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NAS CECIL FIELD, FL
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SAMPLING AND ANALYSIS REPORT FOR FACILITY 504 BASE REALIGNMENT AND CLOSURE ZONE H AVIATION ORDNANCE AREA REVISION 1 NAS CECIL FIELD FL

9/2/1998

HARDING LAWSON ASSOCIATES

SAMPLING AND ANALYSIS REPORT

FACILITY 504

BASE REALIGNMENT AND CLOSURE

ZONE H, AVIATION ORDNANCE AREA

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Unit Identification Code: N60200

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc
BCT	Base Realignment and Closure cleanup team
EBS	environmental baseline survey
ELCR	excess lifetime cancer risk
FDEP	Florida Department of Environmental Protection
GCTL	groundwater cleanup target level
HI	hazard index
HLA	Harding Lawson Associates
HQ	hazard quotient
NAS	Naval Air Station
PRE	preliminary risk evaluation
RBC	risk-based concentration
SAO	sampling and analysis outline
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

Harding Lawson Associates (HLA), under contract to the Southern Division, Naval Facilities Engineering Command, has completed the Phase II Sampling and Analysis program for Facility 504 at Naval Air Station (NAS) Cecil Field. This report summarizes the related field operations, results, conclusions, and recommendations of the Phase II investigation.

Facility 504 is an inert storage building located approximately 700 feet south of Perimeter Road, on the eastern side of the entrance road to the Aviation Ordnance Area. Potential environmental concerns identified for the facility include the presence of a septic system and lift station, located to the west of the building. The Base Realignment and Closure cleanup team (BCT) regards septic tank and leachfield systems as potential pathways for contaminants to enter the groundwater. No other environmental concerns were identified for this facility in the Environmental Baseline Survey (EBS) (ABB Environmental Services, Inc. [ABB-ES], 1994a).

A sampling and analysis outline (SAO) for the assessment of groundwater downgradient of the septic system at Facility 504 was prepared by HLA (then ABB-ES) and approved by the BCT (ABB-ES, 1996). The results of the Phase II Sampling and Analysis program developed in the SAO are discussed below.

2.0 PHASE II INVESTIGATION

The Phase II investigation included the installation of one shallow groundwater monitoring well, and collection and analysis of one groundwater sample. Field activities were undertaken in general conformance with the Project Operations Plan (ABB-ES, 1994b).

A groundwater monitoring well was installed downgradient (southwest) of the septic leachfield and lift station to a depth of 13 feet below land surface. The downgradient location was identified based on the U.S. Geological Survey groundwater flow model. One groundwater sample was collected and analyzed for the full Contract Laboratory program suite of target compound list organics and target analyte list inorganics. A general site plan indicating the location of the monitoring well is presented on Figure 1. The soil boring log is included in Appendix A.

3.0 PRELIMINARY RISK EVALUATION

A preliminary risk evaluation (PRE) was conducted to assess potential risks to human and ecological receptors posed by contaminants in groundwater. Primary exposure pathways were evaluated to determine which pathways potentially contribute to human health and ecological risks. The evaluation was conducted in general conformance with methodology provided in the U.S. Environmental Protection Agency (USEPA) Region IV memorandum entitled "Amended Guidance on Preliminary Risk Evaluations (PREs) for the Purpose of Reaching a Finding of

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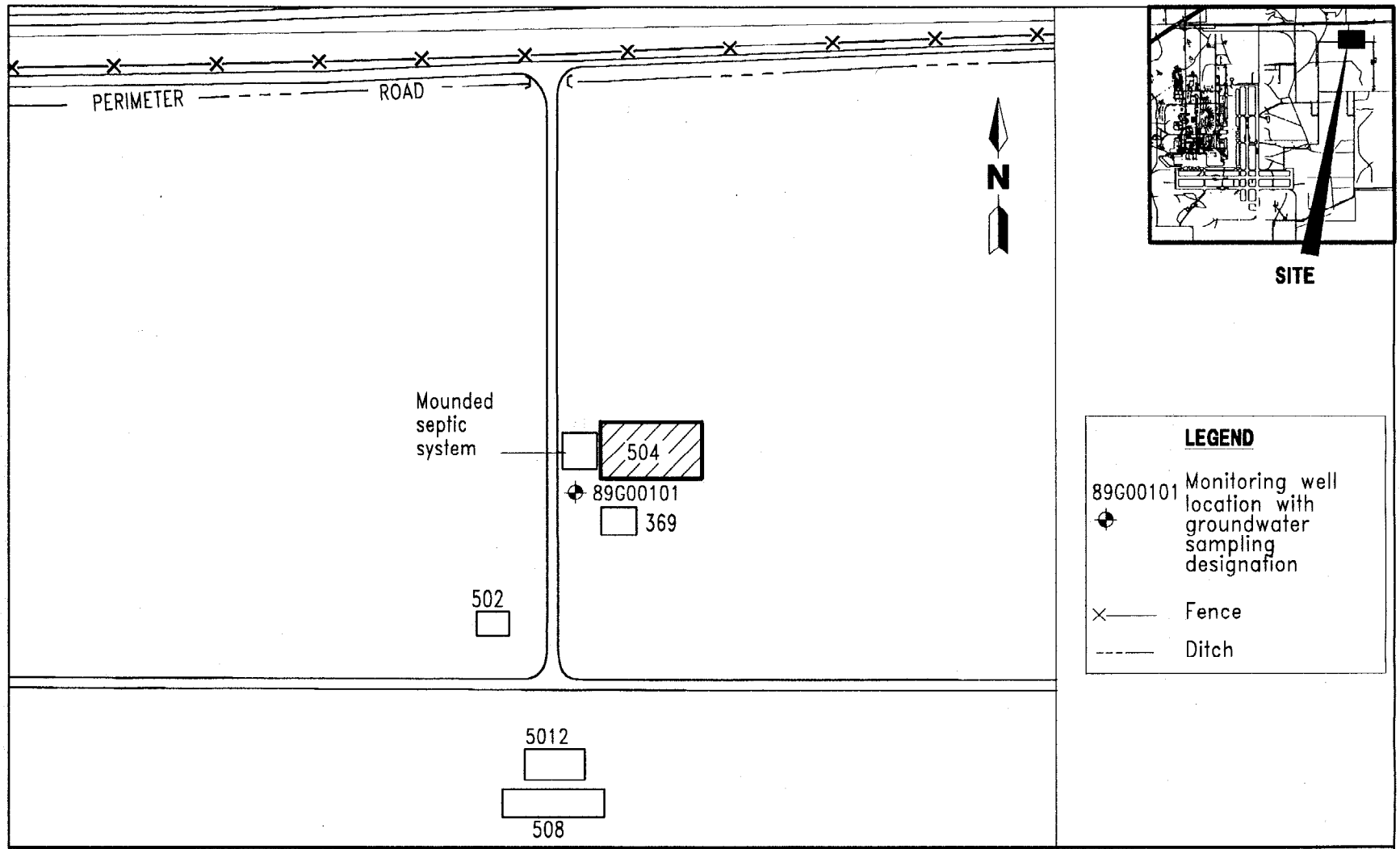

FIGURE 1
FACILITY 504
INERT STORAGE
SAMPLE LOCATION PLAN

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NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Suitability to Lease (FOSL)" (USEPA, 1994), USEPA Region IV bulletins on ecological risk assessment (USEPA, 1995), and minutes of meetings with the USEPA and the Florida Department of Environmental Protection (FDEP) concerning PREs (ABB-ES, 1995). Site background information and rationale for sample collection and analysis are detailed in the EBS Report (ABB-ES, 1994a) and the SAO (ABB-ES, 1996).

Inorganic analytes were compared to NAS Cecil Field screening criteria for inorganics established by the NAS Cecil Field partnering team. The NAS Cecil Field screening criteria were determined by using the nonparametric upper-outside value cutoffs as described in *Understanding Robust and Exploratory Data Analysis* (Hoaglin et al., 1983). These screening values were developed from data collected throughout NAS Cecil Field. No risk evaluation is conducted for inorganic analytes detected below NAS Cecil Field screening criteria for inorganics.

3.1 PUBLIC HEALTH PRELIMINARY RISK EVALUATION. All detected analytes were compared to readily available risk-based screening values to assess the likelihood of adverse human health effects associated with potential exposure to groundwater. Risk-based screening values were obtained from USEPA Region III Risk-Based Concentrations (RBCs) (USEPA, 1998) and FDEP Groundwater Guidance Concentrations (FDEP, 1994). Most screening values published in the references listed above are based on toxicity constants and standard human exposure scenarios, and correspond to fixed levels of risk. The designated level of risk for noncarcinogenic chemicals is based on a hazard quotient (HQ) of 1. The level of risk for carcinogenic chemicals is based on an excess lifetime cancer risk (ELCR) of 1×10^{-6}. Cancer and noncancer risks associated with industrial and residential land use are estimated by dividing the maximum detected analyte concentration by the corresponding USEPA Region III RBC value at the designated level of risk (HQ of 1 or ELCR of 1×10^{-6}). For noncarcinogens, the HQ are summed to determine the cumulative noncancer risk or hazard index (HI).

Eight inorganic analytes were detected in the groundwater sample collected downgradient of the septic system at Facility 504. Concentrations of detected analytes in groundwater have been compared with RBCs for tap water and FDEP groundwater cleanup target levels (GCTLs) and, where applicable, with NAS Cecil Field Inorganic Background Data Set (see Appendix A). Because no contaminants were detected at concentrations in excess of NAS Cecil Field inorganic background data set values or GCTLs, no HI or ELCR was calculated and no further human health risk evaluation is required.

3.2 ECOLOGICAL PRELIMINARY RISK EVALUATION. Potential exposure pathways and ecological habitat associated with Facility 504 were characterized by HLA ecological risk assessors in June 1996. Facility 504 is surrounded by mowed grass and pavement. No complete exposure pathways to groundwater were confirmed within the immediate study area. Therefore, no further ecological risk evaluation was conducted.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the information obtained for this assessment, the concentrations of analytes detected in groundwater at Facility 504 do not represent a hazard to human health or the environment.

The color classification for Facility 504 should be changed from Gray to Light Green. No further action is recommended for Facility 504.

REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1994a. *Base Realignment and Closure Environmental Baseline Survey Report, Naval Air Station Cecil Field, Jacksonville, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina (November).

ABB-ES. 1994b. *Project Operations Plan for Cecil Field and Health and Safety Plan*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (December).

ABB-ES. 1995. Minutes of September 25, 1995, conference call to discuss preliminary risk evaluations.

ABB-ES. 1996. *Sampling and Analysis Outline, Building 504, Base Realignment and Closure, Zone H, Developed Nonindustrial Area, Group V, Naval Air Station, Cecil Field, Jacksonville, Florida*. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina (June).

Florida Department of Environmental Protection. 1994. *Groundwater Guidance Concentrations*. Bureau of Drinking Water and Groundwater Resources. Tallahassee, Florida (June).

Hoaglin, D.C., F. Mosteller, and J.W. Tukey. 1983. *Understanding Robust and Exploratory Data Analysis*. New York: John Wiley and Sons, Inc.

U.S. Environmental Protection Agency (USEPA). 1994. Memorandum from USEPA Region IV. Subject: "Amended Guidance on Preliminary Risk Evaluations (PREs) for the Purpose of Reaching a Finding of Suitability to Lease (FOSL)." Atlanta, Georgia (December 20).

USEPA. 1995. *Supplemental Guidance to RAGS*. Region IV bulletins. USEPA Region IV Waste Management Division. Atlanta, Georgia.

USEPA. 1998. *Risk-Based Concentration Table*. Region III. Philadelphia, Pennsylvania.

APPENDIX A

SOIL BORING LOGS AND PRELIMINARY RISK EVALUATION TABLE

Project: N.A.S. Cecil Field		**Well ID:** CEF-504-1S	**Boring ID:**
Client: SOUTHNAVFACENGCOM	**Contractor:** Alliance Environmental Inc.		**Job No.:** 08544.94
Northing/Easting:		**Date started:** 10/16/96	**Complid:** 10/16/96
Method: HSA	**Casing dia.:** 2 inches	**Screened int.:** 3 to 13 FT	**Protection level:** D
TOC elev.: Ft.	**Type of OVM.:** PID	**Total dpth:** 13Ft.	**Dpth to ▽** 3.0 Ft.
ABB Rep.: R. Holloway	**Well development date:**		**Site:** Bldg. 504

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				0.0			SC	POSTHOLE	
				3.5	SILTY SAND: (SM), 100% quartz, light to dark gray, fine to very fine grained, sub-angular to sub-rounded, wet at 3.0' bls.				
5									
10									
15									
20									

ABB ENVIRONMENTAL SERVICES, INC.

BRAC Preliminary Risk Evaluation Table for Analytes Detected in Groundwater
Facility 504

Analyte[1]	Sample 89G00101	Screening Values GCTL		RBC(T)		BKGRD	Calculated Risk Values[2] ELCR	HQ
Inorganic Analytes								
Barium	10.2	2000	p	2600	n	88.2		
Cobalt	1.3			2200	n	12.8		
Magnesium	419					10000.0		
Potassium	638					4330.0		
Sodium	2160	160000	p			16500.0		
Thallium	3.4	2	p *	2.9	n	13.3		
Vanadium	1.5	49	st	260	n	20.2		
Zinc	10.4		s	11000	n	76.8		

Notes:

[1] All detected analytes are reported. All analytes are reported in ug/l.

[2] ELCR and HQ are only calculated for analytes detected at concentrations in excess of BKGRD and GCTL.

Sample Suffixes indicate the following:
F=filtered sample, DL= laboratory diluted sample, RE= laboratory re-extracted, D=field duplicate.

BRAC = Base Realignment and Closure (ACT).
RBC(T) = Risk-Based Concentration (tap water), USEPA Region III, May 1996.
ELCR = calculated excess lifetime cancer risk; ELCR = detected concentration/RBC(T)* 10E-06.
HQ = calculated hazard quotient for noncarcinogenic analytes; HQ detected concentration/RBC(T).
p = primary standard (MCL).
n = noncarcinogenic risk.
st = systemic toxicant.
* = values that exceed Florida Department of Environmental Protection GCTLs.
s = secondary standard (related to taste, odor, color, or other non-aesthetic effects).
BKGRD = Naval Air Station Cecil Field inorganic background data set.
GCTL = Groundwater Cleanup Target Levels, FDEP, Chapter 62-785, Florida Administrative Code.