

*Focused Feasibility Study Addendum**September 2001**Operable Unif13 - Sites 8 and 24, NAS Pensacola*

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**Operable Unit 13 Focused Feasibility Study Addendum****1.0 Introduction**

This addendum to the May 3, 2000 Final Focused Feasibility Study (FS) for Operable Unit 13 (Sites 8 and 24) has been prepared to address the issue of subsurface soil contamination. The Remedial Investigation documented the presence of cadmium, dieldrin, and aldrin in the subsurface at this OU. Figures 6-2, 6-3 and 6-6 from the Remedial Investigation Report provide the locations of these exceedances.

The FS detailed the strategy and costs associated with the removal of subsurface soil in the areas of 08S01 and 24S15. These were provided as Soil Alternatives S3(c) (excavation of subsurface soil to residential standards) and S3(d) (excavation of subsurface soil to industrial standards). However, neither of these alternatives addressed the subsurface contamination associated with location 08S03. This addendum provides an analysis of that contamination, and provides an addition to the costs for Alternatives S3(c) and (d).

**2.0 Development and Screening of the Addition to Alternatives S3(c) and (d)****2.1 Contamination and volume**

As shown on Figure 6-3, the contaminants present in subsurface soil at 08S03 above their respective leachability thresholds are dieldrin and aldrin. Both of these constituents were detected in all sampled subsurface intervals. Because of the vertical persistence of the dieldrin and aldrin detections, this addendum assumes excavation of subsurface soil in the vicinity of 08S03 to 11 feet below ground surface. Areally, it is assumed that contamination extends a distance of 15 feet in all directions from the location of 08S03. These assumptions yield an impacted soil volume of 288 cubic yards (70 cubic yards of surface soil and 300 cubic yards of subsurface soil). Due to the loose, granular subsurface material, it will be necessary to utilize

shoring and structural support for the foundation of Building 3561. These assumptions are incorporated into the cost analysis.

Following excavation, backfill material would be placed in the excavation in lifts and compacted. Improper excavation, backfill, or compaction could result in subsidence and thus damage the building integrity.

## **2.2 Iniplenientability**

This alternative requires the Navy to hire a contractor to perform soil removal activities. Many contractors with 40 CFR 1910.120 training are available to perform these services. Pavement to be removed under this alternative for subsurface soil excavation is located east of Building 3561.

## **2.3 Effectiveness**

This alternative will provide additional protectiveness. In removing impacted subsurface soil to the water table, this alternative would be effective at eliminating future risk to groundwater due to the leaching of dieldrin and aldrin.

## **2.4 Cost of Addition to S3(c and d)**

The additional cost to Alternative S3(c and d) for including soil removal at location 08S03 is estimated at \$197,800. Itemized costs for the addition are presented in Table 1. It is assumed that all soil removed will be disposed of in a Subtitle D landfill as a special waste and cannot be reused as backfill.

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**Table 1**  
**Itemized Costs for Addition to Alternative S3(c and d)**  
**Excavation with Offsite Disposal -Subsurface Soil**

Action	Quantity	Cost Per Unit	Total Cost
<b>SAMPLING, EXCAVATION, AND DISPOSAL</b>			
Subsurface extent sampling			
sampling – DPT rig 1 days		\$1,500/day	\$1,500
sampling – labor 2 people – 1 day		\$110/hr per crew	\$880
equipment		LS	\$1,000
analysis 6 borings, 5 samples/boring		\$500/analysis	\$6,000
reporting		LS	\$1,500
Surface Soil Excavation	70 CY	\$20/CY	\$1,400
Subsurface Soil Excavation	300 CY	\$20/CY	\$6,000
Shoring/structural controls	60 LF	LS	\$25,000
Confirmation Sampling	10 samples (plus 1 QA/QC samples)	\$680/each	\$7,480
Backfill/Compaction	430 CY	\$20/CY	\$8,600
Transportation (Perdido Landfill)	22 trucks (assuming 20 CY trucks)	\$105/load	\$2,310
Soil Disposal	650 tons (assume 1.5 tons/CY)	\$36/ton	\$23,400
		<b>Subtotal</b>	<b>\$85,100</b>
<b>PROGRAM COSTS</b>			
Remedial Action Contractor	LS	LS	\$50,000
Engineering Oversight	LS	20%cost	\$17,000
Contingency/Miscellaneous	LS	25%cost	\$21,300
		<b>Subtotal</b>	<b>\$88.</b>
		<b>Total</b>	<b>\$173,400</b>
<b>CONTROLS</b>			
Implementation	LS	LS	(included in original estimate \$: 50,000)
<b>5-YEAR REEVALUATION</b>			
1998 cost of one evaluation	LS	LS	(included in original estimate: \$10,000)
			Present worth of one evaluation every 5 years for 30 years at a 6% discount rate
			\$24,400
<b>TOTAL COST OF ALTERNATIVE S3(D)</b>			<b>\$197,800</b>

**Notes:**

Costs for S3 (a) and (b) need to be considered in addition to those shown for S3 (c and d)

**Note:** Backfill/compaction, transportation, and soil disposal volumes include an additional 15% to account for soil expansion following excavation.

Analysis includes inorganics and pesticides.

**3.0 Detailed Analysis of the Addition to Alternatives S3(c) and (d)**

The addition of subsurface soil removal at 08S03 does not alter the detailed analysis previously performed for Alternatives S3 (c) and (d).

**4.0 Comparative Analysis of the Addition to Alternatives S3(c) and (d)**

The addition of subsurface soil removal at 08S03 does not alter the comparative analysis previously performed for Alternatives S3 (c) and (d).

**FLORIDA PROFESSIONAL ENGINEER'S SEAL**

I am registered to practice engineering by the Florida State Board of Professional Examiners (License No. 50413). I certify, under penalty of law, that the Focused Feasibility Study Addendum for Naval Air Station Pensacola - Operable Unit 13 was performed in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. To the best of my knowledge and belief, the information submitted is true, accurate, and complete; and the contents of this document are consistent with currently accepted engineering practices. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

*Elizabeth Claire Barnett*

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*9-11-01*

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Date  
License No. 50413  
License Expires February 28, 2003

**FLORIDA PROFESSIONAL GEOLOGIST SEAL**

I have read and approve of this Focused Feasibility Study Addendum at  
NAS Pensacola OU 13 and seal it in accordance with Chapter 492 of the Florida Statutes.  
In sealing this document, I certify the geological information contained in it is true to the best  
of my knowledge and the geological methods and procedures included herein are consistent  
with currently accepted geological practices.

Name: Brian E. Caldwell  
License Number: #1330  
State: Florida  
Expiration Date: July 31, 2002

Brian E. Caldwell Brian E. Caldwell  
9/19/01 Date