33	14.48	45.10	13.45	46.13	14.39	45.19	16.10	43.48
WHF-15-2I	1206070.85	625801.65	60.10	63	15.72	44.38	15.33	44.77	16.19	43.91	17.37	42.73
WHF-15-2D	1206064.49	625825.70	59.39	112	15.08	44.31	14.68	44.71	15.52	43.87	15.70	43.69
WHF-15-3S	1206488.88	626123.35	69.29	38	21.00	48.29	20.17	49.12	21.39	47.90	22.77	46.52
WHF-15-3I	1206488.15	626095.58	69.69	88	21.76	47.93	21.41	48.28	22.16	47.53	23.53	46.16
WHF-15-3D	1206490.28	626159.29	69.44	119	21.01	48.43	20.68	48.76	21.36	48.08	22.75	46.69
WHF-15-4S	1207477.30	625555.48	143.29	109	91.98	51.31	92.11	51.18	92.53	50.76	94.45	48.84
WHF-15-5S	1206671.97	624992.42	104.14	68	59.55	44.59	59.38	44.76	60.22	43.92	61.54	42.60
WHF-15-5I	1206675.00	624984.00	105.17	98	NE		NE		61.28	43.89	62.63	42.54
WHF-15-5D	1206682.00	624976.00	106.11	129	NE		NE		62.22	43.89	63.54	42.57
WHF-15-6S	1206299.12	625420.45	74.29	44	29.58	44.71	29.23	45.06	30.15	44.14	31.40	42.89
WHF-15-6D	1206306.83	625412.46	75.08	123	30.69	44.39	30.37	44.71	31.27	43.81	32.45	42.63
WHF-15-7S	1206708.00	625823.00	120.45	89	NE		NE		70.76	49.69	72.35	48.10
WHF-15-7I	1206707.00	625832.00	120.17	120	NE		NE		70.46	49.71	72.03	48.14
WHF-15-7D	1206707.00	625840.00	119.18	148	NE		NE		70.03	49.15	71.63	47.55
WHF-15-8S	1206065.00	624844.00	79.67	55	NE		NE		40.15	39.52	41.11	38.56
WHF-15-8I	1206056.00	624846.00	79.48	85	NE		NE		39.98	39.50	40.95	38.53
WHF-15-8D	1206047.00	624848.00	79.08	117	NE		NE		39.57	39.51	40.54	38.54
SITE 16												
WHF-16-1	1205320.04	626578.67	50.04	43	9.15	40.89	8.94	41.10	9.29	40.75	9.06	40.98
WHF-16-2S	1206255.07	626763.39	83.66	50	34.27	49.39	33.93	49.73	34.63	49.03	35.87	47.79
WHF-16-2	1206257.07	626809.39	82.19	74	32.86	49.33	32.53	49.66	33.20	48.99	34.47	47.72
WHF-16-2I	1206255.90	626773.31	80.60	130	31.56	49.04	31.23	49.37	31.89	48.71	33.13	47.47
WHF-16-3S	1205407.34	626169.98	51.69	23	11.05	40.64	10.83	40.86	11.14	40.55	12.01	39.68
WHF-16-3I	1205401.59	626161.38	51.31	53	10.75	40.56	10.49	40.82	10.93	40.38	11.71	39.60
WHF-16-3II	1205396.39	626153.49	51.22	79	10.84	40.38	10.60	40.62	11.04	40.18	11.80	39.42
WHF-16-3D	1205391.36	626144.09	51.40	118	6.95	44.45	6.57	44.83	6.92	44.48	7.86	43.54
WHF-16-4S	1205379.57	626591.66	54.79	22	11.94	42.85	10.67	44.12	12.74	42.05	13.81	40.98
WHF-16-4II	1205381.03	626559.05	53.01	65	11.58	41.43	11.58	41.43	11.75	41.26	12.48	40.53
WHF-16-4D	1205382.49	626540.27	52.87	123	11.57	41.30	11.43	41.44	11.75	41.12	12.46	40.41
WHF-16-5	1204855.84	626431.26	37.54	14	3.06	34.48	3.09	34.45	3.16	34.38	3.35	34.19
WHF-16-6S	1205906.00	626167.00	56.57	22	NE		NE		12.16	44.41	13.46	43.11
WHF-16-6I	1205905.00	626175.00	56.77	62	NE		NE		12.45	44.32	13.59	43.18
WHF-16-7S	1205042.00	626188.00	38.27	15	NE		NE		2.96	35.31	3.68	34.59
WHF-16-7I	1205039.00	626194.00	38.17	46	NE		NE		1.44	36.73	1.93	36.24
WHF-16-7D	1205036.00	626201.00	38.05	75	NE		NE		1.31	36.74	1.79	36.26

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Stream Gage			30.73	NA	1.13	29.60	NE					
SITE 31												
WHF-31-1S	1208134.00	624793.00	150.09	95	NE		NE		NM		DRY	
WHF-31-2S	1208134.00	623800.00	122.38	88	NE		NE		78.14	44.24	80.13	42.25
WHF-31-3S	1207909.00	623467.00	105.49	72	NE		NE		NM		66.91	38.58
WHF-31-4S	117588.54	623876.57	106.91	70	NE		NE		NM		DRY	
WHF-31-4I	115761.39	623863.31	107.36	100	NE		NE		NM		67.62	39.74
WHF-31-4D	117577.93	623870.38	107.22	38	NE		NE		NM		67.27	39.95
MIDFIELD HANGER SITES												
SITE 5												
WHF-5-0W-1	1209620.00	629684.00	185.80	178	116.76	69.04	114.61	71.19	114.92	70.88	116.55	69.25
WHF-5-0W-2	1209628.16	629573.36	186.02	116	113.15	72.87	111.65	74.37	111.67	74.35	112.66	73.36
WHF-5-3	1209754.55	629900.98	182.02	151	112.30	69.72	NA	182.02	NM		112.71	69.31
WHF-5-8S	1210154.00	630901.55	177.44	128	102.64	74.80	100.94	76.50	101.03	76.41	103.17	74.27
WHF-5-8D	1210141.88	630896.23	177.86	174	103.62	74.24	102.04	75.82	102.54	75.32	104.45	73.41
WHF-5-9S	1209644.00	630618.86	175.55	129	103.13	72.42	101.59	73.96	102.12	73.43	103.71	71.84
WHF-5-9D	1209625.20	630611.55	175.97	180	103.56	72.41	102.00	73.97	102.56	73.41	104.15	71.82
WHF-5-10S	1209320.71	630364.77	184.11	145	112.55	71.56	111.13	72.98	111.50	72.61	113.13	70.98
WHF-5-10D	1209300.09	630355.03	184.32	183	113.05	71.27	111.59	72.73	111.97	72.35	113.65	70.67
WHF-5-PZ1	1209627.42	629645.68	186.00	137	116.66	69.34	115.66	70.34	115.71	70.29	117.02	68.98
WHF-5-PZ2	1209628.16	629611.68	185.90	152	115.33	70.57	114.07	71.83	114.33	71.57	115.89	70.01
SITE 6												
WHF-6-1S	1209957.06	629374.42	177.63	134	108.47	69.16	107.13	70.50	107.28	70.35	109.03	68.60
WHF-6-1D	1209966.98	629386.89	177.55	180	108.03	69.52	106.80	70.75	107.05	70.50	108.85	68.70
WHF-6-3	1210053.98	629425.27	175.72	123	105.40	70.32	104.13	71.59	104.35	71.37	106.10	69.62
SITE 33												
WHF-33-1	1209955.15	629870.00	180.58	127	109.19	71.39	WELL SENT.		WELL SENT.		109.66	70.92
WHF-33-2	1209851.60	629884.39	181.48	128	110.18	71.30	WELL SENT.		WELL SENT.		110.63	70.85
WHF-33-3	1209862.89	629812.25	181.79	128	110.64	71.15	WELL SENT.		WELL SENT.		111.05	70.74
WHF-33-4	1209990.96	629774.47	180.36	128	109.15	71.21	107.76	72.60	107.97	72.39	109.63	70.73
WHF-33-5	1209984.63	629993.81	178.39	126	106.78	71.61	105.30	73.09	105.55	72.84	107.23	71.16
SOUTHFIELD HANGAR SITES												
SITE 7												
WHF-7-1	1209041.00	628569.46	187.75	143	123.63	64.12	122.75	65.00	122.75	65.00	124.40	63.35
SITE 8												
WHF-8-1	1209897.07	627295.25	173.14	181	109.54	63.60	109.23	63.91	109.23	63.91	111.43	61.71
SITE 29												
WHF-29-1	1208846.95	629118.96	193.53	139	124.60	68.93	123.37	70.16	123.37	70.16	124.18	69.35
WHF-29-2	1208849.75	628943.65	191.52	137	123.65	67.87	122.61	68.91	122.61	68.91	123.45	68.07
WHF-29-3	1208648.45	628931.16	194.02	140	125.82	68.20	124.72	69.30	124.72	69.30	125.50	68.52
WHF-29-4	1208603.43	629037.14	195.78	139	127.09	68.69	125.85	69.93	125.85	69.93	126.67	69.11
WHF-29-5	1208926.15	629497.33	193.47	132	121.44	72.03	120.26	73.21	120.26	73.21	120.99	72.48
SITE 30												
WHF-30-2	1209413.33	628006.85	177.27	130	113.98	63.29	112.71	64.56	112.71	64.56	NM	
WHF-30-3	1209292.06	628032.95	179.11	135	115.96	63.15	114.78	64.33	114.78	64.33	116.06	63.05
WHF-30-4	1209294.49	628161.98	181.49	135	117.80	63.69	116.90	64.59	116.90	64.59	118.43	63.06
WHF-30-5	1209609.14	628431.51	181.89	158	116.50	65.39	115.80	66.09	115.80	66.09	117.60	64.29

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1996-UPDATED 24 OCTOBER 1997.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/19/96-1/20/96 Depth Feet BTOC	Water Level 1/19/96-1/20/96 Elevation Ft. above MSL	Water Level 4/25-27/96 Depth Feet BTOC	Water Level 4/25-27/96 Elevation Ft. above MSL	Water Level 7/25-27/96 Depth Feet BTOC	Water Level 7/25-27/96 Elevation Ft. above MSL	Water Level 11/7-9/96 Depth Feet BTOC	Water Level 11/7-9/96 Elevation Ft. above MSL
NORTHFIELD HANGAR SITES												
SITE 3												
WHF-3-1S	1207621.58	632209.35	172.97	123	96.80	76.17	95.69	77.28	95.25	77.72	96.89	76.08
WHF-3-1	1207611.51	632198.68	174.92	153	98.76	76.16	97.66	77.26	97.51	77.41	98.87	76.05
WHF-3-1D	1207610.04	632178.41	172.97	180	96.95	76.02	95.85	77.12	95.43	77.54	97.06	75.91
WHF-3-2S	1207782.86	632184.34	172.78	114	95.03	77.75	93.67	79.11	93.34	79.44	94.59	78.19
WHF-3-2I	1207795.00	632195.00	175.37	153	99.17	76.20	98.10	77.27	NM		99.36	76.01
WHF-3-2D	1207765.16	632183.56	173.14	176	96.69	76.45	95.65	77.49	95.09	78.05	96.85	76.29
WHF-3-3S	1207695.36	632062.10	175.23	111	97.54	77.69	96.00	79.23	96.02	79.21	97.22	78.01
WHF-3-3I	1207693.62	632040.10	178.18	154	102.33	75.85	101.35	76.83	NM		102.63	75.55
WHF-3-3D	1207693.53	632019.91	175.69	181	100.05	75.64	99.09	76.60	98.62	77.07	100.26	75.43
WHF-3-4	1207451.46	632194.59	174.38	121	98.20	76.18	96.83	77.55	96.83	77.55	98.34	76.04
WHF-3-7S	1207669.50	632251.08	173.27	124	96.90	76.37	95.75	77.52	95.34	77.93	96.98	76.29
WHF-3-7I	1207660.94	632251.58	173.25	140	96.91	76.34	97.76	75.49	95.33	77.92	96.97	76.28
WHF-3-7D	1207652.01	632252.07	173.29	181	96.99	76.30	95.85	77.44	95.40	77.89	97.05	76.24
SITE 4												
WHF-4-1	1208536.18	632766.31	172.45	153	95.67	76.78	92.92	79.53	92.64	79.81	94.28	78.17
SITE 32												
WHF-32-1	1208014.14	633106.04	171.88	110	92.66	79.22	90.86	81.02	90.32	81.56	91.57	80.31
WHF-32-2	1207885.48	633198.37	172.27	111	93.13	79.14	91.27	81.00	90.78	81.49	91.99	80.28
WHF-32-3	1207892.17	633060.18	172.01	110	93.56	78.45	91.71	80.30	91.27	80.74	92.51	79.50
WHF-32-4	1207990.17	632988.86	172.29	110	93.35	78.94	well plugged		well plugged		well plugged	
WHF-32-5	1208029.24	633294.89	172.15	110	92.45	79.70	90.40	81.75	89.75	82.40	91.18	80.97
UST SITES												
SITE 1466												
WHF-1466-1	1208816.54	627384.8	177.79	135	117.27	60.52	116.96	60.83	116.96	60.83	118.64	59.15
WHF-1466-1D	1208936.38	629050.5	191.24	163	125.94	65.30	125.03	66.21	125.03	66.21	126.63	64.61
WHF-1466-2	1209933.99	628823.41	180.72	120	108.17	72.55	107.70	73.02	107.70	73.02	108.02	72.70
WHF-1466-2D	1209494.21	628800.38	190.03	144	123.79	66.24	122.98	67.05	122.98	67.05	124.71	65.32
WHF-1466-3	1208314.69	628573.52	197.42	145	134.50	62.92	133.94	63.48	133.94	63.48	135.64	61.78
WHF-1466-3D	1209906.26	628363.88	179.75	149	113.64	66.11	113.03	66.72	113.03	66.72	115.11	64.64
WHF-1466-4	1207922.74	628288.48	190.37	151	128.65	61.72	128.38	61.99	128.38	61.99	130.06	60.31
WHF-1466-5R	1208056.79	627628.39	175.18	132	115.37	59.81	115.17	60.01	115.17	60.01	116.85	58.33
WHF-1466-6	1207829.83	627108.12	173.09	131	115.58	57.51	115.54	57.55	115.54	57.55	117.20	55.89
WHF-1466-6I	1207808.00	627114.00	173.06	160	NM		115.52	57.54	115.52	57.54	117.20	55.86
WHF-1466-6D	1207799.00	627121.00	173.05	190	NM		115.58	57.47	115.58	57.47	117.22	55.83
WHF-1466-6DD	1207789.00	627132.00	172.86	218	NM		NM		NM		117.09	55.77
WHF-1466-7	1208216.03	626725.15	172.26	131	115.23	57.03	115.22	57.04	115.22	57.04	117.03	55.23
WHF-1466-8	1208990.92	626663.47	172.24	131	112.85	59.39	112.70	59.54	112.70	59.54	114.50	57.74
WHF-1466-8I	1208972.00	626670.00	172.58	171	NM		113.09	59.49	113.09	59.49	114.95	57.63
WHF-1466-8D	1208962.00	626675.00	172.28	190	NM		112.95	59.33	112.95	59.33	114.70	57.58
WHF-1466-8DD	1208952.00	626682.00	172.64	220	NM		NM		NM		115.06	57.58
WHF-1466-9	1210492.27	627644.67	173.20	116	99.67	73.53	99.85	73.35	99.85	73.35	100.38	72.82
WHF-1466-9I	1210489.00	627651.00	173.40	160	NM		107.05	66.35	107.05	66.35	109.50	63.90
WHF-1466-9D	1210493.00	627664.00	173.11	190	NM		106.90	66.21	106.90	66.21	109.38	63.73
WHF-1466-9DD	1210496.00	627675.00	173.44	220	NM		NM		NM		109.63	63.81
WHF-1466-10	1209657.23	627192.33	172.08	122	109.09	62.99	108.62	63.46	108.62	63.46	109.80	62.28
WHF-1466-11	1210525.94	628485.13	175.87	104	96.47	79.40	96.83	79.04	96.83	79.04	97.25	78.62
WHF-1466-12	1209594.71	629128.76	189.92	147	122.68	67.24	121.80	68.12	121.80	68.12	123.53	66.39

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1996-UPDATED 24 OCTOBER 1997.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/19/96-1/20/96 Depth Feet BTOC	Water Level 1/19/96-1/20/96 Elevation Ft. above MSL	Water Level 4/25-27/96 Depth Feet BTOC	Water Level 4/25-27/96 Elevation Ft. above MSL	Water Level 7/25-27/96 Depth Feet BTOC	Water Level 7/25-27/96 Elevation Ft. above MSL	Water Level 11/7-9/96 Depth Feet BTOC	Water Level 11/7-9/96 Elevation Ft. above MSL
WHF-1466-13	1209414.18	628006.79	177.31	130	N/A	N/A	NM		NM		113.93	63.38
WHF-1466-14	1208944.85	628092.09	181.05	135	111.48	69.57	111.39	181.05	DRY		DRY	
WHF-1466-15	1209166.19	627611.48	177.81	135	115.96	61.85	115.33	62.48	115.33	62.48	117.01	60.80
WHF-1466-16	1209662.19	627740.42	176.49	135	113.68	62.81	112.23	64.26	112.23	64.26	113.63	62.86
WHF-1466-17	1208283.50	627818.17	177.91	134	112.08	65.83	116.74	61.17	116.74	61.17	118.38	59.53
WHF-1466-18	1209171.17	628402.19	185.58	135	121.57	64.01	120.32	65.26	120.32	65.26	121.73	63.85
WHF-1466-19	1208807.94	628641.71	188.81	145	125.12	63.69	124.34	64.47	124.34	64.47	126.03	62.78
WHF-1466-20	1208702.50	628379.34	187.76	140	124.83	62.93	124.25	63.51	124.25	63.51	125.81	61.95
WHF-1466-21S	1206717.00	623285.00	62.39	40	NE		28.97	33.42	28.97	33.42	31.12	31.27
WHF-1466-21I	1206710.00	623280.00	61.75	69	NE		29.75	32.00	29.75	32.00	30.52	31.23
WHF-1466-21D	1206702.00	623273.00	61.44	96	NE		30.33	31.11	30.33	31.11	29.87	31.57
WHF-1466-22S	1209940.00	623603.00	139.36	108	NE		90.03	49.33	90.03	49.33	93.12	46.24
WHF-1466-22I	1209952.00	623596.00	139.23	140	NE		89.87	49.36	89.87	49.36	93.05	46.18
WHF-1466-22D	1209963.00	623591.00	139.11	167	NE		87.85	51.26	87.85	51.26	93.41	45.70
SITE 1467												
WHF-1467-1	1208880.11	632144.48	168.51	97	83.44	85.07	NM		89.87	78.64	83.39	85.12
WHF-1467-2	1209133.86	632896.85	157.44	85	73.49	83.95	72.11	85.33	87.85	69.59	72.60	84.84
WHF-1467-2D	1207367.82	631970.72	174.29	124	98.94	75.35	NM		89.87	84.42	99.31	74.98
WHF-1467-3	1209267.99	633301.90	157.25	95	75.46	81.79	NM		89.87	67.38	74.78	82.47
WHF-1467-4	1208093.29	631782.58	174.64	103	91.33	83.31	91.11	83.53	87.85	86.79	92.34	82.30
WHF-1467-5	1208824.68	631802.78	173.27	100	87.56	85.71	NM		89.87	83.40	88.16	85.11
WHF-1467-5D	1208046.38	633347.40	171.77	140	91.80	79.97	90.37	81.40	87.85	83.92	90.57	81.20
WHF-1467-6	1208559.81	631562.19	176.54	103	NM		NM		87.85	88.69	92.47	84.07
WHF-1467-6D	1208432.97	633067.31	166.23	102	84.55	81.68	82.50	83.73	91.42	74.81	83.01	83.22
WHF-1467-7	1209052.49	632855.16	157.48	85	73.40	84.08	72.04	85.44	82.04	75.44	72.40	85.08
WHF-1467-7D	1209074.01	633275.99	158.18	129	78.66	79.52	76.85	81.33	71.70	86.48	78.49	79.69
WHF-1467-8	1206877.55	633649.88	173.24	107	91.87	81.37	89.99	83.25	76.68	96.56	91.19	82.05
WHF-1467-8D	1208899.70	632156.47	168.85	127	92.24	76.61	NM		89.99	78.86	92.72	76.13
WHF-1467-9	1208397.28	633980.16	162.99	100	80.41	82.58	78.25	84.74	78.25	84.74	79.69	83.30
WHF-1467-10	Abandoned		89.10	82	NM		NM		NM		Abandoned	
WHF-1467-11	1209424.83	633512.23	156.49	90	74.16	82.33	72.22	84.27	72.22	84.27	72.06	84.43
WHF-1467-12	Abandoned		106.55	83	NM		NM	106.55	NM		NM	
WHF-1467-13R	1209301.78	632312.00	164.57	90	79.30	85.27	78.14	86.43	77.92	86.65	78.61	85.96
WHF-1467-14	1207731.96	631553.69	174.47	110	94.60	79.87	93.56	80.91	93.87	80.60	95.13	79.34
WHF-1467-15	Abandoned				NM		NM		NM		Abandoned	
WHF-1467-16	1207111.19	631339.86	177.05	115	100.43	76.62	99.89	77.16	100.17	76.88	101.23	75.82
WHF-1467-17	1206345.83	631844.43	115.00	106	NM		NM		NM		NM	
WHF-1467-18	1206407.62	632661.19	175.12	115	97.52	77.60	96.34	78.78	96.34	78.78	97.72	77.40
WHF-1467-19	1207591.45	633994.12	169.33	105	87.03	82.30	84.99	84.34	84.99	84.34	86.29	83.04
WHF-1467-20	1207871.24	632957.17	172.26	110	93.94	78.32	92.38	79.88	91.48	80.78	92.77	79.49
WHF-1467-21	1207384.89	631942.66	173.93	111	97.69	76.24	96.44	77.49	96.35	77.58	97.92	76.01
WHF-1467-22R	1207981.96	632195.77	172.38	103	91.72	80.66	90.27	82.11	90.39	81.99	91.55	80.83
WHF-1467-23	1208368.59	632084.82	172.57	101	87.74	84.83	86.86	85.71	87.09	85.48	87.97	84.60
WHF-1467-24	1208544.22	632765.31	169.77	100	85.76	84.01	84.38	85.39	84.09	85.68	84.79	84.98
WHF-1467-25	1208691.16	633034.12	160.85	91	78.84	82.01	76.75	84.10	76.46	84.39	77.20	83.65
WHF-1467-26	1208423.02	633068.08	166.28	90	74.16	92.12	75.47	90.81	75.55	90.73	75.73	90.55
WHF-1467-27	1207310.26	632473.23	173.74	116	96.66	77.08	94.72	79.02	94.72	79.02	96.30	77.44
WHF-1467-28	1207602.58	632767.80	173.03	106	95.10	77.93	93.50	79.53	93.11	79.92	94.38	78.65
WHF-1467-29	1208520.49	632477.02	168.96	100	84.19	84.77	82.88	86.08	82.82	86.14	83.49	85.47

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1996-UPDATED 24 OCTOBER 1997.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC ELEVATION (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/19/96-1/20/96 Depth Feet BTOC	Water Level 1/19/96-1/20/96 Elevation Ft. above MSL	Water Level 4/25-27/96 Depth Feet BTOC	Water Level 4/25-27/96 Elevation Ft. above MSL	Water Level 7/25-27/96 Depth Feet BTOC	Water Level 7/25-27/96 Elevation Ft. above MSL	Water Level 11/7-9/96 Depth Feet BTOC	Water Level 11/7-9/96 Elevation Ft. above MSL
WHF-1467-30	1208220.74	632549.79	174.23	103	92.68	81.55	90.83	83.40	90.56	83.67	91.45	82.78
WHF-1467-31	1207346.22	633177.47	171.21	125	92.22	78.99	90.20	81.01	90.20	81.01	91.56	79.65
WHF-1467-32	1208624.59	633276.57	162.31	100	81.40	80.91	79.18	83.13	78.75	83.56	79.83	82.48
WHF-1467-33	1208203.66	633103.51	169.86	84	77.44	92.42	77.21	92.65	77.30	92.56	77.41	92.45
SITE 3054												
WHF-3054-1	1209921.73	627170.85	171.47	125	104.69	N/A	104.33	N/A	104.33	67.14	105.05	66.42
WHF-3054-2	1209907.63	627272.31	171.09	118	105.09	N/A	104.71	N/A	104.71	66.38	105.50	65.59
SITE 2894					NE							0.00
WHF-2894-1	1177749.42	632616.20	167.26	96	NE		82.49		82.29	84.97	82.78	84.48
WHF-2894-1D	1177660.57	632586.96	167.78	114	NE		DRY		88.32	79.46	91.31	76.47
WHF-2894-2	1208987	632711	159.14	86	NE		73.12		73.04	86.10	73.74	85.40
WHF-2894-2D	1177644.31	632736.05	167.40	117	NE		87.60		87.49	79.91	90.35	77.05
WHF-2894-3	1209125	632814	154.27	86	NE		DRY		59.13	95.14	69.93	84.34
WHF-2894-4	ABANDONED		164.88	91	NE		81.30		NM		NM	164.88
WHF-2894-5	1209121	632709	167.57	96	NE		82.45		82.29	85.28	82.89	84.68
WHF-2894-6	1209072	632671	167.05	96	NE		DRY		81.06	85.99	81.68	85.37
WHF-2894-7	1209216	632725	159.21	85	NE		75.00		74.84	84.37	75.58	83.63

NOTES: Monitoring wells at UST sites 1466, 1467, 3054, and 2894 were not surveyed by licensed professional surveyors.

TOC - Top of Casing
Ft. - Feet
MSL - mean sea level (NVGD) 1927?
BTOC - below top of casing
NE - Not extant at the time of the survey.

NA - no access
PZ - piezometer
S - shallow aquifer monitoring well
I - intermediate aquifer monitoring well
WELL SENT. - MONITORED ELECTONICALLY

NAVAL AIR STATION WHITING FIELD - WATER LEVEL SURVEY DATA - 1996-1997 UPDATED 18, FEBRUARY 1998.

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC Elevation (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/16/97-1/18/97		Water Level 8/7/97-8/9/97		Water Level 1/26/98	
					Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)
PRODUCTION WELLS										
W-N2	1209039.28	631869.70	N/A	190.00	NM		NM		NM	
W-W2	1209376.90	630999.19	N/A	216.00	NM		NM		NM	
W-S2	1209888.06	629926.01	N/A	210.00	NM		NM		NM	
BACKGROUND WELLS										
WHF-BKG-1	1205079.54	638522.10	195.46	121.60	99.21	96.25	101.28	94.18	NM	
WHF-BKG-1I	1205060.00	638507.00	128.70	140.30	99.05	29.65	101.11	27.59	NM	
WHF-BKG-1D	1205070.00	638516.00	128.68	179.30	99.21	29.47	101.26	27.42	NM	
WHF-BKG-2	1209243.13	639722.35	180.24	109.22	91.19	89.05	93.61	86.63	NM	
WHF-BKG-2I	1209253.00	638507.00	128.70	144.20	91.27	37.43	93.69	35.01	NM	
WHF-BKG-2D	1209262.00	639724.00	111.90	174.00	NM		93.68	18.22	NM	
WHF-BKG-3	1210627.97	635989.34	147.57	80.50	67.23	80.34	69.17	78.40	NM	
NORTH PERIMETER ROAD SITES										
SITE 1										
WHF-1-1	1203042.32	635143.15	142.62	123.00	59.61	83.01	61.09	81.53	NM	
WHF-1-1S	1203049.74	635151.60	143.08	75.40	59.95	83.13	60.68	82.40	NM	
WHF-1-2	1203118.26	635344.99	145.61	78.80	61.24	84.37	62.43	83.18	NM	
WHF-1-3	1203351.52	635188.25	155.50	87.48	71.71	83.79	72.97	82.53	NM	
WHF-1-4	1203203.00	635090.00	151.86	79.00	68.68	83.18	69.85	82.01	NM	
SITE 2										
WHF-2-1	1202494.86	634086.86	150.80	87.42	73.91	76.89	74.45	76.35	NM	
WHF-2-2	1202865.00	633889.00	159.16	91.00	82.53	76.63	83.25	75.91	NM	
WHF-2-3	1203282.00	633867.00	160.63	91.00	82.87	77.76	83.78	76.85	NM	
SITE 17										
WHF-17-1S	1205336.67	637015.03	194.96	115.50	105.31	89.65	107.62	87.34	NM	
WHF-17-1	1205336.12	636993.08	194.71	159.00	105.52	89.19	107.42	87.29	NM	
WHF-17-2	1205453.92	636831.50	197.35	121.90	108.28	89.07	110.38	86.97	NM	
WHF-17-3	1205827.08	637196.16	201.21	126.50	109.08	92.13	111.24	89.97	NM	
SITE 18										
WHF-18-1	1203772.59	633090.33	163.57	120.20	89.26	74.31	90.08	73.49	NM	
WHF-18-2S	1203842.84	632763.09	164.75	107.86	91.61	73.14	92.70	72.05	NM	
WHF-18-3	1204225.03	633101.79	175.64	112.90	99.85	75.79	101.32	74.32	NM	
SOUTH PERIMETER ROAD SITES										
SITE 9										
WHF-9-1	1214219.01	628597.84	146.55	118.40	83.07	63.48	84.69	61.86	NM	
WHF-9-2	1213671.00	628836.00	161.07	124.35	96.01	65.06	97.88	63.19	NM	
WHF-9-3S	1214061.06	628618.01	150.85	108.24	87.01	63.84	88.69	62.16	NM	
SITE 10										
WHF-10-1	1214221.83	628137.54	146.73	118.20	84.50	62.23	86.16	60.57	NM	
WHF-10-2	1214063.81	628091.56	150.75	113.14	88.38	62.37	90.08	60.67	NM	
SITE 11										
WHF-11-1S	1215235.29	627392.24	116.65	54.40	45.76	70.89	44.83	71.82	NM	
WHF-11-1	1215504.26	627581.66	124.86	128.40	58.24	66.62	59.28	65.58	NM	
WHF-11-2	1214288.00	626575.17	148.12	125.84	90.29	57.83	92.20	55.92	NM	
WHF-11-3	1215520.53	627461.72	117.19	73.16	59.10	58.09	60.13	57.06	NM	
WHF-11-4S	1215055.00	627372.00	129.43	79.00	70.06	59.37	71.19	58.24	NM	
WHF-11-4D	1215055.00	627382.00	125.79	109.00	69.72	56.07	71.16	54.63	NM	
SITE 12										
WHF-12-1	1214670.02	627457.07	136.40	113.40	77.02	59.38	78.42	57.98	NM	
WHF-12-2	1214561.00	627418.00	135.56	85.00	76.11	59.45	79.54	56.02	NM	
SITE 13										
WHF-13-1S	1215513.09	626794.39	108.97	61.30	52.57	56.40	53.55	55.42	NM	
WHF-13-1	1215431.00	626260.00	102.66	122.90	48.38	54.28	49.41	53.25	NM	
WHF-13-1I	1215474.00	626745.00	109.17	93.00	52.20	56.97	53.63	55.54	NM	
WHF-13-2S	1215418.00	626036.00	102.86	72.41	49.10	53.76	50.14	52.72	NM	
WHF-13-3S	1216782	626657	81.81	41.00	NE		28.26	53.55	NM	
WHF-13-4S	1216717	625260	80.68	40.10	NE		31.35	49.33	NM	

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC Elevation (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/16/97-1/18/97		Water Level 8/7/97-8/9/97		Water Level 1/26/98	
					Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)
SITE 14										
WHF-14-1	1214547.12	625482.71	139.69	153.20	85.85	53.84	87.11	52.58	NM	
WHF-14-2	1214432.70	625372.17	145.80	118.30	92.55	53.25	93.83	51.97	NM	
SITE 15										
WHF-15-1	1206206.41	625518.50	66.35	73.20	24.54	41.81	25.51	40.84	NM	
WHF-15-2S	1206067.73	625812.81	59.58	32.90	16.79	42.79	18.09	41.49	NM	
WHF-15-2I	1206070.85	625801.65	60.10	63.20	18.01	42.09	18.93	41.17	NM	
WHF-15-2D	1206064.49	625825.70	59.39	112.44	17.33	42.06	18.24	41.15	NM	
WHF-15-3S	1206488.88	626123.35	69.29	37.94	23.63	45.66	24.80	44.49	NM	
WHF-15-3I	1206488.15	626095.58	69.69	87.83	24.25	45.44	25.57	44.12	NM	
WHF-15-3D	1206490.28	626159.29	69.44	119.48	23.59	45.85	24.85	44.59	NM	
WHF-15-4S	1207440.00	625585.00	143.29	109.15	95.55	47.74	97.24	46.05	NM	
WHF-15-5S	1206671.97	624992.42	104.14	68.18	62.34	41.80	63.40	40.74	NM	
WHF-15-5I	1206675	624984	105.17	98.00	63.40	41.77	64.46	40.71	NM	
WHF-15-5D	1206682	624976	106.11	129.00	64.34	41.77	65.40	40.71	NM	
WHF-15-6S	1206299.12	625420.45	74.29	43.73	32.14	42.15	33.12	41.17	NM	
WHF-15-6D	1206306.83	625412.46	75.08	123.36	33.19	41.89	34.15	40.93	NM	
WHF-15-7S	1207107	625696	120.45	89.00	73.36	47.09	74.90	45.55	NM	
WHF-15-7I	1207106	625705	120.17	120.00	73.03	47.14	74.56	45.61	NM	
WHF-15-7D	1207106	625713	119.81	148.00	72.63	47.18	74.17	45.64	NM	
WHF-15-8S	1206065.00	624844.00	79.67	55.00	41.67	38.00	41.79	37.88	NM	
WHF-15-8I	1206056.00	624846.00	79.48	85.00	41.48	38.00	42.24	37.24	NM	
WHF-15-8D	1206047.00	624848.00	79.08	117.00	41.09	37.99	42.35	36.73	NM	
SITE 16										
WHF-16-1	1205287	626618	50.04	43.00	10.26	39.78	10.87	39.17	NM	
WHF-16-2S	1206226	626845	83.66	49.80	USGS		USGS		NM	
WHF-16-2	1206225	626830	82.19	74.20	35.26	46.93	36.49	45.70	NM	
WHF-16-2I	1206224	626806	80.60	130.14	33.88	46.72	35.11	45.49	NM	
WHF-16-3S	1205407.34	626169.98	51.69	23.25	12.23	39.46	12.92	38.77	NM	
WHF-16-3I	1205401.59	626161.38	51.31	52.87	12.04	39.27	12.67	38.64	NM	
WHF-16-3II	1205396.39	626153.49	51.22	78.91	12.12	39.10	12.75	38.47	NM	
WHF-16-3D	1205391.36	626144.09	51.40	118.08	8.34	43.06	9.28	42.12	NM	
WHF-16-4S	1205347	626631	54.79	22.38	14.15	40.64	14.86	39.93	NM	
WHF-16-4II	1205348	626598	53.01	64.80	12.81	40.20	13.47	39.54	NM	
WHF-16-4D	1205349	626580	52.87	122.54	12.80	40.07	13.45	39.42	NM	
WHF-16-5	1204855.84	626431.26	37.54	13.50	3.35	34.19	3.67	33.87	NM	
WHF-16-6S	1205906	626167	56.57	22.00	13.96	42.61	14.73	41.84	NM	
WHF-16-6I	1205905	626175	56.77	62.00	14.16	42.61	15.09	41.68	NM	
WHF-16-7S	1205042	626188	38.27	15.00	1.99	36.28	4.00	34.27	NM	
WHF-16-7I	1205039	626194	38.17	46.00	2.11	36.06	2.50	35.67	NM	
WHF-16-7D	1205036	626201	38.05	75.00	3.53	34.52	2.39	35.66	NM	
Stream Gage			30.73		1.04	29.69	0.80	29.93	NM	
SITE 31										
WHF-31-1S	1208098	624666	150.09	95.00	NM		105.17	44.92	NM	
WHF-31-2S	1208093	623828	122.38	88.00	80.12	42.26	82.36	40.02	NM	
WHF-31-3S	1207909	623467	105.49	72.00	67.74	37.75	68.63	36.86	NM	
WHF-31-4S	1207667	623729	106.91	70.00	NM		68.61	38.30	NM	
WHF-31-4I	1207641	623713	107.36	100.00	68.53	38.83	69.45	37.91	NM	
WHF-31-4D	1207652	623721	107.22	38.00	68.17	39.05	69.09	38.13	NM	
MIDFIELD HANGER SITES										
SITE 5										
WHF-5-0W-1	1209620.00	629684.00	185.80	177.81	NM					
WHF-5-0W-2	1209628.16	629573.36	186.02	116.40	113.84	72.18	115.40	70.62	NM	
WHF-5-3	1209754.55	629900.98	182.02	150.81	114.60	67.42	118.21	63.81	NM	
WHF-5-8S	1210154.00	630901.55	177.44	128.15	104.73	72.71	108.38	69.06	108.98	68.46
WHF-5-8D	1210141.88	630896.23	177.86	174.18	106.03	71.83	109.50	68.36	109.94	67.92
WHF-5-9S	1209644.00	630618.86	175.55	128.74	105.19	70.36	109.22	66.33	109.20	66.35
WHF-5-9D	1209625.20	630611.55	175.97	180.12	105.60	70.37	109.83	66.14	109.58	66.39
WHF-5-10S	1209320.71	630364.77	184.11	144.71	114.59	69.52	118.52	65.59	NM	

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC Elevation (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/16/97-1/18/97		Water Level 8/7/97-8/9/97		Water Level 1/26/98	
					Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)
WHF-5-10D	1209300.09	630355.03	184.32	183.32	115.05	69.27	118.80	65.52	NM	
WHF-5-PZ1	1209627.42	629645.68	186.00	136.78	NM		NM		NM	
WHF-5-PZ2	1209628.16	629611.68	185.90	151.94	117.60	68.30	121.09	64.81	NM	
SITE 6										
WHF-6-1S	1209957.06	629374.42	177.63	134.33	110.33	67.30	114.03	63.60	NM	
WHF-6-1D	1209966.98	629386.89	177.55	180.47	110.68	66.87	114.25	63.30	NM	
WHF-6-3	1210053.98	629425.27	175.72	123.45	108.00	67.72	111.53	64.19	NM	
SITE 33									NM	
WHF-33-1	1209955.15	629870.00	180.58	127.44	111.59	68.99	115.21	65.37	NM	
WHF-33-2	1209851.60	629884.39	181.48	128.40	112.57	68.91	116.19	65.29	NM	
WHF-33-3	1209862.89	629812.25	181.79	128.44	113.00	68.79	118.21	63.58	NM	
WHF-33-4	1209990.96	629774.47	180.36	127.94	111.62	68.74	115.16	65.20	NM	
WHF-33-5	1209984.63	629993.81	178.39	125.90	109.17	69.22	112.79	65.60	112.91	65.48
WEST WELL SITES										
WHF-35-1S	1209301	631242	178.17	116.00	110.14	68.03	110.14	68.03	NM	
WHF-35-1I	1209305	631243	178.16	146.00	110.27	67.89	110.27	67.89	NM	
WHF-35-1D	1209310	631246	178.16	176.00	110.80	67.36	110.80	67.36	NM	
WHF-35-2S	1209466	630767	178.44	113.00	NE		102.63	75.81	NM	
WHF-35-2I	1209470	630769	178.24	148.00	NE		111.43	66.81	NM	
WHF-35-2D	1209470	630764	178.23	180.00	NE		111.26	66.97	NM	
WHF-36-1S	1209569	631209	176.72	116.00	NE		107.77	68.95	NM	
WHF-36-1I	1209662	631203	176.53	146.00	NE		108.38	68.15	NM	
WHF-36-1D	1209655	631221	176.89	173.00	NE		109.30	67.59	NM	
WHF-37-1S	1209785	631280	175.45	118.00	NE		106.09	69.36	NM	
WHF-37-1I	1209792	631278	175.33	140.00	NE		105.86	69.47	NM	
OFF SITE WEST										
WHF-OW-1S	1202616	626074	52.58	16.00	NE		5.49	47.09	NM	
WHF-OW-1I	1202619	626076	52.88	46.00	NE		5.95	46.93	NM	
WHF-OW-1D	1202622	626078	53.09	76.00	NE		5.42	47.67	NM	
WHF-OW-2S	1204037	624944	108.94	77.00	NE		59.21	49.73	NM	
WHF-OW-3S	1204354	624275	93.59	55.00	NE		46.96	46.63	NM	
WHF-OW-3I	1204357	624272	87.35	80.00	NE		46.91	40.44	NM	
WHF-OW-3D	1204352	624274	87.77	115.00	NE		46.88	40.89	NM	
WHF-OW-4S	1203876	623937	117.56	78.00	NE		68.77	48.79	NM	
WHF-OW-5S	1205943	623005	34.15	16.00	NE		6.32	27.83	NM	
WHF-OW-5I	1205950	623010	33.30	46.00	NE		6.66	26.64	NM	
WHF-OW-5D	1205947	623007	34.02	75.00	NE		6.77	27.25	NM	
SOUTHFIELD HANGAR SITES										
SITE 7										
WHF-7-1	1209041.00	628569.46	187.75	143.38	125.92	61.83	128.67	59.08	NM	
SITE 8										
WHF-8-1	1209897.07	627295.25	173.14	180.70	113.23	59.91	115.69	57.45	NM	
SITE 29										
WHF-29-1	1208846.95	629118.96	193.53	139.48	125.16	68.37	127.10	66.43	NM	
WHF-29-2	1208849.75	628943.65	191.52	136.90	124.40	67.12	126.23	65.29	NM	
WHF-29-3	1208648.45	628931.16	194.02	139.64	126.46	67.56	128.35	65.67	NM	
WHF-29-4	1208603.43	629037.14	195.78	139.10	127.64	68.14	129.62	66.16	NM	
WHF-29-5	1208926.15	629497.33	193.47	132.14	121.77	71.70	128.35	65.12	NM	
SITE 30										
WHF-30-2	1209413.33	628006.85	177.27	130.00	114.98	62.29	117.74	59.53	NM	
WHF-30-3	1209292.06	628032.95	179.11	134.60	117.09	62.02	119.84	59.27	NM	
WHF-30-3D			178.86	285.00	NE		113.12	65.74	NM	
WHF-30-4	1209294.49	628161.98	181.49	135.44	119.63	61.86	122.47	59.02	NM	
WHF-30-5	1209609.14	628431.51	181.89	157.53	119.23	62.66	122.16	59.73	NM	

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC Elevation (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/16/97-1/18/97		Water Level 8/7/97-8/9/97		Water Level 1/26/98	
					Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)
NORTHFIELD HANGAR SITES										
SITE 3										
WHF-3-1S	1207621.58	632209.35	172.97	123.22	98.05	74.92	100.46	72.51	NM	
WHF-3-1	1207611.51	632198.68	174.92	153.17	100.05	74.87	NM		NM	
WHF-3-1D	1207610.04	632178.41	172.97	180.29	98.24	74.73	100.68	72.29	NM	
WHF-3-2S	1207782.86	632184.34	172.78	114.12	95.59	77.19	96.60	76.18	NM	
WHF-3-2I	1207795.00	632195.00	175.37	153.20	100.30	75.07	102.92	72.45	NM	
WHF-3-2D	1207765.16	632183.56	173.14	176.17	97.81	75.33	100.04	73.10	NM	
WHF-3-3S	1207695.36	632062.10	175.23	110.80	98.40	76.83	100.89	74.34	NM	
WHF-3-3I	1207693.62	632040.10	178.18	154.22	103.60	74.58	106.19	71.99	NM	
WHF-3-3D	1207693.53	632019.91	175.69	180.57	101.07	74.62	103.75	71.94	NM	
WHF-3-4	1207451.46	632194.59	174.38	121.45	99.51	74.87	101.81	72.57	NM	
WHF-3-7S	1207669.50	632251.08	173.27	123.80	98.09	75.18	100.56	72.71	NM	
WHF-3-7I	1207660.94	632251.58	173.25	139.92	98.08	75.17	100.58	72.67	NM	
WHF-3-7D	1207652.01	632252.07	173.29	180.54	98.15	75.14	100.66	72.63	NM	
SITE 4										
WHF-4-1	1208536.18	632766.31	172.45	153.07	95.64	76.81	98.06	74.39	NM	
SITE 32										
WHF-32-1	1208014.14	633106.04	171.88	110.34	93.15	78.73	95.47	76.41	NM	
WHF-32-2	1207885.48	633198.37	172.27	110.54	93.55	78.72	95.86	76.41	NM	
WHF-32-3	1207892.17	633060.18	172.01	110.02	94.14	77.87	NM		NM	
WHF-32-4	1207990.17	632988.86	172.29	110.25	NM		NM		NM	
WHF-32-5	1208029.24	633294.89	172.15	109.61	92.80	79.35	95.14	77.01	NM	
UST SITES										
SITE 1438										
WHF-1438-1S	1210432	631579	172.05	112.40	NE	0.00	100.89	71.16	101.89	70.16
WHF-1438-2S	1210534	631400	174.35	117.00	NE	0.00	103.93	70.42	104.78	69.57
WHF-1438-2D			174.44	153.00	NE	0.00	NE	NE	104.75	69.69
WHF-1438-3S	1210394	631020	175.54	110.00	NE	0.00	105.98	69.56	106.58	68.96
WHF-1438-4S	1210615	631120	174.17	115.00	NE	0.00	114.05	60.12	105.11	69.06
WHF-1438-5s			176.66	153.00	NE	0.00	NE	NE	108.92	67.74
WHF-1438-6S			175.01	116.00	NE	0.00	NE	NE	106.63	68.38
SITE 1466										
WHF-1466-1	1208816.54	627384.8	177.79	135.00	120.11	57.68	122.51	55.28	NM	
WHF-1466-1D	1208936.38	629050.5	191.24	163.00	127.66	63.58	131.00	60.24	NM	
WHF-1466-2	1209933.99	628823.41	180.72	120.00	108.27	72.45	108.95	71.77	NM	
WHF-1466-2D	1209494.21	628800.38	190.03	144.00	126.31	63.72	129.27	60.76	NM	
WHF-1466-3	1208314.69	628573.52	197.42	145.00	137.01	60.41	139.61	57.81	NM	
WHF-1466-3D	1209906.26	628363.88	179.75	149.00	116.66	63.09	NM		NM	
WHF-1466-4	1207922.74	628288.48	190.37	151.00	131.24	59.13	133.74	56.63	NM	
WHF-1466-5R	1208056.79	627628.39	175.18	132.00	118.16	57.02	120.42	54.76	NM	
WHF-1466-6	1207829.83	627108.12	173.09	131.00	118.48	54.61	120.63	52.46	NM	
WHF-1466-6I	1207808.00	627114.00	173.06	160.00	118.43	54.63	120.61	52.45	NM	
WHF-1466-6D	1207799.00	627121.00	173.05	190.00	118.50	54.55	120.62	52.43	NM	
WHF-1466-6DD	1207789.00	627132.00	172.86	218.00	118.37	54.49	120.49	52.37	NM	
WHF-1466-7	1208216.03	626725.15	172.26	131.00	118.43	53.83	120.65	51.61	NM	
WHF-1466-8	1208990.92	626663.47	172.24	131.00	116.07	56.17	118.41	53.83	NM	
WHF-1466-8I	1208972.00	626670.00	172.58	171.00	116.52	56.06	118.86	53.72	NM	
WHF-1466-8D	1208962.00	626675.00	172.28	190.00	116.26	56.02	118.58	53.70	NM	
WHF-1466-8DD	1208952.00	626682.00	172.64	220.00	116.62	56.02	119.93	52.71	NM	
WHF-1466-9	1210492.27	627644.67	173.20	116.00	101.02	72.18	101.50	71.70	NM	
WHF-1466-9I	1210489.00	627651.00	173.40	160.00	111.46	61.94	113.99	59.41	NM	
WHF-1466-9D	1210493.00	627664.00	173.11	190.00	111.30	61.81	113.92	59.19	NM	
WHF-1466-9DD	1210496.00	627675.00	173.44	220.00	111.53	61.91	114.12	59.32	NM	
WHF-1466-10	1209657.23	627192.33	172.08	122.00	111.32	60.76	NM		NM	
WHF-1466-11	1210525.94	628485.13	175.87	104.00	97.66	78.21	97.51	78.36	NM	
WHF-1466-12	1209594.71	629128.76	189.92	147.00	125.17	64.75	128.30	61.62	NM	
WHF-1466-13	1209414.18	628006.79	177.31	130.00	NM			177.31	NM	
WHF-1466-14	1208944.85	628092.09	181.05	135.00	NM		DRY		NM	

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC Elevation (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/16/97-1/18/97		Water Level 8/7/97-8/9/97		Water Level 1/26/98	
					Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)
WHF-1466-15	1209166.19	627611.48	177.81	135.00	118.50	59.31	121.11	56.70	NM	
WHF-1466-16	1209662.19	627740.42	176.49	135.00	114.95	61.54	116.80	59.69	NM	
WHF-1466-17	1208283.50	627818.17	177.91	134.00	119.53	58.38	122.12	55.79	NM	
WHF-1466-18	1209171.17	628402.19	185.58	135.00	122.82	62.76	124.10	61.48	NM	
WHF-1466-19	1208807.94	628641.71	188.81	145.00	127.48	61.33	130.22	58.59	NM	
WHF-1466-20	1208702.50	628379.34	187.76	140.00	127.25	60.51	129.89	57.87	NM	
WHF-1466-21S	1206717.00	623285.00	62.39	40.00	31.52	30.87	31.80	30.59	NM	
WHF-1466-21I	1206710.00	623280.00	61.75	69.00	30.90	30.85	31.16	30.59	NM	
WHF-1466-21D	1206702.00	623273.00	61.44	96.00	30.27	31.17	30.53	30.91	NM	
WHF-1466-22S	1209940.00	623603.00	139.36	108.00	94.72	44.64	96.33	43.03	NM	
WHF-1466-22I	1209952.00	623596.00	139.23	140.00	94.60	44.63	96.17	43.06	NM	
WHF-1466-22D	1209963.00	623591.00	139.11	167.00	95.00	44.11	96.51	42.60	NM	
WHF-1466-23S	1206200	627685	128.88	90.00	NE		78.98	49.90	NM	
WHF-1466-23I	1206199	627680	128.15	123.00	NE		78.86	49.29	NM	
WHF-1466-23D	1206199	627675	128.14	153.00	NE		78.84	49.30	NM	
SITE 1467										
WHF-1467-1	1208880.11	632144.48	168.51	97.00	83.93	-83.93	84.99	83.52	NM	
WHF-1467-2	1209133.86	632896.85	157.44	85.00	77.37	80.07	77.39	80.05	NM	
WHF-1467-2D	1207367.82	631970.72	174.29	124.00	100.54	73.75	102.79	71.50	NM	
WHF-1467-3	1209267.99	633301.90	157.25	95.00	76.10	81.15	78.62	78.63	NM	
WHF-1467-4	1208093.29	631782.58	174.64	103.00	92.84	81.80	93.66	80.98	NM	
WHF-1467-5	1208824.68	631802.78	173.27	100.00	88.58	84.69	89.35	83.92	NM	
WHF-1467-5D	1208046.38	633347.40	171.77	140.00	91.21	80.56	94.23	77.54	NM	
WHF-1467-6	1208559.81	631562.19	176.54	103.00	92.87	83.67	93.71	82.83	NM	
WHF-1467-6D	1208432.97	633067.31	166.23	102.00	84.09	82.14	75.83	90.40	NM	
WHF-1467-7	1209052.49	632855.16	157.48	85.00	73.51	83.97	74.99	82.49	NM	
WHF-1467-7D	1209074.01	633275.99	158.18	129.00	80.14	78.04	82.31	75.87	NM	
WHF-1467-8	1206877.55	633649.88	173.24	107.00	92.34	80.90	94.76	78.48	NM	
WHF-1467-8D	1208899.70	632156.47	168.85	127.00	84.92	83.93	96.53	72.32	NM	
WHF-1467-9	1208397.28	633980.16	162.99	100.00	80.94	82.05	83.43	79.56	NM	
WHF-1467-10	Abandoned		89.10	82.00	Abandoned		NM		NM	
WHF-1467-11	1209424.83	633512.23	156.49	90.00	75.52	80.97	NM		NM	
WHF-1467-12	Abandoned		106.55	82.65	Abandoned		NM		NM	
WHF-1467-13R	1209301.78	632312.00	164.57	90.00	79.09	85.48	80.36	84.21	NM	
WHF-1467-14	1207731.96	631553.69	174.47	110.00	95.84	78.63	NM		NM	
WHF-1467-15	Abandoned		115.50	108.00	Abandoned		NM		NM	
WHF-1467-16	1207111.19	631339.86	177.05	115.00	101.85	75.20	102.85	74.20	NM	
WHF-1467-17	1206345.83	631844.43	115.00	106.00	Abandoned		NM		NM	
WHF-1467-18	1206407.62	632661.19	175.12	115.00	98.83	76.29	100.96	74.16	NM	
WHF-1467-19	1207591.45	633994.12	169.33	105.00	87.43	81.90	NM		NM	
WHF-1467-20	1207871.24	632957.17	172.26	110.00	93.98	78.28	NM		NM	
WHF-1467-21	1207384.89	631942.66	173.93	111.00	98.92	75.01	101.23	72.70	NM	
WHF-1467-22R	1207981.96	632195.77	172.38	103.00	92.26	80.12	92.42	79.96	NM	
WHF-1467-23	1208368.59	632084.82	172.57	101.00	88.42	84.15	89.49	83.08	NM	
WHF-1467-24	1208544.22	632765.31	169.77	100.00	85.52	84.25	87.07	82.70	NM	
WHF-1467-25	1208691.16	633034.12	160.85	91.00	78.49	82.36	NM		NM	
WHF-1467-26	1208423.02	633068.08	166.28	90.00	75.84	90.44	78.68	87.60	NM	
WHF-1467-27	1207310.26	632473.23	173.74	116.00	97.40	76.34	99.71	74.03	NM	
WHF-1467-28	1207602.58	632767.80	173.03	106.00	95.78	77.25	98.22	74.81	NM	
WHF-1467-29	1208520.49	632477.02	168.96	100.00	84.26	84.70	85.52	83.44	NM	
WHF-1467-30	1208220.74	632549.79	174.23	102.50	92.22	82.01	94.12	80.11	NM	
WHF-1467-31	1207346.22	633177.47	171.21	125.00	92.70	78.51	95.14	76.07	NM	
WHF-1467-32	1208624.59	633276.57	162.31	100.00	81.42	80.89	83.87	78.44	NM	
WHF-1467-33	1208203.66	633103.51	169.86	84.00	77.55	92.31	77.55	92.31	NM	
SITE 3054										
WHF-3054-1	1209921.73	627170.85	171.47	125.00	106.81	64.66	106.91	64.56	NM	
WHF-3054-2	1209907.63	627272.31	171.09	117.50	106.58	64.51	107.36	63.73	NM	

Monitoring Well Identifier	Easting State Plane Coordinate	Northing State Plane Coordinate	Well TOC Elevation (Ft. MSL)	Well Depth BTOC (Feet)	Water Level 1/16/97-1/18/97		Water Level 8/7/97-8/9/97		Water Level 1/26/98	
					Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)	Depth (Ft. BTOC)	Elevation (Ft. MSL)
SITE 2894										
WHF-2894-1	1209629	632466	167.26	96.00	83.25	84.01	84.34	82.92	NM	
WHF-2894-1D	1209541	632436	167.87	114.00	91.87	76.00	94.24	73.63	NM	
WHF-2894-2	1209386	632584	159.14	86.00	74.27	84.87	75.51	83.63	NM	
WHF-2894-2D	1209524	623586	167.40	117.00	90.92	76.48	93.44	73.96	NM	
WHF-2894-3	1209524	632687	154.27	86.00	70.60	83.67	72.11	82.16	NM	
WHF-2894-4	Abandoned		164.86	91.00	Abandoned		NM		NM	
WHF-2894-5	1209520	632582	167.57	96.00	83.45	84.12	84.81	82.76	NM	
WHF-2894-6	1209471	632544	167.05	96.00	82.19	84.86	83.48	83.57	NM	
WHF-2894-7	1209615	632598	159.21	85.00	76.20	83.01	77.42	81.79	NM	
NOTES:	Monitoring wells at UST sites 1466, 1467, 3054, and 2894 were not surveyed by licensed professional surveyors.									
	TOC - Top of Casing				NA - No access					
	Ft. - Feet				PZ - Piezometer					
	MSL - mean sea level (NVGD) 1927				S - Shallow or surficial water table monitoring well					
	BTOC - below top of casing				I - Intermediate surficial water table monitoring well					
	NM - Not measured				II - Deeper intermediate surficial water table monitoring well					
	NE - Not extant at the time of the survey				D - Deep surficial water table monitoring well					
	USGS - Electronicall monitored by USGS during su				DD - Deeper surficial water table monitoring well					

Final notes:

1. Records with the eastings and northings at the right margin indicate that the location has been adjusted relative to the surveyors original data to best fit the currently used CADD maps.
2. WHF-1438-2D, WHF-1438-5S, WHF-1438-6S, and WHF-30-3D were installed after the last survey.
3. Numerous wells listed did not exist during the January '97 water level survey.
4. WHF-31-4S, WHF-31-4I, WHF-31-4D, WHF-0W-3S, WHF-0W-3I, WHF-31-3D are listed with references that have not been corrected for proper relative placement on the base CADD map.

APPENDIX E

QUALITY ASSURANCE AND QUALITY CONTROL DATA

LABORATORY DATA CONSULTANTS, INC.
7750 El Camino Real, Suite 2C, Carlsbad, CA 92009 Phone: 619 634-0437 Fax: 619 634-0439

APPENDIX A

Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida
PARCC Summary Tables

Draft Version

08/30/96

APPENDIX A

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Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton, Florida

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Table 1

SDG#: WF016 **VALIDATION SAMPLE TABLE** **LDC#:** 1876A

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide
BKB00101	RB583001		soil	5-20-96	X	X	X	X	X
BKB00102	RB583002		soil	5-20-96	X	X	X	X	X
BKB00401	RB583003	FD	soil	5-20-96	X	X	X	X	X
BKB00401D	RB583004	FD	soil	5-20-96	X	X	X	X	X
BKB00402	RB583005		soil	5-20-96	X	X	X	X	X
BKB00201	RB583006		soil	5-20-96	X	X	X	X	X
BKB00202	RB583007		soil	5-20-96	X	X	X	X	X
BKR00201	RB583008	R	water	5-20-96	X	X	X	X	X
BKF00101	RB583009	SB	water	5-20-96	X	X	X	X	X
BKT00201	RB583010	TB	water	5-20-96	X				
BKB00301	RB583011		soil	5-21-96	X	X	X	X	X
BKB00302	RB583012		soil	5-21-96	X	X	X	X	X
BKB00501	RB583013		soil	5-21-96	X	X	X	X	X
BKB00502	RB583014		soil	5-21-96	X	X	X	X	X
BKB00601	RB583015		soil	5-21-96	X	X	X	X	X
BKB00602	RB583016	FD	soil	5-21-96	X	X	X	X	X
BKB00602D	RB583017	FD	soil	5-21-96	X	X	X	X	X
BKB00701	RB583018		soil	5-21-96	X	X	X	X	X
BKB00702	RB583019		soil	5-21-96	X	X	X	X	X
BKB00401MS	RB583003MS	MS	soil	5-20-96	X	X	X	X	X
BKB00401MSD	RB583003MSD	MSD	soil	5-20-96	X	X	X	X	X
BKR00201MS	RB583008MS	MS	water	5-20-96				X	
BKR00201MSD	RB583008MSD	MSD	water	5-20-96				X	

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF016 **VALIDATION SAMPLE TABLE** **LDC#:** 1876A

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide
BKF00101MS	RB583009MS	MS	water	5-20-96					X
BKF00101MSD	RB583009MSD	MSD	water	5-20-96					X

DRAFT

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF017 **VALIDATION SAMPLE TABLE** **LDC#:** 1876B

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide
31B00601	RB592001	FD	soil	5-21-96	X	X	X	X	X
31B00602	RB592002		soil	5-21-96	X	X	X	X	X
31B00603	RB592003		soil	5-21-96	X	X	X	X	X
31B00604	RB592004		soil	5-21-96	X	X	X	X	X
31B00605	RB592005		soil	5-21-96	X	X	X	X	X
31B00601D	RB592006	FD	soil	5-21-96	X	X	X	X	X
12B00101	RB592007	FD	soil	5-21-96	X	X	X	X	X
12B00101D	RB592008	FD	soil	5-21-96	X	X	X	X	X
12B00102	RB592009		soil	5-21-96	X	X	X	X	X
31B00701	RB592010		soil	5-22-96	X	X	X	X	X
31B00702	RB592011		soil	5-22-96	X	X	X	X	X
31B00703	RB592012		soil	5-22-96	X	X	X	X	X
31B00704	RB592013		soil	5-22-96	X	X	X	X	X
31B00705	RB592014		soil	5-22-96	X	X	X	X	X
31B00801	RB592015		soil	5-22-96	X	X	X	X	X
31B00801DL	RB592015DL		soil	5-22-96	X				
31B00802	RB592016		soil	5-22-96	X	X	X	X	X
31B00803	RB592017		soil	5-22-96	X	X	X	X	X
31B00803DL	RB592017DL		soil	5-22-96	X				
31B00804	RB592018		soil	5-22-96	X	X	X	X	X
31B00804DL	RB592018DL		soil	5-22-96	X				
31B00805	RB592019		soil	5-22-96	X	X	X	X	X
31R00101	RB592020	R	water	5-22-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF017 **VALIDATION SAMPLE TABLE** **LDC#:** 1876B

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide
31T00301	RB592021	TB	water	5-22-96	X				
12R00101	RB592022	R	water	5-21-96	X	X	X	X	X
BKT00301	RB592023	TB	water	5-21-96	X				
31B00601MS	RB592001MS	MS	soil	5-21-96	X	X	X	X	X
31B00601MSD	RB592001MSD	MSD	soil	5-21-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF018 **VALIDATION SAMPLE TABLE** **LDC#:** 1876C

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Lead only
30B00201	RB602001		soil	5-23-96	X	X	X
30B00202	RB602002	FD	soil	5-23-96	X	X	X
30B00203	RB602003		soil	5-23-96	X	X	X
30B00202D	RB602005	FD	soil	5-23-96	X	X	X
30B00101	RB602006		soil	5-23-96	X	X	X
30B00102	RB602007		soil	5-23-96	X	X	X
30B00103	RB602008		soil	5-23-96	X	X	X
30R00101	RB602010	R	water	5-23-96	X	X	X
30T00101	RB602011	TB	water	5-23-96	X		
30B00202MS	RB602002MS	MS	soil	5-23-96	X	X	X
30B00202MSD	RB602002MSD	MSD	soil	5-23-96	X	X	X

DRAFT

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF019 **VALIDATION SAMPLE TABLE** **LDC#:** 1876D

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Lead only
30B00501	MB047001		soil	6-4-96	X	X	X
30B00502	MB047002	FD	soil	6-4-96	X	X	X
30B00503	MB047003		soil	6-4-96	X	X	X
30B00502D	MB047005	FD	soil	6-4-96	X	X	X
30B00401	MB047006		soil	6-4-96	X	X	X
30B00402	MB047007		soil	6-4-96	X	X	X
30B00403	MB047008		soil	6-4-96	X	X	X
30R00201	MB047010	R	water	6-4-96	X	X	X
30T00201	MB047011	TB	water	6-4-96	X		
30R00301	MB068001	R	water	6-5-96	X	X	X
30T00301	MB068002	TB	water	6-5-96	X		
30F00101	MB068003	SB	water	6-5-96	X	X	X
30B00601	MB068004		water	6-5-96	X	X	X
30B00602	MB068005	FD	soil	6-5-96	X	X	X
30B00603	MB068006		soil	6-5-96	X	X	X
30B00602D	MB068009	FD	soil	6-5-96	X	X	X
30B00301	MB068010		soil	6-5-96	X	X	X
30B00302	MB068011		soil	6-5-96	X	X	X
30B00303	MB068012		soil	6-5-96	X	X	X
30B00303DL	MB068012DL		soil	6-5-96		X	
30B00305	MB068015		soil	6-5-96	X	X	X
30B00502MS	MB047002MS	MS	soil	6-4-96	X	X	X
30B00502MSD	MB047002MSD	MSD	soil	6-4-96	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF019 **VALIDATION SAMPLE TABLE** **LDC#:** 1876D

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Lead only
30F00101MS	MB068003MS	MS	soil	6-4-96			X
30F00101MSD	MB068003MSD	MSD	soil	6-4-96			X
30B00601MS	MB068004MS	MS	water	6-5-96			X
30B00601MSD	MB068004MSD	MSD	water	6-5-96			X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF020 **VALIDATION SAMPLE TABLE** **LDC#:** 1883A

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Lead only
33B00301	MB080001		soil	6-6-96	X	X	X
33B00302	MB080002	FD	soil	6-6-96	X	X	X
33B00303	MB080003		soil	6-6-96	X	X	X
33B00304	MB080004		soil	6-6-96	X	X	X
33B00305	MB080005		soil	6-6-96	X	X	X
33B00305RE	MB080005RE		soil	6-6-96		X	
33B00306	MB080006		soil	6-6-96			X
33B00302D	MB080007	FD	soil	6-6-96	X	X	X
33B00201	MB080008		soil	6-6-96	X	X	X
33B00202	MB080009		soil	6-6-96	X	X	X
33B00203	MB080010		soil	6-6-96	X	X	X
33B00205	MB080011		soil	6-6-96			X
33B00101	MB080012		soil	6-6-96	X	X	X
33B00102	MB080013	FD	soil	6-6-96	X	X	X
33B00103	MB080014		soil	6-6-96	X	X	X
33B00102D	MB080015	FD	soil	6-6-96	X	X	X
33R00101	MB080016	R	water	6-6-96	X	X	X
33T00101	MB080017	TB	water	6-6-96	X		
33B00302MS	MB080002MS	MS	soil	6-6-96	X	X	
33B00302MSD	MB080002MSD	MSD	soil	6-6-96	X	X	
33B00302MSRE	MB080002MSRE	MS	soil	6-6-96		X	
33B00302MSDRE	MB080002MSDRE	MSD	soil	6-6-96		X	
33B00302S	MB080002S	MS	soil	6-6-96			X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF020 **VALIDATION SAMPLE TABLE** **LDC#:** 1883A

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Lead only
33B00302D	MB080002D	DUP	soil	6-6-96			X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WHF021 **VALIDATION SAMPLE TABLE** **LDC#:** 1883B

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	TCLP Metals
30U00101	MB107001		soil	6-11-96	X
30U00201	MB107002		soil	6-11-96	X
30U00301	MB107003		soil	6-11-96	X
30U00401	MB107004		soil	6-11-96	X
33U00101	MB107005		soil	6-11-96	X
33U00201	MB107006		soil	6-11-96	X
33U00301	MB107007		soil	6-11-96	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table II
Summary of Rejected Data (Organics)
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds				
SDG	**Fraction**	**Sample**	**Compound**	**Reason**
WF016	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBS	All samples	No rejected results	-
WF017	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF018	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
WF019	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
WF020	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-

Table III
Summary of Rejected Data (Inorganics)
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes				
SDG	**Fraction**	**Sample**	**Analyte**	**Reason**
WF016	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF017	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF018	Lead	All samples	No rejected results	-
WF019	Lead	All samples	No rejected results	-

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds								
			Criteria		% Recovery			
SDG	Client ID	Compound	% Recovery	RPD	MS	MSD	RPD	Qualifier
WF016	BKB00401	Volatiles	-	-	-	-	-	None
		Semivolatiles	-	-	-	-	-	None
		Pesticides/PCBs	-	-	-	-	-	None
WF017	31B00601	Volatiles	-	-	-	-	-	None
		N-Nitroso-di-n-propylamine	41-126	≤38	33	-	45	None
		1,2,4-Trichlorobenzene	38-107	≤23	33	-	43	None
		Phenol	-	≤35	-	-	40	None
		1,4-Dichlorobenzene	-	≤27	-	-	44	None
		4-Chloro-3-methylphenol	-	≤33	-	-	38	None
		Acenaphthene	-	≤19	-	-	30	None
		Pesticides/PCBs	-	-	-	-	-	None
WF018	30B00203	Volatiles	-	-	-	-	-	None
		N-Nitroso-di-n-propylamine	41-126	-	33	34	-	UJ
		1,2,4-Trichlorobenzene	38-107	-	35	35	-	UJ
		Pyrene	35-142	-	33	-	-	UJ
WF019	30B00502	Volatiles	-	-	-	-	-	None
		1,4-Dichlorobenzene	-	≤27	-	-	40	UJ
		1,2,4-Trichlorobenzene	-	≤23	-	-	34	UJ
		Acenaphthene	-	≤19	-	-	25	UJ
WF020	33B00302	Volatiles	-	-	-	-	-	None
		Semivolatiles	-	-	-	-	-	None

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF016	**Client ID**	**BKB00401**	**BKB00401D**	
	Laboratory ID	**RB583003**	**RB583004**	
	Collection Date	**5/20/96**	**5/20/96**	
	Acetone	6 ug/Kg	17 ug/Kg	96
	Di-n-butylphthalate	1000 ug/Kg	970 ug/Kg	3
	Pesticides/PBs	ND	ND	-
WF016	**Client ID**	**BKB00602**	**BKB00602D**	
	Laboratory ID	**RB583016**	**RB583017**	
	Collection Date	**5/21/96**	**5/21/96**	
	Acetone	47 ug/Kg	6 ug/Kg	155
	Di-n-butylphthalate	580 ug/Kg	310 ug/Kg	61
	Pesticides/PCBs	ND	ND	-
WF017	**Client ID**	**31B00601**	**31B00601D**	
	Laboratory ID	**RB592001**	**RB592006**	
	Collection Date	**5/21/96**	**5/21/96**	
	Acetone	3 ug/Kg	11 ug/Kg	114
	Di-n-butylphthalate	39 ug/Kg	350U ug/Kg	Not calculable
	Bis(2-ethylhexyl)phthalate	110 ug/Kg	79 ug/Kg	33
	Gamma-chlordane	1.5 ug/Kg	1.1 ug/Kg	31
WF017	**Client ID**	**12B00101**	**12B00101D**	
	Laboratory ID	**RB592007**	**RB592008**	
	Collection Date	**5/21/96**	**5/21/96**	
	Acetone	8 ug/Kg	3 ug/Kg	91
	Diethylphthalate	830 ug/Kg	370U ug/Kg	Not calculable
	Pesticides/PCBs	ND	ND	-
WF018	**Client ID**	**30B00202**	**30B00202D**	
	Laboratory ID	**RB602002**	**RB602005**	
	Collection Date	**5/23/96**	**5/23/96**	
	Acetone	7 ug/Kg	9 ug/Kg	25
	Methylene chloride	1 ug/Kg	2 ug/Kg	67
	Di-n-butylphthalate	380U ug/Kg	360 ug/Kg	Not calculable
WF019	**Client ID**	**30B00502**	**30B00502D**	
	Laboratory ID	**MB047002**	**MB047005**	
	Collection Date	**6/4/96**	**6/4/96**	
	Acetone	16 ug/Kg	14 ug/Kg	13
	Methylene chloride	2 ug/Kg	2 ug/Kg	0
	Trichloroethene	ND	1 ug/Kg	Not calculable
	Bis(2-ethylhexyl)phthalate	1000 ug/Kg	970 ug/Kg	3
	2-Methylnaphthalene	1900U ug/Kg	210 ug/Kg	Not calculable

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF019	**Client ID**	**30B00602**	**30B00602D**	
	Laboratory ID	**MB068005**	**MB068009**	
	Collection Date	**6/5/96**	**6/5/96**	
	Acetone	23 ug/Kg	31 ug/Kg	30
	Methylene chloride	5 ug/Kg	4 ug/Kg	22
	Trichloroethene	ND	1	Not calculable
	Di-n-butylphthalate	51 ug/Kg	43 ug/Kg	17
	Bis(2-ethylhexyl)phthalate	99 ug/Kg	42 ug/Kg	81
WF020	**Client ID**	**33B00302**	**33B00302D**	
	Laboratory ID	**MB080002**	**MB08007**	
	Collection Date	**6/6/96**	**6/6/96**	
	Acetone	7 ug/Kg	8 ug/Kg	13
	Methylene chloride	ND	2 ug/Kg	Not calculable
	1,2-Dichloroethene (total)	ND	4 ug/Kg	Not calculable
	Trichloroethene	ND	13 ug/Kg	Not calculable
	Bis(2-ethylhexyl)phthalate	48 ug/Kg	380U ug/Kg	Not calculable
WF020	**Client ID**	**33B00102**	**33B00102D**	
	Laboratory ID	**MB080013**	**MB080015**	
	Collection Date	**6/6/96**	**6/6/96**	
	Acetone	5 ug/Kg	5 ug/Kg	0
	Methylene chloride	ND	1 ug/Kg	Not calculable
	Di-n-butylphthalate	66 ug/Kg	45 ug/Kg	21
	Bis(2-ethylhexyl)phthalate	760 ug/Kg	370U ug/Kg	Not calculable

Table VI
Summary of Surrogate Recoveries
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF016	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
	All samples	Pesticides/PCBs	All within QC limits	-	-	None
WF017	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			6	
	12R00101	Decachlorobiphenyl	57	60-150		UJ (all detects)
		Decachlorobiphenyl	56	60-150		UJ (all detects)
	31R00101	Decachlorobiphenyl	27	60-150		UJ (all detects)
		Decachlorobiphenyl	27	60-150		UJ (all detects)
	12B00101D	Tetrachloro-m-xylene	58	60-150		UJ (all detects)
	12B00102	Tetrachloro-m-xylene	55	60-150		UJ (all detects)
		Tetrachloro-m-xylene	56	60-150		UJ (all detects)
	31B00603	Tetrachloro-m-xylene	46	60-150		UJ (all detects)
		Decachlorobiphenyl	54	60-150		UJ (all detects)
		Tetrachloro-m-xylene	49	60-150		UJ (all detects)
		Decachlorobiphenyl	53	60-150		UJ (all detects)
	31B00604	Tetrachloro-m-xylene	52	60-150		UJ (all detects)
		Decachlorobiphenyl	58	60-150		UJ (all detects)
		Tetrachloro-m-xylene	54	60-150		UJ (all detects)
WF018	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
WF019	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
WF020	All samples	Volatiles	All within QC limits	-	-	None
	33B00305	Semivolatiles			1	
		2-Fluorophenol	0	25-121		R (all compounds)
		Phenol-d5	0	24-113		R (all compounds)
		2-Chlorophenol-d4	0	20-130		R (all compounds)
		1,2-Dichlorobenzene-d4	0	20-130		R (all compounds)
		Nitrobenzene-d5	0	23-120		R (all compounds)
		2-Fluorobiphenyl	0	30-115		R (all compounds)
		2,4,6-Tribromophenol	0	19-122		R (all compounds)
		Terphenyl-d14	0	18-137		R (all compounds)

Notes: J = estimated value
UJ = undetected, but number that is reported as the quantification limit is an estimated value.

Table VII
Summary of Compounds Exceeding Instrument Calibration
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Criteria		Qualifier
			Initial Calibration %RSD	Continuing Calibration %D	
WF016	5/31/96	Chloromethane	48.8	26.5	UJ
	6/1/96	Chloromethane	42.0	-	UJ
	6/2/96	Chloromethane	-	37.6	UJ
	6/3/96	Chloromethane	-	33.4	UJ
	6/6/96	4-Nitroaniline	-	29.2	UJ
		Di-n-octylphthalate	-	25.2	UJ
	6/12/96	Endrin aldehyde	21.4	-	J
WF017	5/31/96	Chloromethane	48.8	26.5	UJ
	6/1/96	Chloromethane	42.0	-	UJ
	6/2/96	Chloromethane	-	37.6	UJ
	6/3/96	Chloromethane	-	33.4	UJ
	6/4/96	Chloromethane	-	64.3	UJ
		Chloroethane	-	37.9	UJ
	6/4/96	Chloromethane	-	62.2	UJ
	6/6/96	4-Nitroaniline	-	29.2	UJ
		Di-n-octylphthalate	-	25.2	UJ
	6/7/96	Butylbenzylphthalate	-	26.8	UJ
		3,3'-Dichlorobenzidine	-	32.9	UJ
		Bis(2-ethylhexyl)phthalate	-	27.4	UJ
	6/12/96	Endrin aldehyde	21.4	-	J
WF018	5/31/96	Chloromethane	48.8	26.5	UJ
	6/1/96	Chloromethane	42.0	-	UJ
	6/4/96	Chloromethane	-	64.3	UJ
		Chloroethane	-	37.9	UJ
	6/6/96	4-Nitroaniline	-	29.2	UJ
		Di-n-octylphthalate	-	25.2	UJ
WF019	All	Volatiles	-	-	None
	6/11/96	Hexachlorobenzene	-	30.8	UJ

Table VII
Summary of Compounds Exceeding Instrument Calibration
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds					
SDG	**Date**	**Compound**	**Criteria**		**Qualifier**
			Initial Calibration %RSD	**Continuing Calibration %D**	
WF020	All	Volatiles	-	-	None
	6/26/96	Bis(2-ethylhexyl)phthalate	-	28.6	UJ
		Di-n-octylphthalate	-	33.8	UJ

Notes: %RSD = percent Relative Standard Deviation for initial calibrations

%D = percent Difference for continuing calibrations

J = the compound was positively identified; the associated numerical value is the approximate concentration of the compound in the sample, either because its concentration was lower than the QL (laboratory "J" flag), or because QC criteria were not met (validation "J").

UJ = the compound was not detected above the reported sample QL. However, the reported sample QL is approximate; the compound concentration may not reliably be presumed to be less than the QL value.

R = the sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the compound cannot be verified.

Table VIII
Summary of Method Blank Contamination
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	**Compound**	**Concentration**	**Associated Samples**
WF016	Acetone	2 ug/Kg	BKB00101 BKB00401 BKB00401D BKB00402 BKB00201 BKB00202 BKB00301 BKB00302 BKB00501 BKB00502 BKB00601 BKB00602
	Acetone	1 ug/Kg	BKB00602D
	Bis(2-ethylhexyl)phthalate	12 ug/L	BKR00201 BKF00101
	Pestcides/PCBs	ND	-
WF017	Acetone	1 ug/Kg	31B00601 31B00605 12B00101 12B00101D 12B00102 31B00702 31B00703 31B00704 31B00705 31B00801 31B00802 31B00803
	Acetone	2 ug/Kg	31B00701 31B00804 31B00805
	Acetone	2 ug/Kg	31B00803DL 31B00804DL
	Bis(2-ethylhexylphthalate	2 ug/L	31R00101
	Bis(2-ethylhexylphthalate	2 ug/L	12R00101
	Pesticides/PCBs	ND	-

Table VIII
Summary of Method Blank Contamination
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	**Compound**	**Concentration**	**Associated Samples**
WF018	Acetone	2 ug/Kg	30B00201 30B00203
	Acetone	2 ug/Kg	30B00202 30B00202D 30B00101 30B00102 30B00103
	Bis(2-ethylhexyl)phthalate	43 ug/Kg	30B00201 30B00202 30B00203 30B00202D 30B00101 30B00102 30B00103
WF019	Methylene chloride Acetone	5 ug/Kg 5 ug/Kg	30B00501 30B00502 30B00503 30B00502D 30B00401 30B00402 30B00403
	Acetone	5 ug/Kg	30B00601 30B00602 30B00603 30B00602D 30B00301 30B00302 30B00303 30B00305
	Bis(2-ethylhexyl)phthalate	1 ug/L	30R00201
	Bis(2-ethylhexyl)phthalate	59 ug/Kg	30B00601 30B00602 30B00603 30B00602D 30B00301 30B00302 30B00303 30B00303DL 30B00305

Table VIII
Summary of Method Blank Contamination
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	**Compound**	**Concentration**	**Associated Samples**
WF020	Acetone	5 ug/Kg	33B00301 33B00302 33B00303 33B00304 33B00305 33B00302D 33B00201 33B00202 33B00203 33B00101 33B00102 33B00103 33B00102D
	Bis(2-ethylhexyl)phthalate	6 ug/L	33R00101
	Bis(2-ethylhexyl)phthalate	43 ug/Kg	33B00301 33B00302 33B00303 33B00304 33B00302D 33B00201 33B00202 33B00203 33B00101 33B00102 33B00103 33B00102D
	Bis(2-ethylhexylphthalate	300 ug/Kg	33B00305RE

Table IX
Summary of Field Blank Contamination
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF016	**Client ID:** BKR00201 **Laboratory ID:** RB583008 **Collection Date:** 5/20/96 **Type:** Equipment Rinsate		
	Acetone	2 ug/L	None
	Di-n-butylphthalate	8 ug/L	None
	Bis(2-ethylhexyl)phthalate	3 ug/L	10U ug/L[1]
	Pesticides/PCBs	ND	None
WF016	**Client ID:** BKT00201 **Laboratory ID:** RB583010 **Collection Date:** 5/20/96 **Type:** Trip Blank		
	Methylene chloride	1 ug/L	None
	Acetone	13 ug/L	None
WF016	**Client ID:** BKF00101 **Laboratory ID:** RB583009 **Collection Date:** 5/20/96 **Type:** Source Blank		
	Acetone	23 ug/L	None
	Di-n-butylphthalate	9 ug/L	None
	Bis(2-ethylhexyl)phthalate	3 ug/L	10U ug/L[1]
	Pesticides/PCBs	ND	None
WF017	**Client ID:** 12R00101 **Laboratory ID:** RB592022 **Collection Date:** 5/21/96 **Type:** Rinsate		
	Acetone	8 ug/L	None
	Di-n-butylphthalate	9 ug/L	None
	Bis(2-ethylhexyl)phthalate	15 ug/L	15U ug/L[1]
	Butylbenzylphthalate	2 ug/L	None
	Pesticides/PCBs	ND	None
WF017	**Client ID:** 31R00101 **Laboratory ID:** RB592020 **Collection Date:** 5/22/96 **Type:**		
	Acetone	17 ug/L	None
	Di-n-butylphthalate	6 ug/L	None
	Bis(2-ethylhexyl)phthalate	6 ug/L	10U ug/L[1]
	Pesticides/PCBs	ND	None

Table IX
Summary of Field Blank Contamination
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF017	**Client ID:** 31T00301 **Laboratory ID:** RB592021 **Collection Date:** 5/22/96 **Type:** Trip Blank		
	Acetone	4 ug/L	None
WF017	**Client ID:** BKT00301 **Laboratory ID:** RB592023 **Collection Date:** 5/21/96 **Type:** Trip Blank		
	Acetone	3 ug/L	None
WF018	**Client ID:** 30T00101 **Laboratory ID:** RB602011 **Collection Date:** 5/23/96 **Type:** Trip Blank		
	Methylene chloride	3 ug/L	None
	Acetone	10 ug/L	None
WF018	**Client ID:** 30R00101 **Laboratory ID:** RB602010 **Collection Date:** 5/23/96 **Type:** Rinsate		
	Acetone	6 ug/L	None
	Di-n-butylphthalate	9 ug/L	None
WF019	**Client ID:** 30T00201 **Laboratory ID:** MB047011 **Collection Date:** 6/4/96 **Type:** Trip Blank		
	Volatiles	ND	None
WF019	**Client ID:** 30T00301 **Laboratory ID:** MB068002 **Collection Date:** 6/5/96 **Type:** Trip Blank		
	Volatiles	ND	None
WF019	**Client ID:** 30R00201 **Laboratory ID:** MB047010 **Collection Date:** 6/4/96 **Type:** Rinsate		
	Volatiles	ND	None
	Di-n-butylphthalate	3 ug/L	None
	Bis(2-ethylhexyl)phthalate	4 ug/L	10U ug/L[1]

Table IX
Summary of Field Blank Contamination
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF019	**Client ID:** 30R00301 **Laboratory ID:** MB068001 **Collection Date:** 6/5/96 **Type:** Rinsate		
	Methylene chloride	3 ug/L	None
	Di-n-butylphthalate	7 ug/L	None
	Bis(2-ethylhexyl)phthalate	4 ug./L	None
WF019	**Client ID:** 30F00101 **Laboratory ID:** MB068003 **Collection Date:** 6/5/96 **Type:** Source Blank		
	Acetone	29 ug/L	None
	Di-n-butylphthalate	13 ug/L	None
WF020	**Client ID:** 33T00101 **Laboratory ID:** MB080017 **Collection Date:** 6/6/96 **Type:** Trip Blank		
	Volatiles	ND	None
WF020	**Client ID:** 33R00101 **Laboratory ID:** MB080016 **Collection Date:** 6/6/96 **Type:** Rinsate		
	Acetone	15 ug/L	None
	Di-n-butylphthalate	13 ug/L	None
	Bis(2-ethylhexyl)phthalate	3 ug/L	10U ug/L[1]

[1] = sample result was modified based on an associated method blank concentration.

Note: see detailed data validation report for the discrete qualifiers.

Table X
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike and Laboratory Duplicate Samples
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Client ID	Analyte	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF016	BKB00401	All metals Cyanide	- -	- -	- -	- -	- -	None None
WF016	BKR00201	Metals	-	-	-	-	-	None
WF016	BKF00101	Cyanide	-	-	-	-	-	None
WF017	31B00601	Lead Cyanide	75-125 -	≤35 -	179.2 -	- -	49.3 -	J None
WF018	30B00202	Lead	-	-	-	-	-	None
WF019	30B00502	Lead	-	-	-	-	-	None
WF019	30F00101	Lead	-	-	-	-	-	None
WF019	30B00601	Lead	75-125	-	66.4	-	-	J
WF020	33B00302	Lead	-	-	-	-	-	None

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF016	**Client ID**	**BKB00401**	**BKB00401D**	
	Laboratory ID	**RB583003**	**RB583004**	
	Collection Date	**5/20/96**	**5/20/96**	
	Aluminum	3600 mg/Kg	2290 mg/Kg	44
	Arsenic	0.54 mg/Kg	0.79 mg/Kg	38
	Barium	7.2 mg/Kg	6.4 mg/Kg	12
	Beryllium	ND	0.07 mg/Kg	Not calculable
	Calcium	194 mg/Kg	203 mg/Kg	5
	Chromium	3.2 mg/Kg	2.4 mg/Kg	29
	Cobalt	0.77 mg/Kg	0.58 mg/Kg	28
	Copper	1.8 mg/Kg	1.7 mg/Kg	6
	Iron	2220 mg/Kg	1660 mg/Kg	29
	Lead	1.4 mg/Kg	2.4 mg/Kg	53
	Magnesium	114 mg/Kg	93.0 mg/Kg	20
	Manganese	19.5 mg/Kg	14.5 mg/Kg	29
	Nickel	1.5 mg/Kg	ND	Not calculable
	Potassium	84.5 mg/Kg	ND	Not calculable
	Sodium	27.6 mg/Kg	22.5 mg/Kg	20
	Vavadium	4.9 mg/Kg	3.4 mg/Kg	36
	Zinc	3.9 mg/Kg	2.7 mg/Kg	36
	Cyanide	0.10 mg/Kg	0.13 mg/Kg	26
WF016	**Client ID**	**BKB00602**	**BKB00602D**	
	Laboratory ID	**RB583016**	**RB583017**	
	Collection Date	**5/21/96**	**5/21/96**	
	Aluminum	5040 mg/Kg	6050 mg/Kg	18
	Arsenic	1.4 mg/Kg	0.95 mg/Kg	38
	Barium	5.2 mg/Kg	5.9 mg/Kg	13
	Calcium	210 mg/Kg	195 mg/Kg	7
	Chromium	4.5 mg/Kg	4.7 mg/Kg	4
	Copper	2.0 mg/Kg	2.3 mg/Kg	14
	Iron	3430 mg/Kg	3820 mg/Kg	11
	Lead	1.8 mg/Kg	1.7 mg/Kg	6
	Magnesium	97.6 mg/Kg	111 mg/Kg	13
	Manganese	9.5 mg/Kg	11.1 mg/Kg	16
	Nickel	1.6 mg/Kg	ND	Not calculable
	Sodium	28.6 mg/Kg	26.2 mg/Kg	9
	Vanadium	10.3 mg/Kg	11.3 mg/Kg	9
	Zinc	3.2 mg/Kg	3.1 mg/Kg	3
	Cyanide	0.13 mg/Kg	0.16 mg/Kg	21

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF017	**Client ID**	**31B00601**	**31B00601D**	
	Laboratory ID	**RB295001**	**RB592006**	
	Collection Date	**5/21/96**	**5/21/96**	
	Aluminum	1580 mg/Kg	1760 mg/Kg	11
	Arsenic	0.44 mg/Kg	0.29 mg/Kg	41
	Barium	7.4 mg/Kg	9.6 mg/Kg	26
	Beryllium	0.07 mg/Kg	0.07 mg/Kg	0
	Cadmium	0.52 mg/Kg	0.68 mg/Kg	27
	Calcium	237 mg/Kg	297 mg/Kg	22
	Chromium	3.9 mg/Kg	5.4 mg/Kg	32
	Copper	11.4 mg/Kg	13.6 mg/Kg	18
	Iron	1120 mg/Kg	1310 mg/Kg	16
	Lead	6.3 mg/Kg	7.0 mg/Kg	11
	Magnesium	83.5 mg/Kg	98.7 mg/Kg	17
	Manganese	9.2 mg/Kg	11.3 mg/Kg	20
	Mercury	0.07 mg/Kg	0.08 mg/Kg	13
	Selenium	0.14 mg/Kg	ND mg/Kg	Not calculable
	Silver	1.1 mg/Kg	1.7 mg/Kg	43
	Sodium	23.5 mg/Kg	26.3 mg/Kg	11
	Vanadium	2.2 mg/Kg	2.4 mg/Kg	9
	Zinc	11.0 mg/Kg	15.9 mg/Kg	36
	Cyanide	0.10 mg/Kg	ND	Not calculable
WF017	**Client ID**	**12B00101**	**12B00101D**	
	Laboratory ID	**RB592007**	**RB592008**	
	Collection Date	**5/21/96**	**5/21/96**	
	Aluminum	25400 mg/Kg	8890 mg/Kg	96
	Arsenic	5.3 mg/Kg	1.2 mg/Kg	126
	Barium	18.0 mg/Kg	14.5 mg/Kg	22
	Beryllium	0.20 mg/Kg	ND	Not calculable
	Cadmium	0.57 mg/Kg	ND	Not calculable
	Calcium	495 mg/Kg	552 mg/Kg	11
	Chromium	19.9 mg/Kg	9.1 mg/Kg	74
	Copper	6.3 mg/Kg	2.9 mg/Kg	74
	Iron	16100 mg/Kg	8620 mg/Kg	61
	Lead	4.7 mg/Kg	3.4 mg/Kg	32
	Magnesium	170 mg/Kg	96.7 mg/Kg	55
	Manganese	7.7 mg/Kg	4.9 mg/Kg	44
	Mercury	0.04 mg/Kg	0.04 mg/Kg	0
	Nickel	2.5 mg/Kg	ND	Not calculable
	Potassium	81.2 mg/Kg	ND	Not calculable
	Sodium	49.8 mg/Kg	33.4 mg/Kg	39
	Vanadium	41.7 mg/Kg	26.5 mg/Kg	45
	Zinc	3.6 mg/Kg	3.7 mg/Kg	3
	Cyanide	ND	ND	None
WF018	**Client ID**	**30B00202**	**30B00202D**	
	Laboratory ID	**RB602002**	**RB602005**	
	Collection Date	**5/23/96**	**5/23/96**	
	Lead	1.8 mg/Kg	1.9 mg/Kg	5
WF019	**Client ID**	**30B00502**	**30B00502D**	
	Laboratory ID	**MB047002**	**MB047005**	
	Collection Date	**6/4/96**	**6/4/96**	
	Lead	4.3 mg/Kg	3.9 mg/Kg	10
WF019	**Client ID**	**30B00602**	**30B00602D**	
	Laboratory ID	**MB068005**	**MB068009**	
	Collection Date	**6/5/96**	**6/5/96**	
	Lead	4.5 mg/Kg	5.0 mg/Kg	11

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF020	**Client ID** **Laboratory ID** **Collection Date** Lead	**33B00302** **MB080002** **6/6/96** 7.8 mg/Kg	**33B00302D** **MB080007** **6/6/96** 7.1 mg/Kg	9
WF020	**Client ID** **Laboratory ID** **Collection Date** Lead	**33B00102** **MB080013** **6/6/96** 7.2 mg/Kg	**33B00102D** **MB080015** **6/6/96** 8.0 mg/Kg	11

Table XII
Summary of Analytes Exceeding Instrument Calibration
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes					
SDG	**Date**	**Analyte**	**Criteria**		**Qualifier**
			Initial Calibration r	**Continuing Calibration %R**	
WF016	All	All metals Cyanide	- -	- -	None None
WF017	All	All metals Cyanide	- -	- -	None None
WF018	All	Lead	-	-	None
WF019	All	Lead	-	-	None
WF020	All	Lead	-	-	None

Notes: r = correlation coefficient for initial calibrations

%R = percent recovery for continuing calibrations

J = the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample because QC criteria were not met (validation "J").

UJ = the analyte was not detected above the reported sample IDL. However, the reported sample is approximate; the analyte concentration may not reliably be presumed to be less than the IDL value.

R = the sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Table XIII
Summary of Method Blank Contamination
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	**Analyte**	**Concentration**	**Associated Samples**
WF016	Barium	1.760 ug/L	All water samples in SDG WF016
	Iron	31.120 ug/L	
	Sodium	88.880 ug/L	
	Zinc	16.920 ug/L	
	Aluminum	3.309 mg/Kg	All soil samples in SDG WF016
	Calcium	11.435 mg/Kg	
	Copper	0.249 mg/Kg	
	Iron	1.650 mg/Kg	
	Sodium	5.214 mg/Kg	
	Thallium	0.001 mg/Kg	
	Zinc	1.342 mg/Kg	
	Cyanide	ND	All samples in SDG WF016
WF017	Barium	1.760 ug/L	All water samples in SDG WF017
	Iron	31.120 ug/L	
	Sodium	88.880 ug/L	
	Zinc	16.920 ug/L	
	Aluminum	3.309 mg/Kg	All soil samples in SDG WF017
	Calcium	11.435 mg/Kg	
	Cobalt	0.249 mg/Kg	
	Copper	1.650 mg/Kg	
	Sodium	5.214 mg/Kg	
	Zinc	1.342 mg/Kg	
	Cyanide	ND	All samples in SDG WF017
WF018	Lead	ND	All samples in SDG WF018
WF019	Lead	2.260 ug/L	All water samples in SDG WF019
WF020	Lead	ND	All samples in SDG WF020

Table XIV
Summary of Field Blank Contamination
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter	Concentration	Qualifier
WF016	**Client ID:** BKR00201		
	Laboratory ID: RB583008		
	Collection Date: 5/20/96		
	Type: Rinsate		
	Barium	1.8 ug/L	1.7U ug/L[1]
	Iron	5.6 ug/L	5.6U ug/L[1]
	Lead	2.3 ug/L	None
	Sodium	57.5 ug/L	57.5U ug/L[1]
	Zinc	3.0 ug/L	3.0U ug/L[1]
	Cyanide	1.8 ug/L	None
WF016	**Client ID:** BKF00101		
	Laboratory ID: RB583009		
	Collection Date: 5/20/96		
	Type: Source Blank		
	Iron	6.4 ug/L	6.4U ug/L[1]
	Sodium	52.9 ug/L	52.9U ug/L[1]
	Zinc	3.8 ug/L	3.8U ug/L[1]
	Cyanide	ND	None
WF017	**Client ID:** 31R00101		
	Laboratory ID: RB592020		
	Collection Date: 5/22/96		
	Type: Rinsate		
	Aluminum	86.5 ug/L	None
	Barium	2.3 ug/L	2.3U ug/L[1]
	Calcium	503 ug/L	None
	Chromium	11.3 ug/L	None
	Copper	1.4 ug/L	None
	Iron	132 ug/L	132U ug/L[1]
	Lead	0.60 ug/L	None
	Magnesium	66.2 ug/L	None
	Manganese	3.8 ug/L	None
	Sodium	264 ug/L	None
	Zinc	7.8 ug/L	7.8U ug/L[1]
	Cyanide	ND	None
WF017	**Client ID:** 12R00101		
	Laboratory ID: RB592022		
	Collection Date: 5/21/96		
	Type: Rinsate		
	Aluminum	19.1 ug/L	None
	Barium	1.8 ug/L	1.8U ug/L[1]
	Calcium	86.5 ug/L	None
	Iron	15.6 ug/L	15.6U ug/L[1]
	Lead	0.60 ug/L	None
	Magnesium	30.5 ug/L	None
	Sodium	59.8 ug/L	None
	Zinc	3.8 ug/L	3.8U ug/L[1]
	Cyanide	ND	None

Table XIV
Summary of Field Blank Contamination
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter	Concentration	Qualifier
WF018	**Client ID:** 30R00101 **Laboratory ID:** RB602010 **Collection Date:** 5/23/96 **Type:** Rinsate		
	Lead	ND	None
WF019	**Client ID:** 30R00201 **Laboratory ID:** MB047010 **Collection Date:** 6/4/96 **Type:** Rinsate		
	Lead	ND	None
WF019	**Client ID:** 30R00301 **Laboratory ID:** MB068001 **Collection Date:** 6/5/96 **Type:** Rinsate		
	Lead	ND	None
WF019	**Client ID:** 30F00101 **Laboratory ID:** MB068003 **Collection Date:** 6/5/96 **Type:** Source Blank		
	Lead	2.1 ug/L	2.1U ug/L[1]
WF020	**Client ID:** 33R00101 **Laboratory ID:** MB080016 **Collection Date:** 6/6/96 **Type:** Rinsate		
	Lead	1.6 ug/L	None

[1] = sample result was modified based on an associated method blank concentration.

Note: see detailed data validation report for the discrete qualifiers.

Table XV
Sample Event PARCC Summary
Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton, Florida

SDG	Fraction	Precision[1]	Accuracy[2]	Representativeness	Completeness (%)	Comparability
WF016	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF017	Volatiles	Acceptable	Acceptable	Acceptable	100[3]	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF018	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Lead	Acceptable	Acceptable	Acceptable	100	Acceptable
WF019	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100[3]	Acceptable
	Lead	Acceptable	Acceptable	Acceptable	100	Acceptable
WF020	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Lead	Acceptable	Acceptable	Acceptable	100	Acceptable

[1]Cumulative of sampling and analytical components.
[2]Analytical component.
[3]Samples results rejected for database purposes were not used in the completeness calculation.

Notes: All completeness is expressed as the ratio of number of sample results considered usable (i.e., not qualified as rejected) to the total number of sample results.

% = percent

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APPENDIX A

Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida
PARCC Summary Tables

Final Version

5/1/96

APPENDIX A

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Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton, Florida

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Table I

SDG#: WF006 **Sample Delivery Group Versus Sample Identification** **LDC#:** 1779A

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide	TRPH
01T00101	G8864001	TB	water	12-5-95	X					
01S00101	G8864002		soil	12-5-95	X	X	X	X	X	
01S00201	G8864003		soil	12-5-95	X	X	X	X	X	
01S00301	G8864004		soil	12-5-95	X	X	X	X	X	
01S00401	G8864005		soil	12-5-95	X	X	X	X	X	
01S00501	G8864006		soil	12-5-95	X	X	X	X	X	
02S00401	G8864007	FD	soil	12-5-95	X	X	X	X	X	
02S00401D	G8864008	FD	soil	12-5-95	X	X	X	X	X	
02S00401DDL	G8864008DL		soil	12-5-95		X				
02T00101	G8876001	TB	water	12-6-95	X					
02S00101	G8876002		soil	12-6-95	X	X	X	X	X	
02S00201	G8876003		soil	12-6-95	X	X	X	X	X	
02S00301	G8876004		soil	12-6-95	X	X	X	X	X	
02S00501	G8876005		soil	12-6-95	X	X	X	X	X	
09S00101	G8876006		soil	12-6-95	X	X	X	X	X	X
09S00201	G8876007		soil	12-6-95	X	X	X	X	X	X
09S00401	G8876008		soil	12-6-95	X	X	X	X	X	X
09S00501	G8876009		soil	12-6-95	X	X	X	X	X	X
09S00301	G8876010	FD	soil	12-6-95	X	X	X	X	X	X
09S00301D	G8876011	FD	soil	12-6-95	X	X	X	X	X	X
01R00101	G8876012	R	water	12-6-95	X	X	X	X	X	X
01F00101	G8876013	SB	water	12-6-95	X	X	X	X	X	X
02S00401MS	G8864007MS	MS	soil	12-5-95	X	X	X	X	X	

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF006 **Sample Delivery Group Versus Sample Identification** **LDC#:** 1779A

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide	TRPH
02S00401MSD	G8864007MSD	MSD	soil	12-5-95	X	X	X	X	X	
09S00101MS	G8876006MS	MS	soil	12-6-95						X
09S00101DUP	G8876006MSD	DUP	soil	12-6-95						X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF007 **Sample Delivery Group Versus Sample Identification** **LDC#:** 1779B

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide	TRPH
10T00101	G8889001	TB	water	12-7-95	X					
10S00101	G8889002	FD	soil	12-7-95	X	X	X	X	X	X
10S00101R	G8889002R		soil	12-7-95		X				
10S00101D	G8889003	FD	soil	12-7-95	X	X	X	X	X	X
10S00401	G8889004		soil	12-7-95	X	X	X	X	X	X
10S00601	G8889005		soil	12-7-95	X	X	X	X	X	X
12S00301	G8889006		soil	12-7-95	X	X	X	X	X	X
12S00101	G8889007		soil	12-7-95	X	X	X	X	X	X
12S00601	G8889008		soil	12-7-95	X	X	X	X	X	X
10R00101	G8889009	R	water	12-7-95	X	X	X	X	X	X
13T00101	G8895001	TB	water	12-8-95	X					
13S00101	G8895002		soil	12-8-95	X	X	X	X	X	
13S00201	G8895003		soil	12-8-95	X	X	X	X	X	
13S00301	G8895004		soil	12-8-95	X	X	X	X	X	
13S00401	G8895005		soil	12-8-95	X	X	X	X	X	
13S00501	G8895006		soil	12-8-95	X	X	X	X	X	
14S00101	G8895007	FD	soil	12-8-95	X	X	X	X	X	
14S00101D	G8895008	FD	soil	12-8-95	X	X	X	X	X	
14S00201	G8895009		soil	12-8-95	X	X	X	X	X	
14S00301	G8895010		soil	12-8-95	X	X	X	X	X	
10S00101MS	G8889002MS	MS	soil	12-7-95	X		X	X	X	X
10S00101MSD	G8889002MSD	MSD	soil	12-7-95	X		X	X	X	X
10S00101RMS	G8889002RMS	MS	soil	12-7-95		X				

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF007 **Sample Delivery Group Versus Sample Identification** **LDC#:** 1779B

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide	TRPH
10S00101RMSD	G8889002RMSD	MSD	soil	12-7-95		X				

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF008 **Sample Delivery Group Versus Sample Identification** **LDC#:** 1779C

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide
15T00101	G8913001	TB	water	12-9-95	X				
15S02001	G8913002	FD	soil	12-9-95	X	X	X	X	X
15S02001D	G8913003	FD	soil	12-9-95	X	X	X	X	X
15S02101	G8913004		soil	12-9-95	X	X	X	X	X
15S02201	G8913005		soil	12-9-95	X	X	X	X	X
15S02301	G8913006		soil	12-9-95	X	X	X	X	X
15S02401	G8913007		soil	12-9-95	X	X	X	X	X
15S02501	G8913008		soil	12-9-95	X	X	X	X	X
15S01501	G8913009		soil	12-9-95	X	X	X	X	X
15S01401	G8913010		soil	12-9-95	X	X	X	X	X
15S01301	G8913011		soil	12-9-95	X	X	X	X	X
15S01601	G8913012		soil	12-10-95	X	X	X	X	X
15S01701	G8913013	FD	soil	12-10-95	X	X	X	X	X
15S01701D	G8913014	FD	soil	12-10-95	X	X	X	X	X
15S01801	G8913015		soil	12-10-95	X	X	X	X	X
15S01901	G8913016		soil	12-10-95	X	X	X	X	X
15S00901	G8913017		soil	12-11-95	X	X	X	X	X
15S00901RE	G8913017RE		soil	12-11-95		X			
15R00101	G8913020	R	water	12-11-95	X	X	X	X	X
15S02001MS	G8913002MS	MS	soil	12-9-95	X	X	X	X	X
15S02001MSD	G8913002MSD	MSD	soil	12-9-95	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF009 **Sample Delivery Group Versus Sample Identification** **LDC#:** 1779D

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide
15T00201	G8914001	TB	water	12-11-95	X				
15S00101	G8914002	FD	soil	12-11-95	X	X	X	X	X
15S00101R	G8914002R		soil	12-11-95		X			
15S00101D	G8914003	FD	soil	12-11-95	X	X	X	X	X
15S00201	G8914004		soil	12-11-95	X	X	X	X	X
15S00301	G8914005		soil	12-11-95	X	X	X	X	X
15S00501	G8914006		soil	12-11-95	X	X	X	X	X
15S00401	G8914007		soil	12-11-95	X	X	X	X	X
15S00601	G8914008		soil	12-11-95	X	X	X	X	X
15S00701	G8914009		soil	12-11-95	X	X	X	X	X
15S00801	G8914010		soil	12-11-95	X	X	X	X	X
15S01201	G8914011		soil	12-11-95	X	X	X	X	X
15R00201	G8914012	R	water	12-11-95	X	X	X	X	X
15S01101	G8914013		soil	12-10-95	X	X	X	X	X
15S01001	G8914014		soil	12-10-95	X	X	X	X	X
15S00101MS	G8914002MS	MS	soil	12-11-95	X	X	X	X	X
15S00101MSD	G8914002MSD	MSD	soil	12-11-95	X	X	X	X	X
15S00101RMS	G8914002RMS	MS	soil	12-11-95		X			
15S00101RMSD	G8914002RMSD	MSD	soil	12-11-95		X			

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF010 **Sample Delivery Group Versus Sample Identification** **LDC#:** 1779E

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide
31S00101	G8924001		soil	12-12-95	X	X	X	X	X
31S00201	G8924002		soil	12-12-95	X	X	X	X	X
31S00301	G8924003		soil	12-12-95	X	X	X	X	X
31S00401	G8924004		soil	12-12-95	X	X	X	X	X
31T00101	G8924005	TB	water	12-12-95	X				
31R00101	G8924006	R	water	12-12-95	X	X	X	X	X
31T00201	G8938001	TB	water	12-13-95	X				
31S01501	G8938002	FD	soil	12-13-95	X	X	X	X	X
31S01501D	G8938003	FD	soil	12-13-95	X	X	X	X	X
31S01601	G8938004		soil	12-13-95	X	X	X	X	X
31S01701	G8938005		soil	12-13-95	X	X	X	X	X
31S01801	G8938006		soil	12-13-95	X	X	X	X	X
31S01901	G8938007		soil	12-13-95	X	X	X	X	X
31S01501MS	G8938002MS	MS	soil	12-13-95	X	X	X	X	X
31S01501MSD	G8938002MSD	MSD	soil	12-13-95	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF11A | **Sample Delivery Group Versus Sample Identification** | **LDC#:** 1777A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide	TRPH
09W00101	RA903001	FD	water	1-5-96	X	X	X	X	X	X
09W00101D	RA903002	FD	water	1-5-96	X	X	X	X	X	X
16W00101	RA903003		water	1-5-96	X	X	X	X	X	
09W00101MS	RA903001MS	MS	water	1-5-96	X	X	X	X	X	X
09W00101MSD	RA903001MSD	MSD	water	1-5-96	X	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF11B | **Sample Delivery Group Versus Sample Identification** | **LDC#:** 1777B

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide	TRPH
12T00101	RA847001	TB	water	1-5-96	X					
10S00201	RA847002	FD	soil	1-5-96	X	X	X	X	X	X
10S00201DL	RA847002DL		soil	1-5-96		X				
10S00201D	RA847003	FD	soil	1-5-96	X	X	X	X	X	X
10S00301	RA847004		soil	1-5-96	X	X	X	X	X	X
10S00301R	RA847004R		soil	1-5-96		X				
10S00501	RA847005		soil	1-5-96	X	X	X	X	X	X
12S00201	RA847006		soil	1-5-96	X	X	X	X	X	X
12S00401	RA847007		soil	1-5-96	X	X	X	X	X	X
12S00501	RA847008		soil	1-5-96	X	X	X	X	X	X
12R00101	RA847012	R	water	1-5-96	X	X	X	X	X	X
11T00101	RA847013	TB	water	1-6-96	X					
11S00101	RA847014		soil	1-6-96	X	X	X	X	X	X
11S00201	RA847015		soil	1-6-96	X	X	X	X	X	X
11S00201DL	RA847015DL		soil	1-6-96			X			
11S00201R	RA847015R		soil	1-6-96	X					
11S00501	RA847016		soil	1-6-96	X	X	X	X	X	X
11S00401	RA847017		soil	1-7-96	X	X	X	X	X	X
11S00301	RA847018		soil	1-7-96	X	X	X	X	X	X
10S00201MS	RA847002MS	MS	soil	1-5-96	X	X	X	X	X	X
10S00201MSD	RA847002MSD	MSD	soil	1-5-96	X	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF012 **Sample Delivery Group Versus Sample Identification** **LDC#:** 1777C

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/ PCBs	Metals	Cyanide	Lead	TCLP Metals
11S00601	RA855001	FD	soil	1-7-96						X	
11S00601D	RA855002	FD	soil	1-7-96						X	
11S00701	RA855003		soil	1-7-96						X	
11S00801	RA855004		soil	1-7-96						X	
11S00901	RA855005		soil	1-7-96						X	
11S01001	RA855006		soil	1-7-96						X	
11S01101	RA855007		soil	1-7-96						X	
11S01201	RA855008		soil	1-7-96						X	
11S01301	RA855009		soil	1-7-96						X	
31S00401	RA855010		soil	1-7-96	X	X	X	X	X		
31S00501	RA855011	FD	soil	1-7-96	X	X	X	X	X		
31S00501D	RA855012	FD	soil	1-7-96	X	X	X	X	X		
31S00601	RA855013		soil	1-7-96	X	X	X	X	X		
31S00701	RA855014		soil	1-7-96	X	X	X	X	X		
31S01001	RA855015		soil	1-7-96	X	X	X	X	X		
31S01101	RA855016		soil	1-7-96	X	X	X	X	X		
31S00901	RA855017		soil	1-7-96	X	X	X	X	X		
31S00801	RA855018		soil	1-7-96	X	X	X	X	X		
31S01201	RA855019		soil	1-8-96	X	X	X	X	X		
31S01201R	RA855019R		soil	1-8-96	X						
31S01301	RA855020		soil	1-8-96	X	X	X	X	X		
31R00201	RA855021	R	water	1-8-96	X	X	X	X	X		
31S00401	RA857001		soil	1-7-96							X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF012 **Sample Delivery Group Versus Sample Identification** **LDC#:** 1777C

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/ PCBs	Metals	Cyanide	Lead	TCLP Metals
31S00501	RA857002	FD	soil	1-7-96							X
31S00501D	RA857003	FD	soil	1-7-96							X
31S00601	RA857004		soil	1-7-96							X
31S00701	RA847005		soil	1-7-96							X
31S01001	RA857006		soil	1-7-96							X
31S01101	RA857007		soil	1-7-96							X
31S00901	RA857008		soil	1-7-96							X
31S00801	RA857009		soil	1-7-96							X
31S01201	RA857010		soil	1-8-96							X
31S01301	RA857011		soil	1-8-96							X
31S00501MS	RA855011MS	MS	soil	1-7-96	X	X	X	X	X		
31S00501MSD	RA855011MSD	MSD	soil	1-7-96	X	X	X	X	X		
31S00501MS	RA857002MS	MS	soil	1-7-96							X
31S00501MSD	RA857002MSD	MSD	soil	1-7-96							X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF013 | **Sample Delivery Group Versus Sample Identification** | **LDC#:** 1777D

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/ PCBs	Metals	Cyanide
16S00101	RA856001	FD	soil	1-8-96	X	X	X	X	X
16S00501	RA856002		soil	1-8-96	X	X	X	X	X
16S00401	RA856003		soil	1-8-96	X	X	X	X	X
16S00901	RA856004		soil	1-8-96	X	X	X	X	X
16S00901R	RA856004R		soil	1-8-96		X			
16S01501	RA856005		soil	1-8-96	X	X	X	X	X
16S00201	RA856006		soil	1-9-96	X	X	X	X	X
16S00301	RA856007		soil	1-9-96	X	X	X	X	X
16S00801	RA856008		soil	1-9-96	X	X	X	X	X
16S00801RE	RA856008RE		soil	1-9-96		X			
16S00601	RA856009		soil	1-9-96	X	X	X	X	X
16S00601DL	RA856009DL		soil	1-9-96		X			
16S01201	RA856010		soil	1-9-96	X	X	X	X	X
16S01301	RA856011		soil	1-9-96	X	X	X	X	X
BKS00301	RA856012		soil	1-9-96	X	X	X	X	X
BKS00101	RA856013		soil	1-9-96	X	X	X	X	X
16S01001	RA856014	FD	soil	1-9-96	X	X	X	X	X
16S01001D	RA856015	FD	soil	1-9-96	X	X	X	X	X
16T00101	RA856016	TB	water	1-9-96	X				
16R00101	RA856017	R	water	1-9-96	X	X	X	X	X
16S00101D	RA856018	FD	soil	1-9-96	X	X	X	X	X
24T00101	RA871001	TB	water	1-10-96	X				
24S00101	RA871002		soil	1-10-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF013 **Sample Delivery Group Versus Sample Identification** **LDC#:** 1777D

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/ PCBs	Metals	Cyanide
16S01001MS	RA856014MS	MS	soil	1-9-96	X	X	X	X	X
16S01001MSD	RA856014MSD	MSD	soil	1-9-96	X	X	X	X	X
24S00101MS	RA871002MS	MS	soil	1-10-96					X
24S00101MSD	RA871002MSD	MSD	soil	1-10-96					X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF014 | **Sample Delivery Group Versus Sample Identification** | **LDC#:** 1777E

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide
BKR00101	RA870001	R	water	1-10-96	X	X	X	X	X
BKT00101	RA870002	TB	water	1-10-96	X				
16S01401	RA870003		soil	1-10-96	X	X	X	X	X
16S00701	RA870004		soil	1-10-96	X	X	X	X	X
16S01101	RA870005		soil	1-10-96	X	X	X	X	X
16S01701	RA870006		soil	1-10-96	X	X	X	X	X
16S01601	RA870007		soil	1-10-96	X	X	X	X	X
BKS00201	RA870008	FD	soil	1-10-96	X	X	X	X	X
BKS00201D	RA870009	FD	soil	1-10-96	X	X	X	X	X
BKS00501	RA870010		soil	1-10-96	X	X	X	X	X
BKS00401	RA870011		soil	1-10-96	X	X	X	X	X
31B00401	RA870012		soil	1-11-96	X	X	X	X	X
31B00301	RA870013		soil	1-11-96	X	X	X	X	X
31B00201	RA870014	FD	soil	1-11-96	X	X	X	X	X
31B00201D	RA870015	FD	soil	1-11-96	X	X	X	X	X
31B00101	RA870016		soil	1-11-96	X	X	X	X	X
31B00501	RA870017		soil	1-11-96	X	X	X	X	X
31T00201	RA870018	TB	water	1-11-96	X				
BKS00201MS	RA870008MS	MS	soil	1-10-96	X	X	X	X	X
BKS00201MSD	RA870008MSD	MSD	soil	1-10-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table I

SDG#: WF015 **Sample Delivery Group Versus Sample Identification** **LDC#:** 1777F

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides/PCBs	Metals	Cyanide
COR00101	RA908001	R	water	1-18-96	X	X	X	X	X
COF00101	RA908002	SB	water	1-18-96	X	X	X	X	X
COT00101	RA908003	TB	water	1-18-96	X				
COS00101	RA908004	FD	soil	1-18-96	X	X	X	X	X
COS00101D	RA908005	FD	soil	1-18-96	X	X	X	X	X
EOS00101	RA908006		soil	1-18-96	X	X	X	X	X
POS00101	RA908007		soil	1-18-96	X	X	X	X	X
YOS00101	RA908008		soil	1-18-96	X	X	X	X	X
SOS00101	RA908009		soil	1-18-96	X	X	X	X	X
WOS00101	RA908010		soil	1-18-96	X	X	X	X	X
AOS00101	RA908011		soil	1-18-96	X	X	X	X	X
COS00101MS	RA908004MS	MS	soil	1-18-96	X	X	X	X	X
COS00101MSD	RA908004MSD	MSD	soil	1-18-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate

Table II
Summary of Rejected Data (Organics)
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Fraction	Sample	Compound	Reason
WF006	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBS	All samples	No rejected results	-
WF007	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF008	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF009	Volatiles	All samples	No rejected results	-
	Semivolatiles	15S00201	1,4-Dichlorobenzene	Low MS/MSD recoveries
			1,2,4-Trichlorobenzene	Low MS/MSD recoveries
			Acenaphthene	Low MS/MSD recoveries
			Pyrene	MS/MSD recoveries
	Pesticides & PCBs	All samples	No rejected results	-
WF010	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF11A	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF11B	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF012	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF013	Volatiles	All samples	No rejected results	-
	Semivolatiles	16S00801	All compounds	Low Surrogate recoveries
	Pesticides & PCBs	All samples	No rejected results	-
WF014	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF015	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	COS00101	All compounds	Low Surrogate recoveries
		SOS00101	All compounds	Low Surrogate recoveries

Table III
Summary of Rejected Data (Inorganics)
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes				
SDG	**Fraction**	**Sample**	**Analyte**	**Reason**
WF006	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
	TRPH	All samples	No rejected results	-
WF007	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
	TRPH	All samples	No rejected results	-
WF008	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF009	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF010	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF11A	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
	TRPH	All samples	No rejected results	-
WF11B	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
	TRPH	All samples	No rejected results	-
WF012	All metals	All samples	No rejected results	-
	All TCLP metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	
WF013	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF014	Mercury	31B00301	Mercury	Low LCS % Recovery
	Cyanide	All samples	No rejected results	-
WF015	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF006	02S00401	Volatiles	-	-	-	-	-	None
		Phenol	26-90	-	-	92	-	None
		4-Chloro-3-methylphenol	26-103	-	-	104	-	None
		2,4-Dinitrotoluene	28-89	-	-	100	-	None
		Pyrene	35-142	-	29	30	-	None
		Pesticides & PCBs	-	-	-	-	-	None
WF007	10S00101	Volatiles	-	-	-	-	-	None
		4-Chloro-3-methylphenol	26-103	-	111	-	-	None
		Pesticides & PCBs	-	-	-	-	-	None
WF008	15S02001	Volatiles	-	-	-	-	-	None
		1,4-Dichlorobenzene	28-104	≤27	-	14	142	None
		1,2,4-Trichlorobenzene	38-107	≤23	-	12	149	None
		Acenaphthene	-	≤19	-	-	96	None
		2,4-Dinitrotoluene	28-89	-	100	94	-	None
		Pyrene	35-142	≤36	-	6	67	None
		Pesticides & PCBs	-	-	-	-	-	None
WF009	15S00101	Volatiles	-	-	-	-	-	None
		2-Chlorophenol	25-102	≤50	16	-	110	None
		1,4-Dichlorobenzene	28-104	-	0	0	-	R
		1,2,4-Trichlorobenzene	38-107	≤23	0	3	200	R
		Acenaphthene	31-137	≤19	0	9	200	R
		Pentachlorophenol	17-109	≤47	10	-	127	None
		Pyrene	35-142	-	0	0	-	R
		Pesticides & PCBs	-	-	-	-	-	None
WF009	15S00101R	2,4-Dinitrotoluene	28-89	-	-	95	-	UJ

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF010	31S01501	Volatiles	-	-	-	-	-	-
		4-Chloro-3-methylphenol	26-103	-	104	-	-	None
		2,4-Dinitrotoluene	28-89	-	94	-	-	None
		Pesticides & PCBs	-	-	-	-	-	-
WF11A	09W00101	Volatiles	-	-	-	-	-	None
		4-Chloro-3-methylphenol	23-97	-	104	107	-	None
		4-Nitrophenol	10-80	-	117	119	-	None
		2,4-Dinitrophenol	24-96	-	106	107	-	None
		Pentachlorophenol	96-103	-	120	119	-	None
		Pesticides & PCBs	-	-	-	-	-	None
WF11B	10S00201	Volatiles	-	-	-	-	-	None
		Pyrene	-	≤36	-	-	39	None
		Pesticides & PCBs	-	-	-	-	-	None
WF012	31S00501	Volatiles	-	-	-	-	-	None
		4-Nitrophenol	11-114	-	120	115	-	None
		Pesticides & PCBs	-	-	-	-	-	None
WF013	16S01001	Volatiles	-	-	-	-	-	None
		Phenol	26-90	-	-	96	-	U
		2-Chlorophenol	25-102	-	-	103	-	U
		Pentachlorophenol	17-109	-	-	110	-	U
		Pesticides & PCBs	-	-	-	-	-	None
WF014	BKS00201	Volatiles	-	-	-	-	-	None
		Pentachlorophenol	17-109	-	133	136	-	None
		4-Nitrophenol	11-114	-	-	132	-	None
		Pesticides & PCBs	-	-	-	-	-	None

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds								
			Criteria		% Recovery			
SDG	Client ID	Compound	% Recovery	RPD	MS	MSD	RPD	Qualifier
WF015	COS00101	Volatiles	-	-	-	-	-	None
		Semivolatiles	-	-	-	-	-	None
		Pesticides & PCBs	-	-	-	-	-	None

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF006	**Client ID**	**02S00401**	**02S00401D**	
	Laboratory ID	**G8864007**	**G8864008**	
	Collection Date	**12/5/95**	**12/5/95**	
	Volatiles	ND	ND	-
	Semivolatiles	ND	ND	-
	Dieldrin	8.3	8.0	4
	Alpha-chlordane	5.6	5.1	9
	Gamma-chlordane	3.5	2.9	19
WF006	**Client ID**	**09S00301**	**09S00301D**	
	Laboratory ID	**G8876010**	**G8876011**	
	Collection Date	**12/6/96**	**12/6/96**	
	Acetone	ND	5 ug/Kg	Not calculable
	Semivolatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
WF007	**Client ID**	**10S00101**	**10S00101D**	
	Laboratory ID	**G8889002**	**G8889003**	
	Collection Date	**12/7/95**	**12/7/95**	
	Volatiles	ND	ND	-
	Phenanthrene	280 ug/Kg	1200 ug/Kg	124
	Fluoranthene	660 ug/Kg	2300 ug/Kg	111
	Pyrene	580 ug/Kg	1600 ug/Kg	94
	Benzo(a)anthracene	340 ug/Kg	1200 ug/Kg	112
	Chrysene	500 ug/Kg	1400 ug/Kg	120
	Bis(2-ethylhexyl)phthalate	200 ug/Kg	360U ug/Kg	Not calculable
	Benzo(b)fluoranthene	480 ug/Kg	1300 ug/Kg	92
	Benzo(k)fluoranthene	360 ug/Kg	900 ug/Kg	86
	Benzo(a)pyrene	400 ug/Kg	1000 ug/Kg	86
	Indeno(1,2,3-cd)pyrene	180 ug/Kg	360 ug/Kg	67
	Benzo(g,h,i)perylene	180 ug/Kg	340 ug/Kg	62
	Anthracene	370U ug/Kg	270 ug/Kg	Not calculable
	Carbazole	370U ug/Kg	100 ug/Kg	Not calculable
	Dibenz(a,h)anthracene	370U ug/Kg	170 ug/Kg	Not calculable
	Pesticides & PCBs	ND	ND	-
WF007	**Client ID**	**14S00101**	**14S00101D**	
	Laboratory ID	**G8895007**	**G8895008**	
	Collection Date	**12/8/95**	**12/8/95**	
	Acetone	8 ug/Kg	ND	Not calculable
	Methylene chloride	6 ug/Kg	ND	Not calculable
	Semivolatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF008	**Client ID**	**15S02001**	**15S02001D**	
	Laboratory ID	**G8913002**	**G8913003**	
	Collection Date	**12/9/95**	**12/9/95**	
	Acetone	5 ug/Kg	ND	Not calculable
	Methylene chloride	ND	5 ug/Kg	Not calculable
	Semivolatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
WF008	**Client ID**	**15S01701**	**15S01701D**	
	Laboratory ID	**G8913013**	**G8913014**	
	Collection Date	**12/10/95**	**12/10/95**	
	Acetone	6 ug/Kg	4 ug/Kg	40
	Semivolatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
WF009	**Client ID**	**15S00101**	**15S00101D**	
	Laboratory ID	**G8914002**	**G8914003**	
	Collection Date	**12/11/95**	**12/11/95**	
	Acetone	6 ug/Kg	7 ug/Kg	15
	Bis(2-ethylhexyl)phthalate	ND	1700 ug/Kg	Not calculable
	Pesticides & PCBs	ND	ND	-
WF010	**Client ID**	**31S01501**	**31S01501D**	
	Laboratory ID	**G8938002**	**G8938003**	
	Collection Date	**12/13/95**	**12/13/95**	
	Acetone	ND	5 ug/Kg	Not calculable
	Semivolatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
WF11A	**Client ID**	**09W00101**	**09W00101D**	
	Laboratory ID	**RA903001**	**RA903002**	
	Collection Date	**1/5/96**	**1/5/96**	
	Toluene	10U ug/L	1 ug/L	Not calculable
	Semivolatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF11B	**Client ID**	**10S00201**	**10S00201D**	
	Laboratory ID	**RA847002**	**RA847003**	
	Collection Date	**1/5/96**	**1/5/96**	
	Acetone	29 ug/Kg	20 ug/Kg	37
	2-Hexanone	11U ug/Kg	4 ug/Kg	Not calculable
	Phenanthrene	68 ug/Kg	310 ug/Kg	128
	Di-n-butylphthalate	46 ug/Kg	380U ug/Kg	Not calculable
	Fluoranthene	160 ug/Kg	420 ug/Kg	90
	Pyrene	170 ug/Kg	290 ug/Kg	52
	Butylbenzylphthalate	57 ug/Kg	380U ug/Kg	Not calculable
	Benzo(a)anthracene	87 ug/Kg	190 ug/Kg	74
	Chrysene	120 ug/Kg	220 ug/Kg	59
	Bis(2-ethylhexyl)phthalate	3200 ug/Kg	140 ug/Kg	183
	Benzo(a)fluoranthene	150 ug/Kg	200 ug/Kg	28
	Benzo(k)fluoranthene	110 ug/Kg	210 ug/Kg	62
	Benzo(a)pyrene	95 ug/Kg	150 ug/Kg	45
	Indeno(1,2,3-cd)pyrene	58 ug/Kg	56 ug/Kg	4
	Acenaphthene	380U ug/Kg	40 ug/Kg	Not calculable
	Anthracene	380U ug/Kg	54 ug/Kg	Not calculable
	Carbazole	380U ug/Kg	84 ug/Kg	Not calculable
	4,4'-DDT	7.0 ug/Kg	8.9 ug/Kg	24
	Aroclor 1254	340 ug/Kg	390 ug/Kg	14
WF012	**Client ID**	**31S00501**	**31S00501D**	
	Laboratory ID	**RA855011**	**RA855012**	
	Collection Date	**1/7/96**	**1/7/96**	
	Acetone	9 ug/Kg	8 ug/Kg	12
	Semivolatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
WF013	**Client ID**	**16S00101**	**16S00101D**	
	Laboratory ID	**RA856001**	**RA856018**	
	Collection Date	**1/8/96**	**1/8/96**	
	Acetone	4 ug/Kg	9 ug/Kg	77
	Bis(2-ethylhexyl)phthalate	45 ug/Kg	380U ug/Kg	Not calculable
	4,4'-DDE	3.2 ug/Kg	2.0 ug/Kg	46
	4,4'-DDT	3.8 ug/Kg	2.7 ug/Kg	34
WF013	**Client ID**	**16S01001**	**16S01001D**	
	Laboratory ID	**RA856014**	**RA856015**	
	Collection Date	**1/9/96**	**1/9/96**	
	Acetone	14 ug/Kg	4 ug/Kg	111
	Bis(2-ethylhexyl)phthalate	60 ug/Kg	58 ug/Kg	3
	Dieldrin	33 ug/Kg	60 ug/Kg	58
	4,4'-DDE	13 ug/Kg	22 ug/Kg	51
	4,4'-DDT	6.4 ug/Kg	9.0 ug/Kg	34
	Alpha-chlordane	6.8 ug/Kg	12 ug/Kg	55
	Gamma-chlordane	4.0 ug/Kg	7.9 ug/Kg	66
	Aroclor 1260	48 ug/Kg	110 ug/Kg	78

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF014	**Client ID**	**BKS00201**	**BKS00201D**	
	Laboratory ID	**RA870008**	**RA870009**	
	Collection Date	**1/10/96**	**1/10/96**	
	Acetone	8 ug/Kg	4 ug/Kg	67
	Bis(2-ethylhexyl)phthalate	370U ug/Kg	45 ug/Kg	Not calculable
	Pesticides & PCBs	ND	ND	-
WF014	**Client ID**	**31B00201**	**31B00201D**	
	Laboratory ID	**RA870014**	**RA870015**	
	Collection Date	**1/11/96**	**1/11/96**	
	Acetone	3 ug/Kg	11U ug/Kg	Not calculable
	Bis(2-ethylhexyl)phthalate	370U ug/Kg	48 ug/Kg	Not calculable
	Pesticides & PCBs	ND	ND	-
WF015	**Client ID**	**COS00101**	**COS00101D**	
	Laboratory ID	**RA908004**	**RA908005**	
	Collection Date	**1/18/96**	**1/18/96**	
	Acetone	22 ug/Kg	12U ug/Kg	Not calculable
	Semivolatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-

Table VI
Summary of Surrogate Recoveries
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF006	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
	All samples	Pesticides & PCBs	All within QC limits	-	-	None
WF007	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
		Pesticides & PCBs				
	10R00101	Decachlorobiphenyl	54	60-150	1	UJ (all compounds)
WF008	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
		Pesticides & PCBs				
	15S02501	Decachlorobiphenyl	54	60-150	1	UJ (all compounds)
WF009	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
	All samples	Pesticides & PCBs	All within QC limits	-	-	None
WF010	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
		Pesticides & PCBs				
	31S00101	Tetrachloro-m-xylene	57	60-150	1	UJ/J (all compounds)
		Tetrachloro-m-xylene	56	60-150		

Table VI
Summary of Surrogate Recoveries
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF11A	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
		Pesticides & PCBs				
	09W00101	Decachlorobiphenyl	56	60-150	3	UJ (all compounds)
		Decachlorobiphenyl	50	60-150		
	09W00101D	Decachlorobiphenyl	58	60-150		UJ (all compounds)
		Decachlorobiphenyl	51	60-150		
	16W00101	Decachlorobiphenyl	45	60-150		UJ (all compounds)
		Decachlorobiphenyl	40	60-150		
WF11B	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
		Pesticides & PCBs				
	12R00101	Decachlorobiphenyl	33	60-150	4	UJ (all compounds)
		Decachlorobiphenyl	29	60-150		
	10S00201	Decachlorobiphenyl	56	60-150		UJ/J (all compounds)
		Decachlorobiphenyl	55	60-150		
	10S00301	Decachlorobiphenyl	45	60-150		UJ/J (all compounds)
		Decachlorobiphenyl	42	60-150		
	11S00201	Decachlorobiphenyl	50	60-150		UJ/J (all compounds)
WF012	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
		Pesticides & PCBs	54	60-150	4	UJ (all compounds)
	31R00201	Decachlorobiphenyl	43	60-150		
	31S00901	Decachlorobiphenyl	45	60-150		UJ/J (all compounds)
		Decachlorobiphenyl	40	60-150		
	31S01201	Decachlorobiphenyl	48	60-150		UJ/J (all compounds)
		Decachlorobiphenyl	50	60-150		
	31S01301	Decachlorobiphenyl	46	60-150		UJ (all compounds)

Table VI
Summary of Surrogate Recoveries
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF013	All samples	Volatiles	All within QC limits	-	-	None
		Semivolatiles				
	16S00801	Nitrobenzene-d5	3	23-120	1	R
		2-Fluorobiphenyl	3	30-115		
		Terphenyl-d14	4	18-137		
		Phenol-d5	2	24-113		
		2-Fluorophenol	2	25-121		
		2,4,6-Tribromophenol	3	19-122		
		2-Chlorophenol-d4	3	20-130		
		1,2-Dichlorobenzene-d4	2	20-130		
		Pesticides & PCBs				
	16R00101	Decachlorobiphenyl	58	60-150	8	UJ (all compounds)
	16S00101D	Tetrachloro-m-xylene	22	60-150		UJ/J (all compounds)
		Tetrachloro-m-xylene	21	60-150		
	16S00301	Tetrachloro-m-xylene	57	60-150		UJ/J (all compounds)
		Decachlorobiphenyl	57	60-150		
		Decachlorobiphenyl	54	60-150		
	16S01001	Decachlorobiphenyl	44	60-150		UJ/J (all compounds)
		Decachlorobiphenyl	41	60-150		
	16S01201	Tetrachloro-m-xylene	55	60-150		UJ/J (all compounds)
	16S01301	Decachlorobiphenyl	55	60-150		UJ/J (all compounds)
		Decachlorobiphenyl	55	60-150		
	24S00101	Tetrachloro-m-xylene	48	60-150		UJ (all compounds)
		Tetrachloro-m-xylene	46	60-150		
		Decachlorobiphenyl	41	60-150		
		Decachlorobiphenyl	43	60-150		
	BKS00101	Tetrachloro-m-xylene	56	60-150		UJ (all compounds)
WF014	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
		Pesticides & PCBs				
	BKR00101	Decachlorobiphenyl	43	60-150	1	UJ (all compounds)
		Decachlorobiphenyl	39	60-150		

Table VI
Summary of Surrogate Recoveries
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF015	All samples	Volatiles	All within QC limits	-	-	None
	All samples	Semivolatiles	All within QC limits	-	-	None
		Pesticides & PCBs				
	COR00101	Decachlorobiphenyl	55	60-150	5	UJ (all compounds)
	AOS00101	Tetrachloro-m-xylene	55	60-150		UJ/J (all compounds)
		Decachlorobiphenyl	51	60-150		
		Decachlorobiphenyl	48	60-150		UJ (all compounds
	COS00101D	Tetrachloro-m-xylene	26	60-150		
		Tetrachloro-m-xylene	24	60-150		UJ/J (all compounds)
	WOS00101	Tetrachloro-m-xylene	39	60-150		
		Tetrachloro-m-xylene	37	60-150		
		Decachlorobiphenyl	41	60-150		
		Decachlorobiphenyl	43	60-150		
	YOS00101	Tetrachloro-m-xylene	37	60-150		UJ (all compounds)
		Tetrachloro-m-xylene	36	60-150		
	COS00101	Tetrachloro-m-xylene	7	60-150	2	R (ND compounds)
		Tetrachloro-m-xylene	7	60-150		
	SOS00101	Tetrachloro-m-xylene	2	60-150		R (ND compounds)
		Tetrachloro-m-xylene	1	60-150		
		Decachlorobiphenyl	15	60-150		
		Decachlorobiphenyl	16	60-150		

Notes: J = estimated value
UJ = undetected, but number that is reported as the quantification limit is an estimated value.

Table VII
Summary of Compounds Exceeding Instrument Calibration
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Criteria		Qualifier
			Initial Calibration %RSD	Continuing Calibration %D	
WF006	All	Volatiles	-	-	None
	12/7/96	2,4-Dinitrophenol	-	33.1	UJ
	12/8/96	2,4-Dinitrophenol	-	27.0	UJ
	12/11/96	Diethylphthalate	-	30.1	UJ
	12/12/96	Diethylphthalate	-	27.1	UJ
	11/30/95	Alpha-BHC	21.7	-	UJ
	11/30/95	Alpha-BHC	20.3	-	UJ
WF007	All	Volatiles	-	-	None
	12/12/96	Dimethylphthalate	-	27.1	UJ
	12/15/96	Nitrobenzene	-	25.6	UJ
		Pentachlorophenol	-	29.6	UJ
	12/15/96	Nitrobenzene	-	30.8	UJ
		2,4-Dinitrophenol	-	41.8	UJ
		4,6-Dinitro-2-methylphenol	-	30.1	UJ
		Pentachlorophenol	-	29.8	UJ
		Benzo(k)fluoranthene	-	26.5	UJ/J
	All	Pesticides & PCBs	-	-	None
WF008	All	Volatiles	-	-	None
	12/15/95	Nitrobenzene	-	25.6	UJ
		Pentachlorophenol	-	29.6	UJ
	12/31/95	2,4-Dinitrophenol	-	42.0	UJ
		4-Nitrophenol	-	27.3	UJ
		Pentachlorophenol	-	34.8	UJ
		3,3'-Dichlorobenzidine	-	25.9	UJ
		Benzo(b)fluoranthene	-	27.7	UJ
	11/30/95	Alpha-BHC	21.7	-	UJ
	11/30/95	Alpha-BHC	20.3	-	UJ
WF009	All	Volatiles	-	-	None
	12/15/95	Nitrobenzene	-	25.6	UJ
		Pentachlorophenol	-	29.6	UJ
	12/31/95	2,4-Dinitrophenol	-	42.0	UJ
		4-Nitrophenol	-	27.3	UJ
		Pentachlorophenol	-	34.8	UJ
		3,3'-Dichlorobenzidine	-	25.9	UJ
		Benzo(b)fluoranthene	-	27.7	UJ
	All	Pesticides & PCBs	-	-	None

Table VII
Summary of Compounds Exceeding Instrument Calibration
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Criteria		Qualifier
			Initial Calibration %RSD	Continuing Calibration %D	
WF010	All	Volatiles	-	-	None
	12/27/95	4-Nitrophenol	-	28.1	UJ
		Benzo(b)fluoranthene	-	31.4	UJ
		Indeno(1,2,3-cd)pyrene	-	32.8	UJ
	11/30/95	Alpha-BHC	21.7	-	UJ
	11/30/95	Alpha-BHC	20.3	-	UJ
WF11A	All	Volatiles	-	-	None
	All	Semivolatiles	-	-	None
	1/10/96	Endosulfan I	22	-	UJ
WF11B	1/10/96	Acetone	-	40.0	UJ/J
		2-Butanone	-	37.3	UJ
		4-Methyl-2-pentanone	-	37.7	UJ
		2-Hexanone	-	41.0	UJ/J
	1/11/96	Trichloroethene	-	27.7	UJ
		2-Hexanone	-	50.9	UJ/J
		1,1,2,2-Tetrachloroethane	-	34.2	UJ
	1/12/96	2-Hexanone	-	48.4	UJ/J
	1/10/96	Endosulfan I	22	-	UJ
WF012	1/11/96	Trichloroethene	-	27.7	UJ
		2-Hexanone	-	50.9	UJ
		1,1,2,2-Tetrachloroethane	-	34.2	UJ
	1/12/96	2-Hexanone	-	48.4	UJ
	1/13/96	Chloromethane	-	27.2	UJ
		Vinyl chloride	-	27.2	UJ
		Acetone	-	68.1	UJ/J
		2-Butanone	-	69.9	UJ
		1,2-Dichloroethane	-	29.6	UJ
		4-Methyl-2-pentanone	-	31.4	UJ
	1/15/96	Chloroethane	-	26.3	UJ
		Acetone	-	51.7	UJ/J
		2-Butanone	-	40.8	UJ
		1,2-Dichloroethane	-	35.4	UJ
	All	Semivolatiles	-	-	None
	1/17/96	Endosulfan sulfate	24.0	-	UJ

Table VII
Summary of Compounds Exceeding Instrument Calibration
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Criteria		Qualifier
			Initial Calibration %RSD	Continuing Calibration %D	
WF013	1/15/96	1,1-Dichloroethene	33.9	-	UJ
		Carbon disulfide	32.8	-	UJ
	1/17/96	2-Hexanone	41.7	-	UJ
	1/13/96	Chloromethane	-	27.2	UJ
		Vinyl chloride	-	27.2	UJ
		Acetone	-	68.1	UJ/J
		2-Butanone	-	69.9	UJ
		1,2-Dichloroethane	-	29.6	UJ
		4-Methyl-2-pentanone	-	31.4	UJ
	1/15/96	Chloroethane	-	26.3	UJ
		Acetone	-	51.7	UJ/J
		2-Butanone	-	40.8	UJ
		1,2-Dichloroethane	-	35.4	UJ
	1/18/96	2-Hexanone	-	27.5	UJ
	1/22/96	Chloromethane	-	41.8	UJ
		Vinyl chloride	-	37.1	UJ
		Chloroethane	-	41.7	UJ
		Acetone	-	31.7	UJ/J
		Carbon disulfide	-	25.8	UJ
		2-Hexanone	-	38.4	UJ
	1/19/96	Benzo(g,h,i)perylene	-	29.0	UJ/J
	1/17/96	Endosulfan sulfate	24.0	-	UJ
WF014	1/15/96	1,1-Dichloroethene	33.9	-	UJ
		Carbon disulfide	32.8	-	UJ
	1/14/96	Acetone	31.3	-	UJ/J
	1/16/96	Acetone	-	46.7	UJ/J
		Methylene chloride	-	32.3	UJ
		2-Butanone	-	54.2	UJ
		4-Methyl-2-pentanone	-	31.9	UJ
		2-Hexanone	-	60.0	UJ
	1/12/96	Acetone	-	36.7	UJ/J
	1/20/96	Benzo(k)fluoranthene	-	30.7	UJ/J
	1/31/96	4-Nitrophenol	-	38.2	UJ
		4-Nitroaniline	-	27.9	UJ
		Pentachlorophenol	-	29.4	UJ
		Benzo(g,h,i)perylene	-	35.3	UJ/J
	1/17/96	Endosulfan sulfate	24.0	-	UJ

Table VII
Summary of Compounds Exceeding Instrument Calibration
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Criteria		Qualifier
			Initial Calibration %RSD	Continuing Calibration %D	
WF015	1/17/96	2-Hexanone	41.7	-	UJ
	1/19/96	Chloromethane	-	47.1	UJ
		Vinyl chloride	-	39.0	UJ
		Chloroethane	-	54.7	UJ
		Acetone	-	25.8	UJ/J
		Carbon disulfide	-	45.5	UJ
	1/31/96	4-Nitroaniline	-	27.9	UJ
		Pentachlorophenol	-	29.4	UJ
		Benzo(g,h,i)perylene	-	35.3	UJ
	2/2/96	2-Chlorophenol	-	26.6	UJ
		2-Nitroaniline	-	25.1	UJ
		2,4-Dinitrophenol	-	25.7	UJ
		4-Bromophenyl-phenylether	-	27.2	UJ
		Hexachlorobenzene	-	35.4	UJ
	2/1/96	4-Bromophenyl-phenylether	-	28.4	UJ
		Hexachlorobenzene	-	35.0	UJ
	1/30/96	Endosulfan sulfate	21.0	-	UJ

Notes: %RSD = percent Relative Standard Deviation for initial calibrations

%D = percent Difference for continuing calibrations

J = the compound was positively identified; the associated numerical value is the approximate concentration of the compound in the sample, either because its concentration was lower than the QL (laboratory "J" flag), or because QC criteria were not met (validation "J").

UJ = the compound was not detected above the reported sample QL. However, the reported sample QL is approximate; the compound concentration may not reliably be presumed to be less than the QL value.

R = the sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the compound cannot be verified.

Table VIII
Summary of Method Blank Contamination
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Compound	Concentration	Associated Samples
WF006	Volatiles	ND	All samples in SDG WF006
	Pesticides & PCBs	ND	All samples in SDG WF006
	Diethylphthalate	4 ug/L	01R00101 01F00101
	Diethylphthalate	150 ug/Kg	02S00101 02S00201 02S00301 02S00501 09S00101 09S00201 09S00401 09S00501
WF007	Volatiles	ND	All samples in SDG WF007
	Pesticides & PCBs	ND	All samples in SDG WF007
	Diethylphthalate	2 ug/L	10R00101
	Di-n-octylphthalate	230 ug/Kg	13S00101 13S00301 13S00401 13S00501 14S00101D 14S00301
	Di-n-octylphthalate	180 ug/Kg	13S00201 14S00101
WF008	Volatiles	ND	All samples in SDG WF008
	Pesticides & PCBs	ND	All samples in SDG WF008
	Di-n-butylphthalate	280 ug/Kg	15S02001D 15S02101 15S02201 15S01701 15S01701D
WF009	Volatiles	ND	All samples in SDG WF009
	Semivolatiles	ND	All samples in SDG WF009
	Pesticides & PCBs	ND	All samples in SDG WF009
WF010	Volatiles	ND	All samples in SDG WF010
	Di-n-butylphthalate	320 ug/Kg	31S00101 31S00201 31S00301 31S01401 31S01501 31S01501D 31S01601 31S01701 31S01801 31S01901
	Pesticides & PCBs	ND	All samples in SDG WF010

Table VIII
Summary of Method Blank Contamination
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	**Compound**	**Concentration**	**Associated Samples**
WF11A	Volatiles	ND	All samples in SDG WF11A
	Bis(2-ethylhexyl)phthalate	3 ug/L	09W00101 09W00101D 16W00101
	Pesticides & PCBs	ND	All samples in SDG WF11A
WF11B	Styrene	1 ug/L	11T00101
	Xylenes (total)	2 ug/L	
	Acetone	7 ug/Kg	10S00301 10S00501 11S00101 11S00201 12S00201 12S00401 12S00501
	Acetone	4 ug/Kg	11S00201R 11S00301 11S00401 11S00501
	Bis(2-ethylhexyl)phthalate	3 ug/L	12R00101
	Di-n-butylphthalate	69 ug/Kg	10S00301
	Bis(2-ethylhexyl)phthalate	37 ug/Kg	10S00501 12S00201
	Di-n-butylphthalate	100 ug/Kg	10S00201 10S00201DL 10S00201D 10S00301R 12S00401 12S00501 11S00101
	Pesticides & PCBs	ND	All samples in SDG WF11B
WF012	Xylenes (total)	2 ug/L	31R00201
	Styrene	1 ug/L	
	Acetone	7 ug/Kg	31S00801 31S01201
	Acetone	4 ug/Kg	31S00401 31S00501 31S00501D 31S01201R
	Semivolatiles	ND	All samples in SDG WF12
	Pesticides & PCBs	ND	All samples in SDG WF12
WF013	Xylenes (total)	2 ug/L	16T00101
	Styrene	1 ug/L	16R00101 24T00101

Table VIII
Summary of Method Blank Contamination
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	**Compound**	**Concentration**	**Associated Samples**
WF013	Bis(2-ethylhexyl)phthalate	34 ug/Kg	16S00101 16S00501 16S00401 16S00901
	Bis(2-ethylhexyl)phthalate	46 ug/Kg	16S00901R 16S00201
	Bis(2-ethylhexyl)phthalate	76 ug/Kg	16S00301 16S00801 16S00601 16S00601DL 16S01201 16S01301 BKS00301 16S01001
	Pesticides & PCBs	ND	All samples in SDG WF13
WF014	Toluene	1 ug/Kg	31B00301
	Bis(2-ethylhexyl)phthalate	38 ug/Kg	31B00501
	Pesticides & PCBs	ND	All samples in SDG WF14
WF015	Volatiles	ND	All samples in SDG WF15
	Pesticides & PCBs	ND	All samples in SDG WF15
	Bis(2-ethylhexyl)phthalate	1 ug/L	COR00101 COF00101

Table IX
Summary of Field Blank Contamination

Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF006	**Client ID:** 01T00101 **Laboratory ID:** G8864001 **Collection Date:** 12/5/95 **Type:** Trip Blank		
	Acetone	9 ug/L	None
WF006	**Client ID:** 02T00101 **Laboratory ID:** G8876001 **Collection Date:** 12/6/95 **Type:** Trip Blank		
	Acetone	7 ug/L	None
WF006	**Client ID:** 01R00101 **Laboratory ID:** G8876012 **Collection Date:** 12/6/95 **Type:** Rinsate		
	Acetone	11 ug/L	None
	Di-n-butylphthalate	8 ug/L	None
	Bis(2-ethyhexyl)phthalate	2 ug/L	None
	Pesticides & PCBs	ND	None
WF006	**Client ID:** 01F00101 **Laboratory ID:** G8776013 **Collection Date:** 12/6/95 **Type:** Source Blank		
	Acetone	12 ug/L	None
	2-Butanone	2 ug/L	None
	Di-n-butylphthalate	15 ug/L	None
	Pesticides & PCBs	ND	None
WF007	**Client ID:** 10T00101 **Laboratory ID:** G8889001 **Collection Date:** 12/7/95 **Type:** Trip Blank		
	Acetone	8 ug/L	None
WF007	**Client ID:** 13T00101 **Laboratory ID:** G8895001 **Collection Date:** 12/8/95 **Type:** Trip Blank		
	Acetone	4 ug/L	None
WF007	**Client ID:** 10R00101 **Laboratory ID:** G8889009 **Collection Date:** 12/7/95 **Type:** Rinsate		
	Volatiles	ND	None
	Di-n-butylphthalate	15 ug/L	10U ug/L[1]
	Pesticides & PCBs	ND	None

Table IX
Summary of Field Blank Contamination

Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF008	**Client ID:** 15T00101 **Laboratory ID:** G8913001 **Collection Date:** 12/9/95 **Type:** Trip Blank		
	Acetone	8 ug/L	None
WF008	**Client ID:** 15R00101 **Laboratory ID:** G8913020 **Collection Date:** 12/11/95 **Type:** Rinsate		
	Volatiles	ND	None
	Di-n-butylphthalate	3 ug/L	10U ug/L[1]
	Pesticides & PCBs	ND	None
WF009	**Client ID:** 15T00201 **Laboratory ID:** G8914001 **Collection Date:** 12/11/95 **Trip Blank:** Trip Blank		
	Acetone	19 ug/L	None
WF009	**Client ID:** 15R00201 **Laboratory ID:** G8914012 **Collection Date:** 12/11/95 **Type:** Rinsate		
	Acetone	12 ug/L	None
	Di-n-butylphthalate	4 ug/L	10U ug/L[1]
	Pesticides & PCBs	ND	None
WF010	**Client ID:** 31T00101 **Laboratory ID:** G8924005 **Collection Date:** 12/12/95 **Type:** Trip Blank		
	Acetone	10 ug/L	None
WF010	**Client ID:** 31T00201 **Laboratory ID:** G8938001 **Collection Date:** 12/13/95 **Type:** Trip Blank		
	Acetone	12 ug/L	None
WF010	**Client ID:** 31R00101 **Laboratory ID:** G8924006 **Collection Date:** 12/12/965 **Type:** Rinsate		
	Volatiles	ND	None
	Di-n-butylphthalate	7 ug/L	10U ug/L[1]
	Pesticides & PCBs	ND	None

Table IX
Summary of Field Blank Contamination

Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF11B	**Client ID:** 12R00101 **Laboratory ID:** RA847012 **Collection Date:** 1/5/96 **Type:** Rinsate		
	Volatiles	ND	None
	Di-n-butylphthalate	4 ug/L	None
	Pesticides &PCBs	ND	None
WF11B	**Client ID:** 12T00101 **Laboratory ID:** RA847001 **Collection Date:** 1/5/96 **Type:** Trip Blank		
	Volatiles	ND	None
WF11B	**Client ID:** 11T00101 **Laboratory ID:** RA847013 **Collection Date:** 1/6/96 **Type:** Trip Blank		
	Volatiles	ND	None
WF012	**Client ID:** 31R00201 **Laboratory ID:** RA855021 **Collection Date:** 1/8/96 **Type:** Rinsate		
	Volatiles	ND	None
	Semivolatiles	ND	None
	Pesticides & PCBs	ND	None
WF013	**Client ID:** 16T00101 **Laboratory ID:** RA856016 **Collection Date:** 1/9/96 **Type:** Trip Blank		
	Volatiles	ND	None
WF013	**Client ID:** 24T00101 **Laboratory ID:** RA871001 **Collection Date:** 1/10/96 **Type:** Trip Blank		
	Volatiles	ND	None
WF013	**Client ID:** 16R00101 **Laboratory ID:** RA856017 **Collection Date:** 1/9/96 **Type:** Rinsate		
	Volatiles	ND	None
	Di-n-butylphthalate	5 ug/L	10U ug/L[1]
	Pesticides & PCBs	ND	None

Table IX
Summary of Field Blank Contamination

Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF014	**Client ID:** BKT00101 **Laboratory ID:** RA870002 **Collection Date:** 1/10/96 **Type:** Trip Blank		
	Volatiles	ND	None
WF014	**Client ID:** 31T00201 **Laboratory ID:** RA870018 **Collection Date:** 1/11/96 **Type:** Trip Blank		
	Volatiles	ND	None
WF014	**Client ID:** BKR00101 **Laboratory ID:** RA870001 **Collection Date:** 1/10/96 **Type:** Rinsate		
	Volatiles	ND	None
	Di-n-butylphthalate	5 ug/L	10U ug/L[1]
	Pesticides & PCBs	ND	None
WF015	**Client ID:** COT00101 **Laboratory ID:** RA908003 **Collection Date:** 1/18/96 **Type:** Trip Blank		
	Volatiles	ND	None
WF015	**Client ID:** COR00101 **Laboratory ID:** RA908001 **Collection Date:** 1/18/96 **Type:** Rinsate		
	Volatiles	ND	None
	Di-n-butylphthalate	5 ug/L	10U ug/L[1]
	Pesticides & PCBs	ND	None
WF015	**Client ID:** COF00101 **Laboratory ID:** RA908002 **Collection Date:** 1/18/96 **Type:** Source Blank		
	Volatiles	ND	None
	Di-n-butylphthalate	7 ug/L	None
	Pesticides & PCBs	ND	None

[1] = sample result was modified based on an associated method blank concentration.

Note: see detailed data validation report for the discrete qualifiers.

Table X
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike and Laboratory Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Client ID	Analyte	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF006	02S00401	Calcium	-	±2205 mg/Kg	-	-	9780 mg/Kg	J
		Nickel	-	±17.6 mg/Kg	-	-	40.8 mg/Kg	J
		Antimony	75-125	-	73.8	-	-	J
		Manganese	75-125	-	73.8	-	-	J
		Cyanide	-	-	-	-	-	None
		TRPH	-	-	-	-	-	None
WF007	10S00101	Antimony	75-125	-	65.6	-	-	J
		Barium	75-125	±88.10 mg/Kg	171.0	-	1221 mg/Kg	J
		Manganese	75-125	±6.6 mg/Kg	130.0	-	34.30 mg/Kg	J
		Lead	75-125	-	128.7	-	-	J
		Selenium	75-125	-	56.1	-	-	J
		Cyanide	-	-	-	-	-	None
		TRPH	-	-	-	-	-	None
WF008	15S02001	Antimony	75-125	-	68.2	-	-	J
		Mercury	75-125	-	125.3	-	-	J
		Cyanide	-	-	-	-	-	None
WF009	15S00101	Antimony	75-125	-	53.5	-	-	J
WF010	31S01501	Antimony	75-125	-	73.8	-	-	None
		Cyanide	-	-	-	-	-	None
WF11A	09W00101	All metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
		TRPH	-	-	-	-	-	None
WF11B	10S00201	All metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
		TRPH	-	-	-	-	-	None

Table X
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike and Laboratory Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Client ID	Analyte	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF012	31S00501	All metals	-	-	-	-	-	None
		All TCLP metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF013	16S01001	Aluminum	-	≤35	-	-	71.0	J
		Iron	-	≤35	-	-	42.3	J
		Lead	75-125	-	127	-	-	J
		Cyanide	-	-	-	-	-	None
WF014	BKS00201	Aluminum	-	≤35	-	-	35.6	J
		Cyanide	-	-	-	-	-	None
WF015	COS00101	Lead	75-125	-	-46.5	-	-	J
		Cyanide	-	-	-	-	-	None

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF006	**Client ID**	**02S00401**	**02S00401D**	
	Laboratory ID	**G8864007**	**G8864008**	
	Collection Date	**12/5/95**	**12/5/95**	
	Aluminum	9580 mg/Kg	7580 mg/Kg	23
	Arsenic	3.9 mg/Kg	4.0 mg/Kg	3
	Barium	27.7 mg/Kg	15.9 mg/Kg	54
	Beryllium	0.31 mg/Kg	0.13 mg/Kg	81
	Calcium	14900 mg/Kg	9900 mg/Kg	40
	Chromium	13.6 mg/Kg	14.0 mg/Kg	3
	Cobalt	0.53 mg/Kg	ND	Not calculable
	Copper	4.3 mg/Kg	3.8 mg/Kg	12
	Iron	4010 mg/Kg	3880 mg/Kg	3
	Lead	10.9 mg/Kg	11.6 mg/Kg	6
	Magnesium	926 mg/Kg	403 mg/Kg	79
	Manganese	188 mg/Kg	164 mg/Kg	14
	Mercury	0.03 mg/Kg	0.05 mg/Kg	50
	Nickel	3.9 mg/Kg	3.8 mg/Kg	1
	Potassium	377 mg/Kg	142 mg/Kg	91
	Sodium	104 mg/Kg	70.2 mg/Kg	38
	Vanadium	12.9 mg/Kg	11.7 mg/Kg	10
	Zinc	13.1 mg/Kg	12.5 mg/Kg	5
	Cyanide	0.15 mg/Kg	ND	Not calculable
WF006	**Client ID**	**09S00301**	**09S00301D**	
	Laboratory ID	**G8876010**	**G8876011**	
	Collection Date	**12/6/96**	**12/6/96**	
	Aluminum	25200 mg/Kg	33100 mg/Kg	27
	Arsenic	8.5 mg/Kg	7.1 mg/Kg	18
	Barium	8.9 mg/Kg	21.7 mg/Kg	83
	Beryllium	0.12 mg/Kg	0.22 mg/Kg	59
	Calcium	176 mg/Kg	384 mg/Kg	74
	Chromium	21.7 mg/Kg	29.5 mg/Kg	30
	Cobalt	0.52 mg/Kg	0.55 mg/Kg	6
	Copper	6.8 mg/Kg	9.0 mg/Kg	28
	Iron	17800 mg/Kg	26500 mg/Kg	40
	Lead	11.2 mg/Kg	6.6 mg/Kg	52
	Magnesium	143 mg/Kg	227 mg/Kg	45
	Manganese	28.2 mg/Kg	52.9 mg/Kg	61
	Mercury	0.01 mg/Kg	0.01 mg/Kg	0
	Nickel	ND	6.1 mg/Kg	Not calculable
	Potassium	ND	212 mg/Kg	Not calculable
	Selenium	0.33 mg/Kg	ND	Not calculable
	Sodium	8.4 mg/Kg	10.4 mg/Kg	21
	Vanadium	43.5 mg/Kg	65.1 mg/Kg	40
	Zinc	6.3 mg/Kg	14.4 mg/Kg	78
	Cyanide	ND	ND	-
	TRPH	ND	ND	-

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF007	**Client ID**	**10S00101**	**10S00101D**	
	Laboratory ID	**G8889002**	**G8889003**	
	Collection Date	**12/7/95**	**12/7/95**	
	Aluminum	8760 mg/Kg	8920 mg/Kg	2
	Arsenic	2.5 mg/Kg	2.6 mg/Kg	4
	Barium	361 mg/Kg	1320 mg/Kg	114
	Beryllium	0.13 mg/Kg	0.13 mg/Kg	0
	Cadmium	0.91 mg/Kg	ND	Not calculable
	Calcium	23200 mg/Kg	17800 mg/Kg	26
	Chromium	18.2 mg/Kg	16.8 mg/Kg	8
	Cobalt	0.83 mg/Kg	2.0 mg/Kg	82
	Copper	7.9 mg/Kg	7.9 mg/Kg	0
	Iron	6520 mg/Kg	6780 mg/Kg	4
	Lead	38.0 mg/Kg	33.1 mg/Kg	14
	Magnesium	5910 mg/Kg	5600 mg/Kg	5
	Manganese	56.6 mg/Kg	66.0 mg/Kg	15
	Mercury	0.07 mg/Kg	0.07 mg/Kg	0
	Nickel	6.8 mg/Kg	3.0 mg/Kg	77
	Potassium	219 mg/Kg	ND	Not calculable
	Sodium	35.6 mg/Kg	46.2 mg/Kg	26
	Vanadium	18.9 mg/Kg	18.7 mg/Kg	1
	Zinc	37.7 mg/Kg	34.1 mg/Kg	5
	Cyanide	0.10 mg/Kg	0.20 mg/Kg	67
	TRPH	240 mg/Kg	180 mg/Kg	29
WF007	**Client ID**	**14S00101**	**14S00101D**	
	Laboratory ID	**G8895007**	**G8895008**	
	Collection Date	**12/8/95**	**12/8/95**	
	Aluminum	11600 mg/Kg	11500 mg/Kg	1
	Arsenic	1.5 mg/Kg	1.9 mg/Kg	23
	Barium	23.3 mg/Kg	26.6 mg/Kg	13
	Beryllium	0.15 mg/Kg	0.16 mg/Kg	6
	Calcium	120 mg/Kg	183 mg/Kg	6
	Chromium	7.8 mg/Kg	7.8 mg/Kg	0
	Cobalt	1.8 mg/Kg	1.6 mg/Kg	12
	Copper	3.8 mg/Kg	4.3 mg/Kg	12
	Iron	6310 mg/Kg	6630 mg/Kg	5
	Lead	7.7 mg/Kg	11.9 mg/Kg	42
	Magnesium	177 mg/Kg	162 mg/Kg	9
	Manganese	521 mg/Kg	597 mg/Kg	14
	Mercury	0.04 mg/Kg	0.04 mg/Kg	0
	Nickel	4.1 mg/Kg	4.6 mg/Kg	12
	Potassium	144 mg/Kg	ND	Not calculable
	Sodium	16.4 mg/Kg	14.0 mg/Kg	16
	Vanadium	16.8 mg/Kg	17.4 mg/Kg	6
	Zinc	6.0 mg/Kg	6.6 mg/Kg	10
	Cyanide	0.07 mg/Kg	ND	Not calculable

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF008	**Client ID**	**15S02001**	**15S02001D**	
	Laboratory ID	**G8913002**	**G8913003**	
	Collection Date	**12/9/95**	**12/9/95**	
	Aluminum	4630 mg/Kg	5470 mg/Kg	17
	Arsenic	1.2 mg/Kg	1.1 mg/Kg	9
	Barium	5.6 mg/Kg	6.6 mg/Kg	16
	Beryllium	0.13 mg/Kg	0.13 mg/Kg	0
	Calcium	22.2 mg/Kg	25.2 mg/Kg	13
	Chromium	3.0 mg/Kg	3.7 mg/Kg	21
	Copper	1.9 mg/Kg	2.4 mg/Kg	23
	Iron	2500 mg/Kg	2950 mg/Kg	17
	Lead	5.9 mg/Kg	5.9 mg/Kg	0
	Magnesium	85.0 mg/Kg	107 mg/Kg	23
	Manganese	75.2 mg/Kg	87.1 mg/Kg	15
	Mercury	0.02 mg/Kg	0.02 mg/Kg	0
	Nickel	2.4 mg/Kg	9.1 mg/Kg	117
	Selenium	0.26 mg/Kg	ND	Not calculable
	Vanadium	5.7 mg/Kg	7.1 mg/Kg	22
	Zinc	3.0 mg/Kg	4.1 mg/Kg	31
	Cyanide	ND	ND	-
WF008	**Client ID**	**15S01701**	**15S01701D**	
	Laboratory ID	**G8913013**	**G8913014**	
	Collection Date	**12/10/95**	**12/10/95**	
	Aluminum	13700 mg/Kg	9290 mg/Kg	38
	Arsenic	3.7 mg/Kg	4.3 mg/Kg	15
	Barium	4.4 mg/Kg	3.8 mg/Kg	15
	Beryllium	0.11 mg/Kg	0.11 mg/Kg	0
	Calcium	23.7 mg/Kg	20.4 mg/Kg	15
	Chromium	14.8 mg/Kg	14.0 mg/Kg	6
	Copper	2.6 mg/Kg	2.5 mg/Kg	4
	Iron	11900 mg/Kg	10400 mg/Kg	13
	Lead	4.7 mg/Kg	4.1 mg/Kg	14
	Magnesium	51.2 mg/Kg	41.8 mg/Kg	20
	Manganese	10.8 mg/Kg	6.8 mg/Kg	45
	Nickel	ND	3.0 mg/Kg	Not calculable
	Selenium	ND	0.25 mg/Kg	Not calculable
	Vanadium	35.9 mg/Kg	31.8 mg/Kg	12
	Zinc	1.5 mg/Kg	1.1 mg/Kg	31
	Cyanide	ND	ND	-

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF009	**Client ID**	**15S00101**	**15S00101D**	
	Laboratory ID	**G8914002**	**G8914003**	
	Collection Date	**12/11/95**	**12/11/95**	
	Aluminum	9280 mg/Kg	10800 mg/Kg	15
	Arsenic	2.0 mg/Kg	1.9 mg/Kg	5
	Barium	6.6 mg/Kg	7.8 mg/Kg	17
	Beryllium	0.12 mg/Kg	0.13 mg/Kg	8
	Calcium	21.6 mg/Kg	23.9 mg/Kg	10
	Chromium	8.4 mg/Kg	8.0 mg/Kg	5
	Copper	3.4 mg/Kg	3.9 mg/Kg	14
	Iron	5120 mg/Kg	5700 mg/Kg	11
	Lead	4.7 mg/Kg	3.6 mg/Kg	26
	Magnesium	109 mg/Kg	132 mg/Kg	19
	Manganese	36.4 mg/Kg	39.9 mg/Kg	9
	Mercury	0.02 mg/Kg	0.02 mg/Kg	0
	Nickel	5.0 mg/Kg	2.4 mg/Kg	70
	Potassium	169 mg/Kg	ND	Not calculable
	Vanadium	13.3 mg/Kg	15.1 mg/Kg	13
	Zinc	4.1 mg/Kg	5.0 mg/Kg	22
	Cyanide	ND	ND	-
WF010	**Client ID**	**31S01501**	**31S01501D**	
	Laboratory ID	**G8938002**	**G8938003**	
	Collection Date	**12/13/95**	**12/13/95**	
	Aluminum	9620 mg/Kg	8270 mg/Kg	15
	Arsenic	1.4 mg/Kg	1.9 mg/Kg	30
	Barium	14.6 mg/Kg	12.2 mg/Kg	18
	Beryllium	0.17 mg/Kg	0.15 mg/Kg	13
	Calcium	112 mg/Kg	103 mg/Kg	8
	Chromium	6.7 mg/Kg	6.0 mg/Kg	11
	Cobalt	0.80 mg/Kg	1.2 mg/Kg	40
	Copper	5.5 mg/Kg	4.2 mg/Kg	27
	Iron	4730 mg/Kg	4380 mg/Kg	8
	Lead	5.3 mg/Kg	5.4 mg/Kg	2
	Magnesium	154 mg/Kg	114 mg/Kg	30
	Manganese	183 mg/Kg	172 mg/Kg	6
	Mercury	0.01 mg/Kg	0.01 mg/Kg	0
	Nickel	3.9 mg/Kg	3.4 mg/Kg	13
	Potassium	ND	197 mg/Kg	Not calculable
	Vanadium	12.8 mg/Kg	11.3 mg/Kg	12
	Zinc	6.8 mg/Kg	5.0 mg/Kg	30
	Cyanide	ND	ND	-
WF11A	**Client ID**	**09W00101**	**09W00101D**	
	Laboratory ID	**RA903001**	**RA903002**	
	Collection Date	**1/5/96**	**1/5/96**	
	Aluminum	123 mg/L	129 mg/L	5
	Arsenic	0.60 mg/L	ND	Not calculable
	Barium	1.1 mg/L	1.3 mg/L	17
	Calcium	760 mg/L	726 mg/L	5
	Iron	118 mg/L	105 mg/L	12
	Magnesium	234 mg/L	236 mg/L	1
	Manganese	12.2 mg/L	12.0 mg/L	2
	Potassium	313 mg/L	298 mg/L	2
	Sodium	904 mg/L	893 mg/L	1
	Zinc	5.4 mg/L	3.8 mg/L	34
	Cyanide	ND	ND	-
	TRPH	ND	ND	-

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF11B	**Client ID**	**10S00201**	**10S00201D**	
	Laboratory ID	**RA847002**	**RA847003**	
	Collection Date	**1/5/96**	**1/5/96**	
	Aluminum	8960 mg/Kg	5890 mg/Kg	41
	Arsenic	3.6 mg/Kg	2.4 mg/Kg	40
	Barium	9.2 mg/Kg	8.1 mg/Kg	13
	Beryllium	0.10 mg/Kg	0.06 mg/Kg	50
	Cadmium	1.4 mg/Kg	1.3 mg/Kg	7
	Calcium	1320 mg/Kg	779 mg/Kg	51
	Chromium	16.0 mg/Kg	12.2 mg/Kg	27
	Cobalt	0.79 mg/Kg	0.82 mg/Kg	4
	Copper	10.8 mg/Kg	11.5 mg/Kg	6
	Iron	9660 mg/Kg	8650 mg/Kg	11
	Lead	32.5 mg/Kg	29.0 mg/Kg	11
	Magnesium	200 mg/Kg	100 mg/Kg	66
	Manganese	39.3 mg/Kg	36.4 mg/Kg	8
	Nickel	2.0 mg/Kg	ND	Not calculable
	Potassium	69.4 mg/Kg	ND	Not calculable
	Sodium	181 mg/Kg	192 mg/Kg	6
	Vanadium	24.5 mg/Kg	20.8 mg/Kg	16
	Zinc	50.0 mg/Kg	42.9 mg/Kg	15
	Cyanide	0.20 mg/Kg	0.13 mg/Kg	42
	TRPH	105 mg/Kg	66.1 mg/Kg	46
WF012	**Client ID**	**31S00501**	**31S00501D**	
	Laboratory ID	**RA855011**	**RA855012**	
	Collection Date	**1/7/96**	**1/7/96**	
	Aluminum	4500 mg/Kg	6050 mg/Kg	29
	Arsenic	1.3 mg/Kg	1.2 mg/Kg	8
	Barium	6.6 mg/Kg	8.6 mg/Kg	26
	Calcium	143 mg/Kg	146 mg/Kg	2
	Chromium	2.8 mg/Kg	3.8 mg/Kg	30
	Cobalt	ND	1.2 mg/Kg	Not calculable
	Copper	2.2 mg/Kg	3.0 mg/Kg	31
	Iron	2470 mg/Kg	2840 mg/Kg	14
	Lead	3.2 mg/Kg	2.9 mg/Kg	10
	Magnesium	80.1 mg/Kg	138 mg/Kg	53
	Manganese	87.0 mg/Kg	95.3 mg/Kg	9
	Nickel	1.9 mg/Kg	2.2 mg/Kg	15
	Potassium	81.9 mg/Kg	115 mg/Kg	34
	Selenium	0.18 mg/Kg	ND	Not calculable
	Sodium	192 mg/Kg	175 mg/Kg	9
	Vanadium	5.9 mg/Kg	7.2 mg/Kg	20
	Zinc	3.9 mg/Kg	5.2 mg/Kg	28
	Barium, TCLP	0.393 mg/L	0.574 mg/L	37
	Chromium, TCLP	0.0017U mg/L	0.0018 mg/L	Not calculable
	Selenium, TCLP	0.0217U mg/L	0.2351 mg/L	Not calculable
	Cyanide	0.09 mg/Kg	ND	Not calculable
WF012	**Client ID**	**11S00601**	**11S00601D**	
	Laboratory ID	**RA855001**	**RA855002**	
	Collection Date	**1/7/96**	**11/7/96**	
	Lead	19.3 mg/Kg	25.0 mg/Kg	26

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF013	**Client ID**	**16S00101**	**16S00101D**	
	Laboratory ID	**RA856001**	**RA856018**	
	Collection Date	**1/8/96**	**1/8/96**	
	Aluminum	4250 mg/Kg	5480 mg/Kg	25
	Arsenic	0.94 mg/Kg	1.2 mg/Kg	24
	Barium	13.2 mg/Kg	13.6 mg/Kg	3
	Beryllium	0.09 mg/Kg	ND	Not calculable
	Cadmium	0.28 mg/Kg	0.30 mg/Kg	7
	Calcium	210 mg/Kg	173 mg/Kg	19
	Chromium	4.0 mg/Kg	5.8 mg/Kg	37
	Copper	4.8 mg/Kg	3.0 mg/Kg	46
	Iron	2340 mg/Kg	2910 mg/Kg	22
	Lead	7.8 mg/Kg	7.5 mg/Kg	4
	Magnesium	103 mg/Kg	150 mg/Kg	37
	Manganese	185 mg/Kg	151 mg/Kg	20
	Nickel	ND	1.9 mg/Kg	Not calculable
	Potassium	99.6 mg/Kg	141 mg/Kg	34
	Selenium	0.19 mg/Kg	ND	Not calculable
	Sodium	129 mg/Kg	108 mg/Kg	18
	Vanadium	6.8 mg/Kg	8.6 mg/Kg	23
	Zinc	6.4 mg/Kg	6.9 mg/Kg	8
	Cyanide	0.12 mg/Kg	0.12 mg/Kg	0
WF013	**Client ID**	**16S01001**	**16S01001D**	
	Laboratory ID	**RA856014**	**RA856015**	
	Collection Date	**1/9/96**	**1/9/96**	
	Aluminum	2000 mg/Kg	1780 mg/Kg	12
	Arsenic	0.76 mg/Kg	0.64 mg/Kg	17
	Barium	4.9 mg/Kg	4.0 mg/Kg	20
	Cadmium	ND	0.23 mg/Kg	Not calculable
	Calcium	101 mg/Kg	99.8 mg/Kg	1
	Chromium	3.9 mg/Kg	3.3 mg/Kg	16
	Copper	10.2 mg/Kg	8.6 mg/Kg	17
	Iron	1470 mg/Kg	1310 mg/Kg	12
	Lead	13.5 mg/Kg	12.4 mg/Kg	9
	Magnesium	38.5 mg/Kg	29.9 mg/Kg	25
	Manganese	5.6 mg/Kg	4.9 mg/Kg	13
	Mercury	0.20 mg/Kg	0.17 mg/Kg	16
	Potassium	ND	77.6 mg/Kg	Not calculable
	Selenium	0.13 mg/Kg	ND	Not calculable
	Silver	4.1 mg/Kg	3.6 mg/Kg	13
	Sodium	139 mg/Kg	118 mg/Kg	16
	Vanadium	3.4 mg/Kg	3.2 mg/Kg	6
	Zinc	4.1 mg/Kg	3.4 mg/Kg	19
	Cyanide	0.10 mg/Kg	0.17 mg/Kg	52

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF014	**Client ID**	**BKS00201**	**BKS00201D**	
	Laboratory ID	**RA870008**	**RA870009**	
	Collection Date	**1/10/96**	**1/10/96**	
	Aluminum	6640 mg/Kg	4230 mg/Kg	44
	Arsenic	1.6 mg/Kg	0.99 mg/Kg	47
	Barium	11.4 mg/Kg	8.9 mg/Kg	34
	Beryllium	0.05 mg/Kg	ND	Not calculable
	Cadmium	0.21 mg/Kg	ND	Not calculable
	Calcium	132 mg/Kg	215 mg/Kg	48
	Chromium	3.4 mg/Kg	2.0 mg/Kg	52
	Cobalt	1.0 mg/Kg	ND	Not calculable
	Copper	3.4 mg/Kg	2.3 mg/Kg	39
	Iron	3340 mg/Kg	2220 mg/Kg	40
	Lead	5.9 mg/Kg	5.1 mg/Kg	15
	Magnesium	124 mg/Kg	72.5 mg/Kg	52
	Manganese	249 mg/Kg	217 mg/Kg	14
	Mercury	0.04 mg/Kg	0.05 mg/Kg	1
	Nickel	2.6 mg/Kg	ND	Not calculable
	Potassium	96.8 mg/Kg	65.8 mg/Kg	38
	Selenium	0.16 mg/Kg	0.14 mg/Kg	13
	Sodium	184 mg/Kg	346 mg/Kg	61
	Thallium	0.16 mg/Kg	ND	Not calculable
	Vanadium	8.1 mg/Kg	5.0 mg/Kg	47
	Zinc	5.6 mg/Kg	3.2 mg/Kg	55
	Cyanide	0.11 mg/Kg	ND	Not calculable
WF014	**Client ID**	**31B00201**	**31B00201D**	
	Laboratory ID	**RA870014**	**RA870015**	
	Collection Date	**1/11/96**	**1/11/96**	
	Aluminum	4360 mg/Kg	4050 mg/Kg	7
	Arsenic	1.0 mg/Kg	1.2 mg/Kg	18
	Barium	4.7 mg/Kg	4.3 mg/Kg	9
	Beryllium	0.05 mg/Kg	ND	Not calculable
	Cadmium	0.21 mg/Kg	0.34 mg/Kg	47
	Calcium	107 mg/Kg	121 mg/Kg	12
	Chromium	2.6 mg/Kg	2.1 mg/Kg	21
	Cobalt	0.76 mg/Kg	ND	Not calculable
	Copper	8.5 mg/Kg	8.4 mg/Kg	1
	Iron	2960 mg/Kg	2750 mg/Kg	7
	Lead	2.9 mg/Kg	2.9 mg/Kg	0
	Magnesium	81.1 mg/Kg	72.0 mg/Kg	12
	Manganese	8.0 mg/Kg	7.5 mg/Kg	7
	Mercury	0.04 mg/Kg	0.04 mg/Kg	0
	Nickel	1.8 mg/Kg	1.6 mg/Kg	12
	Potassium	88.8 mg/Kg	114 mg/Kg	25
	Sodium	175 mg/Kg	183 mg/Kg	5
	Vanadium	6.0 mg/Kg	5.3 mg/Kg	12
	Zinc	7.1 mg/Kg	6.4 mg/Kg	10

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF015	**Client ID**	**COS00101**	**COS00101D**	
	Laboratory ID	**RA908004**	**RA908005**	
	Collection Date	**1/18/96**	**1/18/96**	
	Aluminum	1770 mg/Kg	1620 mg/Kg	9
	Arsenic	0.57 mg/Kg	0.29 mg/Kg	65
	Barium	17.3 mg/Kg	11.6 mg/Kg	39
	Beryllium	0.07 mg/Kg	0.10 mg/Kg	35
	Calcium	521 mg/Kg	200 mg/Kg	89
	Chromium	2.0 mg/Kg	1.5 mg/Kg	29
	Copper	5.1 mg/Kg	5.0 mg/Kg	2
	Iron	906 mg/Kg	919 mg/Kg	1.4
	Lead	19.4 mg/Kg	8.9 mg/Kg	74
	Magnesium	142 mg/Kg	51.4 mg/Kg	94
	Manganese	4.9 mg/Kg	5.6 mg/Kg	13
	Sodium	120 mg/Kg	95.6 mg/Kg	23
	Vanadium	2.6 mg/Kg	2.8 mg/Kg	7
	Zinc	11.5 mg/Kg	3.3 mg/Kg	111
	Cyanide	0.12 mg/Kg	0.20 mg/Kg	50

Table XII
Summary of Analytes Exceeding Instrument Calibration
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Date	Analyte	Criteria		Qualifier
			Initial Calibration r	Continuing Calibration %R	
WF006	All	All metals	-	-	None
	All	Cyanide	-	-	None
	All	TRPH	-	-	None
WF007	All	All metals	-	-	None
	All	Cyanide	-	-	None
	All	TRPH	-	-	None
WF008	All	All metals	-	-	None
	All	Cyanide	-	-	None
WF009	All	All metals	-	-	None
	All	Cyanide	-	-	None
WF010	All	All metals	-	-	None
	All	Cyanide	-	-	None
WF11A	All	All metals	-	-	None
	All	Cyanide	-	-	None
	All	TRPH	-	-	None
WF11B	All	All metals	-	-	None
	All	Cyanide	-	-	None
	All	TRPH	-	-	None
WF012	All	All metals	-	-	None
	All	All TCLP metals	-	-	None
	All	Cyanide	-	-	None
WF013	All	All metals	-	-	None
	All	Cyanide	-	-	None
WF014	All	All metals	-	-	None
	All	Cyanide	-	-	None
WF015	All	All metals	-	-	None
	All	Cyanide	-	-	None

Notes: r = correlation coefficient for initial calibrations

%R = percent recovery for continuing calibrations

J = the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample because QC criteria were not met (validation "J").

UJ = the analyte was not detected above the reported sample IDL. However, the reported sample is approximate; the analyte concentration may not reliably be presumed to be less than the IDL value.

R = the sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Table XIII
Summary of Method Blank Contamination
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF006	Aluminum	-5.056 mg/Kg	All soil samples in SDG WF006
	Calcium	-5.002 mg/Kg	
	Copper	0.482 mg/Kg	
	Iron	-1.408 mg/Kg	
	Magnesium	-5.504 mg/Kg	
	Selenium	0.660 mg/Kg	
	Sodium	2.840 mg/Kg	
	Zinc	0.344 mg/Kg	
	Aluminum	-7.772 mg/Kg	All soil samples in SDG WF006
	Cobalt	-0.518 mg/Kg	
	Iron	-1.702 mg/Kg	
	Magnesium	-5.232 mg/Kg	
	Copper	2.690 ug/L	All water samples in SDG WF006
	Iron	-5.220 ug/L	
	Magnesium	-37.720 ug/L	
	Mercury	-0.029 ug/L	
	Selenium	2.300 ug/L	
	Sodium	51.840 ug/L	
	Cyanide	ND	All samples in SDG WF006
	TRPH	ND	All samples in SDG WF006
WF007	Barium	0.174 mg/Kg	All soil samples in SDG WF007
	Calcium	6.280 mg/Kg	
	Iron	1.776 mg/Kg	
	Sodium	6.856 mg/Kg	
	Aluminum	47.800 ug/L	All water samples in SDG WF007
	Beryllium	0.250 ug/L	
	Calcium	38.580 ug/L	
	Cobalt	-2.750 ug/L	
	Copper	6.560 ug/L	
	Iron	15.910 ug/L	
	Nickel	12.410 ug/L	
	Sodium	-320.390 ug/L	
	Zinc	2.210 ug/L	
	Cyanide	ND	All samples in SDG WF007
	TRPH	ND	All samples in SDG WF007
WF008	Aluminum	10.014 mg/Kg	All soil samples in SDG WF008
	Beryllium	0.068 mg/Kg	
	Copper	0.454 mg/Kg	
	Iron	3.440 mg/Kg	
	Sodium	-72.604 mg/Kg	
	Aluminum	5.768 mg/Kg	All soil samples in SDG WF008
	Beryllium	0.060 mg/Kg	
	Cobalt	-0.428 mg/Kg	
	Copper	0.728 mg/Kg	
	Iron	1.184 mg/Kg	
	Nickel	2.284 mg/Kg	
	Sodium	-74.238 mg/Kg	
	Thallium	-0.470 mg/Kg	

Table XIII
Summary of Method Blank Contamination
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF008	Aluminum	47.800 ug/L	All water samples in SDG WF008
	Beryllium	0.250 ug/L	
	Calcium	38.580 ug/L	
	Cobalt	-2.750 ug/L	
	Copper	6.560 ug/L	
	Iron	15.910 ug/L	
	Nickel	12.410 ug/L	
	Sodium	-320.390 ug/L	
	Zinc	2.210 ug/L	
	Cyanide	ND	All samples in SDG WF008
WF009	Aluminum	10.014 mg/Kg	All soil samples in SDG WF009
	Beryllium	0.068 mg/Kg	
	Copper	0.454 mg/Kg	
	Iron	3.440 mg/Kg	
	Sodium	-72.604 mg/Kg	
	Aluminum	5.768 mg/Kg	All soil samples in SDG WF009
	Beryllium	0.068 mg/Kg	
	Cobalt	-0.428 mg/Kg	
	Copper	0.728 mg/Kg	
	Iron	1.184 mg/Kg	
	Nickel	2.284 mg/Kg	
	Sodium	-74.238 mg/Kg	
	Thallium	-0.470 mg/Kg	
	Aluminum	47.800 ug/L	All water samples in SDG WF009
	Beryllium	0.250 ug/L	
	Calcium	38.580 ug/L	
	Cobalt	-2.750 ug/L	
	Copper	6.560 ug/L	
	Iron	15.910 ug/L	
	Nickel	12.410 ug/L	
	Sodium	-320.390 ug/L	
	Zinc	2.210 ug/L	
	Cyanide	ND	All samples in SDG WF009
WF010	Aluminum	6.602 mg/Kg	All soil samples in SDG WF010
	Beryllium	0.066 mg/Kg	
	Copper	0.482 mg/Kg	
	Iron	1.828 mg/Kg	
	Mercury	-0.008 mg/Kg	
	Sodium	-74.902 mg/Kg	
	Aluminum	47.800 ug/L	All water samples in SDG WF010
	Beryllium	0.250 ug/L	
	Calcium	38.580 ug/L	
	Cobalt	-2.750 ug/L	
	Copper	6.560 ug/L	
	Iron	15.910 ug/L	
	Nickel	12.410 ug/L	
	Sodium	-320.390 ug/L	
	Zinc	2.210 ug/L	
	Cyanide	ND	All samples in SDG WF010

Table XIII
Summary of Method Blank Contamination
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF11A	Iron	14.610 ug/L	All samples in SDG WF11A
	Nickel	11.200 ug/L	
	Sodium	22.840 ug/L	
	Zinc	2.170 ug/L	
	Cyanide	ND	All samples in SDG WF11A
	TRPH	ND	All samples in SDG WF11A
WF11B	Iron	14.610 ug/L	All water samples in SDG WF11B
	Nickel	11.200 ug/L	
	Sodium	22.840 ug/L	
	Zinc	2.170 ug/L	
	Aluminum	2.922 mg/Kg	All soil samples in SDG WF11B
	Calcium	10.253 mg/Kg	
	Iron	1.620 mg/Kg	
	Sodium	11.866 mg/Kg	
	Zinc	0.512 mg/Kg	
	Cyanide	ND	All samples in SDG WF11B
	TRPH	ND	All samples in SDG WF11B
WF012	Iron	14.610 ug/L	All water samples in SDG WF12
	Nickel	11.200 ug/L	
	Sodium	22.840 ug/L	
	Zinc	2.170 ug/L	
	Barium	0.081 mg/Kg	All soil samples in SDG WF12
	Calcium	6.408 mg/Kg	
	Iron	0.684 mg/Kg	
	Sodium	9.938 mg/Kg	
	Zinc	0.321 mg/Kg	
	Arsenic, TCLP	-0.01539 mg/L	All samples in SDG WF12
	Barium, TCLP	0.00054 mg/L	
	Lead, TCLP	-0.02157 mg/L	
	Silver, TCLP	-0.00215 mg/L	
WF013	Iron	14.610 ug/L	All water samples in SDG WF13
	Nickel	11.200 ug/L	
	Sodium	22.840 ug/L	
	Zinc	2.170 ug/L	
	Barium	0.082 mg/Kg	All soil samples in SDG WF13
	Calcium	9.329 mg/Kg	
	Iron	0.799 mg/Kg	
	Lead	0.120 mg/Kg	
	Magnesium	4.111 mg/Kg	
	Potassium	56.814 mg/Kg	
	Sodium	8.614 mg/Kg	
	Zinc	0.240 mg/Kg	

Table XIII
Summary of Method Blank Contamination
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	**Analyte**	**Concentration**	**Associated Samples**
WF014	Iron	14.610 ug/L	All water samples in SDG WF14
	Nickel	11.200 ug/L	
	Sodium	22.840 ug/L	
	Zinc	2.170 ug/L	
	Cyanide	2.034 ug/L	All water samples in SDG WF14
	Beryllium	-0.049 mg/Kg	All soil samples in SDG WF14
	Calcium	15.945 mg/Kg	
	Iron	0.701 mg/Kg	
	Manganese	0.103 mg/Kg	
	Sodium	14.786 mg/Kg	
	Zinc	0.601 mg/Kg	
WF015	Iron	4.210 ug/L	All water samples in SDG WF15
	Sodium	30.690 ug/L	
	Thallium	0.700 ug/L	
	Zinc	1.400 ug/L	
	Cyanide	2.034 ug/L	
	Aluminum	2.553 mg/Kg	All soil samples in SDG WF15
	Barium	0.093 mg/Kg	
	Beryllium	0.043 mg/Kg	
	Calcium	6.248 mg/Kg	
	Iron	0.759 mg/Kg	
	Sodium	4.452 mg/Kg	
	Zinc	0.365 mg/Kg	

Table XIV
Summary of Field Blank Contamination
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter	Concentration	Qualifier
WF006	**Client ID: 01R00101**		
	Laboratory ID: G8876012		
	Collection Date: 12/6/95		
	Type: Rinsate		
	Calcium	178 ug/L	J
	Sodium	60.6 ug/L	UJ
	Zinc	2.9 ug/L	J
	Cyanide	ND	None
	TRPH	ND	None
WF006	**Client ID: 01F00101**		
	Laboratory ID: G8776013		
	Collection Date: 12/6/95		
	Type: Source Blank		
	Copper	3.3 ug/L	UJ
	Sodium	113 ug/L	UJ
	Cyanide	ND	None
	TRPH	ND	None
WF007	**Client ID: 10R00101**		
	Laboratory ID: G8889009		
	Collection Date: 12/7/95		
	Type: Rinsate		
	Aluminum	52.3 ug/L	UJ
	Barium	0.70 ug/L	J
	Beryllium	0.25 ug/L	UJ
	Calcium	23.0 ug/L	UJ
	Copper	7.1 ug/L	UJ
	Iron	67.3 ug/L	UJ
	Zinc	17.6 ug/L	J
	Cyanide	ND	None
	TRPH	ND	None
WF008	**Client ID: 15R00101**		
	Laboratory ID: G8913020		
	Collection Date: 12/11/95		
	Type: Rinsate		
	Aluminum	54.6 ug/L	UJ
	Barium	1.0 ug/L	J
	Beryllium	0.21 ug/L	UJ
	Calcium	22.6 ug/L	UJ
	Copper	5.0 ug/L	UJ
	Iron	45.4 ug/L	UJ
	Zinc	1.5 ug/L	UJ
	Cyanide	ND	None

Table XIV
Summary of Field Blank Contamination
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter	Concentration	Qualifier
WF009	**Client ID:** 15R00201		
	Laboratory ID: G8914012		
	Collection Date: 12/11/95		
	Type: Rinsate		
	Aluminum	69.8 ug/L	UJ
	Barium	1.0 ug/L	J
	Beryllium	0.29 ug/L	UJ
	Calcium	58.5 ug/L	UJ
	Copper	6.5 ug/L	UJ
	Iron	29.2 ug/L	UJ
	Nickel	48.7 ug/L	U
	Zinc	2.7 ug/L	J
	Cyanide	ND	None
WF010	**Client ID:** 31R00101		
	Laboratory ID: G8924006		
	Collection Date: 12/12/965		
	Type: Rinsate		
	Aluminum	56.5 ug/L	UJ
	Barium	0.86 ug/L	J
	Beryllium	0.42 ug/L	UJ
	Calcium	18.7 ug/L	UJ
	Copper	5.2 ug/L	UJ
	Iron	35.6 ug/L	UJ
	Zinc	3.2 ug/L	UJ
WF11B	**Client ID:** 12R00101		
	Laboratory ID: RA847012		
	Collection Date: 1/5/96		
	Type: Rinsate		
	Barium	0.30 ug/L	J
	Calcium	42.3 ug/L	J
	Iron	11.6 ug/L	UJ
	Sodium	24.6 ug/L	UJ
	Zinc	2.2 ug/L	UJ
	Cyanide	ND	None
	TRPH	ND	None
WF012	**Client ID:** 31R00201		
	Laboratory ID: RA855021		
	Collection Date: 1/8/96		
	Type: Rinsate		
	Copper	1.3 ug/L	UJ
	Iron	21.2 ug/L	UJ
	Sodium	40.3 ug/L	UJ
	Zinc	3.0 ug/L	UJ
WF013	**Client ID:** 16R00101		
	Laboratory ID: RA856017		
	Collection Date: 1/9/96		
	Type: Rinsate		
	Iron	7.0 ug/L	UJ
	Sodium	30.0 ug/L	UJ
	Zinc	3.4ug/L	UJ

Table XIV
Summary of Field Blank Contamination
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter		Concentration	Qualifier
WF014	**Client ID:**	**BKR00101**		
	Laboratory ID:	**RA870001**		
	Collection Date:	**1/10/96**		
	Type:	**Rinsate**		
	Calcium		42.3 ug/L	J
	Iron		7.8 ug/L	UJ
	Sodium		31.9 ug/L	UJ
	Zinc		1.8 ug/L	UJ
	Cyanide		2.0 ug/L	UJ
WF015	**Client ID:**	**COR00101**		
	Laboratory ID:	**RA908001**		
	Collection Date:	**1/18/96**		
	Type:	**Rinsate**		
	Iron		9.1 ug/L	UJ
	Lead		0.60 ug/L	J
	Sodium		58.6 ug/L	UJ
	Thallium		0.70 ug/L	UJ
	Zinc		2.2 ug/L	UJ
	Cyanide		2.0 ug/L	UJ
WF015	**Client ID:**	**COF00101**		
	Laboratory ID:	**RA908002**		
	Collection Date:	**1/18/96**		
	Type:	**Source Blank**		
	Iron		8.9 ug/L	UJ
	Sodium		55.0 ug/L	UJ
	Zinc		2.0 ug/L	UJ

Table XV
Sample Event PARCC Summary
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton, Florida

SDG	Fraction	Precision[1]	Accuracy[2]	Representativeness	Completeness (%)	Comparability
WF006	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
	TRPH	Acceptable	Acceptable	Acceptable	100	Acceptable
WF007	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
	TRPH	Acceptable	Acceptable	Acceptable	100	Acceptable
WF008	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF009	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	99.5[3]	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF010	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF11A	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
	TRPH	Acceptable	Acceptable	Acceptable	100	Acceptable
WF11B	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
	TRPH	Acceptable	Acceptable	Acceptable	100	Acceptable
WF012	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF013	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	94.4[3]	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF014	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	99.7[3]	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable

Table XV
Sample Event PARCC Summary
Surface Soil Investigation, Phase IIB
NAS Whiting Field, Milton, Florida

SDG	Fraction	Precision[1]	Accuracy[2]	Representativeness	Completeness (%)	Comparability
WF015	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	80.0[3]	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable

[1]Cumulative of sampling and analytical components.
[2]Analytical component.
[3]A few samples have results whose concentrations were rejected.

Notes: All completeness is expressed as the ratio of number of sample results considered usable (i.e., not qualified as rejected) to the total number of sample results.

% = percent
TRPH = Total Recoverable Petroleum Hydrocarbons

APPENDIX A

Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida
PARCC Summary Tables

Draft Version

12/12/97

APPENDIX A

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Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton, Florida

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Table 1

SDG#: WF022 | **VALIDATION SAMPLE TABLE** | **LDC#:** 1932A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
BKT01001	RB858001	TB	water	7-16-96	X				
BKR01001	RB858002	R	water	7-16-96	X	X	X	X	X
BKG00101	RB858003		water	7-16-96	X	X	X	X	X
BKG00101D	RB858004	FD	water	7-16-96	X	X	X	X	X
BKG00102	RB858005		water	7-16-96	X	X	X	X	X
BKG00102F	RB858006		water	7-16-96				X	
BKG00103	RB858007		water	7-16-96	X	X	X	X	X
BKG00202	RB858008		water	7-17-96	X	X	X	X	X
BKG00201	RB858009		water	7-17-96	X	X	X	X	X
BKF01001	RB858010	SB	water	7-17-96	X	X	X	X	X
17T01101	RB873001	TB	water	7-18-96	X				
17G00102	RB873002		water	7-18-96	X	X	X	X	X
17G00101	RB873003		water	7-18-96	X	X	X	X	X
17G00201	RB873004		water	7-18-96	X	X	X	X	X
17G00301	RB873005		water	7-18-96	X	X	X	X	X
17G00201F	RB873006		water	7-18-96				X	
01G00101	RB873007		water	7-19-96	X	X	X	X	X
01G00102	RB873008		water	7-19-96	X	X	X	X	X
01G00102D	RB873009		water	7-19-96	X	X	X	X	X
BKG00101MS	RB858003MS	MS	water	7-16-96	X	X	X	X	X
BKG00101MSD	RB858003MSD	MSD	water	7-16-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF023 **VALIDATION SAMPLE TABLE** **LDC#:** 1942A

Project Name: NAS Whiting Field Parameters/Analytical Method **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
01T01201	RB887001	TB	water	7-22-96	X				
01G00401	RB887002		water	7-22-96	X	X	X	X	X
01G00201	RB887003		water	7-22-96	X	X	X	X	X
01G00201F	RB887004		water	7-22-96				X	
01R01101	RB887005	R	water	7-23-96	X	X	X	X	X
01G00301	RB887006		water	7-23-96	X	X	X	X	X
BKG00301	RB887007		water	7-23-96	X	X	X	X	X
02G00201	RB887008		water	7-23-96	X	X	X	X	X
02G00101	RB887009		water	7-23-96	X	X	X	X	X
02G00101F	RB887010		water	7-23-96				X	
18G00301	RB887011		water	7-24-96	X	X	X	X	X
02G00301	RB887012		water	7-24-96	X	X	X	X	X
02G00301D	RB887013	FD	water	7-24-96	X	X	X	X	X
16T01301	RB887014		water	7-25-96	X				
16G00701	RB887015		water	7-25-96	X	X	X	X	X
16G00702	RB887016		water	7-25-96	X	X	X	X	X
16G00702DL	RB887016DL		water	7-25-96	X				
16G00703	RB887017		water	7-25-96	X	X	X	X	X
16G00703DL	RB887017DL		water	7-25-96	X				
18G00201	RB887018		water	7-26-96	X	X	X	X	X
02G00301MS	RB887012MS	MS	water	7-24-96	X	X	X	X	X
02G00301MSD	RB887012MSD	MSD	water	7-24-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF024 | **VALIDATION SAMPLE TABLE** | **LDC#:** 1943A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
18T01401	RB920001	TB	water	7-29-96	X				
18G00101	RB920002		water	7-29-96	X	X	X	X	X
15G00401	RB920003		water	7-30-96	X	X	X	X	X
BKG00203	RB920004		water	7-30-96	X	X	X	X	X
15R01201	RB920005	R	water	7-31-96	X	X	X	X	X
BKG00203F	RB920006		water	7-30-96				X	
15G00702	RB920007		water	7-31-96	X	X	X	X	X
15G00702F	RB920008		water	7-31-96				X	
15G00701	RB920009		water	7-31-96	X	X	X	X	X
15G00701D	RB920010	FD.	water	7-31-96	X	X	X	X	X
15G00701MS	RB920009MS	MS	water	7-31-96	X	X	X	X	X
15G00701MSD	RB920009MSD	MSD	water	7-31-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF025 | **VALIDATION SAMPLE TABLE** | **LDC#:** 1956A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
15T01501	RB956001	TB	water	8-5-96	X				
15G00703	RB956002		water	8-5-96	X	X	X	X	X
15G00503	RB956003		water	8-6-96	X	X	X	X	X
15G00503DL	RB956003DL		water	8-6-96	X				
15G00502	RB956004		water	8-6-96	X	X	X	X	X
15G00501	RB956005		water	8-6-96	X	X	X	X	X
15G00601	RB956006		water	8-7-96	X	X	X	X	X
15G00603	RB956007		water	8-7-96	X	X	X	X	X
15G00601D	RB956008	FD	water	8-7-96	X	X	X	X	X
15G00503F	RB956009		water	8-6-96				X	
15G00501F	RB956010		water	8-6-96				X	
15R01301	RB956011	R	water	8-7-96	X	X	X	X	X
15T01601	RB956012	TB	water	8-8-96	X				
15G00301	RB956013		water	8-8-96	X	X	X	X	X
15G00302	RB956014		water	8-8-96	X	X	X	X	X
15G00303	RB956015		water	8-9-96	X	X	X	X	X
15G00101	RB956016		water	8-8-96	X	X	X	X	X
15G00203	RB956017		water	8-9-96	X	X	X	X	X
15G00301F	RB956018		water	8-8-96				X	
15G00203F	RB956019		water	8-9-96				X	
15G00601MS	RB956006MS	MS	water	8-7-96	X	X	X	X	X
15G00601MSD	RB956006MSD	MSD	water	8-7-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF026 | **VALIDATION SAMPLE TABLE** | **LDC#:** 1957A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
15T01701	RB980001	TB	water	8-12-96	X				
15G00202	RB980002		water	8-12-96	X	X	X	X	X
15G00201	RB980003		water	8-13-96	X	X	X	X	X
15G00802	RB980004		water	8-13-96	X	X	X	X	X
15G00802R	RB980004R		water	8-13-96		X			
15G00801	RB980005		water	8-13-96	X	X	X	X	X
16G00201	RB980006		water	8-14-96	X	X	X	X	X
15G00803	RB980007		water	8-14-96	X	X	X	X	X
16G00803D	RB980008	FD	water	8-14-96	X	X	X	X	X
15G00202F	RB980009		water	8-12-96				X	
15G00201F	RB980010		water	8-13-96				X	
15G00802F	RB980011		water	8-13-96				X	
15R01401	RB980012	R	water	8-14-96	X	X	X	X	X
15G00803F	RB980013		water	8-14-96				X	
16G00201F	RB980014		water	8-14-96				X	
16T01801	RB980015	TB	water	8-15-96	X				
16G00202	RB980016		water	8-15-96	X	X	X	X	X
16G00202DL	RB980016DL		water	8-15-96	X				
16G00203	RB980017		water	8-15-96	X	X	X	X	X
16G00602	RB980018		water	8-15-96	X	X	X	X	X
16G00601	RB980019		water	8-16-96	X	X	X	X	X
16G00403	RB980020		water	8-16-96	X	X	X	X	X
16G00403DL	RB980020DL		water	8-16-96	X				
16G00403D	RB980021		water	8-16-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF026 | **VALIDATION SAMPLE TABLE** | **LDC#:** 1957A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
16G00403DDL	RB980021DL		water	8-16-96	X				
16G00601F	RB980022		water	8-16-96				X	
16G00403F	RB980023		water	8-16-96				X	
15G00803MS	RB980007MS	MS	water	8-14-96	X	X	X	X	X
15G00803MSD	RB980007MSD	MSD	water	8-14-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF025 | **VALIDATION SAMPLE TABLE** | **LDC#:** 1970A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	Pesticides/PCBs
15G00502RE	RB956004RE		water	8-6-96	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF027 | **VALIDATION SAMPLE TABLE** | **LDC#:** 1970B

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
16T01901	RC016001	TB	water	8-19-96	X				
16G00401	RC016002		water	8-19-96	X	X	X	X	X
16G00402	RC016003		water	8-19-96	X	X	X	X	X
16G00101	RC016004		water	8-19-96	X	X	X	X	X
16G00301	RC016005		water	8-20-96	X	X	X	X	X
16G00302	RC016006		water	8-20-96	X	X	X	X	X
16G00304	RC016007		water	8-20-96	X	X	X	X	X
16G00303	RC016008		water	8-21-96	X	X	X	X	X
16G00501	RC016009		water	8-21-96	X	X	X	X	X
16G00303F	RC016010		water	8-21-96				X	
16G00501F	RC016011		water	8-21-96				X	
16R01501	RC016012	R	water	8-21-96	X	X	X	X	X
16G00501D	RC016013	FD	water	8-21-96	X	X	X	X	X
66T02001	RC016014	TB	water	8-22-96	X				
66G02101	RC016015		water	8-22-96	X	X	X	X	X
66G02103	RC016016		water	8-22-96	X	X	X	X	X
66G02102	RC016017		water	8-22-96	X	X	X	X	X
09G00101	RC016018		water	8-23-96	X	X	X	X	X
09G00301	RC016019		water	8-23-96	X	X	X	X	X
09G00301D	RC016020	FD	water	8-23-96	X	X	X	X	X
66G02102F	RC016021		water	8-23-96				X	
09G00301F	RC016022		water	8-23-96				X	
16G00501MS	RC016009MS	MS	water	8-21-96	X	X	X	X	X
16G00501MSD	RC016009MSD	MSD	water	8-21-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF028 | **VALIDATION SAMPLE TABLE** | **LDC#:** 1974A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
10T02101	RC044001	TB	water	8-26-96	X				
09G00201	RC044002		water	8-26-96	X	X	X	X	X
10G00101	RC044003		water	8-26-96	X	X	X	X	X
10G00201	RC044004		water	8-26-96	X	X	X	X	X
11G00402	RC044005		water	8-26-96	X	X	X	X	X
11G00102	RC044006		water	8-27-96	X	X	X	X	X
11G00401	RC044007		water	8-27-96	X	X	X	X	X
11T02201	RC044008	TB	water	8-28-96	X				
11G00301	RC044009		water	8-28-96	X	X	X	X	X
11G00101	RC044010		water	8-28-96	X	X	X	X	X
11G00201	RC044011		water	8-28-96	X	X	X	X	X
12G00101	RC044012		water	8-27-96	X	X	X	X	X
12G00201	RC044013		water	8-27-96	X	X	X	X	X
11G00201F	RC044014		water	8-28-96				X	
11G00301F	RC044015		water	8-28-96				X	
11R01601	RC044016		water	8-28-96	X	X	X	X	X
12G00101D	RC044017	FD	water	8-27-96	X	X	X	X	X
11G00201D	RC044018	FD	water	8-28-96	X	X	X	X	X
12G00101MS	RC044012MS	MS	water	8-27-96	X	X	X	X	X
12G00101MSD	RC044012MSD	MSD	water	8-27-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF029 | **VALIDATION SAMPLE TABLE** | **LDC#:** 1989A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
13T02301	RC092001	TB	water	9-9-96	X				
13G00101	RC092002		water	9-9-96	X	X	X	X	X
13G00102	RC092003		water	9-9-96	X	X	X	X	X
13G00201	RC092004		water	9-10-96	X	X	X	X	X
13G00103	RC092005		water	9-10-96	X	X	X	X	X
14G00201	RC092006		water	9-10-96	X	X	X	X	X
14G00101	RC092007		water	9-11-96	X	X	X	X	X
13R01701	RC092008	R	water	9-11-96	X	X	X	X	X
14G00101D	RC092009	FD	water	9-11-96	X	X	X	X	X
13G00103F	RC092010		water	9-10-96				X	
66T02401	RC092011	TB	water	9-12-96	X				
66G00901	RC092012		water	9-12-96	X	X	X	X	X
66G00904	RC092013		water	9-12-96	X	X	X	X	X
66G00902	RC092014		water	9-13-96	X	X	X	X	X
66G00903	RC092015		water	9-13-96	X	X	X	X	X
66G00903F	RC092016		water	9-13-96				X	
14G00101MS	RC092007MS	MS	water	9-11-96	X	X	X	X	X
14G00101MSD	RC092007MSD	MSD	water	9-11-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF030 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2000A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
66T02501	RC121001	TB	water	9-16-96	X				
66G00801	RC121002		water	9-16-96	X	X	X	X	X
66G00802	RC121003		water	9-16-96	X	X	X	X	X
66G00803	RC121004		water	9-17-96	X	X	X	X	X
66G00804	RC121005		water	9-17-96	X	X	X	X	X
66G00602	RC121006		water	9-17-96	X	X	X	X	X
66G00601	RC121007		water	9-18-96	X	X	X	X	X
66G00603	RC121008		water	9-18-96	X	X	X	X	X
66G00804F	RC121009		water	9-17-96				X	
66R01801	RC121010		water	9-18-96	X	X	X	X	X
66G00601D	RC121011	FD	water	9-18-96	X	X	X	X	X
66T02601	RC121012	TB	water	9-19-96	X				
66G00604	RC121013		water	9-19-96	X	X	X	X	X
66G02201	RC121014		water	9-19-96	X	X	X	X	X
66G02202	RC121015		water	9-19-96	X	X	X	X	X
66G02203	RC121016		water	9-20-96	X	X	X	X	X
66G02203D	RC121017	FD	water	9-20-96	X	X	X	X	X
66G00601MS	RC121007MS	MS	water	9-18-96	X	X	X	X	X
66G00601MSD	RC121007MSD	MSD	water	9-18-96	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF031 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2031A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA	SVOA	Pesticides /PCBs	Metals	Cyanide
05T02701	MB928001	TB	water	9-23-96	X				
05G00801	MB928002		water	9-23-96	X	X	X	X	X
05G00802	MB928003		water	9-23-96	X	X	X	X	X
05G00901	MB928004		water	9-24-96	X	X	X	X	X
05G00902	MB928005		water	9-24-96	X	X	X	X	X
05G01002	MB928006		water	9-24-96	X	X	X	X	X
05G01001	MB928007		water	9-25-96	X	X	X	X	X
05G00301	MB928008		water	9-25-96	X	X	X	X	X
05G00301RE	MB928008RE		water	9-25-96		X			
05G00801F	MB928009		water	9-23-96				X	
05G00902F	MB928010		water	9-24-96				X	
05R01901	MB928011	R	water	9-25-96	X	X	X	X	X
05G01001D	MB928012	FD	water	9-25-96	X	X	X	X	X
33T02801	MB958001	TB	water	9-26-96	X				
05G00101	MB958002		water	9-26-96	X	X	X	X	X
33G00501	MB958003		water	9-26-96	X	X	X	X	X
33G00201	MB958004		water	9-26-96	X	X	X	X	X
33G00101	MB958005		water	9-27-96	X	X	X	X	X
33G00301	MB958006		water	9-27-96	X	X	X	X	X
33G00301D	MB958007	FD	water	9-27-96	X	X	X	X	X
05G01001MS	MB928007MS	MS	water	9-25-96	X	X	X	X	X
05G01001MSD	MB928007MSD	MSD	water	9-25-96	X	X	X		
05G01001DUP	MB928007DUP	DUP	water	9-25-96				X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF031B | **VALIDATION SAMPLE TABLE** | **LDC#:** 2121A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 7560-32

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals (CLP-2.1)	Cyanide
05G01002	MC447001		water	11-21-96	X	X	X	X	X
16T04001	MC447002	TB	water	11-21-96	X				

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF032 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2046A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
06T02901	MC011001	TB	water	9-30-96	X				
33G00401	MC011002		water	9-30-96	X	X	X	X	X
06G00102	MC011003		water	10-1-96	X	X	X	X	X
06G00101	MC011004		water	10-1-96	X	X	X	X	X
06G00301	MC011005		water	10-2-96	X	X	X	X	X
06R02001	MC011006	R	water	10-2-96	X	X	X	X	X
29G00501	MC011007		water	10-2-96	X	X	X	X	X
29G00501D	MC011008	FD	water	10-2-96	X	X	X	X	X
29T03001	MC037001	TB	water	10-3-96	X				
29G00101	MC037002		water	10-3-96	X	X	X	X	X
66G01201	MC037003		water	10-3-96	X	X	X	X	X
66G00102	MC037004		water	10-4-96	X	X	X	X	X
29G00501MS	MC011007MS	MS	water	10-2-96	X	X	X	X	X
29G00501MSD	MC011007MSD	MSD	water	10-2-96	X	X	X		
29G00501DUP	MC011007DUP	DUP	water	10-2-96				X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF033 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2069A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
29T03101	MC085001	TB	water	10-7-96	X				
26G00401	MC085002		water	10-7-96	X	X	X	X	X
26G00301	MC085003		water	10-8-96	X	X	X	X	X
66G00202	MC085004		water	10-8-96	X	X	X	X	X
29G00201	MC085005		water	10-8-96	X	X	X	X	X
66G01901	MC085006		water	10-9-96	X	X	X	X	X
66R02101	MC085007	R	water	10-9-96	X	X	X	X	X
66T03201	MC118001	TB	water	10-10-96	X				
66G00201	MC118002		water	10-9-96	X	X	X	X	X
66G00201D	MC118003	FD	water	10-9-96	X	X	X	X	X
07G00101	MC118004		water	10-10-96	X	X	X	X	X
30G00501	MC118005		water	10-10-96	X	X	X	X	X
66G00301	MC118006		water	10-11-96	X	X	X	X	X
66G00201MS	MC118002MS	MS	water	10-9-96	X	X	X	X	X
66G00201MSD	MC118002MSD	MSD	water	10-9-96	X	X	X		
66G00201DUP	MC118002DUP	DUP	water	10-9-96				X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF034 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2070A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
66T03301	MC153001	TB	water	10-14-96	X				
66G02001	MC153002		water	10-14-96	X	X	X	X	X
66G00302	MC153003		water	10-15-96	X	X	X	X	X
66G01801	MC153004		water	10-16-96	X	X	X	X	X
30G00301	MC153005		water	10-16-96	X	X	X	X	X
30G00401	MC153006		water	10-16-96	X	X	X	X	X
66R02201	MC153007	R	water	10-16-96	X	X	X	X	X
30G00301D	MC153008	FD	water	10-16-96	X	X	X	X	X
66T03401	MC176001	TB	water	10-17-96	X				
66G01101	MC176002		water	10-17-96	X	X	X	X	X
66G01301	MC176003		water	10-17-96	X	X	X	X	X
66G00501	MC176004		water	10-18-96	X	X	X	X	X
66G00501F	MC176005		water	10-18-96				X	
30G00301MS	MC153005MS	MS	water	10-16-96	X	X	X	X	X
30G00301MSD	MC153005MSD	MSD	water	10-16-96	X	X	X		
30G00301DUP	MC153005DUP	DUP	water	10-16-96				X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF035 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2076A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
66T03501	MC214001	TB	water	10-21-96	X				
66G00401	MC214002		water	10-21-96	X	X	X	X	X
66G01601	MC214003		water	10-22-96	X	X	X	X	X
66G01501	MC214004		water	10-22-96	X	X	X	X	X
66G01701	MC214005		water	10-23-96	X	X	X	X	X
66R02301	MC214006	R	water	10-23-96	X	X	X	X	X
66G01701D	MC214007	FD	water	10-23-96	X	X	X	X	X
66T03601	MC231001	TB	water	10-24-96	X				
66G00101	MC231002		water	10-24-96	X	X	X	X	X
08G00101	MC231003		water	10-24-96	X	X	X	X	X
66G01001	MC231004		water	10-25-96	X	X	X	X	X
66G01701MS	MC214005MS	MS	water	10-23-96	X	X	X	X	X
66G01701MSD	MC214005MSD	MSD	water	10-23-96	X	X	X		
66G01701DUP	MC214005DUP	DUP	water	10-23-96				X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF036 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2077A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
66T03701	MC262001	TB	water	10-28-96	X				
66G00701	MC262002		water	10-29-96	X	X	X	X	X
54G00201	MC262003		water	10-29-96	X	X	X	X	X
54G00101	MC262004		water	10-30-96	X	X	X	X	X
31G00201	MC262005		water	10-30-96	X	X	X	X	X
31G00201F	MC262006		water	10-30-96				X	
54R02401	MC262007	R	water	10-30-96	X	X	X	X	X
54G00101D	MC262008	FD	water	10-30-96	X	X	X	X	X
31T03801	MC284001	TB	water	10-31-96	X				
31G00301	MC284002		water	10-31-96	X	X	X	X	X
31G00402	MC284003		water	10-31-96	X	X	X	X	X
31G00403	MC284004		water	11-1-96	X	X	X	X	X
54G00101MS	MC262004MS	MS	water	10-30-96	X	X	X	X	X
54G00101MSD	MC262004MSD	MSD	water	10-30-96	X	X	X		
54G00101DUP	MC262004DUP	DUP	water	10-30-96				X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF037 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2071A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 8532-20

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)	SVOA (CLP-1.9)	Pesticides /PCBs (CLP-1.9)	Metals	Cyanide
15T03901	MC424001	TB	water	11-18-96	X				
15G00502	MC424002		water	11-18-96	X				
15G00503	MC424003		water	11-18-96	X				
16G00202	MC424004		water	11-19-96	X				
16G00203	MC424005		water	11-19-96	X				
15G00802	MC424006		water	11-20-96	X				
15G00803	MC424007		water	11-20-96	X				
15G00803D	MC424008	FD	water	11-20-96	X				
15R02501	MC424009	R	water	11-20-96	X				
15F00201	MC424010		water	11-20-96	X	X	X	X	X
16G00702	MC448001		water	11-21-96	X				
16G00703	MC448002		water	11-21-96	X				
16G00403	MC448003		water	11-22-96	X				
16T04001	MC448004	TB	water	11-21-96	X				
15G00803MS	MC424007MS	MS	water	11-20-96	X				
15G00803MSD	MC424007MSD	MSD	water	11-20-96	X				

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF038 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2099A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 7560-32

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)
36T04101	MC687001	TB	water	12-17-96	X
36BO0101	MC687002		soil	12-17-96	X
36BO0102	MC687003		soil	12-17-96	X
36BO0103	MC687004		soil	12-17-96	X
36BO0201	MC687005		soil	12-17-96	X
36BO0202	MC687006		soil	12-17-96	X
36BO0203	MC687007		soil	12-17-96	X
36BO0301	MC687008		soil	12-17-96	X
36BO0302	MC687009		soil	12-17-96	X
36BO0303	MC687010		soil	12-17-96	X
36BO0303D	MC687011	FD	soil	12-17-96	X
36BO0401	MC687012		soil	12-18-96	X
36BO0401DL	MC687012DL		soil	12-18-96	X
36BO0402	MC687013		soil	12-18-96	X
36BO0403	MC687014		soil	12-18-96	X
36BO0403D	MC687015	FD	soil	12-18-96	X
36RO2601	MC687016	R	water	12-18-96	X
36BO0303MS	MC687011MS	MS	soil	12-17-96	X
36BO0303MSD	MC687011MSD	MSD	soil	12-17-96	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF039 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2102A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 7560-32

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)
35TO4201	MC698001	TB	water	12-19-96	X
35BO0101	MC698002		soil	12-20-96	X
35BO0102	MC698003		soil	12-20-96	X
35BO0102DL	MC698003DL		soil	12-20-96	X
35BO0103	MC698004		soil	12-20-96	X
35BO0104	MC698005		soil	12-20-96	X
35BO0105	MC698006		soil	12-20-96	X
35BO0106	MC698007		soil	12-21-96	X
35BO0201	MC698008		soil	12-21-96	X
35BO0202	MC698009		soil	12-21-96	X
35BO0203	MC698010		soil	12-21-96	X
35RO2701	MC698011	R	water	12-21-96	X
35BO0301	MC698012		soil	12-21-96	X
35BO0302	MC698013		soil	12-21-96	X
35BO0303	MC698014		soil	12-21-96	X
35BO0302D	MC698015	FD	soil	12-21-96	X
35BO0203D	MC698016	FD	soil	12-21-96	X
35BO0203MS	MC698010MS	MS	soil	12-21-96	X
35BO0203MSD	MC698010MSD	MSD	soil	12-21-96	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF040 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2120A

Project Name: NAS Whiting Field | Parameters/Analytical Method | **Job#:** 7560-32

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (CLP-1.9)
35TO4301	MC783001	TB	water	1-7-97	X
35BO0401	MC783002		soil	1-7-97	X
35BO0402	MC783003		soil	1-7-97	X
35BO0403	MC783004		soil	1-7-97	X
35BO0501	MC783005		soil	1-7-97	X
35BO0501DL	MC783005DL		soil	1-7-97	X
35BO0502	MC783006		soil	1-7-97	X
35BO0503	MC783007		soil	1-7-97	X
35BO0201	MC783008		soil	1-8-97	X
35BO0202	MC783009		soil	1-8-97	X
35BO0203	MC783010		soil	1-8-97	X
35BO0101	MC783011		soil	1-8-97	X
35BO0102	MC783012		soil	1-8-97	X
35BO0103	MC783013		soil	1-8-97	X
35BO0301	MC783014		soil	1-9-97	X
35BO0302	MC783015		soil	1-9-97	X
35BO0303	MC783016		soil	1-9-97	X
35R02801	MC783017	R	water	1-9-97	X
35BO0203D	MC783018	FD	soil	1-8-97	X
35BO0103D	MC783019	FD	soil	1-8-97	X
35BO0203MS	MC783010MS	MS	soil	1-8-97	X
35BO0203MSD	MC783010MSD	MSD	soil	1-8-97	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF041 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2323A

Project Name: NAS Whiting

Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)	Pesticides /PCBs (1.9)	Metals (2.1)
35T04501	MD908001	TB	water	6-11-97	X			
35F00301	MD908002		water	6-11-97	X	X	X	X
35R03001	MD908003	R	water	6-11-97	X	X	X	X
35G00101	MD908004		water	6-11-97	X	X	X	X
35G00101D	MD908005	FD	water	6-11-97	X	X	X	X
35G00101DRE	MD908005RE	FD	water	6-11-97		X		
35G00103	MD908006		water	6-11-97	X	X	X	X
35G00103F	MD908007		water	6-11-97				X
35G00102	MD908008		water	6-12-97	X	X	X	X
37G00102	MD908009		water	6-12-97	X	X	X	X
37T04601	MD926001	TB	water	6-12-97	X			
36G00101	MD926002		water	6-12-97	X	X	X	X
36G00101F	MD926003		water	6-12-97				X
37G00101	MD926004		water	6-12-97	X	X	X	X
36G00102	MD926005		water	6-13-97	X	X	X	X
36G00102RE	MD926005RE		water	6-13-97		X		
36G00103	MD926006		water	6-13-97	X	X	X	X
36G00103RE	MD926006RE		water	6-13-97		X		
35T04701	MD950001	TB	water	6-15-97	X			
35G00202	MD950002		water	6-15-97	X	X	X	X
35G00202D	MD950003	FD	water	6-15-97	X	X	X	X
35G00203	MD950004		water	6-15-97	X	X	X	X
35G00201	MD950005		water	6-16-97	X	X	X	X
35G00201F	MD950006		water	6-16-97				X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF041 **VALIDATION SAMPLE TABLE** **LDC#:** 2323A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)	Pesticides /PCBs (1.9)	Metals (2.1)
13T04801	MD985001	TB	water	6-16-97	X			
13G00301	MD985002		water	6-16-97	X	X	X	X
13G00301F	MD985003		water	6-16-97				X
13G00401	MD985004		water	6-16-97	X	X	X	X
35G00101MS	MD908004MS	MS	water	6-11-97	X	X	X	X
35G00101MSD	MD908004MSD	MSD	water	6-11-97	X	X	X	
35G00101DUP	MD908004DUP	DUP	water	6-11-97				X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF042 **VALIDATION SAMPLE TABLE** **LDC#:** 2311A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)
05T04901	ME007001	TB	water	6-18-97	X
05G00301	ME007002		water	6-17-97	X
05G00901	ME007003		water	6-18-97	X
05G00902	ME007004		water	6-19-97	X
05G00902D	ME007005	FD	water	6-19-97	X
05R03101	ME007006	R	water	6-17-97	X
05T05001	ME021001		water	6-20-97	X
05G01001	ME021002		water	6-20-97	X
05G01002	ME021003		water	6-20-97	X
05G00902MS	ME007004MS	MS	water	6-19-97	X
05G00902MSD	ME007004MSD	MSD	water	6-19-97	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF043 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2315A

Project Name: NAS Whiting | Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)
05T05101	ME042001	TB	water	6-23-97	X
05R03201	ME042002	R	water	6-23-97	X
05G00801	ME042003		water	6-24-97	X
05G00802	ME042004		water	6-24-97	X
05G00802D	ME042005	FD	water	6-24-97	X
33T05201	ME053001	TB	water	6-24-97	X
33G00501	ME053002		water	6-24-97	X
33G00101	ME053003		water	6-24-97	X
33G00201	ME053004		water	6-25-97	X
33G00301	ME053005		water	6-25-97	X
33G00301DL	ME053005DL		water	6-25-97	X
33T05301	ME073001	TB	water	6-25-97	X
06G00102	ME073002		water	6-26-97	X
06G00301	ME073003		water	6-26-97	X
33G00401	ME073004		water	6-26-97	X
30T05401	ME087001	TB	water	6-26-97	X
07G00101	ME087002		water	6-26-97	X
07G00101D	ME087003	FD	water	6-26-97	X
30G00501	ME087004		water	6-26-97	X
30G00301	ME087005		water	6-27-97	X
30G00401	ME087006		water	6-27-97	X
05G00802MS	ME042004MS	MS	water	6-24-97	X
05G00802MSD	ME042004MSD	MSD	water	6-24-97	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF044 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2322A

Project Name: NAS Whiting | Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)
06T05501	ME100001	TB	water	6-29-97	X
06R03301	ME100002	R	water	6-29-97	X
66G00201	ME100003		water	6-29-97	X
06G00101	ME100004		water	6-29-97	X
66G00202	ME100005		water	6-30-97	X
66T05601	ME110001	TB	water	6-30-97	X
66G01201	ME110002		water	6-30-97	X
66G01201D	ME110003	FD	water	6-30-97	X
66G00102	ME110004		water	7-1-97	X
66G01301	ME110005		water	7-1-97	X
66T05701	ME133001	TB	water	7-2-97	X
66G00401	ME133002		water	7-2-97	X
66G02001	ME133003		water	7-2-97	X
66T05801	ME135001	TB	water	7-2-97	X
66G00603	ME135002		water	7-2-97	X
66G00603D	ME135003	FD	water	7-2-97	X
66G00604	ME135004		water	7-2-97	X
66G00601	ME135005		water	7-3-97	X
66G00602	ME135006		water	7-3-97	X
66G01201MS	ME110002MS	MS	water	6-30-97	X
66G01201MSD	ME110002MSD	MSD	water	6-30-97	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF045 **VALIDATION SAMPLE TABLE** **LDC#:** 2345A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)	Pesticides /PCBs (1.9)	Metals (2.1)	Cyanide
OWT05901	ME149001	TB	water	7-7-97	X				
OWR03401	ME149002	R	water	7-7-97	X	X	X	X	X
OWG00501	ME149003		water	7-8-97	X	X	X	X	X
OWG00502	ME149004		water	7-8-97	X	X	X	X	X
OWG00502D	ME149005	FD	water	7-8-97	X	X	X	X	X
OWG00503	ME149006		water	7-8-97	X	X	X	X	X
OWG00503F	ME149007		water	7-8-97				X	
OWT06001	ME159001	TB	water	7-8-97	X				
OWG00101	ME159002		water	7-9-97	X	X	X	X	X
OWG00101RE	ME159002RE		water	7-9-97		X			
OWG00102	ME159003		water	7-9-97	X	X	X	X	X
OWG00102RE	ME159003RE		water	7-9-97		X			
OWG00103	ME159004		water	7-9-97	X	X	X	X	X
OWG00103RE	ME159004RE		water	7-9-97		X			
66T06101	ME175001	TB	water	7-9-97	X				
66G02301	ME175002		water	7-9-97	X	X	X	X	X
66G02301RE	ME175002RE		water	7-9-97		X			
66G02302	ME175003		water	7-9-97	X	X	X	X	X
66G02303	ME175004		water	7-10-97	X	X	X	X	X
OWT06201	ME190001	TB	water	7-10-97	X				
OWG00302	ME190002		water	7-10-97	X	X	X	X	X
OWG00302D	ME190003	FD	water	7-10-97	X	X	X	X	X
OWG00303	ME190004		water	7-10-97	X	X	X	X	X
OWG00301	ME190005		water	7-11-97	X	X	X	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF045 **VALIDATION SAMPLE TABLE** **LDC#:** 2345A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)	Pesticides /PCBs (1.9)	Metals (2.1)	Cyanide
OWG00301F	ME190006		water	7-11-97				X	
OWT06401	ME226001	TB	water	7-14-97	X				
OWT06401DL	ME226001DL		water	7-14-97	X				
OWG00401	ME226002		water	7-14-97	X	X	X	X	X
OWG00201	ME226003		water	7-15-97	X	X	X	X	X
OWG00502MS	ME149004MS	MS	water	7-8-97	X	X	X	X	X
OWG00502MSD	ME149004MSD	MSD	water	7-8-97	X	X	X		
OWG00502DUP	ME149004DUP	DUP	water	7-8-97				X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF046 **VALIDATION SAMPLE TABLE** **LDC#:** 2377A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)	Pesticides /PCBs (1.9)	Metals (4.0)	Cyanide
OWT06501	ME241001	TB	water	7-15-97	X				
31R03301	ME241002	R	water	7-15-97	X	X	X	X	X
31G00101	ME241003		water	7-15-97	X	X	X	X	X
31G00101D	ME241004	FD	water	7-15-97	X	X	X	X	X
OWT06601	ME261001	TB	water	7-16-97	X				
31G00401	ME261002		water	7-16-97	X	X	X	X	X
31G00402	ME261003		water	7-16-97	X				
31G00403	ME261004		water	7-16-97	X				
31G00301	ME261005		water	7-16-97	X				
31T06701	ME305001	TB	water	7-21-97	X				
31G00201	ME305002		water	7-21-97	X				
31G00101MS	ME241003MS	MS	water	7-15-97	X	X	X	X	
31G00101MSD	ME241003MSD	MSD	water	7-15-97	X	X	X		
31G00101DUP	ME241003DUP	DUP	water	7-15-97				X	

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF047 **VALIDATION SAMPLE TABLE** **LDC#:** 2346A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA OLV01.0	Metals (2.1)
39W028	ME243001		water	7-15-97	X	
39W027	ME243002		water	7-15-97	X	
39W024	ME243003		water	7-15-97	X	
39W032	ME243004		water	7-15-97	X	X
39W034	ME243005		water	7-15-97	X	X
39W034D	ME243006		water	7-15-97	X	X
39W031	ME243007		water	7-15-97	X	
STOR_BLK	ME243008		water	7-17-97	X	
39T10001	ME244001	TB	water	7-15-97	X	
39W001	ME244002		water	7-15-97	X	
39W002	ME244003		water	7-15-97	X	X
39W003	ME244004		water	7-15-97	X	
39W004	ME244005		water	7-15-97	X	
39W005	ME244006		water	7-15-97	X	
39W006	ME244007		water	7-15-97	X	
39W007	ME244008		water	7-15-97	X	
39W008	ME244009		water	7-15-97	X	
39W014	ME267001		water	7-16-97	X	
39W015	ME267002		water	7-16-97	X	
39W016	ME267003		water	7-16-97	X	X
39W012	ME267004		water	7-16-97	X	
39W012D	ME267005	FD	water	7-16-97	X	
39W013	ME267006		water	7-16-97	X	
39W017	ME267007		water	7-16-97	X	

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF047 **VALIDATION SAMPLE TABLE** **LDC#:** 2346A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA OLV01.0	Metals (2.1)
STOR_BLK2	ME267008		water	7-18-97	X	
39W034MS	ME243005MS	MS	water	7-15-97	X	X
39W034MSD	ME243005MSD	MSD	water	7-15-97	X	
39W034DUP	ME243005DUP	DUP	water	7-15-97		X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF048 **VALIDATION SAMPLE TABLE** **LDC#:** 2338A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)
39D002	ME245001		soil	7-15-97	X
39D001	ME245002		soil	7-15-97	X
39D007	ME245003		soil	7-15-97	X
39D023	ME264001		soil	7-16-97	X
39D026	ME264002		soil	7-16-97	X
39D016	ME264003		soil	7-16-97	X
39D013	ME264004		soil	7-16-97	X
39D019	ME264005		soil	7-17-97	X
39D018	ME264006		soil	7-17-97	X
39D018D	ME264007	FD	soil	7-17-97	X
39D022	ME264008		soil	7-17-97	X
39R03401	ME264009	R	water	7-16-97	X
39D018MS	ME264006MS	MS	soil	7-17-97	X
39D018MSD	ME264006MSD	MSD	soil	7-17-97	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF049 **VALIDATION SAMPLE TABLE** **LDC#:** 2347A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	SVOA (1.9)
39T10201	ME262001	TB	water	7-15-97	X	
39W023	ME262002		water	7-16-97	X	
39W026	ME262003		water	7-16-97	X	
39W025	ME262004		water	7-16-97	X	
39W029	ME262005		water	7-16-97	X	
39W030	ME262006		water	7-16-97	X	
39U001	ME262007		water	7-16-97	X	X
39W018	ME263001		water	7-17-97	X	
39W019	ME263002		water	7-17-97	X	
39W020	ME263003		water	7-17-97	X	
39W021	ME263004		water	7-17-97	X	
39W021D	ME263005	FD	water	7-17-97	X	
39W022	ME263006		water	7-17-97	X	
39T10401	ME263007	TB	water	7-17-97	X	
39W021MS	ME263004MS	MS	water	7-17-97	X	
39W021MSD	ME263004MSD	MSD	water	7-17-97	X	

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF051 | **VALIDATION SAMPLE TABLE** | **LDC#:** 2360A

Project Name: NAS Whiting

					Parameters/Analytical Method	
Client ID #	**Lab ID #**	**QC Type**	**Matrix**	**Date Collected**	**VOA (1.9)**	**Metals (CLP)**
16T06801	ME306001	TB	water	7-21-97	X	
16R03501	ME306002	R	water	7-21-97	X	
16G00401	ME306003		water	7-22-97	X	
16G00401D	ME306004	FD	water	7-22-97	X	
16G00402	ME306005		water	7-22-97	X	
16G00403	ME306006		water	7-22-97	X	
16T06901	ME322001	TB	water	7-22-97	X	
16G00302	ME322002		water	7-22-97	X	X
16G00303	ME322003		water	7-22-97	X	X
16G00202	ME322004		water	7-23-97	X	X
16G00203	ME322005		water	7-23-97	X	X
16T07001	ME340001	TB	water	7-23-97	X	
16G00601	ME340002		water	7-23-97	X	X
16G00601F	ME340003		water	7-23-97		X
16G00602	ME340004		water	7-23-97	X	X
16R03601	MW340005	R	water	7-23-97		X
16G00304	ME340006		water	7-24-97	X	X
16G00304F	ME340007		water	7-24-97		X
16G00301	ME340008		water	7-24-97	X	X
16G00101	ME340009		water	7-24-97	X	X
16G00101D	ME340010	FD	water	7-24-97	X	X
16T07101	ME348001	TB	water	7-25-97	X	
16G00702	ME348002		water	7-25-97	X	X
16G00702DL	ME348002DL		water	7-25-97	X	

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF051 **VALIDATION SAMPLE TABLE** **LDC#:** 2360A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	Metals (CLP)
16G00703	ME348003		water	7-25-97	X	X
16G00703DL	ME348003DL		water	7-25-97	X	
16G00701	ME348004		water	7-25-97	X	X
16G00401MS	ME306003MS	MS	water	7-22-97	X	
16G00401MSD	ME306003MSD	MSD	water	7-22-97	X	

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF052 **VALIDATION SAMPLE TABLE** **LDC#:** 2354A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (OLV01.0)
39018	ME346001		water	7-25-97	X
39019	ME346002		water	7-25-97	X
39020	ME346003		water	7-25-97	X
39021	ME346004		water	7-25-97	X
39020D	ME346005	FD	water	7-25-97	X
39029	ME346006		water	7-25-97	X
39T10501	ME346007	TB	water	7-25-97	X
STORAGEBLK	ME346008		water	7-26-97	X
39020MS	ME346003MS	MS	water	7-25-97	X
39020MSD	ME346003MSD	MSD	water	7-25-97	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF053 **VALIDATION SAMPLE TABLE** **LDC#:** 2384A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	Metals (2.1)
15T07201	ME367001	TB	water	7-27-97	X	
15R03701	ME367002	R	water	7-27-97	X	X
15G00601	ME367003		water	7-27-97	X	X
15G00602	ME367004		water	7-27-97	X	X
15G00602D	ME367005	FD	water	7-27-97	X	X
15T07301	ME377001	TB	water	7-28-97	X	
15G00201	ME377002		water	7-28-97	X	X
15G00101	ME377003		water	7-28-97	X	X
15G00202	ME377004		water	7-29-97	X	X
15G00203	ME377005		water	7-29-97	X	X
15T07401	ME390001	TB	water	7-29-97	X	
15G00301	ME390002		water	7-29-97	X	X
15G00302	ME390003		water	7-29-97	X	X
15G00701	ME390004		water	7-30-97	X	X
15G00702	ME390005		water	7-30-97	X	X
15T07501	ME404001	TB	water	7-30-97	X	
15G00401	ME404002		water	7-30-97	X	X
15G00703	ME404003		water	7-30-97	X	X
15G00703D	ME404004	FD	water	7-30-97	X	X
15G00501	ME404005		water	7-31-97	X	X
15G00501F	ME404006		water	7-31-97		X
15G00502	ME404007		water	7-31-97	X	X
15G00503	ME404008		water	7-31-97	X	X
15G00602MS	ME367004MS	MS	water	7-27-97	X	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF053 **VALIDATION SAMPLE TABLE** **LDC#:** 2384A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	Metals (2.1)
15G00602MSD	ME367004MSD	MSD	water	7-27-97	X	
15G00602DUP	ME367004DUP	DUP	water	7-27-97		X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF054 **VALIDATION SAMPLE TABLE** **LDC#:** 2399A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)	Metals (2.1)
15T07601	ME441001	TB	water	8-4-97	X	
15G00801	ME441002		water	8-4-97	X	X
15G00801D	ME441003	FD	water	8-4-97	X	X
15G00802	ME441004		water	8-4-97	X	X
15R03801	ME441005	R	water	8-5-97	X	X
15G00803	ME441006		water	8-5-97	X	X
15G00303	ME441007		water	8-5-97	X	X
30T07701	ME450001	TB	water	8-5-97	X	
30R03901	ME450002	R	water	8-6-97	X	X
30G00302	ME450003		water	8-6-97	X	X
15G00801MS	ME441002MS	MS	water	8-4-97	X	X
15G00801MSD	ME441002MSD	MSD	water	8-4-97	X	
15G00801DUP	ME441002DUP	DUP	water	8-4-97		X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table 1

SDG#: WF055 **VALIDATION SAMPLE TABLE** **LDC#:** 2511A

Project Name: NAS Whiting Parameters/Analytical Method

Client ID #	Lab ID #	QC Type	Matrix	Date Collected	VOA (1.9)
OWT08001	MF004001	TB	water	10-27-97	X
OWR04101	MF004002	R	water	10-27-97	X
OWG00401	MF004003		water	10-27-97	X
OWG00401D	MF004004		water	10-27-97	X
13R04201	MF004005	R	water	10-28-97	X
13G00401	MF004006		water	10-28-97	X
OWG00401MS	MF004003MS	MS	water	10-27-97	X
OWG00401MSD	MF004003MSD	MSD	water	10-27-97	X

TB = Trip Blank, R = Rinsate, SB = Source Blank, FD = Field Duplicate, MS = Matrix Spike, MSD = Matrix Spike Duplicate, DUP = Duplicate

Table II
Summary of Rejected Data (Organics)
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Fraction	Sample	Compound	Reason
WF022	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBS	All samples	No rejected results	-
WF023	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF024	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF025	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF026	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF027	Volatiles	16G00501	2-Butanone	Initial & Continuing Calibration (RRF)
		16G00501D	2-Butanone	
		16R01501	2-Butanone	
		66G02101	2-Butanone	
		66G02103	2-Butanone	
		66T02001	2-Butanone	
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF028	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF029	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF030	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF031	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF031B	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF032	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	29G00501	Heptachlor epoxide	Target compound identification (RT)
		29G00501D	Heptachlor epoxide	
WF033	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF034	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF035	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-

Table II
Summary of Rejected Data (Organics)
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Fraction	Sample	Compound	Reason
WF036	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF037	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF038	Volatiles	All samples	No rejected results	-
WF039	Volatiles	All samples	No rejected results	-
WF040	Volatiles	All samples	No rejected results	-
WF041	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF042	Volatiles	All samples	No rejected results	-
WF043	Volatiles	All samples	No rejected results	-
WF044	Volatiles	All samples	No rejected results	-
WF045	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF046	Volatiles	All samples	No rejected results	-
	Semivolatiles	All samples	No rejected results	-
	Pesticides & PCBs	All samples	No rejected results	-
WF047	Volatiles	39T10001	Acetone & 2-Butanone	Initial & Continuing Calibration (RRF)
		39W001	Acetone & 2-Butanone	
		39W002	Acetone & 2-Butanone	
		39W003	Acetone & 2-Butanone	
		39W004	Acetone & 2-Butanone	
		39W005	Acetone & 2-Butanone	
		39W006	Acetone & 2-Butanone	
		39W007	Acetone & 2-Butanone	
		39W008	2-Butanone	
		39W012	Acetone & 2-Butanone	
		39W012D	Acetone & 2-Butanone	
		39W013	Acetone & 2-Butanone	
		39W014	Acetone & 2-Butanone	
		39W015	Acetone & 2-Butanone	
		39W016	Acetone & 2-Butanone	
		39W017	Acetone & 2-Butanone	
		39W024	2-Butanone	
		39W027	2-Butanone	
		39W028	2-Butanone	
		39W031	2-Butanone	
		39W032	Acetone & 2-Butanone	
		39W034	2-Butanone	
		39W034D	Acetone & 2-Butanone	
		STOR_BLK	2-Butanone	
		STOR_BLK2	2-Butanone	
WF048	Volatiles	All samples	No rejected results	-

Table II
Summary of Rejected Data (Organics)
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Fraction	Sample	Compound	Reason
WF049	Volatiles	39T10201 39T10401 39W016 39W019 39W020 39W021 39W021D 39W022 39W023 39W025 39W026 39W029 39W030	Acetone & 2-Butanone Acetone & 2-Butanone Acetone 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone 2-Butanone 2-Butanone	Initial & Continuing calibration (RRF)
WF049	Semivolatiles	All samples	No rejected results	-
WF051	Volatiles	All samples	No rejected results	-
WF052	Volatiles	39G018 39G019 39G020 39G020D 39G021 39G029 39R10501 STORAGE BLK	Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone & 2-Butanone Acetone	Initial & Continuing Calibration (RRF)
WF053	Volatiles	All samples	No rejected results	-
WF054	Volatiles	All samples	No rejected results	-
WF055	Volatiles	All samples	No rejected results	-

Table III
Summary of Rejected Data (Inorganics)
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes				
SDG	**Fraction**	**Sample**	**Analyte**	**Reason**
WF022	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF023	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF024	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF025	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF026	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF027	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF028	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF029	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF030	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF031	All metals	All samples	No rejected results	-
	Cyanide	05G00101	Cyanide	Matrix spike (%R)
		05G00301	Cyanide	
		05G00801	Cyanide	
		05G00802	Cyanide	
		05G00901	Cyanide	
		05G00902	Cyanide	
		05G01001	Cyanide	
		05G01001D	Cyanide	
		05G01002	Cyanide	
		05R01901	Cyanide	
		33G00101	Cyanide	
		33G00201	Cyanide	
		33G00301	Cyanide	
		33G00301D	Cyanide	
		33G00501	Cyanide	
WF031B	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF032	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF033	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF034	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF035	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF036	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-
WF037	All metals	All samples	No rejected results	-
	Cyanide	15F00201	Cyanide	Matrix spike (%R)
WF041	All metals	All samples	No rejected results	-
	Cyanide	All samples	No rejected results	-

Table III
Summary of Rejected Data (Inorganics)
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes				
SDG	**Fraction**	**Sample**	**Analyte**	**Reason**
WF045	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF046	All metals Cyanide	All samples All samples	No rejected results No rejected results	- -
WF047	All metals	All samples	No rejected results	-
WF051	All metals	All samples	No rejected results	-
WF053	All metals	All samples	No rejected results	-
WF054	All metals	All samples	No rejected results	-

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF022	BKG00101	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		4-Chloro-3-methylphenol	23-97	-	108	115	-	J (all detects)
		4-Nitrophenol	10-80	-	88	93	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	100	108	-	J (all detects)
		Pentachlorophenol	9-103	-	106	118	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	-	None
WF023	02G00301	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		4-Nitrophenol	10-80	-	88	82	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	97	-	-	J (all detects)
		Pentachlorophenol	9-103	-	139	122	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	-	None
WF024	15G00701	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		4-Nitrophenol	10-80	-	100	102	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	102	106	-	J (all detects)
		Pentachlorophenol	9-103	-	147	148	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	-	None
WF025	15G00601	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		4-Nitrophenol	10-80	-	99	102	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	101	103	-	J (all detects)
		Pentachlorophenol	9-103	-	124	130	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	-	None

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF026	15G00803	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		4-Chloro-3-methylphenol	23-97	-	99	-	-	J (all detects)
		4-Nitrophenol	10-80	-	108	114	-	J (all detects)
		Pentachlorophenol	9-103	-	140	144	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	-	100	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	-	None
WF027	16G00501	Volatiles						
		Benzene	-	≤11	-	-	12	J
		Semivolatiles						
		4-Nitrophenol	10-80	-	91	91	-	J (all detects)
		Pentachlorophenol	9-103	-	104	104	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	-	None
WF028	12G00101	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		4-Nitrophenol	10-80	-	83	-	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	-	None
WF029	14G00101	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		4-Nitrophenol	10-80	-	88	91	-	J (all detects)
		Pentachlorophenol	9-103	-	-	106	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	-	None
WF030	66G00601	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		4-Nitrophenol	10-80	-	85	89	-	J (all detects)
		Pesticides/PCBs	-	-	-	-	-	None

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF031	05G01001	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		Phenol	-	≤42	-	-	50	None
		2-Chlorophenol	-	≤40	-	-	50	None
		4-Chloro-3-methylphenol	-	≤42	-	-	51	None
		4-Nitrophenol	10-80	≤50	-	95	58	None
		Pentachlorophenol	-	≤50	-	-	52	None
		1,4-Dichlorobenzene	-	≤28	-	-	45	J
		N-Nitroso-di-n-propylamine	-	≤38	-	-	56	J
		1,2,4-Trichlorobenzene	-	≤28	-	-	41	J
		Acenaphthene	-	≤31	-	-	84	J
		2,4-Dinitrotoluene	-	≤38	-	-	52	J
		Pyrene	-	≤31	-	-	54	J
		Pesticides/PCBs	-	-	-	-	-	None
WF031B	None	Volatiles	-	-	-	-	-	-
		Semivolatiles	-	-	-	-	-	-
		Pesticides/PCBs	-	-	-	-	-	-
WF032	29G00501	Volatiles	-	-	-	-	-	None
		Semivolatiles	-	-	-	-	-	None
		Pesticides/PCBs	-	-	-	-	-	None
WF033	66G00201	Volatiles						
		1,1-Dichloroethene	-	≤14	-	-	16	None
		Semivolatiles						
		4-Nitrophenol	10-80	-	-	83	-	None
		Pesticides & PCBs	-	-	-	-	-	None
WF034	30G00301	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		Acenaphthene	46-118	≤31	44	-	37	None
		1,4-Dichlorobenzene	-	≤28	-	-	33	None
		1,2,4-Trichlorobenzene	-	≤28	-	-	34	None
		2,4-Dinitrotoluene	-	≤38	-	-	40	None
		Pyrene	-	≤31	-	-	36	None

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF034 cont.	30G00301	Pesticides/PCBs	-	-	-	-	-	None
WF035	66G01701	Volatiles	-	-	-	-	-	None
		Semivolatiles	-	-	-	-	-	None
		Pesticides/PCBs	-	-	-	-	-	None
WF036	54G00101	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		4-Nitrophenol	10-80	-	101	81	-	None
		1,4-Dichlorobenzene	-	≤28	-	-	30	J
		1,2,4-Trichlorobenzene	-	≤28	-	-	36	J
		Pesticides/PCBs	-	-	-	-	-	None
WF037	15G00803	Volatiles	-	-	-	-	-	None
WF038	36BO0303	Volatiles	-	-	-	-	-	None
WF039	35BO0203	Volatiles	-	-	-	-	-	None
WF040	37BO0203	Volatiles	-	-	-	-	-	None
WF041	35G00101	Volatiles	-	-	-	-	-	None
		Semivolatiles	-	-	-	-	-	None
		Pesticides & PCBs						
		Aldrin	40-120	-	124	121	-	J (all detects)
WF042	05G00902	Volatiles	-	-	-	-	-	None
WF043	05G00802	Volatiles	-	-	-	-	-	None
WF044	66G01201	Volatiles						
		Trichloroethene	-	≤14	-	-	40	None
WF045	OWG00502	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		4-Nitrophenol	10-80	-	96	109	-	J (all detects)
		2,4-Dinitrotoluene	24-96	-	-	100	-	J (all detects)

Table IV
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike/Matrix Spike Duplicates
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Criteria		% Recovery		RPD	Qualifier
			% Recovery	RPD	MS	MSD		
WF045 cont.	OWG00502	Pesticides & PCBs						
		gamma-BHC	-	≤15	-	-	28	J
		Heptachlor	-	≤20	-	-	24	J
		Aldrin	40-120	≤22	-	128	29	J
		Dieldrin	52-126	≤18	-	134	22	J
		Endrin	56-121	≤21	-	144	22	J
WF046	31G00101	Volatiles	-	-	-	-	-	None
		Semivolatiles						
		4-Nitrophenol	10-80	-	88	96	-	J (all detects)
		Pesticides & PCBs						
		Endrin	56-121	-	127	-	-	J (all detects)
WF047	39W034	Volatiles	-	-	-	-	-	None
WF048	39D018	Volatiles	-	-	-	-	-	None
WF049	39W021	Volatiles	-	-	-	-	-	None
	None	Semivolatiles	-	-	-	-	-	None
WF051	16G00401	Volatiles	-	-	-	-	-	None
WF052	39020	Volatiles	-	-	-	-	-	None
WF053	15G00602	Volatiles	-	-	-	-	-	None
WF054	15G00801	Volatiles	-	-	-	-	-	None
WF055	13G00401	Volatiles	-	-	-	-	-	None

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF022	**Client ID**	**BKG00101**	**BKG00101D**	
	Laboratory ID	**RB858003**	**RB858004**	
	Collection Date	**7/16/96**	**7/16/96**	
	Acetone	ND	8 ug/L	Not calculable
	Semivolatiles	ND	ND	-
	Pesticides/PCBs	ND	ND	-
WF022	**Client ID**	**01G00102**	**01G00102D**	
	Laboratory ID	**RB873008**	**RB873009**	
	Collection Date	**7/19/96**	**7/19/96**	
	Acetone	4 ug/L	2 ug/L	67
	Semivolatiles	ND	ND	-
	Pesticides/PCBs	ND	ND	-
WF023	**Client ID**	**02G00301**	**02G00301D**	
	Laboratory ID	**RB887012**	**RB887013**	
	Collection Date	**7/24/96**	**7/24/96**	
	Acetone	ND	10 ug/L	Not calculable
	Carbon disulfide	1 ug/L	ND	Not calculable
	Semivolatiles	ND	ND	-
	Pesticides/PCBs	ND	ND	-
WF024	**Client ID**	**15G00701**	**15G00701D**	
	Laboratory ID	**RB920009**	**RB920010**	
	Collection Date	**7/31/96**	**7/31/96**	
	Acetone	2	ND	Not calculable
	Semivolatiles	ND	ND	-
	Pesticides/PCBs	ND	ND	-
WF025	**Client ID**	**15G00601**	**15G00601D**	
	Laboratory ID	**RB956006**	**RB956008**	
	Collection Date	**8/7/96**	**8/7/96**	
	Acetone	5 ug/L	8 ug/L	46
	1,2-Dichloroethene (total)	1 ug/L	1 ug/L	0
	Chlorobenzene	5 ug/L	5 ug/L	0
	Ethylbenzene	10U ug/L	1 ug/L	Not calculable
	1,4-Dichlorobenzene	12 ug/L	12 ug/L	0
	Naphthalene	4 ug/L	4 ug/L	0
	Diethylphthalate	1 ug/L	1 ug/L	0
	Pesticides/PCBs	ND	ND	-
WF026	**Client ID**	**15G00803**	**15G00803D**	
	Laboratory ID	**RB980007**	**RB980008**	
	Collection Date	**8/14/96**	**8/14/96**	
	Acetone	25 ug/L	5 ug/L	133
	2-Butanone	7 ug/L	10U ug/L	Not calculable
	Trichloroethene	4 ug/L	4 ug/L	0
	Bis(2-ethylhexyl)phthalate	2 ug/L	1 ug/L	67
	4,4'-DDT	0.16 ug/L	0.079 ug/L	68

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF026	**Client ID**	**16G00403**	**16G00403D**	
	Laboratory ID	**RB980020**	**RB980021**	
	Collection Date	**8/16/96**	**8/16/96**	
	Acetone	3 ug/L	2 ug/L	40
	1,2-Dichloroethene (total)	1 ug/L	2 ug/L	67
	Benzene	600 ug/L	600 ug/L	0
	Phenol	8 ug/L	8 ug/L	0
	Naphthalene	1 ug/L	2 ug/L	67
	Bis(2-ethylhexyl)phthalate	1 ug/L	10U ug/L	Not calculable
	Pesticides/PCBs	ND	ND	None
WF026	**Client ID**	**16G00403DL**	**16G00403DDL**	
	Laboratory ID	**RB980020DL**	**RB9890021DL**	
	Collection Date	**8/16/96**	**8/16/96**	
	Acetone	18 ug/L	24 ug/L	29
	Benzene	700 ug/L	740 ug/L	6
WF027	**Client ID**	**16G00501**	**16G00501D**	
	Laboratory ID	**RC016009**	**RC016013**	
	Collection Date	**8/21/96**	**8/21/96**	
	Volatiles	ND	ND	None
	Bis(2-ethylhexyl)phthalate	2 ug/L	10U ug/L	Not calculable
	Pesticides/PCBs	ND	ND	None
WF027	**Client ID**	**09G00301**	**09G00301D**	
	Laboratory ID	**RC016019**	**RC016020**	
	Collection Date	**8/23/96**	**8/23/96**	
	Acetone	46 ug/L	18 ug/L	88
	2-Butanone	2 ug/L	10U ug/L	Not calculable
	Semivolatiles	ND	ND	None
	Pesticides/PCBs	ND	ND	None
WF028	**Client ID**	**11G00201**	**11G00201D**	
	Laboratory ID	**RC044011**	**RC044018**	
	Collection Date	**8/28/96**	**8/28/96**	
	Acetone	5 ug/L	11 ug/L	75
	Phenol	4 ug/L	6 ug/L	40
	Bis(2-ethylhexyl)phthalate	5 ug/L	4 ug/L	22
	Pesticides/PCBs	ND	ND	None
WF028	**Client ID**	**12G00101**	**12G00101D**	
	Laboratory ID	**RC044012**	**RC044017**	
	Collection Date	**8/27/96**	**8/27/96**	
	Acetone	3 ug/L	6 ug/L	67
	Bis(2-ethylhexyl)phthalate	2 ug/L	2 ug/L	0
	Pesticides/PCBs	ND	ND	None

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF029	**Client ID**	**14G00101**	**14G00101D**	
	Laboratory ID	**RC092007**	**RC092009**	
	Collection Date	**9/11/96**	**9/11/96**	
	Acetone	8 ug/L	4 ug/L	67
	Carbon disulfide	3 ug/L	10U ug/L	Not calculable
	Methylene chloride	1 ug/L	10U ug/L	Not calculable
	Bis(2-ethylhexyl)phthalate	4 ug/L	4 ug/L	0
	Pesticides/PCBs	ND	ND	None
WF030	**Client ID**	**66G00601**	**66G00601D**	
	Laboratory ID	**RC121007**	**RC121011**	
	Collection Date	**9/18/96**	**9/18/96**	
	Acetone	2 ug/L	8 ug/L	120
	Methylene chloride	2 ug/L	10U ug/L	Not calculable
	Bis(2-ethylhexyl)phthalate	2 ug/L	3 ug/L	40
	Pesticides/PCBs	ND	ND	None
WF030	**Client ID**	**66G02203**	**66G02203D**	
	Laboratory ID	**RC121016**	**RC121017**	
	Collection Date	**9/20/96**	**9/20/96**	
	Acetone	4 ug/L	10U ug/L	Not calculable
	Bis(2-ethylhexyl)phthalate	2 ug/L	10U ug/L	Not calculable
	Pesticides/PCBs	ND	ND	None
WF031	**Client ID**	**05G01001**	**05G01001D**	
	Laboratory ID	**MB928007**	**MB928012**	
	Collection Date	**9/25/96**	**9/25/96**	
	Volatiles	ND	ND	None
	Semivolatiles	ND	ND	None
	Pesticides/PCBs	ND	ND	None
WF031	**Client ID**	**33G00301**	**33G00301D**	
	Laboratory ID	**MB958006**	**MB958007**	
	Collection Date	**9/27/96**	**9/27/96**	
	1,1-Dichloroethene	5 ug/L	6 ug/L	18
	1,2-Dichloroethene (total)	4 ug/L	3 ug/L	29
	Trichloroethene	300 ug/L	300 ug/L	0
	Di-n-butylphthalate	1 ug/L	1 ug/L	0
	Pesticides/PCBs	ND	ND	None

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF032	**Client ID**	**29G00501**	**29G00501D**	
	Laboratory ID	**MC011007**	**MC011008**	
	Collection Date	**10/2/96**	**10/2/96**	
	Volatiles	ND	ND	None
	Semivolatiles	ND	ND	None
	Pesticides/PCBs	ND	ND	None
WF033	**Client ID**	**66G00201**	**66G00201D**	
	Laboratory ID	**MC118002**	**MC118003**	
	Collection Date	**10/9/96**	**10/9/96**	
	Trichloroethene	1 ug/L	1 ug/L	0
	Toluene	1 ug/L	1 ug/L	0
	Semivolatiles	ND	ND	None
	Pesticides/PCBs	ND	ND	None
WF034	**Client ID**	**30G00301**	**30G00301D**	
	Laboratory ID	**MC153005**	**MC153008**	
	Collection Date	**10/16/96**	**10/16/96**	
	1,2-Dichloroethene (total)	31 ug/L	31 ug/L	0
	Trichloroethene	340 ug/L	340 ug/L	0
	Di-n-butylphthalate	2 ug/L	10U ug/L	Not calculable
	Pesticides/PCBs	ND	ND	None
WF035	**Client ID**	**66G01701**	**66G01701D**	
	Laboratory ID	**MC214005**	**MC214007**	
	Collection Date	**10/23/96**	**10/23/96**	
	Volatiles	ND	ND	None
	Di-n-butylphthalate	3 ug/L	2 ug/L	40
	Pesticides/PCBs	ND	ND	None
WF036	**Client ID**	**54G00101**	**54G00101D**	
	Laboratory ID	**MC262004**	**MC262008**	
	Collection Date	**10/30/96**	**10/30/96**	
	Volatiles	ND	ND	None
	Diethylphthalate	1 ug/L	10U ug/L	Not calculable
	Di-n-butylphthalate	1 ug/L	10U ug/L	Not calculable
	Pesticides/PCBs	ND	ND	None
WF037	**Client ID**	**15G00803**	**15G00803D**	
	Laboratory ID	**MC424007**	**MC424008**	
	Collection Date	**11/20/96**	**11/20/96**	
	Trichloroethene	5 ug/L	5 ug/L	0
WF038	**Client ID**	**36BO0303**	**36BO0303D**	
	Laboratory ID	**MC687010**	**MC687011**	
	Collection Date	**12/17/96**	**12/17/96**	
	Volatiles	ND	ND	None

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF038	**Client ID**	**36BO0403**	**36BO0403D**	
	Laboratory ID	**MC687014**	**MC687015**	
	Collection Date	**12/18/96**	**12/18/96**	
	Volatiles	ND	ND	None
WF039	**Client ID**	**35BO0302**	**35BO0302D**	
	Laboratory ID	**MC698013**	**MC698015**	
	Collection Date	**12/21/96**	**12/21/96**	
	Volatiles	ND	ND	None
WF039	**Client ID**	**35BO0203**	**35BO0203D**	
	Laboratory ID	**MC698010**	**MC698016**	
	Collection Date	**12/21/96**	**12/21/96**	
	Volatiles	ND	ND	None
WF040	**Client ID**	**37BO0203**	**37BO0203D**	
	Laboratory ID	**MC783010**	**MC783018**	
	Collection Date	**1/8/97**	**1/8/97**	
	Acetone	14 ug/Kg	12 ug/Kg	15
	Methylene chloride	2 ug/Kg	10 ug/Kg	133
WF040	**Client ID**	**37BO0103**	**37BO0103D**	
	Laboratory ID	**MC783013**	**MC783019**	
	Collection Date	**1/8/97**	**1/8/97**	
	Acetone	18 ug/Kg	22 ug/Kg	20
	Methylene chloride	3 ug/Kg	11 ug/Kg	114
WF041	**Client ID**	**35G00101**	**35G00101D**	
	Laboratory ID	**MD908004**	**MD908005**	
	Collection Date	**6/11/97**	**6/11/97**	
	Volatiles			
	1,1-Dichlcroethene	6 ug/L	7 ug/L	15
	1,1,1-Trichloroethane	2 ug/L	2 ug/L	0
	Xylene (total)	2 ug/L	1 ug/L	67
	Semivolatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
WF041	**Client ID**	**35G00202**	**35G00202D**	
	Laboratory ID	**MD950002**	**MD950003**	
	Collection Date	**6/15/97**	**6/15/97**	
	Volatiles			
	Chloroform	3 ug/L	3 ug/L	0
	Semivolatiles			
	Bis(2-ethylhexyl)phthalate	10U ug/L	5 ug/L	Not calculable
	Pesticides & PCBs	ND	ND	-
WF042	**Client ID**	**05G00902**	**05G00902D**	
	Laboratory ID	**ME007004**	**ME007005**	
	Collection Date	**6/19/97**	**6/19/97**	
	Volatiles	ND	ND	-

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF043	**Client ID**	**05G00802**	**05G00802D**	
	Laboratory ID	**ME042004**	**ME042005**	
	Collection Date	**6/24/97**	**6/24/97**	
	Volatiles			
	Benzene	1 ug/L	10U ug/L	Not calculable
	Trichloroethene	4 ug/L	10U ug/L	Not calculable
	Xylenes (total)	1 ug/L	10U ug/L	Not calculable
WF043	**Client ID**	**07G00101**	**07G00101D**	
	Laboratory ID	**ME087002**	**ME087003**	
	Collection Date	**6/26/97**	**6/26/97**	
	Acetone	540 ug/L	490 ug/L	10
	Benzene	3900 ug/L	4400 ug/L	12
	Toluene	14000 ug/L	16000 ug/L	13
	Ethylbenzene	1800 ug/L	2000 ug/L	10
	Xylenes, total	3200 ug/L	3600 ug/L	12
WF044	**Client ID**	**66G01201**	**66G01201D**	
	Laboratory ID	**ME110002**	**ME110003**	
	Collection Date	**6/30/97**	**6/30/97**	
	Volatiles			
	1,1-Dichloroethene	3 ug/L	2 ug/L	40
	1,2-Dichloroethene (total)	3 ug/L	3 ug/L	0
	Trichloroethene	120 ug/L	96 ug/L	22
WF044	**Client ID**	**66G00603**	**66G00603D**	
	Laboratory ID	**ME135002**	**ME135003**	
	Collection Date	**7/2/97**	**7/2/97**	
	Volatiles			
	Trichloroethene	1 ug/L	1 ug/L	0
WF045	**Client ID**	**OWG00502**	**OWG00502D**	
	Laboratory ID	**ME149004**	**ME149005**	
	Collection Date	**7/8/97**	**7/8/97**	
	Volatiles			
	Acetone	3 ug/Kg	2 ug/Kg	40
	Semivolatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
WF045	**Client ID**	**OWG00302**	**OWG00302D**	
	Laboratory ID	**ME190002**	**ME190003**	
	Collection Date	**7/10/97**	**7/10/97**	
	Volatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
	Semivolatiles			
	Di-n-butylphthalate	4 ug/L	6 ug/L	40
WF046	**Client ID**	**31G00101**	**31G00101D**	
	Laboratory ID	**ME241003**	**ME241004**	
	Collection Date	**7/15/97**	**7/15/97**	
	Volatiles	ND	ND	-
	Pesticides & PCBs	ND	ND	-
	Semivolatiles			
	Di-n-butylphthalate	6 ug/L	3 ug/L	67

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF047	**Client ID**	**39W034**	**39W034D**	
	Laboratory ID	**ME243005**	**ME243006**	
	Collection Date	**7/15/97**	**7/15/97**	
	Volatiles			
	Acetone	4 ug/L	5U ug/L	Not calculable
	Carbon disulfide	1U ug/L	1 ug/L	Not calculable
WF047	**Client ID**	**39W012**	**39W012D**	
	Laboratory ID	**ME267004**	**ME267005**	
	Collection Date	**7/16/97**	**7/16/97**	
	Volatiles			
	Methylene chloride	2U ug/L	1 ug/L	Not calculable
	Benzene	2 ug/L	2 ug/L	0
WF048	**Client ID**	**39D018**	**39D018D**	
	Laboratory ID	**ME264006**	**ME264007**	
	Collection Date	**7/17/97**	**7/17/97**	
	Volatiles			
	Acetone	27 ug/Kg	27 ug/Kg	0
	Trichloroethene	2 ug/Kg	2 ug/Kg	0
WF049	**Client ID**	**39W021**	**39W021D**	
	Laboratory ID	**ME263004**	**ME263005**	
	Collection Date	**7/17/97**	**7/17/97**	
	Volatiles	ND	ND	-
WF051	**Client ID**	**16G00401**	**16G00401D**	
	Laboratory ID	**ME306003**	**ME306003**	
	Collection Date	**7/22/97**	**7/22/97**	
	Volatiles			
	Acetone	18 ug/L	14 ug/L	25
WF051	**Client ID**	**16G00101**	**16G00101D**	
	Laboratory ID	**ME340009**	**ME340010**	
	Collection Date	**7/24/97**	**7/24/97**	
	Volatiles	ND	ND	-
WF052	**Client ID**	**39020**	**39020D**	
	Laboratory ID	**ME346004**	**ME346005**	
	Collection Date	**7/25/97**	**7/25/97**	
	Volatiles	ND	ND	-
WF053	**Client ID**	**15G00602**	**15G00602D**	
	Laboratory ID	**ME367004**	**ME367005**	
	Collection Date	**7/27/97**	**7/27/97**	
	Volatiles			
	Trichloroethene	2 ug/L	2 ug/L	0
WF053	**Client ID**	**15G00703**	**15G00703D**	
	Laboratory ID	**ME404003**	**ME404004**	
	Collection Date	**7/30/97**	**7/30/97**	
	Volatiles			
	1,2-Trichloroethene (total)	1 ug/L	2 ug/L	67
	Trichloroethene	36 ug/L	38 ug/L	5
	1,1-Dichloroethene	2 ug/L	10U ug/L	Not calculable

Table V
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Organic Compounds			RPD
WF054	**Client ID**	**15G00801**	**15G00801D**	
	Laboratory ID	**ME441002**	**ME441003**	
	Collection Date	**8/4/97**	**8/4/97**	
	Volatiles			
	Chlorobenzene	4 ug/L	4 ug/L	0
WF055	**Client ID**	**OWG00401**	**OWG00401D**	
	Laboratory ID	**MF004003**	**MF004004**	
	Collection Date	**10/27/97**	**10/27/97**	
	Volatiles	ND	ND	-

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF022	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			10	
	BKR01001	Decachlorobiphenyl	58	60-150		J
		Decachlorobiphenyl	58	60-150		J
	BKG00101	Tetrachloro-m-xylene	59	60-150		J
		Tetrachloro-m-xylene	57	60-150		J
	BKG00102	Decachlorobiphenyl	37	60-150		J
		Decachlorobiphenyl	37	60-150		J
	BKG00103	Decachlorobiphenyl	40	60-150		J
		Decachlorobiphenyl	41	60-150		J
	BKG00202	Decachlorobiphenyl	47	60-150		J
		Decachlorobiphenyl	47	60-150		J
	BKG00201	Decachlorobiphenyl	43	60-150		J
		Decachlorobiphenyl	43	60-150		J
	BKF01001	Tetrachloro-m-xylene	59	60-150		J
		Tetrachloro-m-xylene	59	60-150		J
		Decachlorobiphenyl	51	60-150		J
		Decachlorobiphenyl	47	60-150		J
	17G00101	Decachlorobiphenyl	58	60-150		J
		Decachlorobiphenyl	56	60-150		J
	17G00201	Decachlorobiphenyl	22	60-150		J
		Decachlorobiphenyl	21	60-150		J
	01G00102D	Decachlorobiphenyl	59	60-150		J
		Decachlorobiphenyl	56	60-150		J
WF023	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			5	
	01G00201	Decachlorobiphenyl	32	60-150		J
		Decachlorobiphenyl	28	60-150		J
	01G00301	Decachlorobiphenyl	49	60-150		J
		Decachlorobiphenyl	47	60-150		J
	02G00101	Decachlorobiphenyl	41	60-150		J
		Decachlorobiphenyl	42	60-150		J
	16G00703	Decachlorobiphenyl	59	60-150		J
		Decachlorobiphenyl	55	60-150		J
	18G00301	Decachlorobiphenyl	48	60-150		J
		Decachlorobiphenyl	46	60-150		J

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF024	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			1	
	BKG00203	Decachlorobiphenyl	52	60-150	-	J
		Decachlorobiphenyl	48	60-150	-	J
WF025	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			5	
	15G00101	Decachlorobiphenyl	21	60-150		J
		Decachlorobiphenyl	20	60-150		J
	15G00303	Tetrachloro-m-xylene	57	60-150		J
		Tetrachloro-m-xylene	58	60-150		J
	15G00502	Tetrachloro-m-xylene	155	60-150		J (all detects)
		Tetrachloro-m-xylene	162	60-150		J (all detects)
	15R01301	Decachlorobiphenyl	59	60-150		J
	15G00502RE	Decachlorobiphenyl	53	60-150		J
		Decachlorobiphenyl	54	60-150		J
WF026	All	Volatiles	All within QC limits	-	-	None
		Semivolatiles			2	
	15G00802	2-Fluorobiphenyl	161	43-116		J (all detects) all B/N
		Terphenyl-d14	163	33-141		J (all detects) all B/N
	15G00802R	2-Fluorobiphenyl	182	43-116		J (all detects) all B/N
		Terphenyl-d14	153	33-141		J (all detects) all B/N

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF026 cont.		Pesticides/PCBs			9	
	15G00201	Decachlorobiphenyl	52	60-150		J
		Decachlorobiphenyl	50	60-150		J
	15G00202	Decachlorobiphenyl	58	60-150		J
		Decachlorobiphenyl	58	60-150		J
	15G00801	Decachlorobiphenyl	43	60-150		J
		Decachlorobiphenyl	38	60-150		J
	15G00803	Decachlorobiphenyl	58	60-150		J
		Decachlorobiphenyl	58	60-150		J
	16G00201	Decachlorobiphenyl	43	60-150		J
		Decachlorobiphenyl	37	60-150		J
	16G00203	Decachlorobiphenyl	44	60-150		J
		Decachlorobiphenyl	43	60-150		J
	16G00403	Decachlorobiphenyl	40	60-150		J
		Decachlorobiphenyl	39	60-150		J
	16G00403D	Decachlorobiphenyl	47	60-150		J
		Decachlorobiphenyl	46	60-150		J
	16G00601	Decachlorobiphenyl	25	60-150		J
		Decachlorobiphenyl	25	60-150		J
WF027	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			2	
	16G00304	Decachlorobiphenyl	46	60-150		J
		Decachlorobiphenyl	43	60-150		J
	66G02103	Decachlorobiphenyl	58	60-150		J
		Decachlorobiphenyl	58	60-150		J
WF028	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			5	
	10G00101	Decachlorobiphenyl	50	60-150		J
		Decachlorobiphenyl	48	60-150		J
	11G00101	Decachlorobiphenyl	47	60-150		J
		Decachlorobiphenyl	47	60-150		J
	11G00301	Decachlorobiphenyl	25	60-150		J
		Decachlorobiphenyl	24	60-150		J
	11G00401	Decachlorobiphenyl	29	60-150		J
		Decachlorobiphenyl	29	60-150		J
	11G00201D	Decachlorobiphenyl	59	60-150		J

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF029	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			3	
	13G00101	Decachlorobiphenyl	23	60-150		J
		Decachlorobiphenyl	23	60-150		J
	66G00901	Decachlorobiphenyl	43	60-150		J
		Decachlorobiphenyl	42	60-150		J
	66G00903	Decachlorobiphenyl	52	60-150		J
		Decachlorobiphenyl	52	60-150		J
WF030	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			1	
	66G00804	Decachlorobiphenyl	31	60-150		J
		Decachlorobiphenyl	31	60-150		J
WF031	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			3	
	05G00301	Tetrachloro-m-xylene	56	60-150		J
		Tetrachloro-m-xylene	52	60-150		J
	05G00101	Decachlorobiphenyl	164	60-150		J (all detects)
	05G01002	Tetrachloro-m-xylene	57	60-150		J
WF031B	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	All	Pesticides/PCBs	All within QC limits	-	-	None
WF032	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	29G00101	Pesticides/PCBs			1	
		Tetrachloro-m-xylene	54	60-150		J
		Tetrachloro-m-xylene	56	60-150		J

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF033	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			3	
	07G00101	Tetrachloro-m-xylene	174	60-150		J (all detects)
	30G00501	Tetrachloro-m-xylene	59	60-150		J
	66G00201D	Tetrachloro-m-xylene	25	60-150		J
		Tetrachloro-m-xylene	36	60-150		J
WF034	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			1	
	66G01801	Tetrachloro-m-xylene	164	60-150		J (all detects)
WF035	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			1	
	08G00101	Tetrachloro-m-xylene	59	60-150		J
WF036	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides/PCBs			1	
	54G00101	Tetrachloro-m-xylene	57	60-150		J
		Tetrachloro-m-xylene	52	60-150		J
WF037	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
	All	Pesticides/PCBs	All within QC limits	-	-	None
WF038	All	Volatiles	All within QC limits	-	-	None
WF039	All	Volatiles	All within QC limits	-	-	None
WF040	All	Volatiles	All within QC limits	-	-	None

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF041	All	Volatiles	All within QC limits	-	-	None
	All	Semivolatiles	All within QC limits	-	-	None
		Pesticides & PCBs			2	
	35G00201	Decachlorobiphenyl	58	60-150		J
	36G00103	Tetrachloro-m-xylene	57	60-150		J
		Tetrachloro-m-xylene	58	60-150		J
WF042	All	Volatiles	-	-	-	None
WF043	All	Volatiles	-	-	-	None
WF044	All	Volatiles	-	-	-	None
WF045	All	Volatiles	-	-	-	None
		Semivolatiles			3	
	OWG00101	2-Fluorophenol	0	21-110		J (all detects)
		Phenol-d5	0	10-110		R (all non-detects)
		2-Chlorophenol-d4	0	33-110		
		1,2-Dichlorobenzene-d4	0	16-110		
		Nitrobenzene-d5	0	35-114		
		2-Fluorobiphenyl	0	43-116		
		2,4,6-Tribromophenol	0	10-123		
		Terphenyl-d14	0	33-141		
	OWG00102	2-Fluorophenol	0	21-110		J (all detects)
		Phenol-d5	0	10-110		R (all non-detects)
		2-Chlorophenol-d4	0	33-110		
		1,2-Dichlorobenzene-d4	0	16-110		
		Nitrobenzene-d5	0	35-114		
		2-Fluorobiphenyl	0	43-116		
		2,4,6-Tribromophenol	0	10-123		
		Terphenyl-d14	0	33-141		

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF045 cont.	OWG00103	2-Fluorophenol	0	21-110		J (all detects)
		Phenol-d5	0	10-110		R (all non-detects)
		2-Chlorophenol-d4	0	33-110		
		1,2-Dichlorobenzene-d4	0	16-110		
		Nitrobenzene-d5	0	35-114		
		2-Fluorobiphenyl	0	43-116		
		2,4,6-Tribromophenol	0	10-123		
		Terphenyl-d14	0	33-141		
		Pesticides & PCBs			4	
	OWG00101	Tetrachloro-m-xylene	45	60-150		J
		Tetrachloro-m-xylene	52	60-150		J
	OWG00103	Tetrachloro-m-xylene	59	60-150		J
	OWG00302	Tetrachloro-m-xylene	54	60-150		J
		Tetrachloro-m-xylene	52	60-150		J
	OWG00302D	Tetrachloro-m-xylene	53	60-150		J
		Tetrachloro-m-xylene	52	60-150		J
WF046	All	Volatiles	-	-	-	None
	All	Semivolatiles	-	-	-	None
		Pesticides & PCBs			2	
	31G00101	Tetrachloro-m-xylene	48	60-150		J
		Tetrachloro-m-xylene	55	60-150		J
	31R03301	Tetrachloro-m-xylene	59	60-150		J
WF047	All	Volatiles	-	-	-	None
WF048	All	Volatiles	-	-	-	None
WF049	All	Volatiles	-	-	-	None
	All	Semivolatiles	-	-	-	None
WF051	All	Volatiles	-	-	-	None
WF052	All	Volatiles	-	-	-	None
WF053	All	Volatiles	-	-	-	None
WF054	All	Volatiles	-	-	-	None

Table VI
Summary of Surrogate Recoveries
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Client ID	Compound	Percent Recovery	QC Limits	# of Samples	Qualifier
WF055	All	Volatiles	-	-	-	None

Notes: J = estimated value
UJ = undetected, but number that is reported as the quantification limit is an estimated value.

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF022		Volatiles			
	6/25/96	Acetone	30.2	-	J
	7/19/96	Chloromethane	-	28.8	J
		Chloroethane	-	48.7	J
	7/22/96	Chloroethane	-	30.6	J
		Semivolatiles			
	8/13/96	4,6-Dinitro-2-methylphenol	-	27.2	J
		Pentachlorophenol	-	25.4	J
	8/14/96	4-Chloroaniline	-	31.6	J
		2,4-Dinitrophenol	-	27.6	J
		4,6-Dinitro-2-methylphenol	-	33.8	J
	All	Pesticides/PCBs	-	-	None
WF023		Volatiles			
	6/25/96	Acetone	30.2	-	J
	7/25/96	Acetone	-	33.2	J
	7/31/96	Acetone	-	30.4	J
		Methylene chloride	-	31.7	J
		Carbon disulfide	-	27.2	J
	8/1/96	Chloroethane	-	27.5	J
		Carbon disulfide	-	27.5	J
		Methylene chloride	-	37.8	J
		Semivolatiles			
	8/20/96	4-Nitroaniline	-	37.8	J
		Chrysene	-	27.8	J
	8/21/96	4-Nitroaniline	-	31.5	J
		Chrysene	-	28.5	J
		Benzo(g,h,i)perylene	-	32.7	J
	8/25/96	4,4'-DDT	23.6	-	J
WF024		Volatiles			
	6/25/96	Acetone	30.2	-	J
	8/5/96	Acetone	33.8	-	J
	8/2/96	Chloroethane	-	29.5	J
		Carbon disulfide	-	30.8	J
		Methylene chloride	-	41.0	J
		Semivolatiles			
	8/21/96	4-Nitroaniline	-	28.7	J
		Chrysene	-	29.5	J
		Indeno(1,2,3-cd)pyrene	-	28.1	J
		Dibenz(a,h)anthracene	-	34.0	J
		Benzo(g,h,i)perylene	-	37.6	J
	All	Pesticides/PCBs	-	-	None

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF025		Volatiles			
	8/5/96	Acetone	33.8	-	J
	8/14/96	Chloromethane	26.7	-	J
		Chloroethane	28.5	-	J
		Acetone	29.7	-	J
		Semivolatiles			
	9/9/96	2,4-Dinitrophenol	-	29.9	J
		4-Nitroaniline	-	27.6	J
		4,6-Dinitro-2-methylphenol	-	30.7	J
		Pyrene	-	30.0	J
		3,3'-Dichlorobenzidine	-	37.0	J
		2,4-Dinitrophenol	-	35.6	J
		4-Nitroaniline	-	29.4	J
		4,6-Dinitro-2-methylphenol	-	32.0	J
		Pentachlorophenol	-	27.8	J
		3,3'-Dichlorobenzidine	-	27.8	J
	8/25/96	4,4'-DDT	23.6	-	J
WF026		Volatiles			
	8/5/96	Acetone	33.8	-	J
	8/19/96	Chloromethane	-	46.5	J
		Chloroethane	-	77.1	J
		1,1-Dichloroethane	-	28.6	J
		2-Butanone	-	30.3	J
	8/20/96	Chloromethane	-	32.5	J
		Chloroethane	-	32.4	J
	8/22/96	Acetone	-	37.9	J
		Carbon disulfide	-	28.0	J
		2-Butanone	-	27.8	J
		Semivolatiles			
	9/10/96	2,4-Dinitrophenol	-	35.6	J
		4-Nitroaniline	-	29.4	J
		4,6-Dinitro-2-methylphenol	-	32.0	J
		Pentachlorophenol	-	27.8	J
		3,3'-Dichlorobenzidine	-	27.8	J
	9/10/96	4-Chloroaniline	-	36.8	J
		3-Nitroaniline	-	37.9	J
		2,4-Dinitrophenol	-	29.3	J
		4-Nitroaniline	-	49.5	J
		4,6-Dinitro-2-methylphenol	-	29.4	J
		Pentachlorophenol	-	29.6	J
		3,3'-Dichlorobenzidine	-	54.1	J
		Pesticides & PCBs			
	9/14/96	alpha-BHC	22.2	-	J
		delta-BHC	22.1	-	J

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF027		Volatiles			
	9/1/96	2-Butanone	39.1	-	J
		2-Butanone	0.014 (RRF)	-	J(detects) / R(ND)
	8/5/96	Acetone	33.8	-	J
	9/2/96	Acetone	-	102.4	J
		2-Butanone	-	36.3	J
	8/22/96	Acetone	-	37.9	J
		Carbon disulfide	-	28.0	J
		2-Butanone	-	27.8	J
	8/29/96	Bromomethane	-	31.0	J
		Chloroethane	-	63.9	J
		Acetone	-	37.2	J
	9/2/96	Chloromethane	-	32.4	J
		Chloroethane	-	28.4	J
		Acetone	-	49.2	J
		2-Butanone	-	38.7	J
		4-Methyl-2-pentanone	-	35.7	J
		2-Hexanone	-	38.9	J
		2-Butanone	-	0.019 (RRF)	J (detects) / R (ND)
	9/3/96	Chloromethane	-	27.4	J
		Acetone	-	34.7	J
		2-Butanone	-	32.6	J
		4-Methyl-2-pentanone	-	32.9	J
		2-Hexanone	-	38.9	J
		Semivolatiles			
	9/10/96	4-Chloroaniline	-	36.8	J
		3-Nitroaniline	-	37.9	J
		2,4-Dinitrophenol	-	29.3	J
		4-Nitroaniline	-	49.5	J
		4,6-Dinitro-2-methylphenol	-	29.4	J
		Pentachlorophenol	-	29.6	J
		3,3'-Dichlorobenzidine	-	54.1	J
	9/20/96	3,3'-Dichlorobenzidine	-	30.4	J
	All	Pesticides/PCBs	-	-	None
WF028		Volatiles			
	8/5/96	Acetone	33.8	-	J
	9/2/96	Chloromethane	-	32.4	J
		Chloroethane	-	28.4	J
		Acetone	-	49.2	J
		2-Butanone	-	38.7	J
		4-Methyl-2-pentanone	-	35.7	J
		2-Hexanone	-	38.9	J
	9/3/96	Chloromethane	-	27.4	J
		Acetone	-	34.7	J
		2-Butanone	-	32.6	J
		4-Methyl-2-pentanone	-	32.9	J
		2-Hexanone	-	38.9	J

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF028 cont.	9/6/96	Chloromethane	-	35.4	J
		Acetone	-	41.0	J
		2-Butanone	-	41.8	J
		1,2-Dichloropropane	-	27.6	J
		4-Methyl-2-pentanone	-	40.5	J
		2-Hexanone	-	43.3	J
		Bromoform	-	26.2	J
		1,1,2,2-Tetrachloroethane	-	26.5	J
		Semivolatiles			
	9/20/96	3,3'-Dichlorobenzidine	-	30.4	J
	9/26/96	Benzo(k)fluoroanthene	-	28.5	J
	All	Pesticides/PCBs	-	-	None
WF029		Volatiles			
	9/17/96	Chloromethane	-	38.1	J
		Methylene chloride	-	33.6	J
	9/18/96	2-Hexanone	-	26.5	J
		Semivolatiles			
	9/26/96	Benzo(k)fluoranthene	-	28.5	J
	9/26/96	Benzo(k)fluoranthene	-	25.6	J
	All	Pesticides/PCBs	-	-	None
WF030		Volatiles			
	9/20/96	Methylene chloride	-	35.2	J
	9/23/96	Methylene chloride	-	30.2	J
		Semivolatiles			
	10/16/96	2,4-Dinitrophenol	-	25.8	J
		4-Nitrophenol	-	28.0	J
	All	Pesticides/PCBs	-	-	None
WF031	All	Volatiles	-	-	None
	All	Semivolatiles	-	-	None
		Pesticides & PCBs			
	11/5/96	delta-BHC	21.2	-	J
WF031B	All	Volatiles	-	-	None
		Semivolatiles			
	11/28/96	Di-n-octylphthalate	-	25.3	J
		Pesticides & PCBs			
	12/9-10/97	Alpha-BHC	23.9	-	J
WF032		Volatiles			
	10/10/96	1,1,2,2-Tetrachloroethane	-	27.8	J
		Semivolatiles			
	11/3/96	Hexachlorobutadiene	-	33.5	J
		Hexachlorocyclopentadiene	-	31.5	J
		Di-n-octylphthalate	-	27.0	J
		Pesticides & PCBs			
	11/5/96	delta-BHC	21.2	-	J

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF033		Volatiles			
	10/16/96	Acetone	-	25.3	J
		Semivolatiles			
	11/4/96	Hexachlorobutadiene	-	31.2	J
		Hexachlorocyclopentadiene	-	27.9	J
	All	Pesticides/PCBs	-	-	None
WF034	All	Volatiles	-	-	None
		Semivolatiles			
	11/26/96	Di-n-octylpthalate	-	33.9	J
	All	Pesticides/PCBs	-	-	None
WF035	All	Volatiles	-	-	None
		Semivolatiles			
	11/26/96	Bis(2-ethylhexyl)phthalate	-	25.6	J
		Di-n-octylphthalate	-	32.1	J
	11/27/96	Di-n-octylphthalate	-	30.0	J
		Pesticides & PCBs			
	11/5/96	delta-BHC	21.2	-	J
WF036	All	Volatiles	-	-	None
		Semivolatiles			
		Di-n-octylphthalate	-	30.0	J
		Di-n-octylphthalate	-	25.3	J
		Pesticides & PCBs			
		alpha-BHC	23.9	-	J
WF037	All	Volatiles	-	-	None
		Semivolatiles			
	11/28/96	Di-n-octylphthalate	-	25.3	J
		Pesticides & PCBs			
	12/9-10/96	alpha-BHC	23.9	-	J
WF038		Volatiles			
	12/26/96	Acetone	-	30.6	J
WF039		Volatiles			
	12/26/96	Acetone	-	30.6	J
WF040	All	Volatiles	-	-	None
WF041	All	Volatiles	-	-	None
	All	Semivolatiles	-	-	None
		Pesticides & PCBs			
	6/11-12/97	Methoxychlor	24.2	-	J
		delta-BHC	21.5	-	J
WF042	All	Volatiles	-	-	None
WF043	All	Volatiles	-	-	None

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF044		Volatiles			
	7/7/97	Bromomethane	-	33.5	J
WF045	All	Volatiles	-	-	None
	All	Semivolatiles	-	-	None
		Pesticides & PCBs			
	7/31/97	alpha-BHC	20.3	-	J
		alpha-BHC	24.2	-	J
		gamma-BHC	21.9	-	J
WF046	All	Volatiles	-	-	None
	All	Semivolatiles	-	-	None
		Pesticides & PCBs			
	7/31/97	alpha-BHC	20.3	-	J
		alpha-BHC	24.2	-	J
		gamma-BHC	21.9	-	J
WF047		Volatiles			
	7/21/97	Acetone	35.4	-	J
	7/21/97	Acetone	0.023 RRF	-	J (all detects) R (all non-detects)
		2-Butanone	0.030 RRF	-	J (all detects) R (all non-detects)
	7/28/97	Bromomethane	-	34.6	J
		Acetone	-	35.1	J
	7/29/97	Bromomethane	-	30.5	J
		Acetone	-	30.9	J
	7/21/97	Acetone	-	0.020 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.030 (RRF)	J (all detects) R (all non-detects)
	7/22/97	Acetone	-	0.020 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.030 (RRF)	J (all detects) R (all non-detects)
	7/28/97	Acetone	-	0.015 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.026 (RRF)	J (all detects) R (all non-detects)
	7/29/97	Acetone	-	0.015 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.026 (RRF)	J (all detects) R (all non-detects)
WF048		Volatiles			
	7/25/97	Bromomethane	36.5	-	J
	7/26/97	Bromomethane	-	28.7	J

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Date	Compound	Initial Calibration %RSD	Continuing Calibration %D	Qualifier
WF049	7/21/97	Volatiles Acetone	35.4	-	J
	7/21/97	Acetone	0.023 (RRF)	-	J (all detects) R (all non-detects)
		2-Butanone	0.030 (RRF)	-	J (all detects) R (all non-detects)
	7/28/97	Bromomethane	-	34.6	J
		Acetone	-	35.1	J
	7/22/97	Acetone	-	0.020 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.030 (RRF)	J (all detects) R (all non-detects)
	7/28/97	Acetone	-	0.015 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.026 (RRF)	J (all detects) R (all non-detects)
	All	Semivolatiles	-	-	None
WF051	All	Volatiles	-	-	None
WF052		Volatiles			
	7/21/97	Acetone	35.4	-	J
	7/21/97	Acetone	0.023 (RRF)	-	J (all detects) R (all non-detects)
		2-Butanone	0.030 (RRF)	-	J (all detects) R (all non-detects)
	7/29/97	Bromomethane	-	30.5	J
		Acetone	-	30.9	J
	7/29/97	Acetone	-	0.016 (RRF)	J (all detects) R (all non-detects)
		2-Butanone	-	0.026 (RRF)	J (all detects) R (all non-detects)
WF053		Volatiles			
	8/8/97	Acetone	-	36.4	J
WF054		Volatiles			
	8/19/97	Acetone	39.1	-	J
	8/8/97	Acetone	-	36.4	J
	8/19/97	Acetone	-	30.3	J

Table VII
Summary of Compounds Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds					
SDG	**Date**	**Compound**	**Initial Calibration %RSD**	**Continuing Calibration %D**	**Qualifier**
WF055	All	Volatiles	-	-	None

Notes: %RSD = percent Relative Standard Deviation for initial calibrations

%D = percent Difference for continuing calibrations

J = the compound was positively identified: the associated numerical value is the approximate concentration of the compound in the sample, either because its concentration was lower than the QL (laboratory "J" flag), or because QC criteria were not met (validation "J").

UJ = the compound was not detected above the reported sample QL. However, the reported sample QL is approximate; the compound concentration may not reliably be presumed to be less than the QL value.

R = the sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the compound cannot be verified.

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Compound	Concentration	Associated Samples
WF022	Volatiles		BKT01001
	Acetone	8 ug/L	BKR01001
			BKG00101
			BKG00101D
			BKG00102
			BKG00103
	Methylene chloride	1 ug/L	BKG00202
	Acetone	16 ug/L	BKG00201
			BKF01001
	Acetone	14 ug/L	17T01101
			17G00102
			17G00101
			17G00201
			17G00301
			01G00101
			01G00102
			01G00102D
		ND	
	Semivolatiles	ND	-
	Pesticides/PCBs		-
WF023	Volatiles		01T01201
	Methylene chloride	2 ug/L	01G00401
	Acetone	15 ug/L	01G00201
			01G00301
			BKG00301
			02G00201
			02G00101
			18G00301
			02G00301
			02G00301D
	Semivolatiles	ND	-
	Pesticides/PCBs	ND	-
WF024	Volatiles		18T01401
	Acetone	2 ug/L	18G00101
			15G00401
			BKG00203
			15R01201
			15G00701
	Semivolatiles	ND	-
	Pesticides/PCBs	ND	-
WF025	Volatiles		15G00503DL
	Acetone	3 ug/L	15R01301
			15T01601
			15G00301
			15G00302
			15G00303
			15G00101
			15G00203
	Semivolatiles	ND	-
	Pesticides/PCBs	ND	-

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Compound	Concentration	Associated Samples
WF026	Volatiles		15T01701
	Acetone	11 ug/L	15G00202
			15G00201
			15G00802
			15G00801
			16G00201
			15G00803D
			15R01401
	Acetone	4 ug/L	15G00803
			16T01801
			16G00202
			16G00203
	Acetone	5 ug/L	16G00202DL
			16G00602
			16G00601
			16G00403
			16G00403DL
			16G00403D
			16G00403DDL
	Semivolatiles	ND	-
	Pesticides/PCBs	ND	-
WF027	Volatiles		16G00401
	Acetone	5 ug/L	16G00402
			16G00101
			16G00301
	Acetone	5 ug/L	09G00301
	Acetone	6 ug/L	16G00501
	Trichloroethene	1 ug/L	16R01501
	Xylenes (total)	2 ug/L	16G00501D
			66T02001
			66G02101
			66G02103
	Acetone	11 ug/L	16G00303
			66G02102
			09G00101
			09G00301D
	Semivolatiles	ND	-
	Pesticides/PCBs	ND	-
WF028	Volatiles		10T02101
	Acetone	5 ug/L	09G00201
			10G00201
			11G00102
			11G00401
			11T02201
			11G00301
	Acetone	11 ug/L	10G00101
			11G00402
			11G00201
			12G00201

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Compound	Concentration	Associated Samples
WF028 cont.	Acetone	5 ug/L	11G00101
	Carbon disulfide	6 ug/L	12G00101
			11R01601
			12G00101D
			11G00201D
	Semivolatiles	ND	-
	Pesticides/PCBs	ND	-
WF029	Volatiles		13T02301
	Acetone	3 ug/L	13G00101
			13R01701
	Acetone	3 ug/L	13G00102
			13G00201
			13G00103
			14G00201
			14G00101
			14G00101D
			66T02401
			66G00901
			66G00904
			66G00902
			66G00903
	Semivolatiles		
	Bis(2-ethylhexyl)phthalate	1 ug/L	All samples in SDG WF029
	Pesticides/PCBs	ND	-
WF030	Volatiles		66T02501
	Acetone	3 ug/L	66G00801
			66G00802
			66G00803
			66G00804
	Semivolatiles		
	Bis(2-ethylhexyl)phthalate	2 ug/L	All samples in SDG WF030
	Pesticides/PCBs	ND	-
WF031	Volatiles	ND	-
	Semivolatiles		
	Di-n-butylphthalate	3 ug/L	05G00801
	Bis(2-ethylhexyl)phthalate	3 ug/L	05G00802
			05G00901
			05G00902
	Di-n-butylphthalate	2 ug/L	05G01001
	Bis(2-ethylhexyl)phthalate	2 ug/L	05G00301
			05R01901
			05G01001D
	Di-n-butylphthalate	2 ug/L	05G00101
			33G00501
			33G00201
			33G00101
			33G00301
			33G00301D
	Pesticides/PCBs	ND	-

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Compound	Concentration	Associated Samples
WF031B	Volatiles	ND	-
	Semivolatiles	ND	-
	Pesticides/PCBs	ND	-
WF032	Volatiles	ND	-
	Semivolatiles		
	Di-n-butylphthalate	1 ug/L	33G00401 06G00102 06G00101 06G00301 06R02001 29G00501 29G00501D
	Di-n-butylphthalate	3 ug/L	29G00101 66G01201 66G00102
	Pesticides/PCBS	ND	-
WF033	Volatiles	ND	-
	Semivolatiles	ND	-
	Pesticides/PCBs	ND	-
WF034	Volatiles	ND	-
	Semivolatiles		
	Bis(2-ethylhexyl)phthalate	2 ug/L	66G01101 66G01301 66G00501
	Pesticides/PCBs	ND	-
WF035	Volatiles	ND	-
	Semivolatiles	ND	-
	Pesticides/PCBs	ND	-
WF036	Volatiles	ND	-
	Semivolatiles		
	Di-n-butylphthalate	2 ug/L	66G00701 54G00201 54G00101 31G00201 54R02401 54G00101D
	Pesticides/PCBs	ND	-
WF037	Volatiles	ND	-
	Semivolatiles		
	Di-n-butylphthalate	4 ug/L	All samples in SDG WF037
	Pesticides/PCBs	ND	-

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Compound	Concentration	Associated Samples
WF038	Volatiles Acetone	 7 ug/Kg	36BO0101 36BO0102 36BO0103 36BO0201 36BO0202 36BO0203 36BO0301 36BO0302 36BO0303 36BO0303D 36BO0401 36BO0402 36BO0403 36BO0403D
WF039	Volatiles Acetone Methylene chloride	 7 ug/Kg 4 ug/Kg	35BO0203D 35BO0102DL 35BO0105 35BO0201
WF040	Volatiles Acetone Bromomethane Acetone	 3 ug/L 2 ug/L 3 ug/Kg	All water samples in SDG WF040 35BO0402 35BO0501 35BO0501DL 35BO0502 37BO0201 37BO0202 37BO0101 37BO0102 37BO0103 37BO0301 37BO0302 37BO0303 37BO0203D 37BO0103D
WF041	Volatiles Pesticides & PCBs Semivolatiles Di-n-butylphthalate Bis(2-ethylhexyl)phthalate	ND ND 1 ug/L 2 ug/L	- - 13G00301 13G00401
WF042	Volatiles	ND	-
WF043	Volatiles Acetone	 6 ug/L	 33T05301 06G00102 06G00301 33G00401
WF044	Volatiles Acetone	 3 ug/L	66T05601 66G01201 66G01201D 66G00102 66G01301

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Compound	Concentration	Associated Samples
WF044 cont.	Acetone	11 ug/L	66T05701 66G00401 66G02001 66T05801 66G00603 66G00603D 66G00604 66G00601 66G00602
WF045	Volatiles		OWT05901
	Acetone	5ug/L	OWR03401 OWG00501 OWG00502 OWG00502D OWG00503 OWT06001 OWG00101 OWG00102 OWG00103 66T06101 66G02301 66G02302 66G02303
	Acetone	5 ug/L	OWT06201 OWG00302 OWG00302D OWG00303 OWG00301 OWT06401 OWT06401DL OWG00401 OWG00201
	Semivolatiles		OWR03401
	Di-n-butylphthalate	2 ug/L	OWG00501 OWG00502 OWG00502D OWG00503
	Phenol	72 ug/L	OWG00101
	2-Chlorophenol	67 ug/L	OWG00102
	1,4-Dichlorobenzene	33 ug/L	OWG00103
	N-Nitroso-di-n-propylamine	49 ug/L	
	1,2,4-Trichlorobenzene	36 ug/L	
	4-Chloro-3-methylphenol	62 ug/L	
	Acenaphthylene	12 ug/L	
	Acenaphthene	39 ug/L	
	4-Nitrophenol	69 ug/L	
	2,4-Dinitrotoluene	43 ug/L	
	Pentachlorophenol	65 ug/L	
	Pyrene	42 ug/L	
	Di-n-butylphthalate	5 ug/L	66G02301 66G02302 66G02303
	Di-n-butylphthalate	4 ug/L	OWG00401 OWG00201
	Pesticides & PCBs	ND	-

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Compound	Concentration	Associated Samples
WF046	Volatiles 2-Butanone	4 ug/L	All samples in SDG WF046
	Semivolatiles Di-n-butylphthalate	3 ug/L	31R03301 31G00101 31G00101D
	Pesticides & PCBs	ND	-
WF047	Volatiles Acetone	4 ug/L	39W028 39W027 39W024 39W032 39W034D 39W031 39T10001 39W001 39W002 39W003 39W004 39W005
WF048	Volatiles 2-Butanone	4 ug/L	39R03401
	Acetone 2-Butanone	3 ug/Kg 4 ug/Kg	39D002 39D001 39D007 39D023 39D026 39D016 39D013 39D019 39D018 39D018D 39D022
WF049	Volatiles 2-Butanone	4 ug/L	39U001
	Semivolatiles	ND	-
WF051	Volatiles 2-Butanone	4 ug/L	16T06801 16R03501
WF052	Volatiles	ND	-
WF053	Volatiles Methylene chloride	8 ug/L	15G00602D 15T07501 15G00401 15G00703 15G00703D 15G00501 15G00502 15G00503
WF054	Volatiles Acetone	4 ug/L	30T07701 30R03901 30G00302

Table VIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds			
SDG	**Compound**	**Concentration**	**Associated Samples**
WF054 cont.	Methylene chloride	8 ug/L	15T07601 15G00801 15G00801D 15G00802 15R03801 15G00803 15G00303
WF055	Volatiles	ND	-

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF022	**Client ID:** BKF01001		
	Laboratory ID: RB858010		
	Collection Date: 7/17/96		
	Type: Source blank		
	Volatiles		
	Acetone	4 ug/L	10U ug/L[1]
	Semivolatiles		
	Di-n-butylphthalate	6 ug/L	None
	Pesticides/PCBs	ND	None
WF022	**Client ID:** BKR01001		
	Laboratory ID: RB858002		
	Collection Date: 7/16/96		
	Type: Equipment rinsate		
	Volatiles	ND	None
	Semivolatiles		
	Di-n-butylphthalate	5 ug/L	None
	Bis(2-ethylhexyl)phthalate	2 ug/L	None
	Pesticides/PCBs	ND	None
WF022	**Client ID:** BKT01001		
	Laboratory ID: RB858001		
	Collection Date: 7/16/96		
	Type: Trip blank		
	Volatiles		
	Acetone	3 ug/L	10U ug/L[1]
WF022	**Client ID:** 17T01101		
	Laboratory ID: RB873001		
	Collection Date: 7/18/96		
	Type: Trip blank		
	Volatiles		
	Acetone	8 ug/L	10U ug/L[1]
WF023	**Client ID:** 01R01101		
	Laboratory ID: RB887005		
	Collection Date: 7/23/96		
	Type: Equipment rinsate		
	Volatiles		
	Acetone	4 ug/L	None
	Semivolatiles		
	Di-n-butylphthalate	6 ug/L	None
	Pesticides/PCBS	ND	None
WF023	**Client ID:** 01T01201		
	Laboratory ID: RB887001		
	Collection Date: 7/22/96		
	Type: Trip blank		
	Volatiles		
	Methylene chloride	2 ug/L	10U ug/L[1]
	Acetone	3 ug/L	10U ug/L[1]

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter		Concentration	Qualifier
WF023	**Client ID:**	16T01301		
	Laboratory ID:	RB887014		
	Collection Date:	7/25/96		
	Type:	**Trip blank**		
	Volatiles			
	Acetone		2 ug/L	None
WF024	**Client ID:**	18T01401		
	Laboratory ID:	RB92001		
	Collection Date:	7/29/96		
	Type:	**Trip blank**		
	Volatiles			
	Methylene chloride		2 ug/L	None
	Acetone		4 ug/L	10U ug/L[1]
	Chloroform		1 ug/L	None
WF024	**Client ID:**	15R01201		
	Laboratory ID:	RB920005		
	Collection Date:	7/31/96		
	Type:	**Equipment rinsate**		
	Volatiles			
	Acetone		6 ug/L	10U ug/L[1]
	Semivolatiles			
	Di-n-butylphthalate		6 ug/L	None
	Pesticides/PCBs		ND	None
WF025	**Client ID:**	15R01301		
	Laboratory ID:	RB956011		
	Collection Date:	8/7/96		
	Type:	**Equipment rinsate**		
	Volatiles		ND	None
	Semivolatiles			
	Di-n-butylphthalate		6 ug/L	None
	Pesticides/PCBs		ND	None
WF025	**Client ID:**	15T01501		
	Laboratory ID:	RB956001		
	Collection Date:	8/5/96		
	Type:	**Trip blank**		
	Volatiles			
	Methylene chloride		2 ug/L	None
	Acetone		4 ug/L	None
WF025	**Client ID:**	15T01601		
	Laboratory ID:	RB956012		
	Collection Date:	8/8/96		
	Type:	**Trip blank**		
	Volatiles			
	Methylene chloride		1 ug/L	None
	Acetone		2 ug/L	10U ug/L

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF026	**Client ID:** 15T01701 **Laboratory ID:** RB980001 **Collection Date:** 8/12/96 **Type:** Trip blank		
	Volatiles		
	Methylene chloride	1 ug/L	None
WF026	**Client ID:** 16T01801 **Laboratory ID:** RB980015 **Collection Date:** 8/15/96 **Type:** Trip blank		
	Volatiles		
	Methylene chloride	1 ug/L	None
	Acetone	3 ug/L	10U ug/L[1]
WF026	**Client ID:** 15R01401 **Laboratory ID:** RB980012 **Collection Date:** 8/14/96 **Type:** Equipment rinsate		
	Volatiles		
	Acetone	6 ug/L	10U ug/L[1]
	Semivolatiles		
	Di-n-butylphthalate	6 ug/L	None
	Pesticides/PCBS	ND	None
WF027	**Client ID:** 16T01901 **Laboratory ID:** RC016001 **Collection Date:** 8/19/96 **Type:** Trip blank		
	Volatiles		
	Methylene chloride	5 ug/L	None
	Acetone	6 ug/L	None
WF027	**Client ID:** 66T02001 **Laboratory ID:** RC016014 **Collection Date:** 8/22/96 **Type:** Trip blank		
	Volatiles		
	Methylene chloride	3 ug/L	None
WF027	**Client ID:** 16R01501 **Laboratory ID:** RC016012 **Collection Date:** 8/21/96 **Type:** Equipment rinsate		
	Volatiles	ND	None
	Semivolatiles		
	Di-n-butylphthalate	5 ug/L	None
	Pesticides/PCBs	ND	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF028	**Client ID:** 11T02201		
	Laboratory ID: RC044008		
	Collection Date: 8/28/96		
	Type: Trip blank		
	Volatiles		
	Methylene chloride	2 ug/L	None
	Acetone	8 ug/L	10U ug/L[1]
WF028	**Client ID:** 10T02101		
	Laboratory ID: RC044001		
	Collection Date: 8/26/96		
	Type: Trip blank		
	Volatiles		
	Methylene chloride	2 ug/L	None
WF028	**Client ID:** 11R01601		
	Laboratory ID: RC044016		
	Collection Date: 8/28/96		
	Type: Equipment rinsate		
	Volatiles		
	Acetone	9 ug/L	10U ug/L[1]
	Semivolatiles		
	Di-n-butylphthalate	5 ug/L	None
	Pesticides/PCBs	ND	None
WF029	**Client ID:** 13R01701		
	Laboratory ID: RC092008		
	Collection Date: 9/11/96		
	Type: Equipment rinsate		
	Volatiles		
	Acetone	3 ug/L	10U ug/L[1]
	Semivolatiles		
	Di-n-butylphthalate	5 ug/L	None
	Bis(2-ethylhexyl)phthalate	1 ug/L	10U ug/L[1]
	Pesticides/PCBs	ND	None
WF029	**Client ID:** 13T02301		
	Laboratory ID: RC092001		
	Collection Date: 9/9/96		
	Type: Trip blank		
	Volatiles		
	Methylene chloride	1 ug/L	None
	Acetone	2 ug/L	10U ug/L[1]
WF029	**Client ID:** 66T02401		
	Laboratory ID: RC092011		
	Collection Date: 9/12/96		
	Type: Trip blank		
	Volatiles		
	Methylene chloride	3 ug/L	None
	Acetone	3 ug/L	10U ug/L[1]

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF030	**Client ID:** 66R01801		
	Laboratory ID: RC121010		
	Collection Date: 9/18/96		
	Type: Equipment rinsate		
	Volatiles		
	Acetone	4 ug/L	None
	Semivolatiles		
	Di-n-butylphthalate	3 ug/L	None
	Bis(2-ethylhexyl)phthalate	1 ug/L	10U ug/L[1]
	Pesticides/PCBs	ND	None
WF030	**Client ID:** 66T02501		
	Laboratory ID: RC121001		
	Collection Date: 9/16/96		
	Type: Trip blank		
	Volatiles		
	Methylene chloride	3 ug/L	None
	Acetone	3 ug/L	10U ug/L[1]
WF030	**Client ID:** 66T02601		
	Laboratory ID: RC121012		
	Collection Date: 9/19/96		
	Type: Trip blank		
	Volatiles		
	Methylene chloride	3 ug/L	None
	Acetone	3 ug/L	None
WF031	**Client ID:** 05T02701		
	Laboratory ID: MB928001		
	Collection Date: 9/23/96		
	Type: Trip blank		
	Volatiles		
	Methylene chloride	2 ug/L	None
WF031	**Client ID:** 33T02801		
	Laboratory ID: MB958001		
	Collection Date: 9/26/96		
	Type: Trip blank		
	Volatiles		
	Methylene chloride	3 ug/L	None
WF031	**Client ID:** 05R01901		
	Laboratory ID: MB928011		
	Collection Date: 9/25/96		
	Type: Equipment rinsate		
	Volatiles	ND	None
	Semivolatiles		
	Di-n-butylphthalate	2 ug/L	10U ug/L[1]
	Pesticides/PCBs	ND	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF031B	**Client ID:** 16T04001 **Laboratory ID:** MC447002 **Collection Date:** 11/21/96 **Type:** Trip blank		
	Volatiles	ND	None
WF032	**Client ID:** 06T02901 **Laboratory ID:** MC011001 **Collection Date:** 9/30/96 **Type:** Trip blank		
	Volatiles	ND	None
WF032	**Client ID:** 29T03001 **Laboratory ID:** MC037001 **Collection Date:** 10/3/96 **Type:** Trip blank		
	Volatiles	ND	None
WF032	**Client ID:** 06R02001 **Laboratory ID:** MC011006 **Collection Date:** 10/2/96 **Type:** Equipment rinsate		
	Volatiles	ND	None
	Semivolatiles		
	Di-n-butylphthalate	3 ug/L	10U ug/L[1]
	Pesticides/PCBs	ND	None
WF033	**Client ID:** 29T03101 **Laboratory ID:** MC085001 **Collection Date:** 10/7/96 **Type:** Trip blank		
	Volatiles	ND	None
WF033	**Client ID:** 66T03201 **Laboratory ID:** MC118001 **Collection Date:** 10/10/96 **Type:** Trip blank		
	Volatiles		
	Acetone	26 ug/L	None
WF033	**Client ID:** 66R02101 **Laboratory ID:** MC02101 **Collection Date:** 10/9/96 **Type:** Equipment rinsate		
	Volatiles		
	Methylene chloride	1 ug/L	None
	Semivolatiles		
	Di-n-butylphthalate	6 ug/L	None
	Pesticides/PCBs	ND	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter		Concentration	Qualifier
WF034	**Client ID:**	66T03301		
	Laboratory ID:	MC153001		
	Collection Date:	10/14/96		
	Type:	**Trip blank**		
	Volatiles		ND	None
WF034	**Client ID:**	66T03401		
	Laboratory ID:	MC176001		
	Collection Date:	10/17/96		
	Type:	**Trip blank**		
	Volatiles		ND	None
WF034	**Client ID:**	66R02201		
	Laboratory ID:	MC153007		
	Collection Date:	10/16/96		
	Type:	**Equipment rinsate**		
	Volatiles			
	Toluene		8 ug/L	None
	Ethylbenzene		1 ug/L	None
	Xylenes (total)		2 ug/L	None
	Semivolatiles			
	Di-n-butylphthalate		2 ug/L	None
	Pesticides/PCBs		ND	None
WF035	**Client ID:**	66T03501		
	Laboratory ID:	MC214001		
	Collection Date:	10/21/96		
	Type:	**Trip blank**		
	Volatiles		ND	None
WF035	**Client ID:**	66T03601		
	Laboratory ID:	MC231001		
	Collection Date:	10/24/96		
	Type:	**Trip blank**		
	Volatiles		ND	None
WF035	**Client ID:**	66R02301		
	Laboratory ID:	MC214006		
	Collection Date:	10/23/96		
	Type:	**Equipment rinsate**		
	Volatiles		ND	None
	Semivolatiles			
	Di-n-butylphthalate		3 ug/L	None
	Pesticides/PCBs		ND	None
WF036	**Client ID:**	66T03701		
	Laboratory ID:	MC262001		
	Collection Date:	10/28/96		
	Type:	**Trip blank**		
	Volatiles		ND	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF036	**Client ID:** 31T03801 **Laboratory ID:** MC284001 **Collection Date:** 10/31/96 **Type:** Trip blank		
	Volatiles	ND	None
WF036	**Client ID:** 54R02401 **Laboratory ID:** MC262007 **Collection Date:** 10/30/96 **Type:** Equipment rinsate		
	Volatiles	ND	None
	Semivolatiles		
	Di-n-butylphthalate	4 ug/L	10U ug/L[1]
	Pesticides/PCBs	ND	ND
WF037	**Client ID:** 15T03901 **Laboratory ID:** MC424001 **Collection Date:** 11/18/96 **Type:** Trip blank		
	Volatiles	ND	None
WF037	**Client ID:** 16T04001 **Laboratory ID:** MC448004 **Collection Date:** 11/21/96 **Type:** Trip blank		
	Volatiles	ND	None
WF037	**Client ID:** 15R02501 **Laboratory ID:** MC424009 **Collection Date:** 11/20/96 **Type:** Equipment rinsate		
	Volatiles	ND	None
WF037	**Client ID:** 15F00201 **Laboratory ID:** MC424010 **Collection Date:** 11/20/96 **Type:** Source blank		
	Volatiles		
	Xylenes (total)	2 ug/L	None
	Semivolatiles		
	Di-n-butylphthalate	4 ug/L	10U ug/L[1]
	Pesticides/PCBs	ND	None
WF038	**Client ID:** 36RO2601 **Laboratory ID:** MC687016 **Collection Date:** 12/18/96 **Type:** Rinsate		
	Volatiles	ND	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF038	**Client ID:** 36TO4101 **Laboratory ID:** MC687001 **Collection Date:** 12/17/96 **Type:** Trip Blank		
	Volatiles	ND	None
WF039	**Client ID:** 35TO4201 **Laboratory ID:** MC698001 **Collection Date:** 12/19/97 **Type:** Trip Blank		
	Volatiles	ND	None
WF039	**Client ID:** 35RO2701 **Laboratory ID:** MC698011 **Collection Date:** 12/21/96 **Type:** Equipment rinsate		
	Volatiles	ND	None
WF040	**Client ID:** 35TO4301 **Laboratory ID:** MC783001 **Collection Date:** 1/7/97 **Type:** Trip blank		
	Volatiles		
	Bromomethane	1 ug/L	10U ug/L[1]
WF040	**Client ID:** 37RO2801 **Laboratory ID:** MC783017 **Collection Date:** 1/9/97 **Type:** Equipment rinsate		
	Volatiles		
	Acetone	5 ug/L	10U ug/L[1]
	Carbon disulfide	2 ug/L	None
WF041	**Client ID:** 35T04501 **Laboratory ID:** MD908001 **Collection Date:** 6/11/97 **Type:** Trip blank		
	Volatiles		
	Acetone	6 ug/L	None
WF041	**Client ID:** 37T04601 **Laboratory ID:** MD926001 **Collection Date:** 6/12/97 **Type:** Trip blank		
	Volatiles		
	Methylene chloride	1 ug/L	None
WF041	**Client ID:** 35T04701 **Laboratory ID:** MD950001 **Collection Date:** 6/15/97 **Type:** Trip blank		
	Volatiles		
	Methylene chloride	3 ug/L	None
	Xylene (total)	1 ug/L	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF041	**Client ID:** 13T04801		
	Laboratory ID: MD985001		
	Collection Date: 6/16/97		
	Type: Trip blank		
	Volatiles		
	Methylene chloride	2 ug/L	None
	Acetone	6 ug/L	None
WF041	**Client ID:** 35F00301		
	Laboratory ID: MD908002		
	Collection Date: 6/11/97		
	Type: Source blank		
	Semivolatiles		
	Di-n-butylphthalate	3 ug/L	None
	Pesticides & PCBs	**ND**	-
WF041	**Client ID:** 35R03001		
	Laboratory ID: MD908003		
	Collection Date: 6/11/97		
	Type: Equipment rinsate		
	Semivolatiles		
	Di-n-butylphthalate	4 ug/L	None
	Bis(2-ethylhexyl)phthalate	8 ug/L	None
	Pesticides & PCBs	ND	None
WF042	**Client ID:** 05T04901		
	Laboratory ID: ME007001		
	Collection Date: 6/18/97		
	Type: Trip blank		
	Volatiles	ND	None
WF042	**Client ID:** 05T05001		
	Laboratory ID: ME021001		
	Collection Date: 6/20/97		
	Type: Trip blank		
	Volatiles		
	Acetone	2 ug/L	None
WF042	**Client ID:** 05R03101		
	Laboratory ID: ME007006		
	Collection Date: 6/17/97		
	Type: Equipment rinsate		
	Volatiles	ND	None
WF043	**Client ID:** 05R03201		
	Laboratory ID: ME042002		
	Collection Date: 6/23/97		
	Type: Equipment rinsate		
	Volatiles		
	1,2-Dichloropropane	1 ug/L	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF043	**Client ID:** 05T05101 **Laboratory ID:** MW042001 **Collection Date:** 6/23/97 **Type:** Trip blank		
	Volatiles	ND	None
WF043	**Client ID:** 33T05201 **Laboratory ID:** MW053001 **Collection Date:** 6/24/97 **Type:** Trip blank		
	Volatiles		
	Acetone	3 ug/L	None
WF043	**Client ID:** 33T05301 **Laboratory ID:** ME073001 **Collection Date:** 6/25/97 **Type:** Trip blank		
	Volatiles	ND	None
WF043	**Client ID:** 30T05401 **Laboratory ID:** ME087001 **Collection Date:** 6/26/97 **Type:** Trip blank		
	Volatiles		
	Acetone	4 ug/L	None
WF044	**Client ID:** 06R03301 **Laboratory ID:** ME100002 **Collection Date:** 6/29/97 **Type:** Equipment rinsate		
	Volatiles		
	Acetone	7 ug/L	None
	Trichloroethene	6 ug/L	None
	Toluene	3 ug/L	None
	Ethylbenzene	1 ug/L	None
	Xylene (total)	2 ug/L	None
WF044	**Client ID:** 06T05501 **Laboratory ID:** ME100001 **Collection Date:** 6/29/97 **Type:** Trip blank		
	Volatiles	ND	None
WF044	**Client ID:** 66T05601 **Laboratory ID:** ME110001 **Collection Date:** 6/30/97 **Type:** Trip blank		
	Volatiles		
	Acetone	5 ug/L	10U ug/L[1]
WF044	**Client ID:** 66T05701 **Laboratory ID:** ME133001 **Collection Date:** 7/2/97 **Type:** Trip blank		
	Volatiles	ND	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF044	**Client ID:** 66T05801 **Laboratory ID:** ME135001 **Collection Date:** 7/2/97 **Type:** Trip blank		
	Volatiles		
	Acetone	3 ug/L	10U ug/L[1]
WF045	**Client ID:** OWR03401 **Laboratory ID:** ME149002 **Collection Date:** 7/7/97 **Type:** Equipment rinsate		
	Volatiles		
	Acetone	3 ug/L	10U ug/L[1]
	1,2-Dichloropropane	1 ug/L	None
	Semivolatiles		
	Di-n-butylphthalate	5 ug/L	10U ug/L[1]
	Pesticides & PCBs	ND	None
WF045	**Client ID:** OWT05901 **Laboratory ID:** ME149001 **Collection Date:** 7/7/97 **Type:** Trip blank		
	Volatiles		
	Acetone	2 ug/L	10U ug/L[1]
WF045	**Client ID:** OWT06001 **Laboratory ID:** ME159001 **Collection Date:** 7/8/97 **Type:** Trip blank		
	Volatiles	ND	None
WF045	**Client ID:** 66T06101 **Laboratory ID:** ME175001 **Collection Date:** 7/9/97 **Type:** Trip blank		
	Volatiles		
	Acetone	2 ug/L	10U ug/L[1]
WF045	**Client ID:** OWT06201 **Laboratory ID:** ME190001 **Collection Date:** 7/10/97 **Type:** Trip blank		
	Volatiles	ND	None
WF045	**Client ID:** OWT06401 **Laboratory ID:** ME226001 **Collection Date:** 7/14/97 **Type:** Trip blank		
	Volatiles		
	Acetone	250 ug/L	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF045	**Client ID:** OWT06401DL **Laboratory ID:** ME226001DL **Collection Date:** 7/14/97 **Type:** Trip blank		
	Volatiles		
	Acetone	250 ug/L	None
WF046	**Client ID:** 31R03301 **Laboratory ID:** MW241002 **Collection Date:** 7/15/97 **Type:** Equipment rinsate		
	Volatiles		
	1,2-Dichloropropane	1 ug/L	None
	Semivolatiles		
	Di-n-butylphthalate	12 ug/L	12U ug/L[1]
	Pesticides & PCBs	ND	None
WF046	**Client ID:** 31T06501 **Laboratory ID:** ME241001 **Collection Date:** 7/15/97 **Type:** Trip blank		
	Volatiles		
	Acetone	4 ug/L	None
WF046	**Client ID:** 31T06601 **Laboratory ID:** ME261001 **Collection Date:** 7/16/97 **Type:** Trip blank		
	Volatiles		
	Toluene	1 ug/L	None
WF046	**Client ID:** 31T06701 **Laboratory ID:** ME305001 **Collection Date:** 7/21/97 **Type:** Trip blank		
	Volatiles		
	Methylene chloride	1 ug/L	None
WF047	**Client ID:** STOR_BLK **Laboratory ID:** ME243008 **Collection Date:** 7/15/97 **Type:** Storage blank		
	Volatiles	ND	None
WF047	**Client ID:** STOR_BLK2 **Laboratory ID:** ME267008 **Collection Date:** 7/16/97 **Type:** Storage blank		
	Volatiles		
	Acetone	4 ug/L	None
	Toluene	0.4 ug/L	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF047	**Client ID:** 39T10001 **Laboratory ID:** ME244001 **Collection Date:** 7/15/97 **Type:** Trip blank		
	Volatiles		
	Carbon disulfide	0.40 ug/L	None
	Toluene	0.50 ug/L	None
WF048	**Client ID:** 39R03401 **Laboratory ID:** ME264009 **Collection Date:** 7/17/97 **Type:** Equipment rinsate		
	Volatiles		
	1,2-Dichloropropane	1 ug/L	None
WF049	**Client ID:** 39T10201 **Laboratory ID:** ME262001 **Collection Date:** 7/15/97 **Type:** Trip blank		
	Volatiles		
	Toluene	0.90 ug/L	None
WF049	**Client ID:** 39T10401 **Laboratory ID:** ME263007 **Collection Date:** 7/17/97 **Type:** Trip blank		
	Volatiles		
	Toluene	0.40 ug/L	None
WF051	**Client ID:** 16R03501 **Laboratory ID:** ME306002 **Collection Date:** 7/21/97 **Type:** Equipment rinsate		
	Volatiles		
	Methylene chloride	1 ug/L	None
WF051	**Client ID:** 16T06801 **Laboratory ID:** ME306001 **Collection Date:** 7/21/97 **Type:** Trip blank		
	Volatiles		
	Methylene chloride	1 ug/L	None
	Acetone	3 ug/L	None
WF051	**Client ID:** 16T06901 **Laboratory ID:** ME322001 **Collection Date:** 7/22/97 **Type:** Trip blank		
	Volatiles	ND	None
WF051	**Client ID:** 16T07001 **Laboratory ID:** ME340001 **Collection Date:** 7/23/97 **Type:** Trip blank		
	Volatiles	ND	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF051	**Client ID:** 16T07101 **Laboratory ID:** ME348001 **Collection Date:** 7/25/97 **Type:** Trip blank		
	Volatiles	ND	None
WF052	**Client ID:** STORAGEBLK **Laboratory ID:** ME346008 **Collection Date:** 7/25/97 **Type:** Storage blank		
	Volatiles		
	Methylene chloride	1 ug/L	None
	Acetone	3 ug/L	None
WF052	**Client ID:** 39T10501 **Laboratory ID:** ME346007 **Collection Date:** 7/25/97 **Type:** Trip blank		
	Volatiles	ND	None
WF053	**Client ID:** 15R03701 **Laboratory ID:** ME367002 **Collection Date:** 7/27/97 **Type:** Equipment rinsate		
	Volatiles	ND	None
WF053	**Client ID:** 15T07201 **Laboratory ID:** ME367001 **Collection Date:** 7/27/97 **Type:** Trip blank		
	Volatiles	ND	None
WF053	**Client ID:** 15T07301 **Laboratory ID:** ME377001 **Collection Date:** 7/28/97 **Type:** Trip blank		
	Volatiles	ND	None
WF053	**Client ID:** 15T07401 **Laboratory ID:** ME390001 **Collection Date:** 7/29/97 **Type:** Trip blank		
	Volatiles	ND	None
WF053	**Client ID:** 15T07501 **Laboratory ID:** ME404001 **Collection Date:** 7/30/97 **Type:** Trip blank		
	Volatiles	ND	None
WF054	**Client ID:** 15R03801 **Laboratory ID:** ME441005 **Collection Date:** 8/5/97 **Type:** Equipment rinsate		
	Volatiles	ND	None

Table IX
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Organic Compounds

SDG	Parameter	Concentration	Qualifier
WF054	**Client ID:** 30R03901 **Laboratory ID:** ME450002 **Collection Date:** 8/6/97 **Type:** Equipment rinsate		
	Volatiles		
	1,2-Dichloropropane	1 ug/L	None
WF054	**Client ID:** 15T07601 **Laboratory ID:** ME441001 **Collection Date:** 8/4/97 **Type:** Trip blank		
	Volatiles	ND	None
WF054	**Client ID:** 30T07701 **Laboratory ID:** ME450001 **Collection Date:** 8/5/97 **Type:** Trip blank		
	Volatiles	ND	None
WF055	**Client ID:** OWR04101 **Laboratory ID:** MF004002 **Collection Date:** 10/27/97 **Type:** Equipment rinsate		
	Volatiles	ND	None
WF055	**Client ID:** 13R04201 **Laboratory ID:** MF004005 **Collection Date:** 10/28/97 **Type:** Equipment rinsate		
	Volatiles	ND	None
WF055	**Client ID:** OWT08001 **Laboratory ID:** MF004001 **Collection Date:** 10/27/97 **Type:** Trip blank		
	Volatiles	ND	None

[1] = sample result was modified based on an associated method blank concentration.

Note: see detailed data validation report for the discrete qualifiers.

Table X
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike and Laboratory Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Client ID	Analyte	Criteria		% Recovery		RPD/Difference	Qualifier
			% Recovery	Difference	MS	MSD		
WF022	BKG00101	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF023	02G00301	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF024	15G00701	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF025	15G00601	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF026	15G00803	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF027	16G00501	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF028	12G00101	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF029	14G00101	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF030	66G00601	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF031	05G01001	Iron	-	±100	-	-	124.8 ug/L	J
		Lead	-	±3.0	-	-	9.2 ug/L	J
		Sodium	-	±5000	-	-	5978 ug/L	J
		Zinc	-	±20.0	-	-	174 ug/L	J
		Cyanide	75-125	-	3.7	-	-	J (det) R (ND)
WF031B	None	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF032	29G00501	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF033	66G00201	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None

Table X
Summary of Percent Recoveries (%R) and Relative Percent Differences (RPD) for Matrix Spike and Laboratory Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Client ID	Analyte	Criteria		% Recovery		RPD/Difference	Qualifier
			% Recovery	Difference	MS	MSD		
WF034	30G00301	Antimony	75-125	-	126.7	-	-	J (all detects)
		Cyanide	-	-	-	-	-	None
WF035	66G01701	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF036	54G00101	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF037	15F00201	Metals	-	-	-	-	-	None
		Cyanide	75-125	-	3.7	-	-	J (det) R (ND)
WF041	35G00101	Aluminum	-	≤100	-	-	402 ug/L	J
		Iron	-	≤100	-	-	309 ug/L	J
		Manganese	-	≤10	-	-	75.2 ug/L	J
		Cyanide	-	-	-	-	-	None
WF045	OWG00502	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF046	31G00101	Metals	-	-	-	-	-	None
		Cyanide	-	-	-	-	-	None
WF047	39W034	Metals	-	-	-	-	-	None
WF051	None	Metals	-	-	-	-	-	None
WF053	15G00602	Metals	-	-	-	-	-	None
WF054	15G00801	Metals	-	-	-	-	-	None

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF022	**Client ID**	**BKG00101**	**BKG00101D**	
	Laboratory ID	**RB858003**	**RB858004**	
	Collection Date	**7/16/96**	**7/16/96**	
	Aluminum	43.4 ug/L	54.4 ug/L	22
	Barium	15.6 ug/L	15.6 ug/L	0
	Calcium	536 ug/L	558 ug/L	4
	Iron	54.0 ug/L	57.9 ug/L	7
	Lead	ND	0.80 ug/L	Not calculable
	Magnesium	499 ug/L	521 ug/L	4
	Manganese	1.7 ug/L	1.9 ug/L	11
	Selenium	0.67 ug/L	ND	Not calculable
	Sodium	1080 ug/L	1080 ug/L	0
	Zinc	2.4 ug/L	ND	Not calculable
	Cyanide	3.8 ug/L	6.5 ug/L	52
WF022	**Client ID**	**01G00102**	**01G00102D**	
	Laboratory ID	**RB873008**	**RB873009**	
	Collection Date	**7/19/96**	**7/19/96**	
	Aluminum	19.1 ug/L	10.3 ug/L	50
	Barium	15.6 ug/L	15.6 ug/L	0
	Beryllium	0.53 ug/L	ND	Not calculable
	Calcium	5850 ug/L	6250 ug/L	7
	Copper	ND	1.4 ug/L	Not calculable
	Iron	12.2 ug/L	8.8 ug/L	32
	Lead	1.3 ug/L	1.5 ug/L	14
	Magnesium	337 ug/L	331 ug/L	2
	Manganese	6.7 ug/L	9.0 ug/L	29
	Potassium	938 ug/L	842 ug/L	11
	Sodium	2100 ug/L	2070 ug/L	1
	Vanadium	ND	1.6 ug/L	Not calculable
	Zinc	10.2 ug/L	11.4 ug/L	11
	Cyanide	1.9 ug/L	ND	Not calculable
WF023	**Client ID**	**02G00301**	**02G00301D**	
	Laboratory ID	**RB887012**	**RB887013**	
	Collection Date	**7/24/96**	**7/24/96**	
	Aluminum	79.3 ug/L	84.6 ug/L	6
	Barium	128 ug/L	129 ug/L	0.8
	Beryllium	0.39 ug/L	ND	Not calculable
	Calcium	113000 ug/L	113000 ug/L	0
	Iron	36.2 ug/L	38.7 ug/L	7
	Lead	1.4 ug/L	1.3 ug/L	7
	Magnesium	9560 ug/L	9590 ug/L	0.3
	Manganese	13.5 ug/L	13.7 ug/L	1
	Nickel	7.8 ug/L	9.6 ug/L	21
	Potassium	4610 ug/L	4580 ug/L	0.7
	Selenium	1.2 ug/L	0.66 ug/L	58
	Sodium	2200 ug/L	2240 ug/L	2
	Vanadium	3.0 ug/L	2.8 ug/L	7
	Zinc	1.8 ug/L	2.0 ug/L	11
	Cyanide	4.5 ug/L	2.0 ug/L	77

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF024	**Client ID**	**15G00701**	**15G00701D**	
	Laboratory ID	**RB920009**	**RB950010**	
	Collection Date	**7/31/96**	**7/31/96**	
	Aluminum	161 ug/L	173 ug/L	7
	Barium	15.6 ug/L	19.3 ug/L	21
	Calcium	356 ug/L	360 ug/L	1
	Chromium	2.9 ug/L	2.0 ug/L	37
	Iron	183 ug/L	202 ug/L	10
	Lead	0.70 ug/L	0.60 ug/L	15
	Magnesium	433 ug/L	422 ug/L	3
	Manganese	2.8 ug/L	2.6 ug/L	7
	Sodium	1530 ug/L	1610 ug/L	5
	Vanadium	ND	1.2 ug/L	Not calculable
	Zinc	3.4 ug/L	3.6 ug/L	6
	Cyanide	2.6 ug/L	3.2 ug/L	21
WF025	**Client ID**	**15G00601**	**15G00601D**	
	Laboratory ID	**RB956006**	**RB956008**	
	Collection Date	**8/7/96**	**8/7/96**	
	Aluminum	89.4 ug/L	55.8 ug/L	46
	Arsenic	8.0 ug/L	7.8 ug/L	2
	Barium	67.6 ug/L	63.7 ug/L	6
	Calcium	3690 ug/L	3620 ug/L	2
	Iron	31000 ug/L	30500 ug/L	2
	Lead	0.90 ug/L	0.50U ug/L	Not calculable
	Magnesium	1940 ug/L	1900 ug/L	2
	Manganese	139 ug/L	136 ug/L	2
	Potassium	2460 ug/L	2340 ug/L	5
	Sodium	2630 ug/L	2590 ug/L	2
	Zinc	3.4 ug/L	3.3 ug/L	3
	Cyanide	1.5U ug/L	8.1 ug/L	Not calculable
WF026	**Client ID**	**15G00803**	**15G00803D**	
	Laboratory ID	**RB980007**	**RB980008**	
	Collection Date	**8/14/96**	**8/14/96**	
	Aluminum	187 ug/L	146 ug/L	25
	Barium	10.6 ug/L	10.8 ug/L	2
	Calcium	1440 ug/L	1170 ug/L	21
	Chromium	2.9 ug/L	2.0U ug/L	Not calculable
	Cobalt	2.3U ug/L	2.4 ug/L	Not calculable
	Copper	4.0 ug/L	2.4 ug/L	50
	Iron	194 ug/L	175 ug/L	10
	Lead	0.80 ug/L	0.50 ug/L	46
	Magnesium	322 ug/L	296 ug/L	8
	Manganese	33.1 ug/L	32.9 ug/L	0.6
	Potassium	522 ug/L	316U ug/L	Not calculable
	Sodium	5350 ug/L	5380 ug/L	0.6
	Vanadium	2.0 ug/L	1.5 ug/L	29
	Zinc	176 ug/L	178 ug/L	1
	Cyanide	1.6 ug/L	4.2 ug/L	90

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF026	**Client ID**	**16G00403**	**16G00403D**	
	Laboratory ID	**RB980020**	**RB980021**	
	Collection Date	**8/16/96**	**8/16/96**	
	Aluminum	278 ug/L	290 ug/L	4
	Arsenic	1.0 ug/L	0.50U ug/L	Not calculable
	Barium	28.6 ug/L	27.5 ug/L	4
	Calcium	3110 ug/L	3300 ug/L	6
	Chromium	2.3 ug/L	2.9 ug/L	23
	Copper	1.1U ug/L	1.3 ug/L	Not calculable
	Iron	1370 ug/L	879 ug/L	44
	Lead	4.0 ug/L	2.7 ug/L	39
	Magnesium	1320 ug/L	987 ug/L	29
	Manganese	41.3 ug/L	33.5 ug/L	21
	Potassium	540 ug/L	713 ug/L	28
	Sodium	2570 ug/L	2590 ug/L	0.8
	Vanadium	2.2 ug/L	1.2U ug/L	Not calculable
	Zinc	103 ug/L	945 ug/L	161
	Cyanide	2.9 ug/L	1.6 ug/L	58
WF027	**Client ID**	**16G00501**	**16G00501D**	
	Laboratory ID	**RC016009**	**RC016013**	
	Collection Date	**8/21/96**	**8/21/96**	
	Aluminum	12.6 ug/L	16.7 ug/L	28
	Barium	10 ug/L	10 ug/L	0
	Calcium	239 ug/L	234 ug/L	2
	Cobalt	3.2 ug/L	2.3U ug/L	Not calculable
	Iron	9.2 ug/L	5.3 ug/L	54
	Magnesium	276 ug/L	261 ug/L	6
	Manganese	1.0U ug/L	2.1 ug/L	Not calculable
	Sodium	1550 ug/L	1450 ug/L	7
	Zinc	2.6 ug/L	1.6 ug/L	48
WF027	**Client ID**	**09G00301**	**09G00301D**	
	Laboratory ID	**RC016019**	**RC016020**	
	Collection Date	**8/23/96**	**8/23/96**	
	Aluminum	407 ug/L	372 ug/L	9
	Antimony	8.6U ug/L	9.3 ug/L	Not calculable
	Arsenic	2.6 ug/L	2.8 ug/L	7
	Barium	27.1 ug/L	25.8 ug/L	5
	Calcium	15300 ug/L	14600 ug/L	5
	Chromium	4.0 ug/L	2.4 ug/L	50
	Iron	173 ug/L	148 ug/L	16
	Lead	0.50U ug/L	0.60 ug/L	Not calculable
	Magnesium	158 ug/L	160 ug/L	1
	Manganese	1.5 ug/L	1.7 ug/L	12
	Potassium	2390 ug/L	2010 ug/L	17
	Sodium	2070 ug/L	1950 ug/L	6
	Vanadium	16.4 ug/L	14.3 ug/L	14
	Zinc	14.8 ug/L	1.2 ug/L	170

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF028	**Client ID**	**12G00101**	**12G00101D**	
	Laboratory ID	**RC044012**	**RC044017**	
	Collection Date	**8/27/96**	**8/27/96**	
	Aluminum	14.0 ug/L	15.1 ug/L	8
	Barium	14.5 ug/L	14.5 ug/L	0
	Calcium	1840 ug/L	1870 ug/L	2
	Lead	0.60 ug/L	0.50U ug/L	Not calculable
	Magnesium	320 ug/L	327 ug/L	2
	Manganese	1.0U ug/L	1.4 ug/L	Not calculable
	Potassium	2220 ug/L	2290 ug/L	3
	Sodium	2310 ug/L	2360 ug/L	2
	Thallium	0.70 ug/L	0.60U ug/L	Not calculable
	Zinc	6.7 ug/L	5.5 ug/L	20
	Cyanide	1.8U ug/L	2.1 ug/L	Not calculable
WF028	**Client ID**	**11G00201**	**11G00201D**	
	Laboratory ID	**RC044011**	**RC044018**	
	Collection Date	**8/28/96**	**8/28/96**	
	Aluminum	2770 ug/L	2320 ug/L	18
	Arsenic	1.7 ug/L	2.0 ug/L	16
	Barium	50.3 ug/L	51.6 ug/L	3
	Beryllium	0.40 ug/L	0.30U ug/L	Not calculable
	Calcium	35400 ug/L	41800 ug/L	17
	Chromium	20.4 ug/L	19.2 ug/L	6
	Copper	2.0 ug/L	3.1 ug/L	43
	Iron	232 ug/L	337 ug/L	37
	Lead	0.50U ug/L	0.90 ug/L	Not calculable
	Magnesium	388 ug/L	538 ug/L	32
	Manganese	2.2 ug/L	4.8 ug/L	74
	Potassium	12900 ug/L	9610 ug/L	29
	Sodium	3420 ug/L	2950 ug/L	15
	Vanadium	11.0 ug/L	11.0 ug/L	0
	Zinc	3.4 ug/L	24.3 ug/L	151
	Cyanide	1.5U ug/L	3.3 ug/L	Not calculable
WF029	**Client ID**	**14G00101**	**14G00101D**	
	Laboratory ID	**RC092007**	**RC092009**	
	Collection Date	**9/11/96**	**9/11/96**	
	Aluminum	33.1 ug/L	26.5 ug/L	22
	Arsenic	0.50 ug/L	0.50U ug/L	Not calculable
	Barium	22.3 ug/L	22.3 ug/L	0
	Calcium	3060 ug/L	2870 ug/L	6
	Iron	22.0 ug/L	27.3 ug/L	22
	Lead	1.3 ug/L	0.80 ug/L	48
	Magnesium	702 ug/L	691 ug/L	2
	Manganese	1.9 ug/L	1.9 ug/L	0
	Mercury	0.12 ug/L	0.10U ug/L	Not calculable
	Sodium	1590 ug/L	1570 ug/L	1
	Vanadium	1.2U ug/L	1.4 ug/L	Not calculable
	Zinc	89.5 ug/L	96.8 ug/L	8

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF030	**Client ID**	**66G00601**	**66G00601D**	
	Laboratory ID	**RC121007**	**RC121011**	
	Collection Date	**9/18/96**	**9/18/96**	
	Aluminum	39.9 ug/L	39.7 ug/L	**0.5**
	Barium	38.1 ug/L	36.2 ug/L	**5**
	Calcium	863 ug/L	770 ug/L	**11**
	Copper	1.8 ug/L	1.1U ug/L	**Not calculable**
	Iron	8.2 ug/L	41.9 ug/L	**134**
	Lead	0.90 ug/L	0.50U ug/L	**Not calculable**
	Magnesium	1130 ug/L	1110 ug/L	**2**
	Manganese	5.0 ug/L	4.6 ug/L	**8**
	Potassium	860 ug/L	689 ug/L	**22**
	Selenium	0.64 ug/L	0.60U ug/L	**Not calculable**
	Sodium	1280 ug/L	1160 ug/L	**10**
	Zinc	2.9 ug/L	4.8 ug/L	**49**
WF030	**Client ID**	**66G02203**	**66G02203D**	
	Laboratory ID	**RC121016**	**RC121017**	
	Collection Date	**9/20/96**	**9/20/96**	
	Aluminum	44.0 ug/L	51.9 ug/L	16
	Barium	6.4 ug/L	6.4 ug/L	0
	Calcium	751 ug/L	731 ug/L	3
	Cobalt	2.3U ug/L	2.4 ug/L	Not calculable
	Iron	35.6 ug/L	38.9 ug/L	9
	Magnesium	271 ug/L	242 ug/L	11
	Manganese	9.7 ug/L	9.7 ug/L	0
	Potassium	491 ug/L	316U ug/L	Not calculable
	Sodium	2810 ug/L	2760 ug/L	2
	Zinc	1.2 ug/L	2.2 ug/L	59
	Cyanide	1.8U ug/L	12.0 ug/L	Not calculable
WF031	**Client ID**	**05G01001**	**05G01001D**	
	Laboratory ID	**MB928007**	**MB928012**	
	Collection Date	**9/25/96**	**9/25/96**	
	Barium	27.6 ug/L	27.1 ug/L	2
	Calcium	854 ug/L	803 ug/L	6
	Chromium	0.61 ug/L	0.36 ug/L	52
	Cobalt	0.85 ug/L	0.72 ug/L	17
	Copper	35.6 ug/L	1.7U ug/L	Not calculable
	Iron	40.1 ug/L	31.8U ug/L	Not calculable
	Lead	4.4 ug/L	1.8U ug/L	Not calculable
	Magnesium	874 ug/L	871 ug/L	0.6
	Manganese	3.3 ug/L	2.5 ug/L	28
	Mercury	0.03 ug/L	0.04 ug/L	29
	Nickel	1.4 ug/L	1.4 ug/L	0
	Potassium	3.1U ug/L	825 ug/L	Not calculable
	Selenium	5.4 ug/L	3.9U ug/L	Not calculable
	Sodium	15100 ug/L	14900 ug/L	1
	Thallium	7.4 ug/L	1.9U ug/L	Not calculable
	Vanadium	0.58U ug/L	0.63 ug/L	Not calculable
	Zinc	13.7 ug/L	3.8 ug/L	113

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF031	**Client ID**	**33G00301**	**33G00301D**	
	Laboratory ID	**MB958006**	**MB958007**	
	Collection Date	**9/27/96**	**9/27/96**	
	Aluminum	156	98.7	45
	Antimony	3.5	3.4U	Not calculable
	Barium	59.3	59.9	1
	Calcium	2230	2230	0
	Chromium	0.88	0.34U	Not calculable
	Cobalt	0.70	0.49	35
	Iron	107	50.6	72
	Magnesium	1750	1760	0.6
	Manganese	21.2	21.5	1
	Potassium	31.8	1040	188
	Sodium	5370	5550	3
	Thallium	2.9	3.4	16
	Vanadium	1.0	0.58U	Not calculable
	Zinc	7.4	7.2	3
WF032	**Client ID**	**29G00501**	**29G00501D**	
	Laboratory ID	**MC011007**	**MC011008**	
	Collection Date	**10/2/96**	**10/2/96**	
	Barium	89.7 ug/L	84.2 ug/L	6
	Beryllium	0.14 ug/L	0.19 ug/L	30
	Calcium	1580 ug/L	1470 ug/L	7
	Chromium	2.1 ug/L	2.8 ug/L	29
	Cobalt	0.94 ug/L	0.98 ug/L	4
	Copper	2.7 ug/L	4.4 ug/L	48
	Magnesium	2500 ug/L	2320 ug/L	7
	Manganese	8.4 ug/L	8.0 ug/L	5
	Mercury	0.04 ug/L	0.04 ug/L	0
	Sodium	5040 ug/L	5030 ug/L	0.2
	Zinc	5.1 ug/L	3.8 ug/L	29
	Cyanide	1.0 ug/L	1.2 ug/L	18
WF033	**Client ID**	**66G00201**	**66G00201D**	
	Laboratory ID	**MC118002**	**MC118003**	
	Collection Date	**10/9/96**	**10/9/96**	
	Barium	20.8 ug/L	20.7 ug/L	0.5
	Calcium	3250 ug/L	3100 ug/L	5
	Chromium	0.75 ug/L	0.44 ug/L	52
	Copper	1.7U ug/L	2.7 ug/L	Not calculable
	Iron	73.8 ug/L	31.8U ug/L	Not calculable
	Magnesium	456 ug/L	457 ug/L	0.2
	Manganese	3.4 ug/L	3.2 ug/L	6
	Mercury	0.03 ug/L	0.03 ug/L	0
	Potassium	648 ug/L	1920 ug/L	99
	Sodium	3040 ug/L	3020 ug/L	0.7
	Zinc	3.6 ug/L	6.0 ug/L	50

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF034	**Client ID**	**30G00301**	**30G00301D**	
	Laboratory ID	**MC153005**	**MC153008**	
	Collection Date	**10/16/96**	**10/16/96**	
	Barium	28.0 ug/L	27.8 ug/L	0.7
	Beryllium	0.20 ug/L	0.13U ug/L	Not calculable
	Calcium	1530 ug/L	1480 ug/L	3
	Copper	11.0 ug/L	3.2 ug/L	110
	Iron	626 ug/L	634 ug/L	1
	Lead	3.8 ug/L	2.4 ug/L	45
	Magnesium	642 ug/L	650 ug/L	1
	Manganese	20.7 ug/L	21.0 ug/L	1
	Mercury	0.04 ug/L	0.05 ug/L	22
	Potassium	1880 ug/L	2680 ug/L	35
	Sodium	4600 ug/L	4490 ug/L	2
	Zinc	5.5 ug/L	4.4 ug/L	22
WF035	**Client ID**	**66G01701**	**66G01701D**	
	Laboratory ID	**MC214005**	**MC214007**	
	Collection Date	**10/23/96**	**10/23/96**	
	Aluminum	24.3 ug/L	30.9 ug/L	24
	Barium	10.2 ug/L	10.7 ug/L	5
	Calcium	766 ug/L	816 ug/L	6
	Copper	1.7U ug/L	22.5 ug/L	Not calculable
	Iron	343 ug/L	348 ug/L	1
	Lead	2.0U ug/L	2.6 ug/L	Not calculable
	Magnesium	320 ug/L	324 ug/L	1
	Manganese	4.2 ug/L	5.4 ug/L	25
	Mercury	0.03 ug/L	0.03 ug/L	0
	Selenium	4.0 ug/L	3.9U ug/L	Not calculable
	Sodium	7660 ug/L	7790 ug/L	2
	Zinc	2.5 ug/L	26.3 ug/L	165
WF036	**Client ID**	**54G00101**	**54G00101D**	
	Laboratory ID	**MC262004**	**MC262008**	
	Collection Date	**10/30/96**	**10/30/96**	
	Aluminum	87.6 ug/L	91.6 ug/L	4
	Barium	75.2 ug/L	74.3 ug/L	1
	Beryllium	0.18 ug/L	0.18 ug/L	0
	Calcium	1680 ug/L	1660 ug/L	1
	Chromium	1.2 ug/L	1.0 ug/L	2
	Cobalt	0.90 ug/L	1.4 ug/L	43
	Magnesium	1950 ug/L	1920 ug/L	2
	Manganese	13.9 ug/L	12.9 ug/L	7
	Mercury	0.02 ug/L	0.01U ug/L	Not calculable
	Potassium	2410 ug/L	2530 ug/L	5
	Sodium	2110 ug/L	2070 ug/L	2
	Zinc	4.5 ug/L	3.5 ug/L	25

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF041	**Client ID**	**35G00101**	**35G00101D**	
	Laboratory ID	**MD908004**	**MD908005**	
	Collection Date	**6/11/97**	**6/11/97**	
	Aluminum	47.8 ug/L	45.2 ug/L	6
	Barium	78.8 ug/L	79.0 ug/L	0.2
	Calcium	3150 ug/L	3240 ug/L	3
	Copper	8.2 ug/L	6.8 ug/L	19
	Iron	15.9 ug/L	19.0 ug/L	18
	Lead	1.7 ug/L	0.93U ug/L	Not calculable
	Magnesium	2340 ug/L	2370 ug/L	1
	Manganese	28.7 ug/L	28.9 ug/L	0.7
	Sodium	4330 ug/L	4430 ug/L	2
	Thallium	1.9 ug/L	0.89U ug/L	Not calculable
	Zinc	12.1 ug/L	130 ug/L	166
	Cyanide	ND	ND	-
WF041	**Client ID**	**35G00202**	**35G00202D**	
	Laboratory ID	**MD950002**	**MD950003**	
	Collection Date	**6/15/97**	**6/15/97**	
	Aluminum	65.0 ug/L	50.7 ug/L	25
	Barium	24.8 ug/L	25.3 ug/L	2
	Calcium	973 ug/L	1030 ug/L	6
	Copper	5.6 ug/L	3.5 ug/L	46
	Iron	180 ug/L	196 ug/L	8
	Lead	0.93U ug/L	1.9 ug/L	Not calculable
	Magnesium	813 ug/L	819 ug/L	0.7
	Manganese	9.5 ug/L	9.3 ug/L	2
	Selenium	1.8U ug/L	2.6 ug/L	Not calculable
	Sodium	20900 ug/L	21700 ug/L	4
	Thallium	1.0 ug/L	0.89U ug/L	Not calculable
	Zinc	18.7 ug/L	15.4 ug/L	19
	Cyanide	ND	ND	-
WF045	**Client ID**	**OWG00502**	**OWG00502D**	
	Laboratory ID	**ME149004**	**ME149005**	
	Collection Date	**7/8/97**	**7/8/97**	
	Aluminum	175 ug/L	160 ug/L	9
	Barium	7.3 ug/L	7.1 ug/L	3
	Calcium	648 ug/L	585 ug/L	10
	Copper	2.9 ug/L	4.4 ug/L	41
	Iron	106 ug/L	97.1 ug/L	9
	Magnesium	308 ug/L	317 ug/L	3
	Manganese	3.3 ug/L	3.5 ug/L	6
	Nickel	7.8 ug/L	7.7U ug/L	Not calculable
	Sodium	1990 ug/L	2060 ug/L	3
	Zinc	4.5 ug/L	4.7 ug/L	4
	Cyanide	ND	ND	-

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF045	**Client ID**	**OWG00302**	**OWG00302D**	
	Laboratory ID	**ME190002**	**ME190003**	
	Collection Date	**7/10/97**	**7/10/97**	
	Aluminum	31.5 ug/L	16.6U ug/L	Not calculable
	Barium	10.2 ug/L	10.5 ug/L	3
	Calcium	460 ug/L	454 ug/L	1
	Iron	83.3 ug/L	51.1 ug/L	48
	Lead	1.9 ug/L	1.2U ug/L	Not calculable
	Magnesium	286 ug/L	300 ug/L	5
	Manganese	3.0 ug/L	3.0 ug/L	0
	Sodium	1670 ug/L	1670 ug/L	0
	Zinc	3.4 ug/L	3.8 ug/L	11
	Cyanide	ND	ND	-
WF046	**Client ID**	**31G00101**	**31G00101D**	
	Laboratory ID	**ME241003**	**ME241004**	
	Collection Date	**7/15/97**	**7/15/97**	
	Aluminum	96.0 ug/L	91.1 ug/L	5
	Barium	22.6 ug/L	22.5 ug/L	0.4
	Calcium	857 ug/L	851 ug/L	0.7
	Copper	1.3U ug/L	1.4 ug/L	Not calculable
	Iron	120 ug/L	103 ug/L	15
	Magnesium	662 ug/L	675 ug/L	2
	Manganese	9.7 ug/L	9.9 ug/L	2
	Potassium	1910 ug/L	2200 ug/L	15
	Sodium	1760 ug/L	1890 ug/L	7
	Vanadium	1.8 ug/L	1.7U ug/L	Not calculable
	Zinc	3.5 ug/L	9.8 ug/L	95
	Cyanide	ND	ND	-
WF047	**Client ID**	**39W034**	**39W034D**	
	Laboratory ID	**ME243005**	**ME243006**	
	Collection Date	**7/15/97**	**7/15/97**	
	Aluminum	94.0 ug/L	76.3 ug/L	21
	Barium	22.9 ug/L	22.8 ug/L	0.4
	Calcium	1030 ug/L	1010 ug/L	2
	Copper	8.2 ug/L	1.3U ug/L	Not calculable
	Iron	747 ug/L	751 ug/L	0.5
	Magnesium	871 ug/L	854 ug/L	2
	Manganese	12.5 ug/L	12.6 ug/L	0.8
	Sodium	2210 ug/L	2090 ug/L	6
	Zinc	14.7 ug/L	3.0 ug/L	132
WF051	**Client ID**	**16G00101**	**16G00101D**	
	Laboratory ID	**ME340009**	**ME340010**	
	Collection Date	**7/24/97**	**7/24/97**	
	Barium	20.5 ug/L	20.7 ug/L	1
	Calcium	514 ug/L	520 ug/L	1
	Copper	1.7 ug/L	1.7 ug/L	0
	Iron	11.2 ug/L	14.7 ug/L	27
	Magnesium	617 ug/L	623 ug/L	1
	Manganese	3.2 ug/L	3.0 ug/L	6
	Sodium	2130 ug/L	2110 ug/L	1
	Zinc	3.2 ug/L	8.2 ug/L	88

Table XI
Summary of Relative Percent Differences (RPD) for Original and Field Duplicate Samples
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

SDG	Inorganic Analytes			RPD
WF053	**Client ID**	**15G00602**	**15G00602D**	
	Laboratory ID	**ME367004**	**ME367005**	
	Collection Date	**7/27/97**	**7/27/97**	
	Aluminum	16.6U ug/L	29.9 ug/L	Not calculable
	Barium	13.0 ug/L	13.0 ug/L	0
	Calcium	676 ug/L	675 ug/L	0.1
	Chromium	3.3 ug/L	4.2 ug/L	24
	Iron	33.8 ug/L	92.6 ug/L	93
	Magnesium	504 ug/L	490 ug/L	3
	Manganese	2.3 ug/L	2.7 ug/L	16
	Sodium	2870 ug/L	2740 ug/L	5
	Zinc	3.1 ug/L	3.4 ug/L	9
WF053	**Client ID**	**15G00703**	**15G00703D**	
	Laboratory ID	**ME404003**	**ME404004**	
	Collection Date	**7/30/97**	**7/30/97**	
	Aluminum	43.6 ug/L	108 ug/L	14
	Antimony	17.3U ug/L	21.2 ug/L	Not calculable
	Barium	6.6 ug/L	6.2 ug/L	6
	Calcium	587 ug/L	549 ug/L	7
	Chromium	10.6 ug/L	13.4 ug/L	23
	Copper	2.9 ug/L	4.5 ug/L	43
	Iron	107 ug/L	115 ug/L	7
	Lead	0.93U ug/L	5.1 ug/L	Not calculable
	Magnesium	280 ug/L	266 ug/L	5
	Manganese	6.9 ug/L	6.5 ug/L	6
	Nickel	10.9 ug/L	20.3 ug/L	60
	Sodium	2040 ug/L	1820 ug/L	11
	Zinc	5.2 ug/L	6.1 ug/L	16
WF054	**Client ID**	**15G00801**	**15G00801D**	
	Laboratory ID	**ME441002**	**ME441003**	
	Collection Date	**8/4/97**	**8/4/97**	
	Aluminum	143 ug/L	116 ug/L	21
	Arsenic	2.0 ug/L	1.1U ug/L	Not calculable
	Barium	34.7 ug/L	37.3 ug/L	7
	Calcium	1870 ug/L	2010 ug/L	7
	Copper	5.2 ug/L	2.6 ug/L	67
	Iron	4760 ug/L	4940 ug/L	4
	Magnesium	1370 ug/L	1470 ug/L	7
	Manganese	84.6 ug/L	91.4 ug/L	8
	Mercury	0.04U ug/L	0.07 ug/L	Not calculable
	Sodium	1830 ug/L	1960 ug/L	7
	Thallium	0.89U ug/L	0.90 ug/L	Not calculable
	Zinc	8.5 ug/L	6.6 ug/L	25

Table XII
Summary of Analytes Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Date	Analyte	Initial Calibration r	Continuing Calibration %R	Qualifier
WF022	All	Metals Cyanide	- -	- -	None None
WF023	All	Metals Cyanide	- -	- -	None None
WF024	All	Metals Cyanide	- -	- -	None None
WF025	All	Metals Cyanide	- -	- -	None None
WF026	All	Metals Cyanide	- -	- -	None None
WF027	All	Metals Cyanide	- -	- -	None None
WF028	All	Metals Cyanide	- -	- -	None None
WF029	All	Metals Cyanide	- -	- -	None None
WF030	All	Metals Cyanide	- -	- -	None None
WF031	All	Metals Cyanide	- -	- -	None None
WF031B	All	Metals Cyanide	- -	- -	None None
WF032	All	Metals Cyanide	- -	- -	None None
WF033	All	Metals Cyanide	- -	- -	None None
WF034	All	Metals Cyanide	- -	- -	None None
WF035	All	Metals Cyanide	- -	- -	None None
WF036	All	Metals Cyanide	- -	- -	None None
WF037	All	Metals Cyanide	- -	- -	None None
WF041	All	Metals Cyanide	- -	- -	None None
WF045	All	Metals Cyanide	- -	- -	None None
WF046	All	Metals Cyanide	- -	- -	None None
WF047	All	Metals	-	-	None
WF051	All	Metals	-	-	None

Table XII
Summary of Analytes Exceeding Instrument Calibration
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes					
SDG	**Date**	**Analyte**	**Initial Calibration r**	**Continuing Calibration %R**	**Qualifier**
WF053	All	Metals	-	-	None
WF054	All	Metals	-	-	None

Notes: r = correlation coefficient for initial calibrations

%R = percent recovery for continuing calibrations

J = the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample because QC criteria were not met (validation "J").

UJ = the analyte was not detected above the reported sample IDL. However, the reported sample is approximate; the analyte concentration may not reliably be presumed to be less than the IDL value.

R = the sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF022	Aluminum	6.240 ug/L	All samples in SDG WF022
	Iron	12.320 ug/L	
	Lead	0.500 ug/L	
	Sodium	38.890 ug/L	
	Zinc	3.660 ug/L	
WF023	Arsenic	-0.500 ug/L	All samples in SDG WF023
	Iron	5.980 ug/L	
	Lead	1.200 ug/L	
	Sodium	34.400 ug/L	
	Zinc	1.200 ug/L	
WF024	Aluminum	10.600 ug/L	All samples in SDG WF024
	Iron	13.190 ug/L	
	Lead	0.500 ug/L	
	Sodium	37.550 ug/L	
WF025	Aluminum	13.650 ug/L	All samples in SDG WF025
	Beryllium	-0.320 ug/L	
	Iron	7.390 ug/L	
	Selenium	0.650 ug/L	
	Zinc	1.610 ug/L	
WF026	Aluminum	17.380 ug/L	All samples in SDG WF026
	Calcium	119.520 ug/L	
	Iron	10.050 ug/L	
	Magnesium	22.940 ug/L	
	Mercury	0.140 ug/L	
	Sodium	41.280 ug/L	
	Zinc	2.510 ug/L	
	Mercury	0.20 ug/L	All samples in SDG WF026
WF027	Aluminum	18.000 ug/L	All samples in SDG WF027
	Antimony	9.280 ug/L	
	Arsenic	0.500 ug/L	
	Calcium	94.550 ug/L	
	Sodium	28.990 ug/L	
	Vanadium	1.280 ug/L	
	Mercury	0.21 ug/L	All samples in SDG WF027
WF028	Aluminum	51.600 ug/L	All samples in SDG WF028
	Antimony	-10.930 ug/L	
	Calcium	113.470 ug/L	
	Magnesium	45.540 ug/L	
	Mercury	0.140 ug/L	
	Potassium	498.120 ug/L	
	Sodium	43.870 ug/L	
	Zinc	1.230 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF029	Aluminum	10.6 ug/L	All samples in SDG WF029
	Barium	3.0 ug/L	
	Cobalt	2.7 ug/L	
	Iron	21.4 ug/L	
	Vanadium	1.4 ug/L	
	Cobalt	2.7 ug/L	All samples in SDG WF029
	Vanadium	1.6 ug/L	
	Mercury	-0.1 ug/L	All samples in SDG WF029
	Iron	5.3 ug/L	All samples in SDG WF029
	Vanadium	1.6 ug/L	
	Calcium	153.810 ug/L	All samples in SDG WF029
	Cobalt	2.390 ug/L	
	Iron	11.590 ug/L	
	Sodium	37.260 ug/L	
	Zinc	1.630 ug/L	
WF030	Calcium	59.580 ug/L	All samples in SDG WF030
	Iron	6.080 ug/L	
	Sodium	54.620 ug/L	
WF031	Mercury	0.030 ug/L	All samples in SDG WF031
	Potassium	-617.8 ug/L	
	Silver	-1.2 ug/L	
	Thallium	3.3 ug/L	
	Mercury	0.047 ug/L	All samples in SDG WF031
	Potassium	34.4 ug/L	
	Silver	-1.6 ug/L	
	Thallium	3.7 ug/L	
	Mercury	0.055 ug/L	All samples in SDG WF031
	Potassium	542.9 ug/L	
	Silver	-1.4 ug/L	
	Mercury	0.070 ug/L	All samples in SDG WF031
	Potassium	-21.4 ug/L	
	Silver	-1.3 ug/L	
	Thallium	3.5 ug/L	
	Mercury	0.047 ug/L	All samples in SDG WF031
	Potassium	-411.210 ug/L	
	Mercury	0.085 ug/L	All samples in SDG WF031
	Potassium	955.8 ug/L	
	Silver	-2.5 ug/L	
	Thallium	3.2 ug/L	
	Mercury	0.127 ug/L	All samples in SDG WF031
	Mercury	0.130 ug/L	All samples in SDG WF031
	Mercury	-0.030 ug/L	All samples in SDG WF031
	Potassium	-335.53 ug/L	
	Silver	-1.420 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF031 cont.	Arsenic	-6.4 ug/L	All samples in SDG WF031
	Chromium	-0.4 ug/L	
	Mercury	0.034 ug/L	
	Potassium	171.0 ug/L	
	Thallium	5.1 ug/L	
	Vanadium	1.4 ug/L	
	Mercury	0.016 ug/L	All samples in SDG WF031
	Potassium	342.4 ug/L	
	Silver	-1.2 ug/L	
	Thallium	5.2 ug/L	
	Vanadium	0.8 ug/L	
	Chromium	-0.7 ug/L	All samples in SDG WF031
	Mercury	0.011 ug/L	
	Potassium	308.7 ug/L	
	Thallium	6.2 ug/L	
	Vanadium	0.7 ug/L	
	Barium	-0.2 ug/L	All samples in SDG WF031
	Chromium	-0.6 ug/L	
	Mercury	-0.021 ug/L	
	Potassium	377.6 ug/L	
	Thallium	7.2 ug/L	
	Mercury	0.014 ug/L	All samples in SDG WF031
	Arsenic	-6.7 ug/L	All samples in SDG WF031
	Barium	-0.2 ug/L	
	Chromium	-0.8 ug/L	
	Mercury	-0.032 ug/L	
	Nickel	-1.4 ug/L	
	Potassium	441.5 ug/L	
	Thallium	5.7 ug/L	
	Vanadium	0.6 ug/L	
WF031B	Copper	604 ug/L	All samples in SDG WF031B
	Aluminum	-19.5 ug/L	All samples in SDG WF031B
	Barium	0.4 ug/L	
	Copper	4.4 ug/L	
	Manganese	0.4 ug/L	
	Barium	0.4 ug/L	All samples in SDG WF031B
	Copper	6.6 ug/L	
	Iron	3.5 ug/L	
	Mercury	0.0 ug/L	
	Nickel	9.5 ug/L	
	Sodium	10.6 ug/L	
	Barium	25.130 ug/L	All samples in SDG WF031B
	Beryllium	-0.830 ug/L	
	Calcium	129.890 ug/L	
	Copper	8.310 ug/L	
	Iron	8.680 ug/L	
	Magnesium	25.430 ug/L	
	Manganese	0.490 ug/L	
	Silver	2.970 ug/L	
	Sodium	84.450 ug/L	
	Vanadium	2.060 ug/L	
	Zinc	3.100 ug/L	
	Cyanide	-0.981 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF032	Copper	4.5 ug/L	All samples in SDG WF032
	Manganese	0.5 ug/L	
	Mercury	0.0242 ug/L	
	Potassium	-1595.8 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF032
	Cobalt	0.3 ug/L	
	Copper	5.5 ug/L	
	Manganese	0.7 ug/L	
	Mercury	0.0265 ug/L	
	Sodium	17.3 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF032
	Copper	4.9 ug/L	
	Manganese	0.6 ug/L	
	Mercury	0.0255 ug/L	
	Potassium	1914.8 ug/L	
	Sodium	11.6 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF032
	Copper	5.6 ug/L	
	Manganese	0.6 ug/L	
	Mercury	-0.0178 ug/L	
	Sodium	17.4 ug/L	
	Barium	1.210 ug/L	All samples in SDG WF032
	Chromium	2.750 ug/L	
	Copper	3.390 ug/L	
	Manganese	0.410 ug/L	
	Mercury	0.015 ug/L	
	Sodium	856.490 ug/L	
	Zinc	2.310 ug/L	
	Barium	0.3 ug/L	All samples in SDG WF032
	Beryllium	0.1 ug/L	
	Cobalt	0.4 ug/L	
	Copper	5.8 ug/L	
	Manganese	0.2 ug/L	
	Barium	0.3 ug/L	All samples in SDG WF032
	Beryllium	0.1 ug/L	
	Copper	5.8 ug/L	
	Manganese	0.4 ug/L	
	Mercury	-0.0874 ug/L	
	Nickel	2.0 ug/L	
	Sodium	11.5 ug/L	
	Barium	0.2 ug/L	All samples in SDG WF032
	Beryllium	0.1 ug/L	
	Copper	5.6 ug/L	
	Manganese	0.5 ug/L	
	Thallium	2.6 ug/L	
	Barium	0.3 ug/L	All samples in SDG WF032
	Beryllium	0.3 ug/L	
	Cobalt	0.6 ug/L	
	Copper	7.0 ug/L	
	Manganese	0.8 ug/L	
	Nickel	1.4 ug/L	
	Thallium	4.3 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF032 cont.	Aluminum	107.660 ug/L	All samples in SDG WF032
	Antimony	4.320 ug/L	
	Barium	1.760 ug/L	
	Cadmium	1.660 ug/L	
	Calcium	105.840 ug/L	
	Cobalt	0.430 ug/L	
	Copper	12.450 ug/L	
	Iron	54.350 ug/L	
	Magnesium	103.090 ug/L	
	Manganese	0.280 ug/L	
	Sodium	154.770 ug/L	
	Zinc	9.120 ug/L	
	Antimony	4.3 ug/L	All samples in SDG WF032
	Barium	0.4 ug/L	
	Beryllium	0.3 ug/L	
	Copper	5.2 ug/L	
	Manganese	0.6 ug/L	
	Sodium	10.2 ug/L	All samples in SDG WF032
WF033	Barium	0.3 ug/L	All samples in SDG WF033
	Beryllium	0.1 ug/L	
	Cobalt	0.4 ug/L	
	Copper	5.8 ug/L	
	Manganese	0.2 ug/L	
	Mercury	0.07 ug/L	
	Potassium	-1595.8 ug/L	
	Barium	0.3 ug/L	All samples in SDG WF033
	Beryllium	0.1 ug/L	
	Copper	5.8 ug/L	
	Manganese	0.4 ug/L	
	Mercury	0.04 ug/L	
	Potassium	655.4 ug/L	
	Barium	0.2 ug/L	All samples in SDG WF033
	Beryllium	0.1 ug/L	
	Copper	5.6 ug/L	
	Manganese	0.5 ug/L	
	Mercury	0.05 ug/L	
	Potassium	1914.8 ug/L	
	Thallium	2.6 ug/L	
	Barium	0.3 ug/L	All samples in SDG WF033
	Beryllium	0.3 ug/L	
	Cobalt	0.6 ug/L	
	Copper	7.0 ug/L	
	Manganese	0.8 ug/L	
	Potassium	425.8 ug/L	
	Thallium	4.3 ug/L	
	Aluminum	164.460 ug/L	All samples in SDG WF033
	Barium	1.220 ug/L	
	Calcium	107.040 ug/L	
	Copper	2.900 ug/L	
	Iron	33.430 ug/L	
	Magnesium	82.790 ug/L	
	Manganese	0.330 ug/L	
	Potassium	1602.780 ug/L	
	Sodium	221.450 ug/L	
	Zinc	1.660 ug/L	

Table XIII
Summary of Method Blank Contamination
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Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF033 cont.	Mercury	0.06 ug/L	All samples in SDG WF033
	Barium	0.4 ug/L	All samples in SDG WF033
	Beryllium	0.3 ug/L	
	Copper	5.2 ug/L	
	Manganese	0.6 ug/L	
	Mercury	0.05 ug/L	
	Potassium	163.8 ug/L	
	Antimony	4.810 ug/L	All samples in SDG WF033
	Barium	0.460 ug/L	
	Copper	2.870 ug/L	
	Manganese	0.330 ug/L	
	Potassium	509.990 ug/L	
	Sodium	137.200 ug/L	
	Zinc	3.200 ug/L	
	Barium	0.8 ug/L	All samples in SDG WF033
	Beryllium	0.6 ug/L	
	Cadmium	0.8 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.0 ug/L	
	Potassium	1734.0 ug/L	
	Thallium	2.4 ug/L	
	Vanadium	1.1 ug/L	
	Barium	1.2 ug/L	All samples in SDG WF033
	Beryllium	0.8 ug/L	
	Cadmium	0.9 ug/L	
	Chromium	1.2 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.3 ug/L	
	Potassium	1605.5 ug/L	
	Thallium	3.4 ug/L	
	Vanadium	1.8 ug/L	
	Barium	1.1 ug/L	All samples in SDG WF033
	Beryllium	0.8 ug/L	
	Cadmium	0.8 ug/L	
	Chromium	1.1 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.2 ug/L	
	Potassium	768.8 ug/L	
	Thallium	3.2 ug/L	
	Vanadium	1.7 ug/L	
	Barium	0.7 ug/L	All samples in SDG WF033
	Beryllium	0.7 ug/L	
	Cadmium	0.6 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	0.8 ug/L	
	Manganese	1.0 ug/L	
	Potassium	314.6 ug/L	
	Vanadium	1.2 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF033 cont.	Barium	1.0 ug/L	All samples in SDG WF033
	Beryllium	0.6 ug/L	
	Cadmium	0.6 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	1.0 ug/L	
	Manganese	1.0 ug/L	
	Potassium	684.9 ug/L	
	Thallium	2.2 ug/L	
	Vanadium	1.2 ug/L	
	Barium	0.9 ug/L	All samples in SDG WF033
	Beryllium	0.7 ug/L	
	Cadmium	0.7 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	1.0 ug/L	
	Manganese	1.0 ug/L	
	Potassium	722.1 ug/L	
	Thallium	3.4 ug/L	
	Vanadium	1.2 ug/L	
WF034	Copper	5.8 ug/L	All samples in SDG WF034
	Mercury	0.023 ug/L	
	Copper	5.8 ug/L	All samples in SDG WF034
	Manganese	0.4 ug/L	
	Mercury	0.017 ug/L	
	Beryllium	0.1 ug/L	All samples in SDG WF034
	Copper	5.6 ug/L	
	Manganese	0.5 ug/L	
	Mercury	0.030 ug/L	
	Beryllium	0.3 ug/L	All samples in SDG WF034
	Copper	7.0 ug/L	
	Manganese	0.8 ug/L	
	Mercury	0.042 ug/L	
	Sodium	10.2 ug/L	
	Barium	0.460 ug/L	66G02001
	Copper	2.870 ug/L	66G00302
	Sodium	137.200 ug/L	66G01801
	Zinc	3.200 ug/L	30G00301
	Cyanide	-1.327 ug/L	30G00401
			66R02201
			30G00301D
	Mercury	0.024 ug/L	All samples in SDG WF034
	Beryllium	0.3 ug/L	All samples in SDG WF034
	Copper	5.2 ug/L	
	Manganese	0.6 ug/L	
	Mercury	0.026 ug/L	
	Mercury	0.040 ug/L	All samples in SDG WF034
	Mercury	0.033 ug/L	All samples in SDG WF034

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Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF034 cont.	Arsenic	-13.610 ug/L	66G01101
	Barium	1.700 ug/L	66G01301
	Beryllium	-0.710 ug/L	66G00501
	Calcium	108.610 ug/L	66G00501F
	Copper	1.700 ug/L	
	Lead	-8.620 ug/L	
	Manganese	0.790 ug/L	
	Selenium	10.810 ug/L	
	Sodium	70.400 ug/L	
	Zinc	3.200 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF034
	Silver	3.3 ug/L	
	Sodium	11.9 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF034
	Manganese	0.4 ug/L	
	Silver	2.2 ug/L	
	Sodium	12.2 ug/L	
	Beryllium	0.5 ug/L	All samples in SDG WF034
	Copper	1.9 ug/L	
	Manganese	0.6 ug/L	
	Sodium	20.0 ug/L	
	Beryllium	0.1 ug/L	All samples in SDG WF034
	Silver	2.6 ug/L	
	Sodium	17.3 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF034
	Manganese	0.4 ug/L	
	Sodium	9.7 ug/L	
WF035	Barium	0.8 ug/L	All samples in SDG WF035
	Beryllium	0.6 ug/L	
	Manganese	1.0 ug/L	
	Mercury	0.0239 ug/L	
	Thallium	2.4 ug/L	
	Barium	1.2 ug/L	All samples in SDG WF035
	Beryllium	0.8 ug/L	
	Manganese	1.3 ug/L	
	Mercury	0.0256 ug/L	
	Thallium	3.4 ug/L	
	Barium	1.1 ug/L	All samples in SDG WF035
	Beryllium	0.8 ug/L	
	Manganese	1.2 ug/L	
	Mercury	0.0401 ug/L	
	Thallium	3.2 ug/L	
	Barium	0.7 ug/L	All samples in SDG WF035
	Beryllium	0.7 ug/L	
	Manganese	1.0 ug/L	
	Mercury	0.334 ug/L	
	Aluminum	101.120 ug/L	All samples in SDG WF035
	Barium	0.410 ug/L	
	Iron	56.400 ug/L	
	Manganese	0.430 ug/L	
	Sodium	152.450 ug/L	
	Zinc	2.190 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF035 cont.	Barium	1.0 ug/L	All samples in SDG WF035
	Beryllium	0.6 ug/L	
	Manganese	1.0 ug/L	
	Mercury	0.0250 ug/L	
	Thallium	2.2 ug/L	
	Barium	0.9 ug/L	All samples in SDG WF035
	Beryllium	0.7 ug/L	
	Manganese	1.0 ug/L	
	Thallium	3.4 ug/L	
	Barium	0.570 ug/L	All samples in SDG WF035
	Beryllium	-0.910 ug/L	
	Calcium	109.820 ug/L	
	Copper	5.470 ug/L	
	Manganese	0.720 ug/L	
	Zinc	4.400 ug/L	
	Manganese	0.6 ug/L	All samples in SDG WF035
	Manganese	0.4 ug/L	All samples in SDG WF035
	Barium	0.4 ug/L	All samples in SDG WF035
	Beryllium	-0.2 ug/L	
	Manganese	0.6 ug/L	
	Beryllium	-0.2 ug/L	All samples in SDG WF035
	Manganese	0.6 ug/L	
	Beryllium	-0.2 ug/L	All samples in SDG WF035
	Manganese	0.4 ug/L	
WF036	Aluminum	17.7 ug/L	All samples in SDG WF036
	Barium	0.8 ug/L	
	Beryllium	0.6 ug/L	
	Cadmium	0.8 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.0 ug/L	
	Mercury	0.0265 ug/L	
	Thallium	2.4 ug/L	
	Vanadium	1.1 ug/L	
	Aluminum	18.4 ug/L	All samples in SDG WF036
	Barium	1.2 ug/L	
	Beryllium	0.8 ug/L	
	Cadmium	0.9 ug/L	
	Chromium	1.2 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.3 ug/L	
	Mercury	0.0251 ug/L	
	Thallium	3.4 ug/L	
	Vanadium	1.8 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF036 cont.	Aluminum	14.7 ug/L	All samples in SDG WF036
	Barium	1.1 ug/L	
	Beryllium	0.8 ug/L	
	Cadmium	0.8 ug/L	
	Chromium	1.1 ug/L	
	Cobalt	1.1 ug/L	
	Manganese	1.2 ug/L	
	Mercury	0.0165 ug/L	
	Thallium	3.2 ug/L	
	Vanadium	1.7 ug/L	
	Barium	0.7 ug/L	All samples in SDG WF036
	Beryllium	0.7 ug/L	
	Cadmium	0.6 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	0.8 ug/L	
	Manganese	1.0 ug/L	
	Mercury	0.0157 ug/L	
	Vanadium	1.2 ug/L	
	Aluminum	63.950 ug/L	All samples in SDG WF036
	Barium	0.730 ug/L	
	Chromium	0.490 ug/L	
	Manganese	0.430 ug/L	
	Mercury	0.014 ug/L	
	Potassium	1817.440 ug/L	
	Cyanide	-1.333 ug/L	
	Barium	1.0 ug/L	All samples in SDG WF036
	Beryllium	0.6 ug/L	
	Cadmium	0.6 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	1.0 ug/L	
	Manganese	1.0 ug/L	
	Thallium	2.2 ug/L	
	Vanadium	1.2 ug/L	
	Aluminum	91.5 ug/L	All samples in SDG WF036
	Barium	0.9 ug/L	
	Beryllium	0.7 ug/L	
	Cadmium	0.7 ug/L	
	Chromium	0.9 ug/L	
	Cobalt	1.0 ug/L	
	Manganese	1.0 ug/L	
	Thallium	3.4 ug/L	
	Vanadium	1.2 ug/L	
WF037	Copper	6.4 ug/L	All samples in SDG WF037
	Aluminum	-19.5 ug/L	All samples in SDG WF037
	Barium	0.4 ug/L	
	Copper	4.4 ug/L	
	Barium	0.4 ug/L	All samples in SDG WF037
	Copper	6.6 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF037 cont.	Barium	25.130 ug/L	All samples in SDG WF037
	Beryllium	-0.830 ug/L	
	Calcium	129.890 ug/L	
	Copper	8.310 ug/L	
	Iron	8.680 ug/L	
	Magnesium	25.430 ug/L	
	Manganese	0.490 ug/L	
	Silver	2.970 ug/L	
	Sodium	84.450 ug/L	
	Vanadium	2.060 ug/L	
	Zinc	3.100 ug/L	
	Cyanide	-0.981 ug/L	
WF041	Cyanide	-0.6 ug/L	All samples in SDG WF041
	Barium	0.5 ug/L	All samples in SDG WF041
	Sodium	12.2 ug/L	All samples in SDG WF041
	Cyanide	-0.4 ug/L	
	Barium	0.7 ug/L	All samples in SDG WF041
	Sodium	16.3 ug/L	
	Beryllium	-1.010 ug/L	All samples in SDG WF041
	Calcium	133.200 ug/L	
	Copper	3.740 ug/L	
	Iron	9.490 ug/L	
	Lead	1.260 ug/L	
	Sodium	93.470 ug/L	
	Thallium	1.310 ug/L	
	Zinc	19.070 ug/L	
	Cyanide	-1.002 ug/L	
	Barium	-0.6 ug/L	All samples in SDG WF041
	Chromium	-2.9 ug/L	
	Copper	-1.7 ug/L	
	Magnesium	-22.9 ug/L	
	Silver	-2.8 ug/L	
	Vanadium	-3.0 ug/L	
	Copper	6.4 ug/L	All samples in SDG WF041
	Thallium	1.4 ug/L	
	Vanadium	-1.9 ug/L	
	Cobalt	8.9 ug/L	All samples in SDG WF041
	Thallium	1.6 ug/L	
	Cyanide	-0.4 ug/L	
	Beryllium	-0.830 ug/L	All samples in SDG WF041
	Calcium	105.800 ug/L	
	Iron	3.860 ug/L	
	Selenium	-3.230 ug/L	
	Sodium	15.150 ug/L	
	Vanadium	-2.240 ug/L	
	Zinc	0.940 ug/L	
	Selenium	-3.4 ug/L	All samples in SDG WF041
	Thallium	-1.3 ug/L	
	Lead	1.2 ug/L	All samples in SDG WF041
	Selenium	-2.6 ug/L	
	Cyanide	-0.4 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes			
SDG	**Analyte**	**Concentration**	**Associated Samples**
WF041 cont.	Selenium	-3.1 ug/L	All samples in SDG WF041
	Thallium	1.3 ug/L	
	Selenium	-2.8 ug/L	All samples in SDG WF041
	Cyanide	-0.5 ug/L	
	Thallium	-1.0 ug/L	All samples in SDG WF041
	Cyanide	-0.4 ug/L	
	Cyanide	0.4 ug/L	All samples in SDG WF041
	Cyanide	0.4 ug/L	All samples in SDG WF041
	Cyanide	0.4 ug/L	All samples in SDG WF041
WF045	Cyanide	-0.6 ug/L	All samples in SDG WF045
	Cyanide	-0.6 ug/L	All samples in SDG WF045
	Manganese	0.4 ug/L	All samples in SDG WF045
	Vanadium	1.8 ug/L	All samples in SDG WF045
	Beryllium	-0.860 ug/L	All samples in SDG WF045
	Calcium	136.80 ug/L	
	Iron	5.390 ug/L	
	Sodium	32.780 ug/L	
	Vanadium	-1.730 ug/L	
	Zinc	3.340 ug/L	
	Cyanide	-1.013 ug/L	
	Mercury	0.1 ug/L	All samples in SDG WF045
	Cyanide	-0.6 ug/L	All samples in SDG WF045
	Thallium	1.1 ug/L	All samples in SDG WF045
	Cyanide	-0.6 ug/L	
	Cyanide	-0.6 ug/L	All samples in SDG WF045
	Aluminum	17.320 ug/L	All samples in SDG WF045
	Barium	0.450 ug/L	
	Beryllium	-0.550 ug/L	
	Calcium	121.820 ug/L	
	Iron	6.770 ug/L	
	Sodium	45.700 ug/L	
	Thallium	-1.390 ug/L	
	Zinc	2.510 ug/L	
	Cyanide	-0.899 ug/L	
	Beryllium	0.2 ug/L	OWG00401
	Manganese	0.5 ug/L	OWG00201
	Sodium	17.2 ug/L	
	Beryllium	0.2 ug/L	OWG00401
	Manganese	0.7 ug/L	OWG00201
	Sodium	12.2 ug/L	
	Zinc	1.0 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF045 cont.	Barium	0.9 ug/L	OWG00401
	Beryllium	0.5 ug/L	OWG00201
	Chromium	3.0 ug/L	
	Manganese	1.0 ug/L	
	Sodium	19.9 ug/L	
	Thallium	1.2 ug/L	
	Vanadium	2.0 ug/L	
	Zinc	1.6 ug/L	
	Cyanide	-0.377 ug/L	OWG00401 OWG00201
	Beryllium	0.2 ug/L	OWG00401
	Sodium	11.0 ug/L	OWG00201
	Selenium	-2.2 ug/L	OWG00401 OWG00201
	Thallium	-1.0 ug/L	OWG00401 OWG00201
WF046	Beryllium	0.2 ug/L	All samples in SDG WF046
	Sodium	17.2 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF046
	Mercury	0.040 ug/L	
	Sodium	12.2 ug/L	
	Beryllium	0.5 ug/L	All samples in SDG WF046
	Mercury	0.043 ug/L	
	Sodium	19.9 ug/L	
	Aluminum	17.320 ug/L	All samples in SDG WF046
	Barium	0.450 ug/L	
	Beryllium	-0.550 ug/L	
	Calcium	121.820 ug/L	
	Iron	6.770 ug/L	
	Sodium	45.700 ug/L	
	Thallium	-1.390 ug/L	
	Zinc	2.510 ug/L	
	Boron	-0.377 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF046
	Sodium	11.0 ug/L	
WF047	Beryllium	0.2 ug/L	All samples in SDG WF047
	Manganese	0.5 ug/L	
	Mercury	0.1 ug/L	
	Sodium	17.2 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF047
	Manganese	0.7 ug/L	
	Sodium	12.2 ug/L	
	Zinc	1.0 ug/L	
	Barium	0.9 ug/L	All samples in SDG WF047
	Beryllium	0.5 ug/L	
	Chromium	3.0 ug/L	
	Manganese	1.0 ug/L	
	Sodium	19.9 ug/L	
	Thallium	1.1 ug/L	
	Vanadium	2.0 ug/L	
	Zinc	1.6 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF047 cont.	Aluminum	17.320 ug/L	All samples in SDG WF047
	Barium	0.450 ug/L	
	Beryllium	-0.550 ug/L	
	Calcium	121.820 ug/L	
	Iron	6.770 ug/L	
	Sodium	45.700 ug/L	
	Thallium	-1.390 ug/L	
	Zinc	2.510 ug/L	
	Beryllium	0.2 ug/L	All samples in SDG WF047
	Sodium	11.0 ug/L	
	Selenium	-2.2 ug/L	All samples in SDG WF047
WF051	Barium	1.0 ug/L	All samples in SDG WF051
	Beryllium	0.2 ug/L	
	Chromium	3.4 ug/L	
	Copper	1.5 ug/L	
	Manganese	0.5 ug/L	
	Silver	2.8 ug/L	
	Vanadium	2.4 ug/L	
	Manganese	-0.5 ug/L	All samples in SDG WF051
	Mercury	0.04 ug/L	
	Vanadium	1.8 ug/L	
	Arsenic	1.1 ug/L	All samples in SDG WF051
	Mercury	0.04 ug/L	
	Selenium	-1.9 ug/L	
	Manganese	-0.5 ug/L	All samples in SDG WF051
	Mercury	0.07 ug/L	
	Beryllium	-0.800 ug/L	All samples in SDG WF051
	Calcium	140.860 ug/L	
	Iron	5.470 ug/L	
	Sodium	36.740 ug/L	
	Zinc	1.980 ug/L	
	Mercury	0.08 ug/L	All samples in SDG WF051
	Silver	-2.4 ug/L	
	Aluminum	16.800 ug/L	All samples in SDG WF051
	Barium	0.600 ug/L	
	Beryllium	-0.680 ug/L	
	Calcium	127.440 ug/L	
	Chromium	3.050 ug/L	
	Cobalt	2.850 ug/L	
	Copper	2.120 ug/L	
	Iron	10.740 ug/L	
	Manganese	0.690 ug/L	
	Silver	3.040 ug/L	
	Sodium	54.160 ug/L	
	Vanadium	2.700 ug/L	
	Zinc	2.710 ug/L	
	Calcium	42.0 ug/L	All samples in SDG WF051

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF051 cont.	Barium	0.6 ug/L	All samples in SDG WF051
	Beryllium	0.4 ug/L	
	Cobalt	2.6 ug/L	
	Copper	1.7 ug/L	
	Manganese	0.9 ug/L	
	Zinc	1.2 ug/L	
	Manganese	0.7 ug/L	All samples in SDG WF051
	Arsenic	-1.130 ug/L	All samples in SDG WF051
	Beryllium	-0.720 ug/L	
	Calcium	131.080 ug/L	
	Iron	12.060 ug/L	
	Zinc	4.540 ug/L	
	Lead	-1.3 ug/L	All samples in SDG WF051
	Lead	-1.4 ug/L	All samples in SDG WF051
	Magnesium	0.5 ug/L	
	Lead	-1.6 ug/L	All samples in SDG WF051
	Aluminum	18.640 ug/L	All samples in SDG WF051
	Barium	0.490 ug/L	
	Beryllium	-0.760 ug/L	
	Calcium	134.210 ug/L	
	Chromium	3.850 ug/L	
	Iron	35.410 ug/L	
	Manganese	0.500 ug/L	
	Sodium	35.200 ug/L	
	Zinc	2.300 ug/L	
	Lead	-2.0 ug/L	All samples in SDG WF051
	Vanadium	2.0 ug/L	
	Barium	0.9 ug/L	All samples in SDG WF051
	Beryllium	0.3 ug/L	
	Lead	-2.0 ug/L	
	Manganese	0.7 ug/L	
	Sodium	9.2 ug/L	
	Sodium	15.0 ug/L	All samples in SDG WF051
	Arsenic	-1.6 ug/L	All samples in SDG WF051
WF053	Aluminum	18.640 ug/L	All samples in SDG WF053
	Barium	0.490 ug/L	
	Beryllium	-0.760 ug/L	
	Calcium	134.210 ug/L	
	Chromium	3.850 ug/L	
	Iron	35.410 ug/L	
	Manganese	0.500 ug/L	
	Sodium	35.200 ug/L	
	Zinc	2.330 ug/L	

Table XIII
Summary of Method Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Analyte	Concentration	Associated Samples
WF053 cont.	Barium	-0.760 ug/L	All samples in SDG WF053
	Calcium	138.650 ug/L	
	Chromium	3.750 ug/L	
	Copper	3.390 ug/L	
	Iron	14.500 ug/L	
	Manganese	0.490 ug/L	
	Nickel	8.370 ug/L	
	Sodium	42.790 ug/L	
	Zinc	2.940 ug/L	
	Aluminum	26.970 ug/L	All samples in SDG WF053
	Beryllium	-0.710 ug/L	
	Calcium	151.990 ug/L	
	Iron	16.430 ug/L	
	Manganese	0.580 ug/L	
	Silver	4.360 ug/L	
	Sodium	52.750 ug/L	
	Zinc	3.720 ug/L	
	Beryllium	-0.970 ug/L	All samples in SDG WF053
	Calcium	130.780 ug/L	
	Copper	1.480 ug/L	
	Iron	19.510 ug/L	
	Lead	-1.380 ug/L	
	Manganese	0.780 ug/L	
	Sodium	13.170 ug/L	
	Zinc	6.090 ug/L	
	Aluminum	52.990 ug/L	All samples in SDG WF053
	Arsenic	1.300 ug/L	
	Beryllium	-0.940 ug/L	
	Calcium	198.990 ug/L	
	Chromium	6.790 ug/L	
	Copper	2.230 ug/L	
	Iron	38.980 ug/L	
	Lead	-1.460 ug/L	
	Manganese	1.000 ug/L	
	Sodium	60.080 ug/L	
	Zinc	2.040 ug/L	
WF054	Mercury	0.1 ug/L	All samples in SDG WF054
	Mercury	0.1 ug/L	All samples in SDG WF054
	Mercury	0.1 ug/L	All samples in SDG WF054
	Beryllium	-0.980 ug/L	All samples in SDG WF054
	Calcium	110.890 ug/L	
	Iron	9.300 ug/L	
	Mercury	0.052 ug/L	
	Vanadium	-2.660 ug/L	
	Zinc	2.260 ug/L	

Table XIV
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter	Concentration	Qualifier
WF022	**Client ID:** BKR01001		
	Laboratory ID: RB858002		
	Collection Date: 7/16/96		
	Type: Equipment rinsate		
	Sodium	43.4 ug/L	None
	Aluminum	55.9 ug/L	23.9U ug/L[1]
	Calcium	69.0 ug/L	None
	Iron	23.9 ug/L	43.4U ug/L[1]
	Magnesium	39.7 ug/L	None
	Mercury	0.10 ug/L	None
	Zinc	1.2 ug/L	1.2U ug/L[1]
WF022	**Client ID:** BKF01001		
	Laboratory ID: RB858010		
	Collection Date: 7/17/96		
	Type: Source blank		
	Sodium	61.3 ug/L	61.3U ug/L[1]
WF023	**Client ID:** 01R01101		
	Laboratory ID: RB887005		
	Collection Date: 7/23/96		
	Type: Equipment rinsate		
	Aluminum	13.3 ug/L	None
	Iron	10.8 ug/L	10.8U ug/L[1]
	Zinc	1.2 ug/L	1.2U ug/L[1]
	Cyanide	2.6 ug/L	None
WF024	**Client ID:** 15R01201		
	Laboratory ID: RB920005		
	Collection Date: 7/31/96		
	Type: Equipment rinsate		
	Aluminum	13.8 ug/L	13.8U ug/L[1]
	Iron	10.5 ug/L	10.5U ug/L[1]
	Sodium	55.4 ug/L	55.4U ug/L[1]
	Cyanide	2.6 ug/L	None
WF025	**Client ID:** 15R01301		
	Laboratory ID: RB956011		
	Collection Date: 8/7/96		
	Type: Equipment rinsate		
	Iron	5.3 ug/L	5.3U ug/L[1]
	Sodium	26.6 ug/L	None
	Zinc	1.8 ug/L	1.8U ug/L[1]
WF026	**Client ID:** 15R01401		
	Laboratory ID: RB980012		
	Collection Date: 8/14/96		
	Type: Equipment rinsate		
	Iron	14.8 ug/L	14.8U ug/L[1]
	Zinc	1.1 ug/L	1.1U ug/L[1]
	Cyanide	1.8 ug/L	None

Table XIV
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter		Concentration	Qualifier
WF027	**Client ID:**	16R01501		
	Laboratory ID:	RC016012		
	Collection Date:	8/21/96		
	Type:	Equipment rinsate		
	Arsenic		0.50 ug/L	0.50U ug/L[1]
	Calcium		64.0 ug/L	64.0U ug/L[1]
	Lead		0.80 ug/L	None
	Sodium		26.9 ug/L	26.9U ug/L[1]
	Zinc		1.8 ug/L	None
WF028	**Client ID:**	11R01601		
	Laboratory ID:	RC044016		
	Collection Date:	8/28/96		
	Type:	Equipment rinsate		
	Calcium		67.2 ug/L	67.2U ug/L[1]
	Sodium		30.8 ug/L	30.8U ug/L[1]
	Cyanide		1.5 ug/L	None
WF029	**Client ID:**	13R01701		
	Laboratory ID:	RC092008		
	Collection Date:	9/11/96		
	Type:	Equipment rinsate		
	Calcium		66.4 ug/L	66.4U ug/L[1]
	Sodium		25.4 ug/L	25.4U ug/L[1]
	Zinc		1.8 ug/L	1.8U ug/L[1]
WF030	**Client ID:**	66R01801		
	Laboratory ID:	RC121010		
	Collection Date:	9/18/96		
	Type:	Equipment rinsate		
	Calcium		55.7 ug/L	55.7U ug/L[1]
	Iron		9.2 ug/L	9.2U ug/L[1]
	Selenium		0.68 ug/L	None
	Sodium		24.9 ug/L	24.9U ug/L[1]
	Zinc		2.0 ug/L	None
WF031	**Client ID:**	05R01901		
	Laboratory ID:	MB928011		
	Collection Date:	9/25/96		
	Type:	Equipment rinsate		
	Barium		0.34 ug/L	None
	Manganese		0.38 ug/L	None
	Mercury		0.06 ug/L	0.06U ug/L[1]
	Zinc		2.0 ug/L	None
WF032	**Client ID:**	06R02001		
	Laboratory ID:	MC011006		
	Collection Date:	10/2/96		
	Type:	Equipment rinsate		
	Barium		2.8 ug/L	2.8U ug/L[1]
	Chromium		2.5 ug/L	2.5U ug/L[1]
	Copper		2.9 ug/L	2.9U ug/L[1]
	Manganese		0.48 ug/L	0.48U ug/L[1]
	Mercury		0.01 ug/L	0.01U ug/L[1]
	Sodium		365 ug/L	None
	Zinc		3.0 ug/L	3.0U ug/L[1]
	Cyanide		1.4 ug/L	None

Table XIV
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter	Concentration	Qualifier
WF033	**Client ID:** 66R02101		
	Laboratory ID: MC085007		
	Collection Date: 10/9/96		
	Type: Equipment rinsate		
	Barium	1.6 ug/L	1.6U ug/L[1]
	Beryllium	0.32 ug/L	0.32U ug/L[1]
	Chromium	0.55 ug/L	0.55U ug/L[1]
	Cobalt	0.84 ug/L	0.84U ug/L[1]
	Manganese	2.4 ug/L	2.4U ug/L[1]
	Potassium	777 ug/L	777U ug/L[1]
	Sodium	334 ug/L	334U ug/L[1]
	Vanadium	0.63 ug/L	0.63U ug/L[1]
	Zinc	1.4 ug/L	1.4U ug/L[1]
WF034	**Client ID:** 66R0201		
	Laboratory ID: MC153007		
	Collection Date: 10/16/96		
	Type: Equipment rinsate		
	Barium	0.56 ug/L	0.56 ug/L[1]
	Manganese	0.44 ug/L	0.44 ug/L[1]
	Mercury	0.02 ug/L	0.02 ug/L[1]
	Sodium	119 ug/L	119 ug/L[1]
	Zinc	2.2 ug/L	2.2 ug/L[1]
WF035	**Client ID:** 66R02301		
	Laboratory ID: MC214006		
	Collection Date: 10/23/96		
	Type: Equipment rinsate		
	Aluminum	30.7 ug/L	30.7 ug/L[1]
	Barium	1.3 ug/L	1.3 ug/L[1]
	Calcium	101 ug/L	101 ug/L[1]
	Manganese	0.94 ug/L	0.94 ug/L[1]
	Mercury	0.03 ug/L	0.03 ug/L[1]
	Sodium	100 ug/L	100 ug/L[1]
	Zinc	2.4 ug/L	2.4 ug/L[1]
WF036	**Client ID:** 54R02401		
	Laboratory ID: MC262007		
	Collection Date: 10/30/96		
	Type: Equipment rinsate		
	Aluminum	14.8 ug/L	14.8 ug/L[1]
	Barium	0.59 ug/L	0.59 ug/L[1]
	Chromium	0.48 ug/L	0.48 ug/L[1]
	Manganese	0.32 ug/L	0.32 ug/L[1]
	Potassium	756 ug/L	756 ug/L[1]
	Sodium	265 ug/L	None
	Zinc	1.4 ug/L	None
WF037	**Client ID:** 15F00201		
	Laboratory ID: MC424010		
	Collection Date: 12/2/96		
	Type: Source blank		
	Barium	1.2 ug/L	None
	Calcium	111 ug/L	None
	Copper	6.8 ug/L	None
	Manganese	0.43 ug/L	None
	Sodium	95.7 ug/L	None
	Zinc	2.6 ug/L	None

Table XIV
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter	Concentration	Qualifier
WF041	**Client ID:** 35F00301		
	Laboratory ID: MD908002		
	Collection Date: 6/11/97		
	Type: Source blank		
	Barium	0.78 ug/L	None
	Calcium	164 ug/L	164U ug/L[1]
	Copper	10.3 ug/L	10.3U ug/L[1]
	Iron	35.6 ug/L	35.6U ug/L[1]
	Lead	1.0 ug/L	1.0U ug/L[1]
	Manganese	0.88 ug/L	None
	Sodium	129 ug/L	129U ug/L[1]
	Zinc	13.3 ug/L	13.3U ug/L[1]
WF041	**Client ID:** 35R03001		
	Laboratory ID: MD908003		
	Collection Date: 6/11/97		
	Type: Equipment rinsate		
	Barium	1.0 ug/L	None
	Calcium	165 ug/L	165U ug/L[1]
	Copper	4.9 ug/L	4.9U ug/L[1]
	Iron	10.7 ug/L	10.7U ug/L[1]
	Manganese	1.2 ug/L	None
	Sodium	148 ug/L	148U ug/L[1]
	Thallium	1.7 ug/L	1.7U ug/L[1]
	Zinc	15.8 ug/L	15.8U ug/L[1]
WF045	**Client ID:** OWR03401		
	Laboratory ID: ME149002		
	Collection Date: 7/7/97		
	Type: Equipment rinsate		
	Barium	0.44 ug/L	0.44U ug/L[1]
	Calcium	133 ug/L	133U ug/L[1]
	Copper	1.8 ug/L	None
	Iron	7.1 ug/L	7.1U ug/L[1]
	Sodium	60.4 ug/L	60.4U ug/L[1]
	Zinc	1.7 ug/L	1.7U ug/L[1]
WF046	**Client ID:** 31R03301		
	Laboratory ID: MW241002		
	Collection Date: 7/15/97		
	Type: Equipment rinsate		
	Barium	1.1 ug/L	1.1U ug/L[1]
	Calcium	126 ug/L	126U ug/L[1]
	Iron	4.4 ug/L	4.4U ug/L[1]
	Manganese	0.40 ug/L	None
	Sodium	65.6 ug/L	65.6U ug/L[1]
	Zinc	5.4 ug/L	5.4U ug/L[1]

Table XIV
Summary of Field Blank Contamination
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton Florida

Inorganic Analytes

SDG	Parameter	Concentration	Qualifier
WF051	**Client ID:** 16R03601		
	Laboratory ID: ME340005		
	Collection Date: 7/23/97		
	Type: Equipment rinsate		
	Calcium	166 ug/L	166U ug/L[1]
	Copper	1.7 ug/L	1.7U ug/L[1]
	Iron	12.7 ug/L	12.7U ug/L[1]
	Lead	1.2 ug/L	None
	Manganese	0.68 ug/L	0.68U ug/L[1]
	Sodium	48.9 ug/L	48.9U ug/L[1]
	Zinc	2.6 ug/L	2.6U ug/L[1]
WF053	**Client ID:** 15R03701		
	Laboratory ID: ME367002		
	Collection Date: 7/27/97		
	Type: Equipment rinsate		
	Barium	1.6 ug/L	None
	Calcium	134 ug/L	134U ug/L[1]
	Chromium	4.2 ug/L	4.2U ug/L[1]
	Copper	2.1 ug/L	2.1U ug/L[1]
	Iron	18.4 ug/L	None
	Manganese	0.69 ug/L	0.69U ug/L[1]
	Sodium	83.0 ug/L	83.0U ug/L[1]
	Zinc	5.0 ug/L	5.0U ug/L[1]
WF054	**Client ID:** 15R03801		
	Laboratory ID: ME441005		
	Collection Date: 8/5/97		
	Type: Equipment rinsate		
	Cadmium	4.7 ug/L	
	Calcium	159 ug/L	159U ug/L[1]
	Copper	1.3 ug/L	None
	Iron	13.3 ug/L	13.3U ug/L[1]
	Manganese	0.48 ug/L	None
	Mercury	0.05 ug/L	0.05U ug/L[1]
	Sodium	20.0 ug/L	None
	Zinc	1.8 ug/L	None
WF054	**Client ID:** 30R03901		
	Laboratory ID: ME450002		
	Collection Date: 8/6/97		
	Type: Equipment rinsate		
	Aluminum	16.7 ug/L	None
	Barium	0.78 ug/L	None
	Calcium	150 ug/L	150U ug/L
	Copper	3.7 ug/L	None
	Iron	14.0 ug/L	14.0U ug/L
	Manganese	0.58 ug/L	None
	Sodium	67.0 ug/L	None
	Zinc	4.4 ug/L	None

[1] = sample result was modified based on an associated method blank concentration.

Note: see detailed data validation report for the discrete qualifiers.

Table XV
Sample Event PARCC Summary
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton, Florida

SDG	Fraction	Precision[1]	Accuracy[2]	Representativeness	Completeness (%)	Comparability
WF022	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF023	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF024	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF025	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF026	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF027	Volatiles	Acceptable	Acceptable	Acceptable	99.0	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF028	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF029	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF030	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF031	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	**Unacceptable**	Acceptable	**0**	Acceptable
WF031B	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF032	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	99.3	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable

Table XV
Sample Event PARCC Summary
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton, Florida

SDG	Fraction	Precision[1]	Accuracy[2]	Representativeness	Completeness (%)	Comparability
WF033	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF034	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF035	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF036	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF037	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides/PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	**Unacceptable**	Acceptable	**0**	Acceptable
WF038	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF039	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF040	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF041	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides & PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF042	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF043	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF044	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF045	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides & PCBs	**Unacceptable**	**Unacceptable**	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF046	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Pesticides & PCBs	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
	Cyanide	Acceptable	Acceptable	Acceptable	100	Acceptable
WF047	Volatiles	Acceptable	Acceptable	Acceptable	97.0	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
WF048	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF049	Volatiles	Acceptable	Acceptable	Acceptable	95.2	Acceptable
	Semivolatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
WF051	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable
	Metals	Acceptable	Acceptable	Acceptable	100	Acceptable
WF052	Volatiles	Acceptable	Acceptable	Acceptable	94.3	Acceptable

Table XV
Sample Event PARCC Summary
Groundwater and Subsurface Soil Investigation, Phase IIB
NAS Whiting Field, Milton, Florida

SDG	Fraction	Precision[1]	Accuracy[2]	Representativeness	Completeness (%)	Comparability
WF053	Volatiles Metals	Acceptable Acceptable	Acceptable Acceptable	Acceptable Acceptable	100 100	Acceptable Acceptable
WF054	Volatiles Metals	Acceptable Acceptable	Acceptable Acceptable	Acceptable Acceptable	100 100	Acceptable Acceptable
WF055	Volatiles	Acceptable	Acceptable	Acceptable	100	Acceptable

[1]Cumulative of sampling and analytical components.
[2]Analytical component.
[3]Samples results rejected for database purposes were not used in the completeness calculation.

Notes: All completeness is expressed as the ratio of number of sample results considered usable (i.e., not qualified as rejected) to the total number of sample results.

% = percent

APPENDIX F

HUMAN HEALTH RISK DATA

Table F-1
Screening Concentrations for Surface Soil
for Selection of Chemicals of Potential Concern

Remedial Investigation Report
Site 31
NAS Whiting Field, Milton, Florida

Analyte	Risk Based Screening Concentration [1]	Florida Cleanup Goal [2]	Florida Cleanup Goal Leaching Value [2]	Selected Screening Concentration [3]
Volatile Organic Compounds (µg/kg)				
1,1-Dichloroethene	1,100	90	60	90
2-Hexanone	310,000	5,100	1,400	5,100
Acetone	780,000	780,000	2,800	780,000
Benzene	12,000	1,100	7	1,100
Carbon disulfide	780,000	200,000	5,600	200,000
Chlorobenzene	160,000	30,000	1,300	30,000
Methylene chloride	85,000	16,000	20	16,000
Toluene	1,600,000	380,000	500	380,000
Trichloroethene	58,000	6,000	30	[11]30
Xylenes (total)	16,000,000	5,900,000	200	5,900,000
Semivolatile Organic Compounds (µg/kg)				
Benzo(b)fluoranthene	870	1,400	10,000	870
Benzo(k)fluoranthene	8,700	15,000	25,000	8,700
Butylbenzylphthalate	1,600,000	15,000,000	310,000	1,500,000
Di-n-octylphthalate	160,000	NSC	NSC	160,000
bis(2-Ethylhexyl)phthtalate	46,000	76,000	3,600,000	46,000
Pesticides/PCBs (µg/kg)				
4,4-DDD	2,700	4,600	4,000	2,700
4,4-DDE	1,900	3,300	18,000	1,900
4,4-DDT	1,900	3,300	11,000	1,900
Aroclor-1260	[4] 320	[4] 500	[4] 17,000	320
Dieldrin	40	70	4	40
alpha-Chlordane	[5] 1,800	[5] 3100	[5] 9,600	1,800
gamma-Chlordane	[5] 1,800	[5] 3100	[5] 9,600	1,800
Inorganics (mg/kg)				
Aluminum	7,800	72,000	NC	7,800
Antimony	3.1	26	5	3.1
Arsenic	[6] 0.43	0.8	29	0.43
Barium	550	110	1,600	110
Beryllium	16	120	63	16
Cadmium	3.9	75	8	3.9
Calcium	[7] 1,000,000	NSC	NC	1,000,000

See notes at end of table

Table F-1 (Continued)
Screening Concentrations for Surface Soil
for Selection of Chemicals of Potential Concern

Remedial Investigation Report
Site 31
NAS Whiting Field, Milton, Florida

Analyte	Risk Based Screening Concentration [1]	Florida Cleanup Goal [2]	Florida Cleanup Goal Leaching Value [2]	Selected Screening Concentration [3]
Inorganics (mg/kg) (Cont.)				
Chromium	[8] 23	[8] 210	38	23
Cobalt	470	4,700	NC	470
Copper	310	110	NC	110
Cyanide	[9] 160	30	40	30
Iron	2,300	NSC	NC	2,300
Lead	[10] 400	400	NC	400
Magnesium	[7] 460,468	NSC	NC	460,468
Manganese	160	1600	NC	160
Mercury	2.3	3.4	2.1	2.3
Nickel	160	110	130	110
Potassium	[7] 1,000,000	NSC	NC	1,000,000
Selenium	39	390	5	39
Silver	39	390	17	39
Sodium	[7] 1,000,000	NSC	NC	1,000,000
Thallium	[11] 0.55	NSC	NC	0.55
Vanadium	55	15	980	15
Zinc	2,300	23,000	6,000	2,300

[1] For all chemicals except the essential nutrients, the USEPA Region III RBC Table for residential soil (October 5, 2000) has been used, unless otherwise noted. Screening values are based on a cancer risk of 10^{-6} or a hazard quotient of 1.0. Noncarcinogenic RBCs have been adjusted to reflect a target hazard quotient of 0.1.
[2] Florida Department of Environmental Protection (FDEP) technical report dated May 26, 1999. Cleanup goals are based on a target cancer risk of 10^{-6} or a target hazard quotient of 1.
[3] The selected screening concentration for the human health risk assessment is the lowest value of the RBC and the Florida Cleanup Goal. The Florida Cleanup Goal based on leaching is used if an analyte is selected as an HHCPC in groundwater.
[4] Value for polychlorinated biphenyls.
[5] Value for chlordane is used.
[6] RBC value is based on arsenic as a carcinogen.
[7] Essential nutrient screening value (see GIR Report).
[8] RBC and Florida Cleanup Goal values are based on Chromium VI.
[9] Value for hydrogen cyanide used as a surrogate.
[10] RBC is not available for lead; value is from Revised Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER Directive 9355.4-12).
[11] Trichloroethene was the only volatile organic compound that was retained as a COPC in groundwater. Therefore, the leaching-based value is used as the screening concentration.

Notes: µg/kg = micrograms per kilogram.
RBC = USEPA Region III Risk Based Concentration.
NC = not calculated, per FDEP, 1996.
mg/kg = milligrams per kilogram.
NSC = no screening criteria available.
DDD = Dichlorodiphenyl dichloroethane
DDE = Dichlorodiphenyl dichloroethene
DDT = Dichlorodiphenyl trichloroethene

Table F-2
Screening Concentrations for Subsurface Soil
for Selection of Chemicals of Potential Concern

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, Florida

Analyte	Risk Based Screening Concentration [1]	Florida Cleanup Goal [2]	Florida Cleanup Goal based on Leaching [2]	Selected Screening Concentration [3]
Volatile Organic Compounds (mg/kg)				
Acetone	20,000,000	5,500,000	2,800	5,500,000
Methylene chloride	760,000	23,000	20	23,000
Pesticides (mg/kg)				
gamma-chlordane	[4] 16,000	[4] 12,000	[4] 9,600	12,000
Inorganic Analytes (mg/kg)				
Aluminum	200,000	1,000,000	NC	200,000
Arsenic	[5] 3.8	3.7	29	3.7
Barium	14,000	87,000	1,600	14,000
Beryllium	410	800	63	410
Cadmium	100	1,300	8	100
Calcium	[6] 1,000,000	NSC	NC	1,000,000
Chromium	[7] 610	[7] 420	38	420
Copper	8,200	110	NC	100,000
Cyanide	[8] 4,100	39,000	40	4,100
Iron	61,000	NSC	NC	61,000
Lead	[9] 400	920	NC	400
Magnesium	[6] 460,468	NSC	NC	460,468
Manganese	4,100	22,000	NC	4,100
Mercury	61	26	2.1	26
Nickel	4,100	28,000	130	4,100
Selenium	1,000	10,000	5	1,000
Silver	1,000	9,100	17	1,000

See notes at end of table

Table F-2 (Continued)
Screening Concentrations for Subsurface Soil
for Selection of Chemicals of Potential Concern

Remedial Investigation Report
Site 31F
NAS, Whiting Field, Milton, Florida

Analyte	Risk Based Screening Concentration [1]	Florida Cleanup Goal [2]	Florida Cleanup Goal based on Leaching [2]	Selected Screening Concentration [3]
Inorganic Analytes (mg/kg) (Cont.)				
Vanadium	1,400	7,400	980	1,400
Zinc	61,000	560,000	6,000	61,000

[1] For all chemicals except the essential nutrients, the USEPA Region III RBC Table for industrial soil (October 2000) has been used, unless otherwise noted. Screening values are based on a cancer risk of 10^{-6} or a hazard quotient of 1.0. Noncarcinogenic RBCs have been adjusted to reflect a target hazard quotient of 0.1.
[2] Florida Department of Environmental Protection (FDEP) technical report dated May 26, 1999. Cleanup goals are based on a target cancer risk of 10^{-6} or a target hazard quotient of 1.
[3] The selected screening concentration for the human health risk assessment is the lowest value of the RBC and the Florida Cleanup Goal. For analytes that selected as a HHCPC in groundwater, the Florida Soil Clean-up Goal based on Leaching is selected as the screening concentration.
[4] Value for chlordane is used.
[5] RBC value is based on arsenic's as a carcinogen.
[6] Essential nutrient screening value (see GIR Report).
[7] RBC and Florida Cleanup Goal values are based on Chromium VI.
[8] Value for hydrogen cyanide used as a surrogate.
[9] RBC is not available for lead; value is from Revised Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites (OSWER Directive 9355.4-12).

Notes: µg/kg = micrograms per kilogram. mg/kg = milligrams per kilogram.
RBC = USEPA Region III Risk Based Concentration. NSC = no screening criteria available

Table F-3
Screening Concentrations for Groundwater
For Selection of Chemicals of Potential Concern

Remedial Investigation Report
Site 31
NAS Whiting Field, Milton, Florida

Chemical	Risk-Based Screening Concentration [1]	Federal MCL [2]	Florida Groundwater Guidance Concentration [3]	Selected Screening Concentration [4]
Volatiles (µg/L)				
Methylene chloride	4.1	NSC	5	4.1
Trichloroethene	1.6	5	3	1.6
Metals (µg/L)				
Aluminum	3,700	(50)	(200)	50
Barium	260	2,000	2,000	260
Calcium	[5] 1,055,398	NSC	NSC	1,055,398
Copper	150	[6] (1,000)	(1,000)	150
Cyanide	[7] 73	200	200	73
Iron	1,100	(300)	(300)	300
Magnesium	[5] 118,807	NSC	NSC	118,807
Manganese	73	(50)	(50)	50
Nickel	73	100	100	73
Potassium	[5] 297,016	NSC	NSC	297,016
Sodium	[5] 396,022	NSC	160,000	160,000
Vanadium	26	NSC	[49]	26
Zinc	1,100	(5,000)	(5,000)	1,100

[1] For all chemicals except the essential nutrients, the USEPA Region III RBC Table for tap water (October 5, 2000) has been used. Screening values are based on a cancer risk of 10^{-6} and a hazard quotient of 1. Per USEPA Region IV Guidance (USEPA, 1995), the noncarcinogenic RBCs have been adjusted to reflect a target hazard quotient of 0.1.
[2] Federal MCLs are taken from USEPA Drinking Water Regulations and Health Advisories from October 1996. Primary MCLs have no marks, Secondary MCLs are indicated by parentheses ( ), and Federal maximum contaminant level goals (MCLGs) are indicated by brackets [ ]. The lowest of these nonzero values is presented.
[3] Florida Department of Environmental Protection Groundwater Guidance Concentrations from May 26, 1999. Primary Standards have no marks, Secondary Standards are indicated by parentheses ( ), and other criteria (i.e., carcinogen, organoleptic, or a systemic toxicant) are indicated by brackets [ ].
[4] The selected screening concentration for the human health risk assessment is the lowest value of the RBC, Federal MCL value, and Florida Guidance Concentration values.
[5] Essential nutrient screening value (see GIR Report).
[6] Treatment technology action level for copper in drinking water distribution system (USEPA Drinking Water Standards and Health Advisories May 1996).
[7] RBC value is based on hydrogen cyanide.

Notes: µg/L = micrograms per liter.
NSC = not presented in available guidance.
RBC = USEPA Region III Risk Based Concentration.
NA = not available.
MCL = maximum contaminant level.

Table F-4
Oral Dose-Response Data
for Carcinogenic Effects

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, Florida

Chemical	Weight of Evidence	Oral Slope Factor (mg/kg/day)(-1)	Source	Test Species	Exposure Route	Tumor Type	Study Source
Volatiles							
Trichloroethylene	B2	1.1e-02	(1)				
Pesticides/PCBs							
Aroclor-1260	B2	2.0e+00	IRIS	Rat	Oral-diet	Liver	IRIS
Dieldrin	B2	1.6e+01	IRIS	Mouse	Oral-diet	Liver	IRIS
Inorganics							
Aluminum	D	NE					
Barium	ND	NE					
Cadmium	B1	ND					
Chromium	D	NE					
Copper	D	NE					
Iron	D	NE					
Lead	B2	ND					
Manganese	D	NE					
Mercury	C	ND					
Silver	D	NE					

(1) This value was provided by the Environmental Criteria and Assessment Office (ECAO) of the USEPA in response to a specific request.

Weight of Evidence (route-specific):
A = Human carcinogen
B = Probable human carcinogen (B1 = limited human evidence; B2 = sufficient human evidence)
C = Possible human carcinogen
D = Not classifiable as to human carcinogenicity

Notes: ND = No Data
NE = Not Evaluated

Integrated Risk Information System (IRIS) on-line database search, current as of December 2000.
Health Effects Assessment Summary Tables (HEAST), current as of July 1997.

Table F-5
Dermal Dose-Response Data for Carcinogenic Effects

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, Florida

Compound	Weight of Evidence	Oral Slope Factor (mg/kg-day)-1	Oral Absorption Efficiency	Reference	Dermal Slope Factor (mg/kg-day)-1
Volatiles					
Trichloroethylene	B2	1.1e-02	100%	Prout et al., 1985	1.1e-02
Pesticides/PCBs					
Aroclor-1260	B2	2.0e+00	90%	Albro & Fishbein, 1972	2.2e+00
Dieldrin	B2	1.6e+01	50%	USEPA, 1995	3.2e+01
Inorganics					
Aluminum	D	NE			NE
Barium	ND	NE			
Cadmium	B1	ND			NE
Chromium	D	NE			NE
Copper	D	NE			
Iron	D	NE			NE
Lead	B2	ND			ND
Manganese	D	NE			NE
Mercury	C	ND			
Silver	D	NE			NE

See notes at end of table

Table F-5 (Continued)
Dermal Dose-Response Data for Carcinogenic Effects

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, Florida

Compound	Weight of Evidence	Oral Slope Factor (mg/kg-day)-1	Oral Absorption Efficiency	Reference	Dermal Slope Factor (mg/kg-day)-1

Weight of Evidence (route-specific):
A = Human carcinogen
B = Probable human carcinogen (B1 = limited human evidence; B2 = sufficient human evidence)
C = Possible human carcinogen
D = Not classifiable as to human carcinogenicity

Albro, P.W. and Fishbein, L. 1972. Intestinal Absorption of Polychlorinated Biphenyls in Rats. Bull. Environ. Contam. Toxicol 8: 26-35.
Prout, M.Prout, M.S., Provan, W.M. and Green, T. 1985. Species Differences in Response to Trichloroethylene. Toxicol. Appl. Pharmacol. 79: 389-400.
USEPA, 1995: Chemicals without specific information on absorbtion efficiency are assigned default values as follows: VOCs: 80%; SVOCs and pesticides: 50%; Inorganics: 20%.

Notes: ND = No Data
NE = Not Evaluated

Table F-6
Inhalation Dose-Response Data
for Carcinogenic Effects

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, Florida

Chemical	Weight of Evidence	Inhalation Slope Factor (mg/kg/day)(-1)	Source	Inhalation Unit Risk (μg/m^3)(-1)	Source	Test Species	Exposure Route	Tumor Type	Study Source
Volatiles									
Trichloroethylene	B2	6.0e-03	(1)	1.7e-06	(1)				
Pesticides/PCBs									
Aroclor-1260	B2	2.0e+00	IRIS	ND		Rat	Orla-diet	Liver	IRIS
Dieldrin	B2	1.6e+01	IRIS	4.6e-03	IRIS	Mouse	Oral-diet	Liver	IRIS
Inorganics									
Aluminum	D	NE		NE					
Barium	ND	NE		NE					
Cadmium	B1	6.3e+00	IRIS	1.8e-03	IRIS	Human	Inhalation	Lung	IRIS
Chromium	A	4.1e+01	IRIS	1.2e-02	IRIS	Human	Inhalation	Lung	IRIS
Copper	D	NE		NE					
Iron	D	NE		NE					
Lead	B2	NE		NE					
Manganese	D	NE		NE					
Mercury	C	ND		ND					
Silver	D	NE		NE					

See notes at end of table

Table F-6
Inhalation Dose-Response Data
for Carcinogenic Effects

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, Florida

Chemical	Weight of Evidence	Inhalation Slope Factor (mg/kg/day)(-1)	Source	Inhalation Unit Risk ($\mu g/m^3$)(-1)	Source	Test Species	Exposure Route	Tumor Type	Study Source

(1) This value was provided by the Environmental Criteria and Assessment Office (ECAO) of the USEPA in response to a specific request.

Weight of Evidence (route-specific):
A = Human carcinogen
B = Probable human carcinogen (B1 = limited human evidence; B2 = sufficient human evidence)
C = Possible human carcinogen
D = Not classifiable as to human carcinogenicity

Notes: NE = Not Evaluated

Integrated Risk Information System (IRIS) on-line database search, current as of December 2000.
Health Effects Assessment Summary Tables (HEAST), current as of July 1997.

Table F-7
Oral Dose-Response Data
for Noncarcinogenic Effects

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, Florida

Chemical	Chronic		Subchronic		Study Type	Confid-ence Level	Critical Effect	Test Animal	Uncertainty Factor	Study Source
	Oral RfD (mg/kg-day)	Source	Oral RfD (mg/kg-day)	Source						
Volatiles										
Trichloroethylene	6.0e-03	(1)	ND							
Pesticides/PCBs										
Aroclor-1260	2.0e-05	IRIS	5.0e-05		Oral-diet	Medium	Immunotoxicity	Monkey	300 H,A,S	IRIS
Dieldrin	5.0e-05	IRIS	5.0e-05		Oral-diet	Medium	Liver lesions	Rat	100 H,A	IRIS
Inorganics										
Aluminum	1.0e+00	(1)	ND							
Barium	7.0e-02	IRIS	7.0e-02		Oral-drinking water	Medium	Increased blood pressure	Human	3H	IRIS
Cadmium	1.0e-03	IRIS	ND		Oral-diet	High	Proteinuria	Human	10 H	IRIS
Chromium	3.0e-03	IRIS	2.0e-02		Oral-drinking water	Low	No effects observed	Rat	300 H,A,S	IRIS
Copper	ND		ND							
Iron	3.0e-01	(1)	ND							
Lead	ND		ND							
Manganese	4.7e-02		ND		Oral-diet	Medium	No effects observed	Human	1,1 M	IRIS
Mercury	3.0e-04	IRIS	3.0e-03		Oral-diet	High	Autoimmune effects	Rat	1,000 H,A,S,L	IRIS
Silver	5.0e-03	IRIS	5.0e-03		Intravenous	Low	Argyria	Human	3 H	IRIS

See notes at end of table

Table F-7 (Continued)
Oral Dose-Response Data
for Noncarcinogenic Effects

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, FLorida

Chemical	Chronic		Subchronic		Study Type	Confid-ence Level	Critical Effect	Test Animal	Uncertainty Factor	Study Source
	Oral RfD (mg/kg-day)	Source	Oral RfD (mg/kg-day)	Source						

(1) This value was provided by the Environmental Criteria and Assessment Office (ECAO) of the USEPA in response to a specific request.

Uncertainty factors:
H = Variation in human sensitivity
A = Animal to human extrapolation
S = Extrapolation from subchronic to chronic NOAEL
L = Extrapolation from LOAEL to NOAEL
D = Inadequate data
M = Modifying factor

Notes: ND = No Data
NA = Not Applicable

Integrated Risk Information System (IRIS) on-line database search, current as of December 2000.
Health Effects Assessment Summary Tables (HEAST), current as of July 1997.
Environmental Center Assessment Center (ECAO)

Table F-8
Dermal Dose-Response Data for Noncarcinogenic Effects

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, Florida

Chemical	Chronic Oral RfD (mg/kg-day)	Subchronic Oral RfD (mg/kg-day)	Oral Absorption Efficiency	Reference	Dermal Chronic RfD (mg/kg-day)	Dermal Subchronic RfD (mg/kg-day)
Volatiles						
Trichloroethylene	6.0e-03	ND	100%	Prout et al., 1985	6.0e-03	ND
Pesticides/PCBs						
Aroclor-1260	2.0e-05	5.0e-05	90%	Albro & Fishbein, 1972	1.8e-05	4.5e-05
Dieldrin	5.0e-05	5.0e-05	50%	USEPA, 1995	2.5e-05	2.5e-05
Inorganics						
Aluminum	1.0e+00	ND	20%	USEPA, 1995	2.0e-01	ND
Barium	7.0e-02	7.0e-02	7%	ATSDR, 1991a	4.9E-03	4.9E-03
Cadmium	1.0e-03	ND	20%	USEPA, 1995	2.0e-04	ND
Chromium	3.0e-03	2.0e-02	11%	Ogawa, 1976	3.3e-04	2.2e-03
Copper	ND	ND				
Iron	3.0e-01	ND	2%	Goyer, 1991	6.0e-03	ND
Lead	ND	ND			ND	ND
Manganese	4.7e-02	ND	4%	ATSDR, 1991b	1.9e-03	ND
Mercury	3.0e-04	3.0e-03	20%	Nielsen, 1992	6.0e-05	6.0e-04
Silver	5.0e-03	5.0e-03	21%	MacIntyre et al, 1978	1.1e-03	1.1e-03

See notes at end of table

Table F-8
Dermal Dose-Response Data for Noncarcinogenic Effects

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, Florida

Chemical	Chronic Oral RfD (mg/kg-day)	Subchronic Oral RfD (mg/kg-day)	Oral Absorption Efficiency	Reference	Dermal Chronic RfD (mg/kg-day)	Dermal Subchronic RfD (mg/kg-day)

Weight of Evidence (route-specific):

A	=	Human carcinogen
B	=	Probable human carcinogen (B1 = limited human evidence; B2 = sufficient human evidence)
C	=	Possible human carcinogen
D	=	Not classifiable as to human carcinogenicity

Albro, P.W. and Fishbein, L. 1972. Intestional Absorption of Polychlorinated Biphenyls in Rats. Bull. Environ. Contam. Toxicol 8: 26-35.
ATSDR, 1991a. "Toxicological Profile for Barium". Agency for Toxic Substances and Disease Registry, U.S. Public Health Service (Draft).
ATSDR, 1991b. "Toxicological Profile for Manganese". Agency for Toxic Substances and Disease Registry, U.S. Public Health Service (Draft).
Goyer, R.A., 1991. Toxic Effects of Metals. In: Cassarett and Doull's Toxicology: The Basic Science of Posions, 4th edition. Eds. M.O. Amdur, J. Doull and C.D. Klaassen. Pergamon Press, N.Y.
MacIntyre, D., Mclay, A.L.C. and East, B.W. 1978. Silver Poisoning Associated with an Antismoking Lozenge. Br. Med. J. 2: 1749-1750.
Nielsen, J.B. 1992. Toxicokinetics of Mercuric Chloride and Methylmercuric Chloride in Mice. J. Toxicol. Environ. Health 37: 85-122.
Ogawa, M. and Shimada, Y. 1987. Differences in Urinary Monochlorobenzene Metabolities Between Rats and Humans. Int. Arch. Occup. Environ. Health 53: 51-57.
Prout, M.S., Provan, W.M. and Green, T. 1985. Species Differences in Response to Trichloroethylene. Toxicol. Appl. Pharmacol. 79: 389-400.
Vahter, M. 1983. Metabolism of Arsenic. In: Fowler, B.A., ed. Biological and Environmental Effect of Arsenic. NY: Elsevier. pp. 171-198.

Notes: ND = No Data

Table F-9
Inhalation Dose-Response Data
for Noncarcinogenic Effects

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, Florida

Chemical	Chronic		Subchronic		Inhalation	Study Type	Confidence Level	Critical Effect	Test Animal	Uncertainty Factor	Study Source
	RfC (µg/m³)	Source	RfC (µg/m³)	Source	RfD (1)						
Volatiles											
Trichloroethylene	ND		ND								
Pesticides/PCBs											
Aroclor-1260	ND		ND								
Dieldrin	ND		ND								
Inorganics											
Aluminum	ND		ND								
Barium	5e-04	HEAST	5e-03		1.0e-04	Inhalation	Low	Fetotoxicity	Rat	1,000 H,A,S	HEAST
Cadmium	ND		ND								
Chromium	1.0e-4		ND		2.9e-05	Inhalation	Medium	Increase lactate dehydrogenase	Rat	300 H,S,A	IRIS
Copper	ND		ND								
Iron	ND		ND								
Lead	ND		ND								
Manganese	5.0e-05	IRIS	ND		1.4e-05	Inhalation	Medium	Neurobehavioral impairment	Human	1,000 H,L,D	IRIS
Mercury	3.0e-04	IRIS	3.0e-04		8.6e-05	Inhalation	Low	Neurotoxicity	Human	30 H,D	HEAST
Silver	ND		ND								

See notes at end of table

Table F-9 (Continued)
Inhalation Dose-Response Data
for Noncarcinogenic Effects

Remedial Investigation Report
Site 31
NAS, Whiting Field, Milton, Florida

Chemical	Chronic		Subchronic		Study Type	Confidence Level	Critical Effect	Test Animal	Uncertainty Factor	Study Source
	RfC ($\mu g/m^3$)	Source	RfC ($\mu g/m^3$)	Source						

(1) RfD calculated from RfC as follows, per USEPA, 1995:

RfD (mg/kg-d) = RfC (mg/m[3])/ 70 kg x 20 m[3]/d

Uncertainty factors:

A = Animal to human extrapolation
H = Variation in human sensitivity
S = Extrapolation from subchronic to chronic NOAEL
L = Extrapolation from LOAEL to NOAEL
D = Inadequate data
M = Modifying factor

Notes: ND = No Data
NA = Not Applicable

Integrated Risk Information System (IRIS) on-line database search, current as of December 2000.
Health Effects Assessment Summary Tables (HEAST), current as July 1997.

TABLE F-10

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADULT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	100	mg/day	USEPA, 1991
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	1	mg/cm²-event	USEPA, 1995
ABSORPTION FRACTION	ABS_d	chemical specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,750	cm²	USEPA, 1992
DOSE ABSORBED PER EVENT	DAevent	chemical specific	mg/cm^2-event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-06	kg/mg	inorganics
	CF	1.00E-09	kg/ug	organics
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	45	days/year [1]	Assumption
EXPOSURE DURATION	ED	20	years	Assumption
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	20	years	Assumption

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.

USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = \frac{DAevent \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

$DAevent = CS \times AF \times ABS_d \times CF$

Note: For noncarcinogenic effects: AT = ED

TABLE F-10

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADULT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
Aroclor-1260	O	1350	ug/kg	6.8E-08	2.0E+00	1.4E-07	0.01	3.9E-08	2.2E+00	8.6E-08	2.2E-07
Dieldrin	O	118	ug/kg	5.9E-09	1.6E+01	9.5E-08	0.01	3.4E-09	3.2E+01	1.1E-07	2.0E-07
Lead	I	1890	mg/kg	9.5E-05	ND		0.001	5.5E-06	ND		
SUMMARY CANCER RISK						2E-07				2E-07	4E-07

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	2.4E-07	2.0E-05	1.2E-02	0.01	1.4E-07	1.8E-05	7.6E-03	1.9E-02
Dieldrin	O	118	ug/kg	2.1E-08	5.0E-05	4.2E-04	0.01	1.2E-08	2.5E-05	4.8E-04	8.9E-04
Aluminum	I	7480	mg/kg	1.3E-03	1.0E+00	1.3E-03	0.001	7.6E-05	2.0E-01	3.8E-04	1.7E-03
Barium	I	534	mg/kg	9.4E-05	7.0E-02	1.3E-03	0.001	5.4E-06	4.9E-03	1.1E-03	2.4E-03
Cadmium	I	26.8	mg/kg	4.7E-06	1.0E-03	4.7E-03	0.001	2.7E-07	1.0E-05	2.7E-02	3.2E-02
Chromium	I	295	mg/kg	5.2E-05	3.0E-03	1.7E-02	0.001	3.0E-06	3.0E-04	1.0E-02	2.7E-02
Copper	I	948	mg/kg	1.7E-04	ND		0.001	9.6E-06	ND		
Iron	I	9410	mg/kg	1.7E-03	3.0E-01	5.5E-03	0.001	9.5E-05	6.0E-03	1.6E-02	2.1E-02
Lead	I	1890	mg/kg	3.3E-04	ND		0.001	1.9E-05	ND		
Mercury	I	8.8	mg/kg	1.5E-06	3.0E-04	5.2E-03	0.001	8.9E-08	6.0E-05	1.5E-03	6.7E-03
Silver	I	154	mg/kg	2.7E-05	5.0E-03	5.4E-03	0.001	1.6E-06	1.1E-03	1.4E-03	6.8E-03
SUMMARY HAZARD INDEX						0.05				0.07	0.1

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

TABLE F-12

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADOLESCENT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	100	mg/day	USEPA, 1991
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg/cm²-event	USEPA, 1995
AGE-SPECIFIC SURFACE AREA	SA_i	age-specific	cm²	USEPA, 1989
ABSORPTION FRACTION	ABS_d	chemical-specific	unitless	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganics
	CF	1.00E-09	kg/ug	Organics
BODY WEIGHT	BW	45	kg	USEPA, 1995
AGE-SPECIFIC BODY WEIGHT	BW_i	age-specific	kg	USEPA, 1989
EXPOSURE FREQUENCY	EF	45	days/year [1]	Assumption
EXPOSURE DURATION	ED	10	years	USEPA, 1995
AGE-SPECIFIC EXPOSURE DURATION	ED_i	age-specific	years	Assumption
AGE-WEIGHTED SURFACE AREA [2]	$SA_{soil/adj}$	1013	cm²-year/kg	Per USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm²-event	Per USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	10	years	USEPA, 1995

[1] Units for exposure frequency are in events/year in the calculation of the dermally absorbed dose.

[2] In estimating the dermally absorbed dose for children age 7 through 16, the time-weighted, bodyweight normalized surface area exposed is calculated from surface area, exposure duration, and body weight for each of 10 age periods, age 7 through 16, per USEPA, 1992.

USEPA, 1989. Exposure Factors Handbook;EPA/600/8-89/043; May 1989.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; January 1992.
USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletins, Bulletin No. 3, November 1995.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE_{-INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE_{-DERMAL} = AT \times 365\ days/year) \times SA_{soil/adj}$$

Where:

$SA_{soil/adj}$ = SUM $(SA_i \times ED_i / BW_i)$

DA_{event} = CS x AF x ABS_d x CF

Note: For noncarcinogenic effects: AT = ED.

TABLE F-12

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADOLESCENT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
Aroclor-1260	O	1350	ug/kg	5.3E-08	2.0E+00	1.1E-07	0.01	2.4E-08	2.2E+00	5.3E-08	1.6E-07
Dieldrin	O	118	ug/kg	4.6E-09	1.6E+01	7.4E-08	0.01	2.1E-09	3.2E+01	6.7E-08	1.4E-07
Lead	I	1890	mg/kg	7.4E-05	ND		0.001	3.4E-06	ND		
					SUMMARY CANCER RISK	2E-07				1E-07	3E-07

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	3.7E-07	2.0E-05	1.8E-02	0.01	1.7E-07	1.8E-05	9.4E-03	2.8E-02
Dieldrin	O	118	ug/kg	3.2E-08	5.0E-05	6.5E-04	0.01	1.5E-08	2.5E-05	5.9E-04	1.2E-03
Aluminum	I	7480	mg/kg	2.0E-03	1.0E+00	2.0E-03	0.001	9.3E-05	2.0E-01	4.7E-04	2.5E-03
Barium	I	534	mg/kg	1.5E-04	7.0E-02	2.1E-03	0.001	6.7E-06	4.9E-03	1.4E-03	3.5E-03
Cadmium	I	26.8	mg/kg	7.3E-06	1.0E-03	7.3E-03	0.001	3.3E-07	1.0E-05	3.3E-02	4.1E-02
Chromium	I	295	mg/kg	8.1E-05	3.0E-03	2.7E-02	0.001	3.7E-06	3.0E-04	1.2E-02	3.9E-02
Copper	I	948	mg/kg	2.6E-04	ND		0.001	1.2E-05	ND		
Iron	I	9410	mg/kg	2.6E-03	3.0E-01	8.6E-03	0.001	1.2E-04	6.0E-03	2.0E-02	2.8E-02
Lead	I	1890	mg/kg	5.2E-04	ND		0.001	2.4E-05	ND		
Mercury	I	8.8	mg/kg	2.4E-06	3.0E-04	8.0E-03	0.001	1.1E-07	6.0E-05	1.8E-03	9.9E-03
Silver	I	154	mg/kg	4.2E-05	5.0E-03	8.4E-03	0.001	1.9E-06	1.1E-03	1.7E-03	1.0E-02
					SUMMARY HAZARD INDEX	0.08				0.08	0.2

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

TABLE F-13

INHALATION OF PARTICULATES - SURFACE SOIL
ADOLESCENT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	0.625	$m^3/hour$	USEPA, 1995
BODY WEIGHT	BW	45	kg	USEPA, 1995
EXPOSURE TIME	ET	4	hours/day	Assumption
EXPOSURE FREQUENCY	EF	45	days/year	Assumption
EXPOSURE DURATION	ED	10	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	10	years	USEPA, 1995

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA 1995. Supplemental Guidance to RAGS, Region 4 Bulletins, Bulletin No. 3, November 1995.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

CA = C x CF x (1/PEF)

Note: For noncarcinogenic effects: AT = ED

TABLE F-13

INHALATION OF PARTICULATES - SURFACE SOIL
ADOLESCENT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)^-1	CANCER RISK
Aroclor-1260	O	1350	ug/kg	1.09E-09	1.1E-12	2.0E+00	2.1E-12
Dieldrin	O	118	ug/kg	9.52E-11	9.3E-14	1.6E+01	1.5E-12
Cadmium	I	26.8	mg/kg	2.16E-08	2.1E-11	6.3E+00	1.3E-10
Chromium VI	I	295	mg/kg	2.38E-07	2.3E-10	4.1E+01	9.5E-09
						SUMMARY CANCER RISK	1E-08

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	1.09E-09	7.5E-12	ND	
Dieldrin	O	118	ug/kg	9.52E-11	6.5E-13	ND	
Aluminum	I	7480	mg/kg	6.03E-06	4.1E-08	ND	
Barium	I	534	mg/kg	4.31E-07	2.9E-09	1.0E-04	2.9E-05
Copper	I	948	mg/kg	7.65E-07	5.2E-09	ND	
Cadmium	I	26.8	mg/kg	2.16E-08	1.5E-10	ND	
Chromium	I	295	mg/kg	2.38E-07	1.6E-09	2.9E-05	5.6E-05
Iron	I	9410	mg/kg	7.59E-06	5.2E-08	ND	
Lead	I	1890	mg/kg	1.52E-06	1.0E-08	ND	
Mercury	I	8.8	mg/kg	7.10E-09	4.9E-11	8.6E-05	5.7E-07
Silver	I	154	mg/kg	1.24E-07	8.5E-10	ND	
						SUMMARY HAZARD INDEX	9E-05

TABLE F-14

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADULT RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	100	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	1	mg/cm^2-event	USEPA, 1995
ABSORPTION FRACTION	ABS_d	chemical-specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,750	cm^2	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	350	days/year [1]	Assumption
EXPOSURE DURATION	ED	24	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	24	years	USEPA, 1995

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; January 1992.

USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = \frac{DA_{event} \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

$$DA_{event} = CS \times AF \times ABS_d \times CF$$

Note: **For noncarcinogenic effects, AT = ED.**

TABLE F-14

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADULT RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
Aroclor-1260	O	1350	ug/kg	6.3E-07	2.0E+00	1.3E-06	0.01	3.6E-07	2.2E+00	8.0E-07	2.1E-06
Dieldrin	O	118	ug/kg	5.5E-08	1.6E+01	8.9E-07	0.01	3.2E-08	3.2E+01	1.0E-06	1.9E-06
Lead	I	1890	mg/kg	8.9E-04	ND		0.001	5.1E-05	ND		
SUMMARY CANCER RISK						2E-06				2E-06	4E-06

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	1.8E-06	2.0E-05	9.2E-02	0.01	1.1E-06	1.8E-05	5.9E-02	1.5E-01
Dieldrin	O	118	ug/kg	1.6E-07	5.0E-05	3.2E-03	0.01	9.3E-08	2.5E-05	3.7E-03	7.0E-03
Aluminum	I	7480	mg/kg	1.0E-02	1.0E+00	1.0E-02	0.001	5.9E-04	2.0E-01	2.9E-03	1.3E-02
Barium	I	534	mg/kg	7.3E-04	7.0E-02	1.0E-02	0.001	4.2E-05	4.9E-03	8.6E-03	1.9E-02
Cadmium	I	26.8	mg/kg	3.7E-05	1.0E-03	3.7E-02	0.001	2.1E-06	2.0E-04	1.1E-02	4.7E-02
Chromium	I	295	mg/kg	4.0E-04	3.0E-03	1.3E-01	0.001	2.3E-05	3.0E-04	7.7E-02	2.1E-01
Copper	I	948	mg/kg	1.3E-03	ND		0.001	7.5E-05	ND		
Iron	I	9410	mg/kg	1.3E-02	3.0E-01	4.3E-02	0.001	7.4E-04	6.0E-03	1.2E-01	1.7E-01
Lead	I	1890	mg/kg	2.6E-03	ND		0.001	1.5E-04	ND		
Mercury	I	8.8	mg/kg	1.2E-05	3.0E-04	4.0E-02	0.001	6.9E-07	6.0E-05	1.2E-02	5.2E-02
Silver	I	154	mg/kg	2.1E-04	5.0E-03	4.2E-02	0.001	1.2E-05	1.1E-03	1.1E-02	5.3E-02
SUMMARY HAZARD INDEX						0.4				0.3	0.7

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November, 1995).
[2] Calculated from oral RfDs.

TABLE F-15

INHALATION OF PARTICULATES - SURFACE SOIL
ADULT RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

22-Apr-01

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	0.833	$m^3/hour$	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	16	hours/day	Assumption
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1995
EXPOSURE DURATION	ED	24	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	24	years	USEPA, 1995

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

CA = C x CF x (1/PEF)

Note:

For noncarcinogenic effects: AT = ED

TABLE F-15

INHALATION OF PARTICULATES - SURFACE SOIL
ADULT RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)-1	CANCER RISK
Aroclor-1260	O	1350	ug/kg	1.09E-09	6.8E-11	2.0E+00	1.4E-10
Dieldrin	O	118	ug/kg	9.52E-11	6.0E-12	1.6E+01	9.5E-11
Cadmium	I	26.8	mg/kg	2.16E-08	1.4E-09	6.3E+00	8.5E-09
Chromium VI	I	295	mg/kg	2.38E-07	1.5E-08	4.1E+01	6.1E-07
						SUMMARY CANCER RISK	6E-07

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	1.09E-09	2.0E-10	ND	
Dieldrin	O	118	ug/kg	9.52E-11	1.7E-11	ND	
Aluminum	I	7480	mg/kg	6.03E-06	1.1E-06	ND	
Barium	I	534	mg/kg	4.31E-07	7.9E-08	1.0E-04	7.9E-04
Copper	I	948	mg/kg	7.65E-07	1.4E-07	ND	
Cadmium	I	26.8	mg/kg	2.16E-08	3.9E-09	ND	
Chromium	I	295	mg/kg	2.38E-07	4.3E-08	2.9E-05	1.5E-03
Iron	I	9410	mg/kg	7.59E-06	1.4E-06	ND	
Lead	I	1890	mg/kg	1.52E-06	2.8E-07	ND	
Mercury	I	8.8	mg/kg	7.10E-09	1.3E-09	8.6E-05	1.5E-05
Silver	I	154	mg/kg	1.24E-07	2.3E-08	ND	
						SUMMARY HAZARD INDEX	2E-03

TABLE F-16

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	200	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	1	mg/cm²-event	USEPA, 1995
AGE-SPECIFIC SURFACE AREA	SA	age-specific	cm²	USEPA, 1989
ABSORPTION FRACTION	ABS	chemical-specific	unitless	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
BODY WEIGHT	BW	15	kg	USEPA, 1991
AGE-SPECIFIC BODY WEIGHT	BW	age-specific	kg	USEPA, 1989
EXPOSURE FREQUENCY	EF	350	days/year [1]	USEPA, 1995
EXPOSURE DURATION	ED	6	years	USEPA, 1995
AGE-SPECIFIC EXPOSURE DURATION	ED	age-specific	years	Assumption
AGE-WEIGHTED SURFACE AREA [2]	$SA_{soil/adj}$	766	cm^2-year/kg	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	6	years	USEPA, 1995

[1] Units for exposure frequency are in events/year in the calculation of the dermally absorbed dose.

[2] In estimating the dermally absorbed dose for children age1 through 6, the time-weighted, bodyweight normalized surface area exposed is calculated from surface area, exposure duration, and body weight for each of 6 age periods, age 1 through 6, per USEPA, 1992.

USEPA, 1989. Exposure Factors Handbook;EPA/600/8-89/043; May 1989.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; January 1992.
USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = (DA_{event} \times EF / AT \times 365\ days/year) \times SA_{soil/adj}$$

Where:

$SA_{soil/adj}$ = SUM (SA x ED / BW)

DA_{event} = CS x AF x ABS x CF

Note: For noncarcinogenic effects, AT = ED.

TABLE F-16

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day)$^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day)$^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
Aroclor-1260	O	1350	ug/kg	1.5E-06	2.0E+00	3.0E-06	0.01	1.4E-07	2.2E+00	3.1E-07	3.3E-06
Dieldrin	O	118	ug/kg	1.3E-07	1.6E+01	2.1E-06	0.01	1.2E-08	3.2E+01	4.0E-07	2.5E-06
Lead	I	1890	mg/kg	2.1E-03	ND		0.001	2.0E-05	ND		
					SUMMARY CANCER RISK	5E-06				7E-07	6E-06

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	1.7E-05	2.0E-05	8.6E-01	0.01	1.7E-06	1.8E-05	9.2E-02	9.5E-01
Dieldrin	O	118	ug/kg	1.5E-06	5.0E-05	3.0E-02	0.01	1.4E-07	2.5E-05	5.8E-03	3.6E-02
Aluminum	I	7480	mg/kg	9.6E-02	1.0E+00	9.6E-02	0.001	9.2E-04	2.0E-01	4.6E-03	1.0E-01
Barium	I	534	mg/kg	6.8E-03	7.0E-02	9.8E-02	0.001	6.5E-05	4.9E-03	1.3E-02	1.1E-01
Cadmium	I	26.8	mg/kg	3.4E-04	1.0E-03	3.4E-01	0.001	3.3E-06	1.0E-05	3.3E-01	6.7E-01
Chromium	I	295	mg/kg	3.8E-03	3.0E-03	1.3E+00	0.001	3.6E-05	3.0E-04	1.2E-01	1.4E+00
Copper	I	948	mg/kg	1.2E-02	ND		0.001	1.2E-04	ND		
Iron	I	9410	mg/kg	1.2E-01	3.0E-01	4.0E-01	0.001	1.2E-03	6.0E-03	1.9E-01	5.9E-01
Lead	I	1890	mg/kg	2.4E-02	ND		0.001	2.3E-04	ND		
Mercury	I	8.8	mg/kg	1.1E-04	3.0E-04	3.8E-01	0.001	1.1E-06	6.0E-05	1.8E-02	3.9E-01
Silver	I	154	mg/kg	2.0E-03	5.0E-03	3.9E-01	0.001	1.9E-05	1.1E-03	1.7E-02	4.1E-01
					SUMMARY HAZARD INDEX	4				0.8	5

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

TABLE F-17

INHALATION OF PARTICULATES - SURFACE SOIL
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION IN AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	0.625	$m^3/hour$	USEPA, 1995
BODY WEIGHT	BW	15	kg	USEPA, 1991
EXPOSURE TIME	ET	24	hours/day	Assumption
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1991
EXPOSURE DURATION	ED	6	years	USEPA, 1991
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	6	years	USEPA, 1991

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletins, Bulletin No. 3, November 1995.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

CA = C x CF x (1/PEF)

Note:

For noncarcinogenic effects: AT = ED

TABLE F-17

INHALATION OF PARTICULATES - SURFACE SOIL
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)-1	CANCER RISK
Aroclor-1260	O	1350	ug/kg	1.09E-09	8.9E-11	2.0E+00	1.8E-10
Dieldrin	O	118	ug/kg	9.52E-11	7.8E-12	1.6E+01	1.3E-10
Cadmium	I	26.8	mg/kg	2.16E-08	1.8E-09	6.3E+00	1.1E-08
Chromium VI	I	295	mg/kg	2.38E-07	2.0E-08	4.1E+01	8.0E-07
						SUMMARY CANCER RISK	8E-07

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	1.09E-09	1.0E-09	ND	
Dieldrin	O	118	ug/kg	9.52E-11	9.1E-11	ND	
Aluminum	I	7480	mg/kg	6.03E-06	5.8E-06	ND	
Barium	I	534	mg/kg	4.31E-07	4.1E-07	1.0E-04	4.1E-03
Copper	I	948	mg/kg	7.65E-07	7.3E-07	ND	
Cadmium	I	26.8	mg/kg	2.16E-08	2.1E-08	ND	
Chromium	I	295	mg/kg	2.38E-07	2.3E-07	2.9E-05	7.9E-03
Iron	I	9410	mg/kg	7.59E-06	7.3E-06	ND	
Lead	I	1890	mg/kg	1.52E-06	1.5E-06	ND	
Mercury	I	8.8	mg/kg	7.10E-09	6.8E-09	8.6E-05	7.9E-05
Silver	I	154	mg/kg	1.24E-07	1.2E-07	ND	
						SUMMARY HAZARD INDEX	1E-02

TABLE F-18

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
SITE MAINTENANCE WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	50	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg/cm^2-event	USEPA, 1995
ABSORPTION FRACTION	ABS	chemical-specific	unitless	Assumption
SURFACE AREA EXPOSED	SA	5,750	cm^2	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	30	days/year [1]	Assumption
EXPOSURE DURATION	ED	25	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	25	years	USEPA, 1995

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.
USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE_{-INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE_{-DERMAL} = \frac{DA_{event} \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

$$DA_{event} = CS \times AF \times ABS \times CF$$

Note: **For noncarcinogenic effects, AT = ED**

TABLE F-18

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
SITE MAINTENANCE WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
Aroclor-1260	O	1350	ug/kg	2.8E-08	2.0E+00	5.7E-08	0.01	3.3E-08	2.2E+00	7.2E-08	1.3E-07
Dieldrin	O	118	ug/kg	2.5E-09	1.6E+01	4.0E-08	0.01	2.8E-09	3.2E+01	9.1E-08	1.3E-07
Lead	I	1890	mg/kg	4.0E-05	ND		0.001	4.6E-06	ND		
SUMMARY CANCER RISK						1E-07				2E-07	3E-07

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	7.9E-08	2.0E-05	4.0E-03	0.01	9.1E-08	1.8E-05	5.1E-03	9.0E-03
Dieldrin	O	118	ug/kg	6.9E-09	5.0E-05	1.4E-04	0.01	8.0E-09	2.5E-05	3.2E-04	4.6E-04
Aluminum	I	7480	mg/kg	4.4E-04	1.0E+00	4.4E-04	0.001	5.1E-05	2.0E-01	2.5E-04	6.9E-04
Barium	I	534	mg/kg	3.1E-05	7.0E-02	4.5E-04	0.001	3.6E-06	4.9E-03	7.4E-04	1.2E-03
Cadmium	I	26.8	mg/kg	1.6E-06	1.0E-03	1.6E-03	0.001	1.8E-07	1.0E-05	1.8E-02	2.0E-02
Chromium	I	295	mg/kg	1.7E-05	3.0E-03	5.8E-03	0.001	2.0E-06	3.0E-04	6.6E-03	1.2E-02
Copper	I	948	mg/kg	5.6E-05	ND		0.001	6.4E-06	ND		
Iron	I	9410	mg/kg	5.5E-04	3.0E-01	1.8E-03	0.001	6.4E-05	6.0E-03	1.1E-02	1.2E-02
Lead	I	1890	mg/kg	1.1E-04	ND		0.001	1.3E-05	ND		
Mercury	I	8.8	mg/kg	5.2E-07	3.0E-04	1.7E-03	0.001	5.9E-08	6.0E-05	9.9E-04	2.7E-03
Silver	I	154	mg/kg	9.0E-06	5.0E-03	1.8E-03	0.001	1.0E-06	1.1E-03	9.5E-04	2.8E-03
SUMMARY HAZARD INDEX						0.018				0.04	0.06

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

TABLE F-19

INHALATION OF PARTICULATES - SURFACE SOIL
SITE MAINTENANCE WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	2.5	m^3/hour	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	8	hours/day	Assumption
EXPOSURE FREQUENCY	EF	30	days/year	Assumption
EXPOSURE DURATION	ED	25	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	25	years	USEPA, 1995

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance:
"Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletins, Bulletin No. 3, November 1995.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

CA = C x CF x (1/PEF)

Note: For noncarcinogenic effects, AT = ED

TABLE F-19

INHALATION OF PARTICULATES - SURFACE SOIL
SITE MAINTENANCE WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)^-1	CANCER RISK
Aroclor-1260	O	1350	ug/kg	1.09E-09	9.1E-12	2.0E+00	1.8E-11
Dieldrin	O	118	ug/kg	9.52E-11	8.0E-13	1.6E+01	1.3E-11
Cadmium	I	26.8	mg/kg	2.16E-08	1.8E-10	6.3E+00	1.1E-09
Chromium VI	I	295	mg/kg	2.38E-07	2.0E-09	4.1E+01	8.2E-08
						SUMMARY CANCER RISK	8E-08

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	1.09E-09	2.6E-11	ND	
Dieldrin	O	118	ug/kg	9.52E-11	2.2E-12	ND	
Aluminum	I	7480	mg/kg	6.03E-06	1.4E-07	ND	
Barium	I	534	mg/kg	4.31E-07	1.0E-08	1.0E-04	1.0E-04
Copper	I	948	mg/kg	7.65E-07	1.8E-08	ND	
Cadmium	I	26.8	mg/kg	2.16E-08	5.1E-10	ND	
Chromium	I	295	mg/kg	2.38E-07	5.6E-09	2.9E-05	1.9E-04
Iron	I	9410	mg/kg	7.59E-06	1.8E-07	ND	
Lead	I	1890	mg/kg	1.52E-06	3.6E-08	ND	
Mercury	I	8.8	mg/kg	7.10E-09	1.7E-10	8.6E-05	1.9E-06
Silver	I	154	mg/kg	1.24E-07	2.9E-09	ND	
						SUMMARY HAZARD INDEX	3E-04

TABLE F-20

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
OCCUPATIONAL WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	50	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg/cm^2-event	USEPA, 1992
ABSORPTION FRACTION	ABS	chemical-specific	unitless	Assumption
SURFACE AREA EXPOSED	SA	2,300	cm^2	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	250	days/year [1]	USEPA, 1995
EXPOSURE DURATION	ED	25	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	25	years	USEPA, 1995

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.

USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = \frac{DA_{event} \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

DA_{event} = CS x AF x ABS x CF

Note: For noncarcinogenic effects, AT = ED

TABLE F-20

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
OCCUPATIONAL WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
Aroclor-1260	O	1350	ug/kg	2.4E-07	2.0E+00	4.7E-07	0.01	1.1E-07	2.2E+00	2.4E-07	7.1E-07
Dieldrin	O	118	ug/kg	2.1E-08	1.6E+01	3.3E-07	0.01	9.5E-09	3.2E+01	3.0E-07	6.3E-07
Lead	I	1890	mg/kg	3.3E-04	ND		0.001	1.5E-05	ND		
SUMMARY CANCER RISK						8E-07				5E-07	1E-06

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	6.6E-07	2.0E-05	3.3E-02	0.01	3.0E-07	1.8E-05	1.7E-02	5.0E-02
Dieldrin	O	118	ug/kg	5.8E-08	5.0E-05	1.2E-03	0.01	2.7E-08	2.5E-05	1.1E-03	2.2E-03
Aluminum	I	7480	mg/kg	3.7E-03	1.0E+00	3.7E-03	0.001	1.7E-04	2.0E-01	8.4E-04	4.5E-03
Barium	I	534	mg/kg	2.6E-04	7.0E-02	3.7E-03	0.001	1.2E-05	4.9E-03	2.5E-03	6.2E-03
Cadmium	I	26.8	mg/kg	1.3E-05	1.0E-03	1.3E-02	0.001	6.0E-07	1.0E-05	6.0E-02	7.3E-02
Chromium	I	295	mg/kg	1.4E-04	3.0E-03	4.8E-02	0.001	6.6E-06	3.0E-04	2.2E-02	7.0E-02
Copper	I	948	mg/kg	4.6E-04	ND		0.001	2.1E-05	ND		
Iron	I	9410	mg/kg	4.6E-03	3.0E-01	1.5E-02	0.001	2.1E-04	6.0E-03	3.5E-02	5.1E-02
Lead	I	1890	mg/kg	9.2E-04	ND		0.001	4.3E-05	ND		
Mercury	I	8.8	mg/kg	4.3E-06	3.0E-04	1.4E-02	0.001	2.0E-07	6.0E-05	3.3E-03	1.8E-02
Silver	I	154	mg/kg	7.5E-05	5.0E-03	1.5E-02	0.001	3.5E-06	1.1E-03	3.2E-03	1.8E-02
SUMMARY HAZARD INDEX						0.15				0.15	0.3

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

TABLE F-21

INHALATION OF PARTICULATES - SURFACE SOIL
OCCUPATIONAL WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	0.833	m^3/hour	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	8	hours/day	Assumption
EXPOSURE FREQUENCY	EF	250	days/year	Assumption
EXPOSURE DURATION	ED	25	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	25	years	USEPA, 1995

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance:
"Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletins, Bulletin No. 3, November 1995.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR (mg/kg-day)$^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{\text{CA x IR x ET x EF x ED}}{\text{BW x AT x 365 days/yr}}$$

Where:

CA = C x CF x (1/PEF)

Note: **For noncarcinogenic effects, AT = ED.**

TABLE F-21

INHALATION OF PARTICULATES - SURFACE SOIL
OCCUPATIONAL WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)^-1	CANCER RISK
Aroclor-1260	O	1350	ug/kg	1.09E-09	2.5E-11	2.0E+00	5.1E-11
Dieldrin	O	118	ug/kg	9.52E-11	2.2E-12	1.6E+01	3.5E-11
Cadmium	I	26.8	mg/kg	2.16E-08	5.0E-10	6.3E+00	3.2E-09
Chromium VI	I	295	mg/kg	2.38E-07	5.5E-09	4.1E+01	2.3E-07
						SUMMARY CANCER RISK	2E-07

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	1.09E-09	7.1E-11	ND	
Dieldrin	O	118	ug/kg	9.52E-11	6.2E-12	ND	
Aluminum	I	7480	mg/kg	6.03E-06	3.9E-07	ND	
Barium	I	534	mg/kg	4.31E-07	2.8E-08	1.0E-04	2.8E-04
Copper	I	948	mg/kg	7.65E-07	5.0E-08	ND	
Cadmium	I	26.8	mg/kg	2.16E-08	1.4E-09	ND	
Chromium	I	295	mg/kg	2.38E-07	1.6E-08	2.9E-05	5.3E-04
Iron	I	9410	mg/kg	7.59E-06	4.9E-07	ND	
Lead	I	1890	mg/kg	1.52E-06	9.9E-08	ND	
Mercury	I	8.8	mg/kg	7.10E-09	4.6E-10	8.6E-05	5.4E-06
Silver	I	154	mg/kg	1.24E-07	8.1E-09	ND	
						SUMMARY HAZARD INDEX	8E-04

TABLE F-22

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
EXCAVATION WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	480	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg/cm^2-event	USEPA, 1995
ABSORPTION FRACTION	ABS	chemical-specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,750	cm^2	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	30	days/year [1]	Assumption
EXPOSURE DURATION	ED	1	years	USEPA, 1991
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	1	years	USEPA, 1991

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.

USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = \frac{DAevent \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

$$DA_{event} = CS \times AF \times ABS \times CF$$

Note: **For noncarcinogenic effects, AT = ED**

TABLE F-22

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
EXCAVATION WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
Aroclor-1260	O	1350	ug/kg	1.1E-08	2.0E+00	2.2E-08	0.01	1.3E-09	2.2E+00	2.9E-09	2.5E-08
Dieldrin	O	118	ug/kg	9.5E-10	1.6E+01	1.5E-08	0.01	1.1E-10	3.2E+01	3.6E-09	1.9E-08
Lead	I	1890	mg/kg	1.5E-05	ND		0.001	1.8E-07	ND		
SUMMARY CANCER RISK						4E-08				7E-09	4E-08

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD [1] (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [2]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [3] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	7.6E-07	5.0E-05	1.5E-02	0.01	9.1E-08	4.5E-05	2.0E-03	1.7E-02
Dieldrin	O	118	ug/kg	6.7E-08	5.0E-05	1.3E-03	0.01	8.0E-09	2.5E-05	3.2E-04	1.6E-03
Aluminum	I	7480	mg/kg	4.2E-03	1.0E+00	4.2E-03	0.001	5.1E-05	2.0E-01	2.5E-04	4.5E-03
Barium	I	534	mg/kg	3.0E-04	7.0E-02	4.3E-03	0.001	3.6E-06	4.9E-03	7.4E-04	5.0E-03
Cadmium	I	26.8	mg/kg	1.5E-05	1.0E-03	1.5E-02	0.001	1.8E-07	1.0E-05	1.8E-02	3.3E-02
Chromium	I	295	mg/kg	1.7E-04	2.0E-02	8.3E-03	0.001	2.0E-06	2.2E-03	9.1E-04	9.2E-03
Copper	I	948	mg/kg	5.3E-04	ND		0.001	6.4E-06	ND		
Iron	I	9410	mg/kg	5.3E-03	3.0E-01	1.8E-02	0.001	6.4E-05	6.0E-03	1.1E-02	2.8E-02
Lead	I	1890	mg/kg	1.1E-03	ND		0.001	1.3E-05	ND		
Mercury	I	8.8	mg/kg	5.0E-06	3.0E-03	1.7E-03	0.001	5.9E-08	6.0E-04	9.9E-05	1.8E-03
Silver	I	154	mg/kg	8.7E-05	5.0E-03	1.7E-02	0.001	1.0E-06	1.1E-03	9.5E-04	1.8E-02
SUMMARY HAZARD INDEX						0.1				0.03	0.1

[1] Subchronic Rfd values were used for the excavation worker due to short exposure scenario.
[2] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (USEPA, 1995).
[3] Calculated from oral RfDs.

TABLE F-23

INHALATION OF PARTICULATES - SURFACE SOIL
EXCAVATION WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	2.5	$m^3/hour$	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	8	hours/day	Assumption
EXPOSURE FREQUENCY	EF	30	days/year	Assumption
EXPOSURE DURATION	ED	1	years	Assumption
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	1	years	USEPA, 1991

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance:
Standard Default Exposure Factors; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

CA = C x CF x (1/PEF)

Note: For noncarcinogens, AT = ED.

TABLE F-23

INHALATION OF PARTICULATES - SURFACE SOIL
EXCAVATION WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)^-1	CANCER RISK
Aroclor-1260	O	1350	ug/kg	1.09E-09	3.7E-13	2.0E+00	7.3E-13
Dieldrin	O	118	ug/kg	9.52E-11	3.2E-14	1.6E+01	5.1E-13
Cadmium	I	26.8	mg/kg	2.16E-08	7.3E-12	6.3E+00	4.6E-11
Chromium VI	I	295	mg/kg	2.38E-07	8.0E-11	4.1E+01	3.3E-09
						SUMMARY CANCER RISK	3E-09

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m³)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	1.09E-09	2.6E-11	ND	
Dieldrin	O	118	ug/kg	9.52E-11	2.2E-12	ND	
Aluminum	I	7480	mg/kg	6.03E-06	1.4E-07	ND	
Barium	I	534	mg/kg	4.31E-07	1.0E-08	1.0E-04	1.0E-04
Copper	I	948	mg/kg	7.65E-07	1.8E-08	ND	
Cadmium	I	26.8	mg/kg	2.16E-08	5.1E-10	ND	
Chromium	I	295	mg/kg	2.38E-07	5.6E-09	2.9E-05	1.9E-04
Iron	I	9410	mg/kg	7.59E-06	1.8E-07	ND	
Lead	I	1890	mg/kg	1.52E-06	3.6E-08	ND	
Mercury	I	8.8	mg/kg	7.10E-09	1.7E-10	8.6E-05	1.9E-06
Silver	I	154	mg/kg	1.24E-07	2.9E-09	ND	
						SUMMARY HAZARD INDEX	3E-04

TABLE F-24

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADULT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	100	mg/day	USEPA, 1991
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	1	mg/cm²-event	USEPA, 1995
ABSORPTION FRACTION	ABS_d	chemical specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,750	cm²	USEPA, 1992
DOSE ABSORBED PER EVENT	DAevent	chemical specific	mg/cm²-event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-06	kg/mg	inorganics
	CF	1.00E-09	kg/ug	organics
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	45	days/year [1]	Assumption
EXPOSURE DURATION	ED	20	years	Assumption
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	20	years	Assumption

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.

USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = \frac{DAevent \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

$DAevent = CS \times AF \times ABS_d \times CF$

Note: For noncarcinogenic effects: AT = ED

TABLE F-24

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADULT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
No carcinogenic HHCPCs were selected.											
SUMMARY CANCER RISK						0E+00				0E+00	0E+00

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Manganese	I	376	mg/kg	6.6E-05	4.7E-02	1.4E-03	0.001	3.8E-06	1.9E-03	2.0E-03	3.4E-03
SUMMARY HAZARD INDEX						0.001				0.002	0.003

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

TABLE F-25

INHALATION OF PARTICULATES - SURFACE SOIL
ADULT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	0.833	$m^3/hour$	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	4	hours/day	Assumption
EXPOSURE FREQUENCY	EF	45	days/year	Assumption
EXPOSURE DURATION	ED	20	years	Assumption
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	20	years	USEPA, 1991

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

CA = C x CF x (1/PEF)

Note: For noncarcinogenic effects, AT = ED

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK
No carcinogenic HHCPCs were selected.							
						SUMMARY CANCER RISK	0E+00

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Manganese	I	376	mg/kg	3.03E-07	1.8E-09	1.4E-05	1.3E-04
						SUMMARY HAZARD INDEX	1E-04

TABLE F-26

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADOLESCENT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	100	mg/day	USEPA, 1991
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg/cm²-event	USEPA, 1995
AGE-SPECIFIC SURFACE AREA	SA_i	age-specific	cm²	USEPA, 1989
ABSORPTION FRACTION	ABS_d	chemical-specific	unitless	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganics
	CF	1.00E-09	kg/ug	Organics
BODY WEIGHT	BW	45	kg	USEPA, 1995
AGE-SPECIFIC BODY WEIGHT	BW_i	age-specific	kg	USEPA, 1989
EXPOSURE FREQUENCY	EF	45	days/year [1]	Assumption
EXPOSURE DURATION	ED	10	years	USEPA, 1995
AGE-SPECIFIC EXPOSURE DURATION	ED_i	age-specific	years	Assumption
AGE-WEIGHTED SURFACE AREA [2]	$SA_{soil/adj}$	1013	cm²-year/kg	Per USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm²-event	Per USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	10	years	USEPA, 1995

[1] Units for exposure frequency are in events/year in the calculation of the dermally absorbed dose.

[2] In estimating the dermally absorbed dose for children age 7 through 16, the time-weighted, bodyweight normalized surface area exposed is calculated from surface area, exposure duration, and body weight for each of 10 age periods, age 7 through 16, per USEPA, 1992.

USEPA, 1989. Exposure Factors Handbook;EPA/600/8-89/043; May 1989.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; January 1992.
USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletins, Bulletin No. 3, November 1995.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE_{-INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE_{-DERMAL} = AT \times 365\ days/year) \times SA_{soil/adj}$$

Where:

$SA_{soil/adj}$ = SUM $(SA_i \times ED_i / BW_i)$

DA_{event} = $CS \times AF \times ABS_d \times CF$

Note: For noncarcinogenic effects: AT = ED.

TABLE F-26

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADOLESCENT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
No carcinogenic HHCPCs were selected.											
					SUMMARY CANCER RISK	0E+00				0E+00	0E+00

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Manganese	I	376	mg/kg	1.0E-04	4.7E-02	2.2E-03	0.001	4.7E-06	1.9E-03	2.5E-03	4.7E-03
					SUMMARY HAZARD INDEX	0.002				0.002	0.005

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

TABLE F-27

INHALATION OF PARTICULATES - SURFACE SOIL
ADOLESCENT TRESPASSER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	0.625	$m^3/hour$	USEPA, 1995
BODY WEIGHT	BW	45	kg	USEPA, 1995
EXPOSURE TIME	ET	4	hours/day	Assumption
EXPOSURE FREQUENCY	EF	45	days/year	Assumption
EXPOSURE DURATION	ED	10	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	10	years	USEPA, 1995

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA 1995. Supplemental Guidance to RAGS, Region 4 Bulletins, Bulletin No. 3, November 1995.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

CA = C x CF x (1/PEF)

Note: For noncarcinogenic effects: AT = ED

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)^-1	CANCER RISK
No carcinogenic HHCPCs were selected.							
						SUMMARY CANCER RISK	0E+00

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Manganese	I	376	mg/kg	3.03E-07	2.1E-09	1.4E-05	1.5E-04
						SUMMARY HAZARD INDEX	1E-04

TABLE F-28

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADULT RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	100	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	1	mg/cm^2-event	USEPA, 1995
ABSORPTION FRACTION	ABS_d	chemical-specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,750	cm^2	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	350	days/year [1]	Assumption
EXPOSURE DURATION	ED	24	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	24	years	USEPA, 1995

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; January 1992.

USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = \frac{DA_{event} \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

$$DA_{event} = CS \times AF \times ABS_d \times CF$$

Note: **For noncarcinogenic effects, AT = ED.**

TABLE F-28

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
ADULT RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
No carcinogenic HHCPCs were selected.											
SUMMARY CANCER RISK						0E+00				0E+00	0E+00

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Manganese	I	376	mg/kg	5.2E-04	4.7E-02	1.1E-02	0.001	3.0E-05	1.9E-03	1.6E-02	2.7E-02
SUMMARY HAZARD INDEX						0.01				0.02	0.027

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November, 1995).
[2] Calculated from oral RfDs.

TABLE F-29

INHALATION OF PARTICULATES - SURFACE SOIL
ADULT RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	0.833	m^3/hour	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	16	hours/day	Assumption
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1995
EXPOSURE DURATION	ED	24	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	24	years	USEPA, 1995

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

CA = C x CF x (1/PEF)

Note:

For noncarcinogenic effects: AT = ED

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)-1	CANCER RISK
No carcinogenic HHCPCs were selected.							
SUMMARY CANCER RISK							0E+00

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Manganese	I	376	mg/kg	3.03E-07	5.5E-08	1.4E-05	4.0E-03
SUMMARY HAZARD INDEX							4E-03

TABLE F-30

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	200	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	1	mg/cm^2-event	USEPA, 1995
AGE-SPECIFIC SURFACE AREA	SA	age-specific	cm^2	USEPA, 1989
ABSORPTION FRACTION	ABS	chemical-specific	unitless	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
BODY WEIGHT	BW	15	kg	USEPA, 1991
AGE-SPECIFIC BODY WEIGHT	BW	age-specific	kg	USEPA, 1989
EXPOSURE FREQUENCY	EF	350	days/year [1]	USEPA, 1995
EXPOSURE DURATION	ED	6	years	USEPA, 1995
AGE-SPECIFIC EXPOSURE DURATION	ED	age-specific	years	Assumption
AGE-WEIGHTED SURFACE AREA [2]	$SA_{soil/adj}$	766	cm^2-year/kg	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	6	years	USEPA, 1995

[1] Units for exposure frequency are in events/year in the calculation of the dermally absorbed dose.

[2] In estimating the dermally absorbed dose for children age1 through 6, the time-weighted, bodyweight normalized surface area exposed is calculated from surface area, exposure duration, and body weight for each of 6 age periods, age 1 through 6, per USEPA, 1992.

USEPA, 1989. Exposure Factors Handbook;EPA/600/8-89/043; May 1989.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; January 1992.
USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = (DA_{event} \times EF / AT \times 365\ days/year) \times SA_{soil/adj}$$

Where:

$SA_{soil/adj}$ = SUM (SA x ED / BW)

DA_{event} = CS x AF x ABS x CF

Note: For noncarcinogenic effects, AT = ED.

TABLE F-30

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
No carcinogenic HHCPCs were selected.											
				SUMMARY CANCER RISK		0E+00				0E+00	0E+00

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Manganese	I	376	mg/kg	4.8E-03	4.7E-02	1.0E-01	0.001	4.6E-05	1.9E-03	2.4E-02	1.3E-01
				SUMMARY HAZARD INDEX		0.1				0.02	0.127

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

TABLE F-31

INHALATION OF PARTICULATES - SURFACE SOIL
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION IN AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	0.625	$m^3/hour$	USEPA, 1995
BODY WEIGHT	BW	15	kg	USEPA, 1991
EXPOSURE TIME	ET	24	hours/day	Assumption
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1991
EXPOSURE DURATION	ED	6	years	USEPA, 1991
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	6	years	USEPA, 1991

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletins, Bulletin No. 3, November 1995.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

CA = C x CF x (1/PEF)

Note:

For noncarcinogenic effects: AT = ED

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)-1	CANCER RISK
No carcinogenic HHCPCs were selected.							
						SUMMARY CANCER RISK	0E+00

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Manganese	I	376	mg/kg	3.03E-07	2.9E-07	1.4E-05	2.1E-02
						SUMMARY HAZARD INDEX	2E-02

TABLE F-32

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
SITE MAINTENANCE WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	50	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg/cm²-event	USEPA, 1995
ABSORPTION FRACTION	ABS	chemical-specific	unitless	Assumption
SURFACE AREA EXPOSED	SA	5,750	cm²	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	30	days/year [1]	Assumption
EXPOSURE DURATION	ED	25	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	25	years	USEPA, 1995

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.

USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = \frac{DA_{event} \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

$$DA_{event} = CS \times AF \times ABS \times CF$$

Note: **For noncarcinogenic effects, AT = ED**

TABLE F-32

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
SITE MAINTENANCE WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
No carcinogenic HHCPCs were selected.											
SUMMARY CANCER RISK						0E+00				0E+00	0E+00

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Manganese	I	376	mg/kg	2.2E-05	4.7E-02	4.7E-04	0.001	2.5E-06	1.9E-03	1.3E-03	1.8E-03
SUMMARY HAZARD INDEX						0.0005				0.001	0.002

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

TABLE F-33

INHALATION OF PARTICULATES - SURFACE SOIL
SITE MAINTENANCE WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	2.5	m^3/hour	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	8	hours/day	Assumption
EXPOSURE FREQUENCY	EF	30	days/year	Assumption
EXPOSURE DURATION	ED	25	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	25	years	USEPA, 1995

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance:
"Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletins, Bulletin No. 3, November 1995.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$INTAKE = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

CA = C x CF x (1/PEF)

Note: For noncarcinogenic effects, AT = ED

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)^-1	CANCER RISK
No carcinogenic HHCPCs were selected.							
				SUMMARY CANCER RISK			0E+00

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Manganese	I	376	mg/kg	3.03E-07	7.1E-09	1.4E-05	5.1E-04
				SUMMARY HAZARD INDEX			5E-04

TABLE F-34

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
OCCUPATIONAL WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	50	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg/cm²-event	USEPA, 1992
ABSORPTION FRACTION	ABS	chemical-specific	unitless	Assumption
SURFACE AREA EXPOSED	SA	2,300	cm²	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	250	days/year [1]	USEPA, 1995
EXPOSURE DURATION	ED	25	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	25	years	USEPA, 1995

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.

USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = \frac{DA_{event} \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

$$DA_{event} = CS \times AF \times ABS \times CF$$

Note: **For noncarcinogenic effects, AT = ED**

TABLE F-34

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
OCCUPATIONAL WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
No carcinogenic HHCPCs were selected.											
SUMMARY CANCER RISK						**0E+00**				**0E+00**	**0E+00**

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Manganese	**I**	**376**	mg/kg	1.8E-04	**4.7E-02**	3.9E-03	0.001	8.5E-06	**1.9E-03**	4.5E-03	8.4E-03
SUMMARY HAZARD INDEX						**0.004**				**0.004**	**0.008**

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

TABLE F-35

INHALATION OF PARTICULATES - SURFACE SOIL
OCCUPATIONAL WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	0.833	m^3/hour	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	8	hours/day	Assumption
EXPOSURE FREQUENCY	EF	250	days/year	Assumption
EXPOSURE DURATION	ED	25	years	USEPA, 1995
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	25	years	USEPA, 1995

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance:
"Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS: Region 4 Bulletins, Bulletin No. 3, November 1995.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$INTAKE = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

CA = C x CF x (1/PEF)

Note: For noncarcinogenic effects, AT = ED.

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)^-1	CANCER RISK
No carcinogenic HHCPCs were selected.							
				SUMMARY CANCER RISK			0E+00

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Manganese	I	376	mg/kg	3.03E-07	2.0E-08	1.4E-05	1.4E-03
				SUMMARY HAZARD INDEX			1E-03

TABLE F-36

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
EXCAVATION WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	480	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	Assumption
ADHERENCE FACTOR	AF	1	mg/cm^2-event	USEPA, 1995
ABSORPTION FRACTION	ABS	chemical-specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,750	cm^2	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	30	days/year [1]	Assumption
EXPOSURE DURATION	ED	1	years	USEPA, 1991
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	1	years	USEPA, 1991

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.

USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = \frac{DAevent \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

$$DA_{event} = CS \times AF \times ABS \times CF$$

Note: **For noncarcinogenic effects, AT = ED**

TABLE F-36

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL
EXCAVATION WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
No carcinogenic HHCPCs were selected.											
SUMMARY CANCER RISK						0E+00				0E+00	0E+00

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD [1] (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [2]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [3] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Manganese	I	376	mg/kg	2.1E-04	4.7E-02	4.5E-03	0.001	2.5E-06	1.9E-03	1.3E-03	5.8E-03
SUMMARY HAZARD INDEX						0.005				0.001	0.006

[1] Subchronic Rfd values were used for the excavation worker due to short exposure scenario.
[2] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (USEPA, 1995).
[3] Calculated from oral RfDs.

TABLE F-37

INHALATION OF PARTICULATES - SURFACE SOIL
EXCAVATION WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31EF

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
SOIL CONCENTRATION	C	chemical-specific	chemical-specific	
PART. EMISSION FACTOR	PEF	1.24E+09	m^3/kg	default [1]
CONCENTRATION AIR	CA	chemical-specific	mg/m^3	
INHALATION RATE	IR	2.5	m^3/hour	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE TIME	ET	8	hours/day	Assumption
EXPOSURE FREQUENCY	EF	30	days/year	Assumption
EXPOSURE DURATION	ED	1	years	Assumption
CONVERSION FACTOR	CF	0.001	mg/ug	Organics only
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	1	years	USEPA, 1991

[1] Florida Soil Clean-Up Goal Variable. FDEP, 1995.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance:
Standard Default Exposure Factors; OSWER Directive 9285.6-03.
USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x INHALATION CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

'HAZARD QUOTIENT = INTAKE (mg/kg-day) / INHALATION REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{CA \times IR \times ET \times EF \times ED}{BW \times AT \times 365 \text{ days/yr}}$$

Where:

CA = C x CF x (1/PEF)

Note: For noncarcinogens, AT = ED.

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION CSF (mg/kg-day)^-1	CANCER RISK
No carcinogenic HHCPCs were selected.							
						SUMMARY CANCER RISK	0E+00

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	AIR CONCENTRATION (mg/m^3)	INTAKE (mg/kg-day)	INHALATION RfD (mg/kg-day)	HAZARD QUOTIENT
Manganese	I	376	mg/kg	3.03E-07	7.1E-09	1.4E-05	5.1E-04
						SUMMARY HAZARD INDEX	5E-04

TABLE F-38

INGESTION OF GROUNDWATER AS DRINKING WATER (UNFILTERED SAMPLES)
ADULT RESIDENT
SITE 31C
MILTON, FLORIDA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION WATER	CW	chemical-specific	ug/liter	
INGESTION RATE	IR	2	liters/day	USEPA, 1995
BODY WEIGHT	BW	70	kg	USEPA, 1991
CONVERSION FACTOR	CF	0.001	mg/ug	
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1995
EXPOSURE DURATION	ED	24	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	24	years	USEPA, 1991

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance:
"Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Region IV Supplemental Gudance to RAGS, Bulletin No. 3, November.

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR (mg/kg-day)-1

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

INTAKE = CW x IR x EF x ED x CF / BW x AT x 365 days/year

Note: For noncarcinogenic effects, AT = ED.

CARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	CANCER SLOPE FACTOR (mg/kg-day)^-1	CANCER RISK INGESTION
Trichlorethene	2	UG/LITER	1.9E-05	1.1E-02	2.1E-07
				TOTAL CANCER RISK	2E-07

NONCARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	REFERENCE DOSE (mg/kg-day)	HAZARD QUOTIENT INGESTION
Trichloroethene	2	UG/LITER	5.5E-05	6.0E-03	9.1E-03
				TOTAL HAZARD INDEX	0.009

ND = no data available.

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TABLE F-39

INGESTION OF GROUNDWATER AS DRINKING WATER (UNFILTERED SAMPLES) IN CAPTURE ZONE
CHILD RESIDENT
SITE 31C
MILTON, FLORDIA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION WATER	CW	chemical-specific	ug/liter	
INGESTION RATE	IR	1	liters/day	USEPA, 1995
BODY WEIGHT	BW	15	kg	USEPA, 1991
CONVERSION FACTOR	CF	0.001	mg/ug	
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1995
EXPOSURE DURATION	ED	6	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	6	years	USEPA, 1991

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance:
"Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1995. Region IV Supplemental Gudance to RAGS, Bulletin No. 3, November.

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR (mg/kg-day)-1

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$\text{INTAKE} = \frac{\text{CW x IR x EF x ED x CF}}{\text{BW x AT x 365 days/year}}$$

Note: For noncarcinogenic effects, AT = ED.

CARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	CANCER SLOPE FACTOR (mg/kg-day)^-1	CANCER RISK INGESTION
Trichlorethene	2	UG/LITER	1.1E-05	1.1E-02	1.2E-07
				TOTAL CANCER RISK	1E-07

NONCARCINOGENIC EFFECTS

COMPOUND	WATER CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	REFERENCE DOSE (mg/kg-day)	HAZARD QUOTIENT INGESTION
Trichloroethene	2	UG/LITER	1.3E-04	6.0E-03	2.1E-02
				TOTAL HAZARD INDEX	0.02

TABLE F-40

INHALATION EXPOSURE TO VOCs WHILE SHOWERING
ADULT RESIDENT
SITE 31C
MILTON, FLORDIA

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SHOWER AIR	CA [1]	chemical-	ug/m^3	Modeled
CONVERSION FACTOR 1	CF_1	24	hours/day	
EXPOSURE TIME SHOWER	ET	0.2	hours/day	USEPA, 1989
EXPOSURE FREQUENCY	EF	350	days/year	USEPA, 1991
EXPOSURE DURATION	ED	24	years	USEPA, 1991
CONVERSION FACTOR 2	CF_2	365	days/year	
AVERAGING TIME CANCER	AT	70	years	USEPA, 1989
AVERAGING TIME NONCANCER	AT	24	years	USEPA, 1989

[1] Calculated via model by Foster and Chrostowski, Air Pollution Control Association Annual Meeting, 1987.
USEPA, 1989. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual, (Part A) EPA/540/1-89/002; December 1989.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Assumptions".

EQUATIONS

CANCER RISK = AVG. CONC. (ug/m^3) * CANCER UNIT RISK $(ug/m^3)^{-1}$

HAZARD QUOTIENT = AVG.CONC.(ug/m^3)/REF. CONC. (ug/m^3)

$$\text{AVG. CONC.} = \frac{CA_{air} * EF * ET * ED}{AT * CF1 * CF2}$$

CARCINOGENIC EFFECTS

COMPOUND	VOLATILE OR NON-VOLATILE? V/NV	SHOWER AIR CONCENTRATION (ug/m^3)	AVERAGE AIR CONCENTRATION LIFETIME (ug/m^3)	INHALATION CANCER UNIT RISK $(ug/m^3)^{-1}$	CANCER RISK
Trichloroethene	V	**8.8E+00**	2.4E-02	2.0E-06	**4.8E-08**
				SUMMARY CANCER RISK	**5E-08**

NA = not applicable. This analyte is not volatile and has therefore not been evaluated via this volatilization model.

NONCARCINOGENIC EFFECTS

COMPOUND	VOLATILE OR NON-VOLATILE? V/NV	SHOWER AIR CONCENTRATION (ug/m^3)	AVERAGE AIR CONCENTRATION FOR TIME PERIOD (ug/m^3)	CHRONIC INHALATION RfC [1] (ug/m^3)	HAZARD QUOTIENT
Trichloroethene	V	**8.8E+00**	7.0E-02	ND	
				SUMMARY HAZARD INDEX	**0.00**

[1] RfC is the Reference Concentration published by USEPA.
ND = no data available.
NA = not applicable. The analyte is not volatile and has therefore not been evaluated via this volatilization model.

TABLE F-41

CONCENTRATION OF VOCs WHILE SHOWERING
ADULT RESIDENT
SITE 31C
MILTON, FLORDIA

EMPIRICAL CONSTANTS

CONSTANT	SYMBOL	VALUE	UNIT	SOURCE
Liquid-film mass transfer for CO_2	K_l (CO_2)	20	cm/hr	Calculated
Gas-film mass transfer for water	K_g (H_2O)	3000	cm/hr	Calculated
Molar gas constant x Temperature	RT	0.024	atm-m³/mole	
Reference temperature	T_1	293	K	
Temperature of shower water	T_s	318	K	Assumption
Viscosity of water at shower temperature	u_s	0.6178	cp	Calculated
Viscosity of water at reference temperature	u_1	0.65	cp	Calculated
Shower droplet free-fall time	t_s	1.5	sec	Assumption
Droplet diameter	d	1	mm	Foster & Chrostowski, 1987
Flow rate in shower	FR	20	l/min	Assumption
Volume of shower area	SV	12	m³	Assumption
Air exchange rate	R	0.03	min^{-1}	Calculated
Time in shower	D_s	12	min	USEPA, 1989
Time at which concentration is being calculated	t	12	min	Assumption

Foster, S.A. and Chrostowski, P.C., 1987. Inhalation Exposures to Volatile Organic Contaminants in the Shower.
USEPA, 1989, Exposure Factors Handbook; EPA/600/8-89/043, May 1989.
All equations and definitions of terms are presented in the Appendix to this report, Calculation of Air Concentration Using the Shower Model.

TABLE F-41

CONCENTRATION OF VOCs WHILE SHOWERING
ADULT RESIDENT
SITE 31C
MILTON, FLORDIA
INTERIM CORRECTIVE MEASURE

SHOWER CONCENTRATIONS

COMPOUND	C_w (ug/l)	MW (g/mol)	H (atm-m³/mol)	k_l (cm/hr)	k_g (cm/hr)	K_L (cm/hr)	K_{al} (cm/hr)	C_{wd} (µg/l)	S (µg/m³-min)	$C_{(voc)}$ (µg/m³)
Trichloroethene	2	130.0	0.01	1.2E+01	1.1E+03	1.1E+01	1.2E+01	5.2E-01	8.7E-01	**8.8E+00**

C_w = Concentration in groundwater
MW = Molecular weight
H = Henry's Law constant
k_l = Chemical-specific mass-transfer coefficient
k_g = Chemical-specific gas mass-transfer coefficient
K_L = Mass transfer coefficient
K_{al} = Temperature correction of mass transfer coefficient
C_{wd} = Analyte concentration in water droplet
S = Release rate of analyte to air
$C_{(voc)}$ = Analyte concentration in bathroom air at time t.

$$C_{(voc)} = (S/R) \times (e^{(RDs)}-1) \times e^{(-Rt)}$$

TABLE F-42

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
ADULT RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	50	mg/day	USEPA, 1996
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	0.2	mg/cm^2-event	USEPA, 1992
ABSORPTION FRACTION	ABS_d	chemical-specific	unitless	USEPA, 1995
SURFACE AREA EXPOSED	SA	5,000	cm^2	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1992
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	350	days/year [1]	Assumption
EXPOSURE DURATION	ED	7	years	USEPA, 1995
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	7	years	USEPA, 1995

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.

USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.

USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; January 1992.

USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.

USEPA, 1996. Exposure Factors Handbook.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = \frac{DA_{event} \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

$$DA_{event} = CS \times AF \times ABS_d \times CF$$

Note: **For noncarcinogenic effects, AT = ED.**

TABLE F-42

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
ADULT RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day)$^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day)$^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
Aroclor-1260	O	1350	ug/kg	9.2E-08	2.0E+00	1.8E-07	0.01	1.8E-08	2.2E+00	4.1E-08	2.3E-07
Dieldrin	O	118	ug/kg	8.1E-09	1.6E+01	1.3E-07	0.01	1.6E-09	3.2E+01	5.2E-08	1.8E-07
Lead	I	1890	mg/kg	1.3E-04	ND		0.001	2.6E-06	ND		
SUMMARY CANCER RISK						3E-07				9E-08	4E-07

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	9.2E-07	2.0E-05	4.6E-02	0.01	1.8E-07	1.8E-05	1.0E-02	5.7E-02
Dieldrin	O	118	ug/kg	8.1E-08	5.0E-05	1.6E-03	0.01	1.6E-08	2.5E-05	6.5E-04	2.3E-03
Aluminum	I	7480	mg/kg	5.1E-03	1.0E+00	5.1E-03	0.001	1.0E-04	2.0E-01	5.1E-04	5.6E-03
Barium	I	534	mg/kg	3.7E-04	7.0E-02	5.2E-03	0.001	7.3E-06	4.9E-03	1.5E-03	6.7E-03
Cadmium	I	26.8	mg/kg	1.8E-05	1.0E-03	1.8E-02	0.001	3.7E-07	2.0E-04	1.8E-03	2.0E-02
Chromium	I	295	mg/kg	2.0E-04	3.0E-03	6.7E-02	0.001	4.0E-06	3.0E-04	1.3E-02	8.1E-02
Copper	I	948	mg/kg	6.5E-04	ND		0.001	1.3E-05	ND		
Iron	I	9410	mg/kg	6.4E-03	3.0E-01	2.1E-02	0.001	1.3E-04	6.0E-03	2.1E-02	4.3E-02
Lead	I	1890	mg/kg	1.3E-03	ND		0.001	2.6E-05	ND		
Mercury	I	8.8	mg/kg	6.0E-06	3.0E-04	2.0E-02	0.001	1.2E-07	6.0E-05	2.0E-03	2.2E-02
Silver	I	154	mg/kg	1.1E-04	5.0E-03	2.1E-02	0.001	2.1E-06	1.1E-03	1.9E-03	2.3E-02
SUMMARY HAZARD INDEX						0.2				0.1	0.3

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November, 1995).
[2] Calculated from oral RfDs.

TABLE F-43

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	100	mg/day	USEPA, 1995
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	0.2	mg/cm^2-event	USEPA, 1995
AGE-SPECIFIC SURFACE AREA	SA	age-specific	cm^2	USEPA, 1989
ABSORPTION FRACTION	ABS	chemical-specific	unitless	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
BODY WEIGHT	BW	15	kg	USEPA, 1991
AGE-SPECIFIC BODY WEIGHT	BW	age-specific	kg	USEPA, 1989
EXPOSURE FREQUENCY	EF	350	days/year [1]	USEPA, 1995
EXPOSURE DURATION	ED	2	years	USEPA, 1995
AGE-SPECIFIC EXPOSURE DURATION	ED	age-specific	years	Assumption
AGE-WEIGHTED SURFACE AREA [2]	$SA_{soil/adj}$	766	cm^2-year/kg	USEPA, 1992
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	2	years	USEPA, 1995

[1] Units for exposure frequency are in events/year in the calculation of the dermally absorbed dose.

[2] In estimating the dermally absorbed dose for children age1 through 6, the time-weighted, bodyweight normalized surface area exposed is calculated from surface area, exposure duration, and body weight for each of 6 age periods, age 1 through 6, per USEPA, 1992.

USEPA, 1989. Exposure Factors Handbook;EPA/600/8-89/043; May 1989.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; January 1992.
USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.
USEPA, 1996. Exposure Factors Handbook.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE_{-INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE_{-DERMAL} = (DA_{event} \times EF / AT \times 365\ days/year) \times SA_{soil/adj}$$

Where:

$SA_{soil/adj}$ = SUM (SA x ED / BW)

DA_{event} = CS x AF x ABS x CF

Note: For noncarcinogenic effects, AT = ED.

TABLE F-43

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
CHILD RESIDENT
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF (mg/kg-day)$^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] (mg/kg-day)$^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
Aroclor-1260	O	1350	ug/kg	2.5E-07	2.0E+00	4.9E-07	0.01	2.8E-08	2.2E+00	6.2E-08	5.6E-07
Dieldrin	O	118	ug/kg	2.2E-08	1.6E+01	3.4E-07	0.01	2.5E-09	3.2E+01	7.9E-08	4.2E-07
Lead	I	1890	mg/kg	3.5E-04	ND		0.001	4.0E-06	ND		
					SUMMARY CANCER RISK	8E-07				1E-07	1E-06

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	8.6E-06	2.0E-05	4.3E-01	0.01	9.9E-07	1.8E-05	5.5E-02	4.9E-01
Dieldrin	O	118	ug/kg	7.5E-07	5.0E-05	1.5E-02	0.01	8.7E-08	2.5E-05	3.5E-03	1.9E-02
Aluminum	I	7480	mg/kg	4.8E-02	1.0E+00	4.8E-02	0.001	5.5E-04	2.0E-01	2.7E-03	5.1E-02
Barium	I	534	mg/kg	3.4E-03	7.0E-02	4.9E-02	0.001	3.9E-05	4.9E-03	8.0E-03	5.7E-02
Cadmium	I	26.8	mg/kg	1.7E-04	1.0E-03	1.7E-01	0.001	2.0E-06	1.0E-05	2.0E-01	3.7E-01
Chromium	I	295	mg/kg	1.9E-03	3.0E-03	6.3E-01	0.001	2.2E-05	3.0E-04	7.2E-02	7.0E-01
Copper	I	948	mg/kg	6.1E-03	ND		0.001	7.0E-05	ND		
Iron	I	9410	mg/kg	6.0E-02	3.0E-01	2.0E-01	0.001	6.9E-04	6.0E-03	1.2E-01	3.2E-01
Lead	I	1890	mg/kg	1.2E-02	ND		0.001	1.4E-04	ND		
Mercury	I	8.8	mg/kg	5.6E-05	3.0E-04	1.9E-01	0.001	6.5E-07	6.0E-05	1.1E-02	2.0E-01
Silver	I	154	mg/kg	9.8E-04	5.0E-03	2.0E-01	0.001	1.1E-05	1.1E-03	1.0E-02	2.1E-01
					SUMMARY HAZARD INDEX	2				0.5	2

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

TABLE F-44

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
OCCUPATIONAL WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

EXPOSURE PARAMETERS

PARAMETER	SYMBOL	VALUE	UNITS	SOURCE
CONCENTRATION SOIL	CS	chemical-specific	chemical-specific	
INGESTION RATE	IR	50	mg/day	USEPA, 1996
FRACTION INGESTED	FI	100%	unitless	USEPA, 1995
ADHERENCE FACTOR	AF	0.2	mg/cm^2-event	USEPA, 1992
ABSORPTION FRACTION	ABS	chemical-specific	unitless	Assumption
SURFACE AREA EXPOSED	SA	2,000	cm^2	USEPA, 1996
DOSE ABSORBED PER EVENT	DA_{event}	chemical-specific	mg/cm^2-event	USEPA, 1995
CONVERSION FACTOR	CF	1.00E-09	kg/ug	Organic conversion
CONVERSION FACTOR	CF	1.00E-06	kg/mg	Inorganic conversion
BODY WEIGHT	BW	70	kg	USEPA, 1991
EXPOSURE FREQUENCY	EF	250	days/year [1]	USEPA, 1995
EXPOSURE DURATION	ED	9	years	USEPA, 1992
AVERAGING TIME				
CANCER	AT	70	years	USEPA, 1991
NONCANCER	AT	9	years	USEPA, 1992

[1] Units for exposure frequency are events/year in the calculation of the dermally absorbed dose.
USEPA, 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors"; OSWER Directive 9285.6-03.
USEPA, 1992. Dermal Exposure Assessment: Principles and Applications; EPA/600/8-91/011B; 1/92.
USEPA, 1995. Supplemental Guidance to RAGS : Region IV, Human Health Risk Assessment Bulletin No. 3.
USEPA, 1996. Exposure Factors Handbook.

EQUATIONS

CANCER RISK = INTAKE (mg/kg-day) x CANCER SLOPE FACTOR $(mg/kg\text{-}day)^{-1}$

HAZARD QUOTIENT = INTAKE (mg/kg-day) / REFERENCE DOSE (mg/kg-day)

$$INTAKE\text{-}_{INGESTION} = \frac{CS \times IR \times FI \times CF \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

$$INTAKE\text{-}_{DERMAL} = \frac{DA_{event} \times SA \times EF \times ED}{BW \times AT \times 365\ days/yr}$$

Where:

$$DA_{event} = CS \times AF \times ABS \times CF$$

Note: **For noncarcinogenic effects, AT = ED**

TABLE F-44

DIRECT CONTACT WITH AND INCIDENTAL INGESTION OF SURFACE SOIL (CENTRAL TENDENCY)
OCCUPATIONAL WORKER
NAS WHITING FIELD
MILTON, FLORIDA
SITE 31C

CARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL CSF $(mg/kg\text{-}day)^{-1}$	CANCER RISK INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL CSF [2] $(mg/kg\text{-}day)^{-1}$	CANCER RISK DERMAL	TOTAL CANCER RISK
Aroclor-1260	O	1350	ug/kg	8.5E-08	2.0E+00	1.7E-07	0.01	6.8E-09	2.2E+00	1.5E-08	1.8E-07
Dieldrin	O	118	ug/kg	7.4E-09	1.6E+01	1.2E-07	0.01	5.9E-10	3.2E+01	1.9E-08	1.4E-07
Lead	I	1890	mg/kg	1.2E-04	ND		0.001	9.5E-07	ND		
SUMMARY CANCER RISK						3E-07				3E-08	3E-07

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral CSFs.

NONCARCINOGENIC EFFECTS

COMPOUND	INORGANIC OR ORGANIC I/O	SOIL CONCENTRATION	UNITS	INTAKE INGESTION (mg/kg-day)	ORAL RfD (mg/kg-day)	HAZARD QUOTIENT INGESTION	DERMAL ABS [1]	INTAKE DERMAL (mg/kg-day)	DERMAL RfD [2] (mg/kg-day)	HAZARD QUOTIENT DERMAL	TOTAL HAZARD QUOTIENT
Aroclor-1260	O	1350	ug/kg	6.6E-07	2.0E-05	3.3E-02	0.01	5.3E-08	1.8E-05	2.9E-03	3.6E-02
Dieldrin	O	118	ug/kg	5.8E-08	5.0E-05	1.2E-03	0.01	4.6E-09	2.5E-05	1.8E-04	1.3E-03
Aluminum	I	7480	mg/kg	3.7E-03	1.0E+00	3.7E-03	0.001	2.9E-05	2.0E-01	1.5E-04	3.8E-03
Barium	I	534	mg/kg	2.6E-04	7.0E-02	3.7E-03	0.001	2.1E-06	4.9E-03	4.3E-04	4.2E-03
Cadmium	I	26.8	mg/kg	1.3E-05	1.0E-03	1.3E-02	0.001	1.0E-07	1.0E-05	1.0E-02	2.4E-02
Chromium	I	295	mg/kg	1.4E-04	3.0E-03	4.8E-02	0.001	1.2E-06	3.0E-04	3.8E-03	5.2E-02
Copper	I	948	mg/kg	4.6E-04	ND		0.001	3.7E-06	ND		
Iron	I	9410	mg/kg	4.6E-03	3.0E-01	1.5E-02	0.001	3.7E-05	6.0E-03	6.1E-03	2.1E-02
Lead	I	1890	mg/kg	9.2E-04	ND		0.001	7.4E-06	ND		
Mercury	I	8.8	mg/kg	4.3E-06	3.0E-04	1.4E-02	0.001	3.4E-08	6.0E-05	5.7E-04	1.5E-02
Silver	I	154	mg/kg	7.5E-05	5.0E-03	1.5E-02	0.001	6.0E-07	1.1E-03	5.5E-04	1.6E-02
SUMMARY HAZARD INDEX						0.15				0.03	0.2

[1] USEPA Region IV guidance specifies absorption factors of 1% for organics and 0.1% for inorganics (November 1995).
[2] Calculated from oral RfDs.

APPENDIX G

ECOLOGICAL RISK DATA

Table G - 1
Summary of Bioaccumulation Data

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NAS Whiting Field
Milton, Florida

Analyte	Log K_{ow} [b]	Bioaccumulation Factor [a]			
		Invertebrate [c]	Plant [d]	Mammal [e]	Bird [f]
VOLATILES [g]					
Acetone	-0.24	NA	NA	NA	NA
Carbon disulfide	2.2	NA	NA	NA	NA
2-Hexanone	NA	NA	NA	NA	NA
Methylene chloride	1.3	NA	NA	NA	NA
SEMIVOLATILES					
Benzo(b)fluoranthene	6.1	6.1	5.0E-02	2.3E-03	1.9E+00	NA
Benzo(k)fluoranthene	6.1	6.1	5.0E-02	2.3E-03	1.9E+00	NA
Butylbenzylphthalate	4.9	6.4	5.0E-02	1.5E-03	3.8E+00	NA
Di-n-octylphthalate	9.2	6.4	5.0E-02	1.5E-03	3.8E+00	NA
bis(2-Ethylhexyl)phthalate	5.1	6.4	5.0E-02	1.5E-03	3.8E+00	NA
PESTICIDES/PCBs					
Aroclor-1260	7.1 [h]	5.8E+00 [i]	1.2E-01 [j]	3.8E+00 [k]	3.2E-01 [l]
4,4'-DDE	5.7	1.7E+00 [m]	1.0E-02 [n]	1.2E+00 [o]	2.9E+00 [p]
Dieldrin	4.6	5.5E+00 [q]	1.7E-02	1.5E+00 [r]	4.4E-01 [s]
INORGANICS					
Aluminum	NA	7.5E-02 [t]	8.0E-04 [u]	7.5E-02 [v]	NA
Barium	NA	7.5E-03 [t]	3.0E-02 [u]	7.5E-03 [v]	NA
Beryllium	NA	5.0E-02 [t]	2.0E-03 [u]	5.0E-02 [w]	NA
Cadmium	NA	1.1E+01 [i]	3.3E+01 [x]	2.1E+00 [v]	3.8E-01 [y]
Chromium	NA	1.6E-01 [i]	1.5E-03 [u]	2.8E-01 [v]	NA
Copper	NA	1.6E-01 [i]	7.8E-01 [z]	6.0E-01 [x]	NA
Cyanide	NA	0.0E+00 [aa]	1.0E+00 [ab]	0.0E+00 [aa]	NA
Lead	NA	7.8E-02 [ac]	0.0E+00 [x]	1.5E-02 [v]	NA
Manganese	NA	2.0E-02 [t]	5.0E-02 [u]	2.0E-02 [v]	NA

Table G - 1
Summary of Bioaccumulation Data

Remedial Investigation Report
Site 31
NAS Whiting Field
Milton, Florida

Analyte	Bioaccumulation Factor [a]				
	Log K_{ow} [b]	Invertebrate [c]	Plant [d]	Mammal [e]	Bird [f]
Mercury	NA	6.80E-02 [ad]	1.8E-01 [u]	1.0E-02 [ad]	2.3 [ad]
Selenium	NA	7.6E-01 [ae]	9.0E-03 [af]	7.5E-01 [v]	NA
Silver	NA	1.5E-01 [t]	8.0E-02 [u]	1.5E-01 [v]	NA
Zinc	NA	1.8E+00 [i]	6.1E-01 [z]	2.1E+00 [v]	NA

Table G - 1
Summary of Bioaccumulation Data

Remedial Investigation Report
Site 31
NAS Whiting Field
Milton, Florida

NOTES:

[a] Units for bioaccumulation factors (BAFs) are mg/kg (fresh) tissue weight over mg/kg (dry) soil weight for invertebrates and plants. The BAF units for small mammals and small birds are mg/kg (fresh) tissue weight over mg/kg (fresh) food weight.

[b] Log K_{ow} values are from the Superfund Chemical Data Matrix (USEPA, 1993), unless otherwise noted. Average Log K_{ow} for classes of semivolatiles are presented in the second log K_{ow} column. When available, chemical class log K_{ow} averages are used instead of chemical specific log K_{ow} to calculate BAF values.

[c] The value is an average BAF for semivolatiles measured in earthworms (Beyer, 1990) , unless otherwise noted. Dry weight values were converted to wet weight assuming earthworm are 80% water ($BAF_{weight\ weight} = BAF_{dry\ weight}/ 0.2$).

[d] Plant BAF were calculated using the following equation presented by Travis and Arms (1988) unless otherwise noted: log (Plant Bioaccumulation Factor) = 1.588-0.578 (log K_{ow}). The calculated plant BAF value was converted from dry weight to wet weight by dividing the BAF by a factor of 0.2 (assuming 80% water content of plants) ($BAF_{weight\ weight} = BAF_{dry\ weight}/ 0.2$).

[e] Mammalian BAFs were calculated using the following equation from Travis and Arms (1988), unless otherwise noted: log BTF (biotransfer factor) = Log K_{ow} - 7.6.

To convert from BTF to BAF, the calculated log BTF is first transformed to base 10 than multiplied by the average ingestion rates for nonlactating and lactating test animals (12 kg/day). BAFs are convert from dry to wet feed weight by divided the BAF by a factor of 0.2 ($BAF_{wet\ weight}$ = BTF *12 mg/day/0.2).

For semivolate analytes with Log K_{ow} less than 5 (log $K_{ow} < 5$) the BAF was assigned a minimal value of 0.15.

When no literature values for pesticides and PCBs were available, the BAF was calculated regardless of the Log K_{ow}, due to the tendency of these lipophylic compounds to bioaccumulate.

[f] Bioaccumulation data are generally lacking for birds. Therefore, there is uncertainty associated with estimating body dose for birds without considering what chemicals may have bioacumulated in prey-item tissue.

[g] No BAFs were calculated for volatile organic compounds because available evidence suggests that these analytes do not bioaccumulate (Suter, 1993, Maughan, 1993).

[h] USEPA (1990) Basics of Pump-and-Treat Ground-Water Remediation Technology.

[i] BAF for earthworms from Diercxsens et al. (1985).

[j] Arithmetic mean BAF for corn, leaves, carrots, beets, sugarbeets, radishes, and soybeans (tops, roots, and whole plants) from USEPA (1985d) and Webber et al. (1983).

[k] Aroclor 1254 is used as a surrogate (Eisler, 1986).

Table G - 1
Summary of Bioaccumulation Data

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[l] BAF calculated from discussion in Eisler, 1986. Kestrels fed 33 mg PCB/kg diet for 62-69 days accumulated 107 mg PCB/kg lipid weight in muscle. Assuming muscle is 10% lipid content, the muscle concentration is estimated at 10.7 mg/kg.

[m] Geometric means of 4,4'-DDT [Davis (1968), Davis & Harrison (1966), Wheatley & Hardman (1968), Bailey et al. (1970), Cramp & Olney (1967), and Beyer & Gish (1980)], 4,4'-DDE [Davis (1968), Davis & Harrison (1966), Cramp & Olney (1967), Collett & Harrison (1968), Hunt & Sacho (1969), and Gish (1970)], and 4,4-DDD [Barker (1958), Davis (1968), Davis & Harrison (1966), Cramp & Olney (1967), Collett & Harrison (1968), Wheatley & Hardman (1968), Hunt & Sacho (1969), Bailey et al. (1970), Dimond et al. (1970), Gish (1970), and Beyer & Gish (1980)] reported for earthworms. Dry soil concentrations calculated assuming 10% moisture content in sandy-loam soils (Donahue et al., 1977).

[n] Geometric mean of 4,4'-DDT, 4,4'-DDD, and 4,4'-DDE BAFs (fresh wt/dry wt) reported for roots (carrot, potato, sugar beet), grains (corn, oats), and legumes (alfalfa) derived from USEPA (1985a) converted from dry weight to wet-weight per values provided by Suter (1993).

[o] BAF for shrews and voles calculated using measured concentrations of DDT_R in stomach content and in whole body (Forsyth & Petrle, 1984).

[p] Whole-body pheasant BAF for 4,4'-DDT presented in USEPA (1985a); derived from Kenaga (1973).

[q] Geometric mean of reported BAFs for earthworms (Gish, 1970) converted from dry weight to wet weight assuming 80% water composition of earthworms.

[r] BAF calculated from data presented by Potter et al (1974). Based on an average dieldrin concentration in cow muscle and fat of 0.17 mg/kg (dry weight) and a dieldrin concentration of 0.11 mg/kg in the diet (dry weight).

[s] Jeffries and Davis (1968).

[t] Prey-specific value is not available. The value shown is the small mammal BAF for this chemical.

[u] Value from Baes et al. (1984) for leafy portions of plants multiplied by 0.2 to represent 80% water composition of plants.

[v] Value derived from BTFs, presented in Baes et al. (1984) for uptake into cattle. BTF converted to BAF by multiplying by food ingestion rate of 12 kg/day dry weight.

[w] Mean of values reported for *Sorex araneus* in MacFadyen (1980).

[x] Mammal value for copper and plant value for cadmium from Levine et al. (1989). Lead does not accumulate in plant tissue; therefore, a BAF of zero was assigned.

[y] Based on accumulation of cadmium in kidneys of European quail in Pimentel et al. (1984).

[z] Median of values reported from Levine et al. (1989).

[aa] Cyanide has not been shown to bioaccumulate in any organisms.

[ab] Cyanide is naturally occurring in some plants; the extent to which it is taken up from soil is unknown and; therefore, a BAF of 1 is conservatively assumed.

Table G - 1
Summary of Bioaccumulation Data

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[ac] Geometric mean of BAF values (fresh weight/dry weights) for worms and woodlice (USEPA, 1985b). Fresh weight tissue concentrations calculated assuming 80% body water content.

[ad] Uptake value (fresh wt./dry wt.) for earthworms from USEPA (1985c) sludge document. Fresh weight tissue concentration calculated assuming 80% body water content.

[ae] Average of values for industrial soils from Beyer and Cromartie (1987) multiplied by 0.2 to represent 80% water composition in earthworms.

[af] Based on reported ratio of selenium in plant tissue and iron fly ash amended soil (Stoewsand et al., 1978).

Notes:

Log Kow = Logarithm transformation of the octanol/water partitioning coefficient.
NA = not available.
PCBs = polychlorinated biphenyls.
BAF = bioaccumulation factor.
mg/kg = milligrams per kilogram.
BTF = biotransfer factor.
PAH = polynuclear aromatic hydrocarbons.
> = greater than.
< = less than.
% = percent.

References:

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Table G - 1
Summary of Bioaccumulation Data

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Ingestion Toxicity Information for Wildlife

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Analyte	Test Species	Test Type	Duration	Effect	Lethal RTV mg/kg-BW-day			Sublethal RTV mg/kg-BW-day			References
					Oral LD_{50}	LOAEL	RTV [1]	LOAEL	NOAEL	RTV [2]	
Volatile Organic Compounds											
2-Butanone (surrogate for	Rat	Oral LD_{50}	NR	Mortality	2,737		547				RTECS, 1994
2-Hexanone)	Mouse	Oral LD_{50}	NR	Mortality	4,050						RTECS, 1994
	Rat	Oral (subchronic)	13 weeks	NOAEL for neurological effects					173	173	ATSDR, 1991b
Acetone	Rat	Oral	NR	Reproductive effects				273,000		27,300	RTECS, 1993
	Rat	Oral LD_{50}	NR	Mortality	5,800						RTECS, 1993
	Rat	Oral LD_{50}		Mortality	9,750						Sax, N.I, 1984
	Mouse	Oral LD_{50}	NR	Mortality	3,000		600				RTECS, 1993
	Rabbit	Oral LD_{50}	NR	Mortality	5,340						RTECS, 1993
Carbon disulfide	Rabbit	Converted inhalatio	34 weeks	NOAEL for Fetotoxicity/malformations					11	11	IRIS, 1993
Methylene chloride	Rat	Oral LD_{50}	NR	Mortality	1,600		320				RTECS, 1994
	Dog	Oral LD_{50}	NR	Mortality	3,000		600				RTECS, 1994
	Rabbit	Oral LD_{50}	NR	Mortality	1,900						RTECS, 1994
	Rat	Oral (chronic)	2 years	Liver toxicity				52.6	5.9		IRIS, 1993
	Rat	Oral (subchronic)	3 months	Mortality, blood chemistry, histopathology					12.5		USEPA, 1984a
Semivolatile Organic Compounds											
Benzo(a)pyrene	Rat	Oral (chronic)	Pregnancy	Sterility in offspring				40			USEPA, 1984b
	Rat	Oral (chronic)	3.5 months	Reproductive				50			USEPA, 1984b
	Mouse	Oral	Multigenerational	Decreased fertility of F1 progeny; decreased F2 litter size.				[3] 10		10	McClain, R.M., et al., 1972
	Mouse	Oral (subchronic)	6 months	Mortality		120	12				ATSDR, 1993
Benzo(b)fluoranthene and Benzo(k)fluoranthene	Rodents	Oral (chronic)	NR	Carcinogenicity				40			Eisler, R., 1987a
Butylbenzylphthalate	Rat	Oral LD_{50}	NR	Mortality	2,330		466				RTECS, 1993
	Rat	Oral	NR	Reproductive effects				21,000			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				16,400			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				16,400			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				4,900		490	RTECS, 1993
	Mouse	Oral LD_{50}	NR	Mortality	4,170						RTECS, 1993
	Guniea Pig	Oral LD_{50}	NR	Mortality	13,750						RTECS, 1993
Di-n-butylphthalate (surrogate	Rat	Oral (subchronic)	48 days	Reproductive effects				125			ATSDR, 1992c
for di-n-octylphthalate)	Rat	Oral (chronic)	1 year	Mortality		600	60				IRIS, 1993
	Mouse	Single oral dose		Mortality	6513		1,303				Sax, 1984
	Rat	Oral	NR	Reproductive effects				[4] 35		3.5	RTECS, 1993
bis(2-Ethylhexyl)phthalate	Rat	Oral LD_{50}	NR	Mortality	30,600						RTECS, 1993

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					Oral LD_{50}	LOAEL	RTV [1]	LOAEL	NOAEL	RTV [2]	
	Rat	Oral	NR	Reproductive effects				7,140			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				35		3.5	RTECS, 1993
	Rat	Oral	NR	Reproductive effects				6,000			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				17,200			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				10,000			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				9,766			RTECS, 1993
	Mouse	Oral LD_{50}	NR	Mortality	30,000						RTECS, 1993
	Mouse	Oral	NR	Reproductive effects				78,880			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects				4,200			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects				50			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects				1,000			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects				2,040			RTECS, 1993
	Rabbit	Oral LD_{50}	NR	Mortality	34,000						RTECS, 1993
	Guinea pig	Oral LD_{50}	NR	Mortality	26,000						RTECS, 1993
	Guinea pig	Oral	NR	Reproductive effects				20,000			RTECS, 1993
	Mammal	Oral	NR	Reproductive effects				20,000			RTECS, 1993
	Mammal	Oral	NR	Reproductive effects				509,000			RTECS, 1993
	Mouse	Oral LD_{50}		Mortality	800		160				RTECS, 1993
	Mouse	Oral (subchronic)	13 weeks	Renal effects				125			RTECS, 1993
Pesticides/PCBs											
Aroclor 1254	Mouse	Oral	NR	Reproductive				1.53		0.153	USEPA, 1993c
	Chicken	Oral (chronic)	NR	Embryonic mortality				0.9			USEPA, 1976
	Rock dove	Oral (chronic)	NR	Parental incubation behavior				0.9		0.09	Peakall,D.B., et al., 1973
	American kestrel	Oral (chronic)	69 days	Reduced sperm concentration				9		0.9	Eisler, R., 1986,
	Mink	Oral dose	160 days	Reproductive				0.096		0.0096	USEPA, 1993c
	Mink	Oral	NR	Kit growth				0.15			USEPA, 1993c
	Mink	Oral	12.5 days	Reproductive				0.375			USEPA, 1993c
	Chicken	Oral	39 weeks	Egg production and fertility				2.44			USEPA, 1993c
	Chicken	Oral	NR	Egg production and hatchability				9.8			USEPA, 1993c
	Chicken	Maternal diet	NR	Chick growth				0.98			USEPA, 1993c
	Pheasant	Oral	16 weeks	Egg hatchability				1.8			USEPA, 1993c
Aroclor 1260	Rat	Oral LD_{50}	NR	Mortality	1,315						RTECS, 1993
	Rat	Oral LD_{50}	NR	Mortality	500		100				Eisler, R., 1986,
	Rat	Oral LD_{50}	NR	Mortality	1,300						Eisler, R., 1986,
	Rat	Oral	NR	Reproductive effects				1,674			RTECS, 1993

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Analyte	Test Species	Test Type	Duration	Effect	Lethal RTV mg/kg-BW-day			Sublethal RTV mg/kg-BW-day			References
					Oral LD_{50}	LOAEL	RTV [1]	LOAEL	NOAEL	RTV [2]	
	Rat	Oral (chronic)	2 generations	Reduced litter size				7.6			USEPA, 1985b
	Rat	Oral (subchronic)	9 weeks	Fetal mortality; maternal toxicity				6.4		0.64	ATSDR, 1987
	Mouse	Oral	NR	Reproductive effects				74			RTECS, 1993
	Mink	Oral LD_{50}		Mortality	4,000						Eisler, R., 1986,
	Mink	Oral LD_{50}		Mortality	3,000						Eisler, R., 1986,
	Mink	Oral LD_{50}		Mortality	750		150				Eisler, R., 1986,
	Mink	Oral (subchronic)	4 months	Impaired reproduction				0.0075		0.00075	Newell, A.J., et al., 1987
	Bobwhite	Oral LD_{50}	8 days	Mortality	[4] 80		16				Eisler, R., 1986,
	Mallard	Oral LD_{50}	8 days	Mortality	111						Eisler, R., 1986,
Dieldrin	Mouse	Oral LD_{50}	NR	Mortality	38		7.6				Allen, J.R., et al., 1979
	Mouse	Oral (chronic)	80 weeks	Body tremors				0.33			NCI, 1978
	Mouse	Oral (chronic)	2 year	Liver enlargement w/ histopathology				0.1			IRIS, 1993
	Mouse	Oral (chronic)	2 year	Hepatic cancer				1.3			ATSDR, 1992b
	Rat	Oral (chronic)	2 year	Histologic changes				2			ATSDR, 1992b
	Rat	Oral (chronic)	2 year	Liver lesions				0.05	0.005		IRIS, 1993
	Dog	Oral (chronic)	2 year	Increased liver weight; liver/body weight				0.05	0.005		IRIS, 1993
	Dog	Oral (chronic)	25 months	Hepatocyte degeneration				0.5			ATSDR, 1992b
	Monkey	Oral (chronic)	120 days	Tremors and convulsions				0.1			Smith, R.M., et al., 1976
	Mouse	Oral (subchronic)	4 weeks	Decreased pup survival				0.65		0.065	Virgo, B.B., et al., 1975
	Rat	Oral LD_{50}	NR	Mortality	46						Allen, J.R., et al., 1979
	Guinea pig	Oral LD_{50}	NR	Mortality	25		5				Allen, J.R., et al., 1979
	Rabbit	Oral LD_{50}	NR	Mortality	45						Allen, J.R., et al., 1979
	House sparrow	Oral LD_{50}	NR	Mortality	48						USFWS, 1984
	Chicken	Oral LD_{50}	NR	Mortality	20						Allen, J.R., et al., 1979
	Rock dove	Oral LD_{50}	NR	Mortality	27						Virgo, B.B., et al., 1975
	Gray partridge	Oral LD_{50}	NR	Mortality	9						Virgo, B.B., et al., 1975
	Chukar	Oral LD_{50}	NR	Mortality	25						Virgo, B.B., et al., 1975
	Japanese quail	Oral LD_{50}	5 days	Mortality	[4] 6		1.2				Hill, E.F. et al., 1975
	Japanese quail	Oral LD_{50}	NR	Mortality	70						Virgo, B.B., et al., 1975
	California quail	Oral LD_{50}	NR	Mortality	9						Virgo, B.B., et al., 1975
	Bobwhite	Oral LD_{50}	5 days	Mortality	[4] 3		0.6				Hill, E.F. et al., 1975
	Pheasant	Oral LD_{50}	NR	Mortality	79						Virgo, B.B., et al., 1975
	Mallard	Oral LD_{50}	5 days	Mortality	[4] 12						Hill, E.F. et al., 1975
	Mallard	Oral LD_{50}	5 days	Mortality	[4] 11						Hill, E.F. et al., 1975
	Mallard	Oral LD_{50}	NR	Mortality	381						Virgo, B.B., et al., 1975
	Whistling duck	Oral LD_{50}	NR	Mortality	100						Virgo, B.B., et al., 1975

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Analyte	Test Species	Test Type	Duration	Effect	Lethal RTV mg/kg-BW-day			Sublethal RTV mg/kg-BW-day			References
					Oral LD_{50}	LOAEL	RTV [1]	LOAEL	NOAEL	RTV [2]	
	Canada goose	Oral LD_{50}	NR	Mortality	141						Virgo, B.B., et al., 1975
	Goat	Oral LD_{50}	NR	Mortality	100						Allen, J.R., et al., 1979
	Sheep	Oral LD_{50}	NR	Mortality	50						Allen, J.R., et al., 1979
	Cattle	Oral LD_{50}	NR	Mortality	60						Allen, J.R., et al., 1979
	Mule deer	Oral LD_{50}	NR	Mortality	75						Allen, J.R., et al., 1979
	Cat	Oral LD_{50}	NR	Mortality	300						Allen, J.R., et al., 1979
	Dog	Oral LD_{50}	NR	Mortality	65		13				Allen, J.R., et al., 1979
4,4'-DDE	Rat	Oral LD_{50}	NR	Mortality	800						RTECS, 1993
	Mouse	Oral LD_{50}	NR	Mortality	700		140				RTECS, 1993
	Hamster	Oral LD_{50}	NR	Mortality	>5,000						RTECS, 1993
	Mallard	Oral	NR	Eggshell thinning				2.91			USEPA, 1993a
	Mallard	Oral	2 years	Reproductive: embryo mortality, cracked eggs				0.58		0.058	USEPA, 1993a
	Kestrel	Oral	NR	Eggshell thinning				0.39		0.039	USEPA, 1993a
Inorganic Analytes											
Aluminum	Mouse	Oral (chronic)	2-3 generations	Reduced body weight gain of newborns				[5] 425		425	NIOSH, 1985
	Rat	Oral (subchronic)	15 days	Reduced growth				100			Bernuzzi, V., et al., 1989
	Rat	Oral LD_{50}	NR	Mortality	3,700		740				Sax, N.I, 1984
Barium	Rat	Oral (chronic)	68 weeks	Renal ultrastructure changes				142			IRIS, 1993
	Rat	Oral (subchronic)	13 weeks	Renal effects				91			Dietz, D.D., et al., 1992
	Rat	Oral (acute)	10 days	Decreased ovarian weight				198		19.8	ATSDR, 1990a
	Rat	Oral (subchronic)	13 weeks	20% population mortality		430	43				Dietz, D.D., et al., 1992
Beryllium	Rat	Oral LD_{50}	NR	Mortality	10		2				USEPA, 1985a
	Rat	Oral (chronic)	NR	Increase in lung sacromas				0.22			USEPA, 1985a
	Rat	Oral (chronic)	3.2 years	Respiratory, cardiopulmonary, hematological, and hepatic effects				0.85		0.085	ATSDR, 1991a
Cadmium	Rat	Oral	NR	Reproductive effects				155			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				220			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				21.5		2.15	RTECS, 1993
	Rat	Oral	NR	Reproductive effects				23			RTECS, 1993
	Rat	Oral LD_{50}		Mortality	250						Eisler, R., 1985a
	Rat	Oral LD_{50}	NR	Mortality	225						RTECS, 1993
	Mouse	Oral LD_{50}	NR	Mortality	890						RTECS, 1993
	Mouse	Oral	NR	Reproductive effects				448			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects				1,700			RTECS, 1993

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					Oral LD_{50}	LOAEL	RTV [1]	LOAEL	NOAEL	RTV [2]	
	Guinea pig	Oral LD_{50}	NR	Mortality	150		30				Eisler, R., 1985a
	Mallard	Oral (subchronic)	90 days	Egg production suppressed				10		1	Eisler, R., 1985a
Chromium	Japanese quail	Oral LD_{50}	5 days	Mortality	126		25.2				Hill, E.F., et al., 1986
	Rat	Oral (subchronic)	90 days	Histopathologic and reproductive effects					1,400	1,400	Ivankovic, S., et al., 1975
	Mouse	Oral (subchronic)	7 weeks	Decreased spermatogenesis				3.5			ATSDR, 1992a
	Black duck	Oral (subchronic)	5 months	Reproductive effects					200	200	Outridge, P.M., et al., 1993
	Rat	Oral LD_{50}		Mortality	200		40				ATSDR, 1992a
Copper	Rat	Single oral dose		Reproductive effects				152			RTECS, 1993
	Rat	Oral LD_{50}	NR	Mortality	940		188				Sax, N.I, 1984
	Mouse	Oral (chronic)	30 days	Decreased litter sizes with teratogenic effects				100		10	Lecyk, M., 1980
Cyanide	Rat	Oral (subchronic)	11.5 months	Increased thyroid weight, myelin degeneration				30			IRIS, 1993
	Mouse	Single oral dose	NR	Mortality	8.5		1.7				Armstrong Medical, 1987
	Young chickens	Oral	20 days	Decreased growth and food intake				11		1.1	Elzubeir, E.A., et al., 1988
	Pig	Oral	110 days	Thyroid hypofunction during pregnancy				11			Tewe, O.O., et al., 1981
	Hamsters	Oral	12 days	Decreased fetal weight and delayed ossification		12		11.9		1.19	Frakes, R.A., et al., 1986
	Mallard	Single oral dose	NR	Mortality in 6% of population		1.1	0.11				Eisler, R., 1991
Lead	Rat	Oral	NR	Reproductive effects				790			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				1,140			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				520			RTECS, 1993
	Rat	Oral	NR	Reproductive effects				1,100			RTECS, 1993
	Calf	Oral LD_{50}	NR	Mortality	220						Eisler, R., 1988
	Rat	Oral (subchronic)	12-14 days	Decreased fetal body weight				2.5			McClain, R.M., et al., 1972
	Mouse	Oral	NR	Reproductive effects				1,120			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects				6,300			RTECS, 1993
	Mouse	Oral	NR	Reproductive effects				300		30	RTECS, 1993
	Mouse	Oral	NR	Reproductive effects				4,800			RTECS, 1993
	Domestic animal	Oral	NR	Reproductive effects				662			RTECS, 1993
	Mammal	Oral	NR	Reproductive effects				2,118			RTECS, 1993
	Kestrel	Diet	NR	Decreased egg laying fertility; decreased egg shell thickness					[4] 4.61	4.61	Eisler, R., 1988
	Kestrel nestlings	Oral	10 days	Reduced growth and brain weight; abnormal development				125			Eisler, R., 1988
	Japanese quail	Oral LD_{50}	5 days	Mortality	24,752						Hill, E.F., et al., 1986

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					Oral LD_{50}	LOAEL	RTV [1]	LOAEL	NOAEL	RTV [2]	
	Rat	Oral (chronic)	2 generations	Developmental effects					7		Kimmel, C.A., et al., 1980
	Guinea pig	Oral LD_{50}		Mortality	300		60				Sax, N.I, 1984
	Rock dove	Oral (chronic)	NR	Kidney pathology; learning deficiencies				6.25			Allen, J.R., et al., 1979
	Rock dove	Oral LD_{50}		Mortality	375		75				Kendall, R.J., et al., 1985
Manganese	Mouse	Oral (subchronic)	90 days	Delayed growth of testes				140		14	ATSDR, 1990b
	Mouse	Oral (chronic)	103 weeks	Mortality	4,050						ATSDR, 1990b
	Rat	Oral LD_{50}	NR	Mortality	410						ATSDR, 1990b
	Rat	Oral LD_{50}	20 days	Mortality	225		45				ATSDR, 1990b
	Rat	Oral (subchronic)	20 days	Decreased litter weight during gestation				620			ATSDR, 1990b
	Rat	Oral (chronic)	103 weeks	Mortality	930						ATSDR, 1990b
	Guinea pig	Oral LD_{50}	NR	Mortality	400						USEPA, 1984a
	Monkey	Oral (chronic)	18 months	Weakness, rigidity				25			ATSDR, 1990b
	Rodents/livestock	Oral (subchronic)	10 days - 2 month	Decreased growth rate				100			Cunningham, et al., 1966
	Mouse	Oral (subchronic)	180 days	Mortality		2,300					Gianutsos, G., et al., 1982
Mercury	Mouse	Oral LD_{50}		Mortality	22		4.4				NIOSH, 1985
	Rock dove	Oral LD_{50}		Mortality	22.8						Eisler, R., 1987b
	Chicken	Oral LD_{50}		Mortality	20		4				Fimreite, N., 1979
	Cortumix	Oral LD_{50}		Mortality	11						Eisler, R., 1987b
	Bobwhite quail	Oral LD_{50}	5 days	Mortality	523						Hill, E.F. et al., 1975
	Ring-necked pheasa	Oral LD_{50}		Mortality	11.5						Eisler, R., 1987b
	Mouse	Oral (subchronic)	50 days	Embryotoxicity and teratogenicity				0.9			Suzuki, T., 1979
	Mouse	Oral (subchronic)	Day 6-17 (gest)	Stillbirths and neonatal death				4			Suzuki, T., 1979
	Rat	Oral (chronic)	NR	Reduced fertility				0.5		0.05	Eisler, R., 1987b
organomercury	Rat	Oral (subchronic)	Day 6-14 (gest)	Retarded fetus growth				4			Suzuki, T., 1979
organomercury	Rat	Oral LD_{50}		Mortality	18		3.6				NIOSH, 1985
organomercury	Pig	Oral (subchronic)	Pregnancy	High incidence of stillbirths				0.5		0.05	Eisler, R., 1987b
organomercury	Mule deer	Oral LD_{50}		Mortality	17.9						Eisler, R., 1987b
organomercury	River otter	Oral LD_{50}		Mortality	2						Eisler, R., 1987b
organomercury	Mink	Oral LD_{50}		Mortality	1		0.2				Eisler, R., 1987b
organomercury	Gray partridge	Oral LD_{50}		Mortality	17.6						Eisler, R., 1987b
methylmercury	Dog	Oral (subchronic)	Pregnancy	High incidence of stillbirths				0.1		0.01	Eisler, R., 1987b
methylmercury	Chukar	Oral LD_{50}		Mortality	26.9						Eisler, R., 1987b
methylmercury	Mallard	Oral	NR	Reproduction, behavior				0.064		0.0064	USEPA, 1993b
methylmercury	Black duck	Oral (subchronic)	28 weeks	Reproduction inhibited				[4] 0.22			Eisler, R., 1987b
methylmercury	Fulvous whistling d	Oral LD_{50}		Mortality	37.8						Eisler, R., 1987b
methylmercury	Northern bobwhite	Oral LD_{50}		Mortality	23.8						Eisler, R., 1987b

Table G - 2
Ingestion Toxicity Information for Wildlife

Remedial Investigation Report
Site 31
NAS Whiting Field
Milton, Florida

Analyte	Test Species	Test Type	Duration	Effect	Lethal RTV mg/kg-BW-day			Sublethal RTV mg/kg-BW-day			References
					Oral LD_{50}	LOAEL	RTV [1]	LOAEL	NOAEL	RTV [2]	
methylmercury	Gray pheasant	Oral (subchronic)	30 days	Reduced reproductive ability				0.64			Eisler, R., 1987b
ethylmercury	House sparrow	Oral LD_{50}		Mortality	12.6						Eisler, R., 1987b
ethylmercury	Bantam chicken	Oral LD_{50}		Mortality	190						Fimreite, N., 1979
ethylmercury	Prairie chicken	Oral LD_{50}		Mortality	11.5		2.3				Eisler, R., 1987b
ethylmercury	Japanese quail	Oral LD_{50}		Mortality	14.4						Eisler, R., 1987b
Selenium	Rat	Oral LD_{50}	NR	Mortality	6,700						RTECS, 1994
	Rat	Oral LD_{50}	NR	Mortality	138		27.6				Sax, N.I, 1984
	Mouse	Oral	NR	Reproductive effects				134		13.4	RTECS, 1994
	Mallard	Oral (subchronic)	3 months	Reduced hatchability				1.75			Eisler, R., 1985b
	Rat	Oral (chronic)	2 years	Decrease in breeding				0.2			ATSDR, 1988
	Rat	Oral (chronic)	NR	Histological changes in heart and kidney				0.045			Eisler, R., 1985b
	Japanese quail	Oral (chronic)	NR	Reduced egg hatching				0.6			Eisler, R., 1985b
	Mallard	Oral (subchronic)	3 months	NOAEL for tratogenic effects				0.72	0.36	0.36	Eisler, R., 1985b
	Horse	Oral LD_{50}		MLD	3.3						Eisler, R., 1985b
	Mallard	Oral	6 weeks	Increased mortality		[4] 2.7	0.27				Heinz, G.H., et.al., 1988
	Black-crowned nigh	Oral	NR	NOAEL for egg hatchability					[4] 0.61		Smith, R.M., et al., 1976
Silver	Mouse	Intraperitoneal (acute)		Mortality	34		6.8				NIOSH, 1985
	Rat	Oral (chronic)	37 week	Weight gain				222.2			ATSDR, 1990c
	Mouse	Oral (chronic)	125 days	Hypoactivity				18.1			ATSDR, 1990c
Zinc	Rat	Oral LD_{50}		Mortality	2,510		502				RTECS, 1993
	Rat	Oral	Gestation	Fetal resorptions in 4 to 20% of population				200		20	Schlicker, S.A., et al., 1968
	Ferret	Oral	3-13 days	Mortality and gastrointestinal effects		390					Straube, E.F., et al., 1980
	Rat	Oral (subchronic)	NR	Kidney toxicity				160			Llobet, J.M. et al., 1988

1 Selected lethal RTVs are boxed. The lethal RTVs correspond to the NOAEL when available. When an NOAEL is not available, then the RTV value is calculated by appling a ten-fold application factor to the LOAEL or a five-fold application factor to the Oral LD_{50}.

2 Selected sublethal RTVs are boxed. The sublethal RTV corresponds to the NOAEL when available. When an NOAEL is not available, the sublethal RTV value is calculated by appling a ten-fold application factor to the sublethal LOAEL.

3 Value for benzo(a)pyrene chosen as a surrogate for all PAHs. Chemical-specific toxicity studies for ecologically significant endpoints are lacking for other PAHs. The sublethal RTV is equal to the LOAEL value because the toxicity test is multi-generational in duration.

4 Converted to dose per kilogram body weight by multiplying the reported value by ingestion rate and dividing by body weight. Body weights for birds obtained from Dunning, 1984. Ingestion rates were calculated using the following regression equation (for all birds) from USEPA , 1993a): Food Ingestion (kg/day) = 0.00582 * Body Weight$^{0.651}$ (kg). Ingestion rates for the chicken from NRC, 1984.

5 Sublethal RTV for aluminum is equal to the LOAEL value because the toxicity test is multi-generational in duration.

Table G - 2
Ingestion Toxicity Information for Wildlife

Remedial Investigation Report
Site 31
NAS Whiting Field
Milton, Florida

Analyte	Test Species	Test Type	Duration	Effect	Lethal RTV mg/kg-BW-day			Sublethal RTV mg/kg-BW-day			References
					Oral LD_{50}	LOAEL	RTV [1]	LOAEL	NOAEL	RTV [2]	

Notes: mg/kg = milligrams per kilogram.
RTV = reference toxicity value.
BW = Body weight.
LD_{50} = dose resulting in 50% mortality in test population.
LOAEL = lowest observed adverse effect level.
NOAEL = no observed adverse effect level.
NR = not reported.
PCBs = polychlorinated biphenyls.
DDE = dichlorodiphenyldichloroethylene.
PAH = polynuclear aromatic hydrocarbons.
> = greater than.
% = percent.
gest = gestation.

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Table G - 2
Ingestion Toxicity Information for Wildlife

Remedial Investigation Report
Site 31
NAS Whiting Field
Milton, Florida

Analyte	Test Species	Test Type	Duration	Effect	Lethal RTV mg/kg-BW-day			Sublethal RTV mg/kg-BW-day			References
					Oral LD_{50}	LOAEL	RTV [1]	LOAEL	NOAEL	RTV [2]	

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Table G - 2
Ingestion Toxicity Information for Wildlife

Remedial Investigation Report
Site 31
NAS Whiting Field
Milton, Florida

Analyte	Test Species	Test Type	Duration	Effect	Lethal RTV mg/kg-BW-day			Sublethal RTV mg/kg-BW-day			References
					Oral LD_{50}	LOAEL	RTV [1]	LOAEL	NOAEL	RTV [2]	

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Table G - 3
RTVs Selected for Ecological Risk Assessment [a]
Units (mg/kgBW/day)

Remedial Investigation Report
Site 31
NAS Whiting Field
Milton, Florida

Analyte	Small Mammal [b]		Small Bird [c]		Predatory Mammal [d]		Predatory Bird [e]	
	Lethal	Sublethal	Lethal	Sublethal	Lethal	Sublethal	Lethal	Sublethal
Volatile Organic Compounds								
Acetone	600	27,300	NA	NA	600	27,300	NA	NA
2-Hexanone	547	173	NA	NA	547	173	NA	NA
Carbon disulfide	NA	11	NA	NA	NA	11	NA	NA
Methylene chloride	320	NA	NA	NA	600	NA	NA	NA
Semivolatile Organic Compounds								
Benzo(b)fluoranthene	12 [f]	10 [f]	NA	NA	12 [f]	10 [f]	NA	NA
Benzo(k)fluoranthene	12 [f]	10 [f]	NA	NA	12 [f]	10 [f]	NA	NA
Butylbenzylphthalate	466	490	NA	NA	466	490	NA	NA
Di-n-octylphthalate	60 [g]	3.5 [g]	NA	NA	60 [g]	3.5 [g]	NA	NA
bis(2-Ethylhexyl)phthalate	160	3.5	NA	NA	160	3.5	NA	NA
Pesticides/PCBs								
Aroclor-1260	100	0.64	16	0.9 [h]	150	0.00075	16	0.9 [h]
Dieldrin	5	0.065	0.6	NA	13	0.065	0.6	NA
4,4'-DDE	140	0.2 [i]	119 [i]	0.058	140	1.2 [i]	119 [i]	0.039
Inorganic Compounds								
Aluminum	740	425	NA	NA	740	425	NA	NA
Barium	43	19.8	NA	NA	43	19.8	NA	NA
Beryllium	2	0.085	NA	NA	2	0.085	NA	NA
Cadmium	30	2.15	NA	1	30	2.15	NA	1
Chromium	40	1,400	25.2	200	40	1,400	25.2	200
Copper	188	10	NA	NA	188	10	NA	NA
Cyanide	1.7	1.19	0.11	1.1	1.7	1.19	0.11	1.1
Lead	60	30	75	4.61	60	30	75	4.61
Manganese	45	14	NA	NA	45	14	NA	NA
Mercury	4.4	0.05	4	NA	4.4	0.05	4	NA
Mercury (organic)	3.6	0.05	2.3	0.0064	0.2	0.01	2.3	0.0064
Selenium	27.6	13.4	0.27	0.36	27.6	13.4	0.27	0.36
Silver	6.8	NA	NA	NA	6.8	NA	NA	NA
Zinc	502	20	NA	NA	502	20	NA	NA

Notes:

[a] Lethal and sublethal RTVs correspond to the boxed lethal RTV presented in Table D-2. Lethal RTVs correspond to the highest NOAEL. When an NOAEL value is not available then one-tenth of the lowest LOAEL, or one-fifth of the lowest LD_{50} is used as a surrogate value. Sublethal RTVs correspond to the highest NOAEL. When an NOAEL value is not available, then one-tenth of the sublethal LOAEL is used as a surrogate.

[b] These RTVs represent chemical concentrations that are not anticipated to result in adverse effects for the cotton mouse and short-tailed shrew.

[c] These RTVs represent chemical concentrations that are not anticipated to result in adverse effects for the mourning dove and eastern meadowlark.

[d] These RTVs represent chemical concentrations that are not anticipated to result in adverse effects for the red fox. When no data are available, the small mammal value is used as a surrogate.

[e] These RTVs represent chemical concentrations that are not anticipated to result in adverse effects for the red-tailed hawk. When no data are available, the small bird value is used as a surrogate.

[f] The value for benzo(a)pyrene is used as a surrogate.

[g] The value for di-n-butylphthalate is used as a surrogate.

[h] The value for Aroclor -1254 is used as a surrogate.

[i] The value for DDT is used as a surrogate.

Table G - 3
RTVs Selected for Ecological Risk Assessment [a]
Units (mg/kgBW/day)

Remedial Investigation Report
Site 31
NAS Whiting Field
Milton, Florida

	Small Mammal [b]		Small Bird [c]		Predatory Mammal [d]		Predatory Bird [e]	
Analyte	Lethal	Sublethal	Lethal	Sublethal	Lethal	Sublethal	Lethal	Sublethal

Notes:
NA = not available.
RTV = reference toxicity value.
mg/kg = milligrams per kilogram.
LD_{50} = dose resulting in 50% mortality in test population.
LOAEL = lowest observed adverse effect level.
NOAEL = no observed adverse effect level.
PCBs = polychlorinated biphenyls.

Table G - 4
Summary of Toxicity Data for Terrestrial Invertebrates

Remedial Investigation Report
Site 31
Naval Air Station Whiting Field
Milton, Florida

Analyte	Test Type	Test Duration	Test Species	Chemical Concentration (mg/kg)	Effect	RTV (mg/kg)	Reference
VOLATILE ORGANIC COMPOUNDS							
2-Hexanone	NA	NA	NA	NA	NA	NA	NA
Carbon disulfide	NA	NA	NA	NA	NA	NA	NA
SEMIVOLATILE ORGANIC COMPOUNDS							
Di-n-octylphthalate	Soil Test	14-day	4 test species	2,390	LC_{50}	478 [a]	Neuhauser *et al*., 1985.
bis(2-Ethylhexyl)phthalate	Soil Test	14-day	4 test species	2,390	LC_{50}	478 [a]	Neuhauser *et al*., 1985.
INORGANIC ANALYTES							
Manganese	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA	NA	NA

NOTES:

[a] Mean of LC_{50} for four test species (*A. teberculata, E. foetida, E. eugeniae,* and *P. excavatus*) from artificial soil tests; values used for a whole chemical class are multiplied by a factor of 0.2 (Neuhauser *et al.*, 1986). Value for dimethylphthalate used for phthalates.

Notes:

RTV = reference toxicity value.

NA = not available.

mg/kg = milligrams per kilogram.

LD_{50} = dose resulting in 50% mortality in test population.

References:

Neuhauser, E.F., R.C. Loehr, M.R. Malecki, D.L. Milligan, and P.R. Durkin. 1985. "The Toxicity of Selected Organic Chemicals to the Earthworm *Eisenia foetida*." J. Environ. Qual. 14:383-388.

Table G - 5
Summary of Toxicity Data for Plant Receptors

Remedial Investigation Report
Site 31
Naval Air Station Whiting Field
Milton, Florida

Analyte	Reference	RTV in soil [a] (mg/kg)
VOLATILE ORGANICS		
2-Hexanone		NA
Carbon disulfide		NA
SEMI-VOLATILE ORGANICS		
Di-n-octylphthalate		200 [b]
bis(2-Ethylhexyl)phthalate	Hulzebos *et al.*, 1993 [c]	>1,000
INORGANICS		
Manganese	Will and Suter, 1995	500
Selenium	Will and Suter, 1995	1
Silver	Will and Suter, 1995	2

[a] RTVs in soil are equal to chemical concentrations in soil that are not expected to result in adverse effects to plants.
[b] Value for di-n-butylphthalate used as a surrogate (Will and Suter, 1994).
[c] Value represents 14-day growth EC_{50} for *Lactuca sativa* in soil.

Notes:
NA = Not Available.
RTV = reference toxicity value.
mg/kg = milligrams per kilogram.
EC_{50} = media concentration resulting in 50% mortality in test population.
mg/l = milligram per liter.
> = greater than.

References:

Hulzebos, E.M., D.M.M. Adema, E.M. Dirven-van Breemen, L. Henzen, W.A. van Dis, H.A. Herbold, J.A. Hoekstra, R. Baerselman, and C.A.M. van Gestel. 1993. "Phytoxicity Studies with Lactuca sativa in Soil and Nutrient Solution." Environ. Toxicol. and Chem. 1

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Table G - 6
Exposure Parameters and Assumptions for Representative Wildlife Species [a]
Site 31A
Naval Air Station
Milton, Florida

Representative Wildlife Species		Percent of Prey in Diet: Inverts	Plants	Small Mammals	Small Birds	Soil	Home Range (acres)	ED [b]	Site Foraging Frequency [c]	Food Ingestion Rate (kg/day)	Body Weight (kg)
Cotton mouse	(Small herb. mammal)	10%	88%	0%	0%	2%	0.147	1	1.00E+00	0.0029	0.021
Mourning dove	(Small herb. bird)	1%	94%	0%	0%	5%	5	1	4.00E-02	0.0154	0.13
Short-tailed shrew	(Small carn. mammal)	78%	12%	0%	0%	10%	0.96	1	2.08E-01	0.0024	0.017
Eastern meadowlark	(Small omn. bird)	75%	20%	0%	0%	5%	5	1	4.00E-02	0.0119	0.087
Red fox	(Predatory mammal)	20%	10%	57%	10%	3%	250	1	8.00E-04	0.24	4.69
Red-tailed hawk	(Predatory bird)	0%	0%	70%	27%	3%	800	1	2.50E-04	0.113	1.02

NOTES:

SITE AREA:	0.2	acres

kg = kilogram
herb. = herbivore
omn. = omnivore
carn. = carnivore

[a] Documentation of exposure parameters presented in: Table 7 - 8.
[b] ED = Exposure Duration (percentage of year receptor is expected to be found at study area).
[c] SFF = Site Foraging Frequency (calculated by dividing site area by receptor home range (SFF cannot exceed 1.0)).

Table G - 7
Estimated Exposure from Ingestion of Food and Soil Containing the Reasonable Maximum Exposure Concentration of ECPCs.
Site 31A
Naval Air Station
Milton, Florida

EXPOSURE CONCENTRATION DATA		ESTIMATED CONCENTRATIONS IN PRIMARY FOOD ITEMS				BAF VALUES FOR OTHER FOOD ITEMS	
ANALYTE	RME CONCENTRATION (mg/kg)	Invert BAF [a]	Concentration in Invertebrate Tissue [b] (mg/kg)	Plant BAF [a]	Concentration in Plant Tissue [c] (mg/kg)	Small Mammal BAF [a]	Small Bird BAF [a]
Silver	1.3	1.5E-01	2.0E-01	8.0E-02	1.0E-01	1.5E-01	NA

ECPC = ecological chemical of potential concern.
RME = reasonable maximum exposure.
BAF = bioaccumulation factor.
mg/kg = milligrams per kilograms.

[a] Bioaccumulation data presented in: Table G-1.
[b] Invertebrate tissue concentration is the invertebrate BAF multiplied by the RME concentration.
[c] Plant tissue concentration is the plant BAF multiplied by the RME concentration.

Table G - 7
Estimated Exposure from Ingestion of Food and Soil Containing the Reasonable Maximum Exposure Concentration of ECPCs.
Site 31A
Naval Air Station
Milton, Florida

POTENTIAL DIETARY EXPOSURE (mg/kgBW/day) [d]

ANALYTE	*Cotton mouse*	*Mourning dove*	*Short-tailed shrew*	*Eastern meadowlark*	*Red fox*	*Red-tailed hawk*
Silver	1.9E-02	7.8E-04	8.3E-03	1.3E-03	4.0E-06	1.4E-06

[d] Calculated by summing the concentration derived from each pathway (multiplying pathway concentration, percent in diet, SFF, and ingestion rate, and then dividing by body weight).

SFF = Site Foraging Frequency.

Table G - 8
Lethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Site 31A
Naval Air Station
Milton, Florida

ANALYTE	*Cotton mouse*			*Mourning dove*			*Short-tailed shrew*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Silver	1.9E-02	6.8E+00	2.8E-03	7.8E-04	NA	NA	8.3E-03	6.8E+00	1.2E-03
SUMMARY HAZARD INDEX			2.8E-03			0.0E+00			1.2E-03

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 8
Lethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Site 31A
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Silver	1.3E-03	NA	NA	4.0E-06	6.8E+00	5.8E-07	1.4E-06	NA	NA
SUMMARY HAZARD INDEX			0.0E+00			5.8E-07			0.0E+00

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 9
Sublethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Site 31A
Naval Air Station
Milton, Florida

ANALYTE	*Cotton mouse*			*Mourning dove*			*Short-tailed shrew*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Silver	1.9E-02	NA	NA	7.8E-04	NA	NA	8.3E-03	NA	NA
SUMMARY HAZARD INDEX			0.0E+00			0.0E+00			0.0E+00

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 9
Sublethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Site 31A
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Silver	1.3E-03	NA	NA	4.0E-06	NA	NA	1.4E-06	NA	NA
SUMMARY HAZARD INDEX			0.0E+00			0.0E+00			0.0E+00

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 10
Exposure Parameters and Assumptions for Representative Wildlife Species [a]
Sites 31B and 31D
Naval Air Station
Milton, Florida

Representative Wildlife Species		Percent of Prey in Diet: Inverts	Plants	Small Mammals	Small Birds	Soil	Home Range (acres)	ED [b]	Site Foraging Frequency [c]	Food Ingestion Rate (kg/day)	Body Weight (kg)
Cotton mouse	(Small herb. mammal)	10%	88%	0%	0%	2%	0.147	1	1.00E+00	0.0029	0.021
Mourning dove	(Small herb. bird)	1%	94%	0%	0%	5%	5	1	7.00E-01	0.0154	0.13
Short-tailed shrew	(Small carn. mammal)	78%	12%	0%	0%	10%	0.96	1	1.00E+00	0.0024	0.017
Eastern meadowlark	(Small omn. bird)	75%	20%	0%	0%	5%	5	1	7.00E-01	0.0119	0.087
Red fox	(Predatory mammal)	20%	10%	57%	10%	3%	250	1	1.40E-02	0.24	4.69
Red-tailed hawk	(Predatory bird)	0%	0%	70%	27%	3%	800	1	4.38E-03	0.113	1.02

NOTES:

SITE AREA: 3.5 acres

kg = kilogram
herb. = herbivore
omn. = omnivore
carn. = carnivore

[a] Documentation of exposure parameters presented in: Table 7-8.
[b] ED = Exposure Duration (percentage of year receptor is expected to be found at study area).
[c] SFF = Site Foraging Frequency (calculated by dividing site area by receptor home range (SFF cannot exceed 1.0)).

Table G - 11
Estimated Exposure from Ingestion of Food and Soil Containing the Reasonable Maximum Exposure Concentration of ECPCs.
Sites 31B and 31D
Naval Air Station
Milton, Florida

EXPOSURE CONCENTRATION DATA		ESTIMATED CONCENTRATIONS IN PRIMARY FOOD ITEMS				BAF VALUES FOR OTHER FOOD ITEMS	
ANALYTE	RME CONCENTRATION (mg/kg)	Invert BAF [a]	Concentration in Invertebrate Tissue [b] (mg/kg)	Plant BAF [a]	Concentration in Plant Tissue [c] (mg/kg)	Small Mammal BAF [a]	Small Bird BAF [a]
Silver	5.9	1.5E-01	8.9E-01	8.0E-02	4.7E-01	1.5E-01	NA

ECPC = ecological chemical of potential concern.
RME = reasonable maximum exposure.
BAF = bioaccumulation factor.
mg/kg = milligrams per kilograms.

[a] Bioaccumulation data presented in: Table G-1.
[b] Invertebrate tissue concentration is the invertebrate BAF multiplied by the RME concentration.
[c] Plant tissue concentration is the plant BAF multiplied by the RME concentration.

Table G - 11
Estimated Exposure from Ingestion of Food and Soil Containing the Reasonable Maximum Exposure Concentration of ECPCs.
Sites 31B and 31D
Naval Air Station
Milton, Florida

POTENTIAL DIETARY EXPOSURE (mg/kgBW/day) [d]

ANALYTE	*Cotton mouse*	*Mourning dove*	*Short-tailed shrew*	*Eastern meadowlark*	*Red fox*	*Red-tailed hawk*
Silver	8.6E-02	6.2E-02	1.8E-01	1.0E-01	3.5E-04	1.3E-04

[d] Calculated by summing the concentration derived from each pathway (multiplying pathway concentration, percent in diet, SFF, and ingestion rate, and then dividing by body weight).

SFF = Site Foraging Frequency.

Table G - 12
Lethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Sites 31B and 31D
Naval Air Station
Milton, Florida

ANALYTE	*Cotton mouse*			*Mourning dove*			*Short-tailed shrew*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Silver	8.6E-02	6.8E+00	1.3E-02	6.2E-02	NA	NA	1.8E-01	6.8E+00	2.7E-02
SUMMARY HAZARD INDEX			1.3E-02			0.0E+00			2.7E-02

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 12
Lethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Sites 31B and 31D
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Silver	1.0E-01	NA	NA	3.5E-04	6.8E+00	5.1E-05	1.3E-04	NA	NA
SUMMARY HAZARD INDEX			0.0E+00			5.1E-05			0.0E+00

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 13
Sublethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Sites 31B and 31D
Naval Air Station
Milton, Florida

ANALYTE	*Cotton mouse*			*Mourning dove*			*Short-tailed shrew*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Silver	8.6E-02	NA	NA	6.2E-02	NA	NA	1.8E-01	NA	NA
SUMMARY HAZARD INDEX			0.0E+00			0.0E+00			0.0E+00

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 13
Sublethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Sites 31B and 31D
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Silver	1.0E-01	NA	NA	3.5E-04	NA	NA	1.3E-04	NA	NA
SUMMARY HAZARD INDEX			0.0E+00			0.0E+00			0.0E+00

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 14
Exposure Parameters and Assumptions for Representative Wildlife Species [a]
Site 31 C
Naval Air Station
Milton, Florida

Representative Wildlife Species		Percent of Prey in Diet: Inverts	Plants	Small Mammals	Small Birds	Soil	Home Range (acres)	ED [b]	Site Foraging Frequency [c]	Food Ingestion Rate (kg/day)	Body Weight (kg)
Cotton mouse	(Small herb. mammal)	10%	88%	0%	0%	2%	0.147	1	1.00E+00	0.0029	0.021
Mourning dove	(Small herb. bird)	1%	94%	0%	0%	5%	5	1	5.60E-01	0.0154	0.13
Short-tailed shrew	(Small carn. mammal)	78%	12%	0%	0%	10%	0.96	1	1.00E+00	0.0024	0.017
Eastern meadowlark	(Small omn. bird)	75%	20%	0%	0%	5%	5	1	5.60E-01	0.0119	0.087
Red fox	(Predatory mammal)	20%	10%	57%	10%	3%	250	1	1.12E-02	0.24	4.69
Red-tailed hawk	(Predatory bird)	0%	0%	70%	27%	3%	800	1	3.50E-03	0.113	1.02

NOTES:

SITE AREA:	2.8	acres

kg = kilogram
herb. = herbivore
omn. = omnivore
carn. = carnivore

[a] Documentation of exposure parameters presented in: Table 7-8.
[b] ED = Exposure Duration (percentage of year receptor is expected to be found at study area).
[c] SFF = Site Foraging Frequency (calculated by dividing site area by receptor home range (SFF cannot exceed 1.0)).

Table G - 15
Estimated Exposure from Ingestion of Food and Soil Containing the Reasonable Maximum Exposure Concentration of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

EXPOSURE CONCENTRATION DATA		ESTIMATED CONCENTRATIONS IN PRIMARY FOOD ITEMS				BAF VALUES FOR OTHER FOOD ITEMS	
ANALYTE	RME CONCENTRATION (mg/kg)	Invert BAF [a]	Concentration in Invertebrate Tissue [b] (mg/kg)	Plant BAF [a]	Concentration in Plant Tissue [c] (mg/kg)	Small Mammal BAF [a]	Small Bird BAF [a]
Acetone	0.0073	NA	NA	NA	NA	NA	NA
Carbon disulfide	0.0109	NA	NA	NA	NA	NA	NA
Methylene chloride	0.351	NA	NA	NA	NA	NA	NA
Benzo (b) fluoranthene	0.1	5.0E-02	5.0E-03	2.3E-03	2.3E-04	1.9E+00	NA
Benzo (k) fluoranthene	0.11	5.0E-02	5.5E-03	2.3E-03	2.5E-04	1.9E+00	NA
Butybenzylphthalate	0.039	5.0E-02	2.0E-03	1.5E-03	5.9E-05	3.8E+00	NA
bis(2-Ethylhexyl)phthalate	1.808	5.0E-02	9.0E-02	1.5E-03	2.7E-03	3.8E+00	NA
Aroclor-1260	1.353	5.8E+00	7.8E+00	1.2E-01	1.6E-01	3.8E+00	3.2E-01
Dieldrin	0.118	5.5E+00	6.5E-01	1.7E-02	2.0E-03	1.5E+00	4.4E-01
4,4-DDE	0.0985	1.7E+00	1.7E-01	1.0E-02	9.9E-04	1.2E+00	2.9E+00
Aluminum	7480	7.5E-02	5.6E+02	8.0E-04	6.0E+00	7.5E-02	NA
Barium	534	7.5E-03	4.0E+00	3.0E-02	1.6E+01	7.5E-03	NA
Beryllium	0.63	5.0E-02	3.2E-02	2.0E-03	1.3E-03	5.0E-02	NA
Cadmium	26.8	1.1E+01	2.9E+02	3.3E+01	8.8E+02	2.1E+00	3.8E-01
Chronium	295	1.6E-01	4.7E+01	1.5E-03	4.4E-01	2.8E-01	NA
Copper	948	1.6E-01	1.5E+02	7.8E-01	7.4E+02	6.0E-01	NA
Cyanide	0.54	0.0E+00	0.0E+00	1.0E+00	5.4E-01	0.0E+00	NA
Lead	1890	7.8E-02	1.5E+02	0.0E+00	0.0E+00	1.5E-02	NA
Mercury	8.8	6.8E-02	6.0E-01	1.8E-01	1.6E+00	1.0E-02	2.3E+00
Selenium	2	7.6E-01	1.5E+00	9.0E-03	1.8E-02	7.5E-01	NA
Silver	154	1.5E-01	2.3E+01	8.0E-02	1.2E+01	1.5E-01	NA
Zinc	346	1.8E+00	6.2E+02	6.1E-01	2.1E+02	2.1E+00	NA

ECPC = ecological chemical of potential concern.
RME = reasonable maximum exposure.
BAF = bioaccumulation factor.
mg/kg = milligrams per kilograms.

[a] Bioaccumulation data presented in: Table G-1.
[b] Invertebrate tissue concentration is the invertebrate BAF multiplied by the RME concentration.
[c] Plant tissue concentration is the plant BAF multiplied by the RME concentration.

Table G - 15
Estimated Exposure from Ingestion of Food and Soil Containing the Reasonable Maximum Exposure Concentration of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

POTENTIAL DIETARY EXPOSURE (mg/kgBW/day) [d]

ANALYTE	*Cotton mouse*	*Mourning dove*	*Short-tailed shrew*	*Eastern meadowlark*	*Red fox*	*Red-tailed hawk*
Acetone	2.0E-05	2.4E-05	1.0E-04	2.8E-05	1.3E-07	8.5E-08
Carbon disulfide	3.0E-05	3.6E-05	1.5E-04	4.2E-05	1.9E-07	1.3E-07
Methylene chloride	9.7E-04	1.2E-03	5.0E-03	1.3E-03	6.0E-06	4.1E-06
Benzo (b) fluoranthene	3.7E-04	3.5E-04	2.0E-03	6.7E-04	7.5E-06	5.4E-06
Benzo (k) fluoranthene	4.1E-04	3.8E-04	2.2E-03	7.4E-04	8.2E-06	6.0E-06
Butybenzylphthalate	1.4E-04	1.3E-04	7.7E-04	2.6E-04	4.9E-06	3.8E-06
bis(2-Ethylhexyl)phthalat	6.6E-03	6.2E-03	3.5E-02	1.2E-02	2.3E-04	1.8E-04
Aroclor-1260	1.3E-01	2.0E-02	8.8E-01	4.6E-01	5.4E-03	3.7E-03
Dieldrin	9.5E-03	9.5E-04	7.3E-02	3.8E-02	2.2E-04	1.2E-04
4,4-DDE	2.7E-03	5.0E-04	2.0E-02	1.0E-02	5.9E-05	2.8E-05
Aluminum	2.9E+01	2.6E+01	1.7E+02	6.1E+01	2.1E-01	1.0E-01
Barium	3.5E+00	2.8E+00	8.0E+00	2.5E+00	1.1E-02	6.3E-03
Beryllium	2.3E-03	2.2E-03	1.2E-02	4.2E-03	1.5E-05	8.0E-06
Cadmium	1.1E+02	5.5E+01	3.3E+01	3.1E+01	4.5E-01	3.1E-01
Chronium	1.5E+00	1.0E+00	9.4E+00	3.8E+00	1.4E-02	6.4E-03
Copper	9.5E+01	4.9E+01	3.0E+01	2.4E+01	1.6E-01	8.4E-02
Cyanide	6.7E-02	3.5E-02	7.6E-03	1.0E-02	4.0E-05	6.3E-06
Lead	7.3E+00	6.4E+00	4.3E+01	1.6E+01	5.0E-02	2.3E-02
Mercury	2.3E-01	1.3E-01	1.9E-01	9.2E-02	4.3E-04	3.5E-04
Selenium	2.9E-02	8.8E-03	2.0E-01	9.5E-02	4.0E-04	1.9E-04
Silver	2.2E+00	1.3E+00	4.7E+00	2.1E+00	7.2E-03	2.8E-03
Zinc	3.5E+01	1.5E+01	7.3E+01	4.0E+01	3.6E-01	2.2E-01

[d] Calculated by summing the concentration derived from each pathway (multiplying pathway concentration, percent in diet, SFF, and ingestion rate, and then dividing by body weight).

SFF = Site Foraging Frequency.

Table G - 16
Lethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	Cotton mouse			Mourning dove			Short-tailed shrew		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	2.0E-05	6.0E+02	3.4E-08	2.4E-05	NA	NA	1.0E-04	6.0E+02	1.7E-07
Carbon disulfide	3.0E-05	NA	NA	3.6E-05	NA	NA	1.5E-04	NA	NA
Methylene chloride	9.7E-04	3.2E+02	3.0E-06	1.2E-03	NA	NA	5.0E-03	3.2E+02	1.5E-05
Benzo (b) fluoranthene	3.7E-04	1.2E+01	3.1E-05	3.5E-04	NA	NA	2.0E-03	1.2E+01	1.6E-04
Benzo (k) fluoranthene	4.1E-04	1.2E+01	3.4E-05	3.8E-04	NA	NA	2.2E-03	1.2E+01	1.8E-04
Butybenzylphthalate	1.4E-04	4.7E+02	3.0E-07	1.3E-04	1.6E+01	8.4E-06	7.7E-04	4.7E+02	1.6E-06
bis(2-Ethylhexyl)phthalate	6.6E-03	1.6E+02	4.1E-05	6.2E-03	6.0E-01	1.0E-02	3.5E-02	1.6E+02	2.2E-04
Aroclor-1260	1.3E-01	1.0E+02	1.3E-03	2.0E-02	1.6E+01	1.2E-03	8.8E-01	1.0E+02	8.8E-03
Dieldrin	9.5E-03	5.0E+00	1.9E-03	9.5E-04	6.0E-01	1.6E-03	7.3E-02	5.0E+00	1.5E-02
4,4-DDE	2.7E-03	1.4E+02	1.9E-05	5.0E-04	NA	NA	2.0E-02	1.4E+02	1.4E-04
Aluminum	2.9E+01	7.4E+02	3.9E-02	2.6E+01	NA	NA	1.7E+02	7.4E+02	2.3E-01
Barium	3.5E+00	4.3E+01	8.1E-02	2.8E+00	NA	NA	8.0E+00	4.3E+01	1.9E-01
Beryllium	2.3E-03	2.0E+00	1.2E-03	2.2E-03	NA	NA	1.2E-02	2.0E+00	6.2E-03
Cadmium	1.1E+02	3.0E+01	3.7E+00	5.5E+01	NA	NA	3.3E+01	3.0E+01	1.1E+00
Chronium	1.5E+00	4.0E+01	3.8E-02	1.0E+00	2.5E+01	4.1E-02	9.4E+00	4.0E+01	2.3E-01
Copper	9.5E+01	1.9E+02	5.0E-01	4.9E+01	NA	NA	3.0E+01	1.9E+02	1.6E-01
Cyanide	6.7E-02	1.7E+00	3.9E-02	3.5E-02	1.1E-01	3.2E-01	7.6E-03	1.7E+00	4.5E-03
Lead	7.3E+00	6.0E+01	1.2E-01	6.4E+00	7.5E+01	8.5E-02	4.3E+01	6.0E+01	7.2E-01
Mercury	2.3E-01	3.6E+00	6.3E-02	1.3E-01	2.3E+00	5.6E-02	1.9E-01	3.6E+00	5.3E-02
Selenium	2.9E-02	2.8E+01	1.0E-03	8.8E-03	2.7E-01	3.2E-02	2.0E-01	2.8E+01	7.1E-03
Silver	2.2E+00	6.8E+00	3.3E-01	1.3E+00	NA	NA	4.7E+00	6.8E+00	6.9E-01
Zinc	3.5E+01	5.0E+02	7.0E-02	1.5E+01	NA	NA	7.3E+01	5.0E+02	1.5E-01
SUMMARY HAZARD INDEX			5.0E+00			5.5E-01			3.6E+00

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 16
Lethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	2.8E-05	NA	NA	1.3E-07	6.0E+02	2.1E-10	8.5E-08	NA	NA
Carbon disulfide	4.2E-05	NA	NA	1.9E-07	NA	NA	1.3E-07	NA	NA
Methylene chloride	1.3E-03	NA	NA	6.0E-06	6.0E+02	1.0E-08	4.1E-06	NA	NA
Benzo (b) fluoranthene	6.7E-04	NA	NA	7.5E-06	1.2E+01	6.2E-07	5.4E-06	NA	NA
Benzo (k) fluoranthene	7.4E-04	NA	NA	8.2E-06	1.2E+01	6.8E-07	6.0E-06	NA	NA
Butybenzylphthalate	2.6E-04	1.6E+01	1.6E-05	4.9E-06	4.7E+02	1.1E-08	3.8E-06	1.6E+01	2.4E-07
bis(2-Ethylhexyl)phthalate	1.2E-02	6.0E-01	2.0E-02	2.3E-04	1.6E+02	1.4E-06	1.8E-04	6.0E-01	2.9E-04
Aroclor-1260	4.6E-01	1.6E+01	2.9E-02	5.4E-03	1.5E+02	3.6E-05	3.7E-03	1.6E+01	2.3E-04
Dieldrin	3.8E-02	6.0E-01	6.3E-02	2.2E-04	1.3E+01	1.7E-05	1.2E-04	6.0E-01	2.0E-04
4,4-DDE	1.0E-02	NA	NA	5.9E-05	1.4E+02	4.2E-07	2.8E-05	NA	NA
Aluminum	6.1E+01	NA	NA	2.1E-01	7.4E+02	2.8E-04	1.0E-01	NA	NA
Barium	2.5E+00	NA	NA	1.1E-02	4.3E+01	2.5E-04	6.3E-03	NA	NA
Beryllium	4.2E-03	NA	NA	1.5E-05	2.0E+00	7.7E-06	8.0E-06	NA	NA
Cadmium	3.1E+01	NA	NA	4.5E-01	3.0E+01	1.5E-02	3.1E-01	NA	NA
Chronium	3.8E+00	2.5E+01	1.5E-01	1.4E-02	4.0E+01	3.5E-04	6.4E-03	2.5E+01	2.5E-04
Copper	2.4E+01	NA	NA	1.6E-01	1.9E+02	8.7E-04	8.4E-02	NA	NA
Cyanide	1.0E-02	1.1E-01	9.4E-02	4.0E-05	1.7E+00	2.4E-05	6.3E-06	1.1E-01	5.7E-05
Lead	1.6E+01	7.5E+01	2.1E-01	5.0E-02	6.0E+01	8.4E-04	2.3E-02	7.5E+01	3.0E-04
Mercury	9.2E-02	2.3E+00	4.0E-02	4.3E-04	3.6E+00	1.2E-04	3.5E-04	2.3E+00	1.5E-04
Selenium	9.5E-02	2.7E-01	3.5E-01	9.5E-02	2.8E+01	3.5E-03	4.0E-04	2.7E-01	1.5E-03
Silver	2.1E+00	NA	NA	2.1E+00	6.8E+00	3.1E-01	7.2E-03	NA	NA
Zinc	4.0E+01	NA	NA	4.0E+01	5.0E+02	8.0E-02	3.6E-01	NA	NA
SUMMARY HAZARD INDEX			9.6E-01			4.1E-01			3.0E-03

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 17
Sublethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	*Cotton mouse*			*Mourning dove*			*Short-tailed shrew*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	2.0E-05	2.7E+04	7.4E-10	2.4E-05	NA	NA	1.0E-04	2.7E+04	3.8E-09
Carbon disulfide	3.0E-05	1.1E+01	2.7E-06	3.6E-05	NA	NA	1.5E-04	1.1E+01	1.4E-05
Methylene chloride	9.7E-04	NA	NA	1.2E-03	NA	NA	5.0E-03	NA	NA
Benzo (b) fluoranthene	3.7E-04	1.0E+01	3.7E-05	3.5E-04	NA	NA	2.0E-03	1.0E+01	2.0E-04
Benzo (k) fluoranthene	4.1E-04	1.0E+01	4.1E-05	3.8E-04	NA	NA	2.2E-03	1.0E+01	2.2E-04
Butybenzylphthalate	1.4E-04	4.9E+02	2.9E-07	1.3E-04	NA	NA	7.7E-04	4.9E+02	1.6E-06
bis(2-Ethylhexyl)phthalate	6.6E-03	3.5E+00	1.9E-03	6.2E-03	NA	NA	3.5E-02	3.5E+00	1.0E-02
Aroclor-1260	1.3E-01	6.4E-01	2.1E-01	2.0E-02	9.0E-01	2.2E-02	8.8E-01	6.4E-01	1.4E+00
Dieldrin	9.5E-03	6.5E-02	1.5E-01	9.5E-04	NA	NA	7.3E-02	6.5E-02	1.1E+00
4,4-DDE	2.7E-03	2.0E-01	1.4E-02	5.0E-04	5.8E-02	8.6E-03	2.0E-02	2.0E-01	9.9E-02
Aluminum	2.9E+01	4.3E+02	6.9E-02	2.6E+01	NA	NA	1.7E+02	4.3E+02	3.9E-01
Barium	3.5E+00	2.0E+01	1.8E-01	2.8E+00	NA	NA	8.0E+00	2.0E+01	4.0E-01
Beryllium	2.3E-03	8.5E-02	2.7E-02	2.2E-03	NA	NA	1.2E-02	8.5E-02	1.5E-01
Cadmium	1.1E+02	2.2E+00	5.2E+01	5.5E+01	1.0E+00	5.5E+01	3.3E+01	2.2E+00	1.5E+01
Chronium	1.5E+00	1.4E+03	1.1E-03	1.0E+00	2.0E+02	5.2E-03	9.4E+00	1.4E+03	6.7E-03
Copper	9.5E+01	1.0E+01	9.5E+00	4.9E+01	NA	NA	3.0E+01	1.0E+01	3.0E+00
Cyanide	6.7E-02	1.2E+00	5.6E-02	3.5E-02	1.1E+00	3.2E-02	7.6E-03	1.2E+00	6.4E-03
Lead	7.3E+00	3.0E+01	2.4E-01	6.4E+00	4.6E+00	1.4E+00	4.3E+01	3.0E+01	1.4E+00
Mercury	2.3E-01	5.0E-02	4.5E+00	1.3E-01	6.4E-03	2.0E+01	1.9E-01	5.0E-02	3.8E+00
Selenium	2.9E-02	1.3E+01	2.1E-03	8.8E-03	3.6E-01	2.4E-02	2.0E-01	1.3E+01	1.5E-02
Silver	2.2E+00	NA	NA	1.3E+00	NA	NA	4.7E+00	NA	NA
Zinc	3.5E+01	2.0E+01	1.8E+00	1.5E+01	NA	NA	7.3E+01	2.0E+01	3.7E+00
SUMMARY HAZARD INDEX			6.9E+01			7.7E+01			3.1E+01

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 17
Sublethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	2.8E-05	NA	NA	1.3E-07	2.7E+04	4.6E-12	8.5E-08	NA	NA
Carbon disulfide	4.2E-05	NA	NA	1.9E-07	1.1E+01	1.7E-08	1.3E-07	NA	NA
Methylene chloride	1.3E-03	NA	NA	6.0E-06	NA	NA	4.1E-06	NA	NA
Benzo (b) fluoranthene	6.7E-04	NA	NA	7.5E-06	1.0E+01	7.5E-07	5.4E-06	NA	NA
Benzo (k) fluoranthene	7.4E-04	NA	NA	8.2E-06	1.0E+01	8.2E-07	6.0E-06	NA	NA
Butybenzylphthalate	2.6E-04	NA	NA	4.9E-06	4.9E+02	1.0E-08	3.8E-06	NA	NA
bis(2-Ethylhexyl)phthalate	1.2E-02	NA	NA	2.3E-04	3.5E+00	6.5E-05	1.8E-04	NA	NA
Aroclor-1260	4.6E-01	9.0E-01	5.1E-01	5.4E-03	7.5E-04	7.3E+00	3.7E-03	9.0E-01	4.2E-03
Dieldrin	3.8E-02	NA	NA	2.2E-04	6.5E-02	3.4E-03	1.2E-04	NA	NA
4,4-DDE	1.0E-02	5.8E-02	1.7E-01	5.9E-05	1.2E+00	4.9E-05	2.8E-05	3.9E-02	7.3E-04
Aluminum	6.1E+01	NA	NA	2.1E-01	4.3E+02	4.9E-04	1.0E-01	NA	NA
Barium	2.5E+00	NA	NA	1.1E-02	2.0E+01	5.4E-04	6.3E-03	NA	NA
Beryllium	4.2E-03	NA	NA	1.5E-05	8.5E-02	1.8E-04	8.0E-06	NA	NA
Cadmium	3.1E+01	1.0E+00	3.1E+01	4.5E-01	2.2E+00	2.1E-01	3.1E-01	1.0E+00	3.1E-01
Chronium	3.8E+00	2.0E+02	1.9E-02	1.4E-02	1.4E+03	1.0E-05	6.4E-03	2.0E+02	3.2E-05
Copper	2.4E+01	NA	NA	1.6E-01	1.0E+01	1.6E-02	8.4E-02	NA	NA
Cyanide	1.0E-02	1.1E+00	9.4E-03	4.0E-05	1.2E+00	3.4E-05	6.3E-06	1.1E+00	5.7E-06
Lead	1.6E+01	4.6E+00	3.4E+00	5.0E-02	3.0E+01	1.7E-03	2.3E-02	4.6E+00	4.9E-03
Mercury	9.2E-02	6.4E-03	1.4E+01	4.3E-04	5.0E-02	8.6E-03	3.5E-04	6.4E-03	5.5E-02
Selenium	9.5E-02	3.6E-01	2.6E-01	4.0E-04	1.3E+01	3.0E-05	1.9E-04	3.6E-01	5.2E-04
Silver	2.1E+00	NA	NA	7.2E-03	NA	NA	2.8E-03	NA	NA
Zinc	4.0E+01	NA	NA	3.6E-01	2.0E+01	1.8E-02	2.2E-01	NA	NA
SUMMARY HAZARD INDEX			4.9E+01			7.5E+00			3.8E-01

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 18
Estimated Exposure from Ingestion of Food and Soil Containing Central Tendency Concentration of ECPCs: Lethal Effects
Site 31 C
Naval Air Station
Milton, Florida

EXPOSURE CONCENTRATION DATA		ESTIMATED CONCENTRATIONS IN PRIMARY FOOD ITEMS				BAF VALUES FOR OTHER FOOD ITEMS	
ANALYTE	CENTRAL TENDENCY CONCENTRATION (mg/kg)	Invert BAF [a]	Concentration in Invertebrate Tissue [b] (mg/kg)	Plant BAF [a]	Concentration in Plant Tissue [c] (mg/kg)	Small Mammal BAF [a]	Small Bird BAF [a]
Acetone	0.0065	NA	NA	NA	NA	NA	NA
Carbon disulfide	0.008	NA	NA	NA	NA	NA	NA
Methylene chloride	0.0638	NA	NA	NA	NA	NA	NA
Benzo (b) fluoranthene	0.01	5.0E-02	5.0E-04	2.3E-03	2.3E-05	1.9E+00	NA
Benzo (k) fluoranthene	0.11	5.0E-02	5.5E-03	2.3E-03	2.5E-04	1.9E+00	NA
Butybenzylphthalate	0.039	5.0E-02	2.0E-03	1.5E-03	5.9E-05	3.8E+00	NA
bis(2-Ethylhexyl)phthalate	0.589	5.0E-02	2.9E-02	1.5E-03	8.8E-04	3.8E+00	NA
Aroclor-1260	0.224	5.8E+00	1.3E+00	1.2E-01	2.7E-02	3.8E+00	3.2E-01
Dieldrin	0.0214	5.5E+00	1.2E-01	1.7E-02	3.6E-04	1.5E+00	4.4E-01
4,4-DDE	0.0197	1.7E+00	3.3E-02	1.0E-02	2.0E-04	1.2E+00	2.9E+00
Aluminum	4818	7.5E-02	3.6E+02	8.0E-04	3.9E+00	7.5E-02	NA
Barium	83.2	7.5E-03	6.2E-01	3.0E-02	2.5E+00	7.5E-03	NA
Beryllium	0.54	5.0E-02	2.7E-02	2.0E-03	1.1E-03	5.0E-02	NA
Cadmium	5.1	1.1E+01	5.6E+01	3.3E+01	1.7E+02	2.1E+00	3.8E-01
Chronium	46	1.6E-01	7.4E+00	1.5E-03	6.9E-02	2.8E-01	NA
Copper	155	1.6E-01	2.5E+01	7.8E-01	1.2E+02	6.0E-01	NA
Cyanide	0.3	0.0E+00	0.0E+00	1.0E+00	3.0E-01	0.0E+00	NA
Lead	277	7.8E-02	2.2E+01	0.0E+00	0.0E+00	1.5E-02	NA
Mercury	1.6	6.8E-02	1.1E-01	1.8E-01	2.9E-01	1.0E-02	2.3E+00
Selenium	1	7.6E-01	7.6E-01	9.0E-03	9.0E-03	7.5E-01	NA
Silver	30	1.5E-01	4.5E+00	8.0E-02	2.4E+00	1.5E-01	NA
Zinc	85.6	1.8E+00	1.5E+02	6.1E-01	5.2E+01	2.1E+00	NA

ECPC = ecological chemical of potential concern.
BAF = bioaccumulation factor.
mg/kg = milligrams per kilograms.

[a] Bioaccumulation data presented in: Table G-1.
[b] Invertebrate tissue concentration is the invertebrate BAF multiplied by the central tendency exposure concentration.
[c] Plant tissue concentration is the plant BAF multiplied by the central tendency exposure concentration.

Table G - 18
Estimated Exposure from Ingestion of Food and Soil Containing Central Tendency Concentration of ECPCs: Lethal Effects
Site 31 C
Naval Air Station
Milton, Florida

POTENTIAL DIETARY EXPOSURE (mg/kgBW/day) [d]

ANALYTE	*Cotton mouse*	*Mourning dove*	*Short-tailed shrew*	*Eastern meadowlark*	*Red fox*	*Red-tailed hawk*
Acetone	1.8E-05	2.2E-05	9.2E-05	2.5E-05	1.1E-07	7.6E-08
Carbon disulfide	2.2E-05	2.7E-05	1.1E-04	3.1E-05	1.4E-07	9.3E-08
Methylene chloride	1.8E-04	2.1E-04	9.0E-04	2.4E-04	1.1E-06	7.4E-07
Benzo (b) fluoranthene	3.7E-05	3.5E-05	2.0E-04	6.7E-05	7.5E-07	5.4E-07
Benzo (k) fluoranthene	4.1E-04	3.8E-04	2.2E-03	7.4E-04	8.2E-06	6.0E-06
Butybenzylphthalate	1.4E-04	1.3E-04	7.7E-04	2.6E-04	4.9E-06	3.8E-06
bis(2-Ethylhexyl)phthalate	2.1E-03	2.0E-03	1.2E-02	4.0E-03	7.4E-05	5.7E-05
Aroclor-1260	2.2E-02	3.3E-03	1.5E-01	7.6E-02	9.0E-04	6.2E-04
Dieldrin	1.7E-03	1.7E-04	1.3E-02	6.8E-03	4.1E-05	2.2E-05
4,4-DDE	5.4E-04	1.0E-04	4.0E-03	2.0E-03	1.2E-05	5.7E-06
Aluminum	1.9E+01	1.6E+01	1.1E+02	3.9E+01	1.4E-01	6.5E-02
Barium	5.4E-01	4.3E-01	1.2E+00	3.9E-01	1.7E-03	9.8E-04
Beryllium	2.0E-03	1.9E-03	1.1E-02	3.6E-03	1.3E-05	6.9E-06
Cadmium	2.1E+01	1.1E+01	6.2E+00	5.8E+00	8.6E-02	6.0E-02
Chronium	2.4E-01	1.6E-01	1.5E+00	6.0E-01	2.2E-03	9.9E-04
Copper	1.5E+01	8.1E+00	4.9E+00	3.9E+00	2.7E-02	1.4E-02
Cyanide	3.7E-02	2.0E-02	4.2E-03	5.7E-03	2.2E-05	3.5E-06
Lead	1.1E+00	9.3E-01	6.3E+00	2.3E+00	7.4E-03	3.3E-03
Mercury	4.1E-02	2.3E-02	3.5E-02	1.7E-02	7.8E-05	6.4E-05
Selenium	1.4E-02	4.4E-03	9.8E-02	4.8E-02	2.0E-04	9.3E-05
Silver	4.4E-01	2.5E-01	9.2E-01	4.1E-01	1.4E-03	5.5E-04
Zinc	8.7E+00	3.6E+00	1.8E+01	1.0E+01	8.8E-02	5.6E-02

[d] Calculated by summing the concentration derived from each pathway (multiplying pathway concentration, percent in diet, SFF, and ingestion rate, and then dividing by body weight).

SFF = Site Foraging Frequency.

Table G - 19
Lethal Effect Risks for Representative Wildlife Species from Central Tendency Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	*Cotton mouse*			*Mourning dove*			*Short-tailed shrew*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	1.8E-05	6.0E+02	3.0E-08	2.2E-05	NA	NA	9.2E-05	6.0E+02	1.5E-07
Carbon disulfide	2.2E-05	NA	NA	2.7E-05	NA	NA	1.1E-04	NA	NA
Methylene chloride	1.8E-04	3.2E+02	5.5E-07	2.1E-04	NA	NA	9.0E-04	3.2E+02	2.8E-06
Benzo (b) fluoranthene	3.7E-05	1.2E+01	3.1E-06	3.5E-05	NA	NA	2.0E-04	1.2E+01	1.6E-05
Benzo (k) fluoranthene	4.1E-04	1.2E+01	3.4E-05	3.8E-04	NA	NA	2.2E-03	1.2E+01	1.8E-04
Butybenzylphthalate	1.4E-04	4.7E+02	3.0E-07	1.3E-04	1.6E+01	8.4E-06	7.7E-04	4.7E+02	1.6E-06
bis(2-Ethylhexyl)phthalate	2.1E-03	1.6E+02	1.3E-05	2.0E-03	6.0E-01	3.4E-03	1.2E-02	1.6E+02	7.2E-05
Aroclor-1260	2.2E-02	1.0E+02	2.2E-04	3.3E-03	1.6E+01	2.1E-04	1.5E-01	1.0E+02	1.5E-03
Dieldrin	1.7E-03	5.0E+00	3.5E-04	1.7E-04	6.0E-01	2.9E-04	1.3E-02	5.0E+00	2.7E-03
4,4-DDE	5.4E-04	1.4E+02	3.9E-06	1.0E-04	NA	NA	4.0E-03	1.4E+02	2.8E-05
Aluminum	1.9E+01	7.4E+02	2.5E-02	1.6E+01	NA	NA	1.1E+02	7.4E+02	1.5E-01
Barium	5.4E-01	4.3E+01	1.3E-02	4.3E-01	NA	NA	1.2E+00	4.3E+01	2.9E-02
Beryllium	2.0E-03	2.0E+00	1.0E-03	1.9E-03	NA	NA	1.1E-02	2.0E+00	5.3E-03
Cadmium	2.1E+01	3.0E+01	7.1E-01	1.1E+01	NA	NA	6.2E+00	3.0E+01	2.1E-01
Chronium	2.4E-01	4.0E+01	5.9E-03	1.6E-01	2.5E+01	6.4E-03	1.5E+00	4.0E+01	3.6E-02
Copper	1.5E+01	1.9E+02	8.2E-02	8.1E+00	NA	NA	4.9E+00	1.9E+02	2.6E-02
Cyanide	3.7E-02	1.7E+00	2.2E-02	2.0E-02	1.1E-01	1.8E-01	4.2E-03	1.7E+00	2.5E-03
Lead	1.1E+00	6.0E+01	1.8E-02	9.3E-01	7.5E+01	1.2E-02	6.3E+00	6.0E+01	1.0E-01
Mercury	4.1E-02	3.6E+00	1.1E-02	2.3E-02	2.3E+00	1.0E-02	3.5E-02	3.6E+00	9.6E-03
Selenium	1.4E-02	2.8E+01	5.2E-04	4.4E-03	2.7E-01	1.6E-02	9.8E-02	2.8E+01	3.5E-03
Silver	4.4E-01	6.8E+00	6.4E-02	2.5E-01	NA	NA	9.2E-01	6.8E+00	1.4E-01
Zinc	8.7E+00	5.0E+02	1.7E-02	3.6E+00	NA	NA	1.8E+01	5.0E+02	3.6E-02
SUMMARY HAZARD INDEX			9.7E-01			2.3E-01			7.5E-01

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 19
Lethal Effect Risks for Representative Wildlife Species from Central Tendency Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	2.5E-05	NA	NA	1.1E-07	6.0E+02	1.9E-10	7.6E-08	NA	NA
Carbon disulfide	3.1E-05	NA	NA	1.4E-07	NA	NA	9.3E-08	NA	NA
Methylene chloride	2.4E-04	NA	NA	1.1E-06	6.0E+02	1.8E-09	7.4E-07	NA	NA
Benzo (b) fluoranthene	6.7E-05	NA	NA	7.5E-07	1.2E+01	6.2E-08	5.4E-07	NA	NA
Benzo (k) fluoranthene	7.4E-04	NA	NA	8.2E-06	1.2E+01	6.8E-07	6.0E-06	NA	NA
Butybenzylphthalate	2.6E-04	1.6E+01	1.6E-05	4.9E-06	4.7E+02	1.1E-08	3.8E-06	1.6E+01	2.4E-07
bis(2-Ethylhexyl)phthalate	4.0E-03	6.0E-01	6.6E-03	7.4E-05	1.6E+02	4.6E-07	5.7E-05	6.0E-01	9.5E-05
Aroclor-1260	7.6E-02	1.6E+01	4.7E-03	9.0E-04	1.5E+02	6.0E-06	6.2E-04	1.6E+01	3.9E-05
Dieldrin	6.8E-03	6.0E-01	1.1E-02	4.1E-05	1.3E+01	3.1E-06	2.2E-05	6.0E-01	3.7E-05
4,4-DDE	2.0E-03	NA	NA	1.2E-05	1.4E+02	8.4E-08	5.7E-06	NA	NA
Aluminum	3.9E+01	NA	NA	1.4E-01	7.4E+02	1.8E-04	6.5E-02	NA	NA
Barium	3.9E-01	NA	NA	1.7E-03	4.3E+01	3.9E-05	9.8E-04	NA	NA
Beryllium	3.6E-03	NA	NA	1.3E-05	2.0E+00	6.6E-06	6.9E-06	NA	NA
Cadmium	5.8E+00	NA	NA	8.6E-02	3.0E+01	2.9E-03	6.0E-02	NA	NA
Chronium	6.0E-01	2.5E+01	2.4E-02	2.2E-03	4.0E+01	5.5E-05	9.9E-04	2.5E+01	3.9E-05
Copper	3.9E+00	NA	NA	2.7E-02	1.9E+02	1.4E-04	1.4E-02	NA	NA
Cyanide	5.7E-03	1.1E-01	5.2E-02	2.2E-05	1.7E+00	1.3E-05	3.5E-06	1.1E-01	3.2E-05
Lead	2.3E+00	7.5E+01	3.1E-02	7.4E-03	6.0E+01	1.2E-04	3.3E-03	7.5E+01	4.4E-05
Mercury	1.7E-02	2.3E+00	7.3E-03	7.8E-05	3.6E+00	2.2E-05	6.4E-05	2.3E+00	2.8E-05
Selenium	4.8E-02	2.7E-01	1.8E-01	2.0E-04	2.8E+01	7.3E-06	9.3E-05	2.7E-01	3.4E-04
Silver	4.1E-01	NA	NA	1.4E-03	6.8E+00	2.1E-04	5.5E-04	NA	NA
Zinc	1.0E+01	NA	NA	8.8E-02	5.0E+02	1.8E-04	5.6E-02	NA	NA
SUMMARY HAZARD INDEX			3.1E-01			3.8E-03			6.6E-04

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 20
Sublethal Effect Ricks for Representative Wildlife Species from Central Tendency Exposure Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	*Cotton mouse*			*Mourning dove*			*Short-tailed shrew*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	1.8E-05	2.7E+04	6.6E-10	2.2E-05	NA	NA	9.2E-05	2.7E+04	3.4E-09
Carbon disulfide	2.2E-05	1.1E+01	2.0E-06	2.7E-05	NA	NA	1.1E-04	1.1E+01	1.0E-05
Methylene chloride	1.8E-04	NA	NA	2.1E-04	NA	NA	9.0E-04	NA	NA
Benzo (b) fluoranthene	3.7E-05	1.0E+01	3.7E-06	3.5E-05	NA	NA	2.0E-04	1.0E+01	2.0E-05
Benzo (k) fluoranthene	4.1E-04	1.0E+01	4.1E-05	3.8E-04	NA	NA	2.2E-03	1.0E+01	2.2E-04
Butybenzylphthalate	1.4E-04	4.9E+02	2.9E-07	1.3E-04	NA	NA	7.7E-04	4.9E+02	1.6E-06
bis(2-Ethylhexyl)phthalate	2.1E-03	3.5E+00	6.1E-04	2.0E-03	NA	NA	1.2E-02	3.5E+00	3.3E-03
Aroclor-1260	2.2E-02	6.4E-01	3.4E-02	3.3E-03	9.0E-01	3.6E-03	1.5E-01	6.4E-01	2.3E-01
Dieldrin	1.7E-03	2.0E+01	8.7E-05	1.7E-04	NA	NA	1.3E-02	2.0E+01	6.7E-04
4,4-DDE	5.4E-04	2.0E-01	2.7E-03	1.0E-04	5.8E-02	1.7E-03	4.0E-03	2.0E-01	2.0E-02
Aluminum	1.9E+01	4.3E+02	4.4E-02	1.6E+01	NA	NA	1.1E+02	4.3E+02	2.5E-01
Barium	5.4E-01	2.0E+01	2.7E-02	4.3E-01	NA	NA	1.2E+00	2.0E+01	6.3E-02
Beryllium	2.0E-03	8.5E-02	2.3E-02	1.9E-03	NA	NA	1.1E-02	8.5E-02	1.2E-01
Cadmium	2.1E+01	2.2E+00	9.9E+00	1.1E+01	1.0E+00	1.1E+01	6.2E+00	2.2E+00	2.9E+00
Chronium	2.4E-01	1.4E+03	1.7E-04	1.6E-01	2.0E+02	8.1E-04	1.5E+00	1.4E+03	1.0E-03
Copper	1.5E+01	1.0E+01	1.5E+00	8.1E+00	NA	NA	4.9E+00	1.0E+01	4.9E-01
Cyanide	3.7E-02	1.2E+00	3.1E-02	2.0E-02	1.1E+00	1.8E-02	4.2E-03	1.2E+00	3.6E-03
Lead	1.1E+00	3.0E+01	3.5E-02	9.3E-01	4.6E+00	2.0E-01	6.3E+00	3.0E+01	2.1E-01
Mercury	4.1E-02	5.0E-02	8.2E-01	2.3E-02	6.4E-03	3.6E+00	3.5E-02	5.0E-02	6.9E-01
Selenium	1.4E-02	1.3E+01	1.1E-03	4.4E-03	3.6E-01	1.2E-02	9.8E-02	1.3E+01	7.3E-03
Silver	4.4E-01	NA	NA	2.5E-01	NA	NA	9.2E-01	NA	NA
Zinc	8.7E+00	2.0E+01	4.4E-01	3.6E+00	NA	NA	1.8E+01	2.0E+01	9.1E-01
SUMMARY HAZARD INDEX			1.3E+01			1.4E+01			5.9E+00

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 20
Sublethal Effect Ricks for Representative Wildlife Species from Central Tendency Exposure Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Acetone	2.5E-05	NA	NA	1.1E-07	2.7E+04	4.1E-12	7.6E-08	NA	NA
Carbon disulfide	3.1E-05	NA	NA	1.4E-07	1.1E+01	1.3E-08	9.3E-08	NA	NA
Methylene chloride	2.4E-04	NA	NA	1.1E-06	NA	NA	7.4E-07	NA	NA
Benzo (b) fluoranthene	6.7E-05	NA	NA	7.5E-07	1.0E+01	7.5E-08	5.4E-07	NA	NA
Benzo (k) fluoranthene	7.4E-04	NA	NA	8.2E-06	1.0E+01	8.2E-07	6.0E-06	NA	NA
Butybenzylphthalate	2.6E-04	NA	NA	4.9E-06	4.9E+02	1.0E-08	3.8E-06	NA	NA
bis(2-Ethylhexyl)phthalate	4.0E-03	NA	NA	7.4E-05	3.5E+00	2.1E-05	5.7E-05	NA	NA
Aroclor-1260	7.6E-02	9.0E-01	8.4E-02	9.0E-04	7.5E-04	1.2E+00	6.2E-04	9.0E-01	6.9E-04
Dieldrin	6.8E-03	NA	NA	4.1E-05	6.5E-02	6.2E-04	2.2E-05	NA	NA
4,4-DDE	2.0E-03	5.8E-02	3.5E-02	1.2E-05	1.2E+00	9.8E-06	5.7E-06	3.9E-02	1.5E-04
Aluminum	3.9E+01	NA	NA	1.4E-01	4.3E+02	3.2E-04	6.5E-02	NA	NA
Barium	3.9E-01	NA	NA	1.7E-03	2.0E+01	8.4E-05	9.8E-04	NA	NA
Beryllium	3.6E-03	NA	NA	1.3E-05	8.5E-02	1.5E-04	6.9E-06	NA	NA
Cadmium	5.8E+00	1.0E+00	5.8E+00	8.6E-02	2.2E+00	4.0E-02	6.0E-02	1.0E+00	6.0E-02
Chronium	6.0E-01	2.0E+02	3.0E-03	2.2E-03	1.4E+03	1.6E-06	9.9E-04	2.0E+02	5.0E-06
Copper	3.9E+00	NA	NA	2.7E-02	1.0E+01	2.7E-03	1.4E-02	NA	NA
Cyanide	5.7E-03	1.1E+00	5.2E-03	2.2E-05	1.2E+00	1.9E-05	3.5E-06	1.1E+00	3.2E-06
Lead	2.3E+00	4.6E+00	5.0E-01	7.4E-03	3.0E+01	2.5E-04	3.3E-03	4.6E+00	7.2E-04
Mercury	1.7E-02	6.4E-03	2.6E+00	7.8E-05	5.0E-02	1.6E-03	6.4E-05	6.4E-03	9.9E-03
Selenium	4.8E-02	3.6E-01	1.3E-01	2.0E-04	1.3E+01	1.5E-05	9.3E-05	3.6E-01	2.6E-04
Silver	4.1E-01	NA	NA	1.4E-03	NA	NA	5.5E-04	NA	NA
Zinc	1.0E+01	NA	NA	8.8E-02	2.0E+01	4.4E-03	5.6E-02	NA	NA
SUMMARY HAZARD INDEX			9.2E+00			1.3E+00			7.2E-02

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 21
Exposure Parameters and Assumptions for Representative Wildlife Species [a]
Sites 31E and 31F
Naval Air Station
Milton, Florida

Representative Wildlife Species		Percent of Prey in Diet: Inverts	Plants	Small Mammals	Small Birds	Soil	Home Range (acres)	ED [b]	Site Foraging Frequency [c]	Food Ingestion Rate (kg/day)	Body Weight (kg)
Cotton mouse	(Small herb. mammal)	10%	88%	0%	0%	2%	0.147	1	1.00E+00	0.0029	0.021
Mourning dove	(Small herb. bird)	1%	94%	0%	0%	5%	5	1	1.00E+00	0.0154	0.13
Short-tailed shrew	(Small carn. mammal)	78%	12%	0%	0%	10%	0.96	1	1.00E+00	0.0024	0.017
Eastern meadowlark	(Small omn. bird)	75%	20%	0%	0%	5%	5	1	1.00E+00	0.0119	0.087
Red fox	(Predatory mammal)	20%	10%	57%	10%	3%	250	1	5.52E-02	0.24	4.69
Red-tailed hawk	(Predatory bird)	0%	0%	70%	27%	3%	800	1	1.73E-02	0.113	1.02

NOTES:

SITE AREA:	13.8 acres

kg = kilogram
herb. = herbivore
omn. = omnivore
carn. = carnivore

[a] Documentation of exposure parameters presented in: Table 7-8.
[b] ED = Exposure Duration (percentage of year receptor is expected to be found at study area).
[c] SFF = Site Foraging Frequency (calculated by dividing site area by receptor home range (SFF cannot exceed 1.0)).

Table G - 22
Estimated Exposure from Ingestion of Food and Soil Containing the Reasonable Maximum Exposure Concentration of ECPCs.
Sites 31E and 31F
Naval Air Station
Milton, Florida

EXPOSURE CONCENTRATION DATA		ESTIMATED CONCENTRATIONS IN PRIMARY FOOD ITEMS				BAF VALUES FOR OTHER FOOD ITEMS	
ANALYTE	RME CONCENTRATION (mg/kg)	Invert BAF [a]	Concentration in Invertebrate Tissue [b] (mg/kg)	Plant BAF [a]	Concentration in Plant Tissue [c] (mg/kg)	Small Mammal BAF [a]	Small Bird BAF [a]
2-Hexanone	0.001	NA	NA	NA	NA	NA	NA
Carbon disulfide	0.0035	NA	NA	NA	NA	NA	NA
Di-n-octylphthalate	0.22	5.0E-02	1.1E-02	1.5E-03	3.3E-04	3.8E+00	NA
bis(2-Ethylhexyl)phthalate	0.206	5.0E-02	1.0E-02	1.5E-03	3.1E-04	3.8E+00	NA
Manganese	376	2.0E-02	7.5E+00	5.0E-02	1.9E+01	2.0E-02	NA
Selenium	0.45	7.6E-01	3.4E-01	9.0E-03	4.1E-03	7.5E-01	NA
Silver	4.6	1.5E-01	6.9E-01	8.0E-02	3.7E-01	1.5E-01	NA

ECPC = ecological chemical of potential concern.
RME = reasonable maximum exposure.
BAF = bioaccumulation factor.
mg/kg = milligrams per kilograms.

[a] Bioaccumulation data presented in: Table G-1.
[b] Invertebrate tissue concentration is the invertebrate BAF multiplied by the RME concentration.
[c] Plant tissue concentration is the plant BAF multiplied by the RME concentration.

Table G - 22
Estimated Exposure from Ingestion of Food and Soil Containing the Reasonable Maximum Exposure Concentration of ECPCs.
Sites 31E and 31F
Naval Air Station
Milton, Florida

POTENTIAL DIETARY EXPOSURE (mg/kgBW/day) [d]

ANALYTE	*Cotton mouse*	*Mourning dove*	*Short-tailed shrew*	*Eastern meadowlark*	*Red fox*	*Red-tailed hawk*
2-Hexanone	2.8E-06	5.9E-06	1.4E-05	6.8E-06	8.5E-08	5.7E-08
Carbon disulfide	9.7E-06	2.1E-05	4.9E-05	2.4E-05	3.0E-07	2.0E-07
Di-n-octylphthalate	8.0E-04	1.4E-03	4.3E-03	2.6E-03	1.4E-04	1.1E-04
bis(2-Ethylhexyl)phthalat	7.5E-04	1.3E-03	4.0E-03	2.5E-03	1.3E-04	9.8E-05
Manganese	3.4E+00	4.3E+00	6.1E+00	3.9E+00	4.3E-02	2.2E-02
Selenium	6.5E-03	3.5E-03	4.4E-02	3.8E-02	4.5E-04	2.1E-04
Silver	6.7E-02	6.9E-02	1.4E-01	1.1E-01	1.1E-03	4.1E-04

[d] Calculated by summing the concentration derived from each pathway (multiplying pathway concentration, percent in diet, SFF, and ingestion rate, and then dividing by body weight).

SFF = Site Foraging Frequency.

Table G - 23
Lethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Sites 31E and 31F
Naval Air Station
Milton, Florida

ANALYTE	*Cotton mouse*			*Mourning dove*			*Short-tailed shrew*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
2-Hexanone	2.8E-06	5.5E+02	5.0E-09	5.9E-06	NA	NA	1.4E-05	5.5E+02	2.6E-08
Carbon disulfide	9.7E-06	NA	NA	2.1E-05	NA	NA	4.9E-05	NA	NA
Di-n-octylphthalate	8.0E-04	6.0E+01	1.3E-05	1.4E-03	NA	NA	4.3E-03	6.0E+01	7.2E-05
bis(2-Ethylhexyl)phthalate	7.5E-04	1.6E+02	4.7E-06	1.3E-03	NA	NA	4.0E-03	1.6E+02	2.5E-05
Manganese	3.4E+00	4.5E+01	7.6E-02	4.3E+00	NA	NA	6.1E+00	4.5E+01	1.4E-01
Selenium	6.5E-03	2.8E+01	2.3E-04	3.5E-03	2.7E-01	1.3E-02	4.4E-02	2.8E+01	1.6E-03
Silver	6.7E-02	6.8E+00	9.8E-03	6.9E-02	NA	NA	1.4E-01	6.8E+00	2.1E-02
SUMMARY HAZARD INDEX			8.6E-02			1.3E-02			1.6E-01

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 23
Lethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Sites 31E and 31F
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
2-Hexanone	6.8E-06	NA	NA	8.5E-08	5.5E+02	1.5E-10	5.7E-08	NA	NA
Carbon disulfide	2.4E-05	NA	NA	3.0E-07	NA	NA	2.0E-07	NA	NA
Di-n-octylphthalate	2.6E-03	NA	NA	1.4E-04	6.0E+01	2.3E-06	1.1E-04	NA	NA
bis(2-Ethylhexyl)phthalate	2.5E-03	NA	NA	1.3E-04	1.6E+02	8.0E-07	9.8E-05	NA	NA
Manganese	3.9E+00	NA	NA	4.3E-02	4.5E+01	9.4E-04	2.2E-02	NA	NA
Selenium	3.8E-02	2.7E-01	1.4E-01	4.5E-04	2.8E+01	1.6E-05	2.1E-04	2.7E-01	7.6E-04
Silver	1.1E-01	NA	NA	1.1E-03	6.8E+00	1.6E-04	4.1E-04	NA	NA
SUMMARY HAZARD INDEX			1.4E-01			1.1E-03			7.6E-04

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 24
Sublethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Sites 31E and 31F
Naval Air Station
Milton, Florida

ANALYTE	Cotton mouse			Mourning dove			Short-tailed shrew		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
2-Hexanone	2.8E-06	1.7E+02	1.6E-08	5.9E-06	NA	NA	1.4E-05	1.7E+02	8.2E-08
Carbon disulfide	9.7E-06	1.1E+01	8.8E-07	2.1E-05	NA	NA	4.9E-05	1.1E+01	4.5E-06
Di-n-octylphthalate	8.0E-04	3.5E+00	2.3E-04	1.4E-03	NA	NA	4.3E-03	3.5E+00	1.2E-03
bis(2-Ethylhexyl)phthalate	7.5E-04	3.5E+00	2.1E-04	1.3E-03	NA	NA	4.0E-03	3.5E+00	1.2E-03
Manganese	3.4E+00	1.4E+01	2.4E-01	4.3E+00	NA	NA	6.1E+00	1.4E+01	4.4E-01
Selenium	6.5E-03	1.3E+01	4.8E-04	3.5E-03	3.6E-01	9.8E-03	4.4E-02	1.3E+01	3.3E-03
Silver	6.7E-02	NA	NA	6.9E-02	NA	NA	1.4E-01	NA	NA
SUMMARY HAZARD INDEX			2.5E-01			9.8E-03			4.4E-01

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 24
Sublethal Effect Risks for Representative Wildlife Species from RME Concentrations of ECPCs.
Sites 31E and 31F
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
2-Hexanone	6.8E-06	NA	NA	8.5E-08	1.7E+02	4.9E-10	5.7E-08	NA	NA
Carbon disulfide	2.4E-05	NA	NA	3.0E-07	1.1E+01	2.7E-08	2.0E-07	NA	NA
Di-n-octylphthalate	2.6E-03	NA	NA	1.4E-04	3.5E+00	3.9E-05	1.1E-04	NA	NA
bis(2-Ethylhexyl)phthalate	2.5E-03	NA	NA	1.3E-04	3.5E+00	3.6E-05	9.8E-05	NA	NA
Manganese	3.9E+00	NA	NA	4.3E-02	1.4E+01	3.0E-03	2.2E-02	NA	NA
Selenium	3.8E-02	3.6E-01	1.1E-01	4.5E-04	1.3E+01	3.4E-05	2.1E-04	3.6E-01	5.7E-04
Silver	1.1E-01	NA	NA	1.1E-03	NA	NA	4.1E-04	NA	NA
SUMMARY HAZARD INDEX			1.1E-01			3.1E-03			5.7E-04

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 25
Exposure Parameters and Assumptions for Representative Wildlife Species [a]
Site 31 C
Naval Air Station
Milton, Florida

Representative Wildlife Species		Percent of Prey in Diet: Inverts	Plants	Small Mammals	Small Birds	Soil	Home Range (acres)	ED [b]	Site Foraging Frequency [c]	Food Ingestion Rate (kg/day)	Body Weight (kg)
Cotton mouse	(Small herb. mammal)	10%	88%	0%	0%	2%	0.147	1	1.00E+00	0.0029	0.021
Mourning dove	(Small herb. bird)	1%	94%	0%	0%	5%	5	1	5.60E-01	0.0154	0.13
Short-tailed shrew	(Small carn. mammal)	78%	12%	0%	0%	10%	0.96	1	1.00E+00	0.0024	0.017
Eastern meadowlark	(Small omn. bird)	75%	20%	0%	0%	5%	5	1	5.60E-01	0.0119	0.087
Red fox	(Predatory mammal)	20%	10%	57%	10%	3%	250	1	1.12E-02	0.24	4.69
Red-tailed hawk	(Predatory bird)	0%	0%	70%	27%	3%	800	1	3.50E-03	0.113	1.02

NOTES:

SITE AREA:	2.8	acres

kg = kilogram
herb. = herbivore
omn. = omnivore
carn. = carnivore

[a] Documentation of exposure parameters presented in: Table 7-8.
[b] ED = Exposure Duration (percentage of year receptor is expected to be found at study area).
[c] SFF = Site Foraging Frequency (calculated by dividing site area by receptor home range (SFF cannot exceed 1.0)).

Table G - 26
Estimated Exposure from Ingestion of Food and Soil Containing the Reasonable Maximum Exposure Concentration of ECPCs from the 1997 investigation.
Site 31 C
Naval Air Station
Milton, Florida

EXPOSURE CONCENTRATION DATA		ESTIMATED CONCENTRATIONS IN PRIMARY FOOD ITEMS				BAF VALUES FOR OTHER FOOD ITEMS	
ANALYTE	RME CONCENTRATION (mg/kg)	Invert BAF [a]	Concentration in Invertebrate Tissue [b] (mg/kg)	Plant BAF [a]	Concentration in Plant Tissue [c] (mg/kg)	Small Mammal BAF [a]	Small Bird BAF [a]
Butybenzylphthalate	0.039	5.0E-02	2.0E-03	1.5E-03	5.9E-05	3.8E+00	NA
bis(2-Ethylhexyl)phthalate	0.57	5.0E-02	2.9E-02	1.5E-03	8.6E-04	3.8E+00	NA
Dieldrin	0.0035	5.5E+00	1.9E-02	1.7E-02	6.0E-05	1.5E+00	4.4E-01
4,4-DDE	0.0041	1.7E+00	7.0E-03	1.0E-02	4.1E-05	1.2E+00	2.9E+00
Aluminum	5275	7.5E-02	4.0E+02	8.0E-04	4.2E+00	7.5E-02	NA
Barium	31.1	7.5E-03	2.3E-01	3.0E-02	9.3E-01	7.5E-03	NA
Cadmium	1.6	1.1E+01	1.8E+01	3.3E+01	5.3E+01	2.1E+00	3.8E-01
Chronium	12.9	1.6E-01	2.1E+00	1.5E-03	1.9E-02	2.8E-01	NA
Copper	118	1.6E-01	1.9E+01	7.8E-01	9.2E+01	6.0E-01	NA
Cyanide	0.27	0.0E+00	0.0E+00	1.0E+00	2.7E-01	0.0E+00	NA
Lead	28.5	7.8E-02	2.2E+00	0.0E+00	0.0E+00	1.5E-02	NA
Mercury	0.64	6.8E-02	4.4E-02	1.8E-01	1.2E-01	1.0E-02	2.3E+00
Selenium	0.41	7.6E-01	3.1E-01	9.0E-03	3.7E-03	7.5E-01	NA
Silver	5.1	1.5E-01	7.7E-01	8.0E-02	4.1E-01	1.5E-01	NA
Zinc	50	1.8E+00	9.0E+01	6.1E-01	3.1E+01	2.1E+00	NA

ECPC = ecological chemical of potential concern.
RME = reasonable maximum exposure.
BAF = bioaccumulation factor.
mg/kg = milligrams per kilograms.

[a] Bioaccumulation data presented in: Table G-1.
[b] Invertebrate tissue concentration is the invertebrate BAF multiplied by the RME concentration.
[c] Plant tissue concentration is the plant BAF multiplied by the RME concentration.

Table G - 26
Estimated Exposure from Ingestion of Food and Soil Containing the Reasonable Maximum Exposure Concentration of ECPCs from the 1997 investigation.
Site 31 C
Naval Air Station
Milton, Florida

POTENTIAL DIETARY EXPOSURE (mg/kgBW/day) [d]

ANALYTE	*Cotton mouse*	*Mourning dove*	*Short-tailed shrew*	*Eastern meadowlark*	*Red fox*	*Red-tailed hawk*
Butybenzylphthalate	1.4E-04	1.3E-04	7.7E-04	2.6E-04	4.9E-06	3.8E-06
bis(2-Ethylhexyl)phthalat	2.1E-03	2.0E-03	1.1E-02	3.8E-03	7.2E-05	5.5E-05
Dieldrin	2.8E-04	2.8E-05	2.2E-03	1.1E-03	6.6E-06	3.6E-06
4,4-DDE	1.1E-04	2.1E-05	8.3E-04	4.2E-04	2.4E-06	1.2E-06
Aluminum	2.1E+01	1.8E+01	1.2E+02	4.3E+01	1.5E-01	7.1E-02
Barium	2.0E-01	1.6E-01	4.6E-01	1.5E-01	6.2E-04	3.7E-04
Cadmium	6.7E+00	3.3E+00	2.0E+00	1.8E+00	2.7E-02	1.9E-02
Chronium	6.6E-02	4.5E-02	4.1E-01	1.7E-01	6.1E-04	2.8E-04
Copper	1.2E+01	6.1E+00	3.7E+00	2.9E+00	2.0E-02	1.0E-02
Cyanide	3.4E-02	1.8E-02	3.8E-03	5.2E-03	2.0E-05	3.1E-06
Lead	1.1E-01	9.6E-02	6.5E-01	2.4E-01	7.6E-04	3.4E-04
Mercury	1.6E-02	9.3E-03	1.4E-02	6.7E-03	3.1E-05	2.5E-05
Selenium	5.9E-03	1.8E-03	4.0E-02	2.0E-02	8.3E-05	3.8E-05
Silver	7.4E-02	4.3E-02	1.6E-01	7.0E-02	2.4E-04	9.3E-05
Zinc	5.1E+00	2.1E+00	1.1E+01	5.8E+00	5.1E-02	3.3E-02

[d] Calculated by summing the concentration derived from each pathway (multiplying pathway concentration, percent in diet, SFF, and ingestion rate, and then dividing by body weight).

SFF = Site Foraging Frequency.

Table G - 27
Lethal Effect Risks for Representative Wildlife Species from 1997 investigation RME Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	*Cotton mouse*			*Mourning dove*			*Short-tailed shrew*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Butybenzylphthalate	1.4E-04	4.7E+02	3.0E-07	1.3E-04	1.6E+01	8.4E-06	7.7E-04	4.7E+02	1.6E-06
bis(2-Ethylhexyl)phthalate	2.1E-03	1.6E+02	1.3E-05	2.0E-03	6.0E-01	3.3E-03	1.1E-02	1.6E+02	7.0E-05
Dieldrin	2.8E-04	5.0E+00	5.7E-05	2.8E-05	6.0E-01	4.7E-05	2.2E-03	5.0E+00	4.3E-04
4,4-DDE	1.1E-04	1.4E+02	8.0E-07	2.1E-05	NA	NA	8.3E-04	1.4E+02	5.9E-06
Aluminum	2.1E+01	7.4E+02	2.8E-02	1.8E+01	NA	NA	1.2E+02	7.4E+02	1.6E-01
Barium	2.0E-01	4.3E+01	4.7E-03	1.6E-01	NA	NA	4.6E-01	4.3E+01	1.1E-02
Cadmium	6.7E+00	3.0E+01	2.2E-01	3.3E+00	NA	NA	2.0E+00	3.0E+01	6.5E-02
Chronium	6.6E-02	4.0E+01	1.7E-03	4.5E-02	2.5E+01	1.8E-03	4.1E-01	4.0E+01	1.0E-02
Copper	1.2E+01	1.9E+02	6.3E-02	6.1E+00	NA	NA	3.7E+00	1.9E+02	2.0E-02
Cyanide	3.4E-02	1.7E+00	2.0E-02	1.8E-02	1.1E-01	1.6E-01	3.8E-03	1.7E+00	2.2E-03
Lead	1.1E-01	6.0E+01	1.8E-03	9.6E-02	7.5E+01	1.3E-03	6.5E-01	6.0E+01	1.1E-02
Mercury	1.6E-02	3.6E+00	4.5E-03	9.3E-03	2.3E+00	4.1E-03	1.4E-02	3.6E+00	3.8E-03
Selenium	5.9E-03	2.8E+01	2.1E-04	1.8E-03	2.7E-01	6.7E-03	4.0E-02	2.8E+01	1.5E-03
Silver	7.4E-02	6.8E+00	1.1E-02	4.3E-02	NA	NA	1.6E-01	6.8E+00	2.3E-02
Zinc	5.1E+00	5.0E+02	1.0E-02	2.1E+00	NA	NA	1.1E+01	5.0E+02	2.1E-02
SUMMARY HAZARD INDEX			3.7E-01			1.8E-01			3.3E-01

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 27
Lethal Effect Risks for Representative Wildlife Species from 1997 investigation RME Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Butybenzylphthalate	2.6E-04	1.6E+01	1.6E-05	4.9E-06	4.7E+02	1.1E-08	3.8E-06	1.6E+01	2.4E-07
bis(2-Ethylhexyl)phthalate	3.8E-03	6.0E-01	6.4E-03	7.2E-05	1.6E+02	4.5E-07	5.5E-05	6.0E-01	9.2E-05
Dieldrin	1.1E-03	6.0E-01	1.9E-03	6.6E-06	1.3E+01	5.1E-07	3.6E-06	6.0E-01	6.0E-06
4,4-DDE	4.2E-04	NA	NA	2.4E-06	1.4E+02	1.7E-08	1.2E-06	NA	NA
Aluminum	4.3E+01	NA	NA	1.5E-01	7.4E+02	2.0E-04	7.1E-02	NA	NA
Barium	1.5E-01	NA	NA	6.2E-04	4.3E+01	1.4E-05	3.7E-04	NA	NA
Cadmium	1.8E+00	NA	NA	2.7E-02	3.0E+01	8.9E-04	1.9E-02	NA	NA
Chronium	1.7E-01	2.5E+01	6.7E-03	6.1E-04	4.0E+01	1.5E-05	2.8E-04	2.5E+01	1.1E-05
Copper	2.9E+00	NA	NA	2.0E-02	1.9E+02	1.1E-04	1.0E-02	NA	NA
Cyanide	5.2E-03	1.1E-01	4.7E-02	2.0E-05	1.7E+00	1.2E-05	3.1E-06	1.1E-01	2.9E-05
Lead	2.4E-01	7.5E+01	3.2E-03	7.6E-04	6.0E+01	1.3E-05	3.4E-04	7.5E+01	4.6E-06
Mercury	6.7E-03	2.3E+00	2.9E-03	3.1E-05	3.6E+00	8.7E-06	2.5E-05	2.3E+00	1.1E-05
Selenium	2.0E-02	2.7E-01	7.2E-02	2.0E-02	2.8E+01	7.1E-04	8.3E-05	2.7E-01	3.1E-04
Silver	7.0E-02	NA	NA	7.0E-02	6.8E+00	1.0E-02	2.4E-04	NA	NA
Zinc	5.8E+00	NA	NA	5.8E+00	5.0E+02	1.2E-02	5.1E-02	NA	NA
SUMMARY HAZARD INDEX			1.4E-01			2.4E-02			4.6E-04

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closest related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL, or 1/5 of the lowest reported LD_{50} is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 28
Sublethal Effect Risks for Representative Wildlife Species from 1997 investigation RME Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	Cotton mouse			Mourning dove			Short-tailed shrew		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Butybenzylphthalate	1.4E-04	4.9E+02	2.9E-07	1.3E-04	NA	NA	7.7E-04	4.9E+02	1.6E-06
bis(2-Ethylhexyl)phthalate	2.1E-03	3.5E+00	5.9E-04	2.0E-03	NA	NA	1.1E-02	3.5E+00	3.2E-03
Dieldrin	2.8E-04	6.5E-02	4.3E-03	2.8E-05	NA	NA	2.2E-03	6.5E-02	3.3E-02
4,4-DDE	1.1E-04	2.0E-01	5.6E-04	2.1E-05	5.8E-02	3.6E-04	8.3E-04	2.0E-01	4.1E-03
Aluminum	2.1E+01	4.3E+02	4.8E-02	1.8E+01	NA	NA	1.2E+02	4.3E+02	2.8E-01
Barium	2.0E-01	2.0E+01	1.0E-02	1.6E-01	NA	NA	4.6E-01	2.0E+01	2.3E-02
Cadmium	6.7E+00	2.2E+00	3.1E+00	3.3E+00	1.0E+00	3.3E+00	2.0E+00	2.2E+00	9.1E-01
Chronium	6.6E-02	1.4E+03	4.7E-05	4.5E-02	2.0E+02	2.3E-04	4.1E-01	1.4E+03	2.9E-04
Copper	1.2E+01	1.0E+01	1.2E+00	6.1E+00	NA	NA	3.7E+00	1.0E+01	3.7E-01
Cyanide	3.4E-02	1.2E+00	2.8E-02	1.8E-02	1.1E+00	1.6E-02	3.8E-03	1.2E+00	3.2E-03
Lead	1.1E-01	3.0E+01	3.6E-03	9.6E-02	4.6E+00	2.1E-02	6.5E-01	3.0E+01	2.2E-02
Mercury	1.6E-02	5.0E-02	3.3E-01	9.3E-03	6.4E-03	1.5E+00	1.4E-02	5.0E-02	2.8E-01
Selenium	5.9E-03	1.3E+01	4.4E-04	1.8E-03	3.6E-01	5.0E-03	4.0E-02	1.3E+01	3.0E-03
Silver	7.4E-02	NA	NA	4.3E-02	NA	NA	1.6E-01	NA	NA
Zinc	5.1E+00	2.0E+01	2.5E-01	2.1E+00	NA	NA	1.1E+01	2.0E+01	5.3E-01
SUMMARY HAZARD INDEX			5.0E+00			4.8E+00			2.5E+00

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

Table G - 28
Sublethal Effect Risks for Representative Wildlife Species from 1997 investigation RME Concentrations of ECPCs.
Site 31 C
Naval Air Station
Milton, Florida

ANALYTE	*Eastern meadowlark*			*Red fox*			*Red-tailed hawk*		
	PDE	RTV	HQ	PDE	RTV	HQ	PDE	RTV	HQ
Butybenzylphthalate	2.6E-04	NA	NA	4.9E-06	4.9E+02	1.0E-08	3.8E-06	NA	NA
bis(2-Ethylhexyl)phthalate	3.8E-03	NA	NA	7.2E-05	3.5E+00	2.0E-05	5.5E-05	NA	NA
Dieldrin	1.1E-03	NA	NA	6.6E-06	6.5E-02	1.0E-04	3.6E-06	NA	NA
4,4-DDE	4.2E-04	5.8E-02	7.2E-03	2.4E-06	1.2E+00	2.0E-06	1.2E-06	3.9E-02	3.0E-05
Aluminum	4.3E+01	NA	NA	1.5E-01	4.3E+02	3.5E-04	7.1E-02	NA	NA
Barium	1.5E-01	NA	NA	6.2E-04	2.0E+01	3.1E-05	3.7E-04	NA	NA
Cadmium	1.8E+00	1.0E+00	1.8E+00	2.7E-02	2.2E+00	1.2E-02	1.9E-02	1.0E+00	1.9E-02
Chronium	1.7E-01	2.0E+02	8.4E-04	6.1E-04	1.4E+03	4.4E-07	2.8E-04	2.0E+02	1.4E-06
Copper	2.9E+00	NA	NA	2.0E-02	1.0E+01	2.0E-03	1.0E-02	NA	NA
Cyanide	5.2E-03	1.1E+00	4.7E-03	2.0E-05	1.2E+00	1.7E-05	3.1E-06	1.1E+00	2.9E-06
Lead	2.4E-01	4.6E+00	5.1E-02	7.6E-04	3.0E+01	2.5E-05	3.4E-04	4.6E+00	7.4E-05
Mercury	6.7E-03	6.4E-03	1.0E+00	3.1E-05	5.0E-02	6.3E-04	2.5E-05	6.4E-03	4.0E-03
Selenium	2.0E-02	3.6E-01	5.4E-02	8.3E-05	1.3E+01	6.2E-06	3.8E-05	3.6E-01	1.1E-04
Silver	7.0E-02	NA	NA	2.4E-04	NA	NA	9.3E-05	NA	NA
Zinc	5.8E+00	NA	NA	5.1E-02	2.0E+01	2.6E-03	3.3E-02	NA	NA
SUMMARY HAZARD INDEX			3.0E+00			1.8E-02			2.3E-02

PDE = Potential Dietary Exposure (mg/kg-BW/day).

RTV = Reference Toxicity Value (mg/kg-BW/day) = highest NOAEL for closet related species. When an NOAEL is not available, then 1/10 of the lowest reported LOAEL is used as a surrogate.

HQ = Hazard Quotient (calculated by dividing PDE by RTV).

NA = not available.

APPENDIX H

STATISTICAL ANALYSIS OF BIOLOGICAL AND CHEMICAL DATA

Appendix H - 1
Statistical Analyses of Biological and Chemical Data
Site 31C Surface Soil

Remedial Investigation and Feasibility Study
Site 31
NAS Whiting Field
Milton, Florida

Bioloical Toxicity Tests Results [1]

Parameter	BKN00101	BKN00301	31N01201	31N01301
Percent change in Worm weight	29.9	8	30.8	18.6
Percent of lettuce seed germinated	43	94	77	60

[1] Values are from Appendix F in GIR (ABB-ES, 1998).
[2] The value is the average of a sample and its duplicate.

Chemical Results	Sample Identification and Results [3]				Statistical Summary			
					Worm Growth		Lettuce germination	
Analyte (mg/kg)	BKS00101	BKS00301	31S01201	31S01301	X Coefficient	R squared	X Coefficient	R square
Benzo (k) fluoranthene	180	185	190	185	0.090	0.001	3.400	0.400
bis(2-Ethylhexyl) phthalate	180	185	540	210	0.033	0.296	0.032	0.065
Aroclor-1260	19	19.5	19	18.5	-10.600	0.162	34.000	0.400
Dieldrin	1.8	1.85	3.5	1.85	6.909	0.287	7.338	0.078
Aluminum	5590	5610	1960	2520	-0.002	0.133	0.000	0.001
Barium	6	14	31.1	9	0.278	0.084	1.039	0.282
Cadmium	0.5	0.5	1.4	0.22	11.335	0.293	12.659	0.088
Copper	2.5	2.5	118	29.8	0.106	0.288	0.083	0.043
Lead	3.9	6.2	28.5	6.7	0.452	0.234	0.613	0.104
Mercury	0.05	0.05	0.24	0.15	55.145	0.220	30.508	0.016
Silver	1	1	5.1	1.1	2.939	0.309	2.740	0.064
Zinc	2	2	11.3	6.4	1.176	0.235	0.707	0.020

[3] One-half of the detection limit is used as a surrogate concentration for the sample where a non-detection was reported.

APPENDIX I

FIGURES, TEXT AND DATA TABLES, RELEVANT TO SITE 31C, FROM THE INTERIM REMEDIAL ACTION REPORT

INTERIM REMEDIAL ACTION/COMPLETION REPORT

FOR

SITES 9, 10, 17, 18, AND 31C

DELIVERY ORDER NO. 0111

NAVAL AIR STATION WHITING FIELD
MILTON, FLORIDA

Prepared for

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND

Under Contract No. N62467-93-D-0936

Prepared by

BECHTEL ENVIRONMENTAL, INC.
OAK RIDGE, TENNESSEE

February 2000

REVISION 0

Bechtel Job No. 22567

Engineer's Certification

The engineering services described in this document, *Interim Remedial Action/Completion Report for Sites 9, 10, 17, 18, and 31C at NAS Whiting Field, Milton, Florida*, prepared by Bechtel Environmental, Inc., have been provided in accordance with commonly accepted engineering practice. This report is a summary of environmental sampling, excavation, and soil placement activities performed by Bechtel Environmental, Inc. under contract to the Naval Facilities Engineering Command, Southern Division. The report has been prepared under the responsible charge of the undersigned professional engineer and, based on such engineer's knowledge, information, and belief, accurately summarizes the work performed.

J.R. Manning
1-27-00

J.R. Manning, P.E.
Project Engineer
Florida PE No. 51803
Expires February 28, 2001

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ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB Environmental Services
Bechtel	Bechtel Environmental, Inc.
BTEX	benzene, toluene, ethybenzene, xylenes
COC	compound of concern
EPA	U.S. Environmental Protection Agency
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FSCGs	Florida soil cleanup goals
GEL	General Engineering Laboratory
IRA	interim removal action
NAS	Naval Air Station
PAH	polynuclear aromatic hydrocarbons
PCB	poly chlorinated biphenyl
RBC	risk-based concentrations
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RPM	remedial project manager
SCTLs	soil cleanup target levels
SOUTHDIV	Naval Facilities Engineering Command, Southern Division
SPLP	synthetic precipitation leaching procedure
SVOC	semi-volatile organic compounds
TAL	target analyte list
TCL	target compound list
TRPH	total recoverable petroleum hydrocarbons
VOC	volatile organic compound
WFPT	Whiting Field Partnering Team

UNITS OF MEASUREMENT

µg/kg	micrograms per kilogram
µg/L	micrograms per liter
bls	below land surface
ft	foot
ft^2	square foot
in.	inch
m	meter
mg/kg	milligrams per kilogram
ppb	parts per billion
ppm	parts per million
yd^3	cubic yard

1.0 INTRODUCTION

This report describes interim remedial actions performed by Bechtel Environmental Inc. (Bechtel) at Naval Air Station (NAS) Whiting Field in Milton, Florida. The work was performed under Naval Facilities Engineering Command, Southern Division (SOUTHDIV) Delivery Order 0111, dated 30 September 1998. Remedial actions were performed at Sites 9, 10, 17, 18, and 31C. Previous site investigations indicated the presence of organic and/or inorganic chemicals in surface soil at levels exceeding the State of Florida soil cleanup target levels (SCTLs) for industrial and/or residential use. Interim remedial actions at Sites 9, 10, 17, and 18 included installation of a 24-in. permeable soil layer and native grass cover on areas where chemical concentrations in surface soil exceeded the SCTLs for industrial use. Surface soils at Site 31C contained chemicals at levels exceeding the SCTLs for residential use. Interim remedial action at this site included soil excavation and disposal, placement of clean soil, and planting of native grasses.

Bechtel conducted soil sampling and analyses at each of the sites during October and November 1998 to delineate the contaminated areas for interim remedial action and site restoration.

Interim remedial action began 11 January 1999. Tasks included:

- mobilization of Bechtel and its subcontractors, materials, and equipment to the sites;
- excavation of contaminated soil;
- soil sampling and analyses for delineation of contaminated areas, clean confirmation of remediated areas, and supplemental site characterization;
- placement of clean soil; planting of native grass covers; and
- land surveys to establish sample locations and site boundaries.

Demobilization was completed by 31 March 1999. The work was performed in accordance with the Remediation Work Plan dated December 1998 (Bechtel 1998a).

1.1 REPORT ORGANIZATION

Section 1.0 includes a site description, brief site history, performance standards for the interim remedial actions, and scope of work. Subsequent sections include a discussion of the interim remedial action objectives, construction activities, sampling and analysis activities, construction quality control, and final construction inspection. Appendixes include summary data from environmental samples (delineation samples, confirmation samples, and supplemental site characterization samples) as-built drawings with sample locations and coordinates, and project organization and schedules.

1.2 FACILITY LOCATION

NAS Whiting Field is located in Santa Rosa County in the northwest coastal section of the Florida panhandle approximately 5.5 miles north of Milton and 25 miles northeast of Pensacola (Figure 1-1). The base occupies approximately 3,842 acres and consists of two separate airfields—the North Field, a fixed-wing training base, and the South Field, a helicopter training base. Military quarters and industrial and administrative support facilities are situated between the two fields. A complete description of historic operations at the facility is presented in Section 1.3 and Appendix A of the NAS Whiting Field General Information Report (ABB-ES 1998).

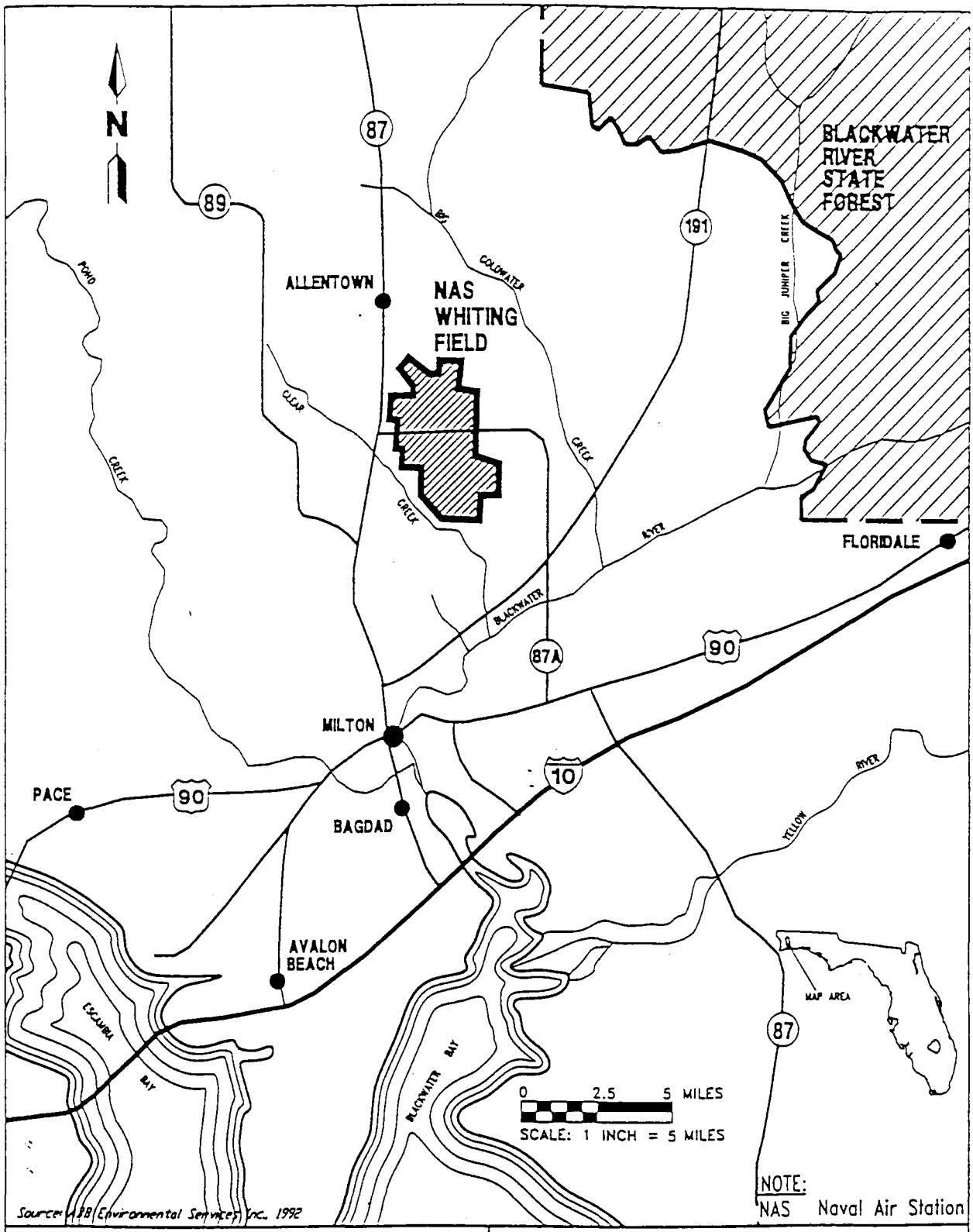

FIGURE 1-1
FACILITY LOCATION MAP

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REMOVAL ACTION
COMPLETION REPORT
SITES 9, 10, 17, 18, AND 31C

NAS WHITING FIELD
MILTON, FLORIDA

Remedial investigations at Sites 9, 10, 17, 18, and 31C (Figure 1-2) were previously performed by SOUTHDIV. All sites are located along Perimeter Road. Remedial investigation fieldwork was performed by Harding Lawson Associates (HLA), [Formerly ABB Environmental Services, Inc. (ABB-ES)] of Tallahassee, Florida. The remedial investigations detected organic and/or inorganic compounds in surface soil at concentrations above the Florida industrial and/or residential direct-exposure SCTLs as listed in the Florida Administrative Code (FAC) Chapter 62-777. Previous operations and waste disposal practices at these sites are the suspected cause of the observed contamination.

1.3 SITE DESCRIPTIONS

Site 9

Site 9 (Figure 1-3) covers approximately 2 acres and is located along the eastern facility boundary near the South Airfield. Waste fuel was reportedly disposed at Site 9 between 1940 and 1960. The risk assessment portion of the remedial investigation (HLA 1999a) indicated surface soil as the only media presenting risks to human health and the environment. Arsenic was identified as the primary chemical of concern exceeding the Florida industrial SCTLs. Subsurface soil was not evaluated because investigation of the site revealed no evidence of buried wastes (HLA 1999a) but is expected to exhibit similar characteristics to surface soil at this site.

Site 10

Site 10 (Figure 1-3) is contiguous to Site 9 and covers approximately 4 acres. The site was used from 1965 to 1973 for disposal of construction debris, including concrete and asphalt rubble, trees, brush, metal cans, and similar materials not suitable for sanitary landfill disposal. Transformer oil and empty pesticide/herbicide containers were also reportedly disposed of at Site 10 (HLA 1999a). Remedial investigation results from surface soil sampling showed arsenic levels exceeding the site-specific SCTL and carcinogenic polynuclear aromatic hydrocarbons (PAHs) benzo(a)pyrene and dibenzo(a,h) anthracene, at concentrations exceeding the Florida industrial SCTLs. Subsurface soil did not exhibit any organic or inorganic analyte concentrations in excess of the industrial Risk-Based Concentrations (RBC) or Florida Soil Cleanup Goals (FSCG), although aldrin (a pesticide) and arsenic both exceeded the residential RBC.

Sites 17 and 18

Sites 17 and 18 are former crash-crew training areas located along Perimeter Road on the northwestern facility boundary near the North Airfield taxiway (Figures 1-4 and 1-5). The sites cover approximately 2 and 5 acres, respectively. Both sites include shallow depressions, 1- to 2-ft deep, used as burn pits. Remedial investigation results from surface soil sampling at Site 17 show total recoverable petroleum hydrocarbons (TRPH) and arsenic levels exceeding the Florida industrial SCTLs (HLA 1999b). Surface soils at Site 18 also exceeded the Florida industrial SCTLs for TRPH (HLA 1999c).

Subsurface soil at Site 17 contained TRPH at levels in excess of organic screening values but did not exceed the leachability criteria; no other organic criteria were exceeded. Arsenic, chromium, and iron exceeded either EPA Region III industrial RBCs or FAC 62-785 industrial and leachability SCTLs (HLA 1999b). Subsurface soil at Site 18 contained TRPH at levels in excess of organic screening values and also exceeded the leachability criteria; no other organic criteria were exceeded. Arsenic exceeded both the Federal residential screening criteria and Florida residential cleanup criteria, but did not exceed the Federal or Florida industrial criteria (HLA 1999c).

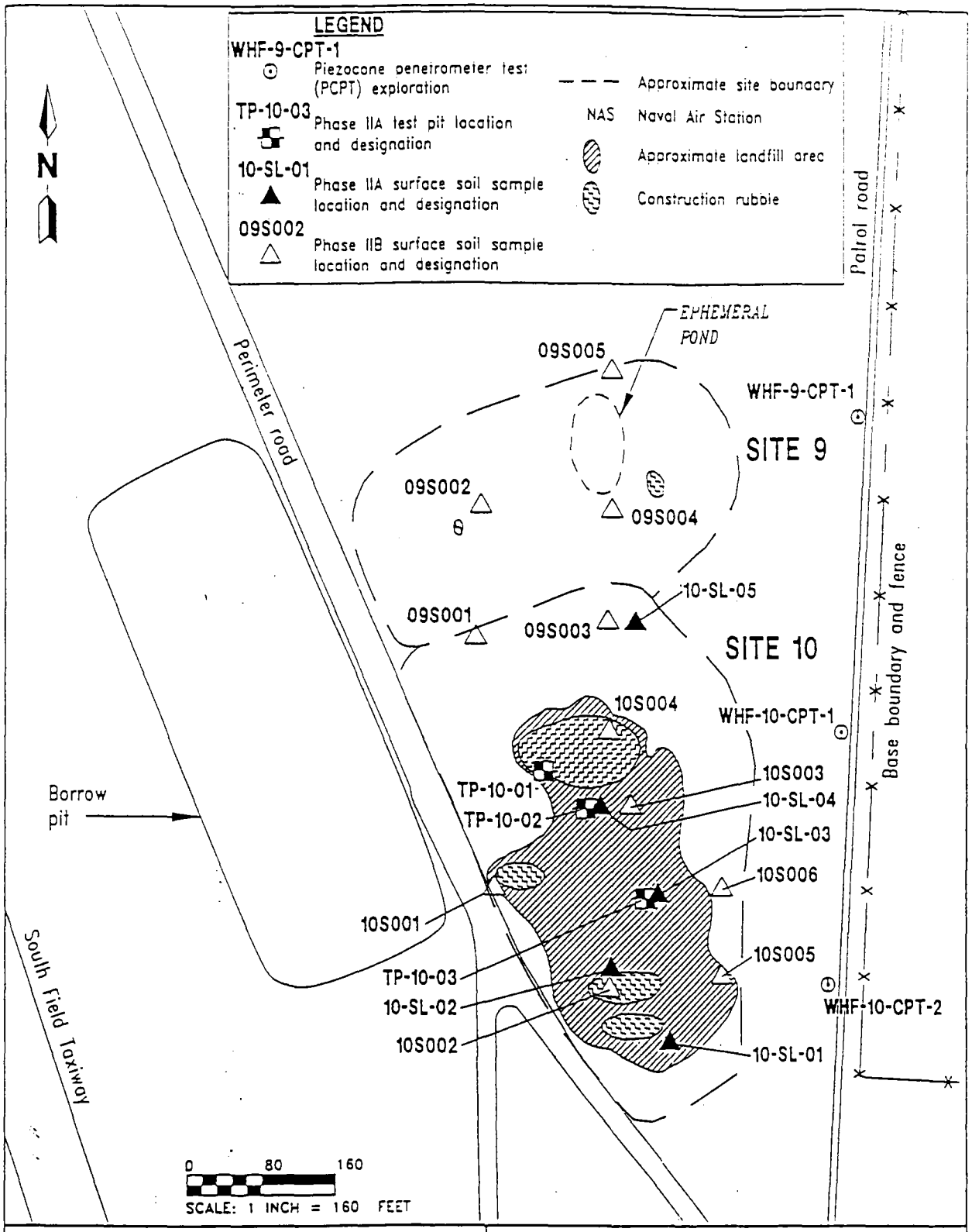

FIGURE 1-3 SITES 9 AND 10

LOCATION OF SURFACE SOIL SAMPLES, TEST PITS, AND PCPT EXPLORATIONS FOR PHASE IIA AND IIB

REMOVAL ACTION COMPLETION REPORT
SITES 9, 10, 17, 18, AND 31C

NAS WHITING FIELD
MILTON, FLORIDA

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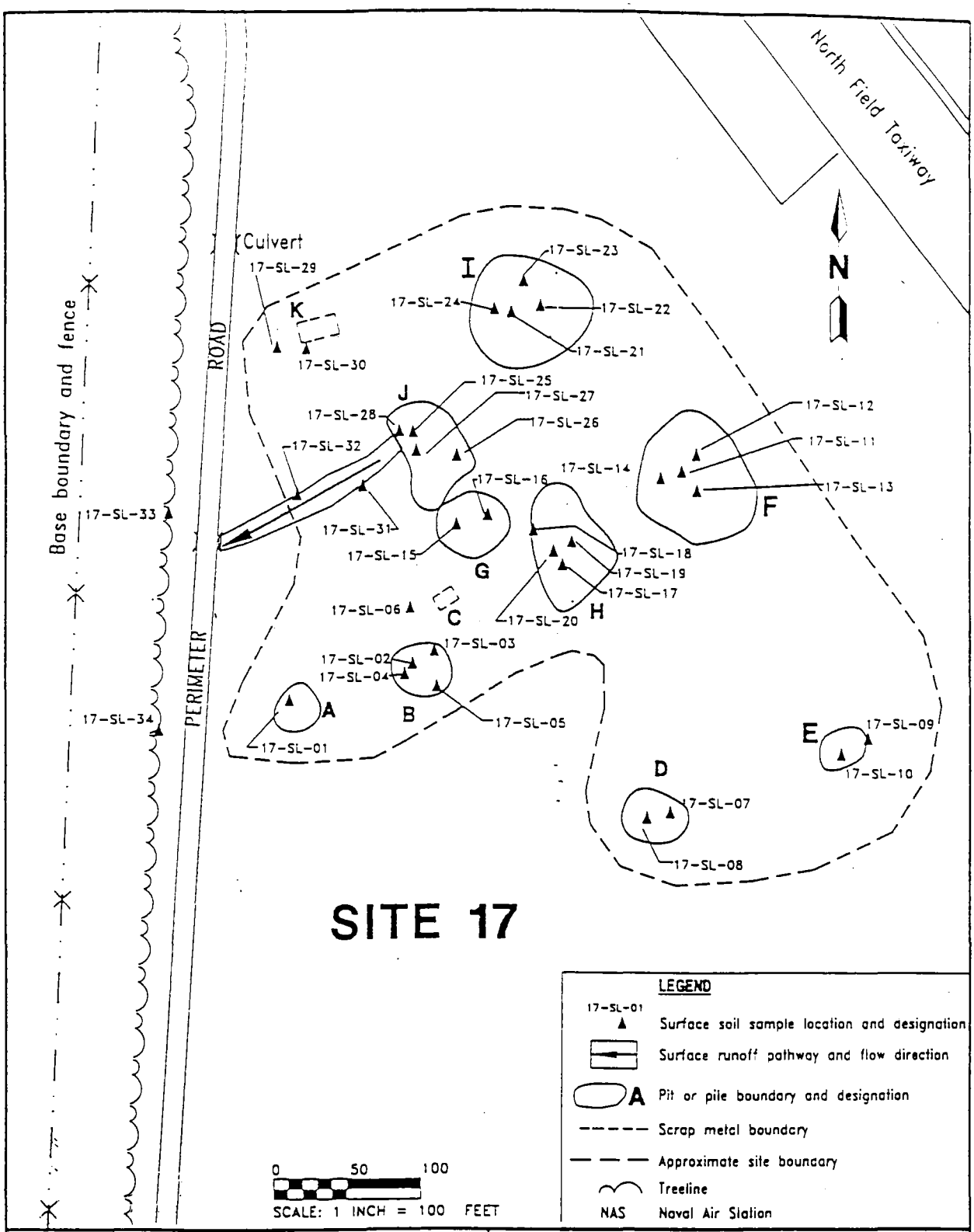

FIGURE 1-4 SITE 17
SURFACE SOIL SAMPLING LOCATIONS

REMOVAL ACTION
COMPLETION REPORT
SITES 9, 10, 17, 18, AND 31C

NAS WHITING FIELD
MILTON, FLORIDA

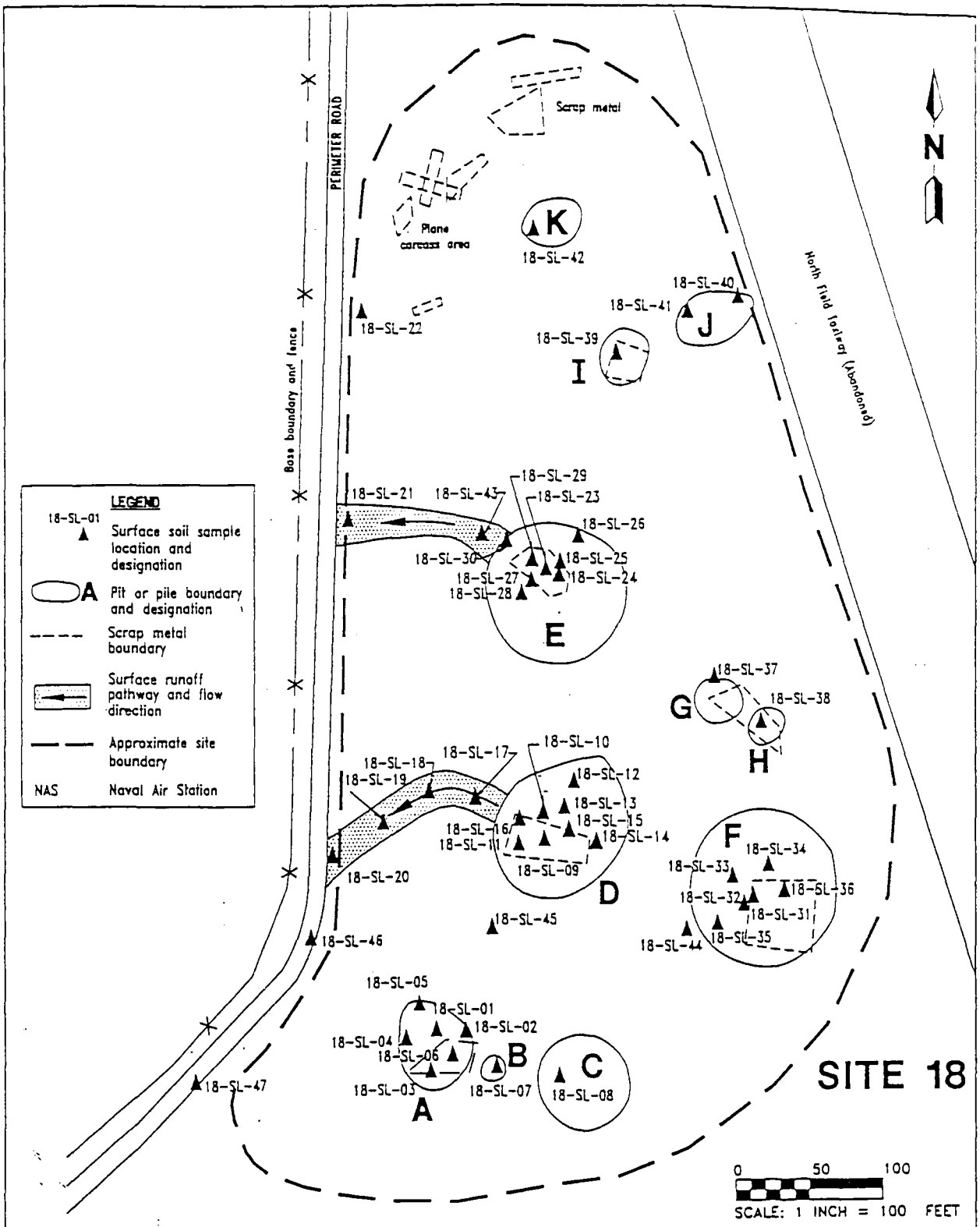

FIGURE 1-5 SITE 18
SURFACE SOIL SAMPLING LOCATIONS

REMOVAL ACTION
COMPLETION REPORT
SITES 9, 10, 17, 18, AND 31C

NAS WHITING FIELD
MILTON, FLORIDA

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Site 31C

The 18-acre site is located southeast of Site 15 and south of Perimeter Road in the South Airfield area (Figure 1-6). The site lies outside the Perimeter Road and consists of grassy terraces bounding a drainage basin. The drainage basin carries runoff from the airfield and the grassy terraces offsite toward Clear Creek to the west. Liquid sludge from the wastewater treatment plant was spread in thin layers (approximately 3 in. or less) on the surface of the ground in the mid-1970s. Approximately 50 separate deposits of sludge were randomly disposed on the site. Minor quantities of concrete, asphalt, and metal rubble from former base operations were also observed at the site, but the time of disposal is not known.

Soil samples were collected from several sludge deposits and surface soil during the Remedial Investigation (RI). Lead concentrations in some samples were found at levels above the residential and industrial FSCGs. Concentrations of barium, copper, mercury, chromium, pesticides, and PCBs were found at levels above residential FSCGs. Subsurface soil did not exhibit any organic or inorganic analyte concentrations above the industrial RBC or FSCGs.

1.4 PERFORMANCE STANDARDS FOR INTERIM REMEDIAL ACTIONS

Performance standards for remedial work plans were based upon the FSCGs when planning and development of interim remedial actions was initiated. Field sampling plans were included, describing sampling for site delineation and confirmation sampling. The performance standards were subsequently adjusted to conform to two sequential changes in Florida Department of Environmental Protection (FDEP) guidance. The first change was from the FSCGs to the SCTLs listed in FAC 62-785, and the second change was to new SCTLs as listed in FAC 62-777. These changes in cleanup criteria were in some instances less stringent for individual chemicals of concern and in others more stringent.

All references to cleanup criteria in this report are based on tables from FAC 62-777 and the site-specific SCG of 4.62 mg/kg for arsenic in surface soil at former covered landfill sites at NAS Whiting Field, as granted in the April 27, 1998 letter from FDEP to the Navy (see Appendix F).

Summaries of site-specific contaminants of concern, maximum concentrations detected, and applicable FDEP SCTLs are in Table 1-1.

The nature and extent of soil contamination at Site 31C was limited to hotspots of sludge deposits at a depth of 12 in. or less. This limited distribution of contamination made it possible to remove hot spots of contaminated soil and restore the site with clean soil, achieving a cleanup to SCTLs for residential use.

Future land use at Sites 9, 10, 17 and 18 is restricted to non-residential use. Sites 9 and 10 are included in the list of former covered landfill sites having a site-specific SCG for arsenic. Since complete removal or treatment of the soil would not be cost effective, the Navy determined these sites could be restricted to non-residential use.

By covering contaminated areas with a minimum of 2 ft of compacted clean fill and implementing administrative controls the Navy would meet Florida's guidance for limiting direct exposure to contaminated soil. Administrative controls include Land Use Controls to require periodic inspection and reporting, restriction of land use, and forbidding excavation or disturbance of soil in the covered areas on the sites of concern.

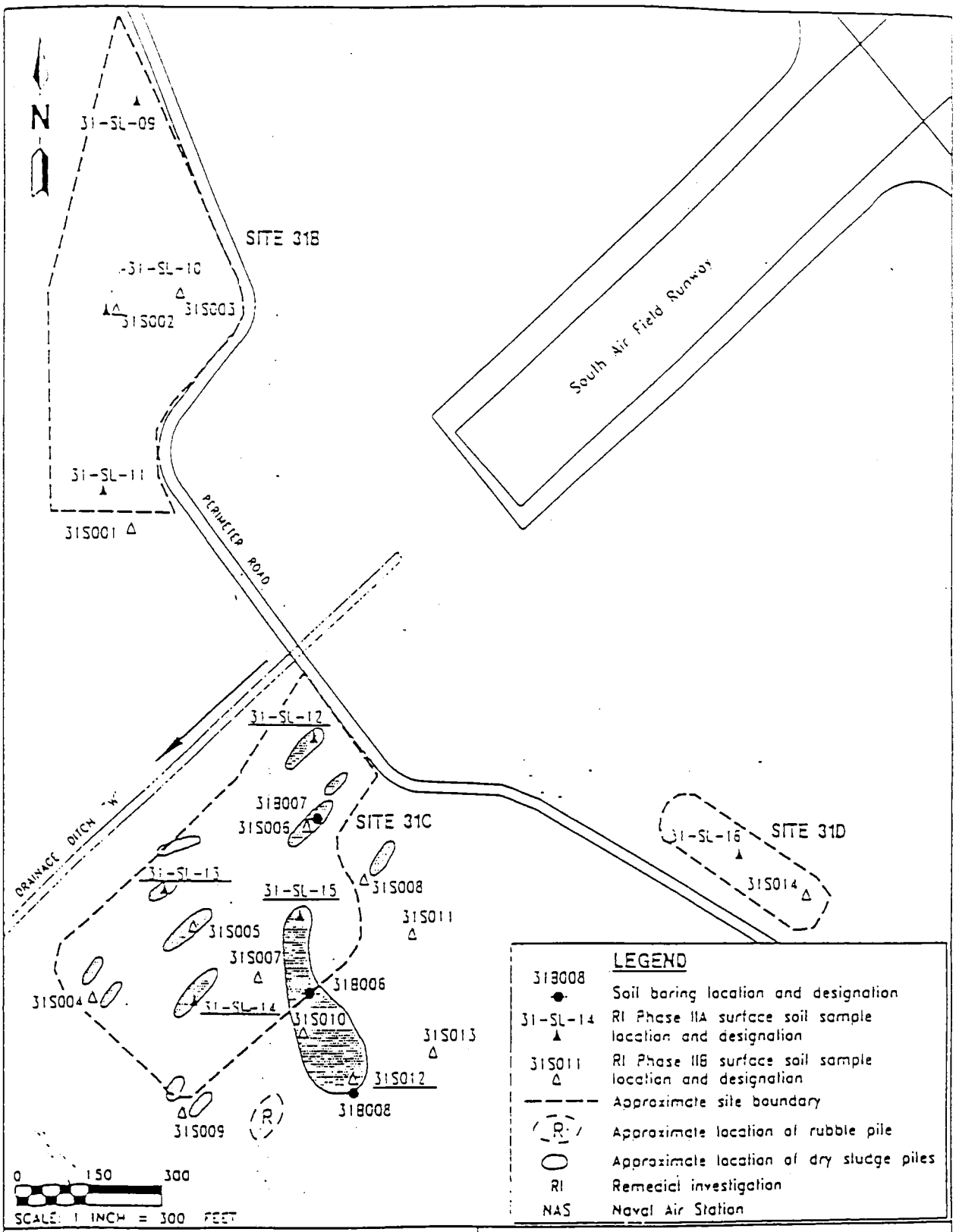

FIGURE 1-6

SITES 31B, 31C, AND 31D
LOCATIONS OF SOIL BORINGS
AND SURFACE SOIL SAMPLES

REMOVAL ACTION
COMPLETION REPORT
SITES 9, 10, 17, 18, AND 31C

NAS WHITING FIELD
MILTON, FLORIDA

Table 1-1
Site-Specific Chemicals of Concern and SCTLs

Site	Chemical of Concern	Maximum Concentration Detected (mg/kg)	Applicable SCTLs (mg/kg)*
9	Arsenic	18	4.62 (1)
10	Arsenic	8.8	4.62 (1)
	Benzo(a)pyrene	3.4	0.5 (2)
	Dibenzo(a,h)anthracene	3.4	5.0 (2)
17	Arsenic	5.9	3.7 (2)
	TRPH	11,700	2,500 (2)
18	Arsenic	1.7J	3.7 (2)
	TRPH	19,300	2,500 (2)
31C	Barium	534	110 (3)
	Chromium	295	210 (3)
	Copper	948	110 (3)
	Lead	1,890	400 (3)
	Mercury	8.8	5.4 (3)
	Arochlor 1260	1.4	0.5 (3)
	Dieldrin	0.120	0.07 (3)

*From FAC 62-777
J = Estimated value
(1) Site-specific SCG for former covered landfill areas (see Appendix F)
(2) Industrial criteria
(3) Residential criteria

1.5 SCOPE OF WORK

The general scope of work for interim remedial actions included:

- Collecting and analyzing surface soil samples to delineate the lateral extent of contaminants in surface soil;
- defining a clean perimeter boundary within which interim remedial activities would be performed;
- covering contaminated surface soil or removal and replacement with clean soil and native grass;
- collecting and analyzing appropriate surface soil confirmation samples to demonstrate remaining surface soil conforms to Florida SCTLs for direct exposure;
- disposal of any hazardous waste removed from the sites;
- collecting and analyzing supplemental surface-soil site-characterization samples where needed;
- performing radiological surveys where appropriate; and
- site restoration.

2.0 INTERIM REMEDIAL ACTION

2.1 REMEDIATION OBJECTIVE

The limited objective for interim remedial actions at NAS Whiting Field is to reduce risk from exposure to surface soil at the subject sites, specifically for maintenance personnel involved in mowing operations. and incidental trespassers walking on the sites. Administrative controls further limit the risk from exposure to surface and subsurface soil at Sites 9, 10, 17, and 18 as discussed in the site-specific RI/Feasibility Study (FS) reports for each site. Reduced risk from exposure to surface soil at Sites 17 and 18 was achieved by covering contaminated areas with twenty-four inches of clean soil and planting native grasses. Reduced risk from exposure to surface soil at Sites 9 and 10 was achieved by using a similar soil cover, combined with administrative controls related to higher site-specific arsenic SCGs.

The same objective at Site 31C was achieved by excavation of contaminated sludge drying areas to a depth of twelve inches or until clean soil was reached, whichever was greater. The excavations were filled with clean soil and covered with sod. All soil excavated at Site 31C was transported offsite and disposed at a subtitle D landfill. Subsurface soil at this site was not found to contain anthropogenic contaminants above residential SCTLs.

Soil used for clean fill and cover material was sampled and analyzed for arsenic content before being brought onto the base. Laboratory results for clean soil are presented in Appendix H.

2.2 INTERIM REMEDIAL ACTIONS AT EACH SITE

The remediation activities associated with each site are summarized below:

Site 9

- Collect delineation and confirmation surface soil samples for arsenic analysis;
- Survey soil sample locations and pre-restoration grade;
- Define boundaries of site, and area to be covered;
- Remove/mulch heavy vegetation overgrowth and trees as necessary;
- Construct 2-ft-thick permeable fill cover;
- Apply Bahia grass seed and irrigate; and
- Survey site restoration grade elevations.

Site 10

- Collect surface soil samples for immunoassay testing for carcinogenic PAHs;
- Collect delineation and confirmation surface soil samples for arsenic and carcinogenic PAH analyses;
- Survey soil sample locations and pre-restoration grade;
- Define boundaries of site, and area to be covered;
- Remove/mulch heavy vegetation and trees as necessary;

- Reduce and grade existing rubble piles;
- Construct 2-ft-thick permeable cover with clean soil;
- Apply Bahia grass seed and irrigate; and
- Survey site restoration grade elevations.

Sites 17 and 18

- Collect surface and subsurface soil samples for immunoassay testing for TRPH;
- Collect delineation and confirmation surface soil samples for TRPH, TRPH leachate , and arsenic (Site 17 only) analyses;
- Survey all sample locations and pre-restoration grade;
- Define boundaries of site, and area to be covered;
- Construct 2-ft-thick permeable cover with clean soil;
- Install Bahia grass sod and irrigate; and
- Survey site restoration grade

Site 31C

- Collect and analyze delineation and confirmation surface soil samples for metals, pesticides, and polychlorinated biphenols (PCBs) analyses;
- Identify and define boundaries of site, and sludge drying areas for removal;
- Excavate sludge drying areas where residential direct-exposure soil SCTLs were exceeded, to a depth of 12-in. below grade or greater;
- Excavate all other sludge drying areas exhibiting distressed vegetation, to an approximate depth of 6-in. below grade;
- Collect and analyze confirmation samples from side-walls and bottoms of excavated areas were SCTLs were exceeded;
- Collect and analyze additional characterization samples from Site 31C to fill data gaps;
- Collect and analyze sample from excavated soil stockpile for waste characterization;
- Survey all confirmation and remedial investigation sample locations and site topography;
- Back-fill excavated areas with clean soil;
- Transport and dispose of all excavated soil at appropriate waste disposal facilities as determined from waste characterization results; and
- Install Bahia grass sod and irrigate.

2.3 INTERIM REMEDIAL ACTION CONSTRUCTION ACTIVITIES

Interim remedial action construction activities included mobilization, soil excavation and disposal, back-filling clean soil, and planting native grass covers at the subject sites. Table 2-1 provides a summary of the material quantities handled at each site.

Table 2-1
Summary of Material Quantities Handled

Site	Soil Excavated (yd^3)	Soil Disposed (ton)	Clean Soil Backfill (yd^3)	Vegetative Cover (ft^2)
Sites 9 and 10	None	None	15,940	168,880 (2)
Site 17	None	None	8,480	61,150 (1)
Site 18	None	None	11,040	106,980 (1)
Site 31C	1,635	1,386	1,920	356,400 (1)
Totals	**1,635**	**1,386**	**37,380**	**693,415**

Notes
(1) Bahia sod
(2) Bahia seed mix

2.3.1 Mobilization

Mobilization activities at NAS Whiting Field began on 11 January 1999. These activities included arrival of personnel at the jobsite; initiation of a pre-construction meeting and notifications; delivery of construction equipment, tools, and materials; and setup of a field office. NAS Whiting Field provided Room 200 of Building 1464 for a temporary field office. This resulted in a cost savings of approximately $5,000 to the project. Bechtel mobilized a Site Superintendent and a Safety and Health Representative/Quality Assurance Representative to perform the fieldwork.

2.3.2 Pre-Construction Activities

Before field activities began, a pre-construction meeting was held by Bechtel on 19 January 1999 at the Public Works Building at NAS Whiting Field; the meeting included representatives from base public works, engineering, safety and security, fire protection, and environmental departments. Bechtel met separately with representatives from NAS Whiting Field maintenance and morale, welfare, and recreation departments to inform them of the scope of work and schedule.

Bechtel personnel performed all the necessary utility notifications and obtained clearances before the start of excavation activities. The base operating services personnel were notified in advance of construction startup to obtain utility clearances and locate all buried interferences. Notifications were given to the base Public Works Department, the resident officer in charge of construction (ROICC), and facility operational personnel.

2.3.3 Excavation and Disposal

Excavation and disposal activities were limited to work performed at Site 31C. Equipment used included a John Deere (JD) 544A loader, Volvo L70C loader, a Daewoo 139 excavator, and a JD 20L excavator. The work was performed by Florida Waste Services of Tampa, Florida. During 20 January through

17 February 1999, approximately 1,635 yd^3 of soil was excavated and stockpiled at Site 31C. A site survey showing the excavated areas is provided as Drawing 419-DD-005 in Appendix A. Construction photographs are provided in Appendix B.

Waste generated during the site restoration activities was managed in accordance with the *Environmental Response Action Contract Waste Management Plan* (Bechtel 1995). Waste was classified based on analytical data collected during the excavation and confirmation sampling activities. All sample results were reviewed prior to release of waste soil for disposal. Waste manifests were signed by the NAS Whiting Field Environmental Coordinator. From 1 March through 5 March 1999, all stockpiled soil was transported and disposed at the Browning Ferris Industries Timberlands Landfill located at Brewton, Alabama. Approximately 1,386 tons of soil, dried sludge, and vegetation (grass, weeds, and roots) were disposed. Copies of the waste tracking log and waste manifests are provided in Appendix C.

2.3.4 Clean Soil for Fill and Cover

Approximately 37,380 yd^3 of clean fill was used during construction activities for all sites. The 24-in. soil cover for Sites 9, 10, 17, and 18 consisted of an 18-in. layer of red, sandy fill and a 6-in. layer of brown fill for topsoil. Earth-moving equipment used to spread and compact the soil included a JD 650 dozer, a JD 644G loader, and an Ingersol Rand SD40D vibratory compactor. The sides of the backfill cover were sloped to the existing grade at a 12-ft horizontal to 1-ft vertical slope. Fill for Site 31C was used to bring the excavated areas back to original grade. Fill soil was provided by Roberson Excavation, Inc., located at 7980 Highway 87 North, Milton, Florida. A summary of the quantities and activity dates for each site is provided below.

Sites 9 and 10

Site preparation activities included clearing and grubbing and leveling existing debris piles. Tri-State Tree Service of Pensacola, Florida performed clearing and grubbing during 22 January through 24 January 1999. Mulched wood material was delivered to the base golf course for landscape purposes. Tree trunks greater than 4 in. in diameter were stockpiled along the edge of Perimeter Road for reclamation. Several debris piles of concrete, asphalt rubble, soil, and minor amounts of metal were leveled using the earth moving equipment.

Approximately 15,940 yd^3 of backfill were placed and compacted during 15 February through 11 March 1999. Drawing 419-DD-001 in Appendix A shows the outer limits of the 24-in. soil cover and the additional soil used for blending to natural contours. As a result of applying the 24-in. soil cover to the sites, it was necessary to reconstruct the surface protection for two existing groundwater monitoring wells. A 36-in.-diameter Hancor corrugated polyethylene pipe and four 4-in.-diameter steel guard posts were installed at each well. The pipe was placed around the well, and cement was placed inside the base of the pipe to stabilize the pipe and allow rainwater to drain away freely. The well-protection detail is shown in Figure 2-1.

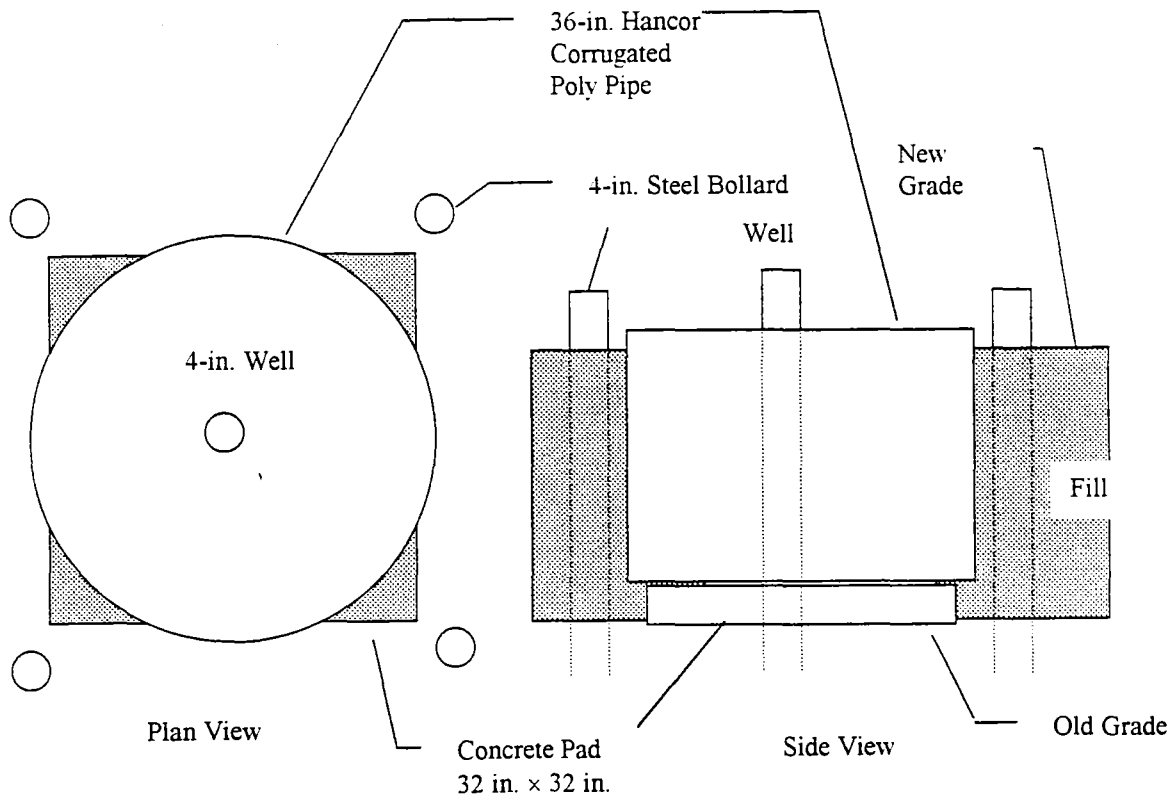

Figure 2-1 Well Protection Detail

Site 17

Approximately 8,480 yd^3 of clean fill were placed and compacted from 28 January through 8 February 1999. Drawing 419-DD-002 shows the outer limits of the 24-in. soil cover and the additional soil used for blending to natural contours.

Site 18

A total of 11,040 yd^3 of clean fill were placed and compacted during 19 January through 27 January 1999. Drawing 419-DD-003 shows the outer limits of the 24-in. soil cover and the additional soil used for blending to natural contours.

Site 31C

A total of 1,920 yd^3 of clean fill were placed in excavations at site 31C and graded to original site contours. The soil was compacted using a front-end loader. Drawing 419-DD-005 shows areas where soil was removed and replaced with clean fill.

2.3.5 Revegetation of Filled and Covered Areas

Approximately 168,130 ft^2 of native grass were planted at Sites 17 and 18, using Bahia grass sod supplied and installed by Eagle Golf and Turf of Milton, Florida. Approximately 356,400 ft^2 of native grass were planted at Site 31C by Florida Waste Services of Tampa, Florida. Approximately 168,880 ft^2 of clean fill at Sites 9 and 10 were covered by planting Bahia grass seed, using subcontract services of Allentown Community Farm Center, of Jay, Florida.

2.3.6 Site Survey

Land surveying services were provided by A-1 Surveying of Milton, Florida. Site boundaries, elevations, soil sample locations, and the top and toe of the backfill slopes were surveyed at each site. As-built drawings of the site surveys are provided in Appendix A.

2.3.7 Demobilization

Demobilization included decontamination of equipment, cleaning work areas, and removing equipment, supplies, and materials from the work sites and office areas.

3.0 SAMPLING AND ANALYSIS RESULTS

To minimize the area of site restoration, Bechtel developed a plan to confirm and delineate the extent of contaminated areas exceeding the applicable Florida SCTLs. The plan included review of existing analytical data and planning and implementing sampling, immunoassay testing, and laboratory analyses of surface soils at each site. Results from this effort defined the areas requiring remediation. Where data gaps were identified by previous RI reports, additional characterization samples were collected to supplement the earlier site investigations. A radiological walkover survey was performed at Sites 17 and 18 to look for possible radium-painted dials and instruments from airplane parts that had been used for crash crew training.

3.1 DELINEATION, CONFIRMATION AND CHARACTERIZATION SAMPLING

Delineation and confirmation sampling were conducted at all sites during October and November 1998. Additional delineation, confirmation, and characterization sampling was conducted during mobilization in January and February 1999. Surface soil samples were collected from the ground surface to a depth of 12 in. below grade. Samples were collected for field screening using immunoassay testing, and for organic and inorganic chemical analyses by offsite laboratories. Samples collected during October and November 1998 were submitted to ENCO Laboratories of Orlando, Florida, and samples collected during January and February 1999 were submitted to General Engineering Laboratory of Charleston, South Carolina. Whenever appropriate, delineation samples were used as confirmation samples (example—clean perimeter samples) to avoid expense of redundant sampling. Characterization samples were collected to fill data gaps identified by the Site 31C RI, to supplement previous sampling.

Samples referred to in this report as Level IV were analyzed by GEL using U.S. Environmental Protection Agency (EPA) Contract Laboratory Program (CLP) Routine Analytical Services (RAS). Although not currently performing EPA contract work, GEL formerly performed CLP work and still performs analytical procedures meeting the quality standards of the CLP. These procedures require rigorous QA/QC protocols and documentation. The samples were analyzed using the CLP Statements of Work (SOWs) for organic and inorganic compounds. The Level IV data were provided by the laboratory in complete packages, including raw data. Data were fully validated, and qualifiers added to the results.

Quality control requirements included one matrix spike and one laboratory duplicate analyzed per 20 samples, per matrix for inorganic parameters. One matrix spike, matrix spike duplicate pair was analyzed per 20 samples, per matrix for organic parameters. Field QC was at a frequency of 5%, or more. Field duplicates were collected at a frequency of 1field duplicate pair per 20 samples, per matrix. Rinsate blanks were taken at a minimum of 1 per 20 samples, per matrix.

The sample results were added to the electronic database for NAS Whiting Field environmental samples.

Samples referred to in this report as Level III were analyzed by GEL and ENCO laboratories, using EPA procedures, some of which are equivalent to CLP RAS, but without the CLP requirements for documentation. These samples are referred to in this report as Level III. Sample results for these samples were thoroughly evaluated for QC purposes, but not validated because of less documentation required in the data packages from the laboratory.

A summary of the sampling activities at each site is provided below. Representative sample results are presented in tables in Appendix D, including field screening (immunoassay) data and laboratory data. These data demonstrate confirmation of the effectiveness of the interim remedial actions (IRAs) performed at these sites. Complete analytical data for these sites, including laboratory methods used for sample analyses are included in the electronic data submittal provided under separate cover. The electronic data include all non-detects for analytes sampled and analyzed for, but not reported in the tables in Appendix D. Results are reported on a dry weight basis.

Site 9

Seventeen surface soil samples (09S006 through 09S022) were collected at Site 9 for arsenic analysis; however, two of the samples were inadvertently collected on Site 10. Sample locations are shown on Figure 3-1. Sample results were used to define the perimeter for placement of the soil cover. Arsenic

results ranged from 1.0 mg/kg to 11.2 mg/kg. Sample locations where the results exceeded the site-specific SCG of 4.6 mg/kg were offset 10 to 20 ft toward undisturbed areas, and another surface soil sample was collected and analyzed. The process was followed until arsenic results were below the site-specific SCG. Sample results are listed in Table D-1 and coordinates are shown on as-built drawing 419-DD-001 in Appendix A.

Site 10

Twenty-five surface soil samples were collected at Site 10. Arsenic sample locations are shown on Figure 3-1 and immunoassay and PAH sample locations are shown on Figure 3-2. Eleven samples (10S007 through 10S015, 10S020, and 10S021) were collected and submitted for arsenic analysis. Ten samples (10IS01 through 10IS10) were used for immunoassay testing for carcinogenic PAHs, and four samples (10S016 through 10S019) for semi-volatile organic analyses to confirm immunoassay results.

Field screening sampling and fast-turnaround laboratory analyses were used to define the perimeter for placement of the soil cover. Immunoassay field test kits were used to determine if soil samples contained PAHs at levels likely to be above the SCTLs for individual carcinogenic PAHs. Total carcinogenic PAHs detected by laboratory analysis ranged from none detected to 17,000 mg/kg. Arsenic concentrations ranged from 0.8 mg/kg to 6.0 mg/kg. Sample locations where arsenic results exceeded the site-specific SCG of 4.6 mg/kg or PAH results exceeded SCTLs were offset 10 to 20 ft toward undisturbed areas, and subsequent samples were collected and analyzed until a clean perimeter was established. Sample results are listed in Tables D-2 and D-3 and coordinates are shown on as-built drawing 419-DD-001 in Appendix A.

Site 17

A radiological survey was performed before collecting soil samples at Site 17 to detect low levels of radiation that may result from radium-painted instruments or dials from debris in the former fire pits. A 10-m by 10-m grid was established across the site, and background radiological readings were collected at the beginning of the survey. Each grid was transected and surveyed in 1-meter swaths, with all readings recorded in a field logbook. All readings were less than twice background criteria. Radiological walkover survey instructions and a copy of the field notes are provided in Appendix E.

Soil sample results were used to establish the perimeter for placement of the clean soil cover and to demonstrate TRPH was not leaching from soils within the former fire pits. A total of 52 samples were collected at Site 17 during October 1998. Sample locations are shown on Figures 3-3 and 3-4.

Thirty-seven screening samples (17-IA-01 through 17-IA-37) were collected from the former fire pits and along the perimeter of the fire pits where previous sampling showed TRPH concentrations above the 2,500-ppm criteria. These samples were used for immunoassay testing (field screening) for total benzene, toluene, ethyl-benzene, and xylenes (BTEX). Samples from seven of the immunoassay locations were also submitted to an offsite laboratory for TRPH analysis (17-SL-35 through 17-SL-41) to confirm the consistency of immunoassay test results and to confirm the clean perimeter. Immunoassay results for BTEX ranged from none detected to 30.67 mg/kg. Laboratory results of chemical analysis for TRPH ranged from none detected to 130 mg/kg.

Three surface soil samples (17-SL-42 through 17-SL-44) were collected from within the fire pits for TRPH leachate testing using the synthetic precipitation leaching procedure (SPLP). Laboratory SPLP leachate test results indicated no TRPH was detected.

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Five samples (17-SL-45 through 17 SL-49) were collected for laboratory analysis from areas where arsenic had been previously detected during the site RI. Laboratory results ranged from 0.60 mg/kg to 2.2 mg/kg. The cleanup criteria for all contaminants including arsenic at this site were the SCTLs in FAC 62-777.

The SPLP results demonstrated there would be no leaching of TRPH into groundwater in excess of Florida Groundwater Cleanup Target Levels if a permeable soil cover was applied to prevent direct exposure to surface soil.

Site 18

A radiological survey, as described above, was conducted at Site 18 before soil samples were collected. All survey readings were below the twice background criteria.

Soil sample analytical results were used to establish an outer perimeter for the soil cover and to demonstrate TRPH was not leaching from soils within the former fire pits. A total of 51 samples were collected at Site 18 during October 1998. Sample locations are shown on Figure 3-5. Forty-eight samples (18-IA-01 through 18-IA-48) were collected from the former fire pits and along the perimeter of the fire pits where previous sampling detected TRPH concentrations above the 2,500 mg/kg criteria. These samples were used for immunoassay testing for BTEX. Immunoassay test results for BTEX in surface soil samples ranged from 0.22 mg/kg to 1,441.6 mg/kg. Eight of the immunoassay locations were also submitted for TRPH analysis (18-SL-48 through 18-SL-55) to confirm immunoassay results. According to laboratory results, no TRPH was detected in surface soil samples.

Three surface soil samples (18-SL-56 through 18-SL-58) and two subsurface soil samples (18-SB-11 and 18-SB-12) were collected for TRPH leachate testing using the SPLP method. The subsurface samples were collected at a depth of 10 ft bls to 12 ft bls from locations previously sampled by HLA, where TRPH had exceeded SCTLs. The SPLP analytical results for TRPH samples collected from surface soil in the former fire pits and from subsurface soil collected at a depth of 11 to 12 ft bls in the fire pits, were below leachate criteria. TRPH leachate results ranged from none detected to 400 μg/L, well below the limit of 5,000 μg/L for groundwater.

The SPLP results demonstrated there would be no leaching of TRPH into groundwater in excess of Florida Groundwater Cleanup Target Levels if a permeable soil cover was applied to prevent direct exposure to surface soil.

Site 31C

A total of 210 surface soil samples were collected at Site 31C. Samples were collected for screening, delineation, confirmation, and supplemental RI site characterization. Samples are summarized by category in Table 3-1.

Table 3-1
Soil Sampling Summary Site 31C

Area	Number Samples	Location IDs	Analyses
Delineation	60	31S020 - 31S079	
Drainage Basin Screening	10	31080 - 31089	Metals, Pesticides, PCBs
31C Remote Area	3	31090 - 31092	Metals, Pesticides, PCBs
Excavation Confirmation	82	31093C - 31174C	Metals, Pesticides, PCBs
Characterization	35	31175C - 31198C 31204C - 31214C	Metals, Pesticides, PCBs
Drainage Basin RI	20	31199C - 31203C	Metals, Pesticides, PCBs, SVOCs, VOCs

During October and November 1998, 60 soil samples (31S020 through 31S079) were collected for delineation sampling of sludge areas. The samples were analyzed at Level III for metals, pesticides, and PCBs. Analytical results showed 12 locations where copper and/or barium concentrations exceeded the residential direct-exposure soil SCTLs. Copper results exceeding the residential SCTLs ranged from 120 mg/kg to 420 mg/kg, and one location showed barium at 190 mg/kg. These locations were selected for excavation and site restoration. Sample locations and areas exceeding the SCTLs are shown on Drawing 419-DD-004 in Appendix A. Sample analytical results are listed in Tables D-7 and D-8 in Appendix D.

An additional 150 soil samples were collected from Site 31C during the interim remedial action field activities in January and February 1999. Confirmation samples were collected from the sidewalls and bottom of excavated areas to demonstrate the removal of all contaminated soil. Supplemental characterization samples were collected to fill data gaps previously identified by the Site 31C RI. Characterization samples were collected concurrently with site delineation and confirmation samples, to expedite complete characterization of the site and take advantage of mobilized field crews.

Additional characterization of surface soil was required for the main flow channel of the drainage basin to look for water-transported contamination. To obtain an early indication of the potential need for excavation of soil from the drainage basin, 10 screening samples were collected from the main flow path in the drainage basin to test for the same site-specific chemicals of concern (COCs) previously found in the sludge deposits. The samples were submitted for Level III 48-hour turn around.

An additional 20 surface soil samples were later collected from locations in the deepest part of the drainage basin for site characterization using Level IV analysis methods. The samples were collected on a line from the road to the steel erosion-control bulkheads at the down-stream edge of the site. Five of the samples were analyzed for the target compound list (TCL) for volatile organic compounds (VOCs), semi-VOCs (SVOCs), pesticides, herbicides, and PCBs, plus the target analyte list (TAL) for metals. The remaining 15 samples were analyzed for the site specific COCs. Results for all samples collected in the drainage basin were below the residential direct-exposure soil SCTLs. Analytical results for drainage basin samples are listed in Tables D-13 through D-16 in Appendix D, and locations are shown on Drawings 419-DD-004 and -005 in Appendix A.

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Characterization samples were collected immediately down-gradient from surface sludge deposits to look for contaminants leached or washed from the sludge deposits, and from locations between sludge deposits to provide complete coverage where no sampling had been previously performed. These 35 samples were submitted for Level IV analysis based on the site-specific list of COCs. Laboratory results for these samples are listed in Tables D-9 and D-10 in Appendix D, and locations are shown on Drawing 419-DD-005 in Appendix A.

Three additional screening samples were collected from a remote-area sludge drying bed northwest of Site 31C at the intersection of Perimeter Road and the paved road to the sewage treatment plant (Figure 3-6). The samples were analyzed for the TAL for metals. Laboratory results indicated no contamination in excess of the residential direct-exposure soil SCTLs. Table D-17 summarizes the results, and locations are shown on Figure 3-6.

Eighty-two samples were collected from the bottom and sidewalls of excavations where soil contamination was above residential direct-exposure soil SCTLs. All results for excavation-confirmation samples were below the SCTLs. None of the 58 supplemental characterization samples contained contaminants above the residential direct-exposure soil SCTLs.

4.0 CONSTRUCTION QUALITY CONTROL

Bechtel provided construction quality control by conducting inspections of subcontractors at various points during the removal activities, as identified in the site-specific Addendum to the Quality Control Program Plan (Bechtel 1998b). Site-specific inspections were conducted during excavation, site restoration, workmanship, and waste management activities. No deficiencies were observed during these inspections.

4.1 FIELD CHANGE NOTICES

No change orders were issued during the construction restoration activities.

5.0 FINAL CONSTRUCTION INSPECTION

A final construction inspection took place on 30 March 1999. Present for the inspection were representatives from Bechtel and from NAS Whiting Field public works and environmental departments. No deficiencies or outstanding punchlist items were identified by Base personnel during this inspection.

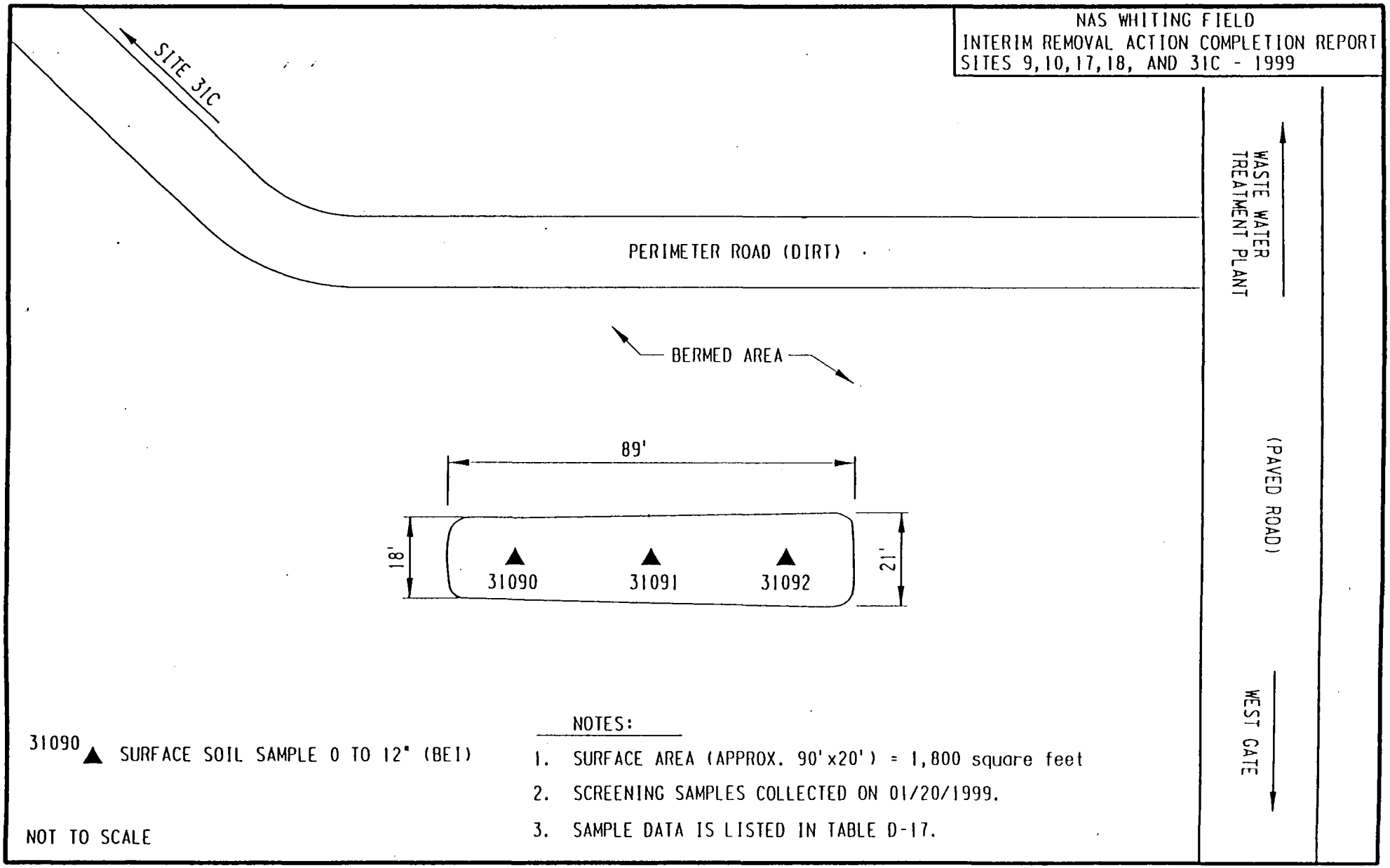

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FIGURE 3-6
SCREENING SAMPLE LOCATIONS AT SITE 31C REMOTE AREA

APPENDIX J

RESPONSE TO REVIEW COMMENTS

Draft Responses to EPA Review Comments
Draft Remedial Investigation Report, Site 31
NAS Whiting Field

1. **Title Page.** The EPA ID number (FL2 170 023 244) should be added to the title page.

   Response: The EPA ID number (FL2 170 023 244) will be added to the title page.

2. **Page –i-, Last Paragraph.** Ms. Linda Martin's telephone number should be changed to (843) 820-5574.

   Response: Ms. Linda Martin's telephone number will be changed to (843) 820-5574.

3. **Forward and Executive Summary.** Move the Forward and Executive Summary so these sections follow the Table of Contents.

   Response: The Foreword and Executive Summary will be moved to follow the Table of Contents.

4. **Executive Summary, Page –ii-, Surface Soil Summary.** The Surface Soil Summary does not address Site 31E. In addition, no comparison is made to federal standards in the Surface Soil Summary.

   Response: The first bullet under Surface Soil Summary will be revised to include Site 31E. The bullet will read as follows:

   Sites 31A, 31B, 31D, 31E, and 31F: No compounds or analytes were detected at concentrations in excess of their respective background screening values, Region III RBCs, and Florida SCTLs.

5. **Executive Summary, Page –iii-.** The Subsurface Soil Summary should address the reason(s) why no subsurface soil samples were obtained at Sites 31 B, D, E, and F.

   Response: It is our understanding that based on review of site history and other available information, the approved work plan recommended that collection of subsurface soil samples at Sites 31B, 31D, and 31 F was not warranted.

6. **Human Health Summary** – If chemical constituents evaluated in the risk assessment pose an unacceptable risk at the end of the risk assessment process, those constituents would be considered "chemicals of concern" (COCs) not "chemicals of potential concern" (COPCs). In the fourth sentence of the first bulleted item, add the words "field sampling" after "RI", add the word "the" between "from" and "site", and change "do not" to "no longer". It is not appropriate to claim no human health chemicals of potential concern were identified for subsurface soil or groundwater at any of the Site 31 areas when subsurface soil samples were only collected at Sites 31A and 31C and groundwater samples were only collected at Site 31C.

   Response: Revisions recommended by the reviewer will be incorporated in the final report.

7. **Ecological Risk Assessment Summary** – This section of the executive summary should provide information related to the constituents which posed a risk prior to removal of the soil.

   Response: The following information will be added to the ecological risk assessment summary.

   More than 20 volatile and semivolatile organic compounds, pesticides, PCBs, and inorganic analytes were identified as ECPCs for various receptors at Site 31C. However, only copper, cadmium, lead, and mercury were primary contributors to ecological risk.

8. **Executive Summary, Page –iv, Conclusions and Recommendations.** This section of the report should indicate the no further action (NFA) recommendation only applies to the surface and subsurface soils at the sites. Recommendations for groundwater should be made in the Site 40 (base-wide groundwater) documents.

   Response: As suggested by the reviewer, the conclusions and recommendations section of the executive summary will be revised to indicate that NFA is recommended for surface and subsurface soils.

9. **List of Tables, Pages –x- and –xi-.** The superscript "1" used on pages –x- and –xi- should be defined in a footnote.

   Response: The superscript "1" used on pages –x- and –xi- will be removed.

10. **Glossary, Page –xii-.** – Chemical of Potential Concern should be abbreviated as "COPC" not as "CPC". Ecological chemical of potential concern should be abbreviated as "ECOPC" not "ECPC". Human health chemical of potential concern should be abbreviated as "HHCOPC" not as "HHCPC". (See comment number 5 above for an explanation on how the terms "chemicals of potential concern" and "chemicals of concern" should be used.)

    Response: Chemical of Potential Concern will be abbreviated as "COPC". Ecological chemical of potential concern will be abbreviated as "ECOPC". Human health chemical of potential concern will be abbreviated as "HHCOPC".

11. **Glossary, Page –xiii-.** Change "Priority" to "Priorities" in the definition of NPL.

    Response: Priority" will be changed to "Priorities" in the definition of NPL

12. **Section 1.1, Page 1-1.** Change the word "or" to "and/or" between the words "toxic" and "hazardous" in the first sentence.

    Response: The word "or" will be changed to "and/or" between the words "toxic" and "hazardous" in the first sentence

13. **Figure 1-2, Page 1-3.** This figure did not reproduce clearly. Please provide a new copy of the figure.

    Response: A new copy of Figure 1-2 is attached to the RTCs.

14. **Section 1.2, Page 1-4.** In the second sentence of the second paragraph, change the word "Priority" to "Priorities".

    Response: Priority" will be changed to "Priorities" in the second sentence of the second paragraph.

15. **Section 3.0, Page 3-1.** Change "QC" to "QA/QC" in the first sentence of the second paragraph.

    Response: "QC" will be changed to "QA/QC" in the first sentence of the second paragraph.

16. **Section 3.2.2, Page 3-6.** Add "using a 2-foot split spoon sampler" after the word "intervals" in the second sentence of the first paragraph.

    Response: The phrase "using a 2-foot split spoon sampler" will be added after the word "intervals" in the second sentence of the first paragraph.

17. **Section 4.1, Page 4-1.** Provide further clarification on the term "wet chemistry analyses" as used in the second sentence of the second paragraph.

    Response: The term "wet chemistry analyses" as used in the second sentence of the second paragraph includes analysis of ammonia-nitrogen, chloride, hardness, nitrate-nitrite, phosphorous, sulfate, sulfite, total dissolved solids, total kjeldahl nitrogen, and total organic carbon. The data is presented in Appendix C of the RI report.

18. **Section 5.0, Page 5-1.** The last sentence of the fourth paragraph should be revised as follows: "Clay layers were typically 6-inches thick."

    Response: The last sentence of the fourth paragraph will be revised as follows: "Clay layers were typically 6-inches thick".

19. **Section 5.1.** Throughout this section, a comparison of site related data is made to FDEP standards; however, no mention, or little mention, is made of a comparison to federal standards. A comparison to federal standards should be made in each of the site discussions.

    Response: A comparison to federal standards will be included in this section.

20. **Section 5.4, Subsurface Soil Assessment.** This section should be renumbered as Section 5.2. In addition, please see Comment No. 17 above as it relates to the comparison of site related data to federal standards.

    Response: Subsurface Soil Assessment will be renumbered as Section 5.2. And a comparison to federal standards will be included in this section.

21. **Section 5.3, Page 5-42.** Add "MCLs" after the word "Federal" in the discussion of inorganic analytes.

    Response: "MCLs" will be added after the word "Federal" in the discussion of inorganic analytes.

22. **Section 6.0, Page 6-1.** Change "CPCs" to "COPCs" in the second bulleted item and throughout the document wherever the term "chemicals of potential concern" is used.

    Response: CPCs will be changed to COPCs.

23. **Section 6.2, Page 6-2.** Change "HHCPCs" to "HHCOPCs" in this section and throughout the document wherever the term "human health chemicals of potential concern" is used.

    Response: HHCPCs will be changed to HHCOPCs.

24. **Section 6.3.1, Page 6-19.** Remove the bold print from the word "trespassers" in the third paragraph.

    Response: The bold print from the tresspassers in the third paragraph will be removed.

25. **Section 6.7, Page 6-41.** Further explanation should be provided for the statement made at the bottom of the page: "The risk due to potential exposure to manganese in surface soil at Sites 31E and 31F remains unchanged and insignificant."

    Response: Because manganese did not pose a non-cancer risk in excess of an HI of 0.1, remedial actions to address manganese were not required. Therefore, the risks estimated in this HHRA for

manganese at Sites 31E and 31F (the highest HI is 0.1 for a future child resident) have not changed as a result of remedial actions performed at Site 31.

However, reference to Sites 31E and 31F is not appropriate in section 6.7, and will be deleted. Sites 31E and 31F risk is discussed in 6.5.1.2.

26. **Section 6.9, page 6-42.** This section of Chapter 6 should address the increased risk posed by manganese in surface soil at Sites 31E and 31F as stated previously in the chapter.

    Response: There are no references to "increased risk posed by manganese" previously in the chapter. Please see the response to Comment 25. The HI for sites 31E and 31F with respect to manganese, will be summarized in Section 6.9.

27. **Section 7.0, Page 7-1.** Change "ECPCs" to "ECOPCs" in this section and throughout the document wherever the term "ecological chemicals of potential concern" is used.

    Response: ECPCs will be changed to ECOPCs.

28. **Section 9.0, Page 9-1.** Considering the information presented in Chapter 6, Site 31 does not qualify for a no further action (NFA) disposition. Although the cumulative risk falls within EPA's acceptable cancer risk range, it exceeds the FDEP target goal of $1x10^{-6}$. Figures 6-2 and 6-4 clearly show the cancer risk level exceeding FDEPs goal. In addition, Section 6.5.3 states the following: "The cumulative risk to hypothetical future residents of $2x10^{-5}$ is within the USEPA acceptable cancer risk range; however, it exceeds the FDEP target level of concern."

    Response: Section 9.0 will be reorganized to indicate the risks identified in paragrpah were addressed by interim removal actions completed by the Navy Response Action Contractor.

Human Health Risk Assessment Review and Comments

Major Comments That Need Action

1 **Page 6-19 Section 6.3 Paragraph 2**. The report does not address the possibility of stormwater runoff as an exposure pathway. Clear Creek is approximately 1800 feet from the SW edge of Site 31C. There is a ditch leading from 31C towards Clear Creek according to Figures 1-2 and 5-2. Is Clear Creek a drinking water source? Justify why this is not a potential pathway. Justify why ingestion of fish from Clear Creek is not a potential pathway.

Response: Clear Creek is not a drinking water source, nor do fish of a recreationally important size or species occur in Cedar Creek. The RI did not identify possible storm water runoff from Site 31C to Clear Creek as a significant migration pathway.

2. **Page 6-19 Section 6.3 Paragraph 2.** The report does not address the possibility of the ingestion of vegetation, meat, and diary products as potential pathways. Justify why these are not potential pathways.

Response: The Site is located at an active military facility that is not scheduled for closure. There are no agricultural activities ongoing at the facility, nor are any planned in the future. Therefore, potential exposure to COPCs in soils at Site 31 via ingestion of agricultural products is not a complete exposure pathway under the current land use, nor is expected to be under the foreseeable future land use.

This information will be incorporated into the risk assessment text.

3. **Page 6-23 Table 6-8.** This table contains the EPCs for surface soil at Site 31C. Beryllium is included in this table (Table 6-8), but according to Table 6-3 (Selection of Human Health Chemicals of Potential Concern) it is not a CPC. Barium and copper are CPCs according to Table 6-3. There is no justification for excluding barium or copper as CPCs.

Response: The reviewer is correct. Beryllium is not a COPC, whereas barium and copper are COPCs in Site 31C surface soil. Table 6-8 and the risk calculations in Appendix F will be revised accordingly.

4. **Appendix F.** Appendix F contains the Human Health Risk Data. Lead was identified as a CPC in Table 6-3 (Selection of Human Health Chemicals of Potential Concern). The risk was not quantified in the Appendix. For lead exposures to children seven years of age or younger, EPA recommends using the current version of the Integrated Exposure Uptake Biokinetic Model.

Response: Although the lead EPC at Site 31C (1,890 mg/kg) exceeded the OSWER directive lead cleanup level for residential properties (400 mg/kg; OWSER 9355.4-12), lead in soil was subsequently remediated to concentrations below the lead cleanup level. The OSWER value is appropriate for use as a conservative screening benchmark for lead concentrations in soils. If lead concentrations exceed the OSWER directive, additional evaluation or remediation may be undertaken. Since remediation of lead in soils was performed, use of the IEUBK model to evaluate the potential risks associated with lead exposures to children does not provide a value-added attribute to the risk assessment.

The risk characterization text will be edited to include a statement indicating that the lead EPC in Site 31C soil exceeded the OSWER value, and that remedial activities have subsequently been taken to address lead in soils.

B. Minor Comments That Need Action

5. **Page ii Executive Summary Paragraph 8.** The Surface Soil Summary for 31C does not include all inorganics with concentrations greater than the background screening level and the Florida SCTL.

   Response: The Surface Soil Summary for 31C will be edited to include barium, copper, and mercury.

6. **Page iii Executive Summary Paragraph 10.** The Groundwater Summary does not include Trichloroethene, which is listed as a CPC in Table 6-6.

   Response: TCE will be added to the executive summary as an HHCOPC.

7. **Page iii Executive Summary Paragraph 10.** The HHRA Summary states the excess lifetime cancer risk was due primarily to Aroclor-1260, dieldrin, arsenic, and copper. Arsenic was not a CPC according to Table 6-3 and an EPC was not calculated for copper (or arsenic) in Table 6-8.

   Response: The reviewer is correct. Arsenic was not selected as a HHCOPC. Copper will be included as a HHCOPC in Table 6-8. The executive summary will be revised to reflect these changes.

8. **Page iii Executive Summary Paragraph 11.** The HHRA summary states that no CPCs were identified in surface samples at 31F. Manganese was a CPC for surface soil according to Tables 5-13 and 6-4.

   Response: The reviewer is correct. Manganese was selected as a HHCOPC. The executive summary will be revised to reflect this change.

9. **Page iii Executive Summary Paragraph 11.** The HHRA Summary states that no CPCs were identified in groundwater in any of the Site 31 Areas. Trichloroethene was a CPC for groundwater according to Table 6-6.

   Response: The reviewer is correct. Trichloroethene was selected as a HHCOPC. The executive summary will be revised to reflect this change.

   Response: The Executive Summary will be changed to reflect TCE is a HHCPC in groundwater.

10. **Page v Table of Contents.** The page number for Section 3.0 Field Investigation is wrong.

    Response: Page number will be corrected.

11. **Page v Table of Contents.** Section 3.5 Interim Remedial Action was not included.

    Response: TOC will be modified to include Section 3.5, Interim Remedial Action.

12. **Page v Table of Contents.** Section 5.4 Subsurface Soil Assessment is numbered incorrectly.

    Response: Subsurface Soil Assessment will be renumbered as Section 5.2.

13. **Page v Table of Contents.** Section 7.5 Risk Characterization is numbered incorrectly.

    Response: Risk Characterization will be renumbered as Section 7.6.

14. **Page ix List of Tables.** Table 5-3 was not included.

Response: Table 5-3 will be added to the list of tables.

15. **Page 1-1 Section 1.0 Paragraph 2.** The report states the historic operations is presented in another document. A summary of the historic operations should be provided in this report.

    Response: A brief paragraph describing historic operations will be added to this section.

16. **Page 2-1 Section 2.1 Paragraph 2.** Little information is provided regarding past site activities. Provide additional detail on site activities and a chronology of land use.

    Response: Information presented in the GIR will be summarized in this section.

17. **Page 3-1 Section 3.0 Paragraph 2.** The report provides no information regarding background samples. Include a discussion of how and where background samples were taken for each media sampled.

    Response: As per the partnering team agreements, information regarding background samples is presented in the GIR. Appropriate references to the GIR will be added to Section 3.0.

18. **Page 3-1 Section 3.0 Paragraph 2.** The report lacks a qualitative discussion of potential or suspected sources of contamination, types and concentration of contaminants detected, potentially contaminated media, potential exposure pathways and receptors. Also provide a statement specifying both the qualitative and quantitative nature of the sampling data, in terms of relative quality and intent for use.

    Response: A brief paragraph describing sampling rationale will be added to Section 3.0

19. **Page 3-1 Section 3.0 Paragraph 3.** The report states that subsurface samples were collected at sites 31A and C and that groundwater samples for taken at 31C. Justify why subsurface samples were not taken at 31B, D, E and F and why groundwater samples were only taken at 31C.

    Response: It is our understanding that based on review of site history and other available information, the approved work plan recommended that collection of subsurface soil samples at Sites 31B, 31D, and 31 F was not warranted. In addition, it is unlikely that the contaminants of concern identified will migrate from surface to subsurface soils.

20. **Page 3-1 Section 3.1 Paragraph 3.** The report states that surface samples were collected from 0 to 12 inches. Were the samples collected from the most contaminated portion of the soil (e.g. SVOCs in the top few inches, VOCs at 9-12 inches)?

    Response: Yes, samples were collected from the most contaminated portion of the soil.

21. **Page 3-6 Section 3.2 Paragraph 2.** The report states that water quality data is in Section 5.5. It is actually in Section 5.3.

    Response: Section 3.2, paragraph will be corrected as suggested by the reviewer.

22. **Page 3-7 Section 3.4 Paragraph 1.** The report states that the Hydrogeologic Assessment is in Section 5.2 and it should be 5.4.

    Response: Section 3.4 will be corrected as suggested by the reviewer.

23. **Page 5-1 Section 5.0 Paragraph.** The report does not provide the number of background samples taken for each site and the rationale for choosing background locations.

    Response: Information pertaining to background samples is presented in the GIR, and is included in footnotes to data tables.

24. **Page 5-1 Section 5.1 Paragraph 1.** The report states that background screening levels are used for each of the 6 sites. It is not clear how the background screening level was calculated for each site. It is also not clear which soil type is present at which site.

    Response: Information pertaining to soil types at each site will be added to the appropriate tables in Section 5.0

25. **Page 5-1 Section 5.1.1 Paragraph 1.** The report states that contaminant concentrations were compared to USEPA Region III Risk Based Concentrations. Region IV is now using Region IX screening levels in most cases (rather than Region III). In addition to the Florida SCTL, the lower of the Region IX PRGs and Region III RBCs may be used.

    Response: The RI report was prepared when comparisons were being made to Region III RBCs.

26. **Page 5-2 Table 5-1.** Table 5-1 contains a comparison of analytes detected in 9 background surface soil samples for the troup loamy sand and bonifay sand. Clarify which of the background samples in the table are relevant to each of the 6 areas. If all nine samples are assumed to be representative of the 6 areas, and the background screening level is twice the mean detected background concentration, why are some of the background screening levels in Tables 5-3, 5-7, 5-11, and 5-13 different than those in Table 5-1?

    Response: Please see response to Comment No. 24.

27. **Page 5-9 Section 5.1.3 Paragraph 5.** The report states that barium, chromium, copper, lead, mercury, and silver were detected in one or more samples at concentrations exceeding the background screening level and the Florida residential and/or leaching SCTLs. Specify which inorganics exceeded the residential SCTL and which exceeded the leaching SCTL (or both).

    Response: The paragraph will be revised to indicate that barium, chromium, copper, lead, mercury and silver exceed background and residential SCTLs. Chromium and silver also exceed leachability criteria. Default leachability criteria are not available for copper and lead.

28. **Page 5-20 Section 5.1.4 Paragraph 1.** The report states that surface soil concentrations were compared to USEPA Risk Based Concentrations. Clarify that Region III RBCs were used.

    Response: Clarification to the use of Region III RBCs will be provided in Section 5.1.4.

29. **Page 5-32 Section 5.4.** The sections in 5.4 are numbered incorrectly. This should be section 5.2.

    Response: Section 5.4 is numbered is incorrectly. It will be revised to read Seaction5.2.

30. **Page 5-32 Section 5.4.1 Paragraph 1.** The report states that one subsurface sample location (31B00501) was located upgradient of the sludge drying beds and was used as a local background sample. However, the sample location is actually 31B005 and the sample identifier is 31B00501. How was this local background sample used and how does it related to the Whiting Field Background screening values provided in Table 5-15?

Response: Samples labeled as subsurface soil at Site 31A were collected from 1.5 to 3.0 feet below land surface. To be conservative, samples were evaluated against surface soil criteria (refer to Section 6.2.1). Therefore, the background sample 31B00501 is not relevant.

31. **Page 5-32 Section 5.4.2 Paragraph 1.** The report states in Section 5.4.1 that a local background sample was taken. Justify why a local background sample was taken at 31A and not 31C. Where any subsurface background samples taken? Provide the number and location of background samples and a map of the locations. Provide the sample results in a table.

    Response: There is no background data set for sludge drying bed fill material. Therefore, a local background sample was collected at Site 31A. Surface and subsurface background sample locations are described in Section 6.2.

32. **Page 5-35 Table 5-15.** This table contains footnote number 9, which should refer to Table 5-14, not Table 5-19. The column labeled "Frequency of Detection" has footnote 12 for mercury, which should be footnote 9. Also, footnote 10 is present in the notes at the end of the table, but if not referenced within the table. Footnotes 11 and 12 are referenced within the table, but are not present in the notes.

    Response: The footnotes will be changed as noted by the reviewer.

33. **Page 5-42 Section 5.3 Paragraph 1.** The report does not provide information regarding groundwater background samples. Were groundwater background samples taken? Provide the number and location of samples on a map. Provide sample results in a table.

    Response: Information on groundwater background samples is provided in Table 5-20 of the RI report. More detailed information on the location and number of samples (Table 3-24) is provided in the GIR.

34. **Page 5-48 Table 5-20.** The table contains footnotes 3,4, and 5, which reference the wrong, columns within the table. Footnotes 9 and 10 do not belong in this table. There is no explanation provided for the letters P, S and T in the column labeled "Basis" for Florida Groundwater Guidance. Footnote 5 refers to Region III RBCs, but the RBCs are not shown within the table.

    Response: Footnotes 3 & 4 will be corrected to correspond to the appropriate columns. Footnote 5 will be deleted. The letter codes will also be noted (P)Primary, (S)Secondary, (T)Systemic toxicant.

35. **Page 5-40 Section 5.3 Paragraph 8.** The report states that Table 5-24 contains a summary of analytes detected in the filtered sample 31G00201F. I think the correct table to reference is Table 5-19.

    Response: The reviewer is correct. The text will be changed as noted.

36. **Page 6-1 Section 6.1 Paragraph 1.** The report states that background samples were taken for each media for the four exposure areas (31A, 31BD, 31C, and 31EF). Were background samples taken for surface, subsurface and groundwater at each of these locations? Clarify which background samples correspond to which location.

    Response: Background samples were collected for each medium. This section will be revised to include a brief description of the background data set used for each medium.

37. **Page 6-2 Section 6.2 Paragraphs 3,4,5.** The report states that the background locations and data for each media are provided in a different document, GIR (HLA, 1998). The data and maps should be included in this report. Provide a table containing the background sample identifier, location, and result for each medium.

    Response: Tables and figures showing the background locations are provided in the GIR. The references to the specific tables and figures that present this information in the GIR will be added to this section. Also, background results are provided in Table 5-1.

38. **Page 6-3 Section 6.2.1 Paragraph 1.** The report states the four subsurface samples collected in 31A were obtained from a depth beginning at 1.5 feet and were therefore considered as surface soil samples. Surface soil is defined as the top 12 inches of soil according to Supplemental Guidance to RAGS, Bulletin 1, 1995.

    Response: Soil samples collected from a depth beginning at 1.5 feet bgs were considered surface soil in the HHRA because the FDEP definition of surface soil includes soils within the top two feet of ground surface. This approach provides a conservative evaluation of these soils, however, because the soil concentration data were compared to screening values applicable to surface soil exposures (i.e., residential-based values) as opposed to less conservative screening values applicable to subsurface soil exposures (i.e., industrial-based values).

39. **Page 6-3 Section 6.2.1 Paragraph 1.** The report states that surface soil sample results for 31A are presented in Table 3-1. The sample data is located in Tables 5-2 and 5-14.

    Response: The reviewer is correct. The text will be changed as noted.

40. **Page 6-3 Section 6.2 Paragraph 6.** The report states that the Industrial Screening Values were used for comparison to the subsurface soil results. The Industrial Screening Values should be used for comparison to subsurface soil only for construction work scenarios.

    Response: The COPC selection was performed in accordance with the methods described in the GIR. The construction worker is the only receptor that is typically evaluated for potential exposures to subsurface soil. Hence, using industrial-based values to select subsurface soil COPCs is consistent with the methodology cited by the reviewer. However, even if residential screening values had been used for comparison to subsurface soil data, no COPCs would have been selected because maximum concentrations of chemicals in subsurface soil do not exceed the residential screening values.

41. **Page 6-4 Table 6-1.** This table determines the Chemicals of Potential Concern for Site 31A. Since both surface and subsurface samples were combined in the case, how was the background screening level determined?

    Response: The background screening value that is applicable for Site 31A surface soils was used. The soil type associated with the 1.5 ft bgs soil samples that were included in the surface soil data set for Site 31A are consistent with the soil type associated with the 0-1 ft bgs samples. Therefore, the background data for surface soil are appropriate for evaluating the 1.5 ft bgs samples.

42. **Page 6-3 Section 6.2.2 Paragraph 1.** The report state that surface soil sample results for 31B and 31D are presented in Table 3-1. The sample data is located in Tables 5-4 and 5-8

    Response: The reviewer is correct. The text will be changed as noted.

43. **Page 6-9 Section 6.2.3 Paragraph 1.** The report states that surface soil sample results for 31C are presented in Table 3-1. The sample data is located in Table 5-6.

    Response: The reviewer is correct. The text will be changed as noted.

44. **Page 6-9 Section 6.2.4 Paragraph 1.** The report states that surface soil sample results for 31E and 31F are presented in Table 3-1. The sample data is located in Tables 5-10 and 5-12.

    Response: The reviewer is correct. The text will be changed as noted.

45. **Page 6-9 Section 6.2.5 Paragraph 1.** The report states that subsurface soil sample results for 31C are presented in Table 3-2. The sample data is located in Table 5-16.

    Response: The reviewer is correct. The text will be changed as noted.

46. **Page 6-9 6.2.5 Paragraph 1.** This section of the report states that 6 subsurface soil samples and 1 duplicate sample were collected from 31C. Section 5.4.2 on page 5-32 states that 15 subsurface samples were collected. Clarify which is correct or what the difference is between the two sections.

    Response: Notes on Table 6-5 present samples considered for risk assessment. Out of the 15 subsurface soil samples collected at the site, six samples were used in the risk assessment calculations.

47. **Page 6-9 Section 6.2.5 Paragraph 2.** The report states that the HHCPC selection criteria for surface soil at 31A are presented in Table 6-5. HHCPC information for 31C is presented in Table 6-5.

    Response: The reviewer is correct. The text will be changed to Table 6-1.

48. **Page 6-9 Section 6.2.6 Paragraph 1.** The report states that groundwater sample results for 31C are presented in Table 3-3. The sample data is located in Table 5-19.

    Response: The reviewer is correct. The text will be changed as noted.

49. **Page 6-9 Section 6.2.6 Paragraph 2.** The report states that the HHCPC selection for groundwater at Site C is presented in Table 6-6. The 31 in 31C is missing.

    Response: The reviewer is correct. The text will be changed as noted.

50. **Page 6-15 Table 6-5.** This table contains the criteria for the selection of HHCPCs for Site 31C in subsurface soil. The table states the maximum detected concentrations for arsenic and iron are below the selected screening levels when they are actually above the selected screening levels.

    Response: The reviewer is correct; the table will be edited accordingly; the results of the COPC selection will not change (i.e., arsenic and iron will not be selected as COPCs because maximum concentrations are below the background screening value).

51. **Page 6-17 Table 6-6.** This table contains the criteria for selection of HHCPCS for Site 31C in groundwater. The table states the maximum detected concentration for aluminum is above the screening level when it is actually below the screening level. The table states the maximum detected concentration for nickel is above the background screening concentration when it is actually below the background screening concentration.

Response: The reviewer is correct; the table will be edited accordingly. An "S" will be added for aluminum, and a "B" will be added for nickel. The results of the COPC selection will not change.

52. **Page 6-9 Section 6.2.** The report lacks a table summarizing the HHCPCs in all the media sampled.

    Response: The HHCPCs are clearly identified in the text in Section 6.2. An additional table summarizing that information would be redundant. However, a brief text summary of the HHCPCs identified will be included at the end of Section 6.2.

53. **Page 6-19 Section 6.3, Paragraph 1.** The report does not provide background information on the populations surrounding the site. For example, provide the nearest city and population, nearest sensitive subpopulations, and nearest residents and their location as related to the site.

    Response: The requested information is presented in the GIR. However, a summary of this information will be included in Section 6.3.

54. **Page 6-21 Table 6-7.** This table provides a summary of the potential exposure pathways. The possibility of Site 31 as a potential future source of drinking water was not addressed.

    Response: Future use of groundwater as a potential source of drinking water is a potentially complete pathway that was evaluated in the HHRA. This information will be added to Table 6-7.

55. **Page 6-22 Section 6.3.4 Paragraph 1.** The report does not provide information regarding the assumptions used when considering exposure conditions and exposure scenarios. Provide a summary of these assumptions.

    Response: The requested information is presented in the GIR. However, a brief summary of the exposure assumptions will be added to the HHRA text.

56. **Page 6-22 Section 6.4 Paragraph 1.** The report states that the toxicity assessment method is described in GIR (HLA, 1998). This report should include a summary of the method used for the toxicity assessment. The concentration below which adverse effects in humans are not expected should be included.

    Response: The requested information is presented in the GIR. Section 6.4 contains a summary of the pertinent information regarding the toxicity assessment. However, a brief summary of the cancer and non-cancer dose-response values (i.e., what they represent and how they are used), will be added to the text.

57. **Page 6-22 Section 6.4 Paragraph 1.** The first two bullets of this paragraph are incomplete sentences.

    Response: The reviewer is correct. The bulleted items will be combined.

58. **Page 6-25 Section 6.5 Paragraph 1.** The report states that the risk characterization methodology is described in GIR (HLA, 1998). This report should include a summary of the risk characterization methodology.

    Response: The requested information is presented in the GIR. However, a brief summary of the risk characterization methodology (e.g., algorithms method used to quantify risks), will be added to the text.

59. **Pages 6-26 through 6-30 Tables 6-11 through 6-14.** These tables contain the risk summaries for current and future land use for the different areas. The first column of each table is labeled "Land Use" and it should be labeled "Receptor".

    Response: The text will be changed to Potential Receptor.

60. **Pages 6-26 through 6-28 Tables 6-11 and 6-12.** These tables contain the risk summaries for current and future land use in 31C. The reported value for the Hazard Index for inhalation of particulates is off by a factor of 10 in each case.

    Response: The reviewer is correct. The particulate inhalation hazard index values reported in Tables 6-26 through 6-28 are 10-times higher than the values reported in Appendix F. The tables will be checked against Appendix F and revised accordingly.

61. **Page 6-28 Table 6-12.** This table contains the risk summary for future land use in 31C. The Excess Lifetime Cancer Risk for the ingestion of groundwater as drinking water does not agree with the values in Tables F-38 and F-39.

    Response: The reviewer is correct. The ingestion cancer risk values reported in Table 6-28 are approximately two-times lower than the values reported in Appendix F. The tables will be checked against Appendix F and revised accordingly.

62. **Page 6-30 Table 6-14.** This table contains the risk summary for future land use in 31E and 31F. The reported value for the Hazard Index for the Total Occupational Worker does not agree with the values in Appendix F.

    Response: The Total Occupational Worker hazard index value should be 0.009, not 0.008 as reported. The table will be revised accordingly.

63. **Page 6-35 Section 6.6 Paragraph 1.** The uncertainty analysis does not address the lack of toxicity data for lead. Also, the uncertainty analysis should acknowledge that the detected concentration for each media is assumed to represent the entire area in question.

    Response: The requested topics will be added to the uncertainty analysis.

64. **Page 6-41 Section 6.6 Paragraph 2.** The report lacks a table summarizing the uncertainty of the exposure assessment as shown on p 6-51 of RAGs Volume 1 Human Health Evaluation Manual, Part A.

    Response: A table showing the general sources of uncertainty inherent in the risk characterization is presented in the GIR. The focus of the uncertainty analysis presented in the Site 31 HHRA is on major site-specific uncertainties that have a bearing on the interpretation of the risk assessment results. These uncertainties can be more adequately discussed in the text, rather than summarized in a table. Adding a table to summarize the uncertainty analysis would be redundant.

65. **Page 6-41 Section 6.6 Paragraph 2.** The report discusses the Central Tendency carcinogenic risk to hypothetical future receptors and states the methodology is found in GRA (HLA, 1998). Provide a summary of the method and parameters used in the Central Tendency carcinogenic risk.

    Response: A brief summary of the assumptions used to develop the Central Tendency risk estimates will be provided.

66. **Page 6-41 Section 6.7 Paragraph 1.** The report states that confirmatory sample data indicate there are no remaining HHCPCs in surface soil at Site 31C. Provide a reference where this confirmatory sample data can be found, or include in the Appendix.

    Response: The BEI Report is referenced

67. **Page 6-42 Section 6.9 Paragraph 6.9.** The report states that arsenic is partially responsible for the Excess Lifetime Cancer Risk. Arsenic is not a CPC according to Table 6-3 (Selection of Human Health Chemicals of Potential Concern) and no EPC was calculated.

    Response: The word "arsenic" should be deleted; risks were primarily associated with dieldrin and Aroclor-1260.

68. **Page 8-1 Section 8.0.** This section discusses contaminant fate and transport. It would be very helpful to have the fate and transport section before the risk assessment section to help identify all potential pathways. Or break Section 8 into separate sections for HH and ERA and place in sections 6.0 and 7.0.

    Response: Reference to Section 8 will be included in Sections 6 and 7.

69. **Page 8-1 Section 8.0 Paragraph 1.** The report does not contain site-specific data for meteorological conditions (e.g. average annual rainfall, prevailing wind direction).

    Response: Please refer to Section 1.4.3 of the GIR

70. **Page 8-12 Section 8.2.3 Paragraph 9.** The report states that hydrology is discussed in section 5.2, when it is actually 5.4.

    Response: The text will be changed as noted.

71. **Page 8-12 Section 8.2.3 Paragraph 11.** The report states the hydraulic gradient is found in Table 5-2, when it is actually 5-22.

    Response: The text will be changed as noted.

72. **Page 8-12 Section 8.2.3 Paragraph 13.** The report states the hydraulic conductivity is found in Table 5-4, when it is actually 5-24.

    Response: The text will be changed as noted.

73. **Page 9-1 Section 9.0 Paragraph 3.** The report states that arsenic is partially responsible for the Excess Lifetime Cancer Risk. Arsenic is not a CPC according to Table 6-3 (Selection of Human Health Chemicals of Potential Concern) and no EPC was calculated.

    Response: The reviewer is correct. The text will be changed as noted.

74. **Appendix F.** The Florida Soil and Groundwater Cleanup Goals were revised 5/99.

    Response: The tables in Appendix F and the COPC selection tables will be revised with the Florida Soil and Groundwater Cleanup Goals current as of May, 1999.

75. **Table F-1 Appendix F.** This table contains the screening concentrations for surface soil for selection of chemicals of potential concern. As of 4/13/00 EPA Region III had different values for chromium, benzene, manganese than the values shown in the report.

    Response: The tables in Appendix F and the COPC selection tables will be revised with the USEPA Region III RBCs current as of April, 2000.

76. **Table F-2 Appendix F.** This table contains the screening concentrations for subsurface soil for selection of chemicals of potential concern. As of 4/13/00 EPA Region III had different values for aluminum, chromium, copper, and manganese.

    Response: The tables in Appendix F and the COPC selection tables will be revised with the USEPA Region III RBCs current as of April, 2000

77. **Table F-5 Appendix F.** This table contains the dermal dose response for carcinogenic effects. The notes include a reference to M. Vahter, but Vahter is not referenced within the text of the table.

    Response: The reference to M. Vahter is not required; it will be removed from the footnote in the table.

78. **Table F-7 Appendix F.** This table contains the oral dose response data for noncarcinogenic effects. IRIS revised data for Oral RfD and Inhalation RfC for chromium in 1998. No source was provided for the oral RfD for manganese and IRIS had a different value than the one shown in Table F-7.

    Response: The oral RfD for manganese published in IRIS is 0.14 mg/kg/day. However, IRIS recommends applying a modifying factor of 3 when manganese exposure to soil or groundwater is evaluated. Hence, the oral RfD used to evaluate manganese risks in soil is 0.047 mg/kg/day. Table F-7 will be edited to indicate that the Uncertainty Factor is 3 (1 uncertainty factor, 3 as a modifying factor). The most current dose-response values for chromium will be used; risk calculations will be revised accordingly.

79. **Tables F-7 through F-9 Appendix F.** These tables contain the oral dose response and inhalation dose response for noncarcinogenic effects. Verify the correct RfD and RfC was used for mercury.

    Response: The correct dose-response values for mercury were presented (i.e., mercury - elemental and mercury - inorganic). However, the RfC should be converted to an RfD for use in the risk calculation spreadsheets. Risk calculations will be revised accordingly.

80. **Table F-10 and others relating to dermal contact Appendix F.** EPA Region I 1998 Dermal Supplement should be used when evaluating dermal contact with metals.

    Response: The dermal absorption values for specific metals published in Risk Assessment Guidance for Superfund, Part E (draft) will be used to quantify dermal risks for metals. Risk calculations will be revised accordingly.

81. **Table F-10 Appendix F.** This table calculates risk from direct contact with and ingestion of surface soil for 31C. The dermal intake equation is missing the soil concentration. Verify the dermal intake of dieldrin is correct.

    Response: The reviewer is correct; the intake equation printed on the first page of Table F-10 is missing the soil concentration term. However, the code programmed in the risk calculation

spreadsheet does include this term. The dermal intake and risk estimates calculated in this table have been checked and they are correct.

82. **Tables F-11, F-13, F-15, F-17, F-19, F-21, and F-23 Appendix F.** These tables calculate the risks for the different exposure pathways and receptors. The table states the soil concentrations of Aroclor-1260 as 1353 ug/Kg and iron as 9414 mg/Kg. According to Table 6-8 (Exposure Point Concentrations for Human Health Chemicals of Potential Concern at 31C) the soil concentrations are 1350 ug/Kg and 9410 mg/Kg respectively.

    Response: The values shown in Table 6-8 were rounded. The values shown in Table 6-8 will be revised to show all 4 significant figures.

83. **Table F-12 Appendix F.** This table contains risks from direct contact and ingestion of surface soil in 31C to the adolescent trespasser. Half of the dermal intake equation is missing and the conversion factor for ug to kg has the wrong units.

    Response: The dermal intake equation printed on the first page of Table F-12 is missing some variables; however, the variables are being used in the spreadsheet calculations. The units for the conversion factor of 1E-09 should be kg per ug, not kg per mg as presently stated. Appropriate corrections will be made to Table F-12.

84. **Tables F-14 and Table F-44 Appendix F.** This table contains risks from direct contact and ingestion of surface soil to the adult resident. The dermal RfD values for beryllium and cadmium are different than those in Table F-8 (Dermal Dose Response Data for Noncarcinogenic Effects).

    Response: The dermal RfDs for beryllium and cadmium presented in Tables F-14 and F-44 are not correct. Tables F-14 and F-44 will be revised with the correct dermal RfDs. The other risk calculation spreadsheets will be checked. [Note: beryllium will be removed as a HHCOPC, per comment No. 3]

85. **Tables F-16, F-18, F-22, F-42, and F-45 Appendix F.** These tables calculate the risk from direct contact and ingestion of surface soil to various receptors. The dermal RfD for beryllium is different than the value in Table F-8 (Dermal Dose Response Data for Noncarcinogenic Effects).

    Response: The dermal RfD for beryllium presented in these tables is not correct. The tables will be revised with the correct dermal RfDs. The other risk calculation spreadsheets will be checked. [Note: beryllium will be removed as a HHCOPC, per comment No. 3]

86. **Tables F-21 and F-35 Appendix F.** These tables contain the risks from inhalation of particulates by occupational and excavation workers. These tables assume an inhalation rate of 0.833 m3/hr. Why don't the occupational and excavation worker use the default inhalation rate of 2.5m3/hr?

    Response: The inhalation rate of 2.5 m^3/hr was used for the excavation worker (Table F-33). An occupational worker would not be continuously involved in strenuous activities; thus the 0.833 m^3/hr inhalation rate is more appropriate.

87. **Tables F-25, F-27, F-29, F-31, F-33, F-35, F-37 Appendix F.** These tables contain the risk from inhalation of particulates by an excavation worker in Site 31EF. The tables contain an inhalation RfD for manganese that is different than the RfD in Table F-9 (Inhalation Dose Response Data for Noncarcinogenic Effects). All of these tables have an excavation worker as the receptor and the assumed parameters differ in each table. Is the table title wrong and the receptor should be trespasser, resident, site worker, and occupational worker?

Response: The manganese inhalation RfD used in the spreadsheets is correct; the value presented in Table F-9 is an inhalation RfC, which is converted to an RfD for use in the risk calculations. With respect to the titles on the tables, Table F-25 is the adult trespasser, F-27 is the child trespasser, F-29 is the adult resident, F-31 is the child resident, F-33 is the excavation worker, and F-35 is the occupational worker, and F-37 is a duplicate of F-33. The tables will be re-titled accordingly; duplicate tables will be removed.

88. **Tables F-26, F-42 Appendix F.** These tables contain risk from direct contact with and ingestion of soil at Site 31EF. The dermal intake equation is incorrect.

    Response: The dermal intake equation printed on the first page of these tables is missing some variables; however, the variables are being used in the spreadsheet calculations. The units for the conversion factor of 1E-09 should be kg per ug, not kg per mg as presently stated. Appropriate corrections will be made to these tables.

C. Minor comments that need no action and are for clarification

89. **Page 5-11 Table 5.5.** The mean of detected concentrations and background screening level for selenium in the table of contaminants from 31B surface soil samples seems excessively high when compared to the range of detected concentrations for selenium. Verify the selenium data is correct.

    Response: The correct value for selenium is 0.37. Table 5-5 will be revised.

90. **Appendix F.** Page numbers would be helpful. The pages are either not numbered or are not consecutive.

    Response: Comment noted.

Ecological Risk Assessment Review and Comments

A. General Comments

1. The ERA follows methodologies that are described in other documents (principally GIR (HLA 1998)) not contained within the body of this report. This information should have been fully described within the RI report. Examples will be presented under the Specific Comments section.

   Response: As agreed upon and approved by the NAS Whiting Field partnering team (BCT) the GIR (HLA, 1998) was developed to streamline and make consistent the individual ecological risk assessments completed at Whiting Field. The document was prepared as a compendium of all general information necessary to evaluate risk at Whiting Field including the approved methodology. The Navy agrees to either add the information contained in the GIR, which is specific to Site 31 or provide specific references.

Specific Comments

2. **Page 7-2 section 7.1 paragraph 3**. Stressed vegetation was detected at Site 31 subunit 31C. A discussion of the stressed areas was provided in the GIR (HLA, 1998) but not in this RI report. This information should have been included in the report.

   Response: All discussions presented in the GIR regarding stressed vegetation at Site 31C will be included in the ERA.

3. **Page 7-2 section 7.1 paragraph 5.** A complete list of vegetative species at Site 31 subunits B-F is provided in GIR (HLA, 1998) but not in this report. This information is necessary to evaluate whether all sensitive species were reviewed for potential impacts.

   Response: All tables listing plant species identified at Site 31, presented in the GIR (HLA, 1998) will be added to the ERA. All of the sensitive species at the site were identified through ecological site characterizations conducted by HLA and the ecological survey of NAS Whiting Field by the Nature Conservancy (1997) and are discussed in Section 7.2.1.

4. **Page 7-2 section 7.1 paragraph 6.** The report states that the only ecological habitat at Site 31 is mowed grass. However, figures 7-2 and 3 clearly show a tree line immediately adjacent to subunits 31C, E, and F. Based on this, are the assumptions concerning the lack of ecological foraging receptors and of large predatory species correct?

   Response: Although the text states that large predatory mammals are not expected to occur at the site risks to these receptors are evaluated in this risk assessment. The following sentence will be added to the 6th paragraph on page 7-2 to further clarify the previous statement. Although large predatory mammals are not expected to inhabit the site, they may use the maintained fields as a forage area early in the morning and late in the afternoon. Consequently, this trophic level was also evaluated in the ERA.

5. **Page 7-6 section 7.1 paragraph 1.** Did the 1995 site characterization include a survey of wildlife in the forested areas adjacent to subunits 31C, E, and F?

   Response: The 1995 site characterization included a survey of wildlife at the facility.

6. **Page 7-6 section 7.1 paragraph 2.** The assertion that surface water contamination should not be considered as a possible pathway because multiple sources of contamination from the air base discharge to the receiving streams is inappropriate. The analysis will have to be made of the ecological impact to these receiving streams from site contaminants. Additionally, a gap in the data is identified by the fact that groundwater samples were obtained from subunit 31C only. The groundwater to surface water pathway was eliminated based on the concentration of contaminants found in subunit 31C. Based on the hydrogeological data provided in section 5.4 this pathway should not be eliminated.

   Response: The text in Section 7.1 will be clarified to explain why the groundwater-to-surface water pathway was eliminated. It has not been determined whether groundwater from the site is discharging to a surface water body. In addition, all of the surface water bodies at NAS Whiting (i.e., Clear Creek and Cold Water Creek) are currently being investigated under a single surface water operable unit. Results of this evaluation are currently not available, as the investigation is ongoing at this time. Any ecological risks from exposure to groundwater discharging to surface water will be addressed in this evaluation. In addition, the groundwater table is located 75 to 100 feet below the ground surface at Site 31. Analytes detected in groundwater, from Site 31C were not detected at elevated concentrations (i.e., less than background and screening benchmarks). These concentrations would most likely decrease with further mixing of groundwater and attenuation, prior to discharge to any surface water body, based solely on the distance to a potential point of discharge and depth to groundwater at the site.

   ****Groundwater is being investigated as a single operable unit (Site 40), not surface water.**

7. **Page 7-6 section 7.2.1 paragraph 1.** The list of terrestrial flora and fauna that have the potential to use the site are presented in another document. They should be provided in the RI for evaluation to ensure all sensitive species have been evaluated.

   Response: Agree. Please see response to comment #3.

8. **Page 7-10 section 7.3 paragraphs 1 and 3.** A discussion on the selection of ecological contaminants of potential concern (ECPC) was presented but the reviewer is referenced to further information in the GIR (HLA, 1998). All information germane to the assessment should be included in the RI for evaluation

   Response: Please see response to comment #1.

9. **Page 7-10 section 7.3 paragraph 5.** Site-specific background information is important for the EA. A background study was conducted but the results are not provided but the reviewer is referred to the GIR (HLA, 1998) report. This information should be included in the RI report for evaluation.

   Response: Please see response to comment #1.

10. **Page 7-24 section 7.4 paragraph 1.** The exposure assessment presented appears to be consistent with guidance documents. However, additional details are provided in the GIR (HLA, 1998), which are not included in the RI.

    Response: Please see response to comment #1.

11. **Page 7-24 section 7.4.3 paragraph 1.** The methodology for calculating the potential dietary exposure (PDE) was presented in the GIR report and not in the RI.

Response: Please see Table 7-6 in the ERA and response to comment #13.

12. **Page 7-24 section 7.4.3 paragraph 2.** Terrestrial receptors were selected to represent trophic levels typical of open maintained fields. However, given the proximity of forested areas adjacent to the Site 31 subunits this assumption should be revisited.

    Response: Please see response to comment #4.

13. **Page 7-25 table 7-6 footnote.** A discussion on the weighted chemical concentration is found in the GIR report, which is not presented in the report but should be for evaluation purposes.

    Response: The following paragraph will be inserted after the second paragraph in section 7.4.3:

    A PDE was estimated for each representative wildlife species for each ECPC in all media according to the equations presented in Table 7-6. The PDE was calculated based on the estimated concentrations of the ECPCs in food items that the species would consume; the amount of soil, surface water, or sediment that it would ingest; the relative amount of different food items in its diet; body weight; and food and water ingestion rate.

14. **Page 7-33 section 7.5 paragraph 1.** Information on the methods used for identifying and characterizing ecological effects for ECPC in surface soil and groundwater are provided in a cursory manner within the RI report but additional information is provided in the GIR documented not found in the RI report. This information as well as the other information referenced above that are found in the GIR document is necessary to completely evaluate the adequacy of the methodologies used in the assessment.

    Response: Per discussions with the NAS Whiting Field partnering team, the risk assessment methodology was not repeated in the RI report. See response to comment #1.

15. **Page 7-34 section 7.5.2 paragraph 3.** Reference is made to surface soil samples obtained from uncontaminated areas at the air station. These samples were collected to carry out toxicity testing for Site 31 subunit 31C. No information is provided to demonstrate that these areas have not been influenced by air station operations. Furthermore, background samples were obtained as part of the overall risk assessment. Why were these background areas not used for this sampling effort?

    Response: Background samples were collected for toxicity testing at Site 31C in order to collect soil for the toxicity test and chemical analysis simultaneously. In addition, the locations that were selected are consistent with the conditions at the site. A comparison of the results of the background samples collected for the toxicity testing and screening ECPCs will be included in the ecological risk assessment.

16. **Page 7-34 section 7.5.2 paragraph 4.** Toxicity testing was performed for subunit 31C using earthworms and lettuce seeds. The toxicity tests are critical to the EA for this site. Results for the study are presented in the report but conclusions are drawn that the contaminates at the site will have little or no impact to the sensitive species being examined. Like other areas discussed above in other comments not all of the information is provided within the body of the RI report. The reviewer is reference to the GIR report for additional information. This information must be included in the RI if the authors expect the information to be used by the reviewer to assess the adequacy of their assessment.

Response: The toxicity test final report for NAS Whiting Field (ESE, 1996) will be included as an appendix to the ERA.

17. **Page 7-43 section 7.6.2.2 paragraph 1.** Silver was identified a an ECPC at subunit sites 31B and D. The conclusion is extrapolated from subunit 31C that no impacts to vegetation would be expected because the concentrations found at these two sites, although in excess of the phytotoxicity level of 2 mg/kg, are less that that at subunit site 31C. Site 31C does exhibit stressed vegetation but the conclusion is drawn from the toxicity test that the statistically significant reduction in lettuce seed germination is not related to contaminants at the site but rather unmonitored non-biological stressors. The conclusion is questionable with respect to subunit sites 31B and D. Silver could be exerting a secondary effect through the food chain pathway that was not examined. Furthermore, the toxicity testing should have been better designed to distinguish biological from non-biological stressors. The decrease in germination percentage had some relation to the contaminants in the subunit site 31C since it is assumed (because additional information is contained in the GIR report and not reported here) that the growth studies were carried out in an environmentally controlled environment. It would have been prudent to examine the impacts of individual ECPC from subunit site31C on the germination rates to determine which of the contributor(s) resulted in the statistically significant reduction in the germination rates. Any other extrapolations from this data to other subunit sites are subject to the same interpretation flaw.

    Response: The phytotoxicity benchmark, as reported by Will and Suter (1995) for silver has a low confidence level because it is based on a single study that did not report the type of toxic effect observed. Therefore, prediction of risks based on an exceedance of this benchmark was further evaluated. It was determined that there was no statistical correlation between detected concentrations of silver and results of the toxicity tests conducted with Site 31C soil. Therefore, due to the similarity in surface soil types and proximity of Sites 31C, B, and D, the results of the toxicity test were extrapolated to the other sites. In addition, the detected concentrations of silver at Sites B and D only slightly exceed the phytotoxicity benchmark. Silver was identified as an ECPC, therefore it was evaluated in the food chain model, and based on the results of this evaluation it was identified as a risk contributor.

18. **Page 7-43 section 7.6.2.3 paragraph 1.** The inability to determine the cause in the reduction in seed germination from the toxicity test is due to inadequate experimental design. As a consequence the authors are unable to attribute a cause and effect for the stressed vegetation at this site. This data is extrapolated to other sites as a reference point for demonstrating that no adverse effects could result from ECPC at these sites (e.g., see comment 16). Without a proper analysis of the observed impacts at subunit site 31C, such extrapolations may lead to inappropriate conclusions.

    The conclusions concerning the impacts observed at this subunit are restricted to loss of ground groundcover. Consideration should be given to the impacts of ingesting vegetation/seeds from these areas given the bioaccumulation information provided in Appendix G of this report.

    The issue for this subunit may have been obviated by the IRA performed in 1999.

    Response: The toxicity tests using Site 31C surface soil were conducted following standardized methods and procedures (i.e., Protocols for Short Term Toxicity Screening of Hazardous Waste Sites [USEPA, 1988]). It was determined the concentrations of constituents detected in these soils do not appear to correlate with the observed phytotoxicity. Therefore, extrapolating these results, based on chemical concentrations to adjacent locations with similar soil types is appropriate. Ingestion of seed/vegetation from these areas is evaluated in the food chain models for Site 31 C and, 31 B and D.

19. **Page 7-44 section 7.6.3.4 paragraph 1.** Seven ECPC were identified for subunit site 31E and F. Only two benchmark values for two of the ECPC existed. The conclusion is drawn that no reduction in invertebrates are expected. This lack of rigor in pursuing other toxological methodologies for determining potential impacts are acknowledged in the uncertainty analysis (section 7.7) but does not provide a reasonable basis for why they were not pursued.

    Response: Further evaluation of the literature will be conducted to identify additional toxicity data for invertebrate receptors at the site.

20. **Page 7-45 section 7.7 paragraph 1.** The GIR is referenced for other uncertainties in the analysis. They are not provided in this RI and should have been if they were germane to the discussion.

    Response: Agree. The ERA will be revised to include a discussion of any additional uncertainties presented in the GIR that are relevant to Site 31.

21. **Page 7-47 section 7.8 paragraph 1.** The conclusions with respect to lack of correlation between the reduction in seed germination and the ECPC in subunit 31C soil remains questionable. No statistical evidence was shown that demonstrated an analysis was carried out to prove this assumption. Furthermore, effects were attributed to AYother non-measured physical, biological, or chemical factors or a combination of factors may be responsibleY@. This suggests that the toxicity experimental design was flawed since to only factor that would not have been controlled would have been the ECPC in the subunit 31C soil that was used in the testing.

    This may be a mute point for this subunit since it was the subject of an IRA in 1999. However, the fact that information from the subunit was used to justify Ano impact@ statements for other subunits with Site 31 makes the data from this site important for the overall Site 31 EA and should be addressed.

    Response: Please see response to comment #18.

Response to FDEP Comments
Draft Site 31 Remedial Investigation Report
NAS Whiting Field, Milton, Florida

1. Tables 6-1, 6-2, 6-3 and subsequent tables indicate background levels of arsenic, which range from 3 to 3.2. Please correct those tables and properly document from where the background data were obtained.

   Response: Discrepancies in background screening values for arsenic, in Section 6 tables, are likely the result of rounding or typographic errors. Background screening values for inorganic analytes are equal to two times the average of detected concentrations in background samples. Complete background data sets are presented in Tables 3-8, 3-9 and 3-14 of the General Information Report (HLA, 1998), and are summarized in Tables 5-1 and XX of the RI.

   Surface soil at Sites 31A, C, E and F is classified as Troup Loamy Sand. Samples BKG-SL-02, BKG-SL-06, BKG-SL-07, BKG-SL-08, BKS00101, BKS00201, BKS00401, and BKS00501 were used for the background data set. The background screening value for arsenic at sites 31A, C, E and F is 3.1 mg/kg.

   A combined background data set consisting of Bonifay Loamy Sand, Dothan Fine Sandy Loam, and Troup Loamy Sand was used for Sites 31B and 31D. Samples were included in this data set.

   A summary table for the Site 31B and D, Background Dataset will be included in the RI (Table 5-1B), and Background screening values in all tables will be verified, and corrected as necessary.

2. Figure 3-2 and 3-4: please properly depict the boundaries of Site 31C. This has been previously requested. Note that Figure 3-5 should properly reference Site 31C and also depict the proper site boundaries.

   Response: The Site 31C boundary on Figures 2-2, 3-2, 3-4, 7-2 will be modified to encompass all areas included in the investigation of Site 31C. This site boundary will also be added to Figure 3-5. All text referring to the acreage of Site 31C will also be changed, accordingly.

3. Section 6.9, Summary of HHRA for Site 31: the second "bullet" indicates that data presented in the IRA Completion report indicates that excavation has removed all HHCPCs at Site 31C. This is in error, since a visual depiction (figure) of those data was requested in a prior comment from the Department regarding the IRA at this site. The Navy's response dated August 1999 states that "the final RI Reports and/or feasibility Studies for each of these sites... will relate the pre-existing and newly-determined contaminant levels, the excavated and filled areas and the covered areas." Figure 3-5, yet another sampling location map without analytical results, inserts a "disclaimer" by noting that the analytical results are contained in the IRA report. This is not acceptable. The present document should present those data and information graphically as previously discussed since I approved the IRA based on that statement. This is important because the data should be in a form that can be understood by a non-professional reviewer and not have to be synthesized from sampling location maps, data tables and laboratory sheets.

   Response: More than 200 samples were collected at Site 31C, including RI samples, supplemental RI samples, site screening samples, delineation samples, and confirmation samples. Due to the extremely large number of samples, a number of figures using a combination of colors and symbology and detailed legends will be required to adequately convey the site conditions.

   - Figure 3-5 will show all samples (with sample IDs) collected by BEI during the IRA, and will also include the location of the samples collected by ABB/HLA, for reference. No chemboxes will be used for figures preceding section 5.
   - Figure 5-3 will be included in section 5.1.3, and will show all samples collected by ABB/HLA, with chemboxes for all contaminants detected at concentrations in excess of Background and SCTL values. This will provide the rationale behind the additional sampling and IRA.
   - Figure 6-10 will be included in section 6-7, and will show all samples collected for the IRA and will also include the location of the samples collected by ABB/HLA, for reference. All symbols will be greyed-out, with the exception that those which exceed Background and SCTLs will be colored red and will

include chemboxes. Dig outlines (for 1-ft depth excavations) will also be shown on this figure to demonstrate that HH contaminants were removed during the IRA.

- If necessary, individual figures for each of the 10 individual dig areas can also be provided with chemboxes on all confirmation (perimeter of excavation) samples, to demonstrate the clean line. These would follow figure 6-10, or could be included as an appendix.
- The 6" dig line would be illustrated in Section 7. It is based on visual observations, and thus will not be related to lab data.

4. Section 7.8, Summary of Ecological Assessment for Site 31: this section contains numerous errors and does not appear to properly relate the data and the actions that were taken (at least at Site 31C). In paragraph one, the meaning of the paragraph is not clear and the site grouping does not appear to relate any useful information. The second paragraph on page 7-47 discusses the absence of correlation between the lettuce germination rates and the concentrations of ECPCs in a rambling manner. This should be rewritten and should state why this statement is (or is not) applicable. The remainder of the summary should be rewritten so that the meaning of each sentence is clear. Further, the overall positive effects of the soil removal at Site 31C should be stressed and not be presented in an incidental manner. This applies especially to the last paragraph: don't state that reductions in growth and reproduction are possible, then later on state that the likelihood for sublethal risks has been further "reduced" by removal of contaminated soil. What is the risk to both humans and to ecological receptors? It should be stated clearly and succinctly.

   Response: . Section 7.8 will be edited to read as follows.

   7.8 SUMMARY OF ECOLOGICAL ASSESSMENT FOR SITE 31. *Potential risks for ecological receptors were evaluated for ECPCs in surface soil at Sites 31A through 31F. Due to similarities in the ecological habitat, disposal practices, and proximity of the sites, surface soil analytical data for Sites 31B and 31D for the ERA. Surface soil analytical data for Sites 31E and 31F were also combined for the same reasons. The habitat for Site 31A is completely different than the other sites, and Site 31C contained areas of visibly distressed vegetation; therefore analytical data from these areas were evaluated individually.*

   Risks associated with exposures to ECPCs in Site 31 surface soil were evaluated for terrestrial wildlife based on a model that estimates the amount of contaminant exposure obtained via the diet and incidental ingestion of surface soil. Comparison of estimated doses for wildlife species with reference toxicity doses representing thresholds for lethal and sublethal effects is the basis of wildlife risk evaluation. No risks to terrestrial wildlife were identified for exposure to ECPCs in surface soil at Sites 31A, 31B, 31D, 31E, or 31F. However, sublethal risks (i.e., reductions in growth and reproduction) to small mammal and bird populations at Site 31C are possible. The primary risk drivers associated with sublethal risks to small mammals and birds are cadmium, copper, and mercury.

   Based on a comparison of RME and CT exposure concentrations to site background data and benchmark values derived from literature, no reduction in plant biomass or plant cover is expected at Sites 31A, 31B, 31D, 31E or 31F. The assessment endpoints for Site 31C are based on site-specific toxicity tests measuring the germination rate of lettuce seeds in surface soil samples from Site 31C. The results of the toxicity tests showed a reduction in lettuce seed germination. However, there was no significant correlation between lettuce seed germination rates and concentrations of ECPCs detected in the surface soil from Site 31C. This suggests that other nonmeasured physical, biological, or chemical factors may be responsible for the observed reduction in lettuce seed germination. The total area of stressed vegetation at Site 31C is relatively small, therefore it is unlikely that ECPCs in surface soil at Site 31C would reduce plant biomass or plant cover to a degree sufficient to affect small mammal and bird populations. All areas of visibly stressed vegetation were effectively addressed during the IRA by excavating the soil to a depth of 6-inches to 1-foot bls and backfilling with clean fill.

   The RME and CT exposure concentrations for Sites 31A, 31B, 31D, 31E or 31F were compared to site background data and benchmark values derived from literature. Site-specific toxicity tests measuring the survival and growth of earthworms were conducted for surface soil samples from Site 31C. Based on these

evaluations, no reduction in the survival and growth of invertebrate communities is expected at any of the Site 31 areas.

In summary, the results of the ERA suggest reductions in the growth and reproduction of small mammal and bird populations at Site 31C are possible. The other assessment endpoints discussed in Subsection 7.2.3 (i.e., reduction in the survivability of terrestrial wildlife populations, reduction in the biomass of plants/invertebrates, or reduction in plant cover availability) are not expected to be impacted at any of the Site 31 areas.

5. As has been previously requested, the Navy should assess the subsurface soil contaminant levels as compared to surface soil SCTLs. In areas where those subsurface soil concentrations exceed the surface soil SCTLs, provision should be made (such as by imposing land use controls or possibly remediation) for an instance in which the surface soil may be removed and receptors may come in contact with the former subsurface soil. If the situation is such that this will not occur and no human or ecological receptors will be affected, this should be clearly stated.

   Response: Table 6-5 will be changed, to compare the analytical results for subsurface soil samples collected at Site 31C to subsurface soil background and residential SCTLs. No HHCPCs have been identified for subsurface soil.

6. Appendix I, Figures and information "relevant to Site 31C" contains information related to other sites. The Navy may want to review this section and consider removing those unrelated data and figures.

   Response: All information not relevant to Site 31C will be removed from Appendix I.

7. Section 9.0, Conclusions and Recommendations: this section indicates that various human and ecological chemicals of potential concern were identified at the various Site 31 sites and that an IRA at Site 31C involved the excavation of 1635 cubic yards of surface soil; however, the data supporting the contention that the removal action has successfully addressed both human health and ecological concerns at sites other than at 31C are not present; see page 7-39 where it states that "It should be noted that the IRA conducted at Site 31C, in response to potential human health and ecological concerns, removed surface soil from all identified hot spots and areas of visibly distressed vegetation." The absence of data supporting this contention in Section 7.5.1 is also obvious. Please supply or properly reference those data. Please note that this section should be labeled 7.6.1 following the renumbering of the second Section 7.5 (Risk Characterization) to 7.6.

   Response: Section 9 will be edited to read as follows:

   This RI report provides an assessment of contaminants detected in soil and groundwater at Site 31. Site 31 is composed of 6 areas, Site 31A (sludge drying beds) and Sites 31B through 31F (sludge disposal areas). Surface soil samples were collected from each of the 6 areas, and subsurface soil samples and groundwater were collected at Site 31C, during the RI. All samples were analyzed for target compound list organic analytes, target analyte list inorganic analytes, and compared to background data-set values, Florida Cleanup Target Levels, and USEPA Risk-based Concentration Values.

   Human health chemicals of potential concern were identified in surface soil at Site 31C. The Human Health Risk Assessment indicates target risk levels were exceeded at Site 31C. The total excess lifetime cancer risk at Site 31C associated with ingestion of surface soil by a hypothetical future resident, current and hypothetical future trespassers, and hypothetical future occupational workers exceeded the Florida target risk level of concern of 1×10^{-6}. The excess lifetime cancer risk was due primarily to Aroclor-1260, dieldrin, and arsenic. An interim removal action at Site 31C involved the delineation, excavation and offsite disposal of 1,635 cubic yards of surface soil. All areas of contaminated surface soil and distressed vegetation, identified at Site 31C during the RI and confirmed in the IRA sampling, were excavated and removed from site by the RAC and therefore do not pose unacceptable risks to human or ecological receptors. Manganese was the only human

health chemical of potential concern identified in surface soil at Site 31E. However, no target risk levels were exceeded at Site 31E. Therefore, no further action was required.

Site 31C was the only location where subsurface soil was evaluated. No human health chemicals of potential concern were identified in subsurface soil at Site 31C. Therefore, no further action was required.

Site 31C was the only location where groundwater was evaluated. Trichlororethene was the only human health chemical of potential concern identified in groundwater at Site 31C. However, no further action was required because a separate RI is being conducted to evaluate groundwater on a regional basis.

Ecological chemicals of potential concern were identified in surface soil for Sites 31A through 31F. No ECPCs were identified in groundwater, and no HHCPCs or ECPCs were identified in subsurface soil at any of the sites. Surface soil at Site 31C is the only media determined to have potential adverse ecological effects, including a reduced rate of lettuce seed germination, and potential reductions in the growth and reproduction of small mammal and bird populations at Site 31C. The IRA which effectively removed all identified areas of contaminated surface soil and distressed vegetation at Site 31C has mitigated these ecological effects.

Based on the interpretation of findings from the remedial investigation activities and the Removal Action Completion Report, No Further Action (NFA) is proposed for Sites 31A (Sludge Drying Beds) and Sites 31B, 31C, 31D, 31E, and 31F (Sludge Disposal Areas). Based on the recommendation for NFA, a feasibility study is not required for these areas.

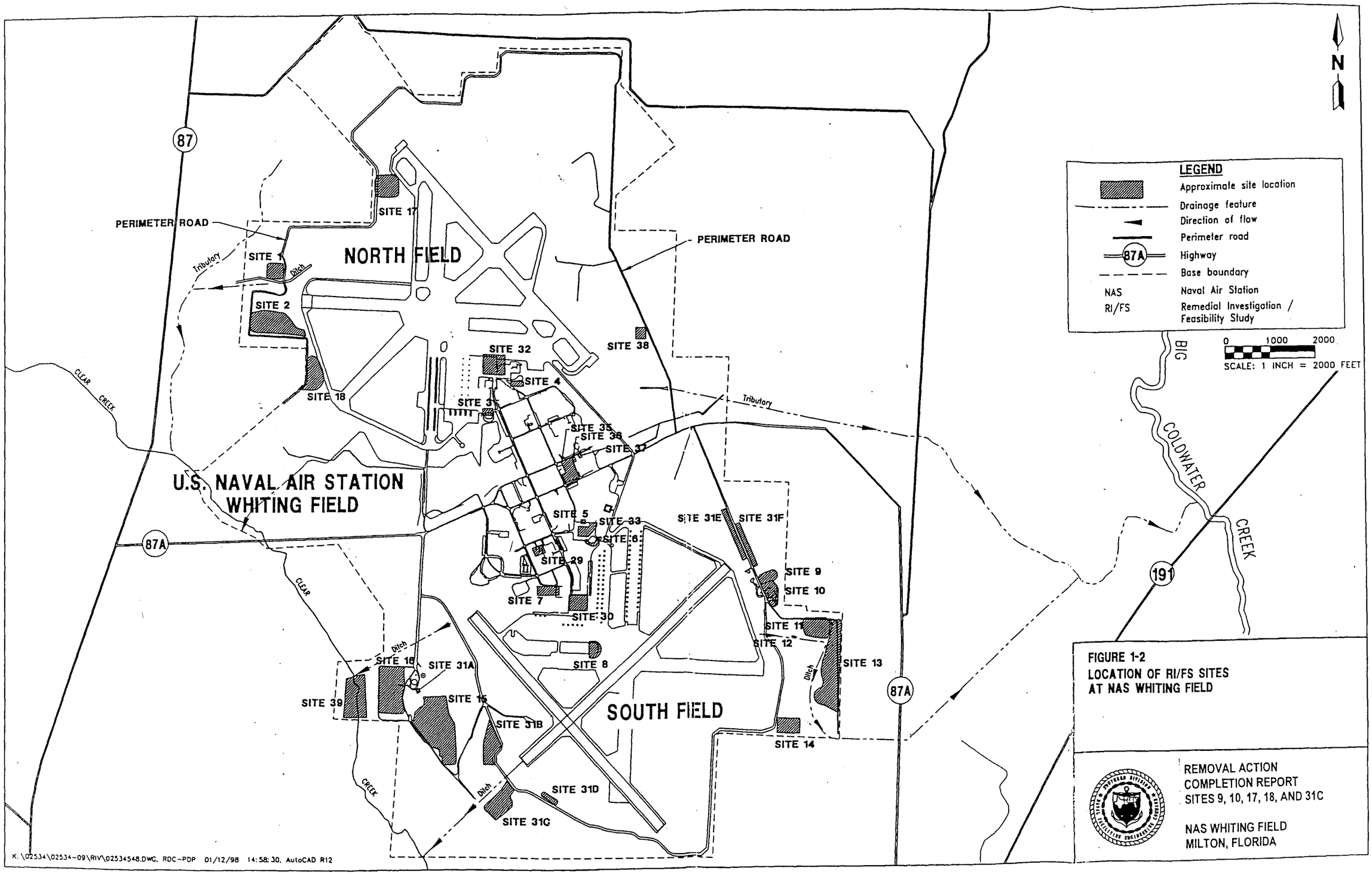

FIGURE 1-2
LOCATION OF RI/FS SITES
AT NAS WHITING FIELD

REMOVAL ACTION
COMPLETION REPORT
SITES 9, 10, 17, 18, AND 31C

NAS WHITING FIELD
MILTON, FLORIDA

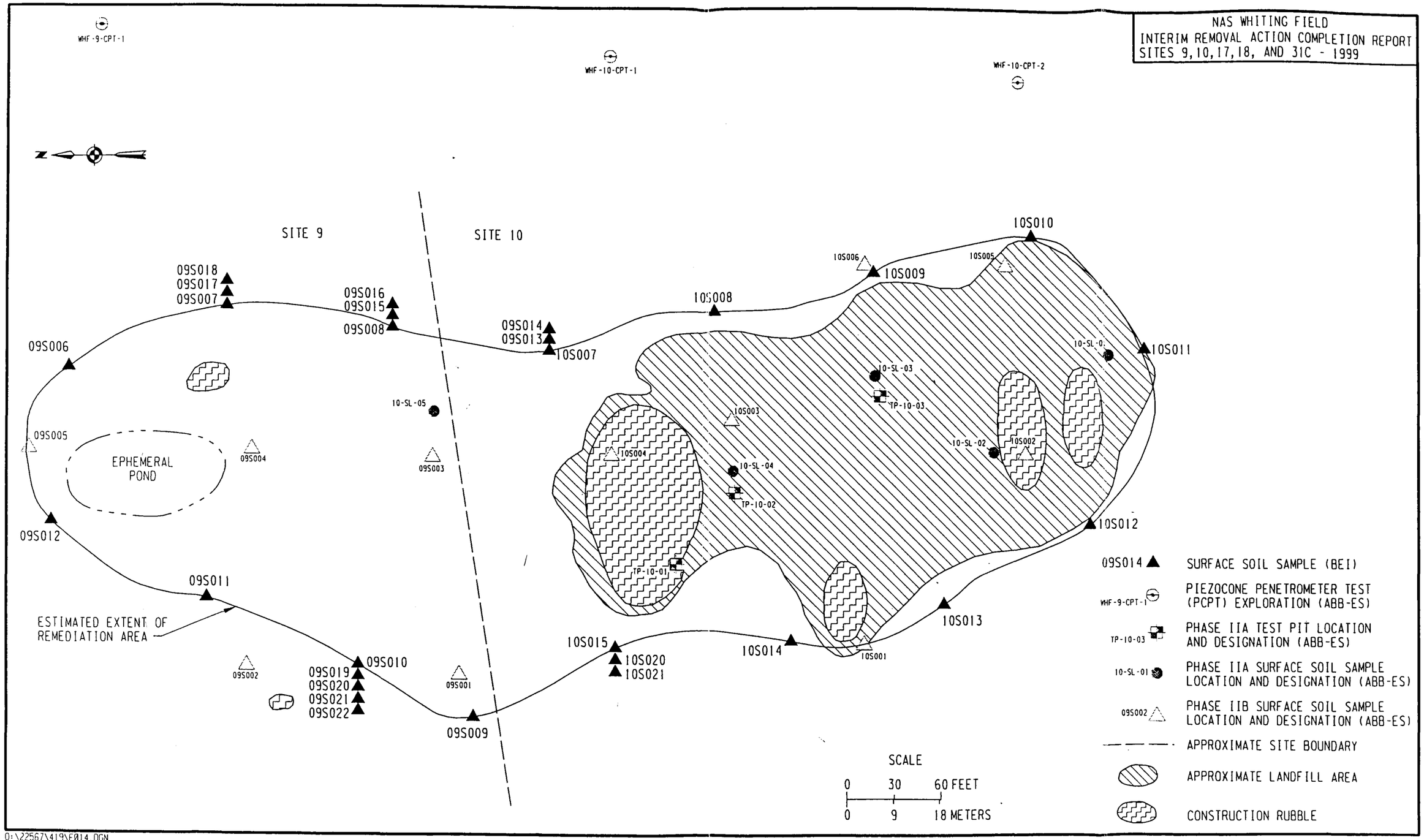

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FIGURE 3-1
SURFACE SOIL SAMPLING LOCATIONS
FOR TOTAL ARSENIC AT SITES 9 AND 10

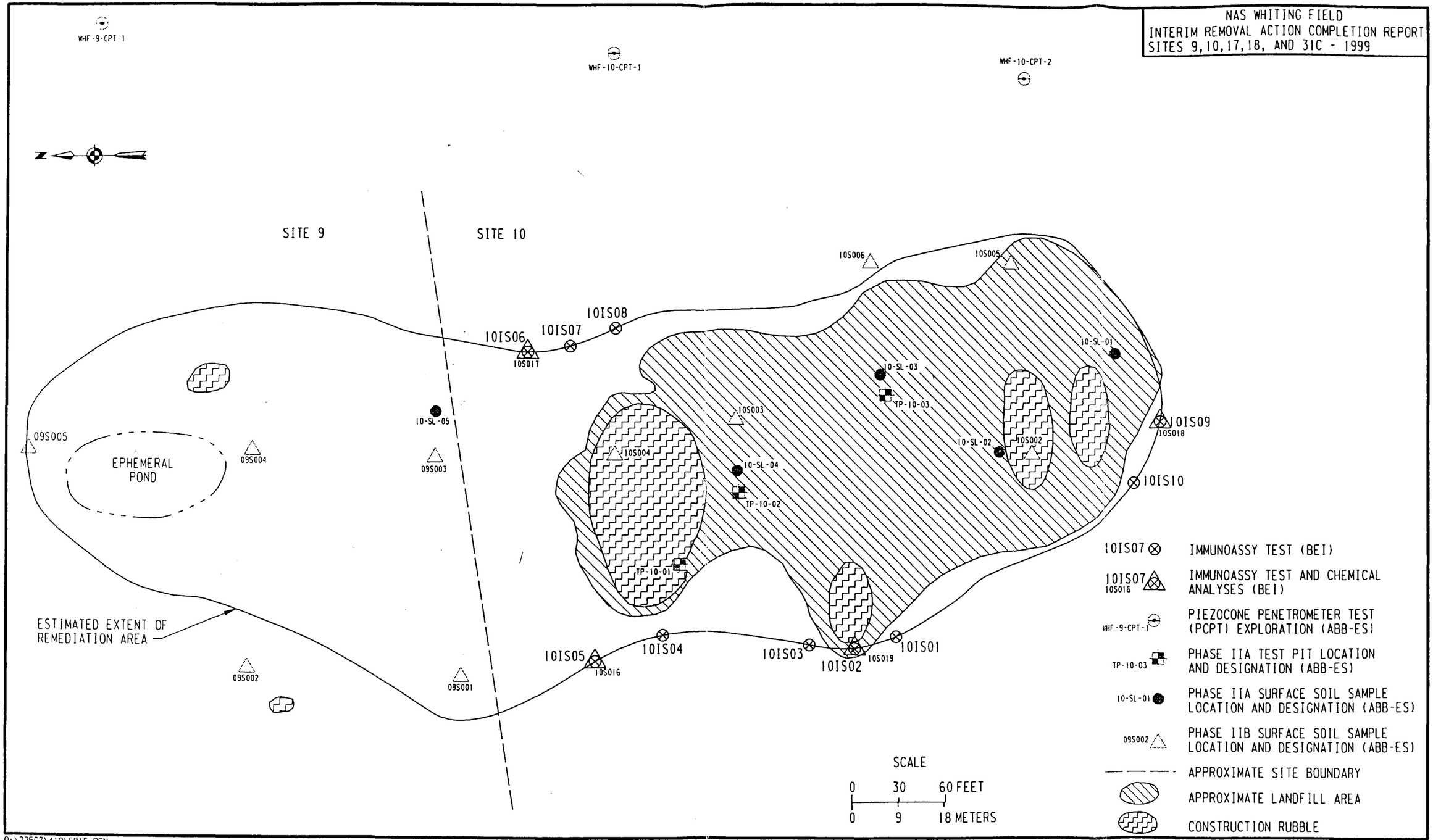

FIGURE 3-2
SURFACE SOIL SAMPLING LOCATIONS
FOR PAHs AT SITE 10

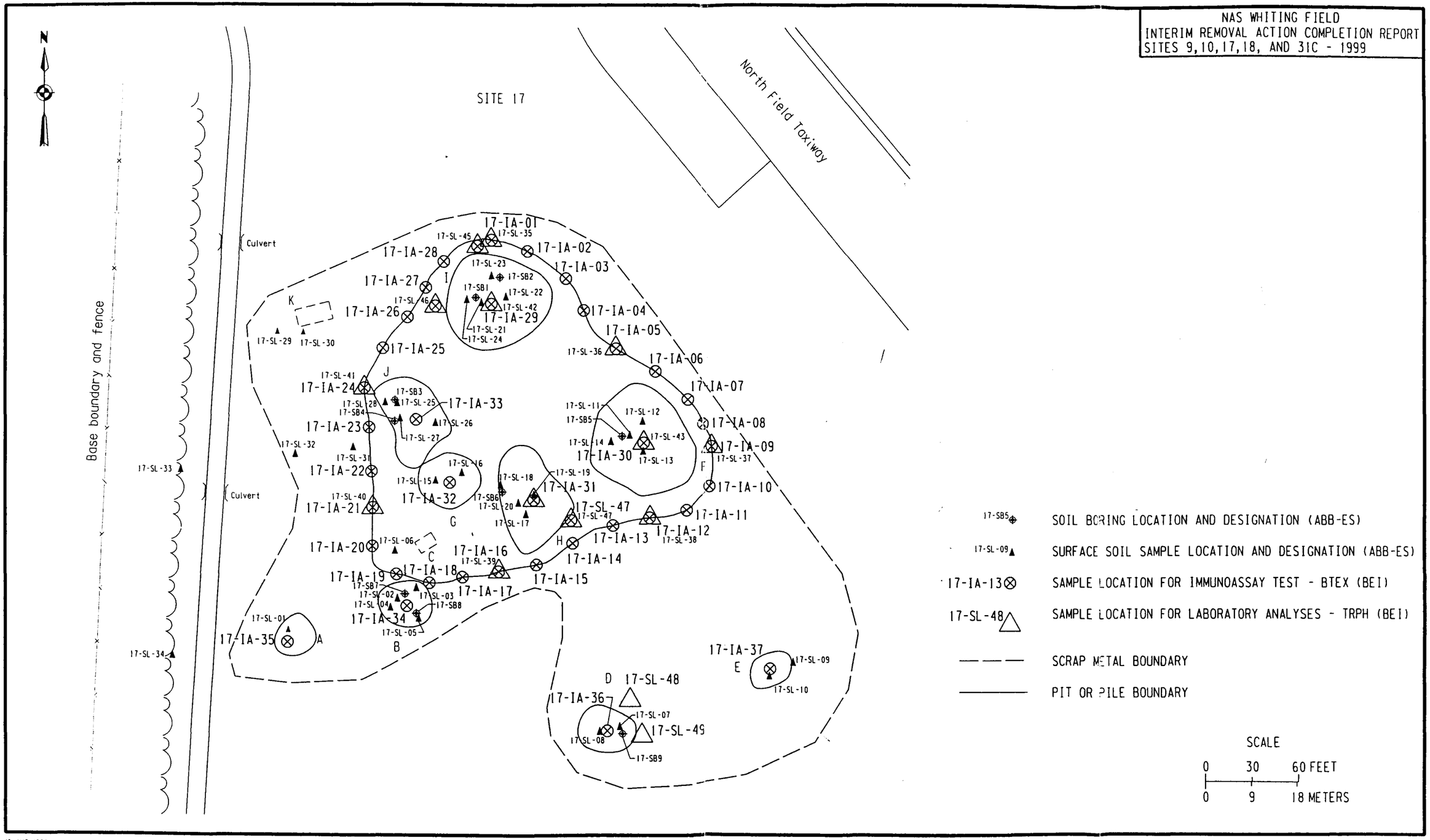

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FIGURE 3-3
SURFACE SOIL SAMPLING LOCATIONS
FOR TRPH AND BTEX AT NAS WHITING FIELD - SITE 17

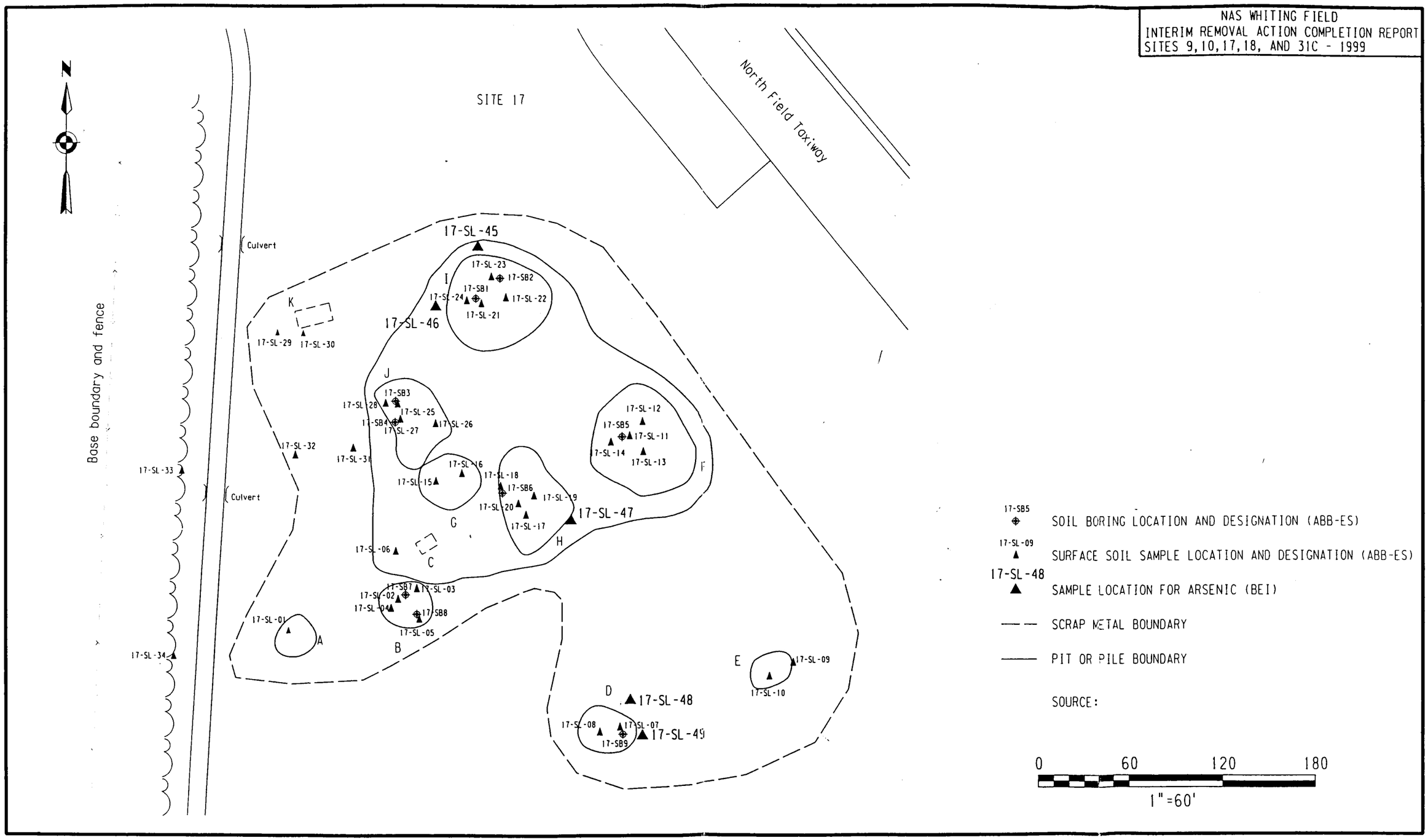

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FIGURE 3-4
SURFACE SOIL SAMPLING LOCATIONS FOR ARSENIC
AT NAS WHITING FIELD - SITE 17

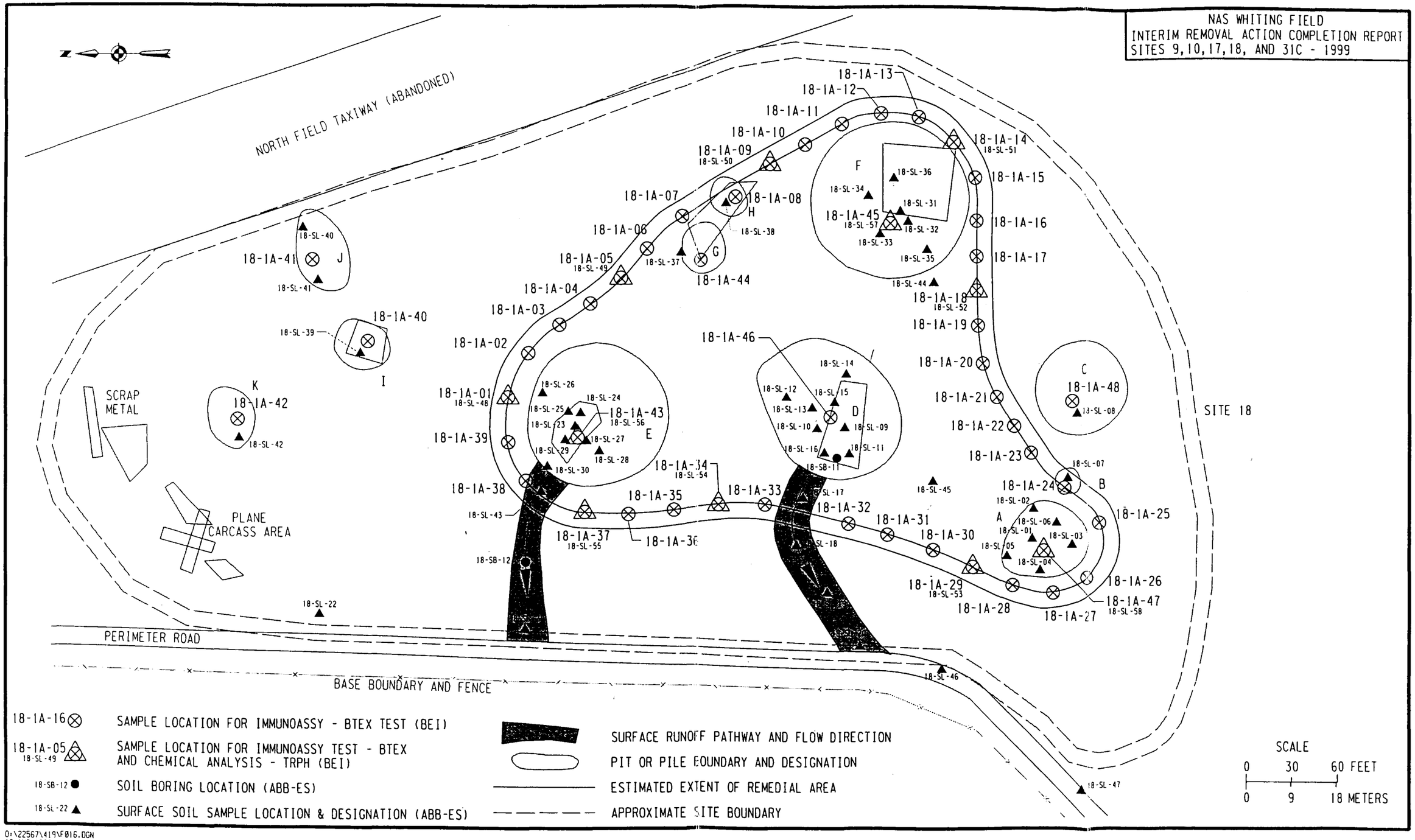

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FIGURE 3-5
SURFACE SOIL SAMPLING LOCATIONS FOR TRPH AND BTEX AT SITE 18