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LETTER REGARDING TRANSMITTAL OF DRAFT TECHNICAL MEMORANDUM RESULTS
OF SOIL AND GROUNDWATER SAMPLING SITE 8 OPERABLE UNIT 13 NAS PENSACOLA

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9/9/2002
CH2MHILL



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September 9, 2002
Mr. Bill Hill, ES31
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Subject: Contract No. N62467-98-D-0095
Contract Task Order 0085 - Naval Air Station (NAS) Pensacola - Pensacola,
Florida
Draft Technical Memorandum, Results of Soil and Groundwater Sampling,
Operable Unit 13 - Site 8, Revision 00

Dear Mr. Hill:

CH2M HILL Constructors (CCI) is pleased to provide this electronic copy of the Draft Technical Memorandum, Results of Soil and Groundwater Sampling, Operable Unit 13 - Site 8, Revision 00.

Please contact me (850.939.8300, ext. 17) if you have any questions or comments regarding this material.

Sincerely,

CH2M HILL

A handwritten signature in black ink, appearing to read "Amy Twitty".

Amy Twitty, P.G.
Project Manager

cc: Gena Townsend/EPA
Tracie Vaught/FDEP
Terry Hansen/TtNUS
Greg Wilfley/CCI
Ron Joyner/NASP
Allison Harris/EnSafe
Brian Caldwell/EnSafe
Paul Stoddard/EnSafe
CCI Project File No. 171578

Results of Soil and Groundwater Sampling Operable Unit 13 – Site 8

PREPARED FOR: Bill Hill
Southern Division, Naval Facilities Engineering Command

PREPARED BY: Amy Twitty, P.G.

DATE: September 8, 2002

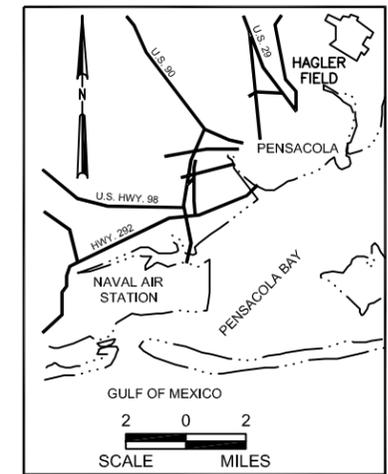
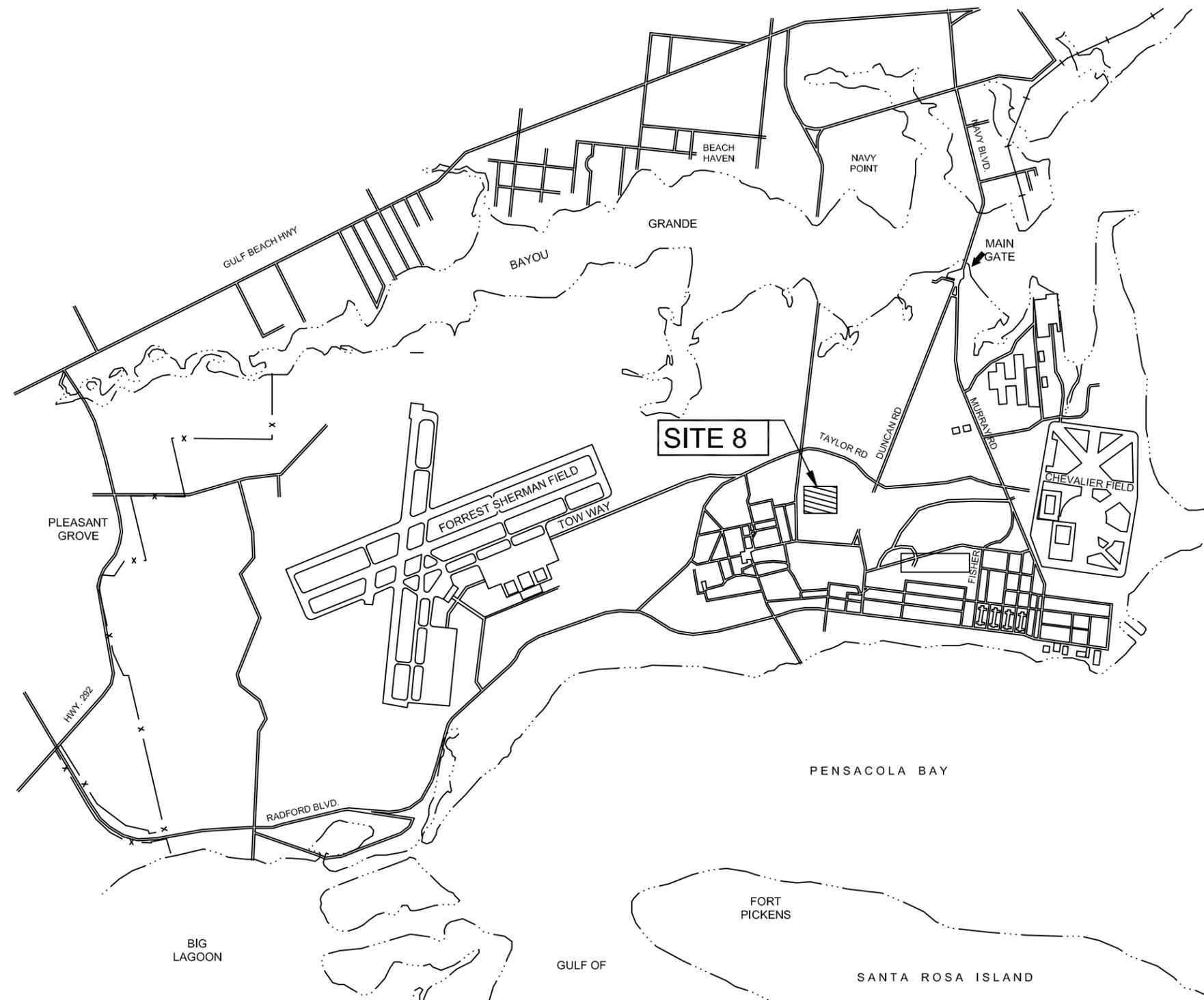
This memorandum presents analytical data obtained during sampling and analysis activities performed between August 13-14, 2002 at Naval Air Station (NAS) Pensacola, Florida. Soil sampling was conducted at Operable Unit (OU) 13, Site 8 in order to delineate contaminants for soil excavation. In addition to the scope outlined in the Sampling and Analysis Plan, CCI also collected one groundwater sample in each area of soil contamination to determine if the groundwater was impacted by soil conditions at the site.

Preliminary review of the data by the Quality Assurance Chemist indicates the data are acceptable, however, the final data validation is not complete. Therefore, this document will be considered draft until the laboratory result qualifiers have been received.

Background and Objectives

Site 8 is located along the eastern side of John Towers Road, south of Taylor Road in the middle of the NAS Complex as shown in Figure 1. Site 8 is an approximate 450- by 600-foot area currently occupied by Building 3561, which houses the NAS Pensacola Public Works Center (PWC) Maintenance/Material Department. An extensive asphalt-paved area surrounds Building 3561 to the north, east, and west, covering nearly all land surface. An approximate 20-foot wide concrete apron immediately surrounds the building to the east and west and is covered by an awning. The PWC stores building materials on the paved area west of the building. Site 8 is generally flat with a land surface elevation averaging 29 feet above mean sea level. Miscellaneous office trailers and fences storage, including Building 3678, are north of Building 3561 (EnSafe, Inc. [EnSafe], 2000). The paved area east of the building is used for PWC storage and employee parking. Sidewalks and a grassy median are to the south, between Buildings 3560 and 3561. A chain-link fence surrounds most of the site. Figure 2 presents the site layout.

Site 8 is a former base rifle range and disposal area. Various solid waste and dry refuse were reportedly placed in trenches and burned there during the late 1950s and 1960s (EnSafe, 2000). Aerial photographs and maps from the 1950s and 1960s show a rifle range at the current location of Building 3561. Earlier aerial photographs show an excavation at the northern end of the rifle range, while later photographs show the excavated area overgrown with vegetation (EnSafe, 2000). Most of the excavation noted in the earlier photographs is currently covered by Building 3561 and the surrounding paved area, which were covered in



PENSACOLA BAY

PENSACOLA BAY

FORT PICKENS

SANTA ROSA ISLAND

SITE 8

FORREST SHERMAN FIELD

CHEVALIER FIELD

GRANDE

BAYOU

NAVY POINT

BEACH HAVEN

GULF BEACH HWY

PLEASANT GROVE

HWY 202

RADFORD BLVD.

BIG LAGOON

GULF OF

PENSACOLA BAY

MURRAY RD

DUNCAN RD

TAYLOR RD

NAVY BLVD

MAIN GATE

FISTER

TOW WAY



0 3000 6000 9000



Approximate Scale: 1" = 3000'

FIGURE 1
Site Location Map
Site 8, NAS Pensacola



LEGEND

Building



Fence

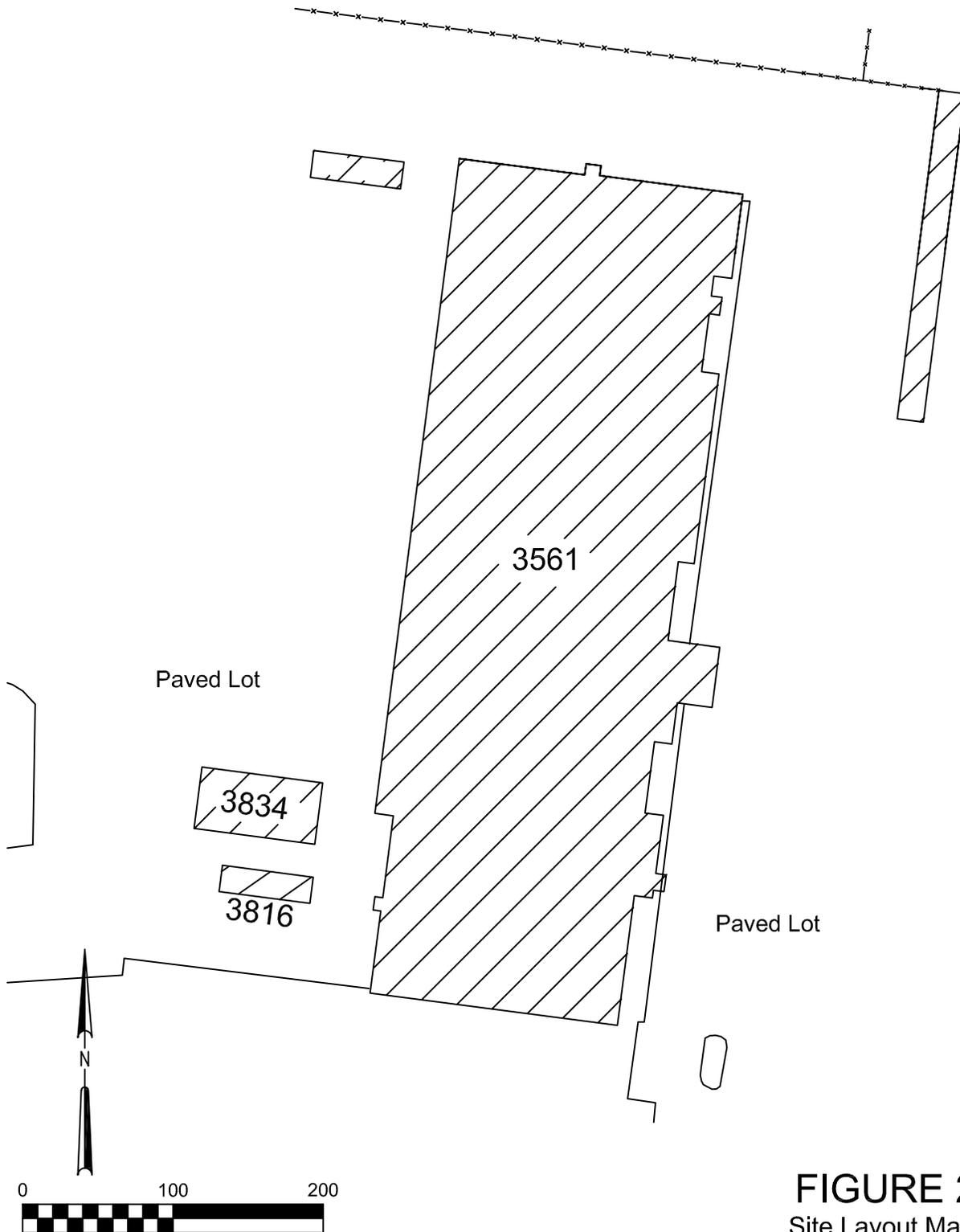


FIGURE 2
Site Layout Map
Site 8, NAS Pensacola

the mid 1970s. Facility personnel reported no waste or residue was identified during the building's construction (Naval Energy and Environmental Support Activity, 1983).

During Remedial Investigation (RI) activities in 1996, two soil contamination areas were identified at Site 8 in the vicinity of previous samples 08S01 and 08S03. Sample 08S01 was taken from the west side of Building 3561 and sample 08S03 was taken adjacent to the east side of Building 3561. It was determined sample 08S01 exceeded the subsurface soil remediation goal for cadmium. In addition, sample 08S03 exceeded the surface and subsurface soil remediation goals for dieldrin.

Remedial cleanup target levels for soil at the site were originally established as the State of Florida soil cleanup target levels (SCTLs), found in Chapter 62-777, Florida Administration Code (FAC). Subsurface SCTL for cadmium is 8 milligrams per kilogram (mg/kg) and for dieldrin is 0.004 mg/kg. The surface soil SCTL for dieldrin is 0.3 mg/kg for industrial use. However, a statistical evaluation was performed by EnSafe in order to remove land use restrictions and achieve residential surface soil cleanup goals for dieldrin at Site 8. The evaluation was conducted in conjunction with FDEP's *Use of the 95 Percent Upper Confidence Level in Developing Exposure Point Concentrations of Contaminants in Soil* (May 11, 1999). Based on the statistical analysis of the 95 percent upper confidence level (UCL), the new surface soil cleanup goal for dieldrin was established at 0.21 mg/kg (Ensafe 2002).

Soil Investigation

From August 13-14, 2002, a total of 20 subsurface samples and associated Quality Assurance/Quality Control (QA/QC) samples were collected by CH2M HILL Constructors, Inc. (CCI) in the vicinity of former sample 08S01 for the source delineation of cadmium. Additionally, a total of six surface, 12 subsurface, and associated QA/QC samples were collected by CCI in the vicinity of former sample 08S03 for the source delineation of dieldrin.

All soil samples were collected using a drill rig equipped with 4-foot samplers lined with plastic sleeves. Soil was thoroughly mixed and placed in 4-ounce glass jars. All sampling was conducted in accordance with CCI's Basewide Work Plan for NAS Pensacola (CCI, 2000), Florida Department of Environmental Protection (FDEP) Standard Operating Procedures, and the U.S. Environmental Protection Agency, Region IV, Environmental Investigation Standard Operating Procedures and Quality Assurance Manual dated May 1996, revised 1997.

Delineation of the cadmium contamination at former sample 08S01 was performed by collecting three initial samples 25 feet to the north, south, and west of its location. In addition, three samples were then collected from these sampling points (50 feet from original sample location), and two more samples were collected 75 and 100 feet to the south of the original sample. Due to the location of Building 3561, initial and secondary samples were collected 18 feet and 36 feet to the east of former sample 08S01. All samples were collected from 5 to 7 feet and 10 to 12 feet below land surface (bls). Initially, only the samples collected closest to the original samples (on 25-ft centers) were analyzed. The additional samples were held at the laboratory pending the results of the 25-ft samples. Figure 3 indicates the layout for each soil sample location.

LEGEND

- Building 
- Fence 
- New Soil Boring 
- Previous Soil Boring 
- Groundwater Sample Collected 

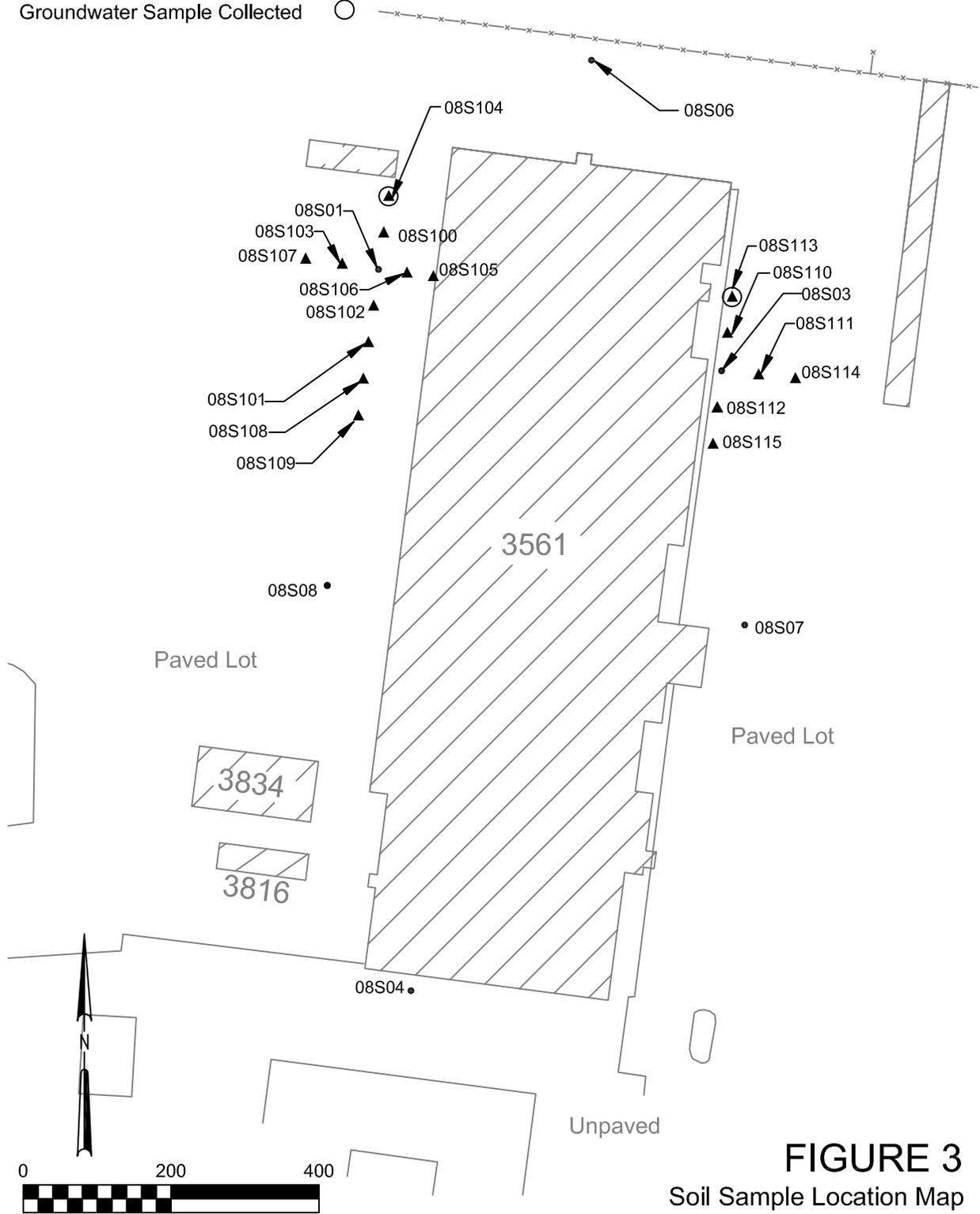


FIGURE 3
Soil Sample Location Map
Site 8, NAS Pensacola

Delineation of the dieldrin contamination at former sample 08S03 was achieved by collecting surface and subsurface samples at 25- and 50-foot increments to the north, south, and east of its location. Samples were collected from 0 to 1 foot, 5 to 7 feet, and 10 to 12 feet bls. Initially, only the samples collected closest to the original samples (on 25-ft centers) were analyzed. The additional samples were held at the laboratory pending the results of the 25-ft samples. Refer to Figure 3 for the soil sample locations.

All samples were delivered to Kemron Environmental Services in Marietta, Ohio (a Navy-approved laboratory). Select samples were analyzed for cadmium using EPA Method 6010B and dieldrin using EPA Method 8081A on a 48-hour turnaround time.

Groundwater Investigation

A direct push drill rig was used to collect two groundwater samples and one duplicate sample. The purpose of the sampling was to determine whether the soil contamination had impacted groundwater. The groundwater samples were collected at the most downgradient locations to former samples 08S01 and 08S03 at locations 08S104 and 08S113, respectively. Refer to Figure 3 for groundwater sampling locations. In collecting the samples, a 4-foot screen rod descended to the water table from approximately 15-19 bls. Teflon tubing was then lowered into the screen interval until it was one foot above the bottom of the screen (approximately 18 feet bls). The tubing was attached to a peristaltic pump and the groundwater was pumped to the surface using low flow. To minimize turbidity in the samples collected at 08S104 and 08S113, approximately three gallons of water were purged prior to collection of the groundwater sample.

The Horiba U-10 was used to check water quality. Table 1 presents the groundwater field parameter data.

TABLE 1
Groundwater Field Parameter Data

Monitoring Well	Measurement Date	Water Temperature (°C)	pH	Specific Conductivity (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
08S104	08/13/2002	29.2	5.71	0.476	129	9.74
08S113	08/14/2002	28.3	5.35	0.115	15	9.23

°C degrees Celsius
mg/L milligrams per liter
mS/cm micro Siemens per centimeter
NTU nephelometric turbidity unit

Results

Soil

Subsurface results for cadmium and dieldrin were compared to the FDEP SCTLs. As stated previously, the surface criterion for dieldrin was established at 0.21 mg/kg using the 95 percent UCL. Tables 2 and 3 present a summary of soil sample results from samples collected from the vicinity of 08S01 and 08S03, respectively. The analytical report is included in Attachment A. The Data Quality Evaluation (DQE) performed for the analytical results are presented in Attachment B.

Of the eight initial samples collected and analyzed for cadmium and the nine initial samples collected and analyzed for dieldrin, no samples exceeded the remediation cleanup goals. Therefore, the secondary samples collected were not analyzed. Figure 4 presents the soil sample results.

TABLE 2
Soil Sampling Results in Vicinity of Former Sample 08S01

Sample ID	Depth (feet bls)	Cadmium (mg/kg)
		EPA Method 6010B
085-08-100-S-7	5-7	0.485 U
085-08-100-S-12	10-12	0.283 J
085-08-102-S-7	5-7	0.156 J
085-08-102-S-12	10-12	1.34
085-08-103-S-7	5-7	0.230 J
085-08-103-S-12	10-12	0.222 J
085-08-106-S-7	5-7	0.0512 J
085-08-106-S-12	10-12	0.0971 J
Regulatory Guidance Subsurface Soil (Chapter 62-777 FAC)		8
bls	below land surface	mg/kg
J	estimated value	U
		milligram per kilogram
		undetected

TABLE 3
Soil Sampling Results in Vicinity of Former Sample 08S03

Sample ID	Depth (feet bls)	Dieldrin by EPA Method 8081A (mg/kg)	
		Surface Soil	Subsurface Soil
085-08-110-S-1	0-1	0.0123	--
085-08-110-S-7	5-7	--	0.0023 J
085-08-110-S-12	10-12	--	0.00343 U
085-08-111-S-1	0-1	0.00355 U	
085-08-111-S-7	5-7	--	0.00115 J
085-08-111-S-12	10-12	--	0.00339 U
085-08-112-S-1	0-1	0.00159 J	--
085-08-112-S-7	5-7	--	0.00338 U
085-08-112-S-12	10-12	--	0.00336 U
95 % UCL for Surface Soil		0.21	
Regulatory Guidance for Subsurface Soil (Chapter 62-777 FAC)			0.004
bls	below land surface	mg/kg	milligram per kilogram
J	estimated value	U	undetected

Groundwater

Groundwater sample results indicate cadmium and dieldrin were not detected in groundwater above the laboratory detection limit. The Method Detection Limit for dieldrin is 0.025 µg/L (above the groundwater cleanup target level [GCTL, Chapter 62-777]). Refer to Table 4 for a summary of groundwater results. Based on the groundwater results, there does not appear to be an impact to groundwater in the vicinity of the soil contamination, although the dieldrin results are not definitive.

TABLE 4
Groundwater Sampling Results

Sample ID	Cadmium (µg/L) EPA Method 6010B	Dieldrin (µg/L) EPA Method 8081A
085-08-104-GW	5.0 U	--
085-08-FD1-GW (Duplicate of 085-08-104-GW)	5.0 U	--
085-08-113-GW-19	--	0.025 U
Regulatory Guidance for Groundwater	5.0 ^a	0.005 ^b

^a primary standard as provided from 62-550 FAC

^b minimum criteria practical quantitation limit as provided from 62-777 FAC

µg/L micrograms per liter

U undetected

Conclusions and Recommendations

Soil delineation at the site has been achieved for cadmium and dieldrin with the exception of the western extent of dieldrin at sample 08S03 where contamination may be present under the building foundation. None of the COCs in the delineation samples exceeded the established soil criteria. None of the COCs exceeded the criteria levels in the groundwater samples collected and analyzed. In order to achieve No Further Action without land use controls at the site and to protect human health and ecology, CCI recommends excavating the soil in the vicinity of former samples 08S01 and 08S03.

An estimated area measuring 50 feet by 43 feet by 10 feet deep from the location of former sample 08S01 on the west side of building 3561 is proposed for excavation of cadmium-impacted soil. In addition, an area measuring approximately 25 feet by 50 feet by 12 feet deep from the location of former sample 08S03 on the east side of building 3561 is proposed for excavation of dieldrin-impacted soil. The proposed volume of soil removal is approximately 1,351 cubic yards (yd³), a substantial decrease from the proposed volume of 8,833 yd³ previously recommended. Table 5 presents the proposed excavation volumes for Site 8, while Figure 4 presents the proposed excavation areas.

LEGEND

Building	
Fence	
New Soil Boring	
Previous Soil Boring	
Groundwater Sample Collected	
Not Detected	ND
No Exceedance	NE

Notes:

1. Soil analytical results are shown in mg/kg.
2. The applicable subsurface soil criterion for cadmium is 8.0 mg/kg.
3. The applicable surface soil criterion for dieldrin is 0.210 mg/kg.
4. The applicable subsurface soil criterion for dieldrin is 0.004 mg/kg.

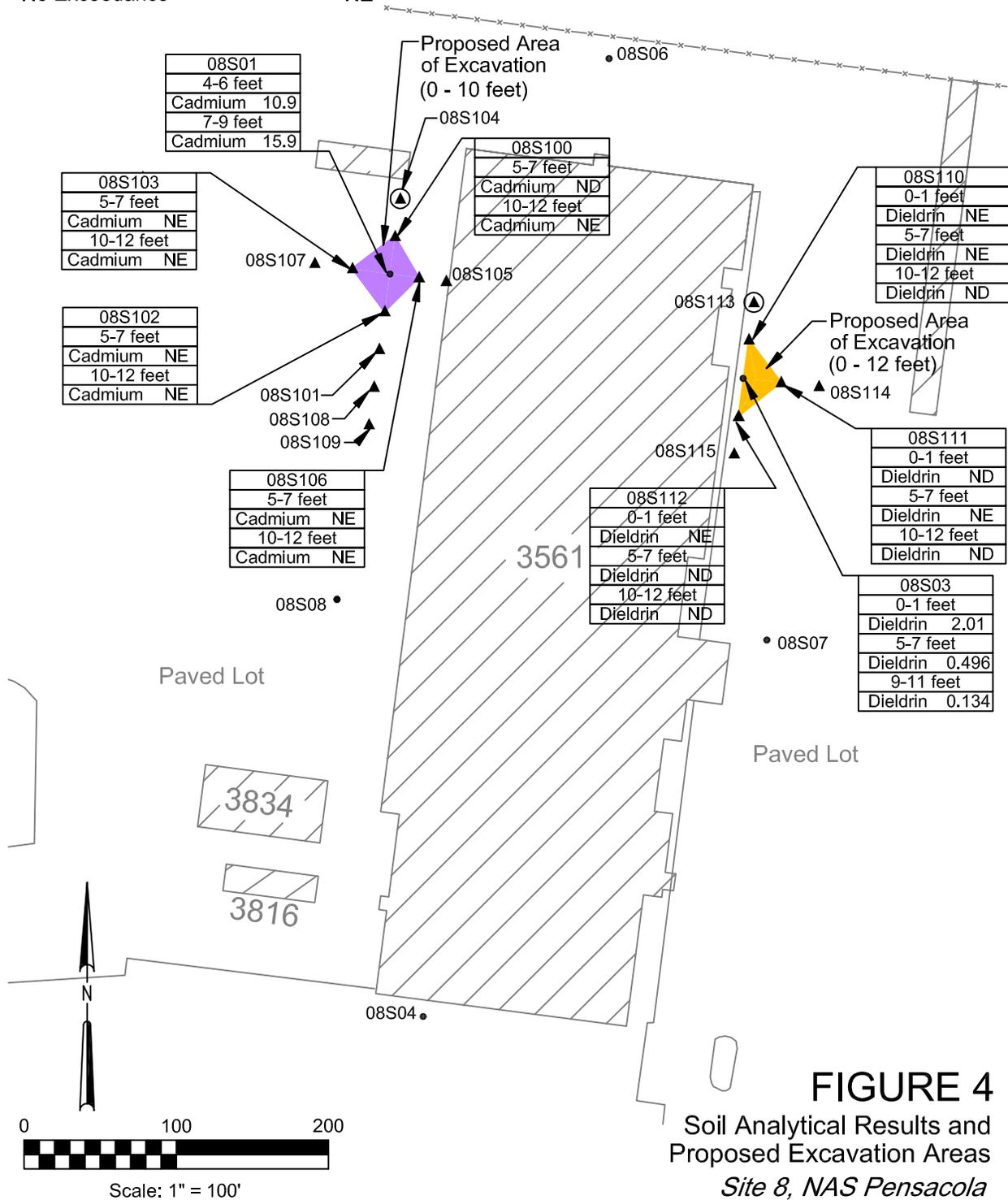


FIGURE 4
Soil Analytical Results and
Proposed Excavation Areas
Site 8, NAS Pensacola

TABLE 5
Proposed Excavation Volumes

Excavation Area	Depth (feet)	Volume (cubic yards)
08S01	0-10	796
08S03	0-12	555
Total		1,351

CCI recommends a soil sample be collected from the western wall of the excavation on the east side of Building 3561 and analyzed for dieldrin since samples could not be collected due to the building foundation.

Upon acceptance of this memorandum by the Navy, CCI will prepare a remedial action work plan outlining the proposed work.

Works Cited

CH2M HILL Constructors, Inc. Basewide Work Plan Naval Air Station Pensacola, Pensacola, Florida. June 2000.

EnSafe. *Focused Feasibility Study Report, Operable Unit 13, Sites 8 and 24, Naval Air Station, Pensacola, Florida.* May 2000.

EnSafe. *95 Percent Upper Confidence Level Calculations for Operable Unit 13.* April 2002.

Naval Energy and Environmental Support Activity. *Initial Assessment Study of Naval Air Station Pensacola, Pensacola, Florida.* 1983.