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NAS CECIL FIELD
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SAMPLING AND ANALYSIS REPORT FOR BUILDING 621LS NAS CECIL FIELD FL

11/1/1997

ABB ENVIRONMENTAL

SAMPLING AND ANALYSIS REPORT

BUILDING 621LS

BASE REALIGNMENT AND CLOSURE

ZONE A, YELLOW WATER WEAPONS COMPLEX
GROUP VII

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
ELCR	excess lifetime cancer risk
FDEP	Florida Department of Environmental Protection
HQ	hazard quotient
PRE	preliminary risk evaluation
RBC	risk-based concentration
SAO	Sampling and analysis outline
TAL	target analyte list
TCL	target compound list
$\mu g/\ell$	micrograms per liter
USEPA	U.S. Environmental Protection Agency
YWWX	Yellow Water Weapons Complex

1.0 INTRODUCTION

ABB Environmental Services, Inc. (ABB-ES), under contract to the Southern Division, Naval Facilities Engineering Command, has completed the Phase II Sampling and Analysis program for Facility 621LS, at Naval Air Station Cecil Field. This report summarizes the related field operations, results, conclusions, and recommendations of the Phase II investigation.

Facility 621LS is a lift station located near the southeast corner of the Yellow Water Weapons Complex (YWWX). The Base Realignment and Closure cleanup team (BCT) regards lift stations as potential pathways for wastewater contaminants to enter the groundwater. A Sampling and Analysis Outline (SAO) for the assessment of groundwater in the vicinity of Lift Station 621LS was prepared by ABB-ES and approved by the BCT (ABB-ES, 1996). Other potential environmental concerns, related to special weapons that may have been stationed at YWWX, are being evaluated separately.

2.0 PHASE II INVESTIGATION

This 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, 1994a).

The groundwater monitoring well was installed southeast of Facility 621LS to a depth of 14 feet below land surface. One groundwater sample was collected and analyzed for the full Contract Laboratory program suite of target compound list (TCL) organics and target analyte list (TAL) 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 (PRE)

A 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 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 "Amended Guidance on Preliminary Risk Evaluations (PREs) for the Purpose of Reaching a Finding of Suitability to Lease (FOSL)" (USEPA, 1994), USEPA Region IV Bulletin 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 Environmental Baseline Survey Report (ABB-ES, 1994b) and the SAO (ABB-ES, 1996).

3.1 PUBLIC HEALTH PRE. 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, 1996) and FDEP Groundwater Guidance Concentrations (FDEP, 1994).

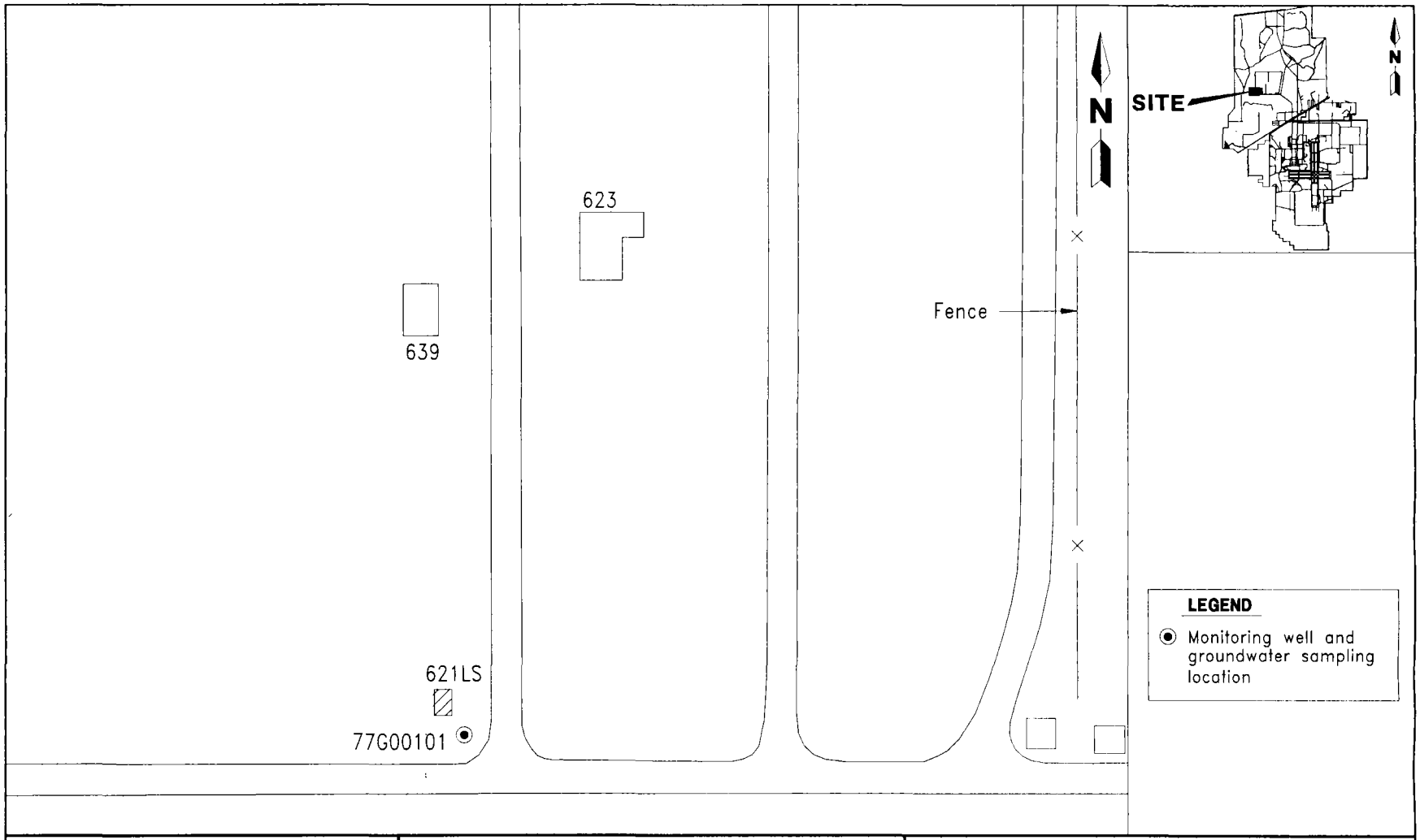

FIGURE 1
BUILDING 621LS
LIFT STATION
SAMPLE LOCATION PLAN

PHASE II SAMPLING AND ANALYSIS REPORT

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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 HQs are summed to determine the cumulative noncancer risk or hazard index (HI).

Eight inorganic analytes were detected in the groundwater sample collected in the study area. A comparison between concentrations of detected analytes in groundwater, and RBCs for tap water and FDEP groundwater guidance concentrations, is presented in Appendix A. The cumulative noncancer risk or hazard index calculated for all detected analytes is 1.1 based upon RBCs for tap water.

Thallium was detected at a concentration of 3.1 micrograms per liter ($\mu g/\ell$), exceeding the FDEP groundwater guidance concentration of 2 $\mu g/\ell$ and the RBC for tap water of 2.9 $\mu g/\ell$. The USEPA maximum contaminant level for thallium in groundwater is 2 $\mu g/\ell$. The analytical result for thallium was less than the contract-required detection limit of 10 $\mu g/\ell$ and was, therefore, qualified as an estimated concentration. No other analytes were detected in excess of screening criteria. No carcinogenic analytes were detected; therefore, an ELCR was not calculated.

There is some uncertainty concerning the detections of thallium in groundwater above the State and Federal MCLs. Thallium has been observed, below the laboratory detection level, at similar concentrations (2 to 6 $\mu g/\ell$) at many sites throughout NAS Cecil Field, including upgradient groundwater samples at OUs 3 and 6. The detection of thallium may be from its presence as a naturally occurring element or from interelemental interference with iron or other cations during the analysis for thallium. Due to the widespread occurrence of thallium at similar concentrations and the potential for interelemental interference, it does not appear that thallium is site related.

3.2 ECOLOGICAL PRE. Potential exposure pathways and ecological habitat associated with Building 621LS were characterized by ABB-ES ecological risk assessors in June 1996. Building 621LS is surrounded by mowed grass. No complete exposure pathways to groundwater were identified within the study area. Therefore, no further ecological risk evaluation was conducted.

4.0 CONCLUSIONS AND RECOMMENDATIONS

One groundwater sample from the shallow surficial aquifer was collected at Facility 621LS and analyzed to determine the concentrations of TCL organic and TAL inorganic compounds. Concentrations of detected compounds were compared to human health and ecological screening criteria. A cumulative hazard index of 1.1 was calculated for all noncarcinogenic analytes detected. No carcinogenic compounds were detected.

Thallium was the only analyte detected at a concentration in excess of its respective RBC. However, due to the widespread occurrence of thallium (a naturally occurring element) at NAS Cecil Field, and the potential for inter-elemental interference during analysis, it does not appear that thallium is site related. There is no potable water supply associated with facility 621LS; therefore, a groundwater to receptor pathway does not currently exist.

No complete exposure pathways to ecological receptors were identified for groundwater in the study area. Therefore, no further ecological risk evaluation was conducted.

Based upon the information obtained for this assessment, the concentrations of analytes detected in groundwater at Building 621LS do not represent a hazard to human health or the environment. However, the BCT has concurred that all facilities within YWWX shall be designated as "encumbered" until the radiological survey for release has been completed. Therefore, the color classification for Facility 621LS should be changed from Gray to Light Green (Encumbered).

REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1994a. *Project Operations Plan for Cecil Field and Health and Safety Plan*. Prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina (December).

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

ABB-ES. 1996. *Sampling and Analysis Outline, Building 859LS, Base Realignment and Closure, Zone C, Developed Nonindustrial Area, Group V, Naval Air Station, Cecil Field, Jacksonville, Florida*. Prepared for SOUTHNAVFACENG-COM, North Charleston, South Carolina (July).

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

U.S. Environmental Protection Agency (USEPA). 1994. *USEPA Region IV, 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. *Region IV Waste Management Division Preliminary Risk Evaluation, Ecological Risk Assessment, Supplemental Guidance to RAGS*. Region IV Bulletin No. 1 (November).

USEPA. 1996. *Region III Risk-Based Screening Table, Region III, Technical Guidance Manual*. Risk Assessment. EPA/903/R-93-001 (May).

APPENDIX A

SOIL BORING LOGS AND TABLE

Project: NAS Cecil Field BRAC		**Well ID:** CEF-62ILS-IS	**Boring ID:** CEF-62ILS-IS
Client: SOUTHDIVNAVFACENGCOM	**Contractor:** Alliance Environmental, Inc.		**Job No.:** 08520-85
Northing/Easting: 389182.992/2155728.628		**Date started:** 10-22-98	**Compltd:** 10-22-98
Method: Auger	**Casing dia.:** 2 in.	**Screened int.:** 2 - 12 ft.	**Protection level:** D
TOC elev.: Ft.	**Type of OVM.:** PID	**Total dpth:** 13.0Ft.	**Dpth to ▽** 2.5 Ft.
ABB Rep.: R. Holloway	**Well development date:** 10-22-98		**Site:** 77 - 62ILS Lift Station

Depth Ft.	Laboratory Sample ID.	Sample	Recovery	Headspace (ppm)	Soil/Rock Description and comments	Lithologic symbol	Soil class.	Blows/6-in.	Well diag.
				0	SILTY SAND (SM): 100%, quartz, light to dark gray, fine- to very fine- grained, sub-angular to sub-rounded.		SM	posthole	
				0				posthole	
5									
10									
15									
20									
25									
30									

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Table A-1
BRAC Preliminary Risk Evaluation Table for Analytes Detected in Groundwater

Sampling and Analysis Report, Building 621LS
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Analyte	Sample	Screening Values		Calculated Risk Values	
	77G00101	FDEPGCC	RBC(T)	ELCR	HQ
Inorganic Analytes					
Barium	16	2,000 p	2,600 n		0.01
Calcium	2,780		2,200 n		0.00
Cobalt	2.1				
Magnesium	981				
Potassium	288				
Thallium	3.1	2 p	2.9 n		1.07
Vanadium	2	49 st	260 n		0.01
Zinc	3.7	s	11,000 n		0.00
				Sum	**1.1**

Notes: All analytes are reported in micrograms per liter.
Sample suffixes indicate the following: F = filtered sample, DL = laboratory diluted sample, RE = laboratory reextracted, D = field duplicate.

BRAC = Base Realignment and Closure (Act).
NAS = Naval Air Station.
FDEPGGC = FDEP Groundwater Guidance Concentration, June 1994.
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.
* = values that exceed FDEPGGC.
st = systematic toxicant.

FACILITY 621LS