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DECISION DOCUMENT FOR STUDY AREA 35 WITH TRANSMITTAL LETTER NTC  
ORLANDO FL  
8/1/2002  
TETRA TECH

**DECISION DOCUMENT  
FOR  
STUDY AREA 35**

**NAVAL TRAINING CENTER  
ORLANDO, FLORIDA**

**Contract No. N62467-94-D-0888  
Contract Task Order 0024**

**Prepared by:**

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**Prepared for:**

**Department of the Navy, Southern Division  
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**August 2002**



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August 27, 2002

Commander, Southern Division  
Naval Facilities Engineering Command  
ATTN: Ms. Barbara Nwokike, Code ES33  
P.O. Box 190010  
2155 Eagle Drive  
North Charleston, SC 29419-9010

Reference: CLEAN Contract No. N62467-94-D-0888  
Contract Task Order No. 0024

Subject: Final Decision Document for Study Area 35  
Naval Training Center, Orlando, Florida

Dear Ms. Nwokike:

Enclosed are two copies of the final Decision Document for Study Area 35. The final document incorporates the revisions and additions provided by the Orlando Partnering Team. I will bring the approval page to the meeting next week for signatures.

If you have any questions, please contact me at (865) 220-4730.

Sincerely,

Steven B. McCoy, P.E.  
Task Order Manager

SBM:ckf

Enclosure

- c: Ms. Barbara Nwokike, Southern Division (Orlando Office)  
Mr. Wayne Hansel, Southern Division  
Ms. Hope Wilson, Southern Division  
Mr. David Grabka, FDEP  
Mr. Gregory Fraley, USEPA Region 4  
Mr. Steve Tsangaris, CH2M Hill  
Mr. Mark Salvetti, Harding ESE  
Mr. J.E. Bentkowski, Gannett Fleming  
Mr. Mark Perry, Tetra Tech NUS (unbound hardcopy)  
Ms. Debbie Wroblewski, Tetra Tech NUS (cover letter only)  
File/db

## Introduction

An environmental investigation and interim remedial actions have been completed for Study Area (SA) 35 on the Main Base of the former Naval Training Center (NTC), Orlando, Florida. The results of the investigation and the actions selected by the Orlando Partnering Team (OPT) to clean up environmental contamination associated with the site are described in this final decision document. The OPT, which was assembled to address environmental issues at NTC Orlando, consists of representatives from the U.S. Navy (Navy) and its contractors, the Florida Department of Environmental Protection (FDEP), and the U.S. Environmental Protection Agency (USEPA). The Navy has transferred SA 35 to the city of Orlando for residential use.

## Site Background

**Main Base.** The Main Base is one of four facilities that comprised the former NTC Orlando (Figure 1). The other three facilities are McCoy Annex, Area C, and Herndon Annex. The Main Base is located approximately 8 miles north of the Orlando International Airport. Three lakes, Lake Baldwin, Lake Spier, and Lake Susannah, lie within or adjacent to the Main Base. Beginning in 1940, the facilities were known as the Orlando Army Air Base and were operated under the command of the U.S. Army Air Corps. The U.S. Air Force (USAF) commanded the facilities between 1947 and 1968 and named the base the Orlando Air Force Base (OAFB). In 1968, the USAF ceased operations at the OAFB and the Navy acquired the properties now known as the Main Base, Area C, McCoy Annex and Herndon Annex. NTC Orlando was closed in April 1999 as part of the Defense Base Realignment and Closure Act of 1990.

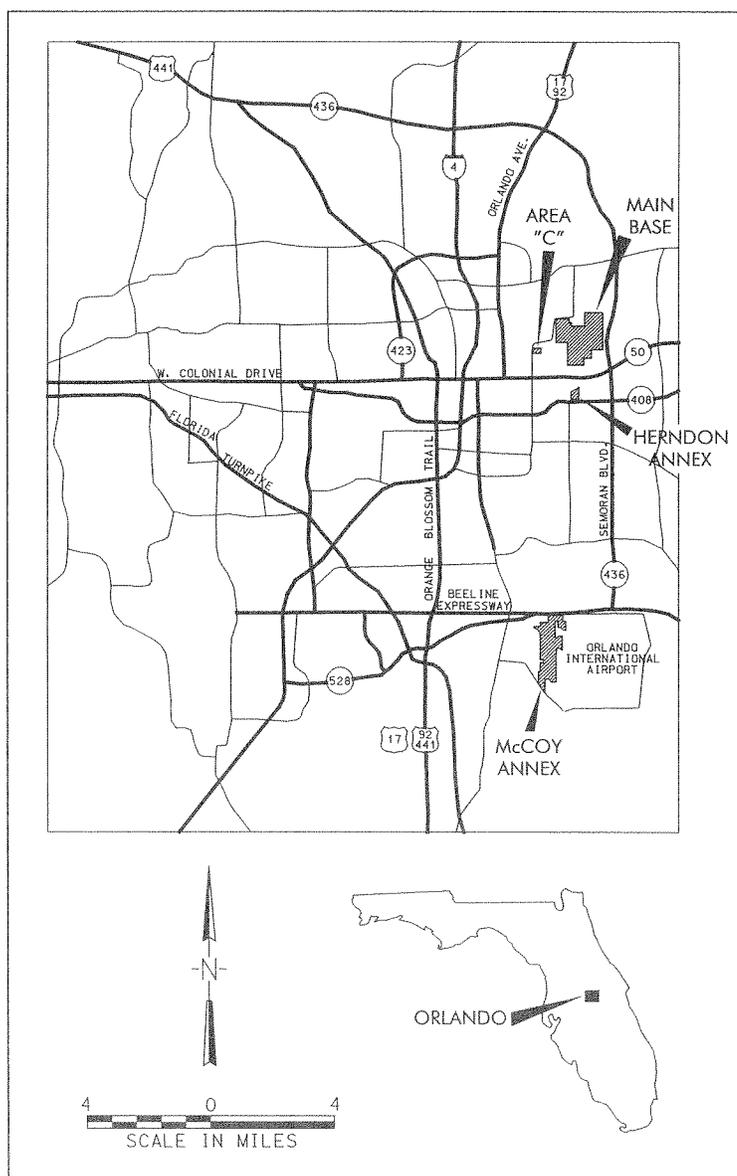
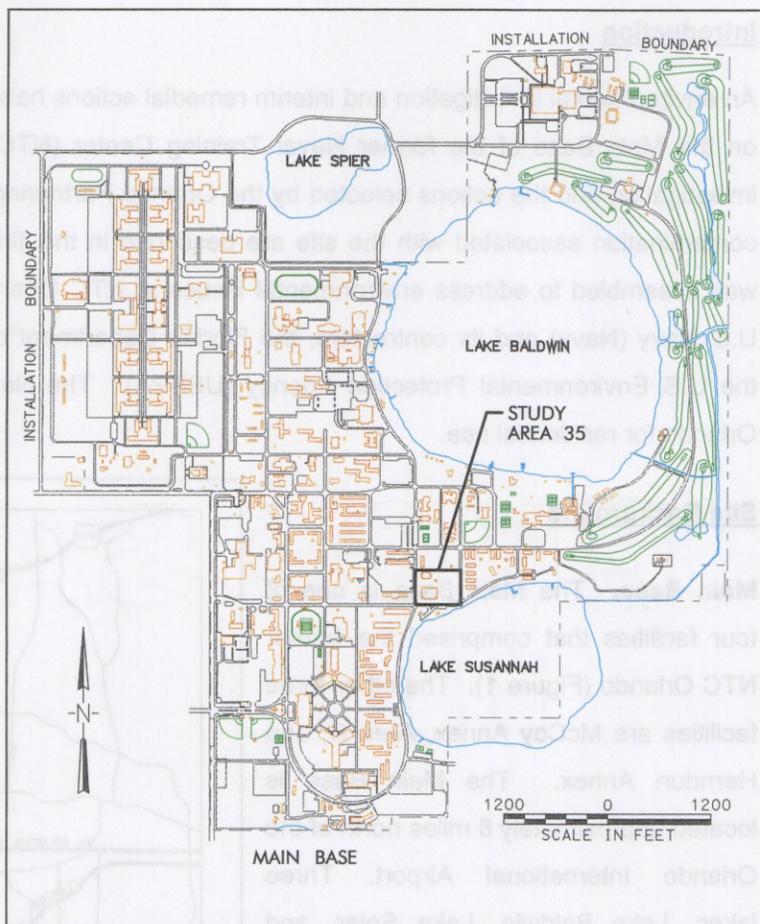


Figure 1. Main Base Location Map

Figure 2 presents a map of the Main Base prior to demolition and removal of the streets, buildings, and other man-made features. The demolition began in the summer of 1999 in preparation for redevelopment of the property by the City of Orlando.

**Study Area 35.** SA 35 encompassed about 4 acres in the southeast portion of the Main Base property. The site occupied the southern half of a block formed by Langley Street, Mitscher Avenue, Iwo Jima Street, and Leahy Avenue. Lake Susannah lies about 150 feet to the southeast. Building 2078 was used for vehicle maintenance from 1968 to 1998 (Figure 3). Six hydraulic vehicle lifts inside the building and one outdoor lift were constructed over narrow pits



**Figure 2. SA 35 Location Map**

about 8 feet deep. Another indoor lift that was not constructed over a pit was abandoned before the start of environmental studies at the site. Building 2079 was used for the storage of tires, batteries, and hazardous materials. More recently, the buildings served as the NTC Orlando 1<sup>st</sup> Lieutenant's shop and a recycling center for aluminum cans, cardboard, and paper. Most of the remaining area was paved, with grassy fringes and drainage areas along each side. Environmental concerns at SA 35 included the hydraulic lift pits, oil- or paint-stained surface soil, areas that received wastewater or storm water runoff, a possible drum release at the north side of Building 2078, and unknown storage practices at Building 2079.

The shallow aquifer at SA 35 is an unconfined sand aquifer and groundwater flow is generally toward the southeast. Groundwater was observed at depths of 7 to 8 feet below ground surface during monitoring well sampling. Groundwater elevation measurements made in January 1999 indicate that the flow gradient is approximately 0.0062 feet per foot.

The groundwater at SA 35 meets the Florida criteria for a G-II aquifer as defined in Chapter 62-520, *Florida Administrative Code*:

“Potable water use, groundwater in aquifers which has a total dissolved solids content of less than 10,000 milligrams per liter, unless otherwise approved by the Commission.”

**Environmental Investigations**

Harding Lawson Associates (HLA) collected soil gas, soil, and groundwater samples between July 1997 and March 1998 to determine whether site activities had resulted in soil or groundwater contamination exceeding Florida cleanup criteria. Following soil removal actions in 1999, Tetra Tech NUS, Inc. (TtNUS), collected additional soil samples in April 2000 and June 2000 to confirm that the soil removal actions had achieved the desired results. The investigations were conducted to accomplish the following objectives:

- Determine whether previous site activities had resulted in concentrations of contaminants in soil or groundwater that exceeded the State of Florida residential cleanup criteria.
- Determine the nature and extent of soil or groundwater contamination, if detected.
- Ensure that soil remaining on the site after completing remedial actions met Florida residential cleanup criteria.

TtNUS documented the site screening process in an Environmental Site Screening Report.<sup>1</sup>

**Soil Investigation.** For an inorganic contaminant in soil at this site, the cleanup criterion is the FDEP residential Soil Cleanup Target Level (SCTL) or

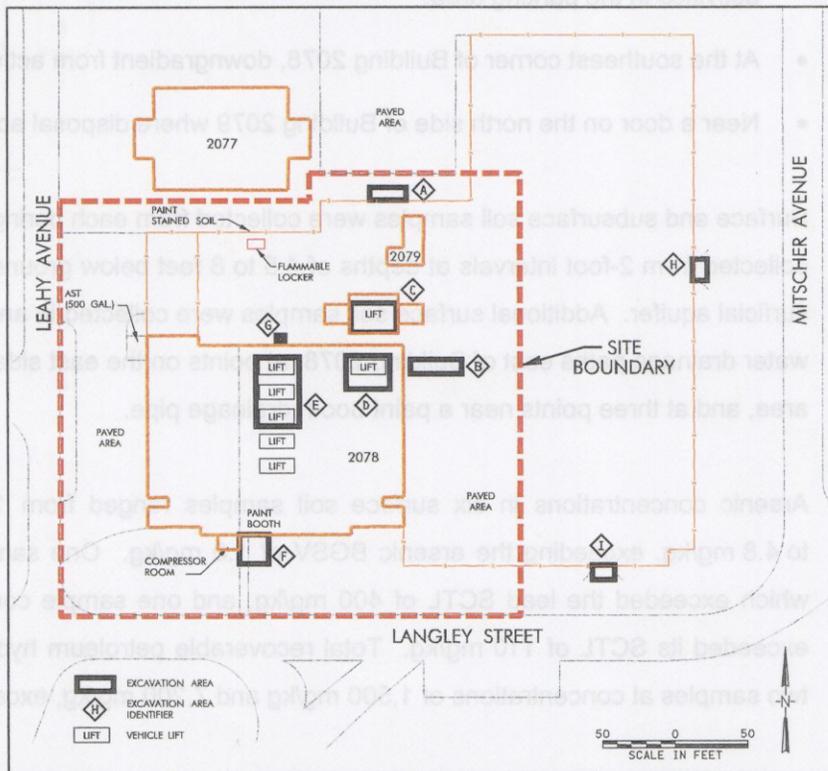


Figure 3. SA 35 Site Map

<sup>1</sup> TtNUS (Tetra Tech NUS), 2000. *Base Realignment and Closure, Environmental Site Screening Report for Study Area 35, Naval Training Center, Orlando, Florida, December.*

the site-specific Background Screening Value (BGSV), whichever is greater. For an organic contaminant in soil, the cleanup criterion is the residential SCTL.

HLA established a grid of 67 soil gas sampling locations on 50-foot centers and installed passive soil gas samplers to quickly screen the site for the presence of volatile organic compounds. None were detected. Sampling efforts were then concentrated in those areas that were most likely to be contaminated.

HLA advanced five soil borings in the following areas of concern:

- On the north side of Building 2078, where material may have seeped from a drum storage area inside the building.
- At the northeast corner of Building 2078, in the direction downgradient from a trench drain at Building 2079 and the exterior hydraulic lift pit.
- In the southeast corner of the parking area, adjacent to the loading ramp and downgradient of activities in the parking area.
- At the southeast corner of Building 2078, downgradient from activities inside the building.
- Near a door on the north side of Building 2079 where disposal activities may have occurred.

Surface and subsurface soil samples were collected from each boring. The subsurface soil samples were collected from 2-foot intervals at depths of 4.5 to 8 feet below ground surface, near the water table of the surficial aquifer. Additional surface soil samples were collected in an area with paint-stained soil, in storm water drainage paths east of Building 2078, at points on the east side and southeast corner of the parking area, and at three points near a paint booth drainage pipe.

Arsenic concentrations in six surface soil samples ranged from 1.1 milligrams per kilogram (mg/kg) to 4.8 mg/kg, exceeding the arsenic BGSV of 1.0 mg/kg. One sample contained 1,240 mg/kg of lead, which exceeded the lead SCTL of 400 mg/kg, and one sample contained 163 mg/kg of barium, which exceeded its SCTL of 110 mg/kg. Total recoverable petroleum hydrocarbons (TRPH) were detected in two samples at concentrations of 1,500 mg/kg and 7,200 mg/kg, exceeding its SCTL of 340 mg/kg.

Three subsurface soil samples contained arsenic at concentrations of 1.1 mg/kg, 1.3 mg/kg, and 1.5 mg/kg. These concentrations exceeded the arsenic BGSV of 1.0 mg/kg.

HLA evaluated the construction of the lift pits, determined that four of the six pits in Building 2078 had native soil floors, and collected soil samples from the floors of those four pits. The surface of the water standing in the exterior lift pit had an oily sheen. The arsenic concentrations in two of the samples were 2.2 mg/kg and 6 mg/kg, exceeding BGSV of 1.0 mg/kg. The barium concentrations in two of the samples were 157 mg/kg and 205 mg/kg, exceeding the barium SCTL of 110 mg/kg. The TRPH concentrations in four samples ranged from 26,000 mg/kg to 85,000 mg/kg, exceeding its SCTL of 340 mg/kg.

**Groundwater Investigation.** For groundwater contaminants detected at this site, the FDEP cleanup criteria are the Groundwater Cleanup Target Levels (GCTLs) for the specific chemicals. The first four soil borings described in the previous section were completed as groundwater monitoring wells. HLA collected groundwater samples from the four new wells and an existing monitoring well in November 1997. In addition, four microwells were installed near the lifts in Building 2078 and sampled in March 1998. One unfiltered sample contained 7.2 micrograms per liter ( $\mu\text{g/L}$ ) of thallium, exceeding its GCTL of 2  $\mu\text{g/L}$ . The thallium concentration in a filtered sample from the same well was below the laboratory detection limit of 4.7  $\mu\text{g/L}$ . The concentration in the filtered sample is considered to be more representative of actual site conditions.

One sample contained 12  $\mu\text{g/L}$  of methylene chloride, exceeding its GCTL of 5  $\mu\text{g/L}$ . Methylene chloride was detected at 2  $\mu\text{g/L}$  in another sample. Methylene chloride is a common laboratory cleaning agent that quickly degrades into other compounds in nature. No methylene chloride degradation products were detected in groundwater samples and it was not detected in soil samples. Investigators concluded that the analytical laboratory was the likely source of the methylene chloride.

One groundwater sample contained 11  $\mu\text{g/L}$  of phenol, slightly exceeding its GCTL of 10  $\mu\text{g/L}$ . Another sample contained 7  $\mu\text{g/L}$  of phenol. No phenol was detected in soil samples collected at those locations, so there is no evidence of a spill. Naturally occurring phenol is often observed in humus-rich soils and, more rarely, as a laboratory contaminant. The low concentrations observed did not warrant additional investigation.

### **Remedial Actions**

**Soil.** Soil contamination exceeding Florida cleanup criteria was identified in the areas labeled A through I on Figure 3. The OPT elected to remove and transport contaminated soil from areas A through E and areas G through I to a permitted treatment, storage, and disposal facility. Area F contained a very low concentration of arsenic (1.1 mg/kg) and the OPT elected not to excavate that area.

The Environmental Detachment Charleston (DET) removed approximately 1,159 tons of soil from the designated areas in April 1999 and submitted a completion report to document the work.<sup>2</sup> Confirmation soil sampling conducted by DET showed that all areas except Area A met the Florida residential cleanup criteria. The arsenic concentration of 1.2 mg/kg in a soil sample collected from the south wall of the excavation exceeded its BGSV of 1.0 mg/kg. The OPT elected not to conduct additional excavation at that location because of its proximity to the foundation of Building 2078.

TtNUS collected four surface soil samples at the edges of the Area A excavation in April 2000 for metals analyses to determine whether soils surrounding the excavation met Florida cleanup criteria. No arsenic detections exceeded the BGSV, but one sample from the north wall of the excavation contained 468 mg/kg of lead, exceeding the SCTL of 400 mg/kg. The elevated lead concentration may have resulted from previous battery storage operations at Building 2079. In June 2000, TtNUS collected three additional surface soil samples near the paved area north of Building 2079. Each sample was found to contain lead, but at concentrations below the SCTL. The Environmental Enterprise Group removed approximately 24 tons of soil from the north wall of the Area A excavation in August 2000, and backfilled the excavation with clean soil. The excavated soil was transported to the former McCoy Annex Landfill for use as cover material in the landfill closure.

**Groundwater.** The presence of thallium at a concentration above its GCTL was probably due to high sample turbidity and is not considered indicative of groundwater contamination. The presence of methylene chloride in two samples and the absence of related organic compounds strongly suggest that the detections were of laboratory origin. The two phenol detections could be naturally occurring or of laboratory origin. The cleanup level for phenol is based on taste and odor, and no adverse health effects are anticipated at the low concentrations detected. As a result, no remedial actions for groundwater are required at SA 35.

### Conclusions

**Soil.** Following the soil removal actions in April 1999 and August 2000, SA 35 soils now meet Florida residential soil cleanup criteria. No additional soil remediation is required.

**Groundwater.** The groundwater under SA 35 meets the Florida GCTLs and is thus suitable for unrestricted use.

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<sup>2</sup> DET (Environmental Detachment Charleston), 1999. *Completion Report for SAs 17, 18, 23, 35, 37, 40, and 42 and OUs 3 and 4, Naval Training Center, Orlando, Florida.* Prepared for SOUTHNAVFACENGCOM, North Charleston, South Carolina, August.

The Base Realignment and Closure Color Code will be changed to "4/Dark Green" to signify "an area where release, disposal, and/or migration of hazardous substances has occurred, and all remedial actions necessary to protect human health and the environment have been taken."

**Community Acceptance**

Community acceptance of the selected remedy for SA 35 was evaluated during meetings of the facility's Restoration Advisory Board (RAB). RAB meetings are open to the public and their bimonthly meetings are publicized in *The Orlando Sentinel*. The public was given an opportunity to comment during presentations on remedial actions, status updates for NTC sites, and annual reviews of the Base Realignment and Closure Business Plan. Comments and questions from the RAB and the general public about the SA 35 remedy were addressed at the RAB meetings.

**Declaration**

Based on the administrative record compiled for this corrective action, the Navy has determined that the remedy selected for SA 35 is appropriate and protective of human health and the environment and complies with Federal and State regulatory requirements. The OPT concurs with the selected remedy.

STUDY AREA 35	
_____ Gregory Fraley Senior Remedial Project Manager U.S. Environmental Protection Agency, Region 4	_____ Date
_____ David P. Grabka, P.G. Remedial Project Manager Florida Department of Environmental Protection	_____ Date
_____ Barbara Nwokike BRAC Environmental Coordinator U.S. Department of the Navy	_____ Date