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NSA MID SOUTH
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STATEMENT OF BASIS SOLID WASTE MANAGEMENT UNIT 3 BUILDING N 121 PLATING
SHOP DRY WELL MILLINGTON SUPPACT TN

**Statement of Basis
Solid Waste Management Unit 3
Building N-121 Plating Shop Dry Well
Naval Support Activity Mid-South
Millington, Tennessee**

INTRODUCTION

This Statement of Basis contains a summary of the location, operating history, contaminants detected, and remedy selected for Solid Waste Management Unit (SWMU) 3, Building N-21 Plating Shop Dry Well, Naval Support Activity Mid-South, Millington, Tennessee (Figure 1). A significant portion of NSA Mid-South's Northside was transferred to the City of Millington, including SWMU 3.

SPECIFIC SITE INFORMATION

SWMU 3, the former Building N-121 Plating Shop Dry Well reportedly received plating wastes generated from plating-shop training conducted at the site between 1951 and 1976. Plating waste drained into a dry well, where it would percolate into the surrounding subsurface soil. Years of operations and the potential impact to human health and the environment are the basis for the evaluation.

SUMMARY OF CONTAMINANT EVALUATION

Aircraft corrosion-control plating processes were taught at Building N-121 between 1951 and 1976, which employed cyanide-based solutions using cadmium, chromium, copper, and nickel. Concentrated plating solution was allegedly discharged through floor drains in the building that emptied into a 10'x10'x6' gravel-filled dry well, located immediately south of the building. After plating operations ceased in 1976, the N-121 building was used for storage of records, lockers, and recreational equipment by the Navy, until 2001 when the building structure was removed. The dry well was removed in 1996 and the building slab was removed in 2003. Today there is little evidence of the former Building N-121 and associated dry well. The site is now a grass-covered lot measuring roughly 150' by 85'.

Multiple investigations have been conducted at SWMU 3, beginning in 1983 and concluding in 2004, with the most comprehensive being the RFI. Environmental samples collected from soil and groundwater as part of the RFI were analyzed for inorganic constituents (metals and cyanide), volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and pesticides/polychlorinated biphenyls (PCBs). Soil and groundwater sample locations are shown on the SWMU 3 figures attached to this statement of basis. A summary of contaminant detections in soil and groundwater follows.

Soil

Seventeen soil samples were collected from five soil boring locations. Benzo(a)pyrene (a semi-volatile organic compound that is a component of coal tar) was the only detected contaminant that exceeded the residential risk-based screening criterion of 88 parts per billion (ppb) due to a single detection of 130 ppb in a surface-soil sample (0 to 1') from location 03S0005 (*Final RFI Report NSA Memphis —Assembly A* [EnSafe, 1996]).

Since the RFI, two removal actions have been completed at SWMU 3. In 1996, the dry well and surrounding soil were removed and in 2003, the building slab was also removed. Elevated chromium concentrations were detected in soil during the sub-slab sampling; however, over-excavation and subsequent sampling found that concentrations were below the industrial and residential criteria (EnSafe, 1999; EnSafe, 2004).

Human health risk for soils at SWMU 3 was assessed using three scenarios: site worker, child trespasser, and future site resident. The soil risk estimate was less than USEPA's acceptable risk range. Similarly, the child and adult hazard indices for the residential scenario were below USEPA's threshold of 1.0. Consequently, no chemicals of concern were identified in soil during the RFI. The Risk Assessment was approved by the United States Environmental Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC) Division of Remediation (DR) (formerly the Division of Superfund).

Groundwater

Samples were collected from two units during the RFI: the loess unit and the fluvial deposits aquifer. The loess unit consists of wind-blown soil deposits and is the principal land surface unit at the NSA Mid-South. Fluvial deposits are sands, gravels, and minor clays beneath the loess.

Five monitoring wells were used to characterize the loess groundwater, and five monitoring wells were used to characterize the fluvial deposits groundwater. Additional groundwater sample locations were collected using direct push technology (DPT) to characterize groundwater from both the loess and fluvial. DPT locations are shown on the attached figure that depicts the SWMU 3 RFI groundwater sample locations.

Loess Groundwater: Cadmium and beryllium exceeded the regulatory level for drinking water in two loess wells (03MW03LS and 03MW04LS). Maximum concentrations of 15 ppb cadmium and 4 ppb beryllium were detected above the regulatory levels of 5 ppb and 1 ppb, respectively. Chromium exceeded the regulatory screening level (100 ppb) at a single location (03MW04LS) where a detection of 112 ppb was identified. Additionally, thallium exceeded its 2 ppb regulatory level at a single location (03MW03LS) where 3 ppb was detected.

Fluvial Deposits Groundwater: There were no constituents detected above relevant action levels.

Additional groundwater monitoring was conducted after the RFI was submitted and approved by the TDEC and USEPA. The post-RFI groundwater data showed significant fluctuations in the earlier detected metals identified in the loess groundwater. For instance, well 03MW01LS, which

previously had no regulatory exceedances, was found in the post-RFI monitoring to have beryllium, chromium, and nickel above the regulatory levels for drinking water. Conversely, monitoring wells 03MW03LS and 03MW04LS, which previously had exceeded regulatory levels were found to contain no exceedances in the post-RFI sampling.

The maximum concentrations of metals detected during the post-RFI sampling, the comparable background reference concentrations (RC) and associated drinking water standards (i.e., Maximum Contaminant Levels [MCLs]) are provided in Table 1. The metals in groundwater were concluded to be naturally occurring based on the similarly elevated background RC shown in Table 1.

**Table 1
Maximum Groundwater Detections
From Post-RFI Monitoring**

| Well ID | Metal | Max Detection | RC (ppb) | MCL (ppb) |
|----------------|--------------------|----------------------|-----------------|------------------|
| 003G01LS | Arsenic | 4.2 | 7.32 | 10 |
| 003G01LS | Vanadium | 53.1 | 40.9 | NA |
| 003G01LS | Beryllium | 1.4 | 1.3 | 1 |
| 003G01LS | Chromium | 278 | 239 | 100 |
| 003G05MF | Methylene chloride | 36 | NA | 5 |
| 003G01LS | Nickel | 219 | 173.5 | 100 |

Notes: RFI: RCRA Facility Investigation
Ppb: parts per billion in groundwater
NA: concentration for un-impacted background groundwater
LS: loess well
MF: middle fluvial well
MCL: Regulatory drinking water level

SELECTED REMEDY

There are no site-related contaminants that would pose an excessive risk to an unrestricted reuse of the property. Therefore, no further action is the recommended remedy for SWMU 3, Building N-21 Plating Shop Dry Well.

REFERENCES

- EnSafe (2005). Supplementary Risk Assessment: SWMU 3 — Building N-121 Plating Shop Dry Well; NSA Mid-South, Millington, Tennessee. July 12, 2005. Revision 0. EnSafe Inc., Memphis, Tennessee.
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- EnSafe (1999). NSA Memphis RFI Voluntary Corrective Action (VCA); SWMU 3 — Building N-121 Plating Shop Dry Well Removal. Revision 02. *EnSafe Inc. Memphis, Tennessee*.
- EnSafe (1998). *Assembly A Long-Term Groundwater Monitoring Report; Addendum, Event 5*, March 20, 1998. EnSafe, Inc. Memphis, Tennessee.
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- E/A&H (1997). *Assembly A Groundwater Monitoring Report; March 1995 — August 1996*, (Event 2). Revision 1. May 30, 1997. EnSafe/Allen & Hoshall, Memphis, Tennessee.
- E/A&H (1996). *Final RFI Report NSA Memphis, Assembly A Building N-121 Plating Shop Dry Well — SWMU 3*. Revision 01; April 15, 1996. EnSafe/Allen & Hoshall Inc. Memphis, Tennessee.

FIGURES FOR SWMU 3

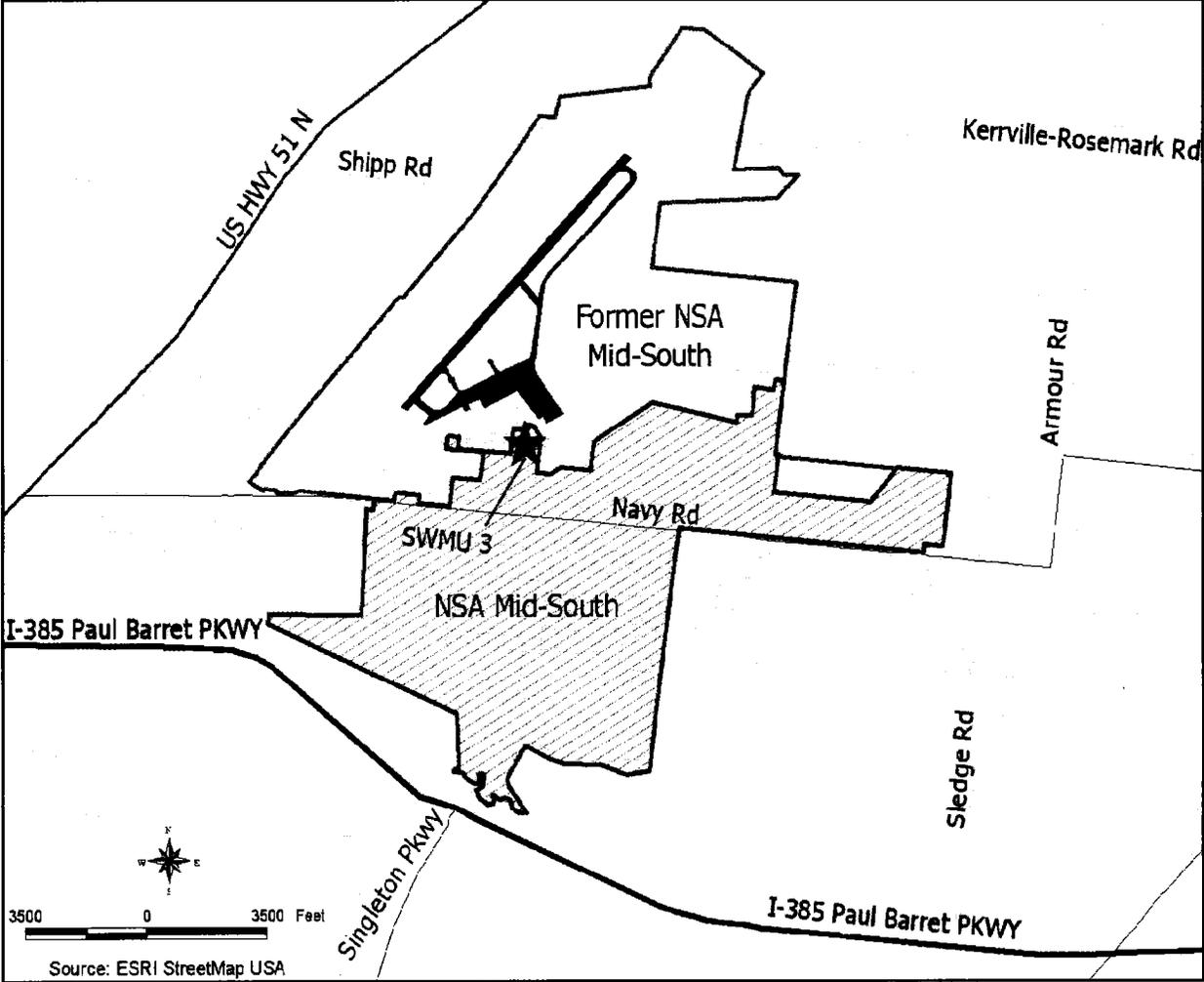
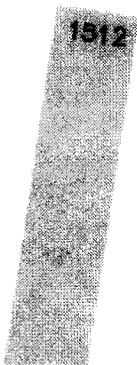
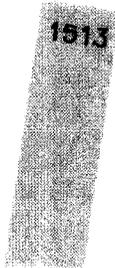
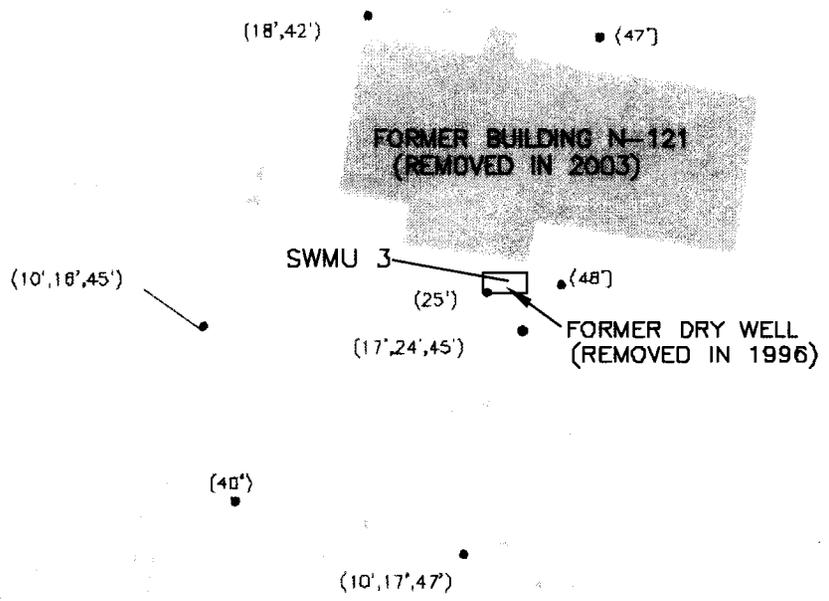
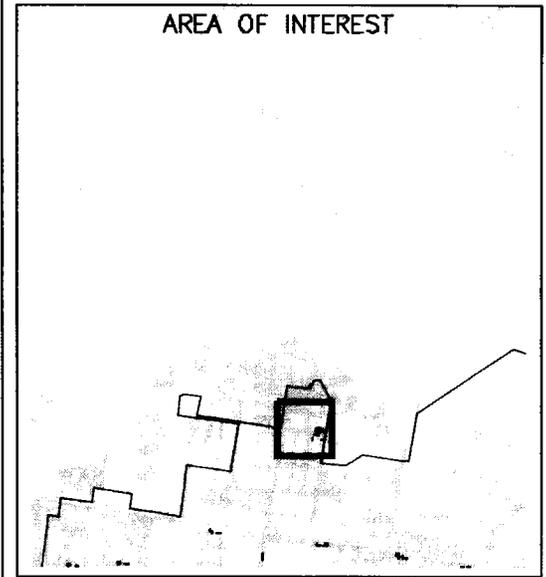


Figure 1: SWMU 3 Location at NSA Mid-South, Millington, Tennessee
Building N-121 Plating Shop Dry Well

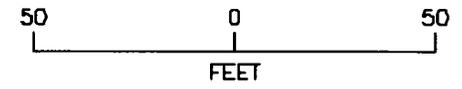


NSA MID-SOUTH

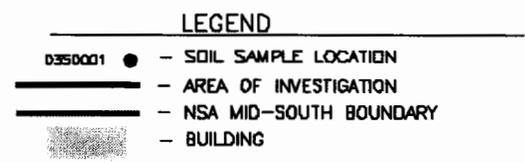
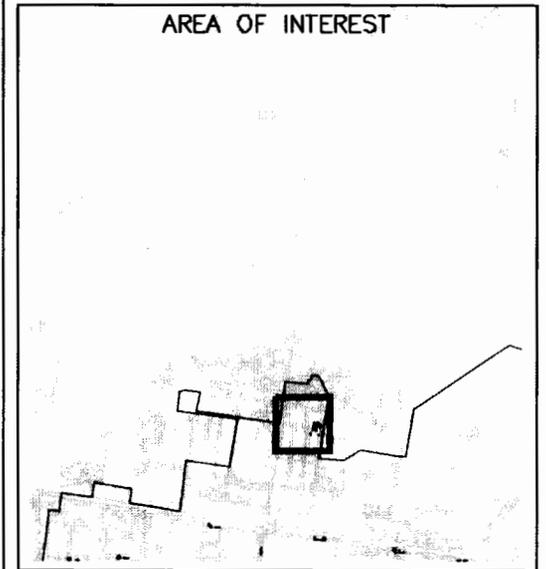
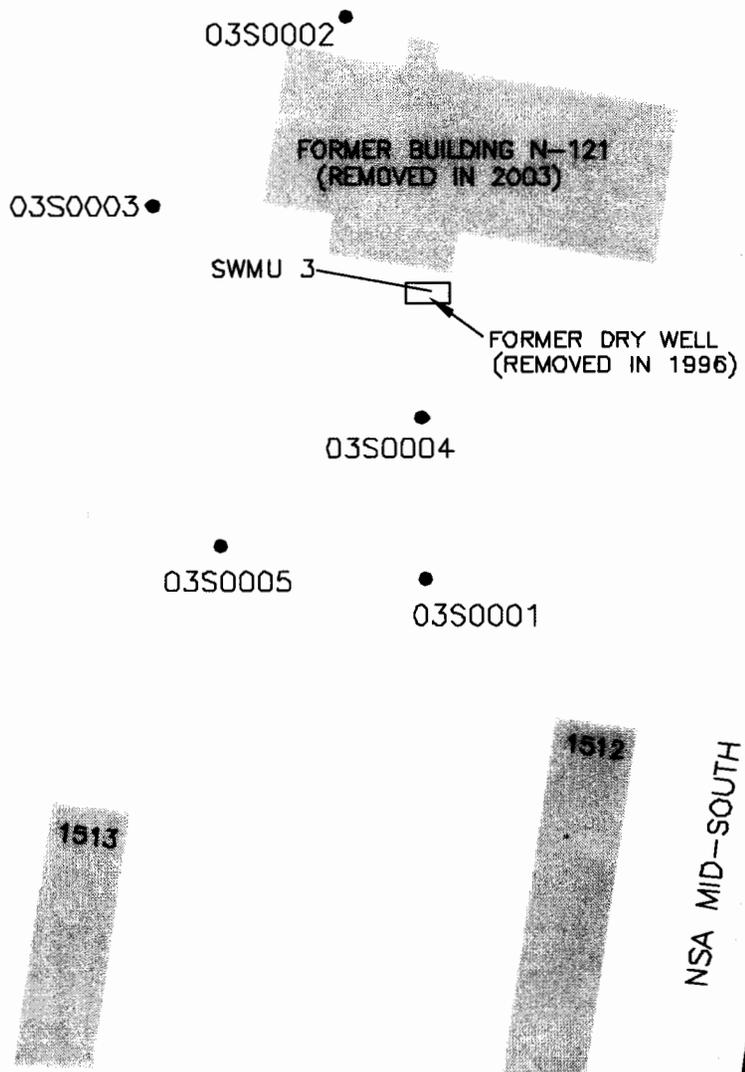
CITY OF MILLINGTON



- LEGEND**
- (10',17') ● - DIRECT PUSH SAMPLE POINT (DEPTH)
 - MIDDLE FLUVIAL DEPOSITS WELL
 - LOESS WELL
 - ==== - AREA OF INVESTIGATION
 - ==== - NSA MID-SOUTH BOUNDARY
 - - BUILDING



SWMU 3 STATEMENT OF BASIS
RFI GROUNDWATER
SAMPLE LOCATIONS



SWMU 3 STATEMENT OF BASIS
RFI SOIL
SAMPLE LOCATIONS