Naval Installation Restoration Program Plan Remedial Response Decision System

Volume 2
Appendix D

Naval Air Station Jacksonville
Jacksonville, Florida

Southern Division
Naval Facilities Engineering Command
Contract Number N62467-94-D-0888
Contract Task Order CTO 0134

November 2004

Status Table
Remedial Response Decision System
Naval Air Station Jacksonville, Florida
Current as of October 29, 2004

PSC	PSC Name	Revision #	Revision Date	Current Status
1	Patrol Road Turnaround Area	Final	December 28, 1995	NFRAP, Site transferred to petroleum program
2	Former Fire Fighter Training Area	Final	October 17, 2003	NFRAP, Site transferred to petroleum program
3	Wastewater Treatment Plant Ex-sludge Disposal Area	Final	October 17, 2003	NFRAP with implementation of LUCs; OU 2 ROD signed October 20, 1998
4	Pine Tree Planting Area	Final	October 17, 2003	NFRAP with implementation of LUCs; OU 2 ROD signed October 20, 1998
5	Shoreline Fill West of Fuel Barge Dock	Final	October 17, 2003	NFRAP with implementation of LUCs
6	Fuel Farm Steam Pit	Final	December 28, 1995	NFRAP based on exclusion from CERCLA authority
7	Gas Hill	Final	December 28, 1995	NFRAP, Site transferred to petroleum program
8	Vacant Lot East of Fuel Farm	Final	October 17, 2003	NFRAP with implementation of LUCs
9	Old Disposal Area East of Fuel Farm	Final	October 17, 2003	NFRAP with implementation of LUCs
10	Tank 119K	Final	December 28, 1995	NFRAP based on exclusion from CERCLA authority
11	Building 101	Final	October 17, 2003	NFRAP
12	Old Test Cell Building	Final	October 17, 2003	NFRAP
13	Radium Paint Waste Disposal Pit	Final	October 17, 2003	NFRAP
14	Battery Shop	Final	October 17, 2003	NFRAP with LUCs
15	Solvent and Paint Sludge Disposal Area	Final	October 17, 2003	NFRAP with LUCs
16	Black Point Storm Sewer Discharge	2	October 17, 2003	RI/FS completed; OU 3 ROD signed on September 20, 2000
17	Glass Bead Disposal Area	2	June 23, 1999	NFRAP
18	Fill Area	Final	June 2, 1999	NFRAP with maintenance of existing LUCs
19	Old Gas Station	Final	December 28, 1995	NFRAP, Site transferred to petroleum program
20	Former Solid Waste Incinerator Facility	Final	May 28, 1999	NFRAP
21	Casa Linda Lake	2	October 17, 2003	NFRAP with LUCs
22	Fort Dix	4	April 26, 1999	Update at completion of golf course expansion
23	Former Skeet Range	4	August 6, 1999	Update at completion of golf course expansion
24	Scrap Metal Disposal Area	Final	December 28, 1995	NFRAP based on exclusion from CERCLA authority
25	Building H2038, Former Radioactive Waste Storage Area	Final	December 25, 1995	NFRAP based on previous removal action
26	Old Main Registered Disposal Area	Final	October 17, 2003	RI/FS completed; OU 1 ROD signed on September 23, 1997
27	Ex-PCB Transformer Storage Area	Final	October 17, 2003	RI/FS completed; OU 1 ROD signed on September 23, 1997
28	Ex-Firefighting Training Area	Final	October 17, 2003	NFRAP
29	Organic Disposal Area	Final	October 17, 2003	NFRAP with implementation of LUCs
30	Old Drum Lot	2	June 29, 1999	NFRAP with implementation of LUCs
31	Former Asphalt Mixing Area	Final	October 17, 2003	NFRAP with implementation of LUCs
32	Ex-Base Landfill	Final	October 17, 2003	NFRAP with implementation of LUCs
33	Base Service Station	Final	December 29, 1995	NFRAP, Site transferred to petroleum program
34	Old Transformer Storage Area	Final	December 29, 1995	NFRAP based on exclusion from CERCLA authority
35	Former Temporary PCB Storage Area	Final	October 17, 2003	NFRAP
36	Dewey Park	Final	October 17, 2003	NFRAP
37	Ex-Power Barge Dock	Final	October 17, 2003	NFRAP
38	Torpedo Rework Facility	3	June 1, 1999	Additional investigation of groundwater contamination and an IRA at the gravel sump area
39	Possible Transformer Burial Area	Final	October 17, 2003	NFRAP
40	Ex-East Industrial Wastewater Treatment Plant Discharge Area	Final	October 17, 2003	NFRAP
41	Domestic Waste Sludge Drying Beds	Final	October 17, 2003	NFRAP with implementation of LUCs; limited period of groundwater monitoring; OU 2 ROD signed October 20, 1998
42	Wastewater Treatment Plant Effluent Polishing Pond	Final	October 17, 2003	NFRAP with implementation of LUCs; limited period of groundwater monitoring; OU 2 ROD signed October 20, 1998
43	Industrial Waste Sludge Drying Beds	Final	October 17, 2003	NFRAP with implementation of LUCs; limited period of groundwater monitoring; OU 2 ROD signed October 20, 1998
44	Drainage Ditch West of Ajax Street	Final	October 17, 2003	NFRAP with implementation of LUCs
45	Building 200 Wash Rack Disposal Pit	2	August 27, 1999	Site screening to address groundwater contamination and residual soil contamination
46	DRMO Yard	2	July 23, 1999	RI/FS
47	Pesticide Shop (Building 536)	3	May 28, 1999	IRA to address surface soil; RI/FS to address any remaining contamination
48	Base Dry Cleaners (Building 106)	2	August 24, 1999	Continuation of ongoing IRA
49	Commissary Battery Charging Station	Final	October 17, 2003	NFRAP
50	East Side Wastewater Treatment Plant Sludge Drying Beds	Final	October 17, 2003	NFRAP with implementation of LUCs
51	South Antenna Field Firefighting Training Area	1	June 7, 1999	RI/FS

Revision Number	Date Prepared	Remarks and Results
0	January 25, 1995	No recommendation relative to Remedial Response Decision System (RRDS) is appropriate for Potential Source of Contamination (PSC) 14 at this time because it is currently undergoing remedial investigation and feasibility study (RI/FS) activities as part of Operable Unit (OU) 3.
1	December 28, 1995	USEPA and FDEP concurred that no recommendation relative to RRDS is appropriate for PSC 14 at this time because it is undergoing RI/FS activities as part of OU 3.
2	June 11, 1997	Based on results from a soil investigation at PSC 14, no further response action planned (NFRAP) is recommended because contaminants in soil are present below acceptable risk levels.
3	July 27, 1999	FDEP concurred with NFRAP recommendation for PSC 14. USEPA concurred, but indicated that a final recommendation should be made when the OU 3 Record of Decision (ROD) is completed.
Final	October 17, 2003	RI for OU 3, which includes PSC 14, has been completed and a Record of Decision was signed on September 20, 2000. PSC 14 Final Remedy: NFRAP with land use controls based on no unacceptable risk to human or ecological receptors in an industrial setting. USEPA and FDEP concurred with the selected remedy and remedial action taken.

NFRAP or Further Remedial Action Decision Report
Naval Air Station Jacksonville
Jacksonville, Florida
Checklist and Summary Sheet

1. RRDS elements evaluated	Complete (Y/N)	Results and Remarks Summary
Review existing information	Y	
Regulatory authority evaluation	Y	CERCLA authority applies.
Previous action evaluation	Y	No response actions have taken place at PSC 14.
Source of contamination evaluation	Y	The contaminants are consistent with reported disposal practices.
Exposure pathway analyses	Y	Human exposure limited to construction or maintenance. No ecological exposure pathway.
Data sufficiency evaluation	Y	Data are sufficient to support risk screening and NFRAP decision.
Risk analyses	Y	Contaminants below risk-based screening concentrations.
ARARs evaluation	Y	NFRAP decision is consistent with ARARs.

2. Remedial response data base status	Complete (Y/N)	Current (Y/N)	Last Revision	Information Used in this Evaluation
Discovery and notification	Y	N	March 1983	Initial Assessment Study (IAS) (Fred C. Hart Associates, Inc., 1983)
Preliminary assessment	Y	N	March 1983	IAS (Fred C. Hart Associates, Inc., 1983)
Site inspection	Y	N	December 1985	Verification Study (Geraghty & Miller, 1985)
Expanded site inspection	Y	N	March 1986	Characterization Study (Geraghty & Miller, 1986a)
Remedial investigation	Y	N	April 2000	RI/FS for OU 3 (HLA, 2000a)
Feasibility study	Y	N	April 2000	RI/FS for OU 3 (HLA, 2000a)
Remedial design and remedial action	Y	N	September 2000	ROD (HLA, 2000c)
Removal action	N	N		
Site closure	Y	N		
Other investigations	Y	N	April 1994	OU 3 Scoping Study Field Program (summarized in RI/FS Workplan for OU 3) (ABB Environmental Services, Inc., 1995)
	Y	N	February 1997	Sampling Event Report (HLA, 1999)

3. RRDS evaluation summary ___X__ NFRAP _____ SITE SCREENING _____ FURTHER REMEDIAL ACTION

	Complete (Y/N)	Rationale and Remarks
Additional data requirements	N	
NFRAP decision	Y	NFRAP with Land Use Controls is recommended in Proposed Plan.
NFRAP proposed plan	Y	Final Proposed Plan for OU 3 issued in April 2000 (HLA, 2000b)

PSC 15 Site Name: Solvent and Paint Sludge Disposal Area	**NFRAP or Further Remedial Action Decision Report Naval Air Station Jacksonville Jacksonville, Florida Checklist and Summary Sheet**	 Date: October 29, 2004

Revision Number	Date Prepared	Remarks and Results
0	January 25, 1995	A recommendation relative to Remedial Response Decision System (RRDS) is not appropriate for Potential Source of Contamination (PSC) 15 at this time because it is currently undergoing remedial investigation and feasibility study (RI/FS) activities as part of Operable Unit (OU) 3.
1	December 28, 1995	A recommendation relative to RRDS is not appropriate for PSC 15 at this time because it is currently undergoing RI/FS activities, including interim removal actions as part of OU 3.
2	August 9, 1999	Bechtel's radiological survey was completed and a soil removal was conducted. A recommendation relative to RRDS is not appropriate for PSC 15 at this time because it is currently undergoing RI/FS activities as part of OU 3.
Final	October 17, 2003	RI/FS for OU 3, which includes PSC 15, has been completed and a Record of Decision was signed on September 20, 2000. PSC 15 Final Remedy: NFRAP with land use controls based on no unacceptable risk to human or ecological receptors in an industrial setting. USEPA and FDEP concurred with the selected remedy and remedial action taken.

PSC 15 Site Name: Solvent and Paint Sludge Disposal Area	**NFRAP or Further Remedial Action Decision Report Naval Air Station Jacksonville Jacksonville, Florida Checklist and Summary Sheet**	 Date: October 17, 2003

1. RRDS elements evaluated	Complete (Y/N)	Results and Remarks Summary
Review existing information	Y	
Regulatory authority evaluation	Y	As a part of the RI/FS
Previous action evaluation	Y	As a part of the RI/FS
Source of contamination evaluation	Y	As a part of the RI/FS
Exposure pathway analyses	Y	As a part of the RI/FS
Data sufficiency evaluation	Y	As a part of the RI/FS
Risk analyses	Y	As a part of the RI/FS
ARARs evaluation	Y	As a part of the RI/FS

2. Remedial response data base status	Complete (Y/N)	Current (Y/N)	Last Revision	Information Used in this Evaluation
Discovery and notification	Y	N	March 1983	Initial Assessment Study (IAS) (Fred C. Hart Associates, Inc., 1983).
Preliminary assessment	Y	N	March 1983	IAS (Fred C. Hart Associates, Inc., 1983).
Site inspection	Y	N	December 1985	Verification Study (Geraghty & Miller, 1985).
Expanded site inspection	Y	N	March 1986	Characterization Study (Geraghty & Miller, 1986a)
Remedial investigation	Y	N	April 2000	RI/FS for OU 3 (HLA, 2000a)
Feasibility study	Y	N	April 2000	RI/FS for OU 3 (HLA, 2000a)
Remedial design and remedial action	Y	N	September 2000	ROD (HLA, 2000c)
Removal action	N	N		
Site closure	Y	N		
Other investigations	Y	N	March 1995	OU 3 Scoping Study Field Program (summarized in RI/FS Workplan for OU 3) (ABB Environmental Services, Inc., 1995)
	Y	N	1997	Radiological Survey (Bechtel Environmental, Inc, 1998)

3. RRDS evaluation summary __X__ NFRAP _____ SITE SCREENING _____ FURTHER REMEDIAL ACTION

	Complete (Y/N)	Rationale and Remarks
Additional data requirements	N	
NFRAP decision	Y	NFRAP recommended with implementation of land use controls.
NFRAP proposed plan	Y	Final Proposed Plan for OU 3 issued in April 2000 (HLA, 2000b)

PSC 16 Site Name: Black Point Storm Sewer Discharge	**NFRAP or Further Remedial Action Decision Report Naval Air Station Jacksonville Jacksonville, Florida Checklist and Summary Sheet**	 Date: October 17, 2003

Revision Number	Date Prepared	Remarks and Results
Draft	January 25, 1995	Sampling should be performed to characterize contamination at PSC 16 as part of the RI for OU 3 as discussed in the RI/FS Workplan for OU 3.
1	December 28, 1995	Sampling should be performed to characterize contamination at PSC 16 as part of the RI for OU 3 as discussed in the RI/FS Workplan for OU 3. This attachment should be updated with the results of the OU 3 RI and the radiological survey when available.
2	October 17, 2003	RI/FS for OU 3, which includes PSC 16, has been completed and a Record of Decision was signed on September 20, 2000. USEPA and FDEP concurred with the selected remedy and remedial action taken.

PSC 16 Site Name: Black Point Storm Sewer Discharge	**NFRAP or Further Remedial Action Decision Report Naval Air Station Jacksonville Jacksonville, Florida Checklist and Summary Sheet**	 Date: October 17, 2003

1. RRDS elements evaluated	Complete (Y/N)	Results and Remarks Summary
Review existing information	Y	
Regulatory authority evaluation	Y	CERCLA authority applies.
Previous action evaluation	N	
Source of contamination evaluation	N	
Exposure pathway analyses	Y	Exposure pathways for human and ecological receptors exist.
Data sufficiency evaluation	Y	Historical information indicates that hazardous substances were discharged into the St. Johns River.
Risk analyses	N	
ARARs evaluation	N	

2. Remedial response data base status	Complete (Y/N)	Current (Y/N)	Last Revision	Information Used in this Evaluation
Discovery and notification	Y	N	March 1983	IAS
Preliminary assessment	Y	N	March 1983	IAS
Site inspection	Y	N	December 1985	Verification Study
Expanded site inspection	Y	N	March 1986	Characterization Study
Remedial investigation	Y	N	April 2000	RI/FS for OU 3 (HLA, 2000a)
Feasibility study	Y	N	April 2000	RI/FS for OU 3 (HLA, 2000a)
Remedial design and remedial action	Y	N	September 2000	ROD (HLA, 2000c)
Removal action	N	N		
Site closure	N	N		
Other investigations	N	N		

3. RRDS evaluation summary _____ NFRAP _____ SITE SCREENING __X__ FURTHER REMEDIAL ACTION

	Complete (Y/N)	Rationale and Remarks
Additional data requirements	N	
NFRAP decision	N	
NFRAP proposed plan	N	

POTENTIAL SOURCE OF CONTAMINATION 16
NO FURTHER RESPONSE ACTION PLANNED OR FURTHER REMEDIAL ACTION DECISION REPORT

In this report, the Remedial Response Decision System (RDS) is applied to potential source of contamination (PSC) 16, the Black Point Storm Sewer Discharge, located on Naval Air Station (NAS) Jacksonville. This No Further Response Action Planned (NFRAP) or Further Remedial Action Decision Report is an attachment to Appendix D to Volume 2 of the Naval Installation Restoration Program (NIRP) plan.

This attachment follows RDS as described in Volume 2 of the NIRP Plan and is divided into the following 10 chapters:

1.0 PSC Background
2.0 Regulatory Authority Evaluation
3.0 Previous Action Evaluation
4.0 Contaminant Source Evaluation
5.0 Exposure Pathway Analyses
6.0 Data Sufficiency Evaluation
7.0 Risk Analyses
8.0 Applicable or Relevant and Appropriate Requirements (ARARs) Evaluation
9.0 Recommendation
10.0 References

1.0 PSC BACKGROUND

This chapter discusses the available background information for PSC 16, the Black Point Storm Sewer Discharge. The discussion is divided into four sections: 1.1, PSC Information and History; 1.2 PSC Description and Environmental Setting; 1.3, Previous Regulatory Review; and 1.4, Data Assessment. Much of the background information was obtained during a records search by ABB Environmental, Inc. (ABB-ES). The records search included a review of documents and memoranda filed at the NAS Jacksonville Facilities and Environmental Department (FED) and at ABB-ES; examination of site maps, plans, and aerial photographs; and interviews with base personnel. ABB-ES obtained additional information during a PSC reconnaissance on April 21, 1994.

1.1 PSC INFORMATION AND HISTORY. The Black Point Storm Sewer Discharge to the St. Johns River was identified as a PSC during the initial assessment study (IAS) based on recurring discharges of JP-5 fuel and oil that reportedly entered the storm[1] sewer from a fuel tank overflow in the vicinity of test cell 12 (Fred C. Hart Associates, 1983). In addition, oil and various chemical waste from other sources within the Naval Air Rework Facility (since renamed the Naval Air Depot or NADEP) were reportedly discharged into the storm sewer. Because the possible discharge of toxic materials into the St. Johns River posed a potential threat to human health and aquatic life, the IAS report recommended PSC 16 for a confirmation study.

A spill log from the FED documented many spills at the Black Point Outfall (PSC 16), including spills of JP-5 fuel, hydraulic oil, chrome[1], and cyanide (NAS Jacksonville, 1982).

The storm sewer under NADEP generally conducts water south along Wright and Wasp Streets and east along Enterprise Avenue to the aircraft apron area. Stormwater discharge is then directed south to the St. Johns River at Black Point (Figure 1). Because activities at NADEP could have contributed contamination to PSC 16 via the storm sewer, these activities and investigations at NADEP are described below.

NADEP, which consists of 45 buildings, is an industrialized area adjacent to the St. Johns River. NADEP is a major tenant command at NAS Jacksonville that maintains and operates facilities; reworks naval aircraft, engines, their components, accessories, and equipment; and performs aircraft maintenance (Geraghty & Miller, Inc., 1984).

[1] It is assumed that chrome means chrome pigment, which is an inorganic pigment containing chromium. Important types are: chromium oxide green, the pur grade consisting of 99 percent chromium oxide (Cr_2O_3), used in paints applied to cement and lime-containing surfaces; and chrome green, chrome yellow, and chrome red, consisting chiefly of lead chromate and used in paints, rubber, and plastic products. These pigments are more stable to sunlight, weathering, and chemical action than the brighter organic dyes (Sax and Lewis, 1987).

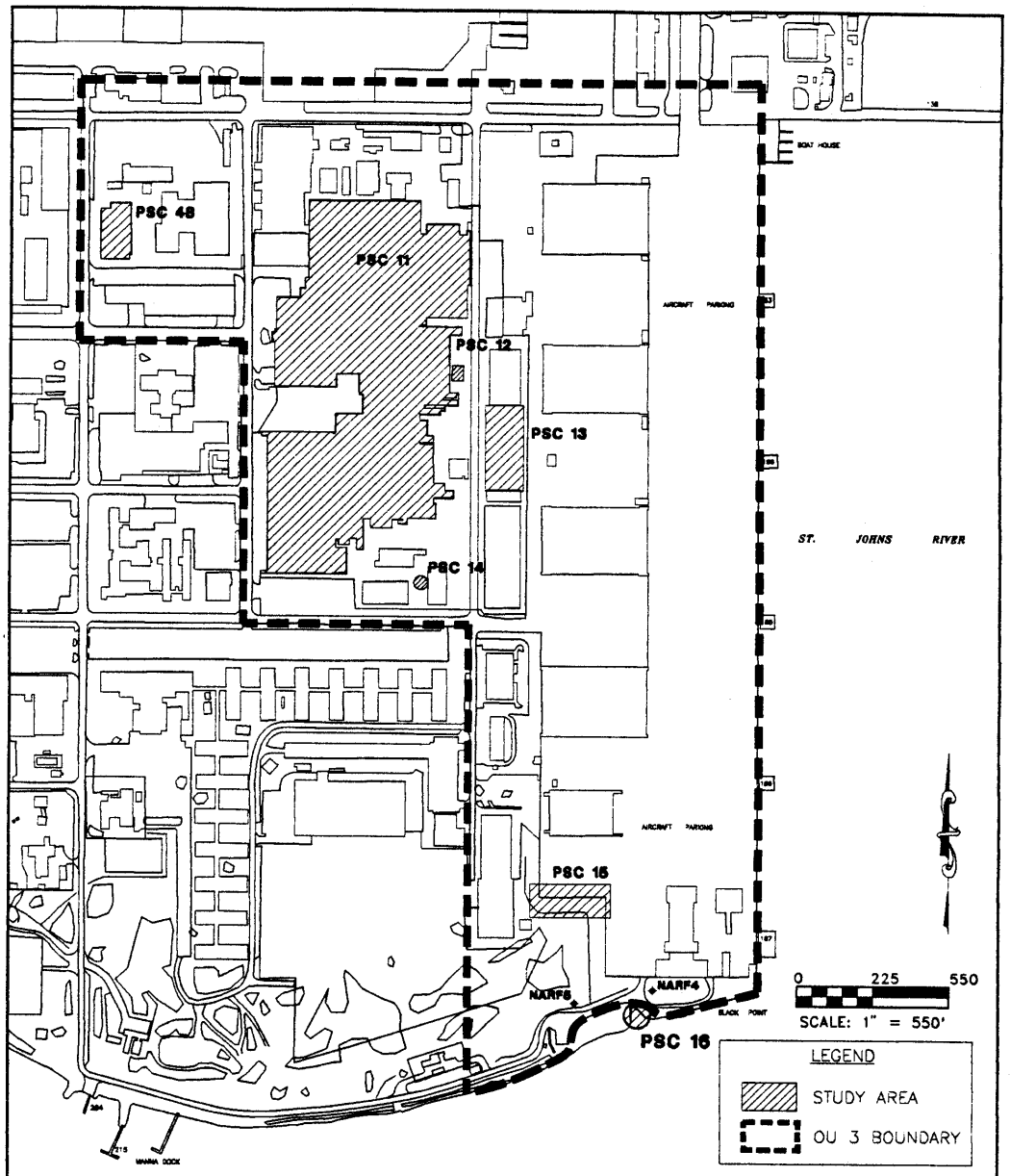

FIGURE 1
LOCATION OF PSC 16,
BLACK POINT STORM SEWER
DISCHARGE

OU3/DRM/12-12-95

REMEDIAL RESPONSE DECISION SYSTEM

NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

Building 101, the largest building on base and the center of NADEP activity, was constructed circa 1940. Construction drawings of plumbing facilities show the initial sanitary and storm sewer systems. All floor drains, lavatory facilities, and sump pits were connected to the sanitary sewer system. With one exception, only downspouts and other stormwater receptacles were connected to the storm sewer pipelines. The exception was the former engine test cell area; its floor drains were connected to the storm sewer system (Robert Bates and Associates, 1988).

As the NADEP operations grew over the years, the wastewater and storm systems expanded and a third sewer system serving only industrial waste was constructed to serve the paint stripping and plating operations at the northwest and southeast corners of Building 101, respectively (Robert Bates and Associates, 1988).

In 1976, the Navy retained Fred Wilson and Associates to design a replacement sewer with greater capacity. Work on replacing the sewer was indefinitely postponed after contractor employees complained of dizziness, nausea, and headaches while installing the storm sewer under Enterprise Avenue near the intersection of Wright Street (Robert Bates and Associates, 1988).

Unauthorized disposal of waste solvents and other materials from the main hangar section of Building 101 (PSC 11) reportedly occurred for many years. Approximately 2,000 gallons of solvents may have been disposed of over a 40-year period. Trichloroethylene (TCE), oils, and mercury were also used and disposed of at Building 101 and may have infiltrated the shallow groundwater and storm sewer lines (Geraghty & Miller, Inc., 1983). A fire in 1975 was attributed to the disposal or exfiltration of waste solvents and other flammable liquids from deteriorated industrial sewer lines to the ground.

The storm and sanitary sewers were reportedly interconnected with the building roof drains and the industrial sewer system in the old test cell area, Building 101K (PSC 12). This area was used for the storage of various chemicals in 55-gallon drums. Numerous chemical spills from ruptured or rusted drums in this area were reported.

The battery shop in Building 125 (PSC 14) contains a seepage pit where waste acids from lead-acid batteries were discarded. An estimated 100 gallons of waste were dumped annually from 1959 to 1982.

The solvent and paint disposal area (PSC 15), located along the eastern side of Building 970, was used for disposal of solvents and paint sludges until 1978. Approximately 2,000 gallons of these wastes were disposed of annually for approximately 36 years.

The verification (confirmation) study investigated the NADEP PSCs (11, 12, 14, 15, and 16) as a group. Seven monitoring wells were installed and sampled (Geraghty & Miller, Inc., 1984). None of these wells was installed at PSC 16 because it is an outfall. Because high levels of volatile organic compounds (VOCs) were found in the groundwater samples, the Verification Study report recommended a characterization study for PSCs 11, 12, 14, 15, and 16.

In 1986, Geraghty & Miller, Inc. conducted a Characterization Study at the NADEP to characterize the contamination found during the 1985 Verification Study (Geraghty & Miller, Inc., 1986). The Characterization Study included the installation and sampling of 12 additional monitoring wells and the resampling of six to the seven existing wells. Several chlorinated VOCs were detected.

Robert Bates and Associates identified and evaluated sources of contamination of the storm drainage system by industrial and sanitary cross-connections during the repair and replacement of the storm sewer under Enterprise, Wasp, and Wright Streets. Using methods such as dye testing, smoke testing, and chemical analysis to identify sources of industrial and sanitary contamination, Robert Bates and Associates concluded that: storm sewer contamination by sanitary and industrial sources was widespread throughout the NADEP area; contamination was the result of improper construction and operations; and contamination entering the storm sewer system through these cross connections ultimately discharged into the St. Johns River (Robert Bates and Associates, 1988).

In 1987, Geraghty & Miller, Inc. conducted a subsurface investigation at Wright Street during which 24 soil borings were drilled and 14 monitoring wells were installed. The purpose of the investigation was to provide information on subsurface conditions along Wright Street and recommendations for water and soil handling and health and safety monitoring during future excavation activities at the site. The report of the investigation stated that none of the soil samples collected from the soil borings exhibited the characteristics of a hazardous substance. However,

only 4 of 14 monitoring wells produced water containing no priority pollutant compounds; a total of 16 priority pollutant compounds were found in the remaining 10 wells (Geraghty & Miller, Inc., 1988).

In 1988, the U.S. Environmental Protection Agency (USEPA) Region IV issued a National Pollutant Discharge Elimination System (NPDES) permit that included the Black Point stormwater discharge (outfall 008) (USEPA, 1988). The permit required monthly grab sampling for pH, oil and grease, and suspended solids. The NPDES permit has expired, but NAS Jacksonville is still performing regular sampling until the new permit is received (Pipkin, 1994).

The Federal Facility Agreement (FFA) site management plan for NAS Jacksonville recommended including PSC 16 in its own operable unit (OU) due to its singular need for sediment sampling (NAS Jacksonville, 1990).

In 1991, Geraghty & Miller, Inc., recommended that PSCs 11, 12, 13, 14, and 15 be grouped into OU 3 based on their common locations within NADEP and their common exposure pathways (Geraghty & Miller, Inc., 1991). A remedial investigation and feasibility study (RI/FS) was recommended at OU 3.

In 1990 or 1991, several hundred gallons of chrome[2] reportedly spilled at Building 794 (the Plating Shop), overflowed the secondary containment, and went into the storm sewer (Garrison, 1994).

PSC 16 is currently being investigated as part of the radiological survey at NAS Jacksonville because of the cross-connections with the storm and industrial sewers.

In the RI/FS Workplan for OU 3, ABB-ES recommended collecting surface water and sediment samples south of OU 3 in the St. Johns River to further characterize the aquatic habitat potentially exposed to OU 3-related contaminants. Analyses of the surface water samples would include a full target compound list (TCL) and target analyte list (TAL) scan, hardness, and the following special parameters: metals by furnace (cadmium, copper, nickel, silver, and beryllium); hexavalent chromium by colorimetric method; phenols by USEPA Method 8040; and halogenated carbons by USEPA Method 8010. Analyses of the sediment samples would include a full TCL and TAL scan and two special analyses: antimony by furnace; and polynuclear aromatic hydrocarbons by USEPA Method 8100 (ABB-ES, 1994a).

An RI/FS was conducted at OU 3, which includes PSC 16, during the latter part of 1998 and the first part of 1999 (HLA, 2000a). During the RI/FS, surface water and sediment samples were collected to further characterize the aquatic habitat. Based on the risk review conducted as part of the RI/FS, it was determined that sediment at PSC 16 poses a risk to the environment.

On September 25, 2000 a Record of Decision (HLA, 2000c) was signed for OU 3, which included PSC 16. As documented in the Record of Decision the preferred remedial action for PSC 16 was the physical removal of tar balls from the upper six inches of sediment by using a raking device at the PSC 16 storm water outfall area.

1.2 PSC DESCRIPTION AND ENVIRONMENTAL SETTING. PSC 16 encompasses the outfall of the stormwater sewer that runs below NADEP (Figure 1). The outfall to the St. Johns River is surrounded by concrete wingwalls (Photographs 1 and 2). PSC 16 is south of and adjacent to OU 3, which encompasses NADEP. Individuals must possess and present an identification pass to enter NADEP. Access to PSC 16 is, therefore, limited to NADEP employees and authorized vehicles.

The Preliminary Characterization Summary Report contains basewide environmental setting information, including geology, hydrogeology, and climatology (ABB-ES, 1994b).

1.3 PREVIOUS REGULATORY REVIEW. The following comment was received on the IAS report's recommendation for a confirmation study for PSC 16:

[2] Because it was from the plating shop, "chrome" probably means some form of dissolved chromium.

Photograph 1: View to northwest of culvert.

Photograph 2: View to east of opening of outfall into St. Johns River.

State of Florida Department of Environmental Regulation (FDER), Catherine C. Farmer, Ground Water Section, October 7, 1983: requested a proposal for the locations of the five monitoring wells and for sampling procedures; that the parameter list for the groundwater samples be expanded to include pH and all primary drinking water metals; and that the soil samples be analyzed for Extraction Procedure Toxicity.

The draft revision of this attachment, dated January 25, 1995, recommended that sampling should be performed to characterize contamination at PSC 16 as part of the RI for OU 3 as discussed in the RI/FS Workplan for OU 3. The following comments were received on this recommendation:

USEPA Region IV, Martha Berry, Remedial Project Manager, Federal Facilities Branch, March 15, 1995: concurred with the recommendation for sampling at PSC 16.

Florida Department of Environmental Protection (FDEP), Jorge R. Caspary, Remedial Project Manager, April 24, 1995: concurred with the recommendation for sampling at PSC 16; however, also recommended that further work at PSC 16 be addressed under the RI/FS for OU 3.

The final RI/FS report for OU 3 was completed in April 2000. Based on the findings of the RI/FS a proposed plan and ROD were developed. Comments received on the ROD from regulatory authorities are summarized below.

USEPA Region IV, Richard D. Green, Director Waste Management Division, September 25, 2000: USEPA concurs with the findings and the selected remedy presented in the ROD.

FDEP Kirby B. Green, III, Deputy Secretary, October 23, 2000: FDEP concurs with the Record of Decision (ROD) for Operable Unit 3 at Naval Air Station Jacksonville.

1.4 DATA ASSESSMENT. The following is a summary of the data currently available for PSC 16 (the sufficiency of these data to support a remedial response decision is evaluated in Chapter 6.0):

- PSC 16 has had recurring discharges of JP-5 fuel and oil that reportedly resulted from overflow at the engine test cell area. The floor drains in the former engine test cell area were connected to the storm sewer system.
- Discharges of oil, waste solvents, TCE, and mercury to industrial or sanitary sewers from PSCs 11, 12, and 14 may have reached the storm sewer system and discharged at PSC 16.
- According to the IAS report, chemical waste may have eroded the sewer line and leaked into the ground.
- Discharges of substances including JP-5 fuel, hydraulic oil, chrome, and cyanide have been documented at the Black Point Outfall.
- The storm sewer under NADEP was partially replaced.
- VOCs were detected in groundwater samples from monitoring wells near PSC 16.
- Several hundred gallons of chrome spilled at Building 794 and reportedly went into the storm sewer.

2.0 REGULATORY AUTHORITY EVALUATION

This chapter evaluates the applicability of regulatory requirements to response actions at the PSC to ensure that PSC-specified remedial responses met applicable regulatory requirements. The evaluation is divided into two sections: 2.1, Existing Regulatory Agreements and 2.2, Regulatory Authority Evaluation.

2.1 EXISTING REGULATORY AGREEMENTS. In December, 1989, NAS Jacksonville was placed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Nation Priority List, which requires remedial response consistent with the guidelines specified within Section 120 (42 U.S. Code 9620), Federal facilities of the Superfund Amendments and Reauthorization Act (SARA) of 1986.

On October 23, 1990, NAS Jacksonville entered into an FFA with the USEPA and the Florida Department of Environmental Regulation (since renamed the FDEP). The FFA recognizes that the facility is subject to the terms of its hazardous waste permits and Resource Conservation and Recovery Act (RCRA) closure permits. The FFA integrates the Navy's response obligations into a comprehensive agreement that activities covered by the FFA will achieve compliance with CERCLA and satisfy the corrective action and closure permit requirements under RCRA. Therefore, ARARs must be considered and remedial measures must be consistent with and incorporated in RCRA permits.

PSCs at NAS Jacksonville fall under the regulatory authority of CERCLA, SARA, and corresponding State laws if a release of a hazardous substance has occurred or if there is a threat of such a release to the environment [Title 40 of the Code of Federal Regulations 300.130(b)(2)]. Exclusion from CERCLA authority and the applications of CERCLA regulations with respect to the threat posed by a PSC to human health and the environment are discussed in Section 2.3.2 of Volume 2 of the NIRP Plan. The PSCs fall under the regulatory authority of any existing RCRA permits for the facility. Facilities of the Superfund Amendments and Reauthorization Act (SARA) of 1986. On October 23, 1990, NAS Jacksonville entered into an FFA with the USEPA and the FDER (since named the FDEP).

The FFA recognizes that the facility is subject to the terms of its hazardous waste permits and Resources Conservation and Recovery Act (RCRA) closure permits. The FFA integrates the Navy's response obligations into a comprehensive agreement that activities covered by the FFA will achieve compliance with CERCLA and satisfy the corrective action and closure permit requirements under RCRA. Therefore, ARARs must be considered and remedial measures must be consistent with and incorporated in RCRA permits.

PSCs at NAS Jacksonville fall under the regulatory authority of CERCLA, SARA, and corresponding State laws if a hazardous substance has been released or if there is a threat of such a release into the environment [Title 40 of the Code of Federal Regulations, 300.130(b)(2)]. Exclusion from CERCLA authority and the application of CERCLA regulations with respect to the threat posed by a PSC to human health and the environment are discussed in Chapter 2.3.2 of Volume 2 of the NIRP Plan. The PSCs also fall under the regulatory authority of any existing RCRA permits for the facility.

2.2 REGULATORY AUTHORITY EVALUATION. Materials discharged at the Black Point storm sewer outfall include JP-5 fuel, hydraulic oil, chromium oxide, cyanide, and lead. Activities at NADEP could have contributed contamination to PSC 16, therefore, materials that may have discharged at PSC 16 include other oils, waste solvents, chromium, mercury, and VOCs such as vinyl chloride, trans-1,2-dichloroethene, 1,1,1-trichloroethane, TCE, and tetrachloroethene. Under CERLCA section 101(14), petroleum products, including crude oil and any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance, are excluded from the definition of "hazardous substance." The fuel and oil contaminants at PSC 16 are, therefore, excluded from CERCLA authority. However, chromium and chromium compounds, cyanide, mercury, TCE, 1,2-dichloroethene, 1,1,1-trichloroethane, tetrachloroethene, vinyl chloride, and waste solvents (F001, F002, F003, or F004) are CERCLA hazardous substances as defined at CERCLA Section 101(14). Therefore, CERCLA authority applies to PSC 16 and a NFRAP designation cannot be recommended based on exclusion from CERCLA authority.

3.0 PREVIOUS ACTION EVALUATION

A previous action evaluation was conducted for PSC 16 as part of the OU 3 RI/.FS.

4.0 CONTAMINANT SOURCE EVALUATION

A contaminant source evaluation was conducted for PSC 16 as part of the OU 3 RI/FS.

5.0 EXPOSURE PATHWAY ANALYSES

This chapter contains exposure pathway analyses, which describe how receptors may come into contact with contaminants in the environment. The analyses include identification of contaminated media, receptor populations, and exposure routes for human and ecological receptors to contaminated media. The exposure pathway discussion is divided into two sections: 5.1, Exposure Pathway Analysis for Human Receptors and 5.2, Exposure Pathway Analysis for Ecological Receptors.

5.1 EXPOSURE PATHWAY ANALYSIS FOR HUMAN RECEPTORS. PSC 16 is the outfall of a storm sewer that drains multiple sources. Materials discharged at the Black Point storm sewer outfall include JP-5 fuel, hydraulic oil, chromium oxide, cyanide, and lead. Human receptors could currently be exposed to contaminants through dermal contact with river water or through consumption of fish. A more involved human health risk assessment was completed as part of the OU 3 RI/FS.

5.2 EXPOSURE PATHWAY ANALYSIS FOR ECOLOGICAL RECEPTORS. Aquatic receptors could be exposed to potential contaminants in the sediment via dermal contact and ingestion; and to potential contaminants in surface water via dermal contact (i.e., exposure of respiratory surfaces). Terrestrial wildlife receptors (i.e., mammals, birds, reptiles) that drink water from the river may be exposed to potential contamination in surface water. Foraging birds may also be exposed to contaminants in surface water and sediments via the consumption of contaminated food items. A more involved ecological risk assessment was completed as part of the OU 3 RI/FS.

Because current exposure pathways to human and ecological receptors are complete, NFRAP cannot be recommended.

6.0 DATA SUFFICIENCY EVALUATION

Data for PSC 16 were collected and analyzed as part of the OU 3 RI/FS. A data sufficiency evaluation for RRDS decision making was completed during that process.

7.0 RISK ANALYSES

Risk analyses were conducted for PSC 16 as part of the OU 3 RI/FS.

8.0 ARARs EVALUATION

An ARARs evaluation was conducted for PSC 16 as part of the OU 3 RI/FS.

9.0 RECOMMENDATION

The remedial alternative presented in the Proposed Plan (HLA, 2000b) and Record of Decision (HLA, 2000c) should be completed.

10.0 REFERENCES

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PSC 21 Site Name: Casa Linda Lake	**NFRAP or Further Remedial Action Decision Report Naval Air Station Jacksonville Jacksonville, Florida Checklist and Summary Sheet**	 Date: October 17, 2003

Revision Number	Date Prepared	Remarks and Results
Draft	October 7, 1994	Further remedial action, in the form of an RI/FS, is recommended for PSC 21. Risk screening and evaluation indicates that it is not possible to conclude that risks associated with consumption of fish from Casa Linda Lake are insignificant.
1	December 28, 1995	Further remedial action, in the form of an RI/FS, is recommended for PSC 21. Risk screening and evaluation indicates that it is not possible to conclude that risks associated with consumption of fish from Casa Linda Lake are insignificant. This attachment should be updated with the results of the RI/FS after it is completed.
2	October 17, 2003	RI/FFS for OU 4, PSC 21, has been completed and a Record of Decision was signed on September 6, 2000. PSC 21 Final Remedy: Wildlife and aquatic habitat control, inclusion of site into the station's stormwater The remedy was completed and a Final Close Out Report (FCOR) (SOUTHDIV, 2003) was prepared and approved by the US EPA. USEPA and FDEP concurred with the selected remedy and remedial action taken. The FCOR was approved.

PSC 21 Site Name: Casa Linda Lake	**NFRAP or Further Remedial Action Decision Report Naval Air Station Jacksonville Jacksonville, Florida Checklist and Summary Sheet**	 Date: October 17, 2003

1. RRDS elements evaluated	Complete (Y/N)	Results and Remarks Summary
Review existing information	Y	As Part of RI & FFS.
Regulatory authority evaluation	Y	As Part of RI & FFS.
Previous action evaluation	Y	As Part of RI & FFS.
Source of contamination evaluation	Y	As Part of RI & FFS.
Exposure pathway analyses	Y	As Part of RI & FFS.
Data sufficiency evaluation	Y	As Part of RI & FFS.
Risk analyses	Y	As Part of RI & FFS.
ARARs evaluation	Y	As Part of RI & FFS.

2. Remedial response data base status	Complete (Y/N)	Current (Y/N)	Last Revision	Information Used in this Evaluation
Discovery and notification	Y	N	March 1983	Initial Assessment Study (IAS) (Fred C. Hart Associates, 1983).
Preliminary assessment	Y	N	March 1983	IAS (Fred C. Hart Associates, 1983).
Site inspection	N	N		
Expanded site inspection	N	N		
Remedial investigation	N	N	June 1999	ARCADIS Geraghty & Miller Inc. (ARCADIS)
Feasibility study	N	N	November 1999	ARCADIS
Remedial design and remedial action	Y	N		
Removal action	N	N		
Site closure	Y	N		
Other investigations	Y	N	March 1993	Sampling Event Report Number 17 (ABB Environmental Services, Inc. [ABB-ES], 1993)
		N	July 1993	Electroshocking Fisheries Investigation (ABB-ES, 1993)

3. RRDS evaluation summary ___X__ NFRAP _____ SITE SCREENING __ _ __ FURTHER REMEDIAL ACTION

	Complete (Y/N)	Rationale and Remarks
Additional data requirements	N	
NFRAP decision	Y	Final Close Out Report, Operable Unit 4, Casa Linda Lake (PSC 21) (SOUTHDIV, 2003)
NFRAP proposed plan	N	

POTENTIAL SOURCE OF CONTAMINATION 21
NO FURTHER RESPONSE ACTION PLANNED OR FURTHER REMEDIAL ACTION DECISION REPORT

In this report, the Remedial Response Decision System (RDS) is applied to potential source of contamination (PSC) 21, Casa Linda Lake, located on Naval Air Station (NAS) Jacksonville. This No Further Response Action Planned (NFRAP) or Further Remedial Action Decision Report is an attachment to Appendix D to Volume 2 of the Naval Installation Restoration Program (NIRP) plan.

This attachment follows RDS as described in Volume 2 of the NIRP Plan and is divided into the following 10 chapters:

1.0 PSC Background
2.0 Regulatory Authority Evaluation
3.0 Previous Action Evaluation
4.0 Contaminant Source Evaluation
5.0 Exposure Pathway Analyses
6.0 Data Sufficiency Evaluation
7.0 Risk Analyses
8.0 Applicable or Relevant and Appropriate Requirements (ARARs) Evaluation
9.0 Recommendation
10.0 References

1.0 PSC BACKGROUND

This chapter discusses the available background information for PSC 21, Casa Linda Lake. The discussion is divided into four sections: 1.1, PSC Information and History; 1.2 PSC Description and Environmental Setting; 1.3, Previous Regulatory Review; and 1.4, Data Assessment. Much of the background information was obtained during a records search by ABB Environmental, Inc. (ABB-ES). The records search included a review of documents and memoranda filed at the NAS Jacksonville Facilities and Environmental Department (FED) and at ABB-ES; examination of maps; and interviews with base personnel. ABB-ES obtained additional information during a PSC reconnaissance on April 22, 1994.

1.1 PSC INFORMATION AND HISTORY. Casa Linda Lake was identified as a PSC during the initial assessment study (IAS) because of a fish kill that occurred on May 6, 1979 (Fred C. Hart Associates, Inc., 1983). The fish kill was caused by an application of the pesticide Dasanit™ (trade name for fensulfothion), which is an organophosphate nematicide, to the surrounding area.

The approximately 11-acre lake is surrounded by the Casa Linda Oaks Golf Course (Figure 1). A study conducted by the Florida Cooperative Extension Service on December 5, 1978, indicated that the golf course had a nematode problem and advised action to control the problem. On February 7, 1979, the Commanding Officer of NAS Jacksonville requested permission from the Commanding Officer of Southern Division, Naval Facilities Engineering Command, to treat the nematode problem with Dasanit™; permission was granted on February 20, 1979.

A telephone conversation record dated April 13, 1979, indicated that the golf course manager planned to double-aerate the areas around ponds and streams prior to the application of Dasanit™ to provide maximum penetration and retention. The record stated that Dasanit™ would be applied at a rate of 100 pounds per acre by a certified pesticide applicator.

Several applications of Dasanit™ were conducted from April 23 to May 3, 1979. Heavy rains (approximately 5 inches) from May 5 to 11 washed a sufficient quantity of Dasanit™ into Casa Linda Lake, killing an estimated 300 to 1,000 fish and at least a dozen ducks. Lake water samples collected by the City of Jacksonville on May 8, 1979, contained concentrations of Dasanit™ at 1,000 times the amount that would kill fish or ducks.

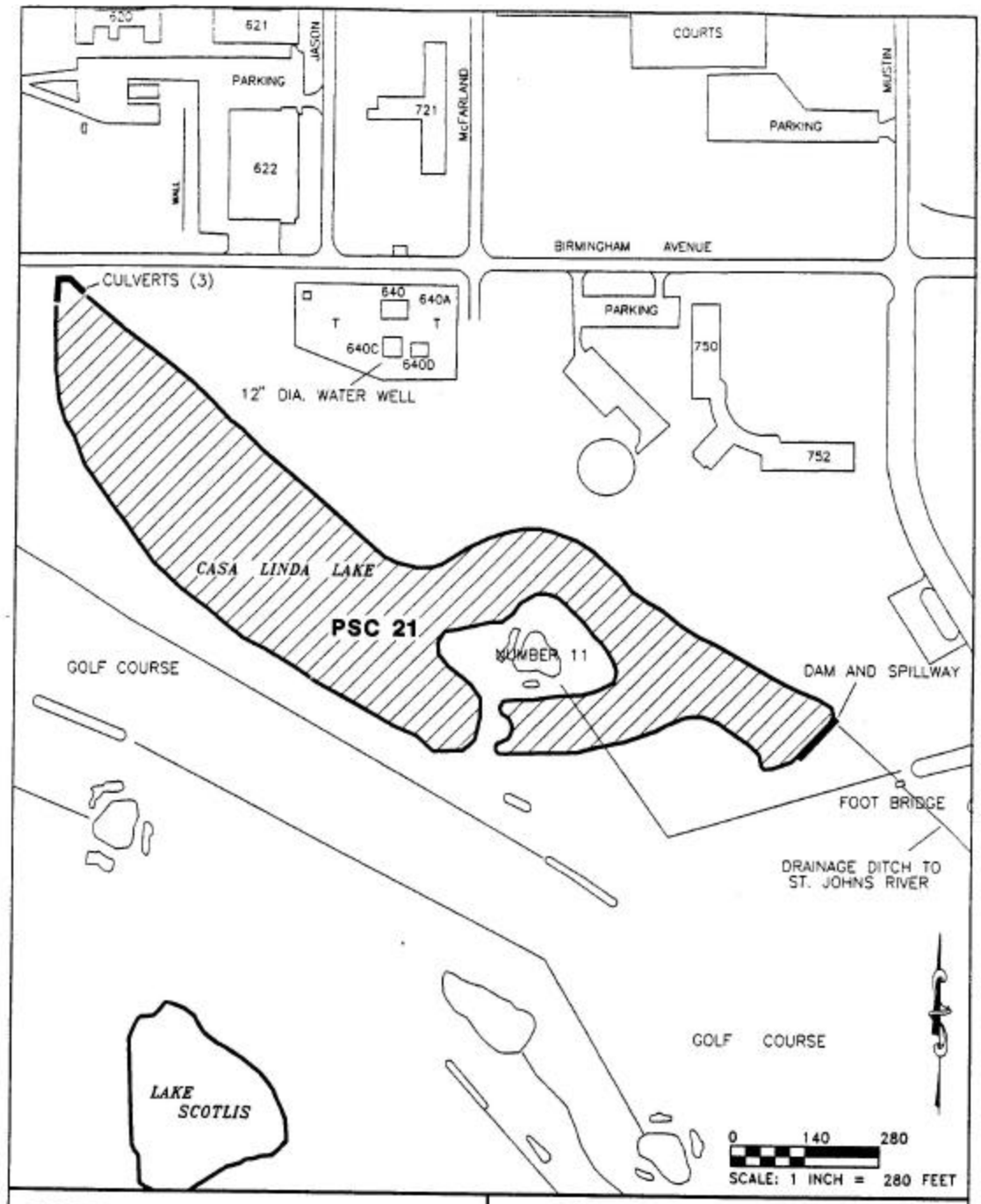


FIGURE 1
LOCATION OF PSC 21, CASA LINDA LAKE

JAX200/DRM/09-26-94

REMEDIAL RESPONSE DECISION SYSTEM

NAS JACKSONVILLE
JACKSONVILLE, FLORIDA

According to Tony Frederick, pesticide applicator at the golf course, nematodes are currently controlled using Nemacur™ (Frederick, 1994). Nemacur™ is applied once per year to the golf course following nematode testing.

The IAS report did not recommend a confirmation study at PSC 21 because the fish kill was an isolated incident and no further environmental damage was noted during the IAS. A fish population/fishery investigation was conducted by the Florida Game and Fresh Water Fish Commission in March 1990. Although no sampling for pesticides was conducted, the investigation concluded that the bass population was excellent and that no habitat problems appeared to exist. Volume 1 of the NIRP Plan recommended no further action for PSC 21 (Geraghty & Miller, 1991).

In 1993, a fisheries investigation was conducted at three surface water bodies at NAS Jacksonville, including Casa Linda Lake, to assess the risk due to fish consumption associated with recreational fishing at the base (ABB-ES, 1993). A survey of the fish population was performed by electroshocking to assess its diversity, size, and condition, and to collect fish tissue samples for laboratory analysis. In addition, three surface water and three sediment samples were collected from Casa Linda Lake at its northwest end, center, and southeast end. The samples were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides and polychlorinated biphenyls (PCBs), and inorganic parameters. None of the samples were analyzed for Dasanit™.

In Sampling Event Report Number 17, the analytical results were compared to ARARs. The analytes detected in surface water samples were compared to two ARARs; Federal Ambient Water Quality Criteria and Florida Surface Water Classification Standards (FSWCS). Four SVOCs [carbazole, di-n-butylphthalate, pyrene, and bis(2-ethylhexyl)phthalate] ere detected, but at concentrations well below their respective ARARs. Of the inorganic parameters detected, copper, iron, and mercury exceeded FSWCS standards for Class II or III waters in at least one surface water sample. No VOCs, pesticides, or PCBs were detected in any surface water samples.

The analytes detected in sediment samples were also compared to two ARARs: the U.S. Environmental Protection Agency (USEPA) Sediment Quality Criteria and National Oceanic and Atmospheric Administration (NOAA) Effects Range Low for sediments. The results indicated that four of the 13 SVOCs detected (chrysene, fluoranthene, phenanthrene, and pyrene), two of the five pesticides detected (4,4'-DDE and 4,4'-DDD), one PCB (PCB-1264), and four inorganic parameters (cadmium, lead, mercury, and zinc) exceeded their respective NOAA standards and/or USEPA criteria in at least one sample. No VOCs were detected in any of the sediment samples.

Tissue samples from the livers and fillets of six fish were analyzed for VOCs, SVOCs, pesticides and PCBs, and inorganic parameters. One SVOC (4-methylphenol), three pesticides (alpha-chlordane, 4,4'-DDE, and 4,4'-DDD), one PCB (PCB-1254), and 11 inorganic parameters (aluminum, arsenic, barium, calcium, chromium, copper, cyanide, iron, lead, magnesium, and manganese) were detected in at least one fish tissue sample. Lesions were observed on several fish from Casa Linda Lake (ECT, 1993). These lesions were determined to be a manifestation of Ulcerative Disease Syndrome (UDS) most likely caused by the bacterium *Aeromonas hydrophila*.

An addendum to the fisheries investigation contained a risk evaluation based on the results of fish tissue sampling. In the evaluation it was concluded that two factors must be considered in making a decision on allowing recreational fishing at Casa Linda Lake: (1) risks associated with consumption of fish exhibiting UDS; and (2) the risk associated with consumption of fish contaminated with PCB-1264. The evaluation further concluded that a recreational fisher consuming two fillets per week for a period of 30 years from the lakes would be exposed to an unacceptable cancer risk (greater than 10^{-4} lifetime cancer risk).

The Remedial Investigation (RI) Report and Risk Assessment (RA) were issued in June 1999 and the Focused Feasibility Study (FFS) was issued in November 1999. Sediment was the only media of concern and contained semi-volatile organic compounds (SVOCs), pesticides and metals which were evaluated in the RA. The Record of Decision (ARCADIS, 2000) was signed in September 2000 and approved by both regulatory agencies (EPA and FDEP).

1.2 PSC DESCRIPTION AND ENVIRONMENTAL SETTING. Casa Linda Lake is situated at the north end of the Casa Linda Oaks Golf Course (Figure 1). The lake occupies approximately 11 acres and is surrounded by greens maintained by golf course personnel. Hole No. 11 is located on a small peninsula in the lake. The banks of the lake are steep and are lined with trees and grasses (Photograph 1). During the PSC reconnaissance, the lake was observed to be a habitat for fish, ducks, gopher tortoises, and an alligator named "Spanky". There is a potable water supply well screened from 318 to 1,015 feet below land surface located about 200 feet to the north of Casa Linda Lake. This well serves as a drinking water supply at NAS Jacksonville; drinking water is treated at the base water treatment plant prior to distribution.

Stormwater culverts discharge to the northwest end of the lake near Birmingham Avenue (Photograph 2). Overflow water from the lake spills over the dam at the southeast end of the lake and discharges to an unlined drainage ditch (Photographs 3 and 4) which empties into the St. Johns River near Mulberry Cove.

There is currently no available information regarding groundwater flow at PSC 21; however, it is likely the lake receives recharge from groundwater in the surficial aquifer system. The general groundwater flow direction in the surficial aquifer system in this area is to the east toward the St. Johns River. Basewide environmental setting information, such as hydrogeology, geology, and climatology, is contained in the Preliminary Characterization Summary Report (ABB-ES, 1994).

A slight sheen was noted on standing water in the drainage ditch during the PSC reconnaissance. No other evidence of contamination, such as stressed vegetation, stained soil, or odor, was noted during the PSC reconnaissance. The lake is currently stocked with fish and people were observed fishing at Casa Linda Lake during the PSC reconnaissance.

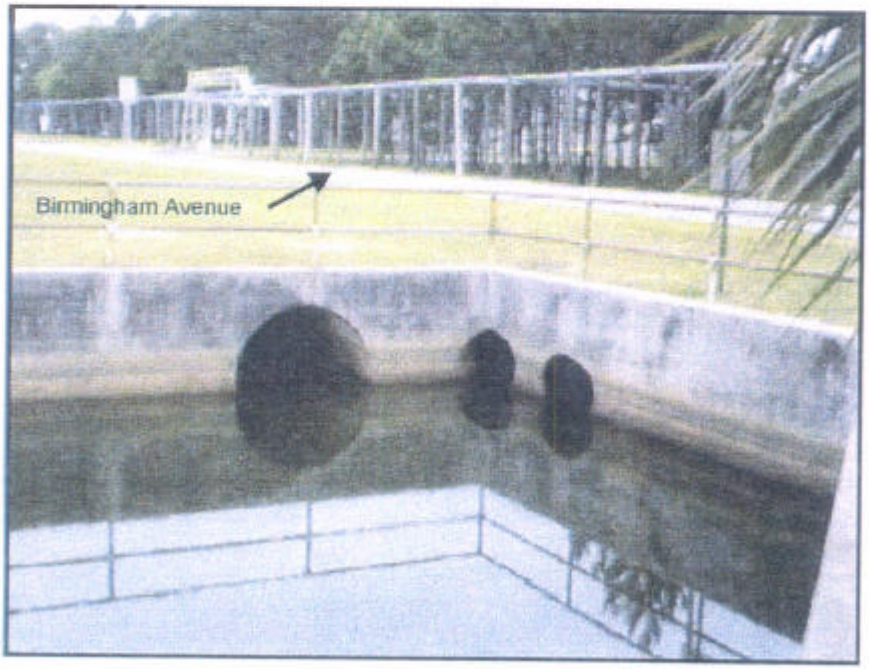
1.3 PREVIOUS REGULATORY REVIEW. Volume 1 of the NIRP Plan recommended no further action at PSC 21. The following comments were received from regulatory authorities regarding this recommendation; however, it should be noted that the results of the fisheries investigation were reported more than 2 years following the comment period:

USEPA Region IV, Lee Thomas, Hydrogeologist, Groundwater Technology Support Unit, November 16, 1990: indicated that data should be presented to show that the groundwater does not contain levels of contaminants of concern that would be harmful over long periods of time. Stated that the lack of fish kills subsequent to May 6, 1979, does not necessarily indicate that there is not a potential risk to human health or the environment. Contaminant levels may be such that chronic toxicity to aquatic life is occurring in a manner that is not observable.

Florida Department of Environmental Regulation (FDER), Dr. James J. Crane, Environmental Administrator, Technical Review Section. Bureau of Waste Cleanup, November 21, 1990: agreed that PSC 21 would be eligible for a no further action status.

City of Jacksonville, Gerald A. Young, Associate Pollution Control Engineer, Water Resources Division, January 4, 1991: agreed with the no further action status for PSC 21.

Photograph 1: View south across Casa Linda Lake.



Photograph 2: Culverts that discharge to the northwest end of Casa Linda Lake.

Photograph 3: Dam at southeast end of Casa Linda Lake that discharges to drainage ditch.

Photograph 4: Drainage ditch at southeast end of Casa Linda Lake that discharges to the St. Johns River.

The draft revision of this attachment, dated October 7, 1994, recommended an RI/FS for PSC 21 in the form of analyzing surface soil samples for lead. The following comments were received from regulatory authorities regarding this recommendation:

USEPA Region IV, James Hudson, Remedial Project Manager, Federal Facilities Branch, November 14, 1994: concurred with the recommendation.

Florida Department of Environmental Protection (FDEP), Jorge R. Caspary, Remedial Project Manager, November 15, 1994: indicated that the recommendation of conducting an RI/FS is acceptable.

Natural Resource Trustee Project, John Mitchell, Manager, Office of Intergovernmental Programs, October 12, 1994: indicated that any additional investigations related to PSC 21 should focus on the ecological effects from contamination, and should lean toward a focused feasibility study for the contaminated sediment in the lake.

The final RI and RA Report (ARCADIS, 1999a) and FFS (ARCADIS, 1999b) for OU 4, PSC 21 was completed in 1999. Based on the findings of these documents, a proposed plan and ROD were developed. Comments received on the ROD (ARCADIS, 2000) from regulatory authorities are summarized below.

USEPA Region IV, Richard D. Green, Director Waste Management Division, September 28, 2000: USEPA concurs with the findings and the selected remedy presented in the ROD.

FDEP Kirby B. Green, III, Deputy Secretary, October 27, 2000: FDEP concurs with the Record of Decision (ROD) for PSC 21, Casa Linda Lake at Naval Air Station Jacksonville.

1.4 DATA ASSESSMENT. The following is a summary of the data currently available regarding PSC 21. Chapter 6.0 evaluates the sufficiency of these data to conduct risk analyses in support of a remedial response decision.

- In 1979, a fish and bird kill occurred at Casa Linda Lake as a result of stormwater runoff following legal application of Dasanit™ (a trade name for fensulfothion) on the surrounding golf course.
- Sampling of the surface water in the lake immediately following the fish kill indicated concentrations of Dasanit™ that were 1,000 times the amount that would kill fish or ducks.
- No sampling of surface water or sediments for residual Dasanit™ has been conducted at Casa Linda Lake since 1979.
- Surface water sampling in 1993 indicated low-level concentrations of SVOCs and at least one detection each of copper, iron, and mercury above FSWCS standards for Class II or III waters.
- Sediment sampling in 1993 indicated four SVOCs, two pesticides, one PCB, and four inorganic parameters above NOAA sediment guidelines or USEPA sediment criteria.
- Tissue samples from fish in Casa Linda Lake were found to contain on SVOC, three pesticides, one PCB, and several inorganic parameters.
- No evidence of contamination, other than a slight sheen in the drainage ditch, was observed during the PSC reconnaissance.

According to the USEPA Chemical Fact Sheet (No. 14A) for fensulfothion dated February 28, 1985:

- Fensulfothion is degraded by soil microbes under aerobic conditions.
- Fensulfothion has a half-life of 3 to 28 days. Its half-life is rapid in silty clay loam and organic soil (3 to 7 days) and fairly rapid in sandy loam, silty loam, and loam soils (around 28 days). Due to its short half-life, fensulfothion has likely degraded completely in the 16 years following the fish kill.
- Fensulfothion degrades rapidly in the water and silt of a simulated pond with half-lives of 10 and 12 days, respectively.
- The mobility of fensulfothion in soil and aged residues is low to moderate in a wide range of soils.

Additional data assessment was performed in the Remedial Investigation.

2.0 REGULATORY AUTHORITY EVALUATION

This chapter evaluates the applicability of regulatory requirements to response actions at the PSC to ensure that PSC-specific remedial responses met applicable regulatory requirements. The evaluation is divided into two sections: 2.1, Existing Regulatory Agreements, and 2.2, Regulatory Authority Evaluation.

2.1 EXISTING REGULATORY AGREEMENTS. In December 1989, NAS Jacksonville was placed on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priority List, which requires remedial response consistent with the guidelines specified with Section 120 (42 U.S. Code 9620), Federal Facilities of the Superfund Amendments and Reauthorization act (SARA) of 1986. On October 23, 1990, NAS Jacksonville entered into an FFA with the USEPA and the Florida Department of Environmental Regulation (since renamed FDEP).

The FFA recognizes that the facility is subject to the terms of its hazardous waste permits and Resource Conservation and Recover act (RCRA) closure permits. The FFA integrates the Navy's response obligations into a comprehensive agreement that activities covered by the FFA will achieve compliance with CERCLA and satisfy the corrective action and closure permit requirements under RCRA. Therefore, ARARs must be considered and remedial measures must be consistent with and incorporated in RCRA permits.

PSCs at NAS Jacksonville fall under the regulatory authority of CERCLA, SARA, and corresponding State laws if a release of a hazardous substance has occurred or if there is a threat of such a release into the environment [Title 40 of the Code of Federal Regulations 200.130(b) (2)]. Exclusion from CERCLA authority and the application of CERCLA regulations with respect to the threat posed by a PSC to human health and the environment are discussed in subsection 2.3.2 of Volume 2 of the NIRP Plan. The PSCs also fall under the regulatory authority of any existing RCRA permits for the facility.

2.2 REGULATORY AUTHORITY EVALUATION. Fensulfothion was discharged into Casa Linda Lake, via stormwater runoff, following a legal application of a nematocide to the surrounding golf course. Fensulfothion is not a hazardous substance as defined in CERCLA Section 101(14). Therefore, the discharge does not constitute a release of a hazardous substance into the environment and CERCLA authority does not apply to PSC 21 because of this discharge.

Although CERCLA authority does not apply to the 1979 discharge of fensulfothion to Casa Linda Lake, subsequent sampling of surface water, sediment, and fish tissue from the lake has identified the likelihood of a release of hazardous substances to the environment, as defined in CERCLA Section 101(14).

Therefore, CERCLA authority does apply to PSC 21, although not for the reason it was identified as a PSC during the IAS.

3.0 PREVIOUS ACTION EVALUATION

No response actions were taken at PSC 21 with the exception of the removal of dead fish and birds from the lake and burial offsite. Fishing at Casa Linda Lake was temporarily prohibited for an undetermined amount of time.

4.0 CONTAMINANT SOURCE EVALUATION

The contaminant source evaluation was conducted for PSC 21 as part of the OU 4, PSC 21, RI/FFS activities.

5.0 EXPOSURE PATHWAY ANALYSES

The exposure pathway analyses were conducted for PSC 21 as part of the OU 4, PSC 21, RI/FFS activities.

6.0 DATA SUFFICIENCY EVALUATION

Analytical data for PSC 21 consist of surface water, sediment, and fish tissue samples from Casa Linda Lake collected during a 1993 fisheries investigation. The sufficiency of the data to use in conducting risk analyses in support of a recommendation for NFRAP is based on four data usability criteria: data sources, analytical methods and detection limits, data quality indicators, and data review.

Data collected prior to an RI are considered historical, according to USEPA guidance (USEPA, 1992). Whether historical or current, data meeting the same analytical requirements as RI data may be used for risk screening or evaluation purposes.

ABB-ES conducted an evaluation of Casa Linda Lake during February 1993 as part of an investigation of fishing at three water bodies at NAS Jacksonville, Casa Linda Lake, Lake Scotlis, and the Polishing Pond. Sampling Event Report Number 17 includes the sampling and analysis plan and provides details of the field sampling and analytical results (ABB-ES, 1993). For purposes of the RDS, certain elements of the report are summarized below.

Seven biota samples were collected by electroshocking methods from three separate trophic levels within Casa Linda Lake: herbivorous (i.e., golden shiner and gizzard shad), omnivorous (i.e., bluegill), and piscivorous (i.e., largemouth bass). Each biota sample consisted of several individual whole fish within a single species and size group. The samples were sent to CH2M Hill Laboratories in Montgomery, Alabama, where the multiple fish in each individual sample were dissected into two separate sample portions for laboratory analysis. One sample portion consisted of fillets; the second portion contained liver and gonads or the carcass remaining after the fillets were removed. Each dissected portion of the original biota sample was analyzed for Target Compound List (TCL) SVOCs, TCL pesticides and PCBs, and Target Analyte List (TAL) inorganic compounds, including cyanide.

In conjunction with the electroshocking activities, three surface water and three sediment samples were collected from Casa Linda Lake. The surface water and sediment were collected in accordance with procedures in the USEPA Standard Operating Procedures and Quality Assurance Manual (USEPA, 1991b). Surface water and sediment samples were analyzed for TCL VOCs, TCL SVOCs, TCL pesticides and PCBs, and TAL inorganics, including cyanides. Surface water and sediment samples were analyzed and reported in accordance with Naval Energy and Environmental Support Activity (NEESA) Level C (USEPA Level III) data quality objectives. Following the laboratory analyses, the data were then validated as required under the NEESA Level C protocol.

As described in the RDS methodology, generally, Data Quality Objective Level III with at least 10 percent Level IV data will be considered sufficient to identify contaminants for risk analysis to support an NFRAP

recommendation. When only Level III data are available and do not report detection of any analytes above background levels, an evaluation will be made, based on an examination of all PSC-specific information, on whether or not the data are adequate to conclude that contaminants are not present at a PSC. Depending on the result of this evaluation, lack of detections in Level III data may either result in a data gap being identified (resulting in a progression to site screening), or proceeding to risk analysis. If Level IV data do not report detection of any analytes above background levels, then this lack of detection will be considered sufficient to conclude that no contaminants are present at a PSC and that a recommendation for NFRAP is justified.

Three surface water and three sediment samples may not be sufficient to adequately characterize conditions at an 11-acre lake. Under RDS, therefore, the sampling and analyses conducted at Casa Linda Lake as part of the site screening are adequate for risk analysis to determine the need for further remedial investigation, but are not sufficient to support an NFRAP recommendation. However, the additional investigative actions performed during the RI are sufficient to support the proposed remedy.

7.0 RISK ANALYSES

The risk analyses were conducted for PSC 21 as part of the OU 4, PSC 21, RI/FFS activities.

8.0 ARARs EVALUATION

An ARARs evaluation was conducted for PSC 21 as part of the OU 4, PSC 21, RI/FFS activities.

9.0 RECOMMENDATION

An RI/FFS for OU 4, PSC 21, Casa Linda Lake was completed and the ROD was signed and implemented. The major components of the ROD were

- Institutional controls comprised of use restrictions and advisory signs which are currently enforced by NAS for Casa Linda Lake;
- Monitoring of Casa Linda Lake in accordance with NAS storm water management programs, including the Storm Water Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs); and
- Control of the habitats in the vicinity of Casa Linda Lake via Passive Habitat Control.

The response action included in the ROD has been completed and the site is now closed under CERCLA (SOUTHDIV, 2003). The site has been included in the Land Use Control and Storm Water Management programs.

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PSC 28 Site Name: Ex-Firefighting Training Area	**NFRAP or Further Remedial Action Decision Report Naval Air Station Jacksonville Jacksonville, Florida Checklist and Summary Sheet**	

Revision Number	Date Prepared	Remarks and Results
0	October 7, 1994	Further remedial action, in the form of a remedial investigation and feasibility study (RI/FS), is recommended at a potential source of contamination (PSC) 28 because existing data suggest that contaminants are present in surface soil and groundwater at concentrations that pose a risk to human and ecological receptors.
1	December 28, 1995	Further remedial action, in the form of an RI/FS, is recommended at a PSC 28 because existing data suggest that contaminants are present in surface soil and groundwater at concentrations that pose a risk to human and ecological receptors. This attachment should be updated with the results of the RI/FS after it is completed.
2	June 29, 1999	No further response action planned (NFRAP) with implementation of land-use controls (LUCs) is recommended for PSC 28 because it was misidentified as the Ex-Firefighting Training Area. Investigations have demonstrated that no Firefighting training occurred at PSC 28 and that PSC 51 is the Ex-Firefighting Training Area.
3	August 6, 1999	NFRAP is recommended for PSC 28 because it was misidentified as the Ex-Firefighting Training Area and because there is no unacceptable risk to current or future residents.
Final	October 17, 2003	FDEP concurred with recommendation of NFRAP. USEPA concurred with recommendation of NFRAP.

1. RRDS elements evaluated	Complete (Y/N)	Results and Remarks Summary
Review existing information	Y	
Regulatory authority evaluation	Y	CERCLA requirements apply.
Previous action evaluation	N	
Source of contamination evaluation	Y	PSC 28 was originally misidentified. The source of contaminants at the site cannot be determined, but the source of polychlorinated biphenyls in soil may be from waste oil used on roads for dust control.
Exposure pathway analyses	ith recomme	Potential exposure pathways exist for both human and ecological receptors.
Data sufficiency evaluation	Y	Existing data are sufficient to support a NFRAP recommendation.
Risk analyses	Y	Risk screening does not indicate unacceptable risks for human and ecological receptors.
ARARs evaluation	N	

2. Remedial response data base status	Complete (Y/N)	Current (Y/N)	Last Revision	Information Used in this Evaluation
Discovery and notification	Y	N	March 1983	Initial Assessment Study (IAS) (Fred C. Hart Associates, 1983)
Preliminary assessment	Y	N	March 1983	IAS (Fred C. Hart Associates, 1983)
Site inspection	Y	N	December 1985	Verification Study (Geraghty & Miller, Inc., 1985)
Expanded site inspection	Y	N	March 1986	Characterization Study (Geraghty & Miller, Inc., 1986a)
Remedial investigation	N	N		
Feasibility study	N	N		
Remedial design and remedial action	N	N		
Removal action	N	N		
Site closure	Y	N		
Other investigations	Y	N	May 1987	Endangerment Assessment Report (Geraghty & Miller, Inc., 1987)

3. RRDS evaluation summary __X___ NFRAP _____ SITE SCREENING _____ FURTHER REMEDIAL ACTION

	Complete (Y/N)	Rationale and Remarks
Additional data requirements	N	
NFRAP decision	Y	NFRAP is recommended based on acceptable risk.
NFRAP proposed plan	N	

PSC 37 Site Name: Ex-Power Barge Dock	**NFRAP or Further Remedial Action Decision Report Naval Air Station Jacksonville Jacksonville, Florida Checklist and Summary Sheet**	 Date: October 17, 2003

Revision Number	Date Prepared	Remarks and Results
0	October 7, 1994	No further response action planned (NFRAP) is recommended for PSC 37 based on exclusion from CERCLA authority.
1	December 29, 1995	Site screening is recommended for Potential Source of Contamination (PSC) 37 because existing data are insufficient to support a recommendation of NFRAP or remedial investigation and feasibility study. This attachment should be updated with the results of site screening activities.
2	June 21, 1999	Site screening has been completed. NFRAP is recommended for PSC 37 because of no evidence of release of polychlorinated biphenyls (PCBs) and based on the results of the ecological risk screening indicating no significant impact resulting from exposure of ecological receptors to contaminants in sediment at PSC 37.
Final	October 17, 2003	Regulators concurred with the NFRAP decision. TtNUS modified the text to include the regulator concurrence in Section 1.3. Modified "NFRAP of Further Remedial Action Decision Report, Checklist and Summary Sheet" only to report the February 4, 1998 submittal as final.

NFRAP or Further Remedial Action Decision Report
Naval Air Station Jacksonville
Jacksonville, Florida
Checklist and Summary Sheet

1. RRDS elements evaluated	Complete (Y/N)	Results and Remarks Summary
Review existing information	Y	
Regulatory authority evaluation	Y	CERCLA authority applies.
Previous action evaluation	Y	No removal actions at PSC 37.
Source of contamination evaluation	Y	No evidence of PCB release from transformers
Exposure pathway analyses	Y	Exposure pathways currently exist for ecological receptors.
Data sufficiency evaluation	Y	Existing data are sufficient to support a recommendation for NFRAP.
Risk analyses	Y	Analyses indicate acceptable risks for ecological receptors.
ARARs evaluation	Y	Sediment contamination levels were compared to Florida Department of Environmental Protection Sediment Quality Assessment Guidelines.

2. Remedial response data base status	Complete (Y/N)	Current (Y/N)	Last Revision	Information Used in this Evaluation
Discovery and notification	Y	N	March 1983	Initial Assessment Study (IAS) (Fred C. Hart Associates, Inc., 1983)
Preliminary assessment	Y	N	March 1983	IAS (Fred C. Hart Associates, Inc., 1983)
Site inspection	N	N		
Expanded site inspection	N	N		
Remedial investigation	N	N		
Feasibility study	N	N		
Remedial design and remedial action	N	N		
Removal action	N	N		
Site closure	Y	N		
Other investigations	Y	N	1997	St. Johns River sediment sampling conducted by Battelle in 1997
	Y	N	1999	Sampling Even Report, PSC 37 (HLA, 1999)

3. RRDS evaluation summary __X___ NFRAP _____ SITE SCREENING _____ FURTHER REMEDIAL ACTION

	Complete (Y/N)	Rationale and Remarks
Additional data requirements	N	
NFRAP decision	Y	Based on acceptable risks to ecological receptors.
NFRAP proposed plan	N	

POTENTIAL SOURCE OF CONTAMINATION 37
NO FURTHER RESPONSE ACTION PLANNED OR FURTHER REMEDIAL ACTION DECISION REPORT

In this report, the Remedial Response Decision System (RRDS) is applied to Potential Source of Contamination (PSC) 37, the Ex-Power Barge Dock, located on Naval Air Station (NAS) Jacksonville. This No Further Response Action Planned (NFRAP) or Further Remedial Action Decision Report is an attachment to Appendix D to Volume 2 of the Naval Installation Restoration Program (NIRP) plan.

This attachment follows RRDS as described in Volume 2 of the NIRP Plan and is divided into the following 10 chapters:

1.0 PSC Background
2.0 Regulatory Authority Evaluation
3.0 Previous Action Evaluation
4.0 Contaminant Source Evaluation
5.0 Exposure Pathway Analyses
6.0 Data Sufficiency Evaluation
7.0 Risk Analyses
8.0 Applicable or Relevant and Appropriate Requirements (ARARs) Evaluation
9.0 Recommendation
10.0 References

1.0 PSC BACKGROUND

This chapter discusses the available background information for PSC 37, the Ex-Power Barge Dock. The discussion is divided into four sections: Section 1.1, PSC History; Section 1.2 PSC Description; Section 1.3, Previous Regulatory Review; and Section 1.4, Data Assessment. Much of the background information was obtained during a search by Harding Lawson Associates (HLA). The records search included a review of documents and memoranda on file at the NAS Jacksonville Facilities Department and at HLA; an examination of maps and aerial photographs; and interviews with station personnel. HLA obtained additional information during a PSC reconnaissance on April 21, 1994.

1.1 PSC HISTORY. The Ex-Power Barge Dock was identified as a PSC during the initial assessment study (IAS) (Fred C. Hart Associates, Inc., 1983) based on a report that a transformer explosion occurred onshore when the barge was in operation. The IAS report explained that further investigation of the incident revealed that transformers were kept on the barge and that no explosions occurred. During an interview with HLA personnel, Mr. Tony Bavington of the Jacksonville Electrical Authority confirmed that transformers for power barges may be present on the barge instead of onshore (Bavington, 1994).

The exact period of the barge operated was not determined. Mr. Bavington and Mr. J. Michael Wadel, Project Manager at the Base Construction Department (Wadel, 1994), indicated that the barge was in operation no later than the 1960s. Examination of aerial photographs spanning 1943 to 1988 supports this assessment. The dock was not present in the 1943 or 1953 photographs. In the 1959 and 1961 aerial photographs, the dock is present and the barge is in operation. The barge is absent in the 1969 photograph, however, and the dock was apparently removed some time in the mid- to late 1980s.

The IAS report did not recommend a confirmation study at PSC 37 because the transformers were located on the barge and there was no evidence that explosions occurred there. Volume 1 of the NIRP Plan (Geraghty & Miller, Inc., 1991) also recommended no further action. However, during subsequent review, Florida Department of Environmental Protection (FDEP) personnel did not concur with the no further action recommendation (Subsection 1.3). They requested collection of sediment samples from the area of the former dock and power barge anchorage and analysis for polychlorinated biphenyls (PCBs).

During June 1997, the St. Johns River Water Management District, as part of a larger sampling event in the river, had Battelle Ocean Sciences collect samples near the former dock. They collected two discrete grab samples and two split samples which were composited from four locations along the dock area. These four samples were analyzed for a full suite of target compound list (TCL) and target analyte list (TAL) constituents. In addition to PCBs, detected concentrations of six polynuclear aromatic hydrocarbons (PAHs), three pesticides, and seven inorganic constituents in the sediment exceeded the FDEP sediment quality assessment guidelines (SQAG)

threshold effects levels (TELs). In addition, one PAH, acenaphthene, also exceeded the probable effects level (PEL).

Based on results of the Battelle sampling, HLA conducted additional sediment sampling to evaluate potential ecological risks to benthic macroinvertebrates resulting from exposure to PSC 37 sediment (HLA, 1999). Three sediment samples were collected in March 1999 from locations shown on Figure 1. The sediment samples were analyzed for TAL inorganics, PAHs, TCL pesticides, TCL PCBs, and total organic carbon (TOC). In addition, grain size analysis and sediment toxicity tests using the estuarine amphipod *Leptocheirus plumulosus* were performed on the three sediment samples.

In sediment, two PAH compounds, one PCB compound (Aroclor-1260), seven pesticides, and 20 inorganic analytes were detected at various concentrations. Maximum detected concentrations of these compounds and analytes are generally at or below both the USEPA Region IV and FDEP sediment quality TEL and PEL values. Compounds and analytes found to exceed their respective TELS but not their PELS include beta-BHC, delta-BHC, arsenic, copper, lead, mercury, and zinc. One pesticide, gamma-BHC (Lindane), was detected at a concentration of 1.3 µg/kg at location 37D00201, which slightly exceeded its Florida SQAG PEL of 0.99 µg/kg, but is below the USEPA Region IV sediment screening value of 3.3 µg/kg. Using the FDEP SQAG value for gamma-BHC (Lindane) for comparison, delta-BHC at 0.98 µg/kg exceeded the TEL guideline of 0.32 µg/kg, but not the USEPA sediment screening value of 3.3 µg/kg.

Results from toxicity tests done on the three sediment samples show that although concentrations of some analytes slightly exceeded FDEP SQAG guidelines, estuarine invertebrates are not adversely affected from exposure to sediment at PSC 37 (HLA, 1999). Using the estuarine amphipod *Leptocheirus plumulosus*, mean survival and mean reburial rates of the organism in the PSC 37 sediment ranged from 95 to 96 percent, versus 94 percent in the laboratory reference sediment sample. There were no significant difference (P = 0.5) in mean survival and reburial rates between the lab control and the site related sediment samples.

PSC 37 sediment underlying the former barge dock area was not significantly impacted by PCBs possibly leaking from transformers being kept on the barge instead of onshore, based on a single detection of one PCB compound (Aroclor-1260) at a concentration of 43 µg/kg.

1.2 PSC DESCRIPTION AND ENVIRONMENTAL SETTING. PSC 37 is located on the St. Johns River at the southeast boundary of the station. The PSC is accessible by partially paved roads on the south side of Mustin Road. The wooden dock once used by the power barge was about 400 feet long and is no longer present; only a concrete bulkhead remains on the shoreline (Photograph 1). There is an abandoned water supply well located approximately 50 feet from the bulkhead. A monitoring well triplet, installed by HLA in 1993 for stationwide background water quality and flow modeling purposes, is located adjacent to the PSC (Photograph 2).

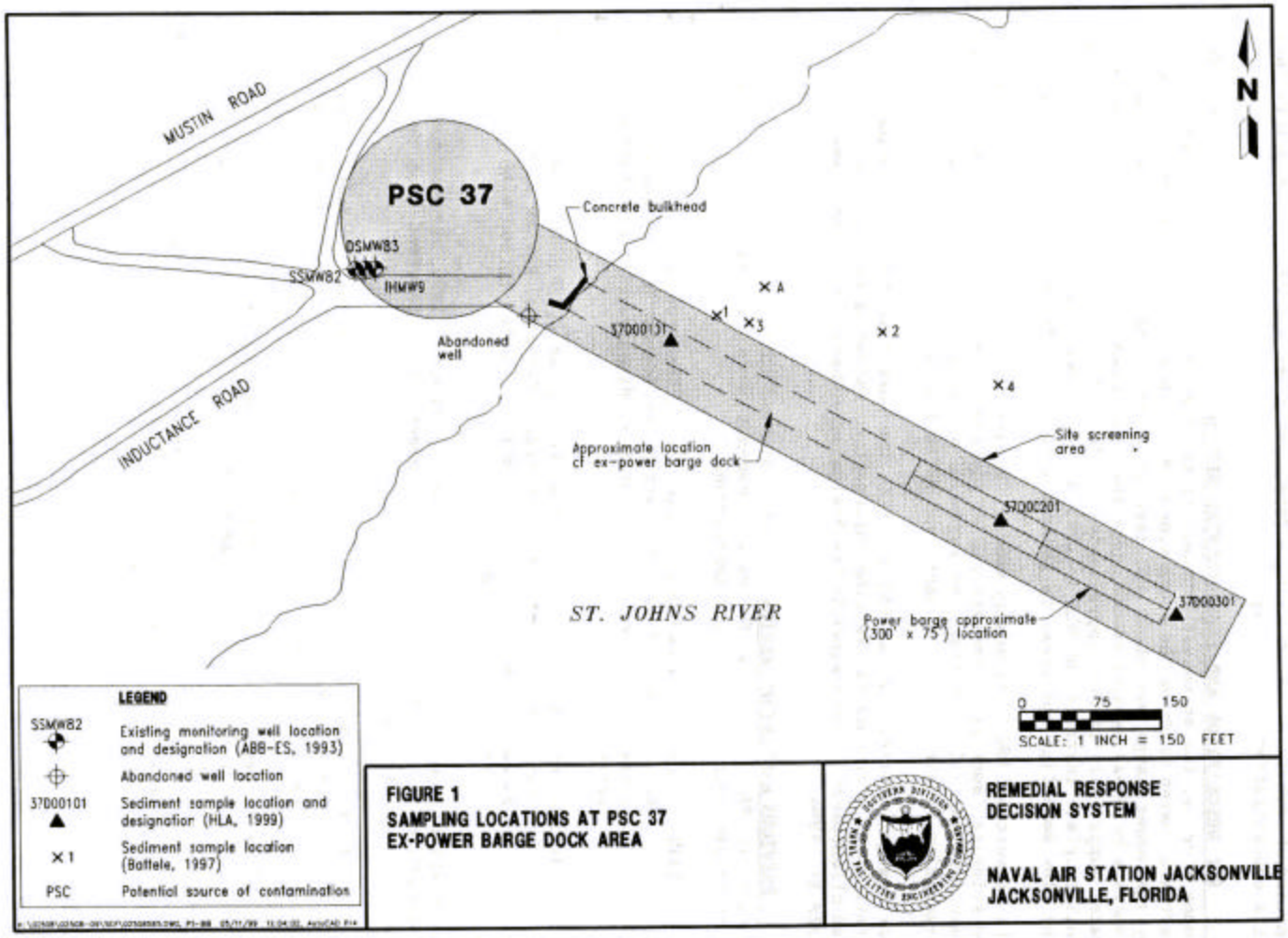
The vicinity of PSC 37 is mostly wooded. During the PSC reconnaissance, there was no evidence, such as a concrete pad or old power lines, that a transformer had been onshore. In addition, no evidence of contamination, such as stressed vegetation, stained soil, or odor, was noted during the PSC reconnaissance.

Shallow groundwater flow at PSC 37 is to the east toward the St. Johns River. Stationwide environmental setting information, including geology, hydrogeology, and climatology, is contained in the Preliminary Characterization Summary Report (ABB-ES, 1994).

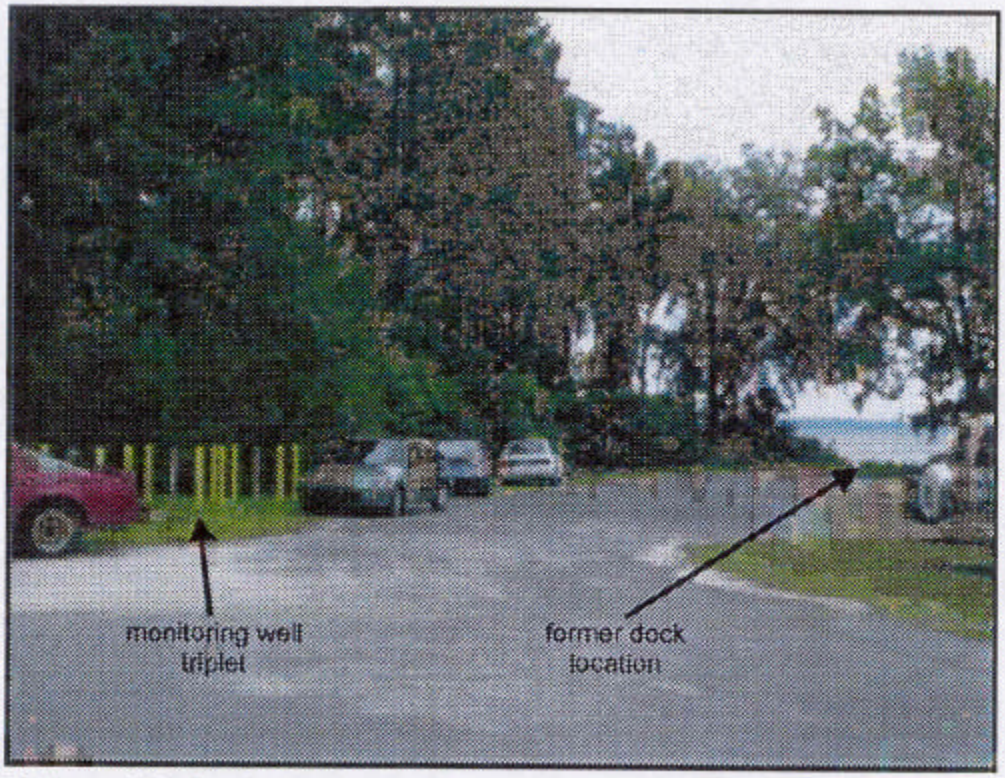
1.3 PREVIOUS REGULATORY REVIEW. Volume 1 of the NIRP Plan recommended no further action at PSC 37. The following comments were received from regulatory authorities regarding this recommendation:

USEPA Region IV, James H. Scarbrough, Chief, Resource Conservation and Recovery Act (RCRA) and Facilities Branch, Waste Management Division, December 5, 1990: did not disagree with no further action recommendation.

Florida Department of Environmental Regulation (FDER), Dr. James J. Crane, Environmental Administrator, Technical Review Section, Bureau of Waste Cleanup, November 21, 1990: agreed with a no further action recommendation.


MUSTIN ROAD
INDUCTANCE ROAD
PSC 37
Concrete bulkhead
OSMW83
SSMW82
IHMW9
Abandoned well
37000101
37000201
37000301
×A
×1
×2
×3
×4
Approximate location of ex-power barge dock
Site screening area
ST. JOHNS RIVER
Power barge approximate (300' x 75') location
N
0 75 150
SCALE: 1 INCH = 150 FEET
LEGEND
SSMW82 Existing monitoring well location and designation (ABB-ES, 1993)
Abandoned well location
37000101 Sediment sample location and designation (HLA, 1999)
×1 Sediment sample location (Battelle, 1997)
PSC Potential source of contamination
FIGURE 1
SAMPLING LOCATIONS AT PSC 37
EX-POWER BARGE DOCK AREA
REMEDIAL RESPONSE DECISION SYSTEM
NAVAL AIR STATION JACKSONVILLE
JACKSONVILLE, FLORIDA

Photograph 1: View east of St. Johns River at location of Ex-Power Barge Dock.



Photograph 2: On-shore area near Ex-Power Barge Dock. Monitoring well triplet in left center.

The draft revision of this attachment, dated October 7, 1994, recommended a NFRAP designation for PSC 37. The following comments were received from regulatory authorities regarding this recommendation:

USEPA Region IV, James W. Hudson, Remedial Project Manager, Federal Facilities Branch, November 14, 1994: concurred with recommendation.

FDEP, Jorge R. Caspary, Remedial Project Manager, November 15, 1994: disagreed with recommendation. Indicated that there are discrepancies as to whether PCB-fluid filled transformers were located onshore or placed on the barge, and recommended that this discrepancy be clarified. He wanted to know the size of the transformers and the quantity of PCB-fluid that could have been spilled as a result of an explosion. If the transformers were on the barge and one exploded, then a soil sample should be collected and analyzed for PCBs. Likewise, if the transformers were large and located onshore, information on transformer size and handling of the incident should be reported.

Natural Resource Trustee Project, John Mitchell, Manager, Office of Intergovernmental Programs, October 12, 1994: disagreed with recommendation. Indicated that any leakage from barge transformers would have been washed from the deck into the St. Johns River. Recommended sediment sampling and analysis performed in the area of the former dock.

FDEP, Jorge R. Caspary, Remedial Project Manager, July 21, 1999: Concurred with recommendation.

USEPA Region IV, Brian Donaldson, Environmental Engineer, January 31, 2000: concurred with recommendation.

1.4 DATA ASSESSMENT. The following is a summary of the data currently available regarding PSC 37:

- The Ex-Power Barge Dock was originally identified as a PSC based on a report that a transformer located onshore had exploded.
- Further investigation during the IAS revealed that the transformers were kept on the barge and that no explosions occurred.
- Observations made during a PSC reconnaissance in 1994 revealed no evidence, such as a concrete pad or old power lines, of transformers having been onshore.
- Initial sampling and analysis of sediments by Battelle along the former dock area detected elevated concentrations of PCBs, PAHs, pesticides, and inorganics.
- Additional sampling and analysis of sediments by HLA along the former dock area detected one PCB compound, two PAHs, seven pesticides, and 20 inorganic analytes. Sediment toxicity tests indicated no adverse effects to estuarine invertebrates resulting from exposure to contaminants in sediment.

2.0 REGULATORY AUTHORITY EVALUATION

This chapter evaluates the applicability of regulatory requirements to response actions at the PSC to ensure that PSC-specific remedial responses met applicable regulatory program requirements. The evaluation is divided into two sections: Section 2.1, Existing Regulatory Agreements and Section 2.2, Regulatory Authority Evaluation.

2.1 EXISTING REGULATORY AGREEMENTS. In December 1989, NAS Jacksonville was placed on the Comprehensive Environmental Response, Compensation, and Liability ACT (CERCLA) National Priority List, which requires remedial response consistent with the guidelines specified within Section 120 (42 U.S. Code 9620), Federal Facilities, of the Superfund Amendments and Reauthorization Act (SARA) of 1986. On October 23, 1990, NAS Jacksonville entered into an FFA with the USEPA and the Florida Department of Environmental Regulation (since renamed the FDEP).

The FFA recognizes that the facility is subject to the terms of its hazardous waste permits and Resource Conservation and Recovery Act (RCRA) closure permits. The FFA integrates the Navy's response obligations into a comprehensive agreement that activities covered by the FFA will achieve compliance with CERCLA and satisfy

the corrective action and closure permit requirements under RCRA. Therefore, ARARs must be considered and remedial measures must be consistent with and incorporated in RCRA permits.

PSCs at NAS Jacksonville fall under the regulatory authority of CERCLA, SARA, and corresponding State laws if a release of a hazardous substance has occurred or if there is a threat of such a release into the environment [Title 40 of the Code of Federal Regulations 300.130(b)(2)]. Exclusion from CERCLA authority and the application of CERCLA regulations with respect to the threat posed by a PSC to human health and the environment are discussed in Section 2.3.2 of Volume 2 of the NIRP Plan. The PSCs also fall under the regulatory authority of any existing RCRA permits for the facility.

2.2 REGULATORY AUTHORITY EVALUATION. Investigation of the Ex-Power Barge Dock has indicated that there is no evidence that an explosion of an onshore transformer ever occurred. However, some transformers may have leaked, resulting in the possible release of PCBs into the river. PCBs, PAHs, and metals were detected in sediment at concentrations above FDEP SQAGs. These constituents are hazardous substances as defined in CERCLA Section 101(14). Therefore, NFRAP based on exclusion from CERLA authority cannot be recommended.

3.0 PREVIOUS ACTION EVALUATION

There have been no removal actions at PSC 27.

4.0 CONTAMINANT SOURCE EVALUATION

The analytical results from sediment samples collected from the former dock area indicate the PCBs, PAHs, pesticides, and metals are present. The levels reported do not indicate that these constituents came from past operations at PSC 37, particularly from PCBs possibly leaking from transformers kept on the barge.

5.0 EXPOSURE PATHWAY ANALYSES

The current human exposure pathways are recreational fishing and dermal contact with and incidental ingestion of the surface water of the St. Johns River. Human health risk screening was not conducted because no surface water analytical data was collected at PSC 37. There is little potential for human exposure to contaminated sediments under the recreational or wading scenario because the area is currently off-limits to human activities.

For ecological risk screening, the exposure pathway most likely to occur is direct contact and indirect ingestion of contaminants in the sediment of the St. Johns River adjacent to PSC 37 by aquatic receptors. The aquatic receptors of concern include bottom-dwelling macroinvertebrates and larval stage aquatic species that may come into contact with contaminants in the sediment. Although fish ingestion of contaminated food and incidental ingestion of contaminated sediment are also potential exposure pathways, these routes of exposure were not evaluated in the screening-level evaluation due to the localized nature of potential sediment contamination adjacent to PSC 37. Population-level impacts to fish are not anticipated because the area surrounding PSC 37 is small relative to the wide range of fish foraging habitat in the St. Johns River.

6.0 DATA SUFFICIENCY EVALUATION

The existing historical data indicate that transformers were kept on the former power barge that operated in the 1950s. Although no transformers exploded, it is assumed that some may have leaked and PCB fluid was washed into the river. Analytical data from the sediment samples indicate no significant impact from PCB fluids that may have leaked from the transformers that were being kept on the barge. Existing data are sufficient to support a NFRAP decision.

7.0 RISK ANALYSES

7.1 HUMAN HEALTH RISK SCREENING. Human health risk screening was not conducted since there is little potential for human exposure to contaminated sediments under the recreational or wading scenario and the area is currently off-limits to human activities.

7.2 ECOLOGICAL RISK SCREENING. As part of the Sampling Event Report (HLA, 1999) prepared to support the 1999 site screening by HLA, a screening-level evaluation was conducted to provide an assessment of potential ecological risks associated with sediment at PSC 37.

Two PAH compounds, one PCB (Aroclor-1260), seven pesticides, and 20 inorganic analytes were detected at various concentrations in sediment collected from three locations. Maximum detected concentrations of these compounds and analytes are generally at or below both the USEPA Region IV and FDEP sediment quality TEL and PEL values. The TEL value represents concentrations of sediment-associated contaminants that are not considered to represent significant hazards to aquatic organisms. Within the range of concentrations between the TEL and PEL, adverse biological effects are possible; above the PEL range, concentrations of sediment-associated contaminants are considered to represent significant hazards to aquatic organisms.

Analytes detected at concentrations exceeding their respective TELs but not their PELs include Aroclor-1260, delta-BHC, arsenic, copper, lead, mercury, and zinc. In addition, gamma-BHC (Lindane) and silver were detected at concentrations exceeding their respective PEL values. Gamma-BHC was detected at a concentration of 1.3 µg/kg in only one of the three samples at location 37D00201. Although this value slightly exceeds the Florida PEL value of 0.99 µg/kg, it is less than the USEPA Region IV sediment screening value of 3.3 µg/kg. Silver was also only detected in one of the three samples at location 37D00201 at a concentration of 1.9 mg/kg. This concentration slightly exceeds the Florida PEL value of 1.77 mg/kg.

Toxicity tests were conducted on three bulk sediment toxicity test samples using the marine amphipod *Leptocheirus plumulosus*. The test species, *L. plumulosus*, was chosen as the representative infaunal test species for the toxicity test because of its tolerance to a wide range of salinities from 0 to 33 parts per thousand as well as its tolerance to both coarse texture and fine grain sediment. The amphipod was evaluated for 10-day acute mortality and reburial rates.

After 10 days of exposure, mean survival and mean reburial rates of *L. plumulosus* in the laboratory control sediment sample were both 94 percent. Mean survival and reburial rates of *L. plumulosus* exposed to the PSC 37 sediment ranged from 95 to 96 percent. There were no significant differences (P = 0.05) in mean survival and reburial rates between the lab control and the site-related sediment samples. These results suggest that although concentrations of some analytes slightly exceeded FDEP SQAG guidelines, benthic macroinvertebrates are not adversely affected from exposure to sediment at PSC 37.

Based on the results of the ecological screening for PSC 37 sediment, there appears to be no significant impact resulting from exposure of aquatic receptors to contaminants in sediment at PSC 37; therefore, it is recommended that this site be proposed for no further action.

8.0 ARARs EVALUATION

Contaminants detected in sediments were compared to USEPA Region IV and FDEP sediment quality TEL and PEL values. Maximum detected concentrations of the detected compounds and analytes are generally at or below both the sediment guidelines.

9.0 RECOMMENDATION

NFRAP is recommended for PSC 37 because the levels of contamination found in sediment indicate no significant adverse impact to ecological receptors. There is no evidence of a significant release of PCB fluids that may have leaked from the transformers that were being kept on the barge.

10.0 REFERENCES

ABB Environmental Services, Inc. (ABB-ES). 1994, *Preliminary Characterization Summary Report, Operable Unit (OU) 1*, Naval Air Station (NAS) Jacksonville, Jacksonville, Florida, Final Draft. Prepared for Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM), North Charleston, South Carolina.

Bavington. 1994. Personal interview with Tony Bavington of the Jacksonville Electrical Authority, by Diane Dopkin of ABB-ES, Arlington, Virginia, June 3.

Fred C. Hart Associates, Inc. 1983. *Initial Assessment Study,* NAS Jacksonville, Jacksonville, Florida, March.

Harding Lawson Associates. 1999. *Sampling Event Report for PSC 37*, NAS Jacksonville, Jacksonville, Florida. Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, June.

Wadel. 1994. Personal interview with J. Michael Wadel, Civil Engineer, Project Manager at the Construction Department, by Diane Dopkin of ABB-ES, Arlington, Virginia, April 29.

Revision Number	Date Prepared	Remarks and Results
0	February 23, 1995	Site screening is recommended for Potential Source of Contamination (PSC) 40 because available data are insufficient to support a recommendation for no further response action planned (NFRAP) or for no further remedial action.
1	December 29, 1995	Regulators concurred with site screening for PSC 40 because available data are insufficient to support a recommendation for NFRAP or for further remedial action. This attachment should be updated with the results of site screening activities.
2	July 6, 1999	Site screening was completed. NFRAP is recommended for PSC 40 based on acceptable risk to current receptors.
Final	October 17, 2003	FDEP concurred with recommendation of NFRAP. EPA concurred with recommendation of NFRAP.

1. RRDS elements evaluated	Complete (Y/N)	Results and Remarks Summary
Review existing information	Y	
Regulatory authority evaluation	Y	CERCLA authority applies.
Previous action evaluation	N	
Source of contamination evaluation	Y	The source of sediment contamination is likely storm water runoff from adjacent paved areas.
Exposure pathway analyses	Y	Potential exposure pathways exist for ecological receptors.
Data sufficiency evaluation	Y	Existing data are sufficient to support a NFRAP recommendation.
Risk analyses	Y	Risk screening indicates no significant impact to ecological receptors exposed to sediment at PSC 40.
ARARs evaluation	N	

2. Remedial response data base status	Complete (Y/N)	Current (Y/N)	Last Revision	Information Used in this Evaluation
Discovery and notification	Y	N	December 1985	Verification Study (Geraghty & Miller, Inc., 1985)
Preliminary assessment	Y	N	December 1985	Verification Study (Geraghty & Miller, Inc., 1985)
Site inspection	Y	N	December 1985	Verification Study (Geraghty & Miller, Inc., 1985)
Expanded site inspection	N	N		
Remedial investigation	N	N		
Feasibility study	N	N		
Remedial design and remedial action	N	N		
Removal action	N	N		
Site closure	Y	N		
Other investigations	Y	N	October 1995	Radiological Survey Report (Bechtel, 1995)
	Y	N	February 1996	Sediment Sampling (Brown & Root, 1996)
	Y	N	March 1999	Sampling Event Report (HLA, 1999)

3. RRDS evaluation summary __X___ NFRAP _____ SITE SCREENING _____ FURTHER REMEDIAL ACTION

	Complete (Y/N)	Rationale and Remarks
Additional data requirements	N	
NFRAP decision	Y	NFRAP based on acceptable risk.
NFRAP proposed plan	N	