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NAS CECIL FIELD, FL
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SAMPLING AND ANALYSIS REPORT FOR FACILITY 559 BASE REALIGNMENT AND
CLOSURE ZONE B GOLF COURSE AREA REVISION 1 NAS CECIL FIELD FL
12/21/1998
HARDING LAWSON ASSOCIATES

SAMPLING AND ANALYSIS REPORT

FACILITY 559

BASE REALIGNMENT AND CLOSURE

ZONE B, GOLF COURSE AREA

**NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA**

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Base Realignment and Closure
Zone B, Golf Course Area
Naval Air Station Cecil Field, Jacksonville, Florida

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GLOSSARY

ABB-ES	ABB Environmental Services, Inc
EBS	environmental baseline survey
ELCR	excess lifetime cancer risk
FDEP	Florida Department of Environmental Protection
HLA	Harding Lawson Associates
HQ	hazard quotient
IAS	initial assessment study
PRE	preliminary risk evaluation
RBC	risk-based concentration
SAO	sampling and analysis outline
SCTL	soil cleanup target level
USEPA	U.S. Environmental Protection Agency

1.0 INTRODUCTION

Harding Lawson Associates (HLA), under contract to Southern Division, Naval Facilities Engineering Command, has completed the Phase II Sampling and Analysis program for Facility 559 at Naval Air Station Cecil Field. This report summarizes the related field operations, results, conclusions, and recommendations.

Facility 559 is referred to as the Men's Golf Association Storage Building in the Environmental Baseline Survey (EBS) Report (ABB Environmental Services, Inc. [ABB-ES], 1994a). The facility is located approximately 200 feet north of the intersection of 6th Street and H Avenue (Figure 1), and is currently used for the storage of picnic supplies.

Facility 559 was color-coded Gray in the EBS Report. According to the Initial Assessment Study (IAS) (Envirodyne Engineers, Inc., 1985), pesticides were stored in Facility 559 between 1978 and 1981. The IAS also indicates pesticides may have been mixed in this area. Typical golf course maintenance activities often result in elevated concentrations of pesticides in surface soil.

A sampling and analysis outline (SAO) to evaluate the potential for surface soil was prepared by HLA (then ABB-ES) and approved by the Base Realignment and Closure cleanup team (ABB-ES, 1996) to assess whether or not sediments in the vicinity of Facility 559 have been impacted by site activities.

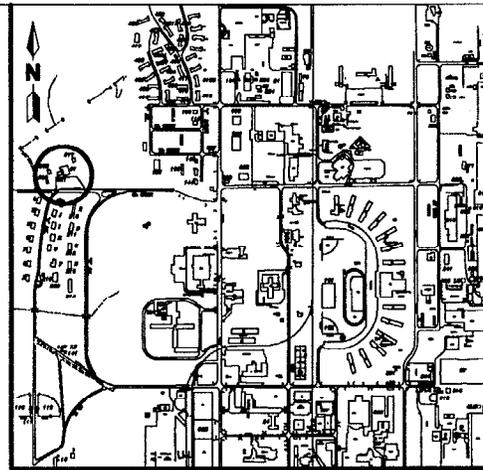
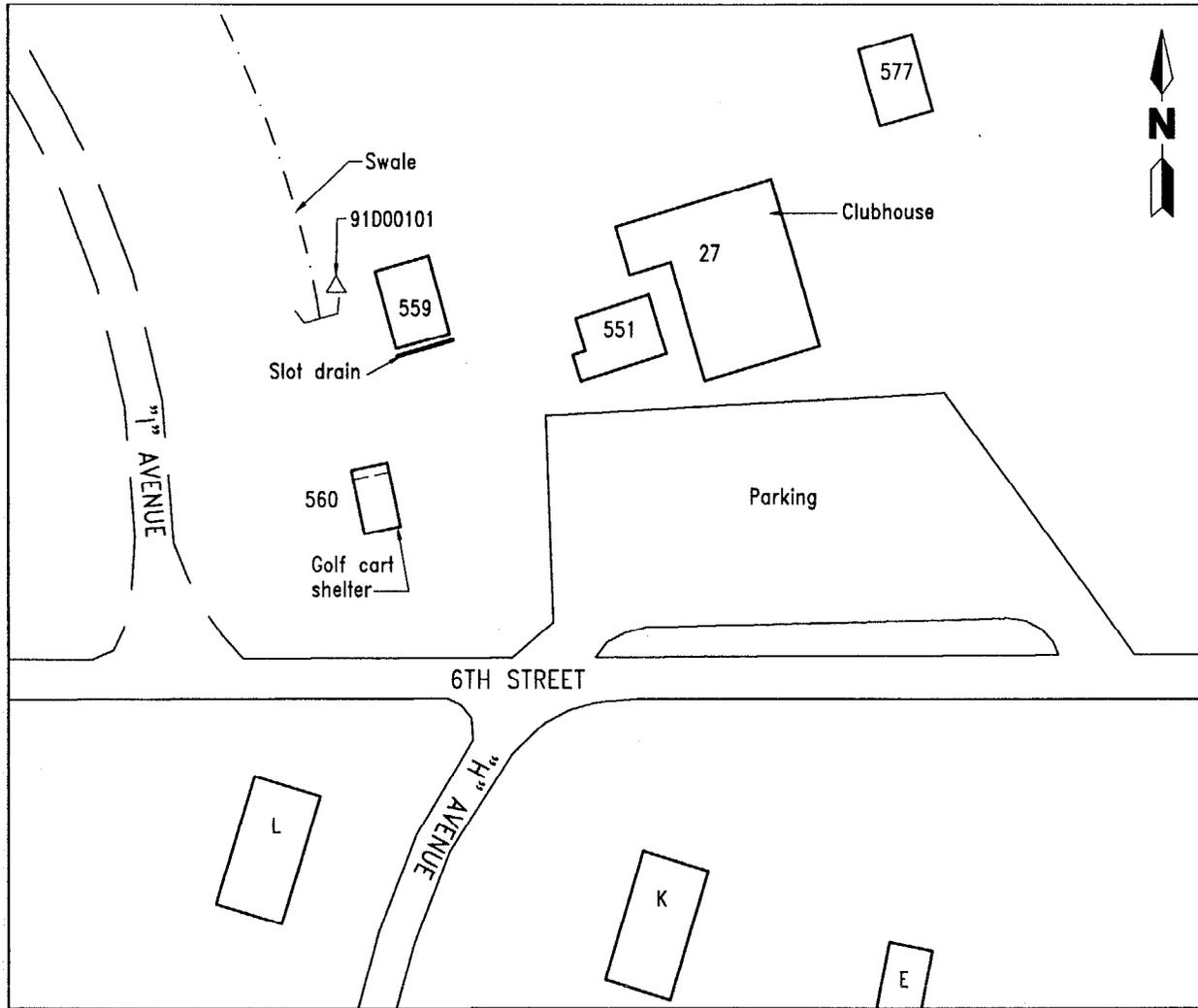
2.0 PHASE II INVESTIGATION

One surface soil sample was collected from 0 to 1 foot below land surface in a drainage swale near the discharge point for a slot drain associated with Facility 559. The slot drain was designed to prevent storm water runoff from entering the wide doorway on the south side of the building. If pesticides were released at Facility 559 during the time it was used to store these materials, it is likely that they would have been intercepted by the slot drain and routed to the drainage swale.

Field activities were undertaken in general conformance with the Project Operations Plan (ABB-ES, 1994b). The soil sample was analyzed for potential contaminants of concern included in the Contract Laboratory Program suite of target compound list pesticides and polychlorinated biphenyls. A site plan indicating the location of the surface soil sample is presented on Figure 1.

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 environmental media. Primary exposure pathways were evaluated to determine those pathways that 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



GENERAL LOCATION PLAN

Scale: 1 inch = 2,000 feet

LEGEND

- 91D00101* Surface soil sample location and designation
- * Screening criteria exceeded

NOTE:

Values presented exceed NAS Cecil Field background data set values and State of Florida Cleanup Target Levels (NAS Cecil Field background data set values are applicable to inorganic analytes only)

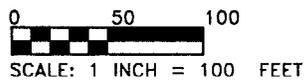


FIGURE 1
FACILITY 559
MENS GOLF ASSOCIATION STORAGE BUILDING
SAMPLE LOCATION PLAN



SAMPLING AND ANALYSIS REPORT

NAVAL AIR STATION CECIL FIELD
JACKSONVILLE, FLORIDA

Guidance on Preliminary Risk Evaluations (PREs) for the Purpose of Reaching a Finding of 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).

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 surface soil. Risk-based screening values were obtained from USEPA Region III Risk-Based Concentrations (RBCs) (USEPA, 1996) and FDEP Soil Cleanup Target Levels (SCTLs) (Florida Administrative Code, 1998).

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.

Six pesticide compounds were detected in the surface soil sample collected at Facility 559. Concentrations of detected compounds are compared to FDEP SCTLs and USEPA RBCs (see Appendix A). None of the compounds detected exceeded FDEP SCTLs or USEPA RBCs. Therefore, no further human health risk evaluation is required.

3.2 ECOLOGICAL PRELIMINARY RISK EVALUATION. An ecological PRE was conducted to evaluate potential risks to ecological receptors in the vicinity of Facility 559. Exposure pathways and ecological habitat associated with Facility 559 were characterized by HLA (then ABB-ES) ecological risk assessors in June 1996. The methods and assumptions used in derivation of ecological screening values applied in this evaluation are presented in the Project Operations Plan (ABB-ES, 1994b).

The drainage swale where the sediment sample was collected does not normally contain water. Therefore, only the terrestrial exposure pathway was considered for this PRE. Ecological habitat at Facility 559 is limited to maintained grass surrounding the building. Ecological receptors that might occasionally use the study area are likely limited to terrestrial species that are tolerant to human and industrial activity. Small passerines, such as the American robin (*Turdus migratorius*), could occasionally forage for terrestrial invertebrates in the grassy portions of the study area. Small mammals, such as the cotton mouse (*Peromyscus gossypinus*), could potentially feed on grasses and seeds in the grassy areas of the study area. Soil invertebrates, such as the earthworm, are likely present in the grassy areas.

Pathways of potential contamination exposure at Facility 559 for wildlife receptors include direct contact, incidental ingestion of surface soil, and limited terrestrial food-web model exposure to contaminants in surface soil that may bioaccumulate. Pathways for soil invertebrates include direct contact and incidental ingestion of surface soil. Pathways for terrestrial plants include direct contact with surface soil.

Concentrations of detected compounds are compared to relevant ecological screening values in Appendix A. No contaminants were detected at concentrations in excess of the ecological screening values.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the information obtained for this assessment, the surface soil at Facility 559 does not represent a hazard to human health or the environment. Six pesticide compounds were detected in surface soil collected at Facility 559 at concentrations below human health and ecological screening values. Therefore, the color classification for Facility 559 should be changed to 3/Light Green to indicate that contaminants have been detected, but at concentrations which do not require removal action. No further evaluation is recommended for Facility 559.

Appropriate site operation and management procedures should be undertaken in order to ensure that current and future site activities do not result in release of hazardous substances to the environment.

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 (SOUTHNAVFACENGCOC), North Charleston, South Carolina (November).
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- USEPA. 1998. *Risk-Based Concentration Table*. Region III. Philadelphia, Pennsylvania.

APPENDIX A

HUMAN HEALTH AND ECOLOGICAL PRELIMINARY RISK EVALUATION TABLES

**Preliminary Risk Evaluation Table for Analytes Detected in Surface Soil
Facility 559, Naval Air Station Cecil Field**

Analyte¹	Sample	Screening Values		Calculated Risk Values²		
		91S00101	BKGRD	SCTL	RBC(R)	ELCR
Pesticides/PCBs						
4,4-DDD	0.019		4.5	2.7	c	
4,4-DDE	0.002		3.2	1.9	c	
Dieldrin	0.0069		0.07	0.04	c	
Heptachlor epoxide	0.0018		0.1	0.07	c	
alpha-Chlordane	0.031		3	0.49	c	
gamma-Chlordane	0.031		3	1.8	c	

Notes:

¹ All detected analytes are reported. Concentrations and screening values are expressed in mg/kg

²ELCR and HI are only calculated for analytes detected at concentrations in excess of BKGRD and SCTL

*= Background screening criteria or SCTLs have been exceeded

BKGRD=NAS Cecil Field Inorganic Background Data Set

SCTL = Soil Cleanup Target Level, Chapter 62-785, Florida Administrative Code

RBC(R)= Risk-based Concentration (Residential), USEPA Region III, April 1998

c=carcinogenic risk

n=non-carcinogenic risk

ELCR = calculated excess lifetime cancer risk, based on RBC(R) values. (ELCR = detected concentration/RBC(R) * 1 E-06)

HQ = calculated Hazard Quotient for non-carcinogenic analytes (HQ=detected concentration/RBC(R))

**Preliminary Ecological Risk Evaluation Table for Analytes Detected in Surface Soil
Facility 559, Naval Air Station Cecil Field**

Analyte ¹	Sample 91S00101	Screening Values		
		Plant ²	Invert ³	Vert ⁴
Pesticides/PCBs				
4,4-DDD	0.019	12.5	12	0.79
4,4-DDE	0.002	12.5	12	1.5
Dieldrin	0.0069	12.5	30	1.9
Heptachlor epoxide	0.0018	12.5	6.4	5.1
alpha-Chlordane	0.031	12.5		0.35
gamma-Chlordane	0.031	12.5		0.35

Notes:

¹ All detected analytes are reported. Concentrations and screening values are expressed in mg/kg

Screening Criteria (refer to the Project Operations Plan, ABB-ES, 1995, Appendix A for details)

² Terrestrial Plant Toxicity Screening Value

³ Invertebrate Toxicity Screening Value

⁴ Vertebrate (Wildlife) Toxicity Screening Value

APPENDIX B

LABORATORY ANALYTICAL DATA

NAS CECIL F. -- FACILITY 559
 SEDIMENT -- PESTICIDES & PCBs -- REPORT REQUEST NO. 10132

Lab Sample Number: C832M
 Site: CECILBRAC3
 Locator: 91D00101
 Collect Date: 07-FEB-97

VALUE QUAL UNITS DL

CLP PESTICIDES/PCBS 90-SOW

alpha-BHC	4.5 U	ug/kg	4.5
beta-BHC	4.5 U	ug/kg	4.5
delta-BHC	4.5 U	ug/kg	4.5
gamma-BHC (Lindane)	4.5 U	ug/kg	4.5
Heptachlor	4.5 U	ug/kg	4.5
Aldrin	4.5 U	ug/kg	4.5
Heptachlor epoxide	1.8 J	ug/kg	4.5
Endosulfan I	4.5 U	ug/kg	4.5
Dieldrin	6.9 J	ug/kg	8.9
4,4-DDE	2 J	ug/kg	8.9
Endrin	8.9 U	ug/kg	8.9
Endosulfan II	8.9 U	ug/kg	8.9
4,4-DDD	19	ug/kg	8.9
Endosulfan sulfate	8.9 U	ug/kg	8.9
4,4-DDT	8.9 U	ug/kg	8.9
Methoxychlor	45 U	ug/kg	45
Endrin ketone	8.9 U	ug/kg	8.9
Endrin aldehyde	8.9 U	ug/kg	8.9
alpha-Chlordane	31	ug/kg	4.5
gamma-Chlordane	31	ug/kg	4.5
Toxaphene	450 U	ug/kg	450
Aroclor-1016	89 U	ug/kg	89
Aroclor-1221	180 U	ug/kg	180
Aroclor-1232	89 U	ug/kg	89
Aroclor-1242	89 U	ug/kg	89
Aroclor-1248	89 U	ug/kg	89
Aroclor-1254	89 U	ug/kg	89
Aroclor-1260	89 U	ug/kg	89

U = NOT DETECTED J = ESTIMATED VALUE
 UJ = REPORTED QUANTITATION LIMIT IS QUALIFIED AS ESTIMATED
 R = RESULT IS REJECTED AND UNUSABLE