

**EPA Superfund
Explanation of Significant Differences:**

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Final

EXPLANATION OF SIGNIFICANT DIFFERENCES



**Site 11C - Oil/Sludge Holding Pond
Fort Eustis, Virginia**

**U. S. Army Transportation Center
Fort Eustis, Virginia**

and

**U.S. Army Corps of Engineers
Baltimore District**

September 2004

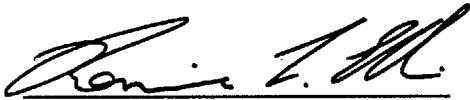


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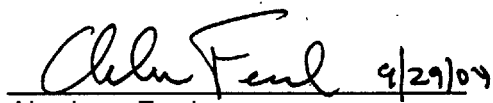
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EXPLANATION OF SIGNIFICANT DIFFERENCES

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SECTION 1 - INTRODUCTION **EXPLANATION OF SIGNIFICANT DIFFERENCES**

1.1 SITE NAME AND LOCATION AND ADMINISTRATIVE RECORD

The site is known as Site 11C - Oil/Sludge Holding Pond (Operable Unit-6, FTEUST-19) located near the intersection of Back River Road and Mulberry Island Road in the Mulberry Island section of Fort Eustis, Virginia (See **Figure 1-1**).

This Explanation of Significant Differences (ESD) was prepared in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) §117(c) and National Contingency Plan (NCP) §300.435(c)(2)(i), and will become part of the Administrative Record file in accordance with NCP §300.825(a)(2). The Administrative Record file is maintained at the Fort Eustis Environmental Office and three local information repositories, to include: Grissom Library, 366 DeShazor Drive, Newport News, VA; the Christopher Newport University Library, 1 University Place, Newport News, VA; and the Groninger Library, Building 1313, Fort Eustis, VA.

1.2 IDENTIFICATION OF LEAD & SUPPORT AGENCIES

The U.S. Army, is owner/operator and the "Lead Agency" (as defined in the NCP), for the response related to Site 11C - Oil/Sludge Holding Pond. The U.S. Environmental Protection Agency (USEPA) Region III and the Virginia Department of Environmental Quality (VDEQ), review and comment on draft documents and decisions. Additionally, site decisions and actions are jointly issued by the U.S. Army and the USEPA, with the concurrence of the VDEQ.

1.3 RATIONALE FOR ESD

The Record of Decision (ROD) was originally signed on October 29, 2002, and in general, specified the excavation and off-site disposal of the Oil/Sludge Material buried at the site. However, upon implementation of the oil/sludge removal during the initial Remedial Action ([RA] as described in the ROD), it was discovered that the total volume of buried oil/sludge material significantly exceeded initial estimates provided in the Remedial Investigation (RI) Report, and that in some instances the material was intermixed with concrete. As such, the excavation of additional oil/sludge material, in accordance with the Selected Remedy specified in the ROD, forms the basis of this ESD.

SECTION 2—SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

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EXPLANATION OF SIGNIFICANT DIFFERENCES

2.1 SITE BACKGROUND

The Oil/Sludge Holding Pond Site is located adjacent to the south of the dredge spoils area on the Mulberry Island portion of Fort Eustis, and presently the site is unused. The Oil/Sludge Holding Pond was originally an unlined pond constructed to contain rainwater runoff. In 1979, approximately 5,000 gallons of No. 2 fuel oil were pumped inadvertently into a sanitary sewer clean-out connection. At the sanitary sewage treatment plant, the fuel was diverted to a sludge drying bed. The sludge, which consisted of a mixture of oil, digested sewage, and fuel residues, was then apparently disposed of in the storm water holding pond and covered with 8 to 10 feet of earthen fill. At the time, the volume of sludge was estimated to be roughly 165 cubic yards, of which the fuel oil comprised approximately 15 percent by volume.

A Remedial Investigation (RI) of the Oil/Sludge Holding Pond determined that Volatile Organic Compounds (VOCs), Base-neutral Acid Extractable Compounds (BNAs), and Total Fuel Hydrocarbons-Heavy Fraction (TFH-H) were present in soil and groundwater samples collected within and beneath the buried oil/sludge. In addition, the RI determined that the constituents present in the site soils and groundwater pose no current excess risk to human and ecological receptors. The only apparent concern at the site would be if the buried oil/sludge was exposed by regrading or excavation. Groundwater is not currently used as a potable supply, nor is it likely to be used as such in the foreseeable future.

However, for risk management and informational purposes, a quantitative assessment of the groundwater was conducted. That assessment determined that there is an increased potential for residential risk if groundwater were used as a drinking water source. Benzene is the only compound that has been detected in groundwater at the site above USEPA maximum contaminant levels (MCLs), and was detected only in one groundwater sample during 1990. However, benzene was not detected in a groundwater sample collected from the same well in 1993. Furthermore, additional groundwater sampling was conducted at the site in July 2001, and benzene was not detected in site groundwater samples. Thus the previous detection of benzene above the MCL appears incidental, and due to the low permeable nature of the site soils, additional leaching to groundwater is not anticipated. Therefore, based upon this data, no remedial action is required for groundwater at the site. Nonetheless, groundwater monitoring should be conducted for a minimum of five additional years to confirm the absence of benzene.

While residential land use is not reasonably anticipated at the site, the potential risks were estimated for such use in the quantitative risk assessment portion of the RI. The risk assessment concluded that groundwater posed a risk to hypothetical future residential site users, if the groundwater were used for drinking water purposes. Specifically, the risk assessment indicated that such hypothetical future use would lead to an increased cancer risk of $8E-4$ and a hazard index of 10.

SECTION 2—SITE HISTORY, CONTAMINATION, AND SELECTED REMEDY

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EXPLANATION OF SIGNIFICANT DIFFERENCES

2.2 DESCRIPTION OF SELECTED REMEDY

The Selected Remedy described in the ROD consists of excavation and off-site disposal of buried sludge and contaminated soil from the site. Other components of the Selected Remedy include the following:

- The excavated soil and sludge, totaling an estimated 50 cubic yards (the exact amount will be determined based upon a scheduled delineation sampling event(s)), will be deposited in an off-site RCRA Subtitle D landfill permitted to accept the material.
- In addition to excavation, on-site activities will include dewatering of excavated soil and sludge (if necessary), erosion controls, dust controls, post-excavation soil sampling, backfilling with clean soil, and ground cover restoration.
- Long-term groundwater monitoring for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals will be conducted annually for a minimum of five years after the excavation of site soil and sludge. Monitoring will aid in evaluating any residual contamination left on site and in determining whether any additional risk management decisions are required as part of the review process.

The Selected Remedy at Site 11C - Oil/Sludge Holding Pond will focus on soil contamination resulting from the buried oil-laden sludge. As indicated in the RI Report, the levels of contamination in the site media are low, and no predominant transport pathways have been identified at the site. However, as a precautionary measure, long-term groundwater monitoring will be conducted at the site (following completion of the Selected Remedy) to ensure that all contaminants from the soils and sludge have not impacted groundwater quality.

SECTION 3 — DOCUMENT BASIS EXPLANATION OF SIGNIFICANT DIFFERENCES

3.1 RATIONALE FOR SIGNIFICANT DIFFERENCES

The Oil/Sludge Holding Pond was originally an unlined pond constructed to contain storm water runoff. In 1979, approximately 5,000 gallons of No. 2 fuel oil were inadvertently pumped into a sanitary sewer clean-out connection. The fuel was diverted to a sludge drying bed at the installation's sewage treatment plant. Anecdotal accounts indicate that the sludge, which consisted of a mixture of oil, digested sewage and fuel residues, was then disposed of in the storm water holding pond and covered with 8 to 10 feet of earthen fill. The volume of sludge was estimated to be roughly 165 cubic yards, of which the fuel oil comprised approximately 15 percent by volume.

The Final Remedial Investigation Report, prepared by Montgomery Watson in February 1997, anticipated the buried oil-laden sludge to be located approximately 6 feet below land surface, in a layer 2 to 3 feet thick, within a 20-foot by 10-foot area. The total estimated oil-laden sludge volume was 20 cubic yards. As specified in the Preferred Alternative, the initial RA at the site required the excavation of approximately 50 cubic yards of sludge material and soil from the site to allow for sufficient over-excavation of the oil sludge material. Initial excavation at the site was conducted in December 2003 and January 2004. The excavation activities revealed the unanticipated presence of significant amounts of concrete rubble overlying, and in some case in contact with the sludge material, which complicated sludge excavation. The concrete also requires off-site disposal due to its contact with the sludge material. In addition, the initial excavations also revealed that the lateral extent of the buried sludge was significantly greater than originally identified in the Remedial Investigation Report.

Subsequently, an intrusive investigation of the site via Direct Push Technology soil borings was conducted on January 22, 2004 in order to identify the extent of the sludge material and concrete rubble. Based on observations made during the initial excavation and the DPT investigation, it appears that there is a correlation between the presence of sludge and concrete at the site; i.e., the presence of concrete in a particular area is likely indicative of the presence of sludge. The investigation and excavation also indicated that the concrete was encountered between 2.5 feet to 10 feet below land surface; while the sludge layer is approximately 6 inches thick located at an approximate depth of 8 feet below land surface. Furthermore, based on the observations, the oil/sludge material is now known to encompass a 50-foot by 120-foot area.

3.2 DESCRIPTION OF SIGNIFICANT DIFFERENCES

As discussed above, the initial excavation activities and subsequent intrusive investigation identified site conditions that differed significantly from those characterized in the RI.

**SECTION 3 — DOCUMENT BASIS
EXPLANATION OF SIGNIFICANT DIFFERENCES**

Final

Descriptions of current site conditions relevant to completion of the revised RA are summarized below.

- Based on the revised vertical and lateral extents, the total sludge volume estimated to be on site is approximately 110 cubic yards, as well as 220 cubic yards of concrete.
- The berm for the dredge spoils area (which was previously adjacent to the site) was recently expanded and now encroaches on a portion of the site. Therefore, this portion of the berm must be removed prior to the extended excavation of the oil /sludge material.

Therefore, the findings of greater lateral extent of oil/sludge (and corresponding increase in oil/sludge volume) than originally estimated in the RI, the unexpected presence of buried concrete rubble, as well as the expansion of the dredge spoils berm onto the site represent the basis of the Significant Differences for the site. The following table summarizes the qualitative and quantitative differences between the actual remedial action versus the remedial action presented in the ROD.

Side-by-Side Comparison of RA as Described in the ROD to Actual RA		
RA Component	RA as Defined in ROD	Actual RA
<i>Quantity of Buried Oil/Sludge</i>	20 cubic yards	110 cubic yards*
<i>Total Quantity of Excavated Material (includes Oil/Sludge, over Excavated Soil, and Concrete)</i>	50 cubic yards (75 tons estimated)	951.31 tons
<i>Quantity of Buried Concrete Rubble</i>	0	440 tons*
<i>Removal of Dredge Spoils Area Berm</i>	No	Yes
<i>Number of Confirmation Samples (including QA/QC samples)</i>	12	31
<i>Total RA Cost (including Sampling and Oversight)</i>	~\$73K	~\$244K

* Estimated value, as exact quantities were difficult to determine given excavation method and intermingling of concrete with oil/sludge.

Overall, while excavation and disposal volumes have changed, resulting in a general increase in the cost of the RA, the means and methods of the RA implementation are virtually identical to that which is specified in the ROD. It is anticipated that the additional excavation, off-site disposal, as well as additional site work (i.e., removal and subsequent rebuilding of the dredge spoils berm) will require an extra four to five weeks to complete. This additional completion time is generally minimal, and will have no significant overall impacts. As such, the expected outcome of the RA will not change in a substantial manner. Furthermore, while the RA remains protective of human health and the environment, it also continues to meet Applicable or Relevant and Appropriate Requirements.

**SECTION 3 — DOCUMENT BASIS
EXPLANATION OF SIGNIFICANT DIFFERENCES**

3.3 SUPPORT AGENCY COMMENTS AND PUBLIC PARTICIPATION

The USEPA Region III and the VDEQ were frequently consulted and extensively involved in the planning stages of the additional RA (as it pertains to the significant differences) at the oil/sludge site. The USEPA and VDEQ agreed with the RA approach, and provided significant input on the sampling and analysis plan. This input included sample collection methodology, sample frequency and quantities, as well as sample locations.

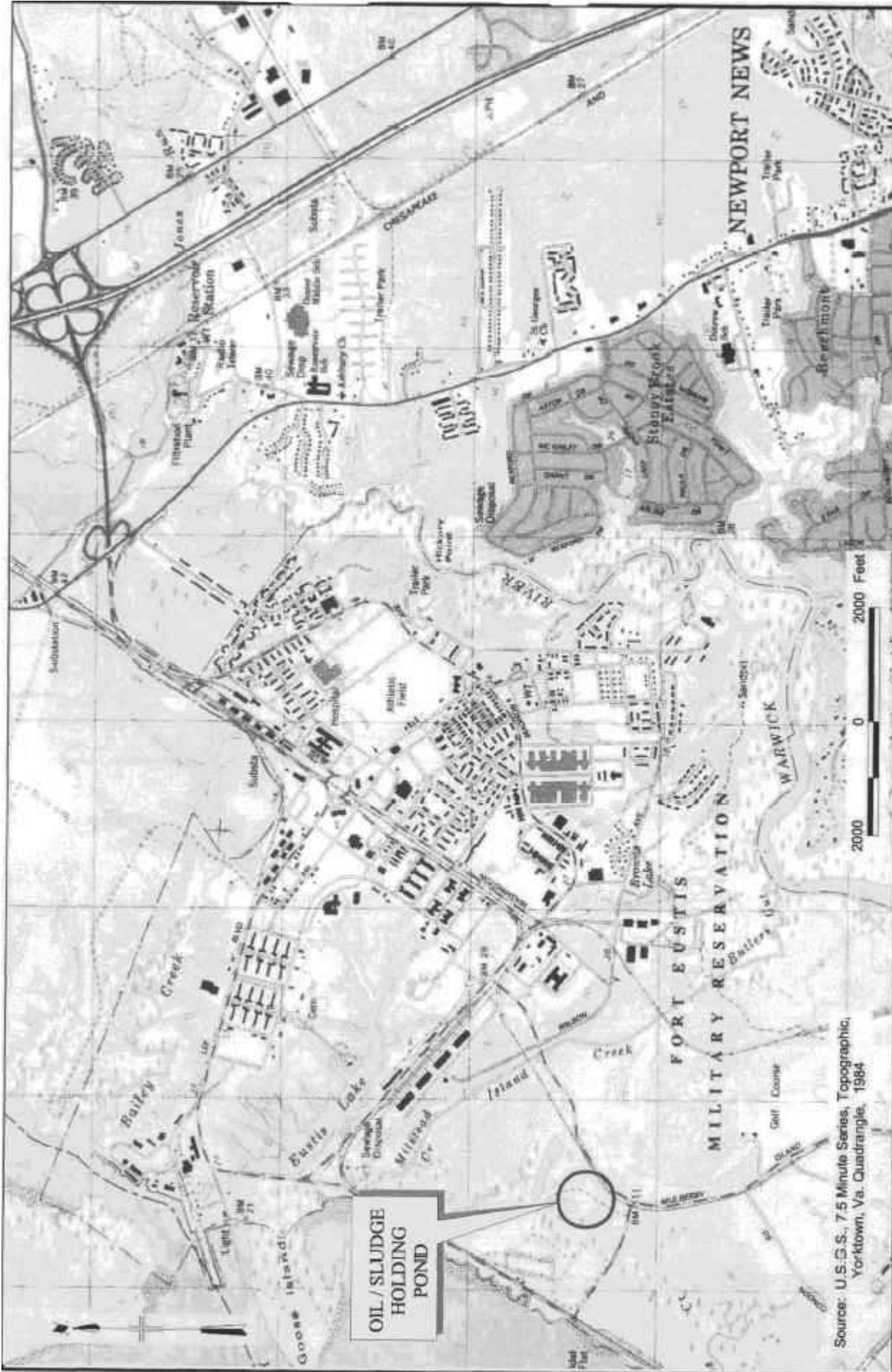
In addition, this ESD meets the public participation requirements set forth in the National Contingency Plan in 40 CFR 300.435(c)(2)(i).

3.4 STATUTORY DETERMINATION

The modified RA satisfies the relevant portions of CERCLA §121.

**Explanation of Significant Differences
Site 11C - Oil/Sludge Holding Pond
Fort Eustis, Virginia**





Source: U.S.S.S., 7.5 Minute Series, Topographic, Yorktown, Va. Quadrangle, 1984

**MALCOLM
PIRNIC**

**FORT EUSTIS, VIRGINIA
OIL/SLUDGE HOLDING POND SITE
EXPLANATION OF SIGNIFICANT DIFFERENCES
SITE LOCATION MAP**

Figure 1-1