

**STATEMENT OF BASIS**

**BRAC SWMUs**  
**1, 4, 6, 8, 10, 11, 16, 18, 21, 26, 27, 31, 36, 38**  
**40, 42, 44, 50, 51, 52, 53, 60, 62, 64, 66, and 67**

**NAVAL SUPPORT ACTIVITY MID-SOUTH**  
**MILLINGTON, TENNESSEE**

**CTO-094**

**SOUTHNAVFACENGCOM CONTRACT NUMBER: N62467-89-D-0318**

**Prepared for:**



**Department of the Navy**  
**Southern Division**  
**Naval Facilities Engineering Command**  
**North Charleston, South Carolina**

**Prepared by:**

***ENS/AFE***

**EnSafe Inc.**  
**5724 Summer Trees Drive**  
**Memphis, Tennessee 38134**  
**(901) 372-7962**

**October 29, 2001**



ENSAFE INC.

ENVIRONMENTAL AND MANAGEMENT CONSULTANTS

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October 29, 2001

Commander  
Attn: Jim Reed  
SOUTHNAVFACENCOM  
2155 Eagle Drive  
North Charleston, SC 29406

Subject: CTO-0094; NSA Mid-South RFI

Document Transmittal —*Statements of Basis for No Further Action and Limited Action SWMUs, Naval Support Activity Mid-South, Millington, Tennessee; October 29, 2001*

Reference: Contract N62467-89-D-0318 (CLEAN II)

Dear Sir:

Please find enclosed two copies of the *Statements of Basis for No Further Action and Limited Action SWMUs, Naval Support Activity Mid-South*, dated October 29, 2001. As requested, additional copies have been distributed as shown on the attached NSA Mid-South RFI distribution list, including hand delivery of one copy to the Millington Public Library.

If you have any questions or comments of a technical nature, please contact me or Jim Rathbone at 901/372-7962. Comments or questions of a contractual nature should be directed to Patricia Tarrant at the same number.

Sincerely,

EnSafe Inc.

By: Lawson M. Anderson, CHMM  
Senior Project Manager

Enclosures: As Stated

cc: Contracts File: CTO-0094 (w/out enclosure)  
Project File: 0094-001-22-150-00 (w/out enclosure)  
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## STATEMENT OF BASIS

### **SWMU 1— Fire Department Drill Area Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 1 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 1, the Fire Department Drill Area, was used from approximately 1960 through 1984 for monthly firefighter training (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes the findings of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report, but it should not be considered a substitute for the report. The RFI report is the primary source of detailed information on SWMU 1; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMU 1. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 1. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States Environmental Protection Agency, Region IV

(USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

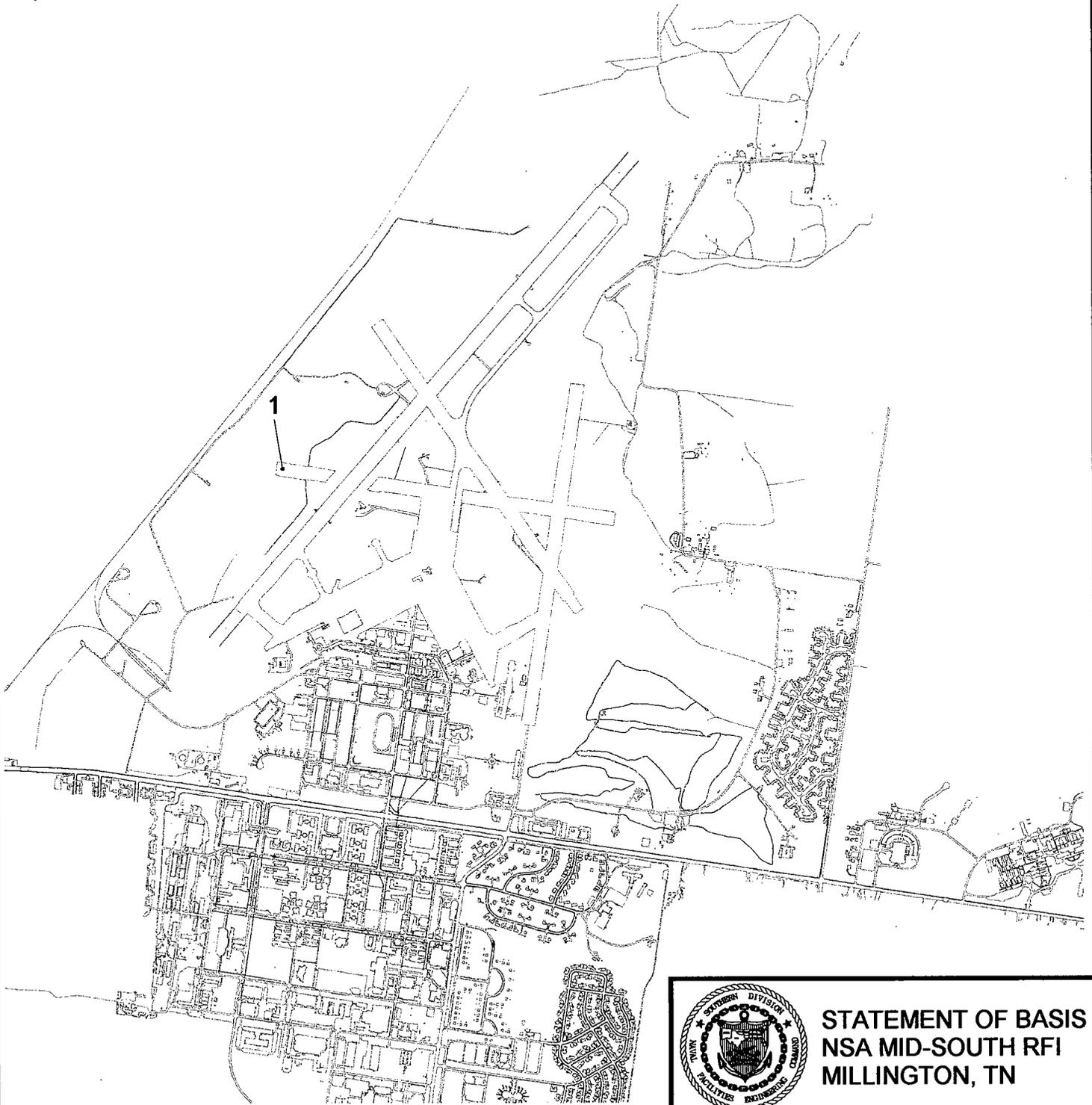
#### **2.0 PROPOSED REMEDY**

Investigation of SWMU 1 indicated minimal impact to soil or groundwater; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk.

Based on the available information, the Navy proposed a remedy for SWMU 1 of no further action in the RFI report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

SWMU 1, the Fire Department Drill Area, is an asphalt covered area of approximately 1.5 acres at the west end of Runway 09 (Figure 2). The Fire Department Drill Area was within a 200-foot-wide asphalt runway which is now in poor condition because of weathering and lack of maintenance. SWMU 1 was reportedly used as a simulated crash site for firefighter training from 1960 through 1984. Monthly fire training consisted of spraying fuel on an aircraft shell, igniting the shell, and extinguishing the fire. Approximately 55 to 100 gallons of fuel were used in each training session. Aviation fuel and waste fuels, such as deplaned fuels from aircraft, were used in the burning operation. Also, SWMU 1 reportedly housed two aboveground storage tanks (ASTs), one of unknown capacity and the other with a reported capacity of 200 gallons. A preliminary investigation of SWMU 1 in 1983 did not recommend it for a confirmation study. A 1992 investigation identified contaminants in soil along the old runway and in the former burn area.

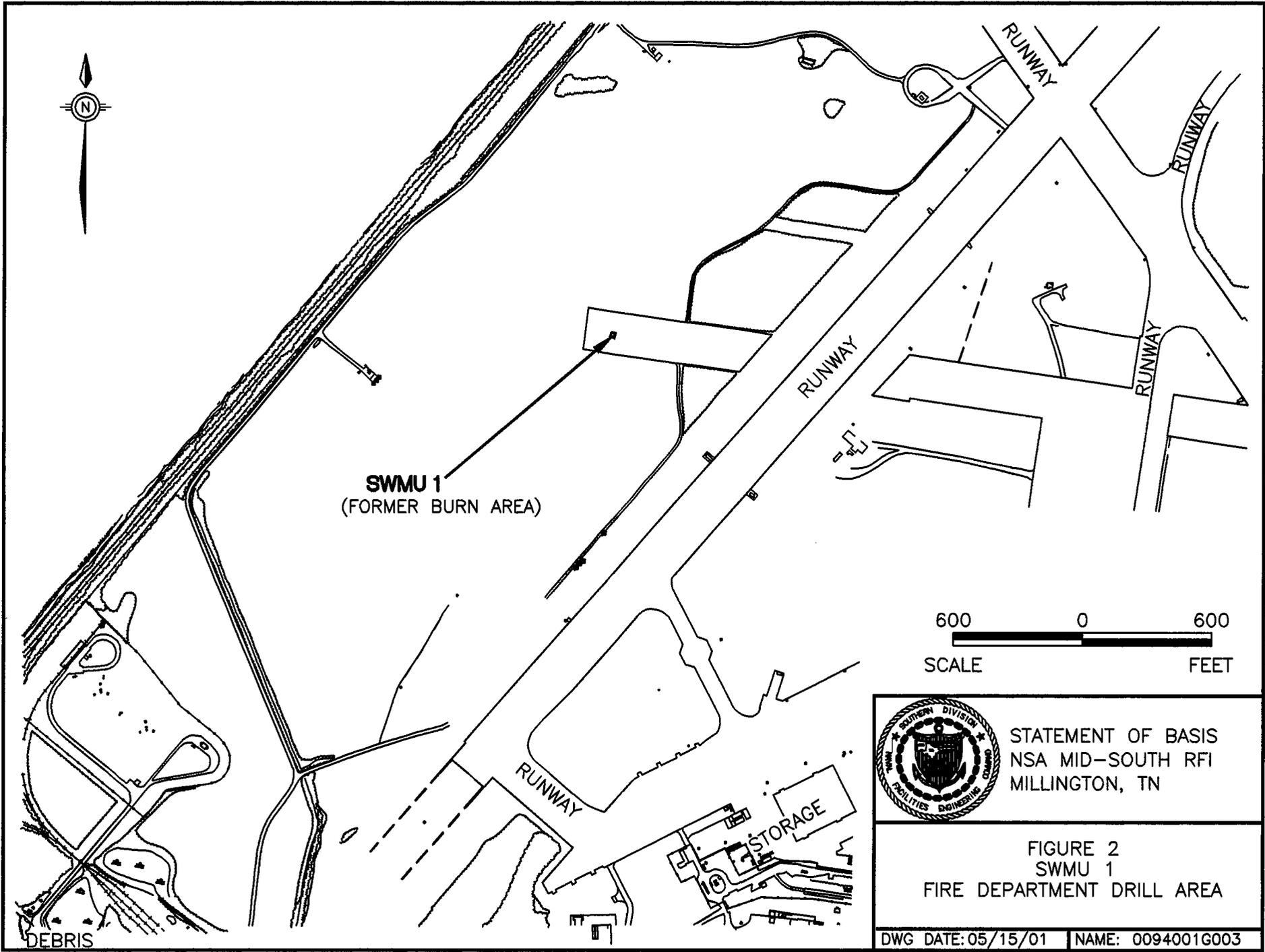


 Roads  
Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1  
SWMU 1  
Fire Department Drill Area**



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMU 1  
FIRE DEPARTMENT DRILL AREA



Between 1994 and 1995, the Navy investigated SWMU 1, in accordance with the regulatory permit requirements. Media sampled during the investigation included surface soil (zero to 12 inches below the surface), subsurface soil (deeper than 12 inches below the surface), and fluvial deposits groundwater (the first usable groundwater beneath the site at approximately 40 feet below the surface).

Contaminant concentrations in SWMU 1 soil and groundwater were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs). Also, total petroleum hydrocarbon (TPH) concentrations were compared to the TDEC cleanup goals for TPH.

Investigation results indicated minimal soil or groundwater impact at SWMU 1, with the following contaminants identified at concentrations exceeding screening values:

- **Surface Soil** — The pesticide dieldrin exceeded its residential RBC in several samples. TPH in one sample exceeded TDEC's most conservative TPH cleanup goal.

Dieldrin is commonly detected throughout Naval Support Activity Mid-South due to its aerial application in the 1950s and 1960s. The dieldrin concentrations identified at SWMU 1 were not considered a site-related source of soil contamination.

#### **4.0 SUMMARY OF SITE RISKS**

During the SWMU 1 RFI, the effects of long-term exposure to the compounds identified in soil were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to

USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable incremental lifetime cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer causing chemicals has been exceeded.

The preliminary risk evaluation of SWMU 1 indicated human health risk did not exceed the USEPA incremental lifetime cancer risk or hazard index acceptable levels for residential or industrial scenarios. Based on the human health preliminary risk evaluation, existing conditions at SWMU 1 are considered protective of human health.

Ecological risk was assessed by observing SWMU 1, which was covered with degraded asphalt. There were no significant features present which would provide shelter, substantive food or water, or a mixture of cover types to wildlife. Therefore, there are no viable long-term habitats for ecological receptors and no unacceptable ecological risk at SWMU 1.

Based on the human health preliminary risk evaluation and no unacceptable ecological risk, existing conditions at SWMU 1 are considered protective of human health and the environment.

#### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 1, minimal impact was identified in soil or groundwater, a preliminary risk evaluation indicated the area is suitable for residential or industrial land use, and there is no unacceptable ecological risk.

Further investigation of SWMU 1 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.



**6.0 SUMMARY OF ALTERNATIVES**

According to the reuse plan prepared by the City of Millington, SWMU 1 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 1 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The human health preliminary risk evaluation indicates the area not only is suitable for industrial land use, but also is acceptable for residential land use. Additionally, there is no unacceptable ecological risk at this asphalt-covered site. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 1 — no further action — is considered protective of human health and the environment.

**7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 1 is no further action. Based on the information currently available, contaminants remaining in soil or groundwater at SWMU 1 meet USEPA and TDEC media cleanup standards, except for dieldrin in several soil samples and TPH in one surface soil sample; a preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Since community input could affect selection of a final remedy for SWMU 1, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box above, and postmarked no later than December 14. Notification of the public comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives of the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received copies

of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 1. Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

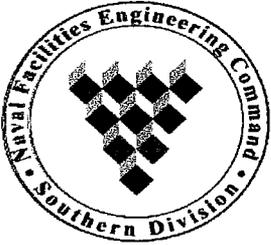
The SWMU 1 RFI report is part of the Administrative Record that can be reviewed in the Information Repository, which was established to provide public access to documents pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
1-901-872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMU 1, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.US](mailto:cbullington@mail.state.tn.US); or write to the address in the box on this page.*



## STATEMENT OF BASIS

### **SWMUs 4, 6, 31, and 38 — Northside Industrial Drainage Ditches Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management units (SWMUs) 4, 6, 31, and 38 at Naval Support Activity Mid-South, Millington, Tennessee (Figure 1). SWMU 4 consists of the storm sewer and drainage ditch from Building N-121, which housed a plating shop. SWMU 6 consists of the storm sewer and drainage ditch from Building N-126, which housed the Aircraft Intermediate Maintenance Department (AIMD) and a plating shop. SWMU 31, which is upgradient of SWMU 6, consists of the storm sewer and drainage ditch near the Aircraft Wash Rack at Fourth Avenue. SWMU 38, which is downgradient from SWMUs 4 and 6, consists of the miscellaneous ditches draining the industrialized areas on the Northside of Naval Support Activity Mid-South.

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe all remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes the findings of the SWMUs 4, 6, 31, and 38 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report, but it should not be considered a substitute for the report. The RFI report is the primary source of detailed information on SWMUs 4, 6, 31, and 38; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMUs 4, 6, 31, and 38. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at

SWMUs 4, 6, 31, and 38. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

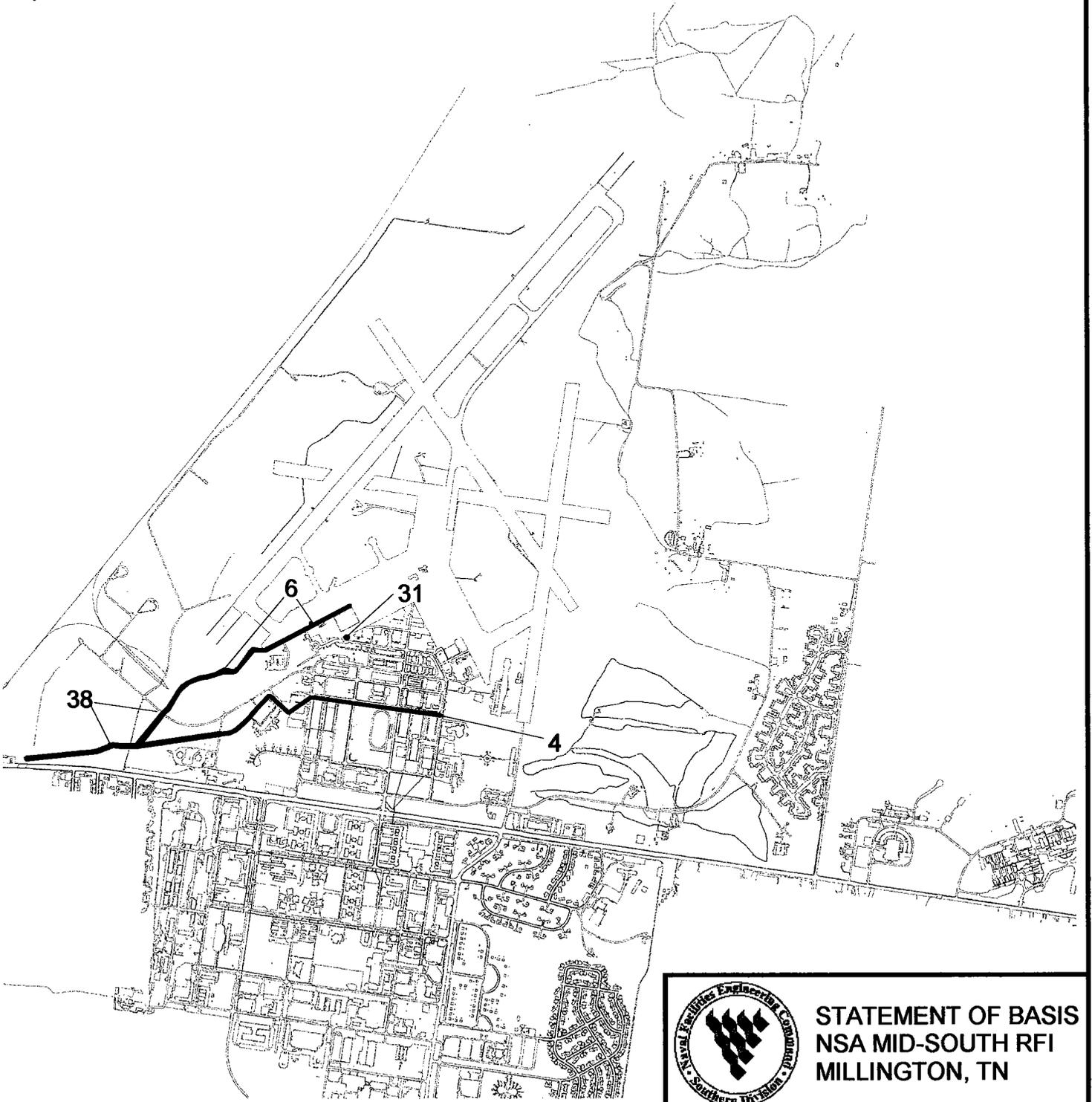
#### **2.0 PROPOSED REMEDY**

Investigation of SWMUs 4, 6, 31, and 38 indicated low concentrations of contamination in sediment; a human health risk assessment indicated the areas are suitable for site worker and child trespasser scenarios; and a low risk potential was predicted to ecological receptors within the drainage ditches.

Based on the available information, the Navy proposed a remedy for SWMUs 4, 6, 31, and 38 of no further action in the RFI report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

Building N-121, at the northwest corner of the intersection of Memphis and Casablanca Avenues, housed a plating shop which used cadmium, chromium, copper, nickel, and cyanide-based solutions. SWMU 4 consists of a storm sewer which originates at Building N-121 and runs westerly along Casablanca Street to Astoria Avenue and then southwesterly to a section of open drainage ditch which discharges into SWMU 38 (Figure 2). Diluted wastewater was flushed down drains, into the storm sewer and open drainage ditch. Conservative estimates of the volume of diluted wastewater discharged into the storm sewer and drainage ditch is 17,000 gallons per day.

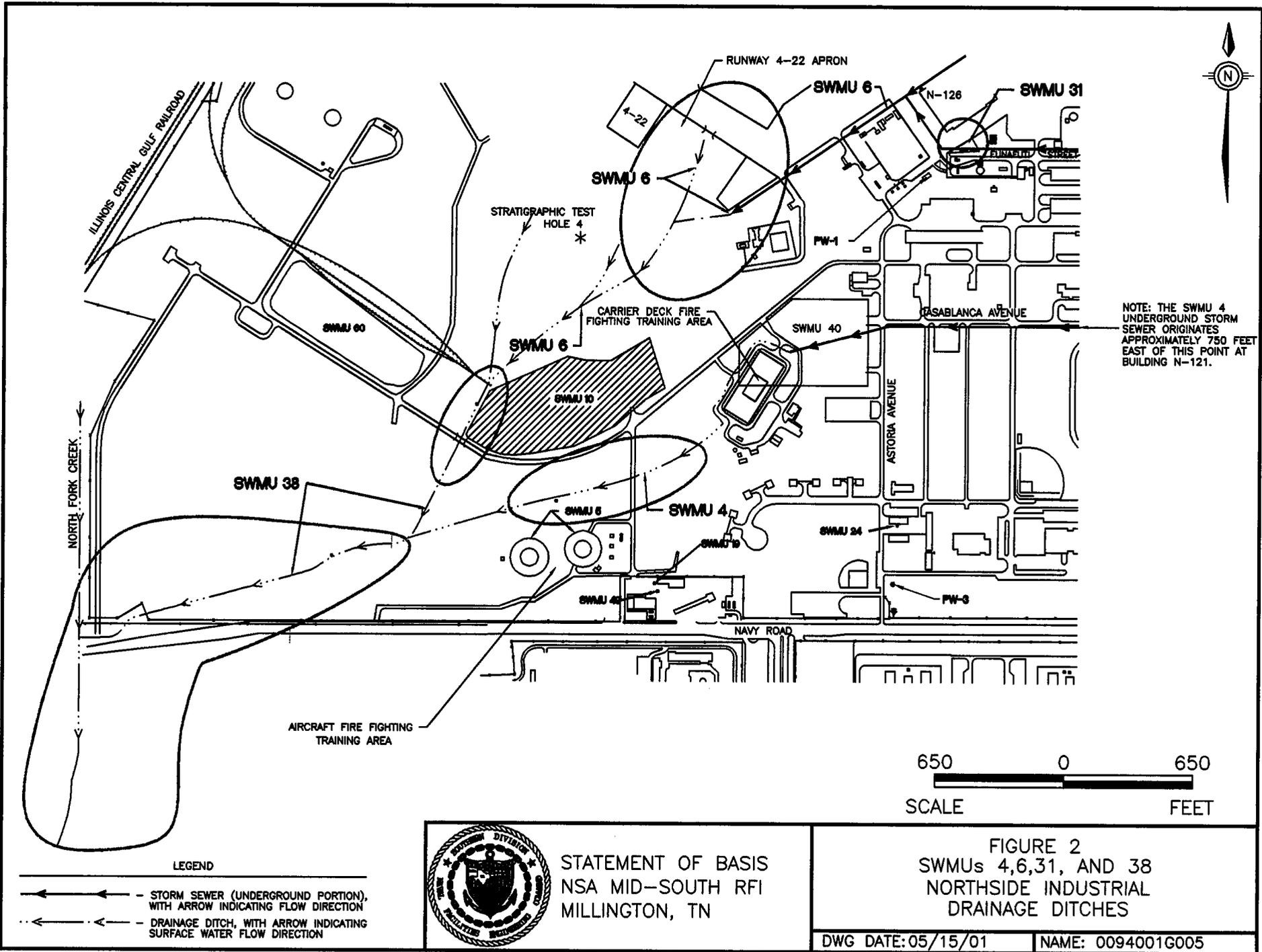


 Roads  
 Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1  
SWMUs 4,6,31, & 38  
Northside Industrial Drainage Ditches**



ILLINOIS CENTRAL GULF RAILROAD

RUNWAY 4-22 APRON

SWMU 6

SWMU 31

SWMU 6

STRATIGRAPHIC TEST HOLE 4 \*

CARRIER DECK FIRE FIGHTING TRAINING AREA

PW-1

SABLANCA AVENUE

SWMU 6

SWMU 40

ASTORIA AVENUE

SWMU 38

SWMU 10

SWMU 4

SWMU 24

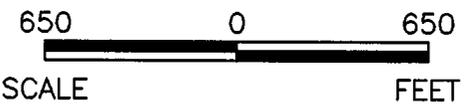
SWMU 40

SWMU 10

PW-3

NAVY ROAD

AIRCRAFT FIRE FIGHTING TRAINING AREA



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMUs 4, 6, 31, AND 38  
NORTHSIDE INDUSTRIAL  
DRAINAGE DITCHES

DWG DATE: 05/15/01

NAME: 0094001G005



SWMU 6 consists of an underground storm sewer which originates at Building N-126 and an open drainage ditch just south of the runway apron (Figure 2). The underground portion of SWMU 6 at Building N-126 flows southwesterly to the end of the apron along Runway 4-22, where it turns due west and becomes an open drainage ditch, intersecting the open ditch south of the Runway 4-22 apron. Between 1955 and 1981, a battery shop operated in the northeast corner of Building N-126. Diluted liquid battery wastes were reportedly discharged through drains into SWMU 6. During operation, the battery shop discharged approximately 100 gallons per day of a diluted and neutralized acid mixture into the storm sewer. Electrolyte spills and drippings also were discharged into the Building N-126 floor drains. These floor drains were connected to 3- and 4-inch acid-resistant pipes which emptied into the storm sewer.

SWMU 31 consists of the Aircraft Wash Rack at Fourth Street (now Indianapolis Street), which is a paved area that slopes to a catch basin in a parking lot (Figure 2). The Aircraft Wash Rack was first used in 1956 to rinse treatment chemicals from aircraft and it is reportedly still structurally sound, but it has not been used to wash aircraft since at least 1986. Aluminum aircraft parts were reportedly treated with chromic acid (alodine) before arriving at the wash rack. The aircraft were then washed with a high-pressure detergent to remove the acid. Wastewater on the parking area collected in the catch basin which was connected to the storm sewer leading to SWMU 6.

SWMU 38 consists of miscellaneous ditches draining the industrial areas on the Northside of Naval Support Activity Mid-South. SWMU 38 flows to the southwest, where it eventually discharges into North Fork Creek (Figure 2).

Between 1995 and 1996, the Navy investigated SWMUs 4, 6, 31, and 38, in accordance with the regulatory permit requirements. Media sampled during the investigation included surface sediment (zero to 6 inches below the surface) and subsurface sediment (deeper than 12 inches below the surface) in the drainage ditches.

Contaminant concentrations in SWMUs 4, 6, 31, and 38 sediment samples were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for

risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation results indicated sediment in certain areas of SWMUs 4, 6, 31, and 38, contained elevated concentrations of semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), pesticides, polychlorinated biphenyls (PCBs), herbicides, and metals. However, analytical data indicated the vertical extent of contamination was generally limited to the upper 6 inches of sediment and the lateral extent was generally limited to the immediate area around discharge points. The pesticides dieldrin and DDT were routinely identified in sediment samples from the drainage ditches; however, their presence was most likely due to aerial application for insect control during the 1950s and 1960s and they were not considered a site-related source of sediment contamination. Based on the isolated contamination encountered, the Navy recommended no further action for sediment at SWMUs 4, 6, 31, and 38.

#### **4.0 SUMMARY OF SITE RISKS**

During the SWMUs 4, 6, 31, and 38 investigation, compounds identified in sediment were assessed to estimate the risk to human health or the environment, a scientific process commonly referred to as a "baseline risk assessment." Risk to human health was calculated for two hypothetical exposure scenarios for ditches: the site worker and the child trespasser. Both scenarios were assessed for exposure to sediment through ingestion (swallowing) and dermal (skin) contact. Risk estimates calculated for sediment exposure were compared to USEPA's acceptable cancer risk (carcinogenic) and hazard risk (noncarcinogenic) levels, which were formulated by USEPA using conservative, protective assumptions about the duration of exposure, and the concentration and toxicity of the chemicals. The acceptable incremental lifetime cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer-causing chemicals has been exceeded.

**Sediment Exposure** — Risk estimates calculated for the site worker and child trespasser scenarios at each of the SWMUs indicated estimates within USEPA acceptable limits. Based on the



human health risk assessment, existing conditions at SWMUs 4, 6, 31, and 38 are considered protective of human health.

Ecological risk at SWMUs 4, 6, 31, and 38 was assessed by observing each of the SWMUs. At SWMUs 4 and 6, viable aquatic communities could not exist due to an intermittent and seasonal flow regime. Further, terrestrial vertebrate use of these areas should be limited based on the lack of habitat features. Downstream transport of inorganic and organic compounds did not appear to be occurring, thus a low risk potential is predicted to ecological receptors from the contamination identified in SWMUs 4 and 6.

At SWMU 31, the drainage system was mostly underground. Thus, no aquatic or terrestrial species were affected, so direct receptor exposure was very limited and ecological risk potential is low.

The SWMU 38 ditch does not appear to be capable of supporting aquatic life and does not provide habitat to support terrestrial species.

A habitat biota survey of this area did not reveal significant use of the area by terrestrial species other than songbirds. A low risk potential is predicted to ecological receptors from the contamination identified in SWMU 38.

Based on the human health risk assessment and a low ecological risk potential, existing conditions at SWMUs 4, 6, 31, and 38 are considered protective of human health and the environment.

### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMUs 4, 6, 31, and 38, low concentrations of contaminants were identified in sediment; a human health risk assessment indicated the areas are suitable for site worker and child trespasser scenarios; and a low risk potential is predicted to ecological receptors.

Further investigation of SWMUs 4, 6, 31, and 38 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

### **6.0 SUMMARY OF ALTERNATIVES**

According to the reuse plan prepared by the City of Millington, the SWMUs 4, 6, 31, and 38 ditches will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMUs 4, 6, 31, and 38 were to demonstrate that human health risk was within acceptable levels for likely human receptors and that environmental risk was not significant. The human health risk assessment indicated the area is

suitable for site worker and child trespasser scenarios, so existing conditions are protective of likely human receptors. Additionally, there is a low risk potential predicted for ecological receptors at these sites. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMUs 4, 6, 31, and 38 —

no further action — is considered protective of human health and the environment.

### **7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMUs 4, 6, 31, and 38 is no further action. Based on the information currently available, contaminants remaining in sediment at SWMUs 4, 6, 31, and 38 may exceed USEPA sediment screening values, but the extent of contamination was limited both laterally and vertically; a human health risk assessment indicated the sites are suitable for site worker and child trespasser scenarios; and a low risk potential is predicted to ecological receptors. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

### **8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Since community input could affect selection of a

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Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535



final remedy for SWMUs 4, 6, 31, and 38, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box on page 5, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

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Millington, Tennessee**

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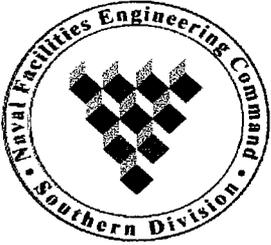
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4858 Navy Road  
Millington, Tennessee 38053  
1-901-872-1585**

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*For more information on the proposed remedy for SWMUs 4, 6, 31, and 38, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on page 5.*



## STATEMENT OF BASIS

### **SWMU 11 — Northside Oiled Dirt Roads Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 11 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 11 consists of the oiled dirt roads on the Northside of Naval Support Activity Mid-South, particularly the horse trails which begin at the riding academy (Building 1460) and encircle Navy Lake, Lake Louise, and Tanya Lake (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes the findings of the SWMU 11 Resource Conservation and Recovery Act (RCRA), Confirmatory Sampling Investigation (CSI) report, but it should not be considered a substitute for the report. The CSI report is the primary source of detailed information on SWMU 11; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMU 11. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 11. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and

October 29, 2001

Conservation (TDEC) and the United States Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

Investigation of SWMU 11 indicated minimal impact to soil; a human health preliminary risk evaluation indicated SWMU 11 is suitable for residential or industrial land use; and there is no unacceptable ecological risk.

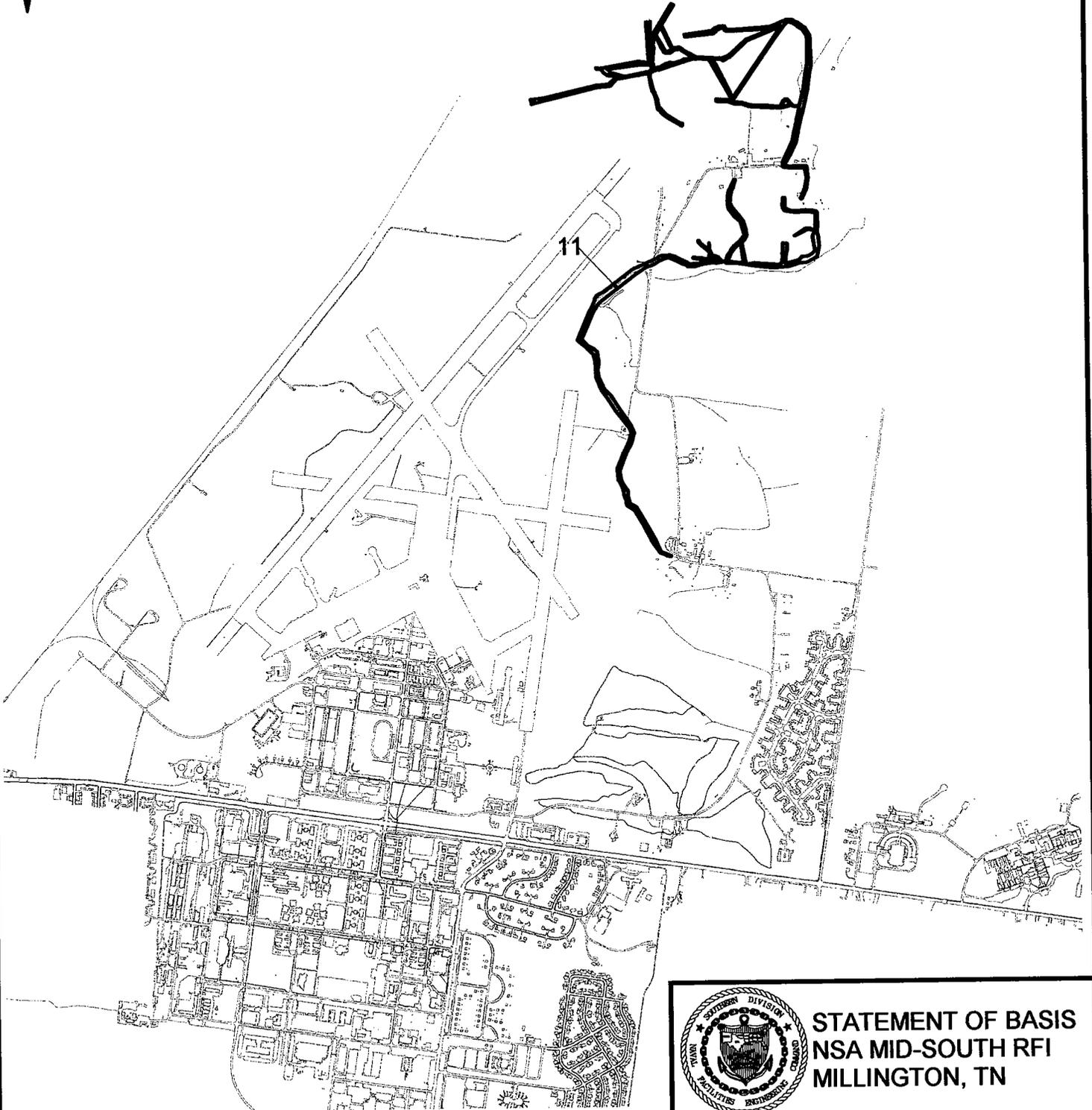
Based on the available information, the Navy proposed a remedy for SWMU 11 of no further action in the CSI report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

SWMU 11 consists of the oiled dirt roads on the Northside of Naval Support Activity Mid-South. The dirt roads are present throughout the periphery of the property, but investigation concentrated on the horse trails maintained by Morale, Welfare, and Recreation starting at the riding academy (Building 1460) and encircling Navy Lake, Lake Louise, and Tanya Lake (Figure 2).

According to the 1990 RCRA Facility Assessment, personnel sprayed waste oil on the dirt roads to suppress dust. The exact dates for spraying oil were not documented; however, it is believed to have started in 1942 and continued until the early 1970s. The amount of dirt road sprayed with oil was estimated to be 150,000 square feet.

In 1995 and 1996, the Navy investigated SWMU 11, in accordance with the regulatory permit requirements. Media sampled during the investigation included surface soil (zero to 12 inches below the surface) and subsurface soil (deeper than 12 inches below the surface).

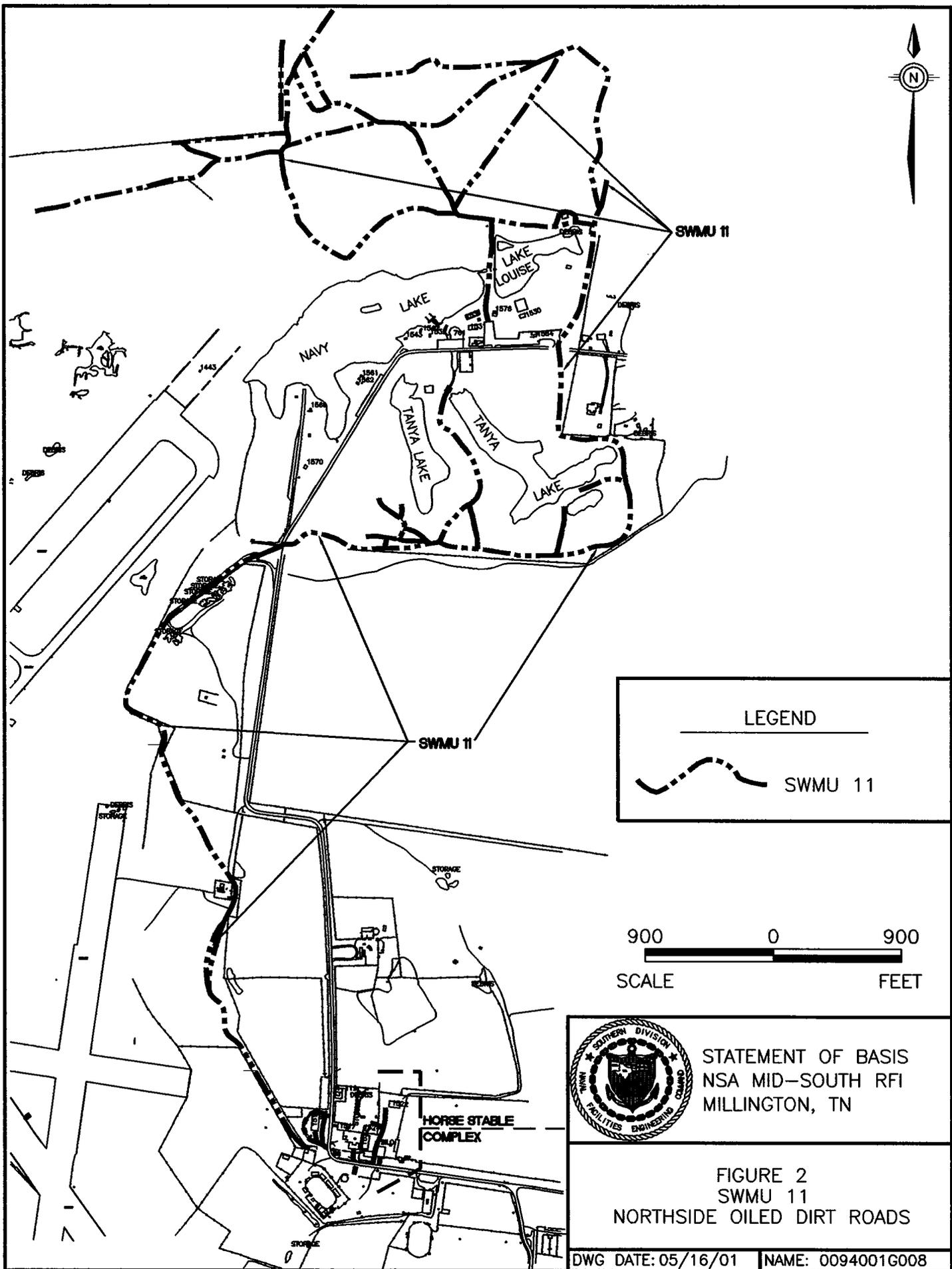


 Roads  
Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1  
SWMU 11  
Northside Oiled Dirt Roads**



SWMU 11

LAKE LOUISE

LAKE

TANYA LAKE

TANYA LAKE

LAKE

NAVY

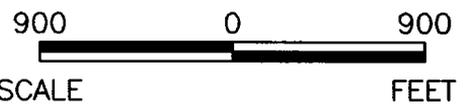
SWMU 11

HORSE STABLE COMPLEX

LEGEND



SWMU 11



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMU 11  
NORTHSIDE OILED DIRT ROADS



Contaminant concentrations in SWMU 11 soil were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation results indicated minimal soil impact at SWMU 11, with the following contaminants identified at concentrations exceeding screening values:

- **Surface Soil** — Samples indicated the pesticide dieldrin exceeding its residential RBC.
- **Subsurface Soil** — Samples indicated nickel exceeding its SSL.

Dieldrin is commonly detected throughout Naval Support Activity Mid-South due to its aerial application in the 1950s and 1960s. The dieldrin concentrations identified at SWMU 11 are not considered a site-related source of soil contamination.

#### 4.0 SUMMARY OF SITE RISKS

During the SWMU 11 CSI, the effects of long-term exposure to the compounds identified in soil were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable incremental lifetime cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer-causing chemicals has been exceeded.

The preliminary risk evaluation of SWMU 11 indicated human health risk did not exceed the USEPA incremental lifetime cancer risk or hazard index acceptable levels for residential or industrial scenarios. Based on the human health preliminary risk evaluation, existing conditions at SWMU 11 are considered protective of human health.

Ecological risk was assessed by observing SWMU 11. Because the horse trails are used frequently, the terrestrial vertebrate use of this area should be limited. Any transport of inorganic or organic compounds should not occur based on site conditions, and thus a low risk potential is predicted to receptors from the contamination observed within the SWMU 11 roadways and trails. Therefore, there are no viable long-term habitats for ecological receptors and no unacceptable ecological risk at SWMU 11.

Based on the human health preliminary risk evaluation and no unacceptable ecological risk, existing conditions at SWMU 11 are considered protective of human health and the environment.

#### 5.0 SCOPE OF CORRECTIVE ACTION

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 11, minimal impact was identified in soil; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk.

Further investigation of SWMU 11 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

#### 6.0 SUMMARY OF ALTERNATIVES

According to the reuse plan prepared by the City of Millington, SWMU 11 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 11 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The human health preliminary risk evaluation indicated the area is suitable for



residential or industrial land use. Additionally, there is no unacceptable ecological risk at SWMU 11. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 11 — no further action — is considered protective of human health and the environment.

### **7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 11 is no further action. Based on the information currently available, contaminants remaining in soil at SWMU 11 meet USEPA and TDEC media cleanup standards, except for dieldrin in several soil samples and nickel in one subsurface soil sample; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

### **8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Because community input could affect selection of a final remedy for SWMU 11, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box above, and postmarked no later than December 14. Notification of the public comment period has been published in *The Commercial Appeal*, a local daily newspaper. Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives of the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 11. Public comments received at the meeting or in writing will be summarized and included with the formal Response to

Comment document.

The SWMU 11 CSI report is part of the Administrative Record that can be reviewed in the Information Repository, which was established to provide public access to documents pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
1-901-872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMU 11, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on this page.*



## STATEMENT OF BASIS

### **SWMU 16 — N-94 Aboveground Waste Tanks Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 16, the N-94 Aboveground Waste Tanks, at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 16 consists of two 8,000-gallon aboveground storage tanks (ASTs), which were installed in 1962 and removed in 1998 (Figure 1).

The purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes information from the SWMU 16 Resource Conservation and Recovery Act (RCRA) Confirmatory Sampling Investigation (CSI)/Voluntary Corrective Action (VCA) report, but it should not be considered a substitute for the report. The CSI/VCA report is the primary source of detailed information on SWMU 16; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and the information that supports them is encouraged and will be considered during selection of the final remedy for SWMU 16. Public participation could alter the final remedy selected from the one proposed here.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 16. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division.

Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

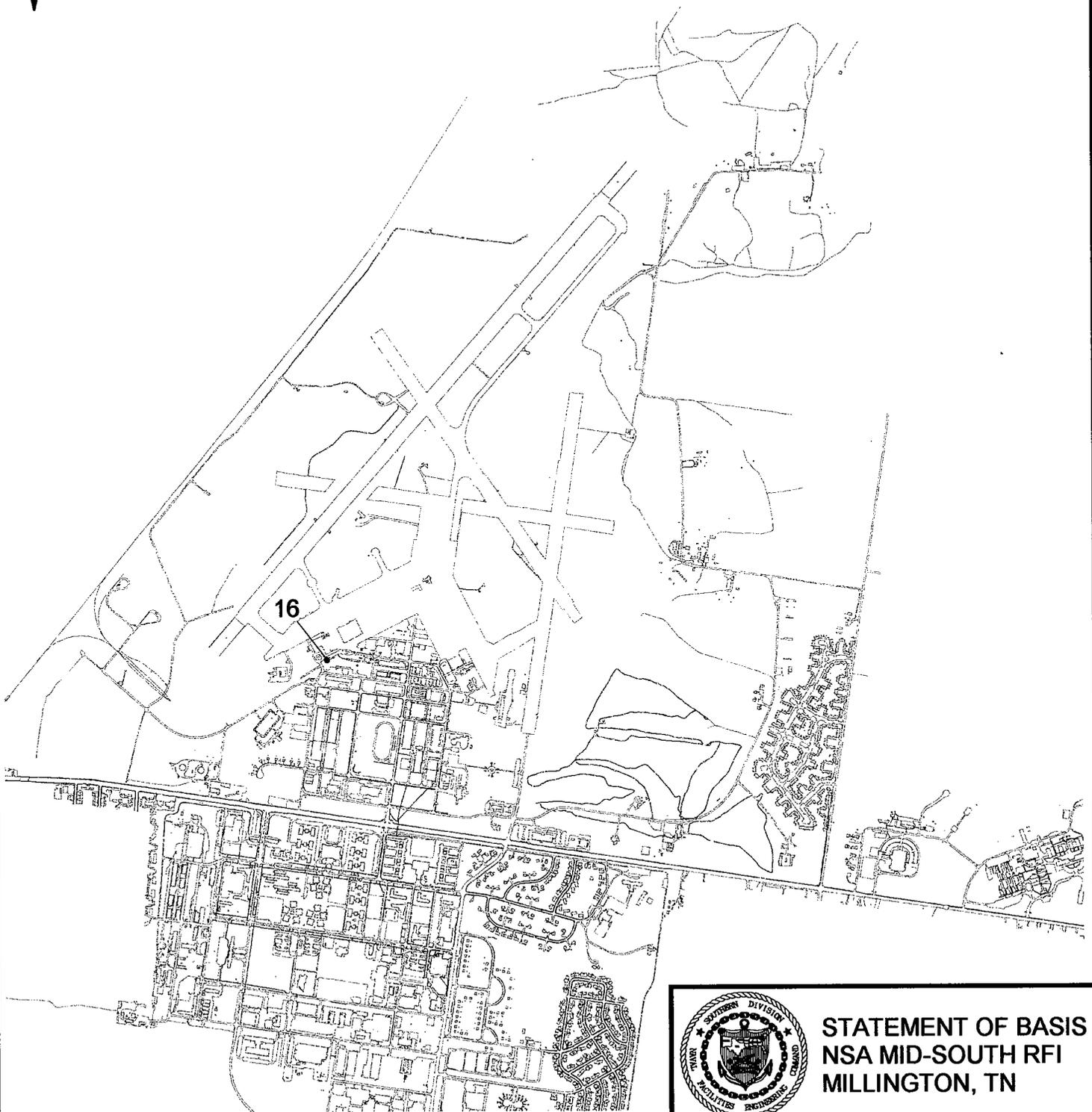
#### **2.0 PROPOSED REMEDY SUMMARY**

Investigation of SWMU 16 indicated petroleum contamination in soil. In 1998, two ASTs and petroleum-contaminated soil exceeding a site-specific cleanup goal were removed and transported offsite for proper disposal. After the soil was removed, confirmation samples indicated remaining contamination was below cleanup goals or background concentrations, so current conditions are considered protective of human health. Also, there is no unacceptable ecological risk at SWMU 16.

Based on the available information, the Navy proposed a remedy for SWMU 16 of no further action in the CSI/VCA report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

SWMU 16 consists of two 8,000-gallon ASTs, which were installed in 1962 and removed in 1998. The ASTs were located approximately 450 feet southwest of the airfield and 200 feet north of Building N-16 (Figure 2). One of the ASTs was used to store waste oil and/or waste fuel, while the other AST was used to store aviation fuel. Neither AST was equipped with a secondary containment system, but the SWMU 16 area was surrounded by a concrete berm. In 1997, petroleum stains were visible on the grass and gravel near the ASTs. The Navy conducted an investigation to determine the nature and extent of contamination associated with the petroleum stains, to estimate the volume of soil that would require removal, and to



 Roads  
 Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1  
SWMU 16  
N-94 Aboveground Waste Tanks**





assess potential health risks associated with any surface soil contamination. Groundwater was not assessed at SWMU 16 because it is an area where groundwater is being investigated for several other sites. Media sampled during the CSI included: surface soil (zero to 12 inches below the surface) and subsurface soil (deeper than 12 inches below the surface).

Contaminant concentrations in SWMU 16 soil were compared to USEPA screening values, which were calculated to be highly protective of health. By comparing these numbers, risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs). Also, a site-specific cleanup goal for total petroleum hydrocarbons (TPH) of 500 parts per million (ppm) was determined for SWMU 16 based on TDEC guidelines and site characteristics, including soil permeability and groundwater use.

CSI soil sample analytical results for surface and subsurface soil indicated TPH concentrations in two surface soil samples exceeded the site-specific TPH cleanup goal. Arsenic was the only contaminant that exceeded its established background concentration and RBC or SSL.

In 1998, the Navy excavated and removed the two ASTs, approximately 100 cubic yards of soil, and 20 cubic yards of concrete for offsite disposal. VCA confirmation soil samples collected following removal of the ASTs and soil excavation detected no TPH concentrations in ten of twelve samples, while the other two samples had TPH concentrations of 24 ppm and 44 ppm. Both TPH detections in confirmation samples were below the site-specific TPH cleanup goal of 500 ppm and less than half of TDEC's most conservative cleanup goal of 100 ppm. Additionally, the VCA confirmation samples were analyzed for metals and all concentrations were less than their established background concentrations and RBCs or SSLs.

Based on analytical results for samples collected during the CSI or VCA, the Navy recommended no further action at SWMU 16.

#### **4.0 SUMMARY OF SITE RISKS**

Following the excavation of TPH-contaminated soil at SWMU 16, CSI and VCA analytical results indicated no RBC, except arsenic, or site-specific TPH cleanup goal exceedances in surface soil. Arsenic concentrations in VCA soil samples exceeded the residential and industrial RBCs, but not the established background concentration for arsenic in soil at Naval Support Activity Mid-South. Therefore, arsenic was not considered a risk to human health because concentrations were less than established background concentrations.

The RBC for an individual contaminant is intended to estimate the concentration at which long-term exposure to that contaminant would result in one person out of one million being at risk of developing cancer should the site not be cleaned up. For noncancer causing contaminants, exceeding the RBC indicates the exposure level exceeds the protective level for that particular chemical. Risk exposure estimates have not been established for TPH; however, TDEC's most conservative cleanup goal for TPH in soil is 100 ppm. The highest concentration of TPH identified in confirmation soil samples after the removal of ASTs and TPH-contaminated soil was 44 ppm, which is below the site-specific cleanup goal of 500 ppm and less than half of TDEC's most conservative cleanup goal of 100 ppm. Based on CSI samples and VCA confirmation samples which indicated no RBC or TPH cleanup goal exceedances, existing conditions at SWMU 16 are considered protective of human health.

There were no significant features present at SWMU 16 that would provide shelter, substantive food or water, or a mixture of cover types to wildlife. Therefore, there were no viable long-term habitats for ecological receptors and no unacceptable ecological risk at SWMU 16.

Based on the CSI and VCA soil samples which indicated no RBC or TPH cleanup goal exceedances and no significant ecological risk, existing conditions at SWMU 16 are considered protective of human health and the environment.

#### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining



contamination, and to select remedies protective of human health and the environment. At SWMU 16, the ASTs and TPH-contaminated soil exceeding the site-specific cleanup goal were excavated and transported offsite for proper disposal in 1998. After the soil was removed, CSI and VCA soil samples indicated no RBC or TPH cleanup goal exceedances.

Further investigation of SWMU 16 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

**6.0 SUMMARY OF ALTERNATIVES**

According to the reuse plan prepared by the City of Millington, the SWMU 16 area will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 16 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. After the soil removal, CSI or VCA soil samples indicated no RBC or TPH cleanup goal exceedances and existing conditions at SWMU 16 are considered protective of human health. Additionally, there is no unacceptable ecological risk at this site. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 16 — no further action — is considered protective of human health and the environment.

**7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The proposed remedy for SWMU 16 is no further action. Based on the information currently available, contaminants remaining in soil at SWMU 16 meet USEPA and TDEC cleanup standards; and further releases were eliminated when the ASTs and TPH-contaminated soil were removed. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were considered.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Because community input could affect selection of a final remedy for SWMU 16, a public-comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box below, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and oral comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

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Public comments received at the meeting or in writing will be summarized and included in the formal Response to Comment document.

The SWMU 16 CSI/VCA report is part of the Administrative Record and can be reviewed in the Information Repository, which was established to provide public access to records and reports pertaining to the Navy's environmental program. The Information Repository is maintained at:

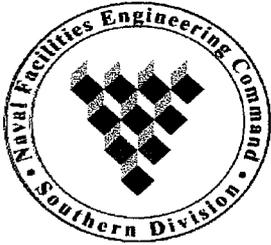


**Millington Public Library  
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Millington, Tennessee 38053  
(901) 872-1585**

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*For more information on the proposed remedy for SWMU 16, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.US](mailto:cbullington@mail.state.tn.US); or write to the address in the box on page 5.*



## STATEMENT OF BASIS

### **SWMU 26 — Building N-102 Battery Acid Neutralization Unit Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 26 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 26, the Building N-102 Battery Acid Neutralization Unit, was used from 1980 to 1992 for neutralizing battery acid liquid prior to discharge into the sanitary sewer system (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes the findings of the SWMU 26 Resource Conservation and Recovery Act (RCRA), Confirmatory Sampling Investigation (CSI) report, but it should not be considered a substitute for the report. The CSI report is the primary source of detailed information on SWMU 26; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMU 26. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 26. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States Environmental Protection Agency, Region IV

(USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

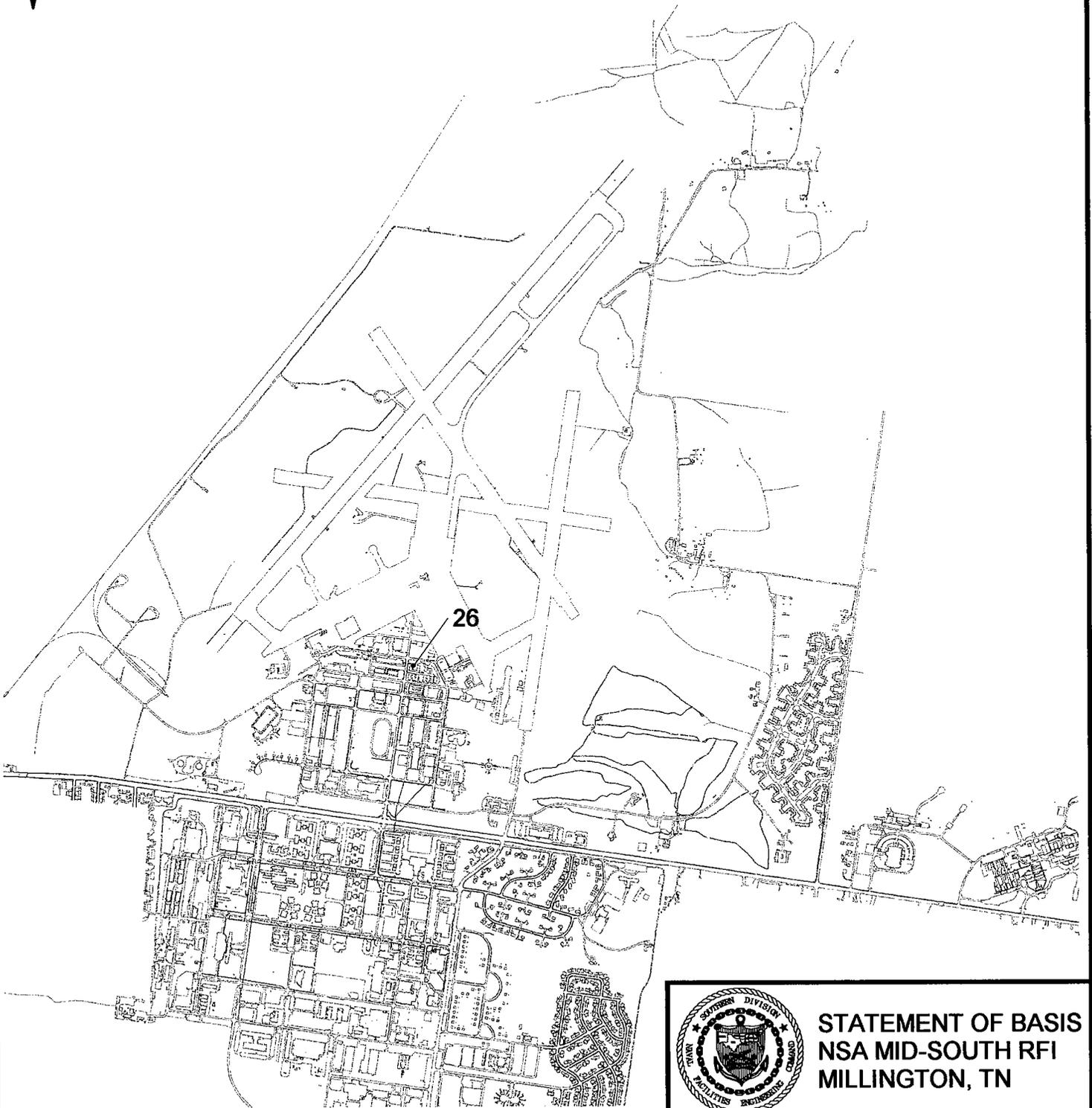
Investigation of SWMU 26 indicated minimal impact to soil; a preliminary risk evaluation indicated the area was suitable for residential or industrial land use; and there is no unacceptable ecological risk.

Based on the available information, the Navy proposed a remedy for SWMU 26 of no further action in the CSI report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

SWMU 26 consists of the Building N-102 battery acid neutralization unit, which was installed in 1980 and used until 1992. The neutralization unit is subsurface in a grassy area outside the northeast corner of Building N-102 (Figure 2). Liquids from recycled batteries were drained into a pair of sinks along the inside wall of the northeast corner of the building, then liquids emptied from the sinks (battery acid and flush water) via piping to the subsurface neutralization unit outside. SWMU 26 was designed to neutralize drained battery acid and flush water with crushed limestone prior to discharge to the sanitary sewer system. During its operation, the neutralization unit was pumped out and the crushed limestone replenished every six months.

Construction of the neutralization unit includes two 3-foot-long by 3-foot-diameter reinforced concrete pipes set in a 6-inch-thick concrete base pad and the entire structure is covered with a 6-inch-thick concrete pad containing a 3-foot-diameter manhole. Surface drainage from the SWMU 26 area drains to the southwest into the SWMU 4 storm sewer and drainage ditch.

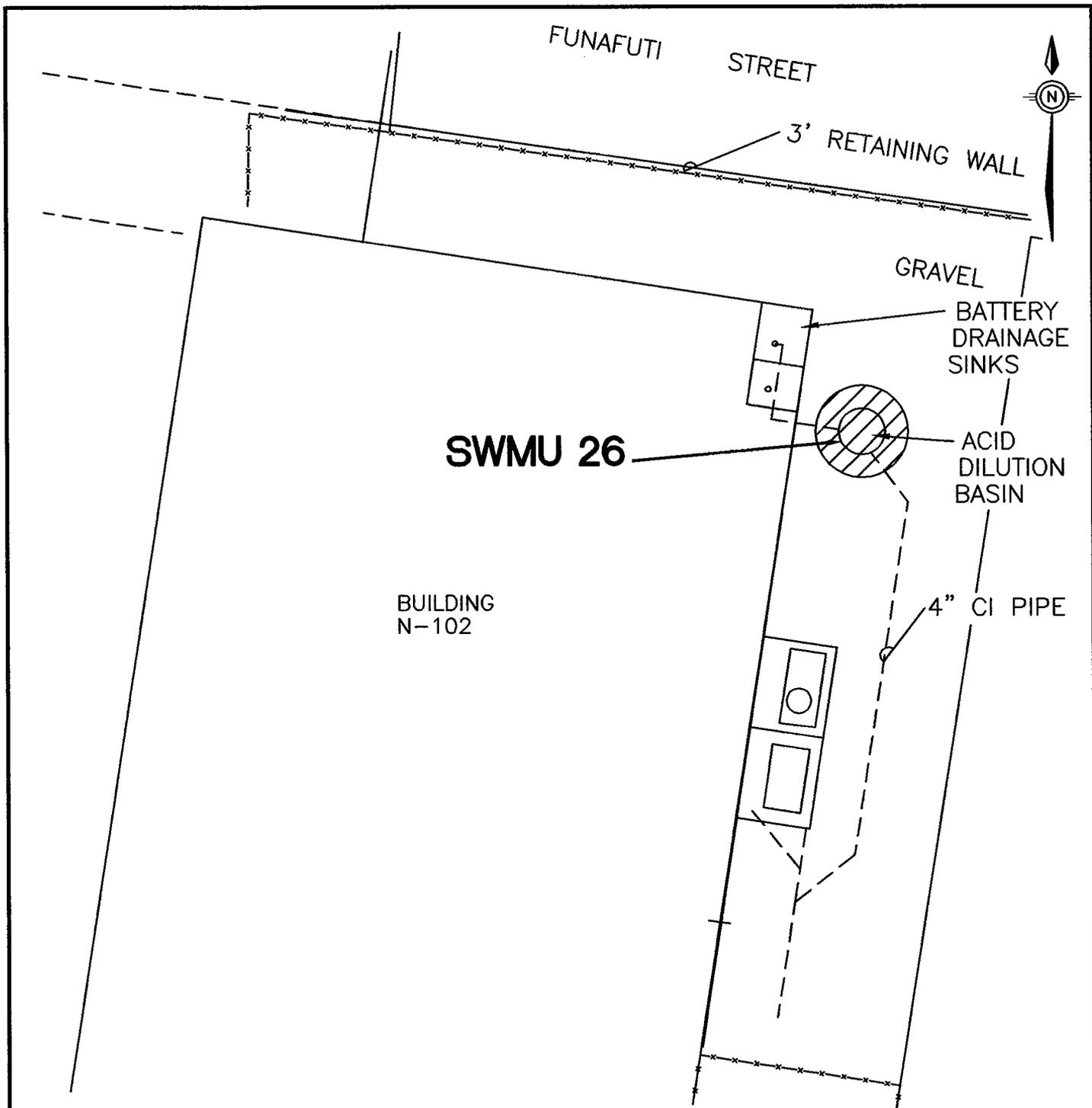


 Roads  
Building



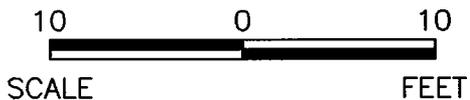
**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1 - SWMU 26  
Building N-102 Battery Acid  
Neutralization Unit**



LEGEND

----- UNDERGROUND PIPING



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMU 26  
BUILDING N-102  
BATTERY ACID NEUTRALIZATION UNIT

DWG DATE: 05/15/01 | NAME: 094001G012



In 1992, the Navy investigated the contents of the neutralization unit. A representative sample of sludge/liquid from the unit indicated constituent concentrations were below regulatory levels for classification as a hazardous waste.

Between 1994 and 1995, the Navy investigated SWMU 26, in accordance with the regulatory permit requirements. Media sampled at SWMU 26 included surface soil (zero to 12 inches below the surface) and subsurface soil (deeper than 12 inches below the surface).

Contaminant concentrations in SWMU 26 soil were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation results indicated minimal soil impact at SWMU 26, with the following contaminants identified at concentrations exceeding screening values:

- **Surface Soil** — The semivolatile organic compound benzo(a)pyrene exceeded its residential RBC.

#### **4.0 SUMMARY OF SITE RISKS**

During the SWMU 26 CSI, the effects of long-term exposure to the compounds identified in soil were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates

additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer causing chemicals has been exceeded.

The preliminary risk evaluation of SWMU 26 indicated human health risk did not exceed the USEPA incremental lifetime cancer risk or hazard index acceptable levels for either residential or industrial use. Based on the human health preliminary risk evaluation, existing conditions at SWMU 26 are considered protective of human health.

Ecological risk was assessed by observing SWMU 26. There were no significant features present which would provide shelter, substantive food or water, or a mixture of cover types to wildlife. Therefore, there were no viable long-term habitats for ecological receptors and no unacceptable ecological risk at SWMU 26.

Based on the human health preliminary risk evaluation and no unacceptable ecological risk, existing conditions at SWMU 26 are considered protective of human health and the environment.

#### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 26, no unacceptable impact was identified in soil, a preliminary risk evaluation indicated the area is suitable for residential or industrial land use, and there is no unacceptable ecological risk.

Further investigation of SWMU 26 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

#### **6.0 SUMMARY OF ALTERNATIVES**

According to the reuse plan prepared by the City of Millington, the SWMU 26 area will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 26 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The human health preliminary risk



evaluation indicates the area not only is suitable for industrial land use, but also is acceptable for residential land use. Additionally, there is no unacceptable ecological risk at this site. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 26 — no further action — is considered protective of human health and the environment.

**7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 26 is no further action. Based on the information currently available, contaminants remaining in soil at SWMU 26 meet USEPA media cleanup standards; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Since community input could affect selection of a final remedy for SWMU 26, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box above, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives of the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received copies of this SB for review. The

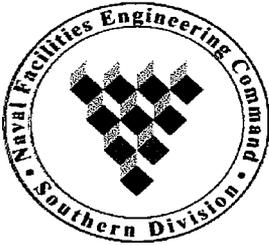
public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 26. Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

The SWMU 26 CSI report is part of the Administrative Record that can be reviewed in the Information Repository, which was established to provide public access to documents pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
1-901-872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

*For more information on the proposed remedy for SWMU 26, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on this page.*



## STATEMENT OF BASIS

### **SWMU 36 — Northside Sewage Treatment Plant Incinerator Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 36 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 36, the Northside Sewage Treatment Plant Incinerator, was operational from approximately 1943 until 1984 (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes the findings of the SWMU 36 Resource Conservation and Recovery Act (RCRA), Confirmatory Sampling Investigation (CSI) report, but it should not be considered a substitute for the report. The CSI report is the primary source of detailed information on SWMU 36; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMU 36. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 36. Therefore, it is responsible for completing the corrective action process. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States Environmental Protection Agency,

Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

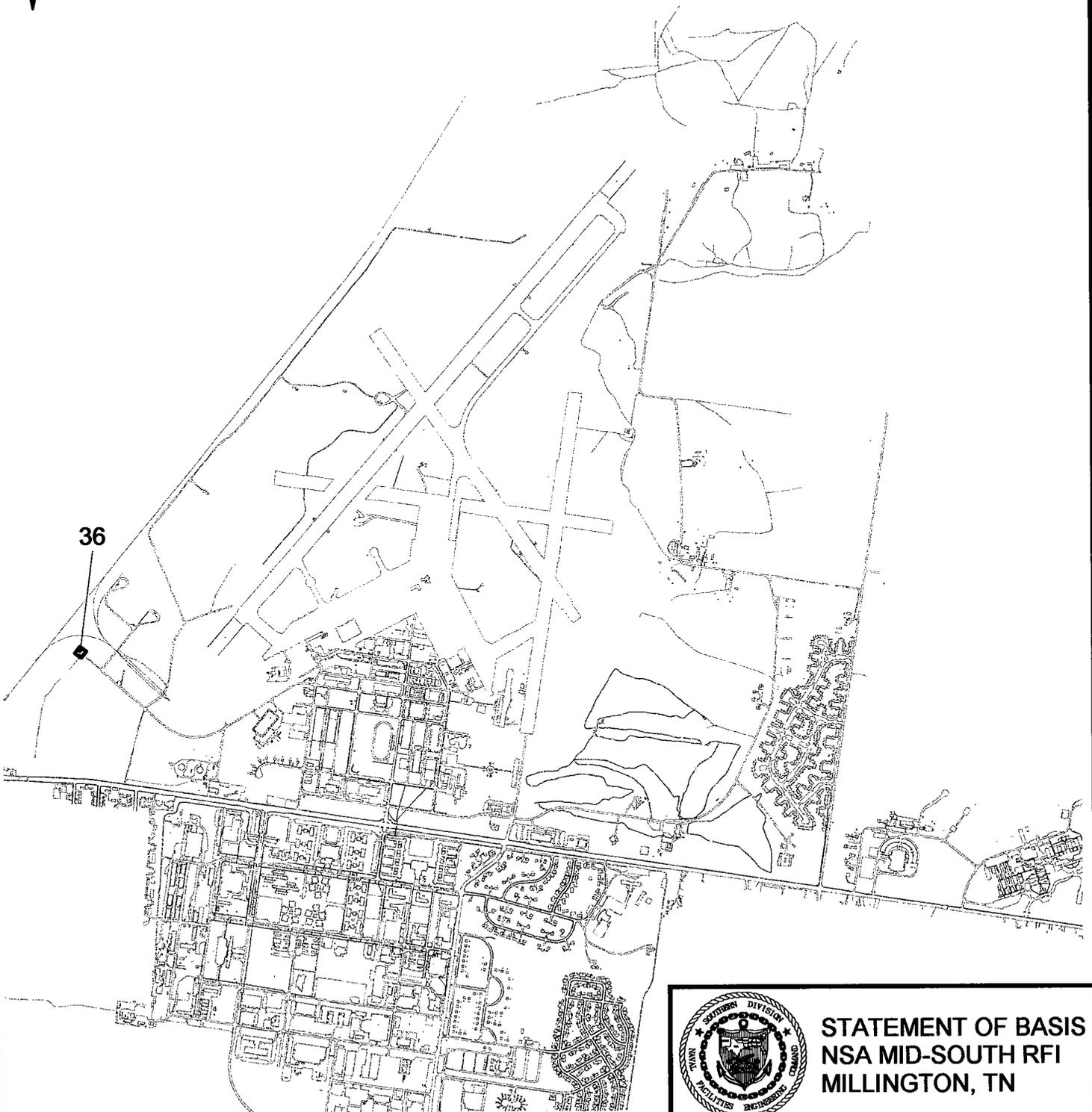
Investigation of SWMU 36 indicated minimal impact to soil or groundwater and a human health preliminary risk evaluation indicated the SWMU 36 area is suitable for residential or industrial land use.

Based on the available information, the Navy proposed a remedy for SWMU 36 of no further action in the CSI report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

SWMU 36, the Northside Sewage Treatment Plant Incinerator, was used to burn nonhazardous paper and plastic from approximately 1943 to 1984. SWMU 36 was approximately 200 feet northeast of the Northside Sewage Treatment Plant (Figure 2).

The incinerator and associated building were demolished in 1984. At the time of the investigation, SWMU 36 was unused and overgrown with vegetation. Engineering plans from 1942 indicated the incinerator building was a two-level structure constructed of wood and concrete bricks, and it was approximately 26 feet long by 22 feet wide. The concrete brick incinerator stack was constructed to approximately 24 feet above grade. Also, the engineering plans indicated an 1,100-gallon underground storage tank (UST) for fueling the incinerator. However, no northing direction was depicted on the plans, so the exact location of the UST was unknown and no records exist to document the UST was removed during demolition of the building. A geophysical survey of SWMU 36 was conducted in 1995, but the results were inconclusive due to piles of asphalt and rebar on the property.

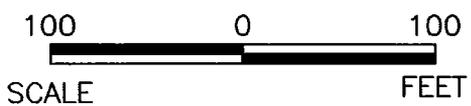
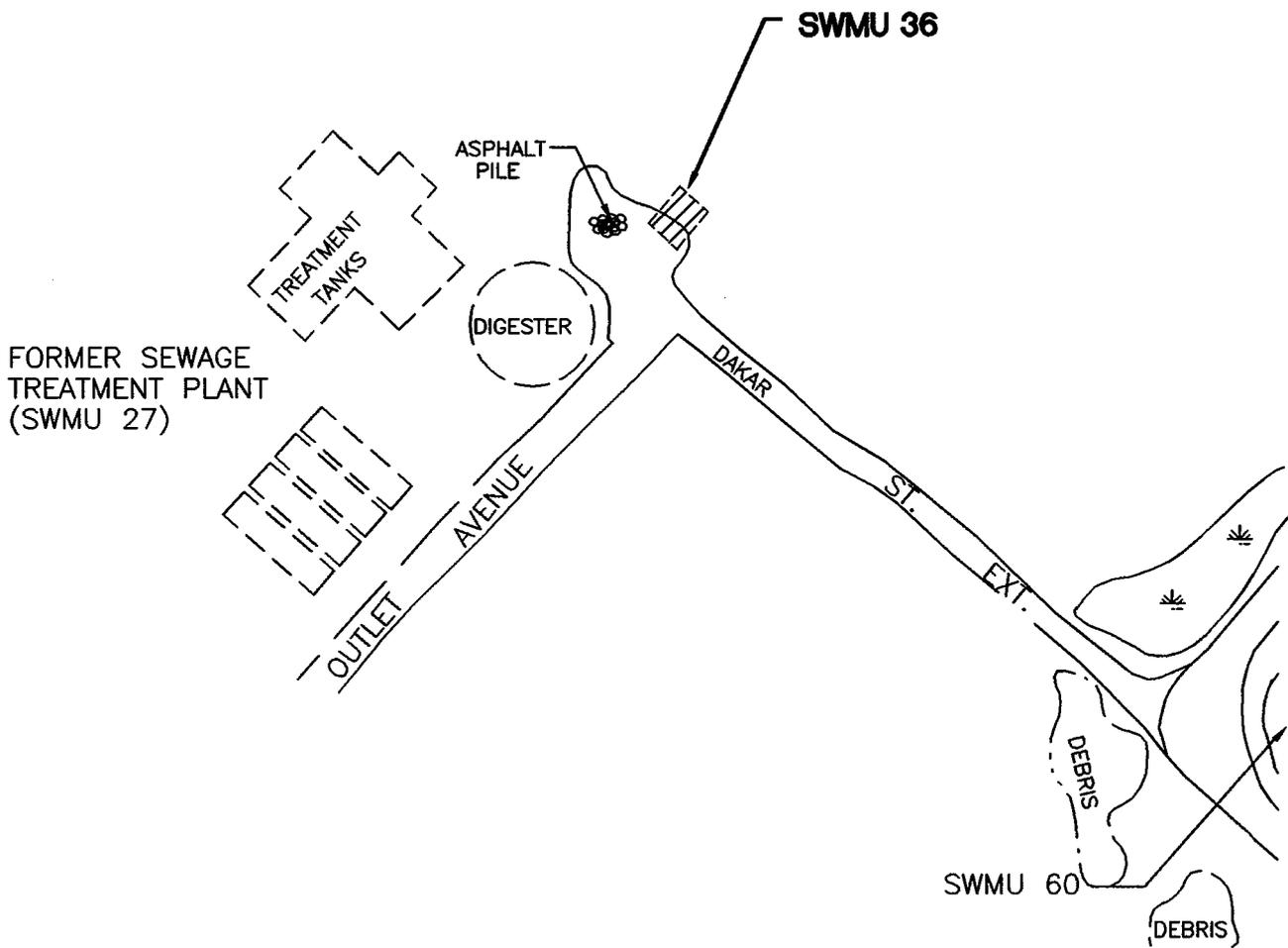
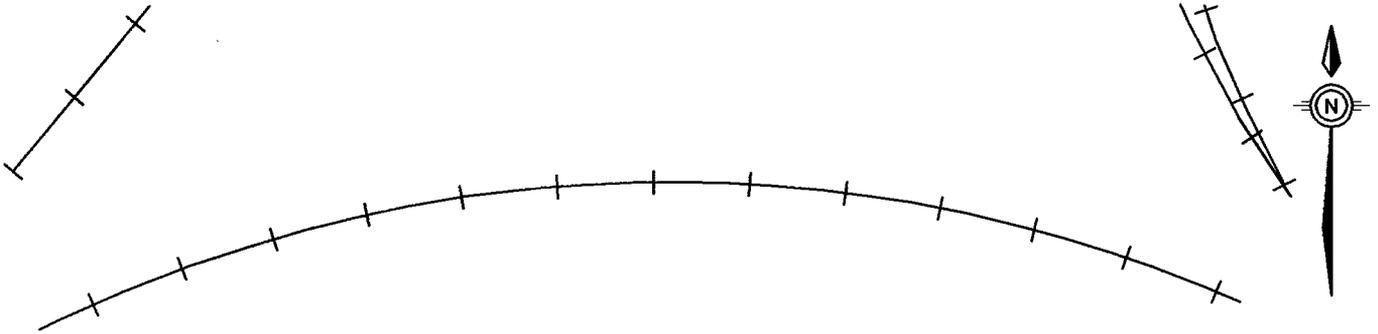


 Roads  
 Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1 - SWMU 36  
Northside Sewage  
Treatment Plant Incinerator**



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMU 36  
NORTHSIDE SEWAGE TREATMENT  
PLANT INCINERATOR



In 1995, the Navy investigated SWMU 36, in accordance with the regulatory permit requirements. Media sampled at SWMU 36 included: surface soil (zero to 12 inches below the surface); subsurface soil (deeper than 12 inches below the surface); and fluvial deposits groundwater (the first usable groundwater beneath the site at approximately 43 feet below the surface).

Contaminant concentrations in SWMU 36 soil and groundwater were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation results indicated minimal soil or groundwater impact at SWMU 36, with the following contaminants identified at concentrations exceeding screening values:

- **Surface Soil** — The semivolatile organic compounds benzo(a)pyrene and dibenz(a,h)anthracene, and the pesticide dieldrin exceeded their residential RBCs.

Dieldrin is commonly detected throughout Naval Support Activity Mid-South due to its aerial application in the 1950s and 1960s. The dieldrin concentrations identified at SWMU 36 were not considered a site-related source of soil contamination.

#### **4.0 SUMMARY OF SITE RISKS**

During the SWMU 36 CSI, the effects of long-term exposure to the compounds identified in soil and groundwater were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial lease settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration,

and quantity of chemicals. The acceptable cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer causing chemicals has been exceeded.

The preliminary risk evaluation of SWMU 36 indicated human health risk did not exceed the USEPA incremental lifetime cancer risk or hazard index acceptable levels for either residential or industrial scenarios. Based on the human health preliminary risk evaluation, existing conditions at SWMU 36 are considered protective of human health.

Ecological risk at SWMU 36 was not assessed as part of the CSI. During the investigation, the site was overgrown with vegetation. In early 2001, the SWMU 36 area was cleared of vegetation prior to the installation of a municipal water line. Therefore, there are no significant features present which would provide shelter, substantive food or water, or a mixture of cover types to wildlife, so there is no significant ecological risk at SWMU 36.

Based on the human health preliminary risk evaluation, existing conditions at SWMU 36 are considered protective of human health.

#### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 36, minimal impact was identified in soil or groundwater, and a preliminary risk evaluation indicated the area is suitable for residential or industrial land use.

Further investigation of SWMU 36 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health. Also, it meets the Navy's environmental program strategy.

#### **6.0 SUMMARY OF ALTERNATIVES**

According to the reuse plan prepared by the City of Millington, SWMU 36 will be reused for industrial purposes, not residential. Therefore, the BCT's goal at SWMU 36 was to demonstrate that human health risk was within acceptable levels for industrial land use. The human health preliminary risk



evaluation indicates the area not only is suitable for industrial land use, but also is acceptable for residential land use. Because the BCT's goal for human health was met, no alternative remedies were evaluated.

**7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 36 is no further action. Based on the information currently available, minimal impact was identified in soil or groundwater; and a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use. Therefore, the proposed remedy is considered protective of human health and no alternative remedies were evaluated.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Because community input could affect selection of a final remedy for SWMU 36, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box above, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives of the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received

copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 36. Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

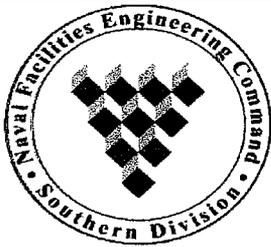
The SWMU 36 CSI report is part of the Administrative Record that can be reviewed in the Information Repository, which was established to provide public access to documents pertaining to the Navy's environmental program. The Information Repository is maintained at:

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4858 Navy Road  
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1-901-872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMU 36, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on this page.*



## STATEMENT OF BASIS

### **SWMU 40 — Salvage Yard No. 1 Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 40 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 40 was used as a salvage yard from 1945 to 1989, for the storage of scrap airplane parts, and for long-term storage and parking of personally-owned vehicles (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes the findings of the SWMU 40 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report, but it should not be considered a substitute for this document. The RFI report is the primary source of detailed information on SWMU 40; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMU 40. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 40. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States Environmental Protection Agency, Region IV

(USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

Investigation of SWMU 40 indicated low concentrations of contaminants in soil or groundwater. Two underground storage tanks (USTs) and associated lines were removed from SWMU 40 in 1996. A human health preliminary risk evaluation indicated SWMU 40 is suitable for residential or industrial land use and there is no unacceptable ecological risk.

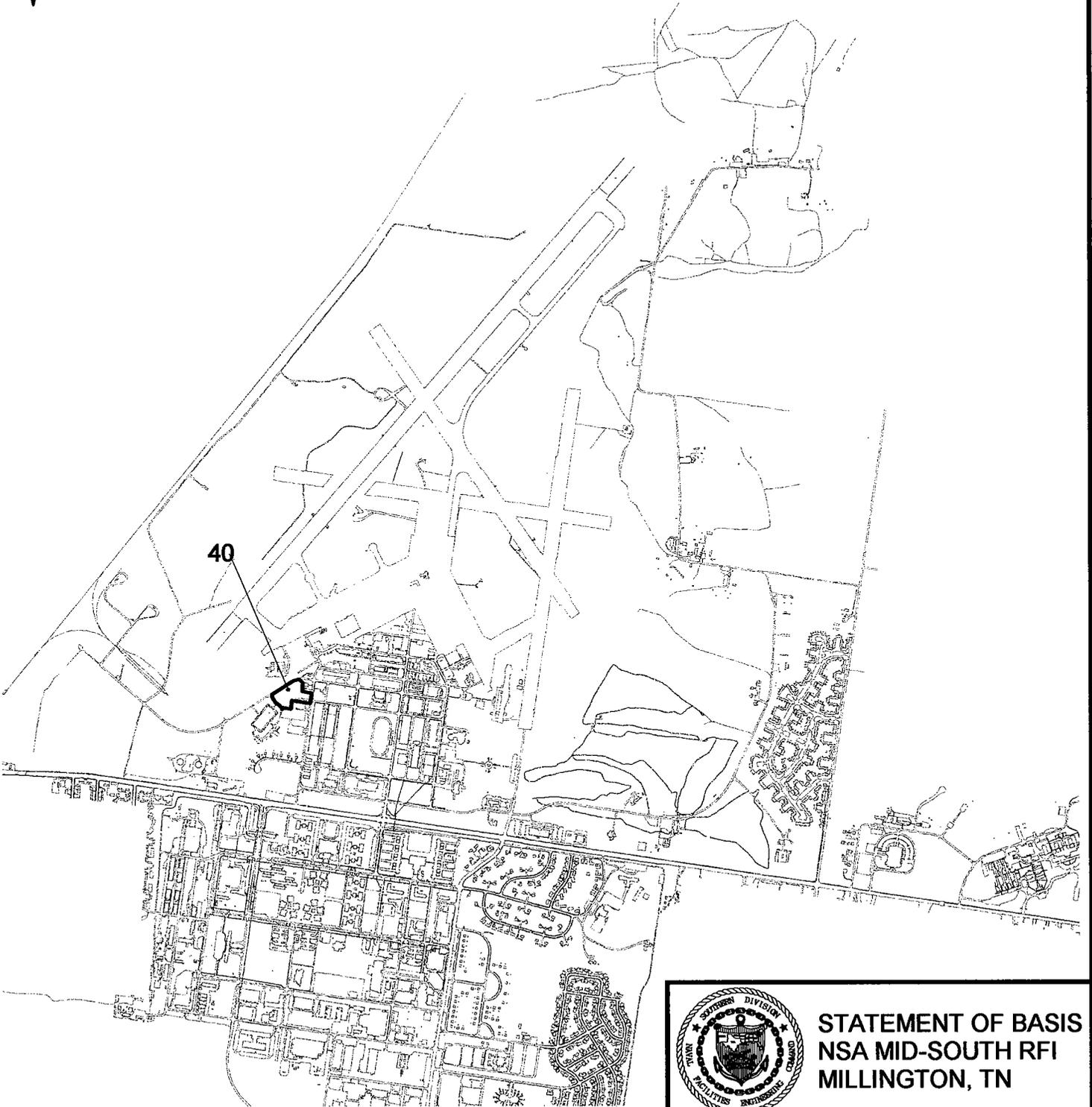
Based on the available information, the Navy proposed a remedy for SWMU 40 of no further action in the RFI report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

SWMU 40, also known as Salvage Yard No. 1, consists of two fenced-in open storage areas designated as Areas N-813 and N-1666 (Figure 2).

The salvage yard was operational from 1945 until 1989. Area N-813 was unpaved and formerly used to store scrap airplane parts, anchor chains, and other equipment. Area N-1666 was covered with asphalt and used for the long-term parking and storage of personally-owned vehicles. In 1988 and 1989, Area N-1666 was converted into a parking area for mobile trailers and used for electronic communications training.

Historical records indicate a gasoline station formerly occupied the north-central portion of SWMU 40 from approximately 1946 until 1949. Two USTs, one 1,000-gallon and one 2,000-gallon, were abandoned in-place in 1949. The demolition date of the gasoline station and associated features is unknown.

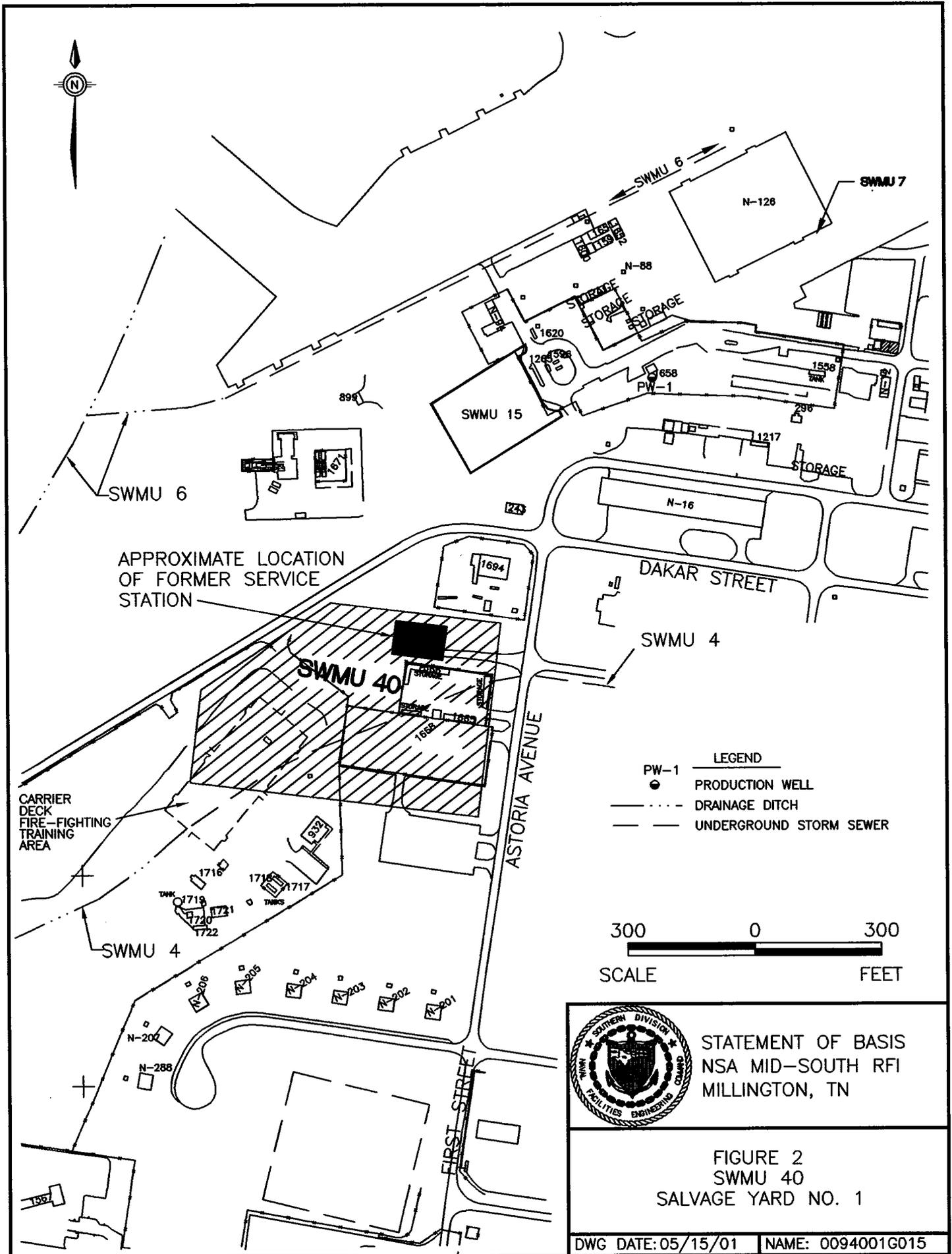


 Roads  
 Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1  
SWMU 40  
Salvage Yard No. 1**





In June 1996, the two USTs and associated fuel transfer lines at SWMU 40 were removed by the Navy as part of their UST program.

In 1988, the Navy investigated soil at SWMU 40 prior to a proposed military construction project. The investigation identified total petroleum hydrocarbon (TPH) contamination in soil samples from the 0- to 1-foot interval below the surface. However, the TPH contamination was attributed to asphalt fragments in the samples.

Between 1994 and 1996, the Navy investigated SWMU 40, in accordance with the regulatory permit requirements. Media sampled at SWMU 40 included: surface soil (zero to 12 inches below the surface); subsurface soil (deeper than 12 inches below the surface); loess groundwater (the first groundwater encountered beneath the site at approximately 12 feet below the surface); and fluvial deposits groundwater (the first usable groundwater beneath the site at approximately 45 feet below the surface). The loess groundwater is considered generally unusable due to low yield and poor quality.

Contaminant concentrations in SWMU 40 soil were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation results indicated localized petroleum impact to soil and groundwater at SWMU 40, with the following contaminants identified at concentrations exceeding screening values:

- **Subsurface Soil** — The volatile organic compounds (VOCs) 1,3,5-trimethylbenzene, 1,2,4-trimethylbenzene, and 1,2,3-trichloropropane exceeded their residential RBCs.
- **Loess Groundwater** — The VOCs 1,2,4-trimethylbenzene and ethylbenzene exceeded their RBC for tap water or USEPA Maximum Contaminant Level for drinking water.

- **Fluvial Deposits Groundwater** — The VOC 1,2,4-trimethylbenzene exceeded its tap water RBC.

Following the soil and groundwater investigation, additional surface soil samples were collected so the human health risk from contaminants identified at SWMU 40 could be assessed.

#### 4.0 SUMMARY OF SITE RISKS

During the SWMU 40 RFI, the effects of long-term exposure to the compounds identified in soil and groundwater were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer-causing chemicals has been exceeded.

The preliminary risk evaluation of SWMU 40 indicated human health risk did not exceed the USEPA incremental lifetime cancer risk or hazard index acceptable levels for either residential or industrial scenarios. Based on the human health preliminary risk evaluation, existing conditions at SWMU 40 are considered protective of human health.

Ecological risk was assessed by observing that SWMU 40 was covered with asphalt. Therefore, there was no quality habitat available for terrestrial species and no unacceptable ecological risk.

Based on the human health preliminary risk evaluation and no unacceptable ecological risk, existing conditions at SWMU 40 are considered protective of human health and the environment.



**5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 40, the USTs and associated fuel transfer lines were removed and properly disposed in 1996; low concentrations of contaminants were identified in soil or groundwater; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk.

Further investigation of SWMU 40 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

**6.0 SUMMARY OF ALTERNATIVES**

According to the reuse plan prepared by the City of Millington, the SWMU 40 area will be reused for industrial purposes, not residential. Therefore, The BCT's goals at SWMU 40 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The human health preliminary risk evaluation indicates the area not only is suitable for industrial land use, but also is acceptable for residential land use. Additionally, there is no unacceptable ecological risk at this site. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 40 — no further action — is considered protective of human health and the environment.

**7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 40 is no further action. Based on the information currently available, low concentrations of contaminants were identified in soil or groundwater; the USTs and associated lines were removed and properly disposed

in 1996; a preliminary risk evaluation indicated the area is suitable for residential or industrial land use and there is no unacceptable ecological risk. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Because community input could affect selection of a final remedy for SWMU 40, a public comment period has been established from October 31 to

December 14. Comments should be submitted in writing to the address in the box on this page, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will

be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

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Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535



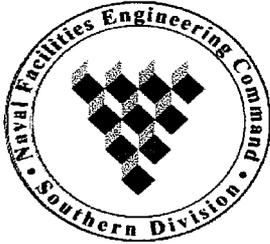
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*For more information on the proposed remedy for SWMU 40, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on page 5.*



## STATEMENT OF BASIS

### **SWMUs 42 and 53 — Building N-12 and Building N-126 Interim Hazardous Waste Accumulation Areas Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management units (SWMUs) 42 and 53 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 42, the Building N-12 Interim Hazardous Waste Storage Area, and SWMU 53, the Building N-126 Interim Hazardous Waste Accumulation Area, were combined during their investigation and in this SB because they are immediately adjacent to one another and they both were used to store hazardous waste (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes the findings of the Resource Conservation and Recovery Act (RCRA), Confirmatory Sampling Investigation (CSI) report for SWMUs 42 and 53, but it should not be considered a substitute for the report. The CSI report is the primary source of detailed information on SWMUs 42 and 53; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMUs 42 and 53. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMUs 42 and 53. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division.

Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

Investigation of SWMUs 42 and 53 indicated minimal impact to soil; a human health preliminary risk evaluation indicated the areas are suitable for residential or industrial land use; and there is no unacceptable ecological risk.

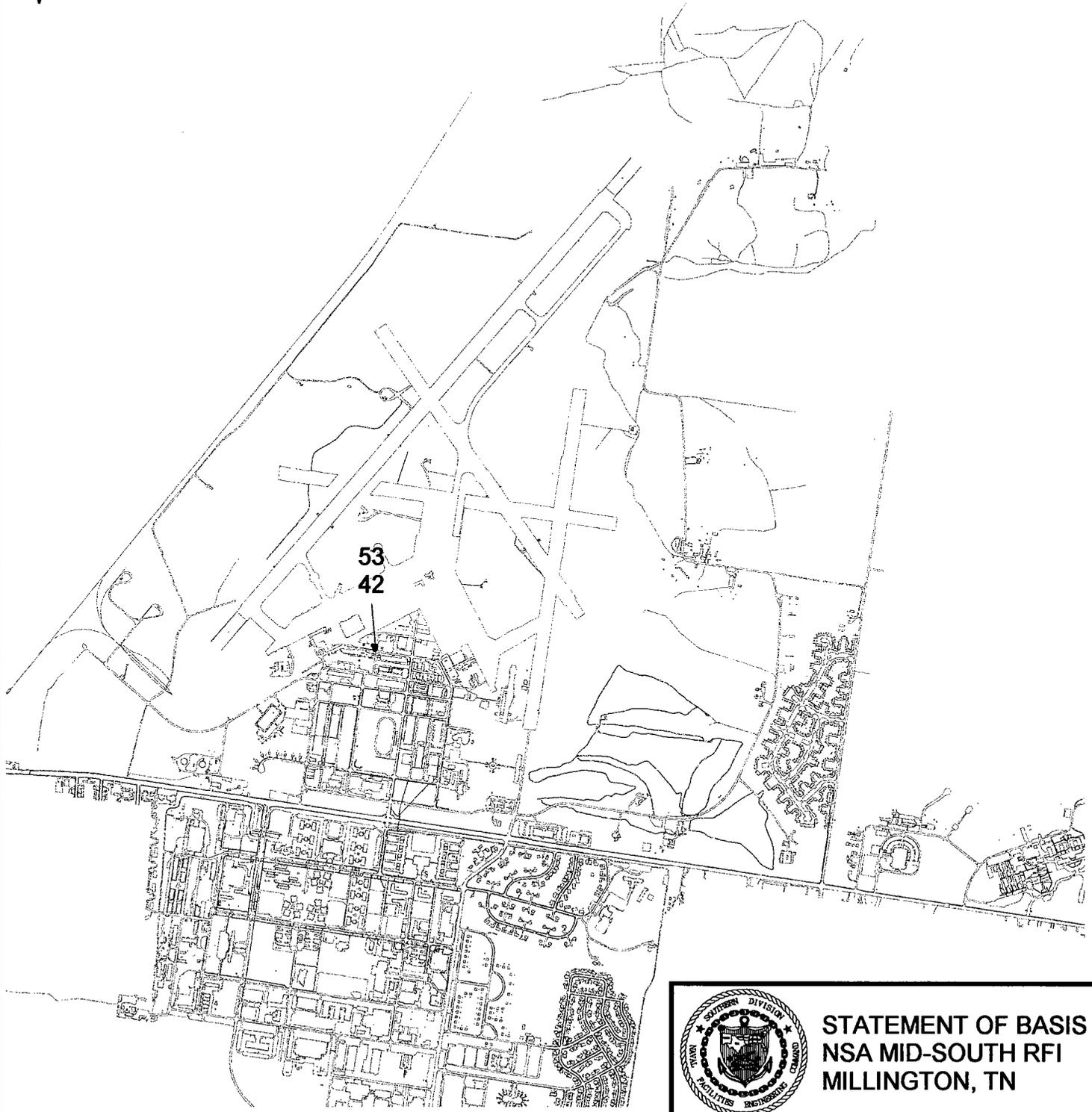
Based on the available information, the Navy proposed a remedy for SWMUs 42 and 53 of no further action in the CSI report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

SWMUs 42 and 53 were grouped together because they are immediately adjacent to one another and they were both used as hazardous waste accumulation areas (Figure 2).

SWMU 42 is approximately 1,400 feet southeast of the main runway and 40 feet north of Building N-12, across Funafuti Street. SWMU 42 was a greater-than-90-day hazardous waste accumulation and storage area since the 1940s. In 1989, the Navy closed SWMU 42 under RCRA guidelines and provided TDEC with a recommendation for clean closure, noting that polychlorinated biphenyl (PCB)-contaminated items may have been stored in the SWMU 42 area.

SWMU 53 is a fenced, asphalt-covered area at the same location as SWMU 42. Materials stored at SWMU 53 included drums of trichloroethene (TCE), mineral spirits, paint thinner wastes, and used oil.

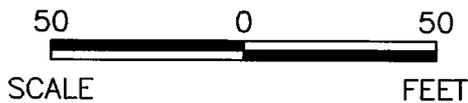
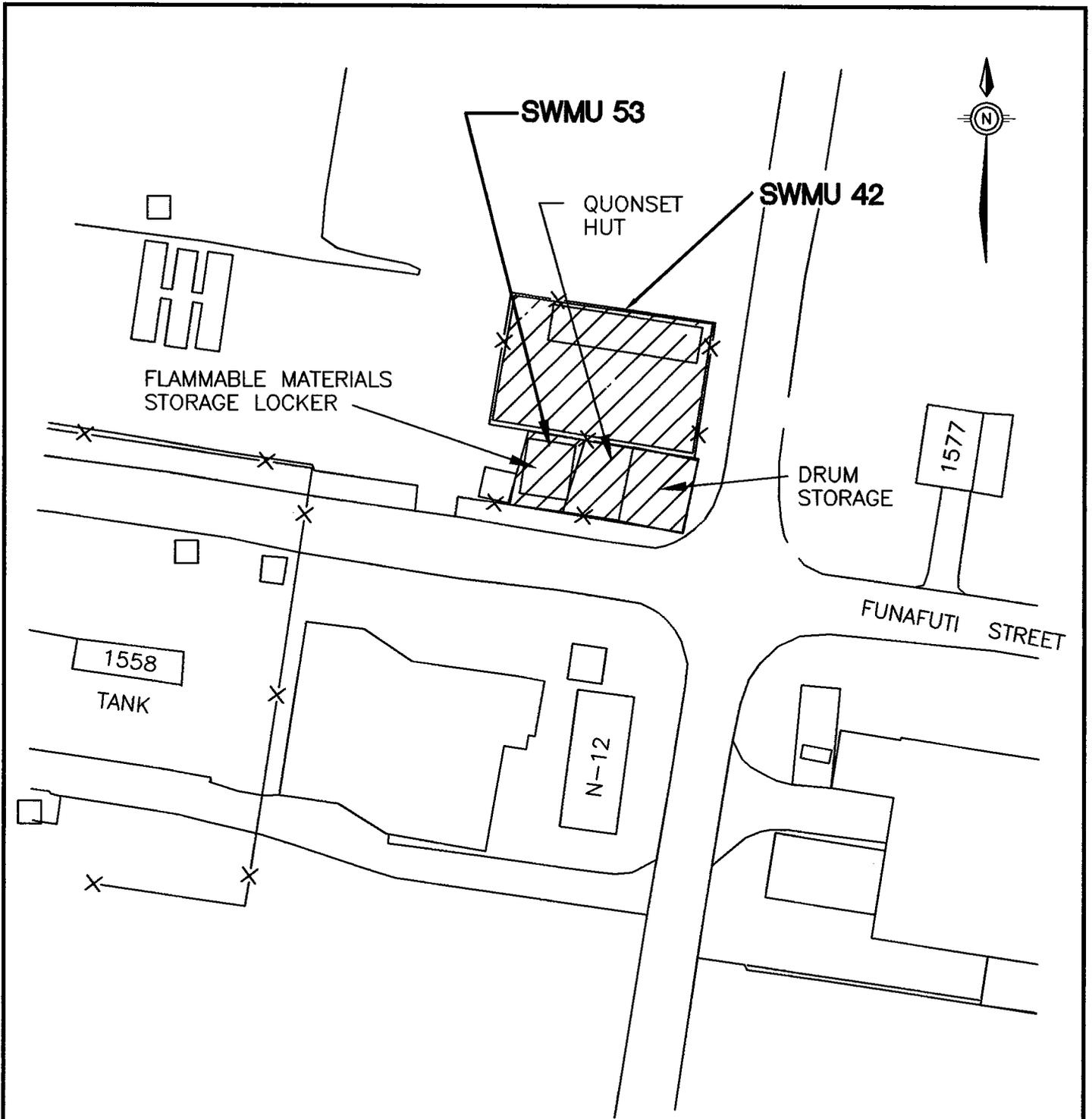


 Roads  
 Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1 - SWMUs 42 & 53  
Buildings N-12 and N-126  
Interim Hazardous Waste  
Accumulation Areas**



STATEMENT OF BASIS  
 NSA MID-SOUTH RFI  
 MILLINGTON, TN

FIGURE 2  
 SWMUs 42 AND 53  
 BUILDINGS N-12 AND N-126  
 INTERIM HAZARDOUS WASTE  
 ACCUMULATION AREAS



SWMU 53 operated as an interim hazardous waste accumulation area from 1955 to 1987.

Visual site inspections of SWMUs 42 and 53 in 1990 and 1995 indicated no evidence of surface releases. Between 1994 and 1995, the Navy investigated SWMUs 42 and 53, in accordance with the regulatory permit requirements. Media sampled at SWMUs 42 and 53 included surface soil (zero to 12 inches below the surface) and subsurface soil (deeper than 12 inches below the surface).

Contaminant concentrations in SWMUs 42 and 53 soil were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation results indicated minimal soil impact at SWMUs 42 and 53, with the following contaminants identified at concentrations exceeding screening values:

- **Surface Soil** — The semivolatile organic compound benzo(a)pyrene, and the pesticide dieldrin exceeded their residential RBCs.
- **Subsurface Soil** — The metals, barium, nickel, and chromium, exceeded their SSLs.

#### **4.0 SUMMARY OF SITE RISKS**

During the SWMUs 42 and 53 CSI, the effects of long-term exposure to the compounds identified in soil were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable cancer risk threshold is considered to be one case per

10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer causing chemicals has been exceeded.

The preliminary risk evaluation of SWMUs 42 and 53 indicated human health risk did not exceed the USEPA incremental lifetime cancer risk or hazard index for either residential or industrial scenarios. Based on the human health preliminary risk evaluation, existing conditions at SWMUs 42 and 53 are considered protective of human health.

Ecological risk was assessed by observing SWMUs 42 and 53. There were no significant features present which would provide shelter, substantive food or water, or a mixture of cover types to wildlife. Therefore, there were no viable long-term habitats for ecological receptors and no unacceptable ecological risk at SWMUs 42 and 53.

Based on the human health preliminary risk evaluation and no unacceptable ecological risk, existing conditions at SWMUs 42 and 53 are considered protective of human health and the environment.

#### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMUs 42 and 53, minimal impact to soil was identified; a human health preliminary risk evaluation indicated the areas are suitable for residential or industrial land use; and there is no unacceptable ecological risk.

Further investigation of SWMUs 42 and 53 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

#### **6.0 SUMMARY OF ALTERNATIVES**

According to the reuse plan prepared by the City of Millington, SWMUs 42 and 53 will be reused for industrial purposes, not residential. Therefore, The BCT's goals at SWMUs 42 and 53 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The



human health preliminary risk evaluation indicates the area not only is suitable for industrial land use, but also is acceptable for residential land use. Additionally, there is no unacceptable ecological risk at these sites. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMUs 42 and 53 — no further action — is considered protective of human health and the environment.

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives of the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMUs 42 and 53. Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

#### **7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMUs 42 and 53 is no further action. Based on the information currently available, several contaminants remaining in soil at SWMUs 42 and 53 exceed RBCs or SSLs, but a human health preliminary risk evaluation indicated the areas are suitable for residential or industrial land use; and there is no unacceptable ecological risk. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

#### **8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Because community input could affect selection of a final remedy for SWMUs 42 and 53, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box above, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

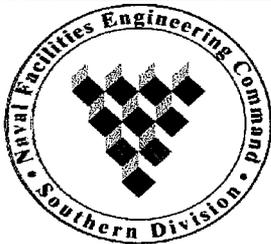
The SWMUs 42 and 53 CSI report is part of the Administrative Record that can be reviewed in the Information Repository, which was established to provide public access to documents pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
1-901-872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMUs 42 and 53, the Restoration Advisory Board, or the environmental program at the Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on this page.*



## STATEMENT OF BASIS

### **SWMU 44 — Building N-102 Hazardous Waste Accumulation Point Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 44 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 44, the Building N-102 Hazardous Waste Accumulation Point, was used as an accumulation point for vehicle batteries from approximately 1981 to 1987 (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes the findings of the SWMU 44 Resource Conservation and Recovery Act (RCRA), Confirmatory Sampling Investigation (CSI) report and the SWMU 44 Voluntary Corrective Action (VCA) report, but it should not be considered a substitute for these documents. The CSI and VCA reports are the primary sources of detailed information on SWMU 44; they can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMU 44. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 44. Therefore, it is responsible for completing the corrective action process. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division.

Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

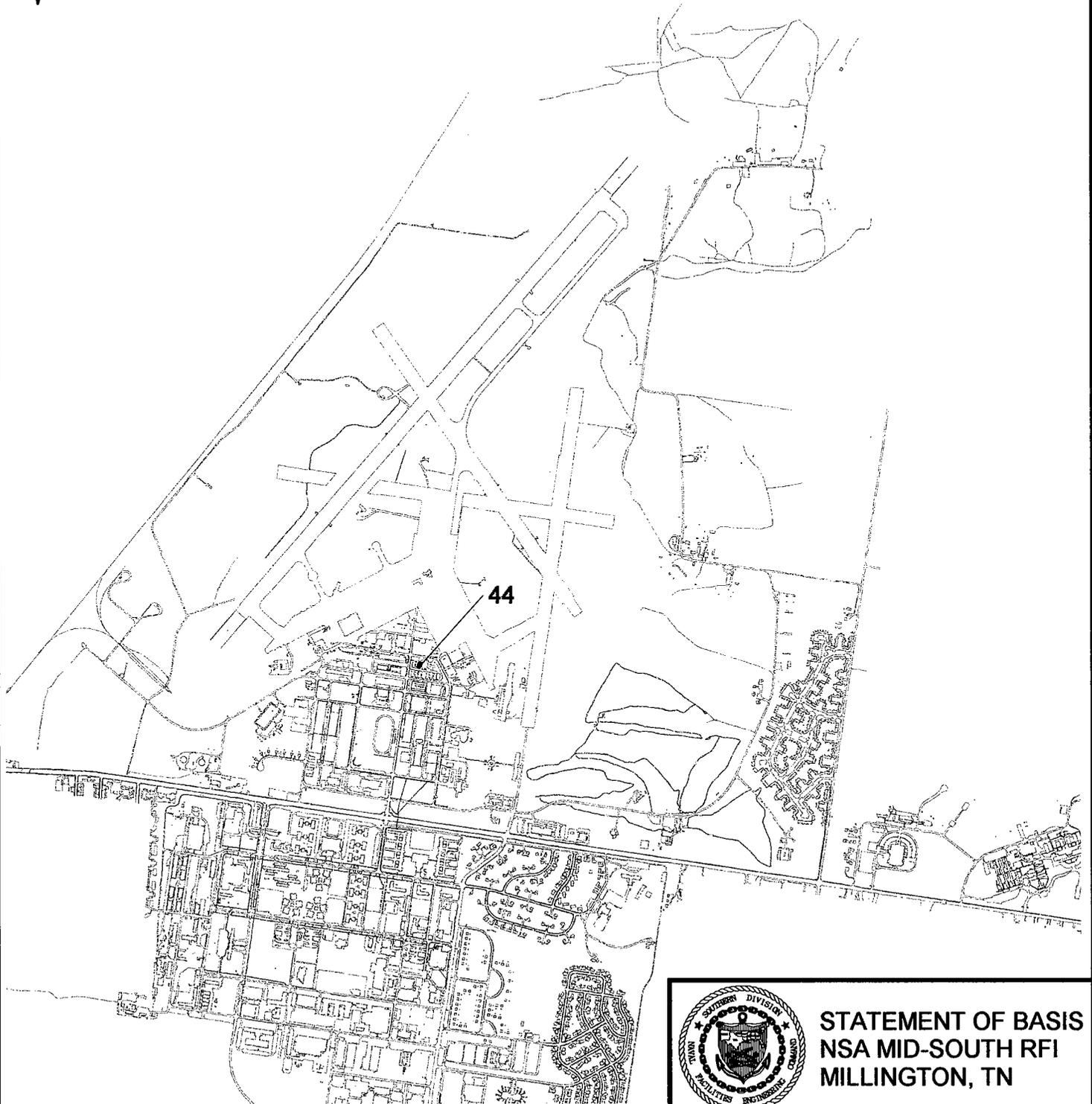
Investigation of SWMU 44 indicated minimal impact to soil, except for total petroleum hydrocarbons (TPH) in soil. In 1995 and 1998, contaminated soil at SWMU 44 was excavated and transported offsite for proper disposal. Following the removal of TPH-contaminated soil, a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk.

Based on the available information, the Navy proposed a remedy for SWMU 44 of no further action in the CSI report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

SWMU 44 was used as an accumulation point for vehicle batteries from approximately 1981 to 1987. SWMU 44 consists of an approximately 20-foot-wide by 100-foot-long gravel-covered area that extends along the entire west side of Building N-122 (Figure 2). The vehicle batteries stored at SWMU 44 were originally flushed inside Building N-102 into a sink on the east wall that drained to a neutralization unit (SWMU 26) outside. The empty batteries were then stored for less than 90 days on pallets outside Building N-122 (SWMU 44) until pickup by a battery salvager.

In 1994, the Navy investigated Building N-122 by collecting and analyzing surface soil samples from the north, south, and east sides of the building, and in the

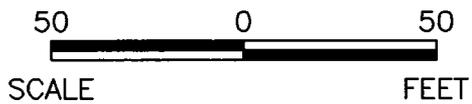
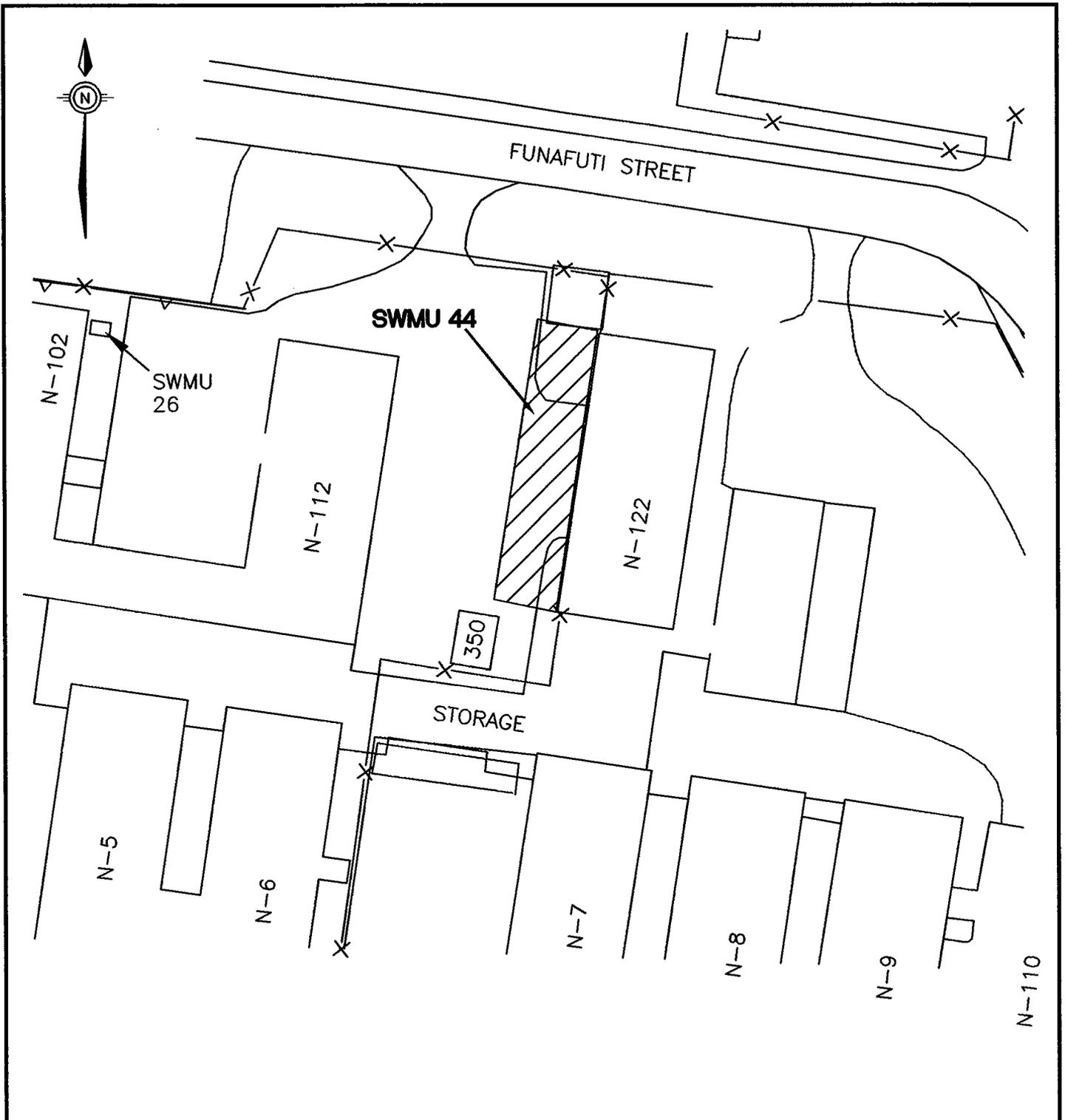


 Roads  
 Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1 - SWMU 44  
Building N-102 Hazardous  
Waste Accumulation Point**



STATEMENT OF BASIS  
 NSA MID-SOUTH RFI  
 MILLINGTON, TN

FIGURE 2  
 SWMU 44  
 BUILDING N-102 HAZARDOUS  
 WASTE ACCUMULATION POINT



drainage ditch north of the building. Analytical results indicated a potential release of petroleum or solvent in a low-lying area south of the building.

In 1995, the Navy conducted a VCA removal of approximately 6 to 8 inches of soil in the low-lying area south of Building N-122. Analytical results from a confirmatory soil sample indicated the contaminants of concern were removed, except for the semivolatile organic compound (SVOC) benzo(a)pyrene which was identified in soil at a concentration exceeding its USEPA residential risk-based concentration (RBC).

Between 1994 and 1996, the Navy conducted a CSI at SWMU 44, in accordance with the regulatory permit requirements. Media sampled at SWMU 44 included surface soil (zero to 12 inches below the surface) and subsurface soil (deeper than 12 inches below the surface).

Contaminant concentrations in SWMU 44 soil were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to RBCs or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs). Also, the TDEC cleanup levels for TPH were compared to TPH concentrations identified in soil.

Investigation results indicated minimal soil impact at SWMU 44, with the following contaminants identified at concentrations exceeding screening values:

- **Surface Soil** — The SVOC benzo(a)pyrene exceeded its residential RBC and TPH exceeded the TDEC soil cleanup level.
- **Subsurface Soil** — Cadmium and chromium exceeded their SSLs.

In 1998, the Navy conducted a second VCA to excavate the TPH-contaminated soil identified at SWMU 44. The area was excavated to a depth of 2.5 feet and approximately 12 cubic yards of soil was removed and properly disposed. Confirmation soil samples collected from the excavation area indicated TPH concentrations were all below TDEC cleanup levels. Based on the

confirmation soil sample results, the Navy recommended no further action concerning soil.

#### **4.0 SUMMARY OF SITE RISKS**

During the SWMU 44 CSI, the effects of long-term exposure to the compounds identified in soil were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer causing chemicals has been exceeded.

The preliminary risk evaluation of SWMU 44 indicated human health risk did not exceed the USEPA incremental lifetime cancer risk or hazard index acceptable levels for either residential or industrial scenarios. Based on the human health preliminary risk evaluation, existing conditions at SWMU 44 are considered protective of human health.

Ecological risk was assessed by observing SWMU 44. There were no significant features present which would provide shelter, substantive food or water, or a mixture of cover types to wildlife. Therefore, there were no viable long-term habitats for ecological receptors and no unacceptable ecological risk at SWMU 44.

Based on the human health preliminary risk evaluation and no unacceptable ecological risk, existing conditions at SWMU 44 are considered protective of human health and the environment.



**5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 44, minimal impact was identified in soil, except for TPH in soil, which was excavated and properly disposed in 1995 and 1998; a preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk.

Further investigation of SWMU 44 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

**6.0 SUMMARY OF ALTERNATIVES**

According to the reuse plan prepared by the City of Millington, SWMU 44 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 44 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The human health preliminary risk evaluation indicates the area not only is suitable for industrial land use, but also is acceptable for residential land use. Additionally, there is no unacceptable ecological risk at this site. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 44 — no further action — is considered protective of human health and the environment.

**7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 44 is no further action. Based on the information currently available, minimal impact was identified in soil, except

for TPH in soil, which was excavated and properly disposed in 1995 and 1998; a preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Since community input could affect selection of a final remedy for SWMU 44, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box below, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives of the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 44.

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535



Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

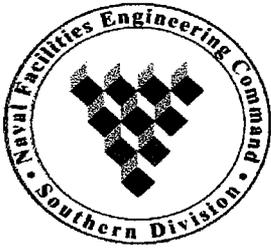
The SWMU 44 CSI and VCA reports are part of the Administrative Record that can be reviewed in the Information Repository, which was established to provide public access to documents pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
1-901-872-1585**

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*For more information on the proposed remedy for SWMU 44, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on page 5.*



## STATEMENT OF BASIS

### **SWMUs 50, 51, and 52 — Hazardous Waste Accumulation Points at Building N-126, MAG-42, VR-60, and VP-67 Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management units (SWMUs) 50, 51, and 52 at Naval Support Activity Mid-South, Millington, Tennessee. These three SWMUs were grouped together because they were in the same general area and they were all used as hazardous waste accumulation points (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes information from the SWMUs 50, 51, and 52 Resource Conservation and Recovery Act (RCRA), Confirmatory Sampling Investigation (CSI) report, but it should not be considered a substitute for the report. The CSI report is the primary source of detailed information on SWMUs 50, 51, and 52; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMUs 50, 51, and 52. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMUs 50, 51, and 52. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the

United States Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

Investigation of SWMUs 50, 51, and 52 indicated minimal impact to soil; a human health preliminary risk evaluation indicated SWMUs 50, 51, and 52 are suitable for residential or industrial land use; and there is no unacceptable ecological risk.

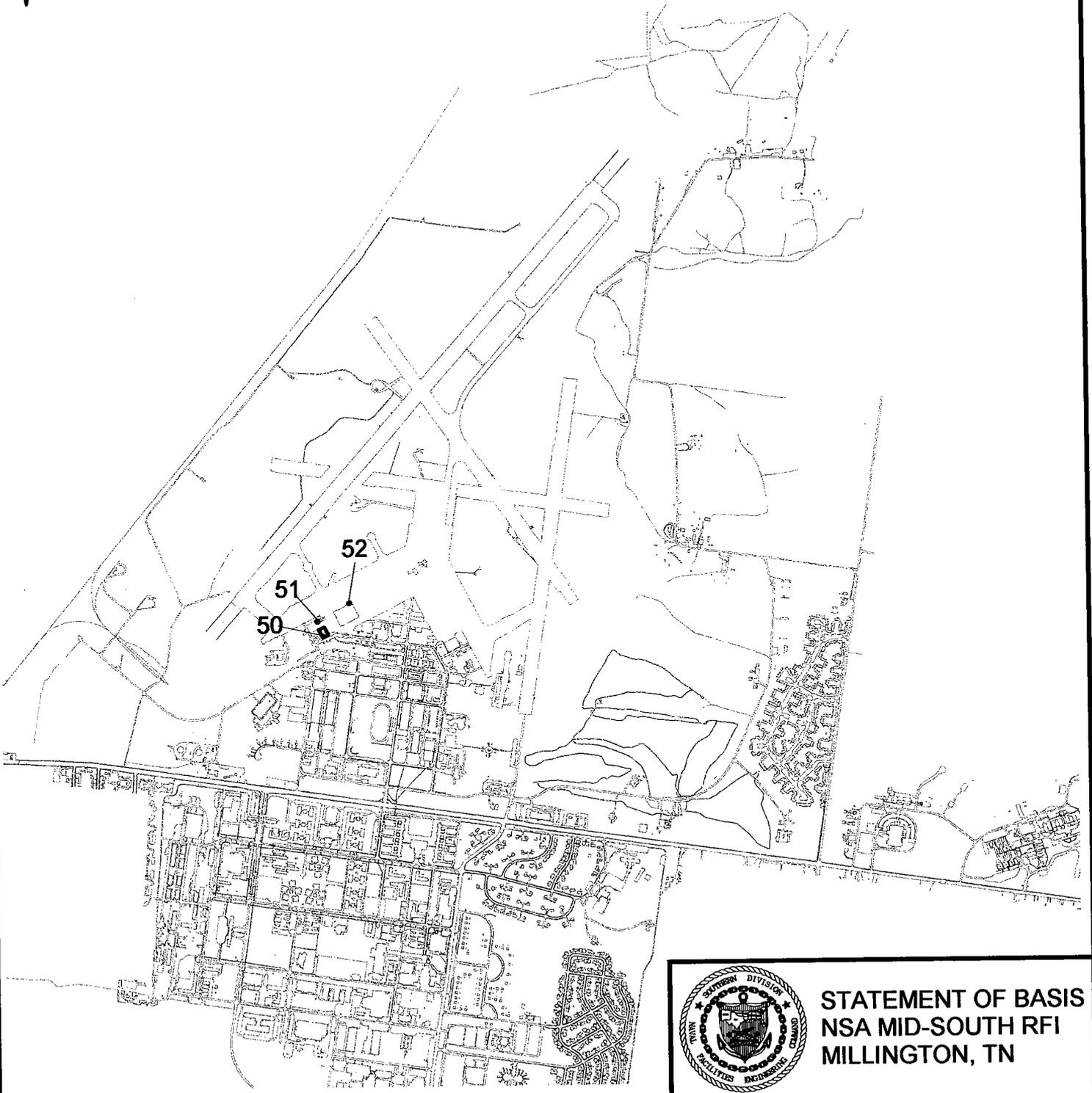
Based on the available information, the Navy proposed a remedy for SWMUs 50, 51, and 52 of no further action in the CSI report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

SWMUs 50, 51, and 52 were grouped together because they were in the same general area of Naval Support Activity Mid-South (Figure 2) and all were used as hazardous waste accumulation points.

SWMU 50 was used as an accumulation point for automobile batteries and containerized mineral spirits or paint thinners from 1955 to 1985. Wastes were accumulated in drums or mobile tanks in several different locations. The location reported in 1985, within the fenced, asphalt-paved area west of Building N-126, was the area investigated. After 1985, the accumulation point moved to a fenced, bermed, and roofed area southeast of Building N-9.

SWMU 51 was used as an accumulation point for mineral spirits or paint thinner wastes from approximately 1955 to 1994. The accumulation area was moved several times, so SWMU 51 was investigated as three distinct areas around Building N-1600. The three SWMU 51 areas investigated were: an area on the north edge of the apron; a fenced area immediately west of the building; and an area near the edge of the concrete apron.

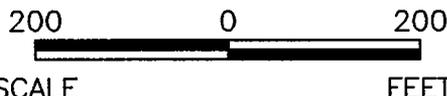
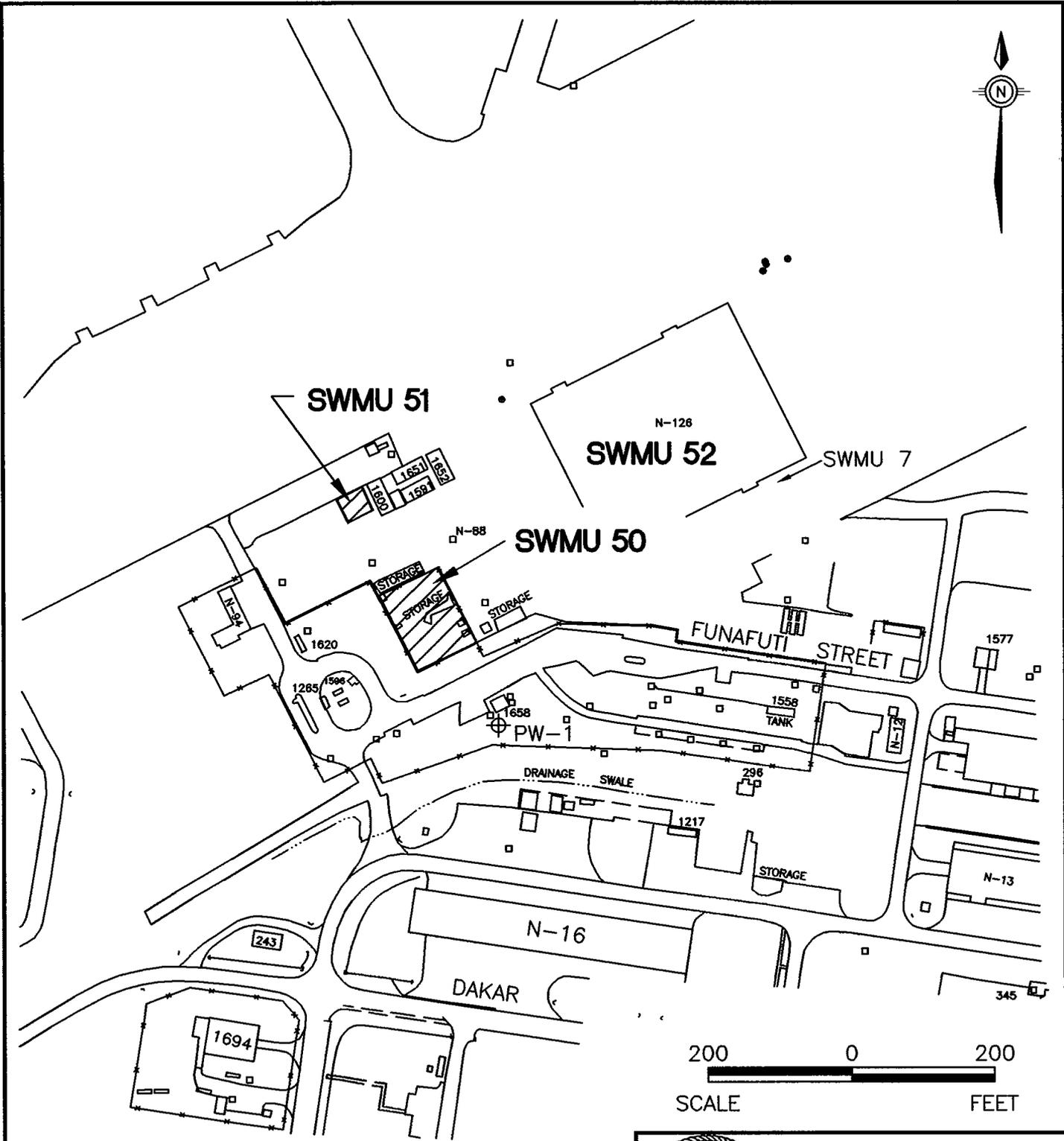


 Roads  
 Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1 - SWMUs 50, 51, & 52  
Hazardous Waste Accumulation  
Points at Building N-126, MAG-42,  
VR-60, and VP-67**



**LEGEND**

⊕ PW-1 PRODUCTION WELL



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMUs 50, 51, AND 52  
HAZARDOUS WASTE ACCUMULATION POINTS  
AT BUILDING N-126, MAG-42,  
VR-60, AND VP-67



SWMU 52 was used as an accumulation point for drummed mineral spirits or paint thinners generated by the VP-67 squadron. Accumulation activities at SWMU 52 began in 1955 and the accumulation area was moved several times. In 1987 the accumulation point was reportedly inside Building N-126, while records dated after 1987 indicated the accumulation point was moved to an outside, fenced, asphalt-paved area west of Building N-126 (investigated as SWMU 50). No releases were reported inside of Building N-126 and the outside accumulation point was investigated as SWMU 50; therefore, SWMU 52 was not recommended for investigation. In August 1995, the Navy, TDEC, and USEPA recommended no further action for SWMU 52, hence no sampling was conducted at this SWMU.

In 1990, a preliminary investigation of SWMUs 50, 51, and 52 indicated releases had occurred inside the fenced area of SWMU 50. Additionally, a visual site inspection of SWMU 51 indicated numerous stains on the asphalt.

Between 1994 and 1996, the Navy investigated SWMUs 50 and 51, in accordance with the regulatory permit requirements. Media sampled at SWMUs 50 and 51 included surface soil (zero to 12 inches below the surface) and subsurface soil (deeper than 12 inches below the surface).

Contaminant concentrations in SWMUs 50 and 51 soil were compared to USEPA screening values, which were calculated to be highly protective of health. By comparing these numbers, risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation of SWMUs 50 and 51 indicated minimal soil impact, with the following contaminants identified at concentrations exceeding screening values:

- **Surface Soil** — The semivolatile organic compound benzo(a)pyrene, and the pesticide dieldrin exceeded their RBCs.
- **Subsurface Soil** — The pesticides Aldrin and dieldrin, and nickel exceeded their SSLs.

#### 4.0 SUMMARY OF SITE RISKS

During the SWMUs 50 and 51 CSI, the effects of long-term exposure to the compounds identified in soil were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer-causing chemicals has been exceeded.

The preliminary risk evaluation of SWMUs 50 and 51 indicated human health risk did not exceed the USEPA incremental lifetime cancer risk or hazard index acceptable levels for either residential or industrial scenarios. Based on the human health preliminary risk evaluation, existing conditions at SWMU 50 and 51 are considered protective of human health.

SWMU 52 was not sampled during the CSI, because it was previously recommended for no further action. Therefore, current conditions at SWMU 52 are considered protective of human health.

Ecological risk was assessed by observing SWMUs 50, 51, and 52. There were no significant features present which would provide shelter, substantive food or water, or a mixture of cover types to wildlife. Therefore, there were no viable long-term habitats for ecological receptors and no unacceptable ecological risk at SWMUs 50, 51, and 52.

Based on the human health preliminary risk evaluation for SWMUs 50 and 51, and no unacceptable ecological risk, existing conditions at SWMUs 50, 51, and 52 are considered protective of human health.



**5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMUs 50, 51, and 52, minimal impact was identified in soil; a human health preliminary risk evaluation indicated SWMUs 50 and 51 are suitable for residential or industrial land use; and there is no unacceptable ecological risk.

Further investigation of SWMUs 50, 51, and 52 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

**6.0 SUMMARY OF ALTERNATIVES**

According to the reuse plan prepared by the City of Millington, SWMUs 50, 51, and 52 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMUs 50, 51, and 52 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The human health preliminary risk evaluation indicates SWMUs 50 and 51 are not only suitable for industrial land use, but also acceptable for residential land use. Additionally, there is no unacceptable ecological risk at these sites. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMUs 50, 51, and 52 — no further action — is considered protective of human health and the environment.

**7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMUs 50, 51, and 52 is no further action. Based on the information currently available, SWMU 52 was previously recommended for no further action; minimal impact was identified in SWMUs 50 and 51 soil; a preliminary risk evaluation indicated SWMUs 50 and

51 are suitable for residential or industrial land use; and there is no unacceptable ecological risk. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Because community input could affect selection of a final remedy for SWMUs 50, 51, and 52, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box below, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives of the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

regarding remedy selection for SWMUs 50, 51, and 52. Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

The SWMUs 50, 51, and 52 CSI report is part of the Administrative Record that can be reviewed in the



Information Repository, which was established to provide public access to documents pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
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The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMUs 50, 51, and 52, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on page 5.*



## STATEMENT OF BASIS

### **SWMU 62 — M-21 Arresting Gear Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 62 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 62, the M-21 Arresting Gear mechanism on Runway 4-22, consists of two cement-lined pits, one on either side of the runway, that housed the arresting gear (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes the findings of the SWMU 62 Resource Conservation and Recovery Act (RCRA), Confirmatory Sampling Investigation (CSI) report, but it should not be considered a substitute for the report. The CSI report is the primary source of detailed information on SWMU 62; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMU 62. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 62. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States

Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

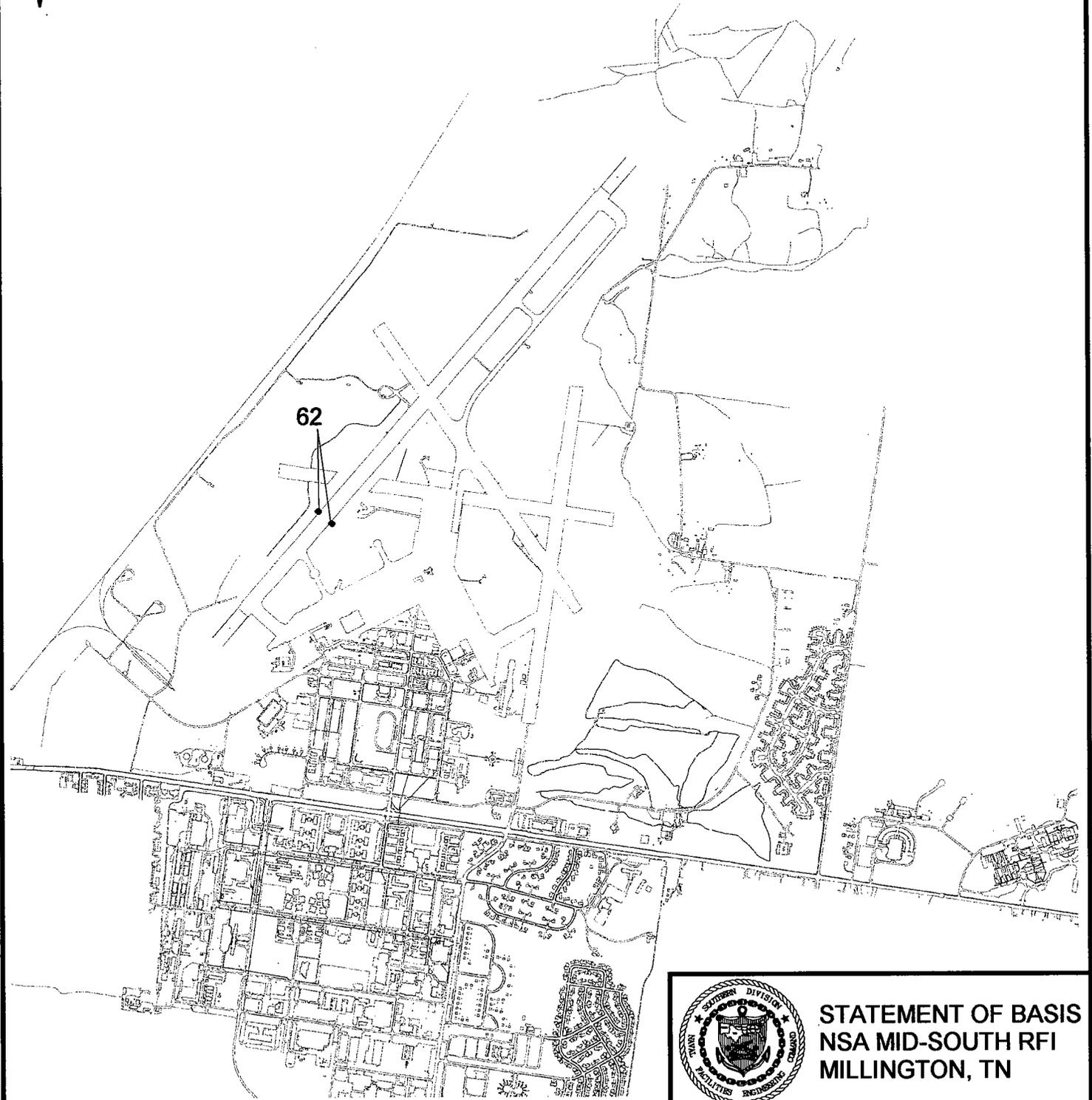
Investigation of SWMU 62 indicated minimal impact to soil or groundwater; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk.

Based on the available information, the Navy proposed a remedy for SWMU 62 of no further action in the CSI report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

SWMU 62, the M-21 Arresting Gear mechanism on Runway 4-22, consists of two cement-lined, L-shaped containment pits on either side of the runway that formerly housed the arresting gear (Figure 2). The gear was powered by a generator and was first used in 1985 for pilot training. A makeshift drywell, approximately 90 feet west of the western containment pit, once received drainage from the pit. Residual contaminants from the arresting gear pits (hydraulic fluid, diesel fuel, and lubricating oil) would enter the drywell via a drain line and float on the heavier water allowing for periodic removal.

Between 1994 and 1996, the Navy investigated SWMU 62, in accordance with the regulatory permit requirements. Media sampled at SWMU 62 included: surface soil (zero to 12 inches below the surface); subsurface soil (deeper than 12 inches below the surface); and fluvial deposits groundwater (the first usable groundwater beneath the site at approximately 38 feet below the surface).

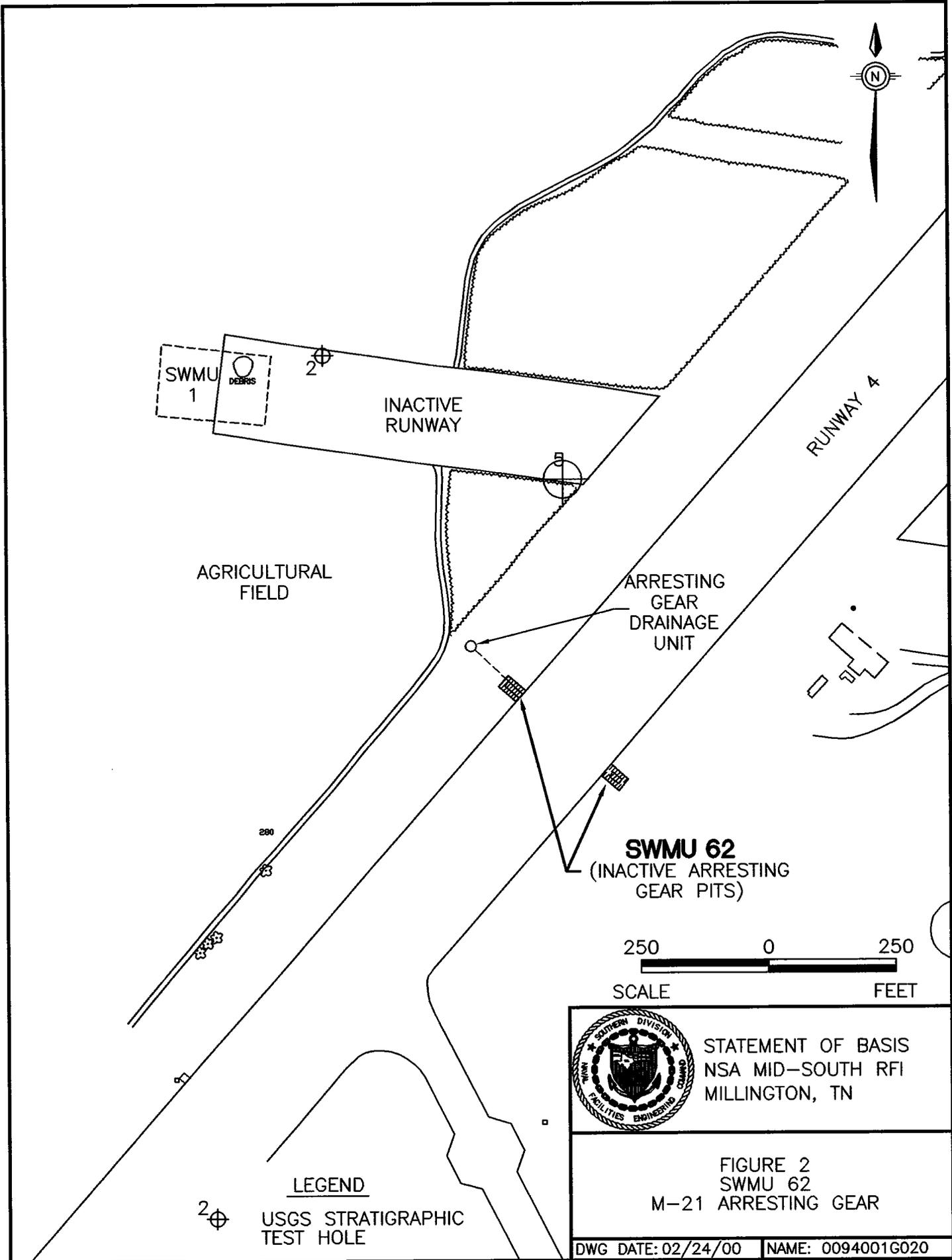


 Roads  
 Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1  
SWMU 62  
M-21 Arresting Gear**





Contaminant concentrations in SWMU 62 soil and groundwater were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation results indicated minimal soil or groundwater impact at SWMU 62, with the following contaminants identified at concentrations exceeding screening values:

- **Surface Soil** — The pesticide dieldrin exceeded its SSL.

Dieldrin is commonly detected throughout Naval Support Activity Mid-South due to its aerial application in the 1950s and 1960s. The dieldrin concentrations identified at SWMU 62 were not considered a site-related source of soil contamination.

#### **4.0 SUMMARY OF SITE RISKS**

During the SWMU 62 CSI, the effects of long-term exposure to the compounds identified in soil and groundwater were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer-causing chemicals has been exceeded.

The preliminary risk evaluation of SWMU 62 indicated human health risk did not exceed the

USEPA incremental lifetime cancer risk or hazard index acceptable levels for either residential or industrial scenarios. Based on the human health preliminary risk evaluation, existing conditions at SWMU 62 are considered protective of human health.

Ecological risk was assessed by observing SWMU 62. There were no significant features present which would provide shelter, substantive food or water, or a mixture of cover types to wildlife. Therefore, there were no viable long-term habitats for ecological receptors and no unacceptable ecological risk at SWMU 62.

Based on the human health preliminary risk evaluation and no unacceptable ecological risk, existing conditions at SWMU 62 are considered protective of human health and the environment.

#### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 62, minimal impact was identified in soil or groundwater; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk.

Further investigation of SWMU 62 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

#### **6.0 SUMMARY OF ALTERNATIVES**

According to the reuse plan prepared by the City of Millington, SWMU 62 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 62 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The human health preliminary risk evaluation indicates the area not only is suitable for industrial land use, but also is acceptable for residential land use. Additionally, there is no unacceptable ecological risk at this site. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for



SWMU 62 — no further action — is considered protective of human health and the environment.

**7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 62 is no further action. Based on the information currently available, contaminants remaining in soil or groundwater at SWMU 62 meet USEPA and TDEC media cleanup standards, except dieldrin which was not considered a site-related contaminant; a preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Since community input could affect selection of a final remedy for SWMU 62, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box on this page, and postmarked no later than **December 14**. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the  
  
October 29, 2001

Restoration Advisory Board. Representatives of the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 62. Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

The SWMU 62 CSI report is part of the Administrative Record that can be reviewed in the Information Repository, which was established to provide public access to documents pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
1-901-872-1585**

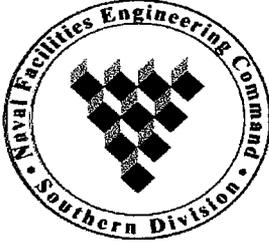
The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

*For more information on the proposed remedy for SWMU 62, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; e m a i l a t*

*cbullington@mail.state.tn.US; or write to the address in the box on this page.*



## STATEMENT OF BASIS

### **SWMU 66 — Radar Area Dump Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 66, the Radar Area Dump, at Naval Support Activity Mid-South, Millington, Tennessee. The dump area, east of inactive Runway 18, was identified in 1994 while clearing trees which interfered with the operation of the nearby radar facility, Building 1696 (Figure 1).

The purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes information from the SWMU 66 Resource Conservation and Recovery Act (RCRA) Voluntary Corrective Action (VCA) report, but it should not be considered a substitute for the report. The VCA report is the primary source of detailed information on SWMU 66; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and the information that supports them is encouraged and will be considered during selection of the final remedy for SWMU 66. Public participation could alter the final remedy selected from the one proposed here.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 66. Therefore, it is responsible for completion of the corrective action. Technical support for the investigation and corrective action process has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the

United States Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

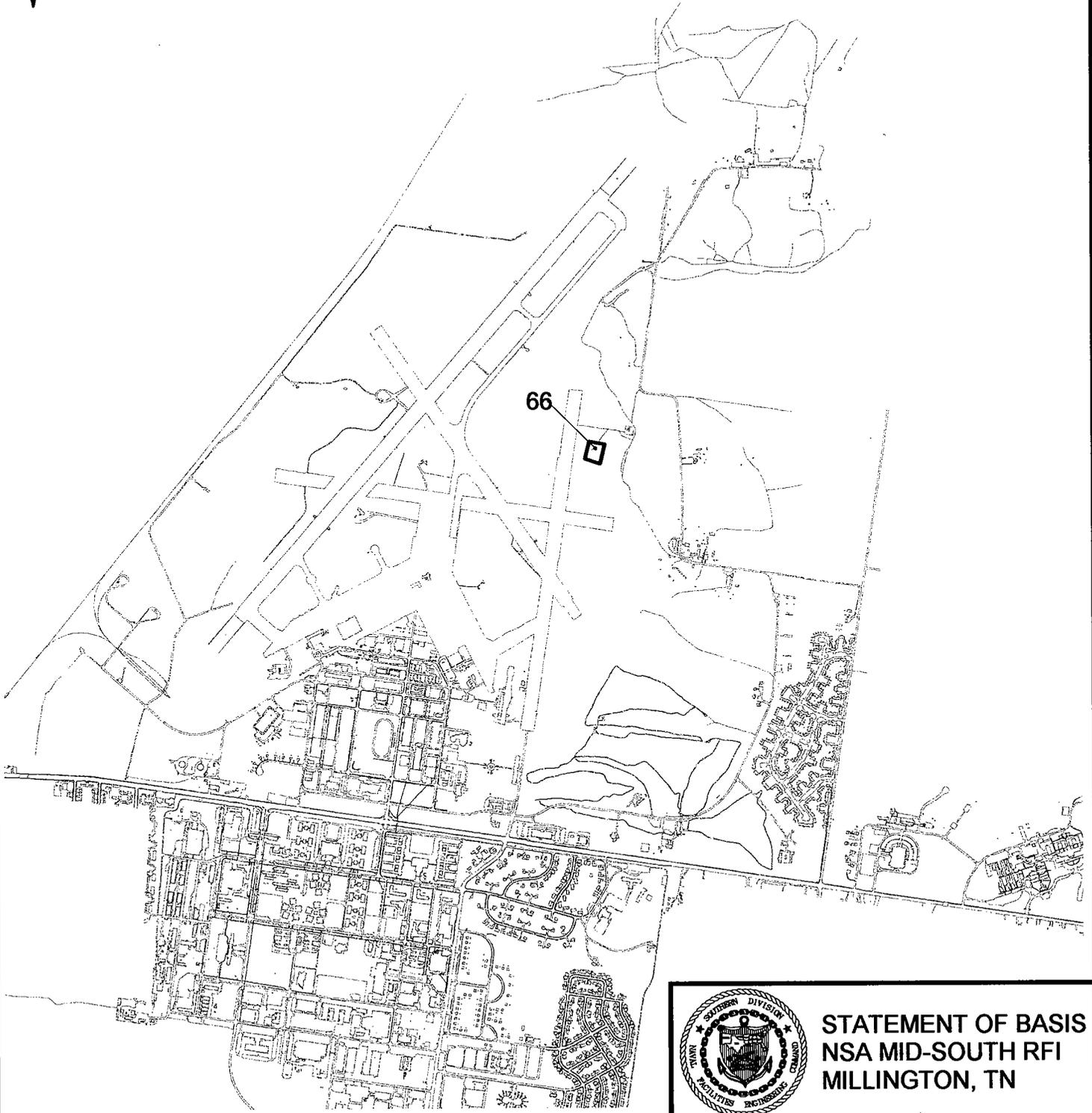
Investigation of SWMU 66 indicated minimal impact to sediment, soil or groundwater; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and an ecological risk assessment identified minimal effects to vegetation or subsurface organisms and limited risk to small mammal species. In 1997, drums and debris in the Radar Area Dump were removed and disposed properly.

Based on the available information, the Navy proposed a remedy for SWMU 66 of no further action in the VCA report which was approved by USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

In July 1994, SWMU 66 was identified while clearing trees which interfered with the operation of the nearby radar facility, Building 1696. SWMU 66 is on the Northside of Naval Support Activity Mid-South, east of inactive Runway 18 and southwest of Building 1696, in a heavily vegetated ravine, approximately 12 feet deep by 350 feet long by 50 feet wide (Figure 2).

When discovered, the ravine contained discarded drums, stoves, refrigerators, and other debris. In October 1994, the Radar Area Dump was designated SWMU 66. In March 1996, the Navy initiated a VCA at SWMU 66 which included removing the vegetation from the ravine, screening and inventorying the drums

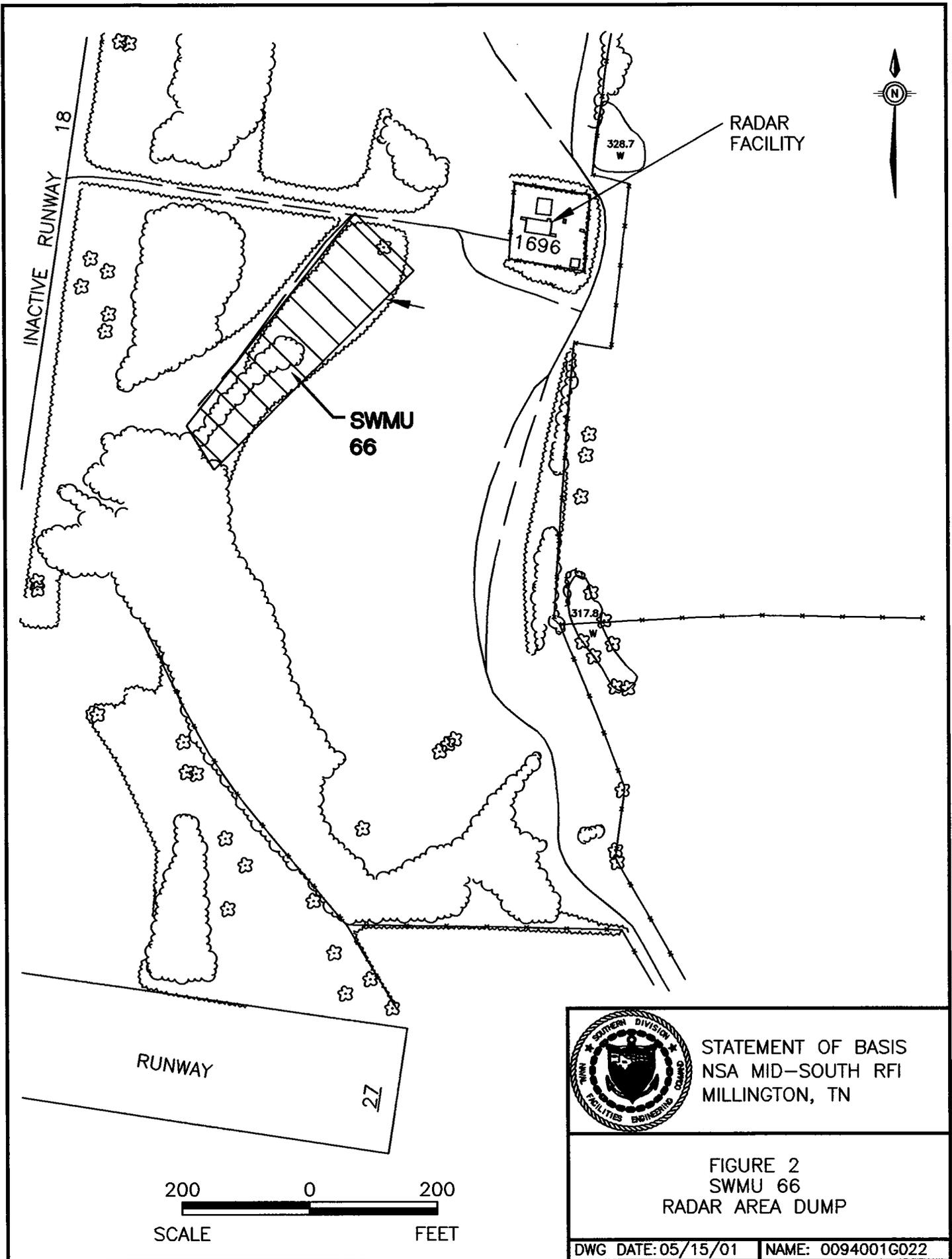


 Roads  
Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1  
SWMU 66  
Radar Area Dump**



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMU 66  
RADAR AREA DUMP



(which were empty), and sampling the sediment in the base of the ravine or soil in the sidewalls for laboratory analysis. Additional sediment sampling was conducted in the base of the ravine in October 1996.

In January 1997, the drums/debris at SWMU 66 area were removed and disposed of properly. In May 1998, the first groundwater encountered beneath SWMU 66 was sampled for laboratory analysis.

Media sampled during the investigation included: sediment, surface soil (0 to 12 inches below the surface), subsurface soil (greater than 12 inches below the surface), and fluvial deposits groundwater (the first groundwater beneath the site at approximately 30 feet below the surface).

Contaminant concentrations in SWMU 66 sediment, soil, and groundwater were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation results indicated minimal sediment, soil or groundwater contamination at SWMU 66, with the following contaminants identified at concentrations exceeding screening values:

- **Sediment** — Semi-volatile organic compounds (SVOCs), pesticides, and metals exceeded their sediment screening values, residential RBCs, or SSLs.
- **Surface Soil** — SVOCs, pesticides, or metals exceeded their residential RBCs or SSLs.
- **Subsurface Soil** — A volatile organic compound, a pesticide, and three metals exceeded their SSLs.

#### **4.0 SUMMARY OF SITE RISKS**

During the SWMU 66 VCA, the effects of long-term exposure to the compounds identified in sediment, soil, or groundwater were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation.

The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable incremental lifetime cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer causing chemicals has been exceeded.

The preliminary risk evaluation of SWMU 66 indicated human health risk did not exceed the USEPA incremental lifetime cancer risk or hazard index acceptable levels for either residential or industrial scenarios. Based on the human health preliminary risk evaluation, existing conditions at SWMU 66 are considered protective of human health.

Ecological risk at SWMU 66 was assessed by comparing maximum concentrations of contaminants identified in sediment or surface soil to ecological screening values and calculating ecological risk estimates. Contaminants identified at SWMU 66 indicated a minimal impact to vegetation or subsurface organisms, while ecological risk to small mammals at SWMU 66 is expected to be limited or negligible.

Based on the human health preliminary risk evaluation and the ecological risk assessment, existing conditions at SWMU 66 are considered protective of human health and the environment.

#### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 66 the debris in the ravine was removed and properly disposed in 1997; minimal impact was



identified in sediment, soil or groundwater; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and ecological risk is minimal to vegetation or subsurface organism, while there is limited risk to small mammal species.

Further investigation of SWMU 66 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

**6.0 SUMMARY OF ALTERNATIVES**

According to the reuse plan prepared by the City of Millington, SWMU 66 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 66 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The human health preliminary risk evaluation indicates the area not only is suitable for industrial land use, but also is acceptable for residential land use. Additionally, an ecological risk assessment indicated a minimal impact to vegetation or subsurface organisms and a limited or negligible impact to small mammals at SWMU 66. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 66 — no further action — is considered protective of human health and the environment.

**7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The proposed remedy for SWMU 66 is no further action. Based on the information currently available, further releases were eliminated when the debris was removed from the ravine; minimal impact was identified in sediment, soil or groundwater; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and ecological risk is minimal to vegetation or subsurface organism, while there is

limited risk to small mammal species. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Because community input could affect selection of a final remedy for SWMU 66, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box below, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and oral comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives from the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the board have already received copies of this SB for review. The public is invited to attend the Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 66. Public comments received at the meeting or in writing will be summarized and included

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

with the formal Response to Comment document.

The SWMU 66 VCA report is part of the Administrative Record and can be reviewed in



the Information Repository, which was established to provide public access to records and reports pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
(901) 872-1585**

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*For more information on the proposed remedy for SWMU 66, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address on page 5.*



## STATEMENT OF BASIS

### **SWMU 67 — Horse Pasture Dump Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 67, the Horse Pasture Dump, at Naval Support Activity Mid-South, Millington, Tennessee. The Horse Pasture Dump is in a remote area of the Northside of Naval Support Activity Mid-South on a parcel of land that is being used as a pasture (Figure 1).

The purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes information from the SWMU 67 Resource Conservation and Recovery Act (RCRA) Voluntary Corrective Action (VCA) report, but it should not be considered a substitute for the report. The VCA report is the primary source of detailed information on SWMU 67; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and the information that supports them is encouraged and will be considered during selection of the final remedy for SWMU 67. Public participation could alter the final remedy selected from the one proposed here.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 67. Therefore, it is responsible for completion of the corrective action. Technical support for the corrective action at SWMU 67 was provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight was provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States Environmental Protection Agency, Region IV

(USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY SUMMARY**

SWMU 67 was a non-hazardous waste/debris disposal area where all debris was removed in 1995. No stains were observed nor was there any evidence of a release at the site, so no sampling was performed.

Based on the available information, the Navy proposed a remedy for SWMU 67 of no further action in the VCA report which was approved by the USEPA and TDEC. The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information and public input could affect the final remedy decision.

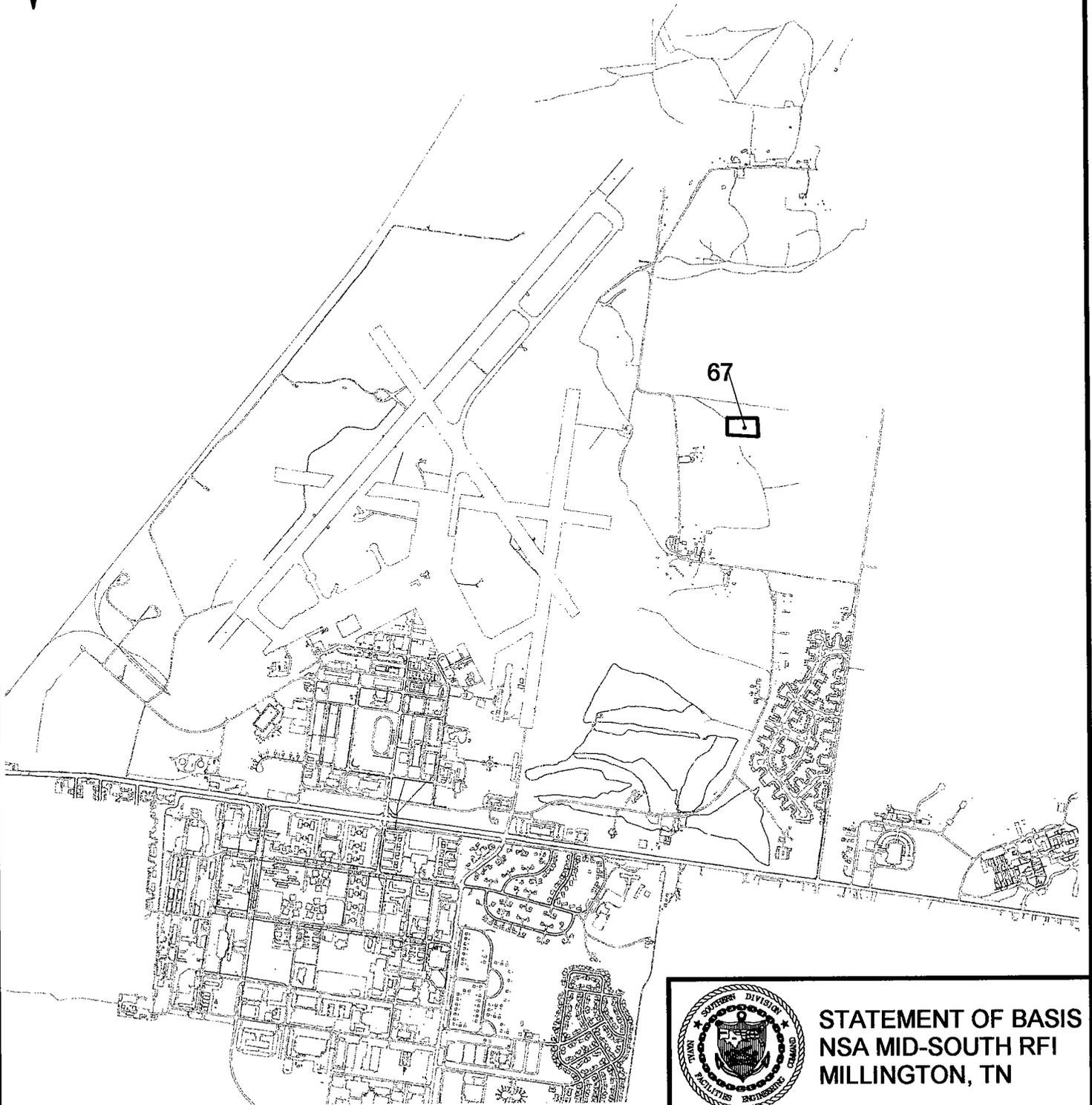
#### **3.0 SITE BACKGROUND**

The Horse Pasture Dump, in a remote area of the Northside of Naval Support Activity Mid-South, was a non-hazardous waste/debris disposal area where all debris was removed in 1995 (Figure 2). During debris removal, one tank was discovered which contained a residual amount of used oil, otherwise all debris appeared to be non-hazardous. No sampling was performed at SWMU 67, since there were no stains observed, nor was there any evidence of a release.

Based on the lack of hazardous constituents or evidence of spills, the Navy recommended no further action at SWMU 67 after the debris removal.

#### **4.0 SUMMARY OF SITE RISKS**

The risk to human health or the environment at SWMU 67 was not assessed because no stains or evidence of spills were encountered before, during, or after the debris removal. Based on the lack of hazardous constituents, existing conditions at SWMU 67 are considered protective of human health and the environment.

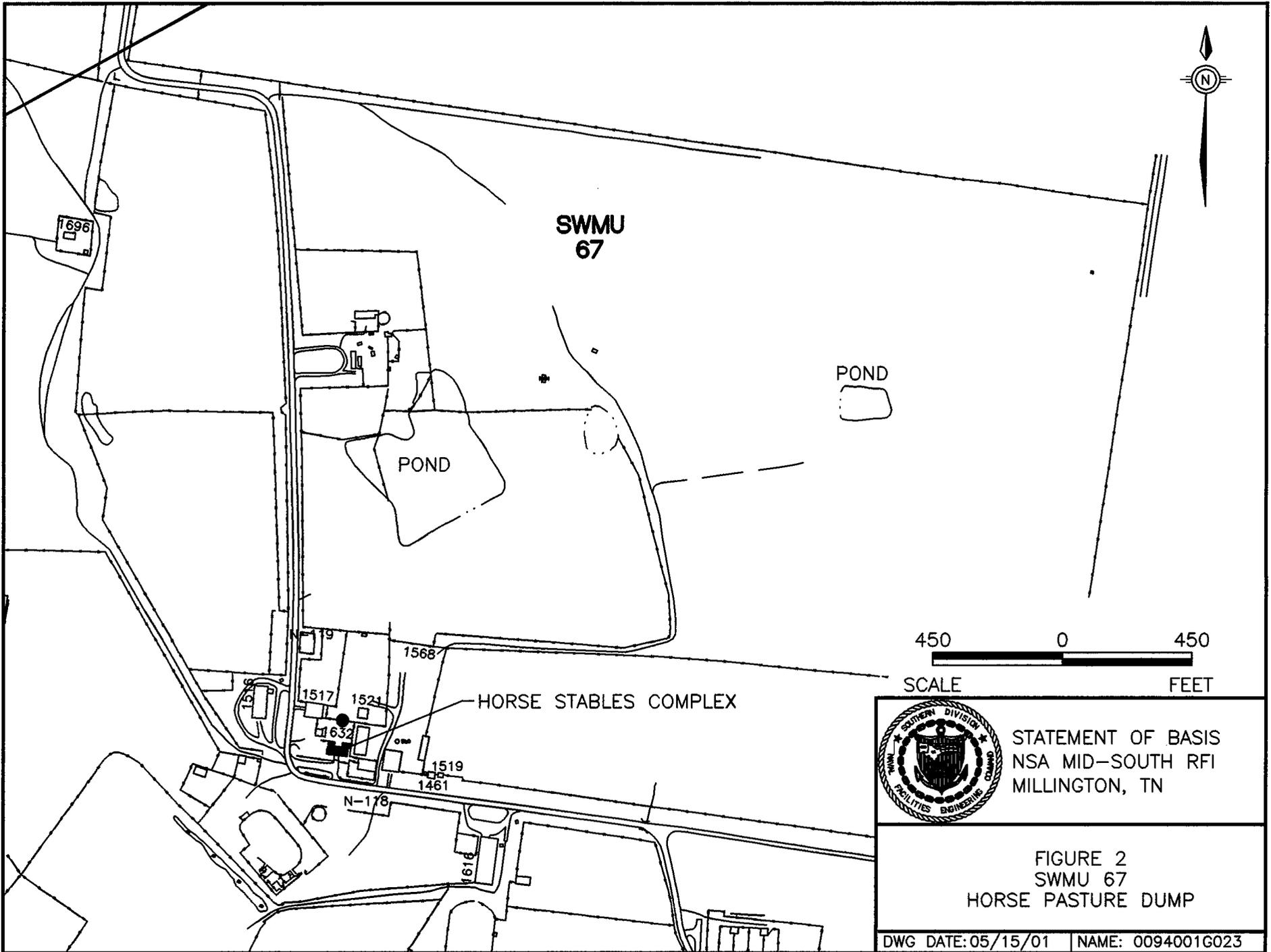


 Roads  
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**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1  
SWMU 67  
Horse Pasture Dump**



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## Statement of Basis



**Naval Support Activity Mid-South  
SWMU 67 — Horse Pasture Dump**

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Further investigation of SWMU 67 is deemed unnecessary and the proposed remedy of no further action is considered protective of human health and the environment.

### 5.0 SCOPE OF CORRECTIVE ACTION

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 67, non-hazardous debris was removed in 1995; no stains or evidence of spills were encountered before, during, or after the debris removal; and existing conditions are considered protective of human health and the environment. Therefore, the proposed remedy of no further action is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

### 6.0 SUMMARY OF ALTERNATIVES

According to the reuse plan prepared by the City of Millington, SWMU 67 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 67 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. However, the risk to human health or the environment at SWMU 67 was not assessed because no stains or evidence of spills were encountered before, during, or after the debris removal. Based on the lack of hazardous constituents, existing conditions at SWMU 67 are considered protective of human health and the environment and no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 67 — no further action — is considered protective of human health and the environment.

### 7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES

The proposed remedy for SWMU 67 is no further action. Based on the information currently available,

potential releases were eliminated when the debris was removed and no stains or evidence of spills were encountered before, during, or after the debris removal. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

### 8.0 PUBLIC PARTICIPATION

Public comment is requested on the proposed remedy described here, as well as others not addressed. Because community input could affect selection of a final remedy for SWMU 67, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box below, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and oral comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives from the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the board have already received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns

regarding remedy selection for SWMU 67. Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

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## **Statement of Basis**



**Naval Support Activity Mid-South  
SWMU 67 — Horse Pasture Dump**

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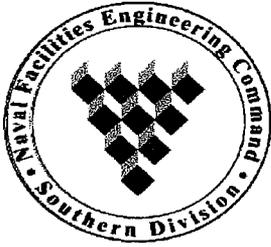
The SWMU 67 VCA report is part of the Administrative Record and can be reviewed in the Information Repository, which was established to provide public access to records and reports pertaining to the Navy's environmental program. The Information Repository is maintained at:

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4858 Navy Road  
Millington, Tennessee 38053  
(901) 872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMU 67, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on page 4.*



## STATEMENT OF BASIS

### **SWMU 8 — Cemetery Disposal Area Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 8 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 8, the Cemetery Disposal Area, was reportedly used for solid and hazardous waste disposal from 1965 to 1980 (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes information from the SWMU 8 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report, but it should not be considered a substitute for this document. The RFI report is the primary source of detailed information on SWMU 8; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and the information that supports them is encouraged and will be considered during selection of the final remedy for SWMU 8. Public participation could alter the final remedy selected from the one proposed here.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 8. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA

comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

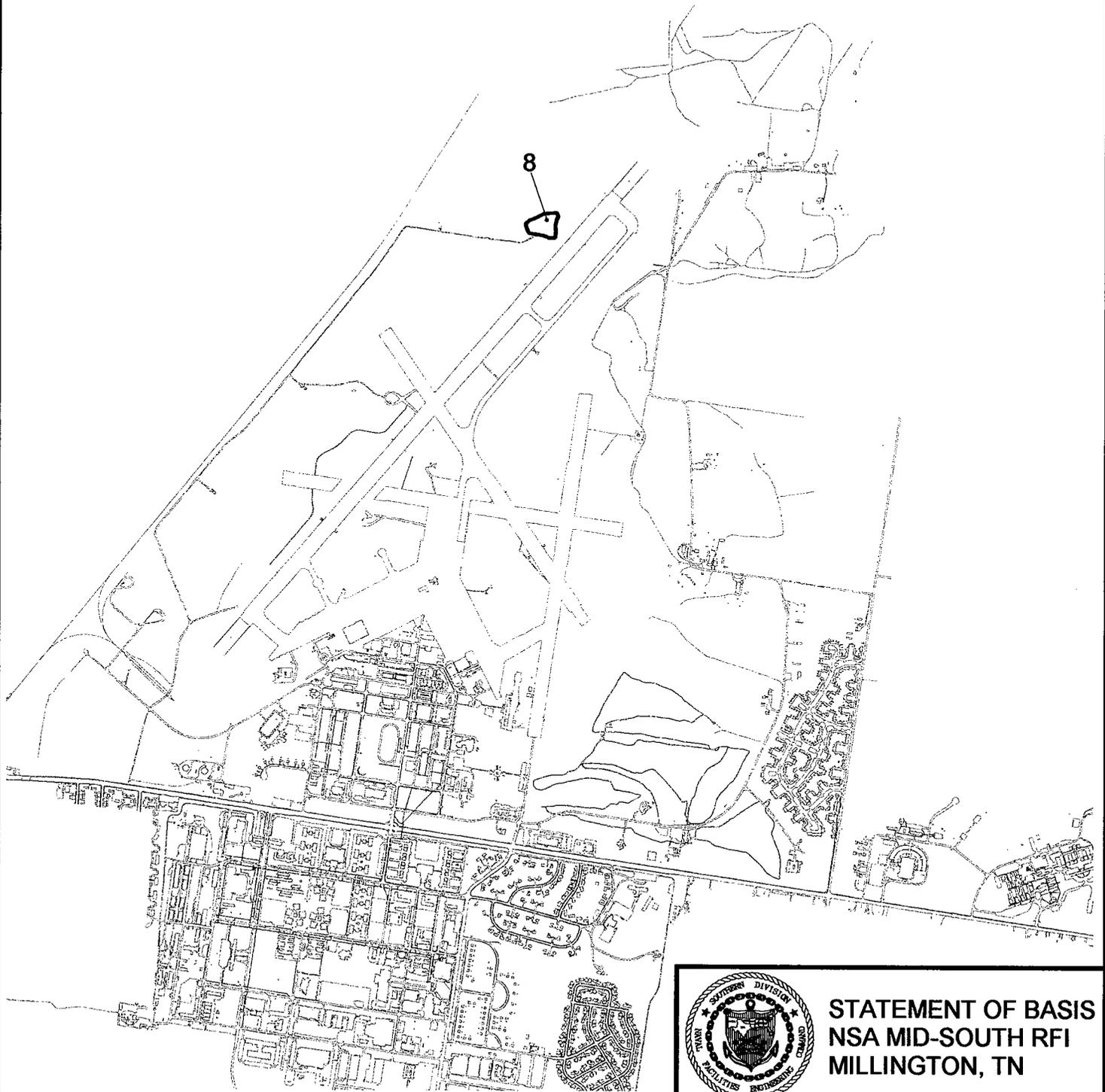
#### **2.0 PROPOSED REMEDY**

In 1997, stockpiled soil at SWMU 8 was removed and properly disposed due to the pesticide dieldrin and semivolatile organic compounds (SVOCs). In 1998, a removal of buried ethylene oxide cylinders was also carried out at SWMU 8. Subsequent investigation of SWMU 8 indicated low concentrations of contaminants in soil and groundwater samples. Risk assessments showed that existing soil conditions are protective of human health and the environment, while shallow groundwater conditions exceeded USEPA's acceptable limits. However, SWMU 8 is planned for continued industrial use and a municipal water supply is readily available, so human exposure to SWMU 8 groundwater should not occur. Therefore, existing conditions at SWMU 8 are considered protective of human health and the environment for industrial land use.

Based on the available information, the Navy's proposed remedy for SWMU 8 is a limited action consisting of the following land use controls:

- The site must be reused for nonresidential purposes only.
- The excavation, drilling, or other disturbance of soil is prohibited without prior approval from the Navy.
- The use of shallow (loess and fluvial deposits) groundwater is prohibited. The installation of wells in the Memphis Sand or deeper aquifers must preclude the downward migration of contamination by using double-cased and grouted wells, and prior written authorization from the Navy and approval from the Memphis-Shelby County Health Department must be obtained.

Implementation and enforcement of the SWMU 8 land use controls are detailed in the Airfield Land Use Control Implementation Plan (LUCIP), the Non-Airfield LUCIP, the airfield deed, and the non-airfield deed #1,



 Roads  
Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1  
SWMU 8  
Cemetery Disposal Area**



which are available for review at the Millington Public Library (see Section 8.0). Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information and public input could affect the final remedy decision. Also, restrictions on groundwater use could be removed in the future as a result of successful remediation.

### 3.0 SITE BACKGROUND

SWMU 8, the cemetery disposal area, comprised approximately 5 to 8 acres immediately west of the north end of the main runway (Figure 2). The Chamberlayne Cemetery, dating from the early 1800s, was approximately 800 feet southwest of SWMU 8 on the unpaved road around the perimeter of Naval Support Activity Mid-South. SWMU 8 was reportedly used for solid and hazardous waste disposal from 1965 to 1980. Wastes reportedly disposed of included three 25-pound canisters of ethylene oxide, metallic scrap, waste chemicals, waste oil, cleaning solutions, transformers, and capacitors. The wastes were reportedly buried eight feet below the original ground surface. Also, several stockpiles of soil, either from random dumping or prior bulldozer operations, were in one area of SWMU 8.

In 1985, a Confirmation Study/Verification Phase was conducted at SWMU 8. Three groundwater monitoring wells were installed and sampled around what was presumed to be the perimeter of the SWMU. Analyses detected no concentrations above USEPA Interim Primary Drinking Water Standards.

In 1994, an electromagnetic geophysical survey of SWMU 8 identified a flat, bermed area, which was the first evidence of a possible disposal-area boundary; however, the survey did not indicate the presence of buried debris. Also in 1994, soil and groundwater samples were collected at SWMU 8 and analyzed in a field laboratory for volatile organic compounds (VOCs). Field laboratory analyses indicated no detectable VOCs in the soil or groundwater samples.

Between 1994 and 1998, the Navy investigated SWMU 8, in accordance with the regulatory permit requirements. Media sampled at SWMU 8 included:

surface soil (zero to 12 inches below the surface); subsurface soil (deeper than 12 inches below the surface); and fluvial deposits groundwater (the first usable groundwater beneath the site at approximately 35 feet below the surface).

Contaminant concentrations in SWMU 8 soil were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

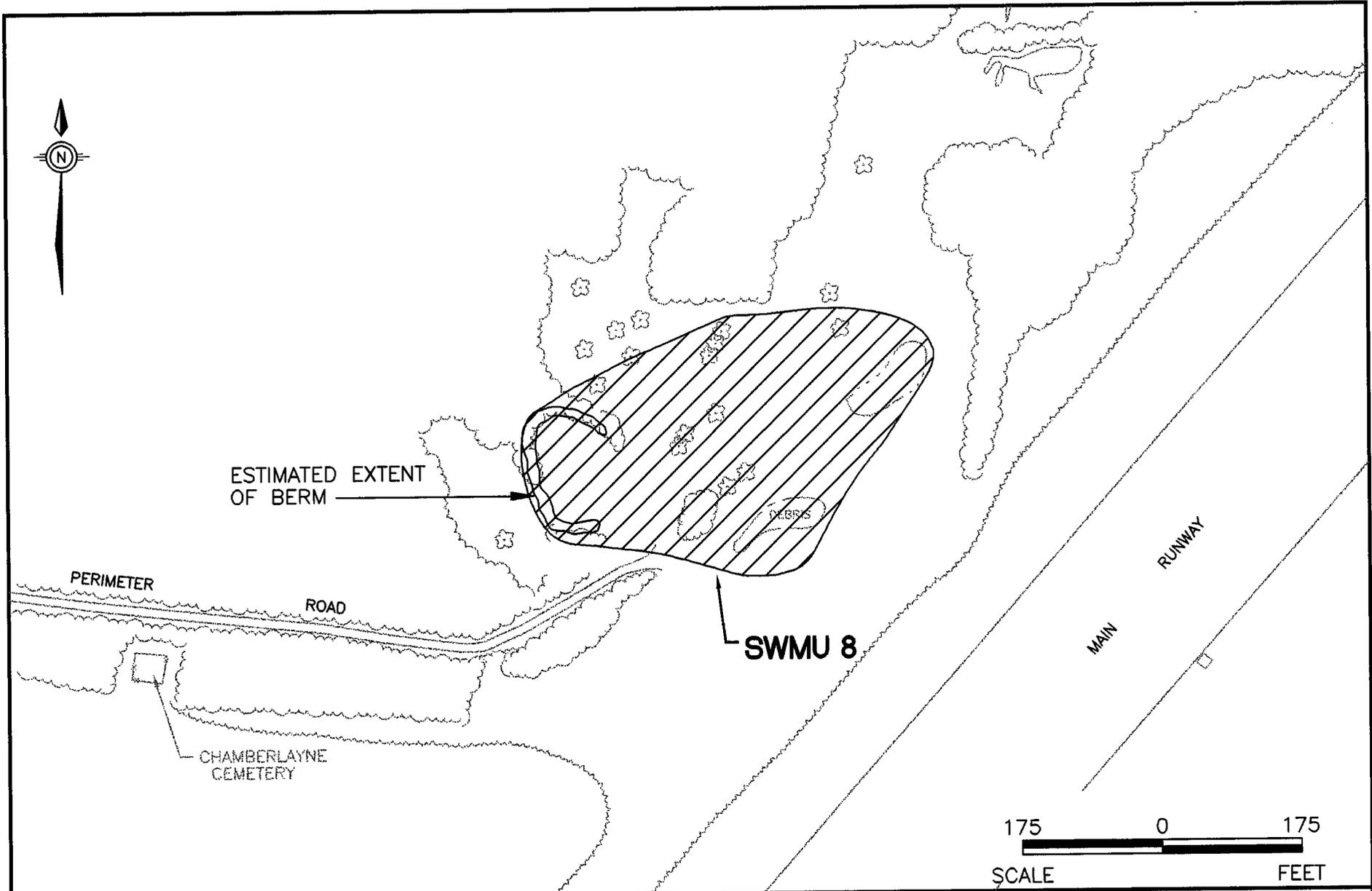
Investigation results indicated low concentrations of contaminants in soil or groundwater samples at SWMU 8, with the following contaminants identified at concentrations exceeding screening values:

**Surface Soil** — The pesticide dieldrin exceeded its residential and industrial RBCs. The VOC methylene chloride; the pesticides dieldrin, endrin, and endrin ketone; and the metals cadmium and selenium exceeded their SSLs.

**Subsurface Soil** — The VOC methylene chloride; the SVOCs benzo(a)pyrene equivalent and carbazole; the pesticide dieldrin; and the metals cadmium and nickel exceeded their SSLs.

**Fluvial Deposits Groundwater** — The VOC acetone and the SVOC bis(2-ethylhexyl)phthalate exceeded their RBC for tap water, while lead exceeded its USEPA treatment technique action level for drinking water.

The contaminants identified in fluvial deposits groundwater samples were from several long-term groundwater monitoring events. Acetone in one well during the third of four sampling events exceeded its tap water RBC, while during the other three events it was not detected in the same well. Likewise, bis(2-ethylhexyl)phthalate (BEHP) during the initial sampling event in two wells exceeded its tap water RBC, then during the next event it was not detected in either well; and lead during the initial sampling event in two wells exceeded its USEPA treatment technique action level, then during the next event it was not detected in either well. It is uncertain whether the detections of acetone and



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMU 8  
CEMETERY DISPOSAL AREA

DWG DATE: 05/15/01 NAME: 0094001G006



BEHP are representative of past site activities, because both are generally considered common laboratory contaminants that can be introduced during sample collection, preparation, or analysis.

Lead in fluvial deposits groundwater was attributed to turbidity, because after the sampling method was changed to reduce turbidity, lead was not detected in any samples.

In March 1997, the Navy excavated and removed several stockpiles of soil at SWMU 8 because of SVOCs and dieldrin identified in stockpile soil samples. After the removal, confirmation samples were collected and again elevated dieldrin concentrations were identified. In April 1997, the Navy conducted a second removal of contaminated soil in the area of the stockpiles.

Confirmation samples collected following the second removal indicated dieldrin concentrations in soil still exceeded the residential RBC, industrial RBC, and SSL. However, a human health preliminary risk evaluation conducted after the second removal, indicated the risk posed by remaining concentrations did not exceed the USEPA's acceptable risk threshold of 1 in 10,000 (see Section 4.0 for more discussion of human health risk). Therefore, the BCT considered investigation of contaminants in soil complete.

In January 1998, a municipal airport grading project began around the main runway to level all areas within 500 feet of the runway centerline to the same elevation as the runway, which included nearly all of SWMU 8. Grading work halted in February 1998, when the grading contractor encountered buried ethylene oxide cylinders in the SWMU 8 area. The Navy conducted a third voluntary removal at SWMU 8 in order to identify and extract all cylinders. Between February and April 1998, 138 ethylene oxide cylinders were removed from the SWMU 8 area.

After the removal of cylinders, the grading project resumed and it was completed in May 1998. The SWMU 8 area was then seeded with grass and is currently maintained as a mowed grass field within the buffer zone around the main runway.

#### **4.0 SUMMARY OF SITE RISKS**

During the SWMU 8 RFI, the effects of long-term exposure to the compounds identified in soil

and groundwater were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer causing chemicals has been exceeded.

SWMU 8 site conditions have changed, so human health risk associated with soil at the site was evaluated semi-quantitatively. Soil conditions before the 1997 removal action indicated human health risk was within the USEPA acceptable risk range. Then soil stockpiles containing contaminants were excavated and disposed of offsite in 1997, while the entire site was excavated and graded in 1998. The site grading presumably lowered the risk range further because of the dilution of any remaining contaminants. Current conditions at SWMU 8 do not represent the pre-existing conditions which were evaluated; however, conditions at SWMU 8 have changed in ways that would be expected to limit human health exposure and reduce corresponding risks. Therefore, existing soil conditions at SWMU 8 are considered protective of human health.

A preliminary risk evaluation of SWMU 8 groundwater indicated the human health risk did not exceed the USEPA incremental lifetime cancer risk, while the hazard index exceeded USEPA's threshold at one sample location due to acetone. As previously discussed, acetone was detected during the third groundwater sampling event exceeding its tap water RBC, but it was not detected during the subsequent fourth sampling event. Therefore, acetone's presence is suspect and it is uncertain whether the identified concentration is representative of groundwater at SWMU 8.



According to the property reuse plan prepared by the City of Millington, the future land use for SWMU 8 is industrial, not residential, so there should be no future site residents. Additionally, the fluvial deposits groundwater formation is not used as a drinking water source at Naval Support Activity Mid-South and if future land use changes to include site residents, the drinking water supply would be a municipal water source. Therefore, there should not be future residents at SWMU 8 and human exposure to shallow groundwater should not occur. Existing soil and groundwater conditions are considered protective of human health for continued industrial land use in combination with no human exposure to site groundwater.

Ecological risk at SWMU 8 was also assessed. The runway grading project required the removal and redistribution of a large portion of soil around SWMU 8 and the removal of all terrestrial wildlife habitat. Following the grading project, the SWMU 8 area was seeded with grass and the area is currently maintained by mowing. Because no quality habitat is available at SWMU 8 and no complete exposure pathways exist, there is no unacceptable ecological risk at SWMU 8.

Based on the human health preliminary risk assessment and no unacceptable ecological risk, existing conditions at SWMU 8 are considered protective of human health and the environment for industrial land use if land use controls are implemented.

#### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 8, multiple removal actions addressed contaminated soil and buried ethylene oxide cylinders; low concentrations of contaminants were identified in soil and groundwater samples; risk assessments indicated existing soil conditions are protective of human health and the environment, while shallow groundwater conditions exceeded USEPA's acceptable limits; and soil-related risk was reduced further by the municipal airport related grading project. However, per the property reuse plan prepared by the City of Millington, SWMU 8 is planned for continued

industrial use and a municipal water supply is readily available, so human exposure to shallow groundwater at SWMU 8 should not occur. The Navy's proposed remedy for SWMU 8 is a limited action consisting of the following land use controls:

- The site must be reused for nonresidential purposes only.
- The excavation, drilling, or other disturbance of soil is prohibited without prior approval from the Navy.
- The use of shallow (loess and fluvial deposits) groundwater is prohibited. The installation of wells in the Memphis Sand or deeper aquifers must preclude the downward migration of contamination by using double-cased and grouted wells, and prior written authorization from the Navy and approval from the Memphis-Shelby County Health Department must be obtained.

Implementation and enforcement of the SWMU 8 land use controls are detailed in the Airfield LUCIP, the Non-Airfield LUCIP, the airfield deed, and the non-airfield deed #1, which are available for review at the Millington Public Library. Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

Further investigation of SWMU 8 is deemed unnecessary and the proposed remedy of a limited action consisting of land use controls is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

#### **6.0 SUMMARY OF ALTERNATIVES**

According to the property reuse plan prepared by the City of Millington, SWMU 8 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 8 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The assessment of human health risk indicated existing soil conditions are protective of human health and the environment, while shallow groundwater conditions exceeded USEPA's acceptable limits. Additionally, soil related risk was reduced further by the municipal airport related grading project. However, SWMU 8 is planned for continued industrial use and a municipal water supply



is readily available, so human exposure to shallow groundwater at SWMU 8 should not occur. Additionally, no unacceptable ecological risk was identified at this site. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 8 — a limited action consisting of land use controls — is considered protective of human health and the environment for industrial land use.

**7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 8 is a limited action consisting of land use controls. Based on information currently available, a preliminary risk evaluation of SWMU 8 indicated the contaminant concentrations are protective of human health and the environment, if humans were not exposed to shallow groundwater and the property use remains industrial; and there is no significant or unacceptable ecological risk. Because SWMU 8 is planned for continued industrial use and a municipal water supply is readily available, the proposed remedy is considered protective of human health and the environment for industrial land use and no alternative remedies were evaluated.

Note: Above and beyond the SWMU 8 proposed remedy described here, **l a n d u s e**

control implementation plans prepared by the BCT are already in place for the transferred airfield and non-airfield parcels. They can be reviewed at the Millington Public Library (see Section 8.0). The *Land Use Control Implementation Plan for the Airfield Parcel* (November 1999), which includes SWMU 8, outlines implementation, maintenance, enforcement, modification, and termination procedures to ensure the continued protection of human health and the environment.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed.

Since community input could affect selection of a final remedy for SWMU 8, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box below, and postmarked no later than December 14.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives of the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 8. Public comments received at the meeting or in writing will be summarized and included in the formal Response to Comment document.

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

The SWMU 8 RFI report is part of the Administrative Record that can be reviewed in the Information Repository, which was established to provide public access to documents pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
1-901-872-1585**



The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMU 8, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.US](mailto:cbullington@mail.state.tn.US); or write to the address in the box on page 7.*



## STATEMENT OF BASIS

### **SWMU 10 — Northside Landfill, Eastern Portion Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 10, the Northside Landfill, Eastern Portion, at Naval Support Activity Mid-South, Millington, Tennessee. The eastern portion of the Northside Landfill operated as a construction-debris disposal area from approximately 1951 to 1986 (Figure 1).

The purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes information from the SWMU 10 Resource Conservation and Recovery Act (RCRA) Confirmatory Sampling Investigation (CSI) report, but it should not be considered a substitute for it. This report is the primary source of detailed information on SWMU 10; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMU 10. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South is the holder of the regulatory permit, which requires corrective action at SWMU 10. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the

United States Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

Investigation of SWMU 10 indicated low concentrations of contaminants in sediment, soil, and groundwater samples; a human health preliminary risk evaluation indicated current conditions are suitable for residential or industrial land use; and in 1998, SWMU 10 was cleared, grubbed, graded level, seeded with grass, and the area will be mowed on a regular basis and used as a runway protection zone, so there is no unacceptable ecological risk. Because SWMU 10 is a former landfill, any future subsurface activity at the site should be assessed and approved prior to disturbing any buried material.

Based on the available information, the Navy's proposed remedy for SWMU 10 is a limited action consisting of the following land use control:

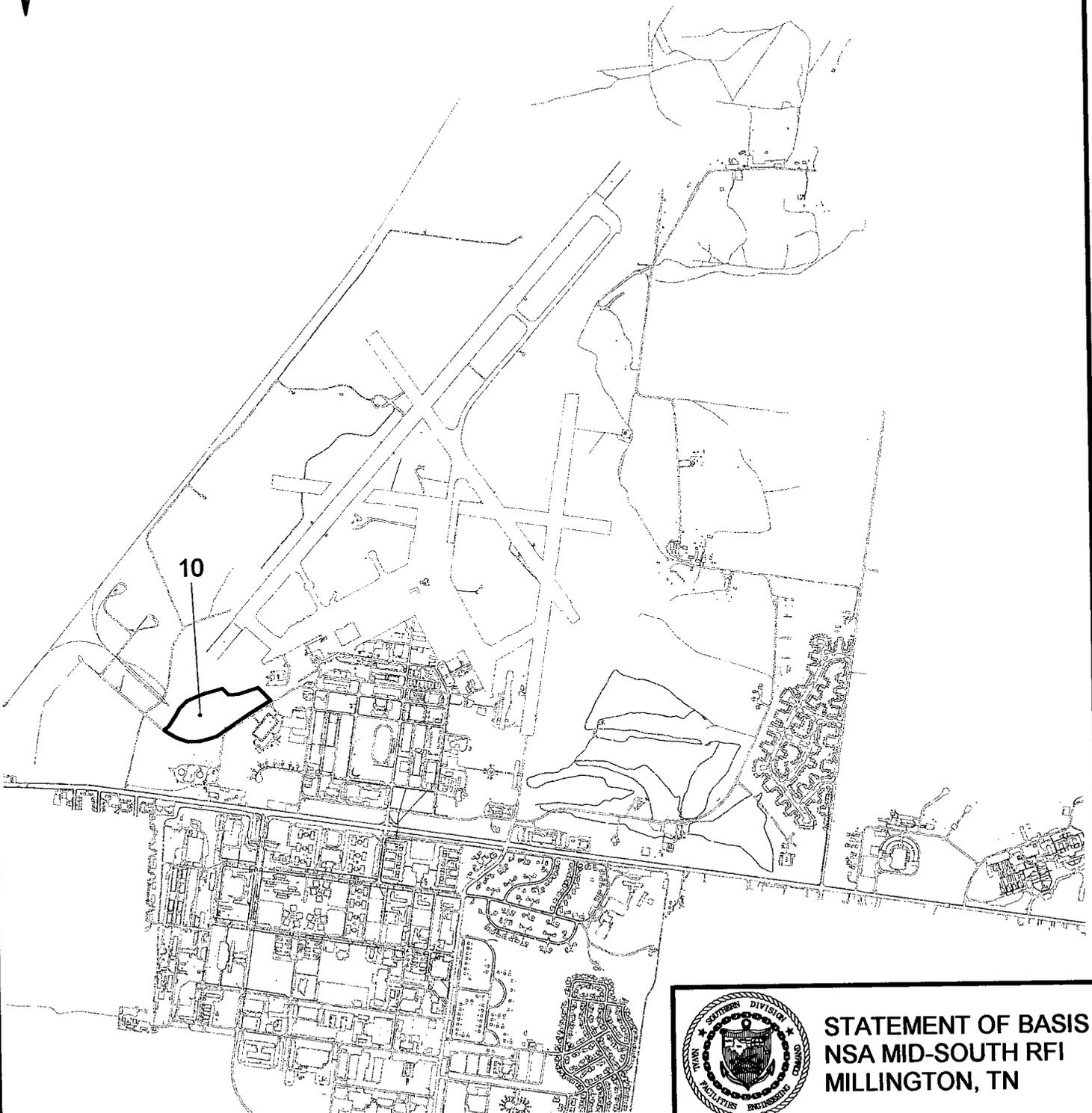
- The excavation, drilling, or other disturbance of soil is prohibited without prior approval from the Navy.

Implementation and enforcement of the SWMU 10 land use controls are detailed in the Airfield Land Use Control Implementation Plan (LUCIP) and the airfield deed, which are available for review at the Millington Public Library (see Section 8.0). Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

The Northside Landfill, eastern portion, operated as a construction-debris disposal area from approximately 1951 to 1986, covering an area from 13 to 20 acres (Figure 2). In 1989, soil excavated from a Naval Support Activity Mid-South housing area was

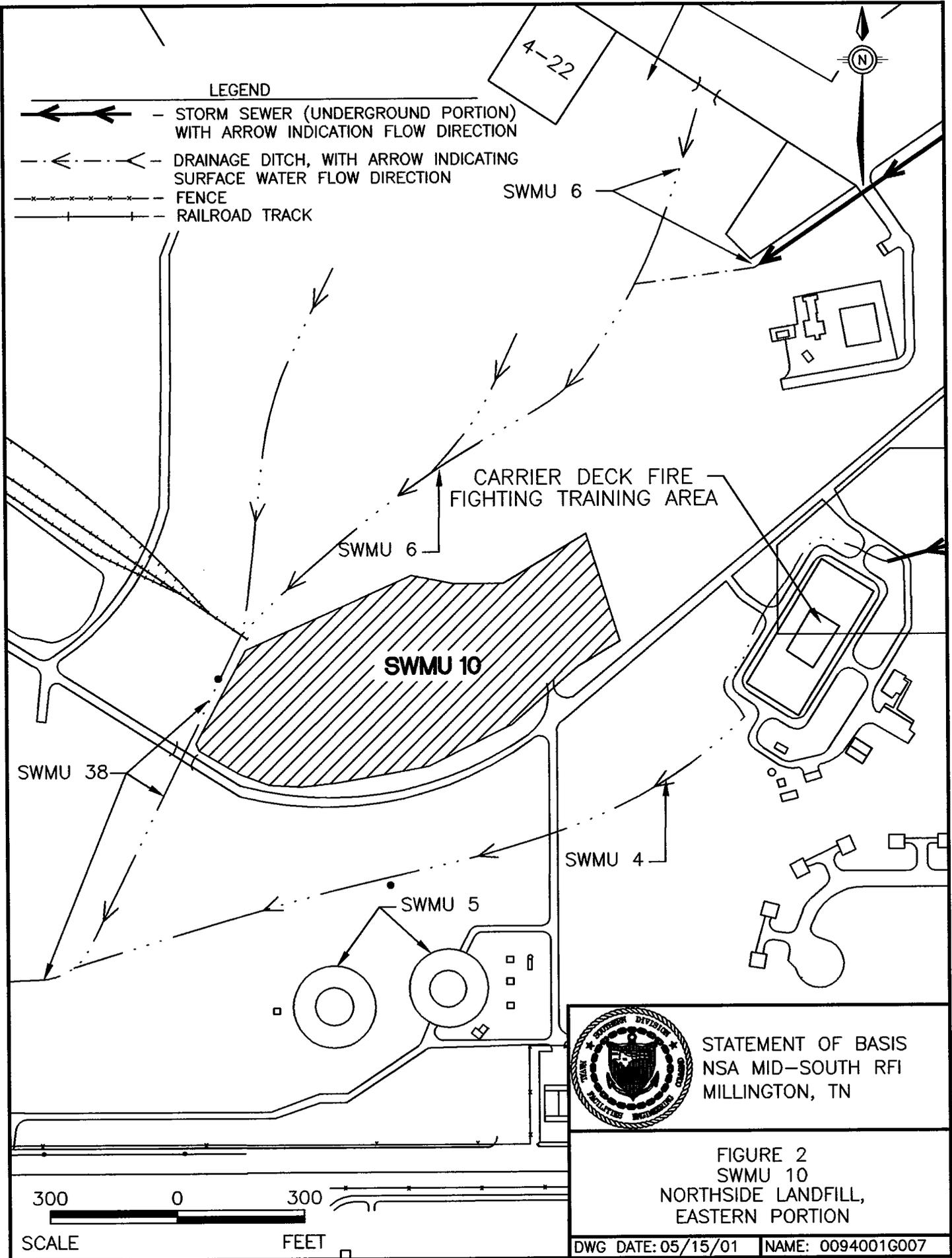


Roads  
Building



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 1  
SWMU 10  
Northside Landfill, Eastern Portion





used to fill and level SWMU 10. Initially, SWMU 10 was identified as not requiring investigation; however, in 1995, after petroleum related constituents were identified in SWMU 38 (the drainage ditch along the western side of SWMU 10), a CSI was recommended to determine if SWMU 10 was contributing to the contaminants identified in SWMU 38.

In 1996, the Navy investigated SWMU 10, in accordance with the regulatory permit requirements. Media sampled during the investigation included sediment in the drainage ditches, surface soil (zero to 12 inches below the surface), subsurface soil (deeper than 12 inches below the surface), loess groundwater (the first groundwater encountered beneath the site at approximately 12 to 24 feet below the surface), and fluvial deposits groundwater (the first usable groundwater beneath the site at approximately 50 feet below the surface).

Contaminant concentrations in SWMU 10 sediment, soil, and groundwater were compared to USEPA screening values which are calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation results indicated low concentrations of contaminants in sediment, soil, and groundwater samples at SWMU 10. The following contaminants exceeded screening values:

- **Sediment** — Six pesticides and two metals exceeded their USEPA sediment screening values; and one polynuclear aromatic hydrocarbon (PAH), one pesticide, and two metals exceeded their SSLs.
- **Surface Soil** — Three PAHs exceeded their residential and industrial RBCs; three PAHs, two pesticides, one polychlorinated biphenyl, and arsenic exceeded their residential RBCs; and thirteen compounds exceeded their SSLs.
- **Subsurface Soil** — One volatile organic compound (VOC), one pesticide, and two metals exceeded their SSLs.
- **Loess Groundwater** — One VOC exceeded its RBC for tap water and USEPA Maximum Contaminant Level for drinking water; and another VOC exceeded only its tap water RBC.
- **Fluvial Deposits Groundwater** — One VOC exceeded its RBC for tap water and USEPA Maximum Contaminant Level for drinking water.

In 1998, the SWMU 10 area was cleared, grubbed, graded level, and seeded with grass that will be mowed on a regular basis, as part of a larger project to create a runway protection zone.

#### 4.0 SUMMARY OF SITE RISKS

Due to the total alteration of SWMU 10 surface soil (any contaminants previously identified in soil have been diluted during the grading project), the risk to human health was assessed by conducting a preliminary risk evaluation of hazards posed by loess and/or fluvial deposits groundwater.

During the SWMU 10 CSI, the effects of long-term exposure to the compounds identified in groundwater were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) compounds for both residential and industrial settings. (No carcinogenic constituents were detected in groundwater, so a hazard index ratio for noncarcinogenic levels was not calculated as part of the preliminary risk evaluation.) The ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable incremental lifetime cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required.

The preliminary risk evaluation of SWMU 10 groundwater indicated human health risk did not exceed the USEPA acceptable cancer risk threshold for either residential or industrial scenarios. Based on



the human health preliminary risk evaluation, existing conditions at SWMU 10 are considered protective of human health.

An ecological risk assessment of SWMU 10 was not conducted, because there were no complete ecological exposure pathways. The quality of ecological habitat at SWMU 10 has been substantially diminished due to the clearing and grading of the site and plans to maintain it as a mowed field. Therefore, there are no viable long-term habitats for ecological receptors and no unacceptable ecological risk at SWMU 10.

Based on the human health preliminary risk evaluation and no unacceptable ecological risk, existing conditions at SWMU 10 are considered protective of human health and the environment.

**5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 10, in 1998 the area was cleared, grubbed, graded level, seeded with grass, and the mowed field will be maintained as a runway protection zone; low concentrations of contaminants were identified in sediment, soil, or groundwater samples; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no significant ecological risk. Two groundwater contaminants at SWMU 10 exceeded the USEPA Maximum Contaminant Level for drinking water; however, the loess and fluvial deposits groundwater are not used as drinking water sources at Naval Support Activity Mid-South and a municipal water supply is readily available. Because SWMU 10 is a former landfill, any future subsurface activity at the site should be assessed and approved prior to disturbing any buried material.

The Navy's proposed remedy for SWMU 10 is a limited action consisting of the following land use control:

- The excavation, drilling, or other disturbance of soil is prohibited without prior approval from the Navy.

Implementation and enforcement of the SWMU 10 land use controls are detailed in the Airfield LUCIP and the airfield deed, which are available for review at the Millington Public Library. Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

Further investigation of SWMU 10 is deemed unnecessary and the proposed remedy of a limited action consisting of a land use control is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

**6.0 SUMMARY OF ALTERNATIVES**

According to the property reuse plan prepared by the City of Millington, SWMU 10 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 10 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The human health preliminary risk evaluation indicated the area not only was suitable for industrial land use, but also was acceptable for residential land use. Additionally, SWMU 10 has no unacceptable ecological risk. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 10 — a limited action consisting of a land use control — is considered protective of human health and the environment.

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

**7.0 EVALUATION OF THE PROPOSED REMEDY  
AND ALTERNATIVES**

The proposed remedy for SWMU 10 is a limited action consisting of a land use control. Based on the information currently available, the area was cleared, grubbed, graded level, seeded with grass, and will be maintained as a mowed field within the runway protection zone; a human health preliminary risk evaluation indicated the area is suitable for residential or industrial land use; and there is no unacceptable ecological risk. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Because community input could affect selection of a final remedy for SWMU 10, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box on page 5, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and oral comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, TN**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives from the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the board have already received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 10. Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

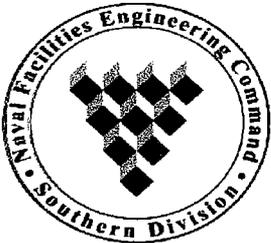
The SWMU 10 CSI report is part of the Administrative Record and can be reviewed in the Information Repository, which was established to provide public access to records and reports pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
(901) 872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMU 10, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.US](mailto:cbullington@mail.state.tn.US); or write to the address on page 5.*



## STATEMENT OF BASIS

### **SWMU 18 — Building N-112 Underground Waste Tank Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 18 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 18, the Building N-112 Underground Waste Tank, consists of a 550-gallon underground storage tank (UST) which stored used engine oil and hydraulic fluid generated during ground support equipment maintenance (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes the findings of the SWMU 18 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report and the Voluntary Corrective Action (VCA) report, but it should not be considered a substitute for these documents. The RFI and VCA reports are the primary source of detailed information on SWMU 18; they can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMU 18. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 18. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment

and Conservation (TDEC) and the United States Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

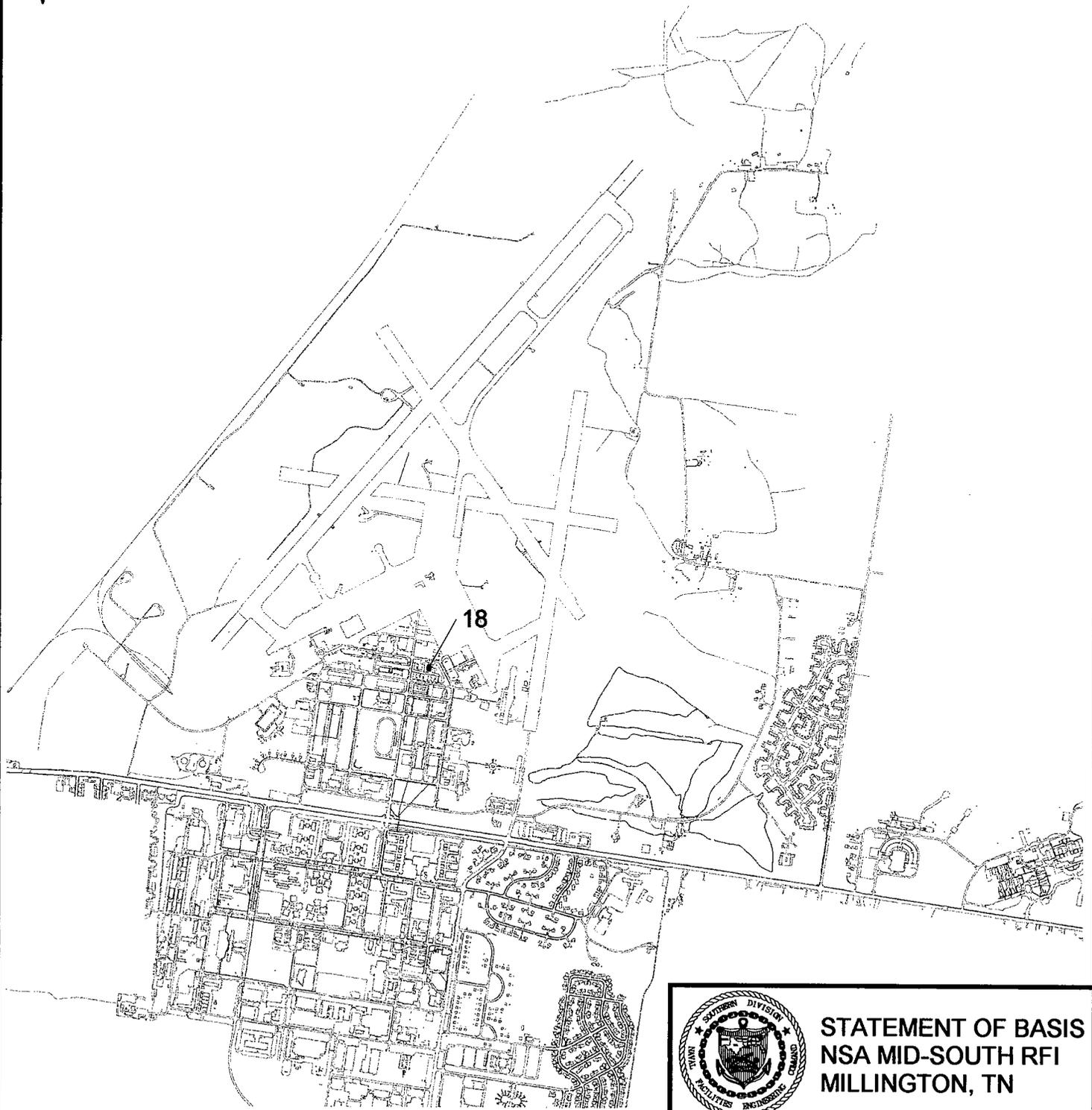
#### **2.0 PROPOSED REMEDY**

Investigation of SWMU 18 indicated minimal impact to soil, while volatile organic compounds (VOCs) were identified in groundwater. Two VCAs at SWMU 18 removed and disposed of the UST and approximately 145 cubic yards of petroleum-contaminated soil. A human health preliminary risk evaluation indicated SWMU 18 is suitable for industrial land use, while there is no unacceptable ecological risk at the site. SWMU 18 groundwater will be further investigated as part of the Area Of Concern A (Northside Fluvial Groundwater) investigation.

Based on the available information, the Navy's proposed remedy for SWMU 18 is a limited action consisting of the following land use controls:

- The site must be reused for nonresidential purposes only.
- The use of shallow (loess and fluvial deposits) groundwater is prohibited. The installation of wells in the Memphis Sand or deeper aquifers must preclude the downward migration of contamination by using double-cased and grouted wells, and prior written authorization from the Navy and approval from the Memphis-Shelby County Health Department must be obtained.

Implementation and enforcement of the SWMU 18 land use controls are detailed in the Non-Airfield Land Use Control Implementation Plan (LUCIP) and the non-airfield deed #6, which are available for review at the Millington Public Library (see Section 8.0). Additionally, the Navy's RCRA permit



 Roads  
 Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1 - SWMU 18  
Building N-112  
Underground Waste Tank**



will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision. Also, restrictions on groundwater use could be removed in the future as a result of successful remediation.

### **3.0 SITE BACKGROUND**

SWMU 18 consists of the Building N-112 Underground Waste Tank which was between Buildings N-102 and N-112, approximately 150 feet south of Funafuti Street (Figure 2). The steel UST had a capacity of 550 gallons and it reportedly stored used engine oil and hydraulic fluid generated during ground support equipment maintenance at Building N-112. Neither the installation date nor the time period the UST was used are known.

In September 1996, the UST at SWMU 18 was removed. However, it was discovered that the steel UST had already been removed and replaced with a comparably-sized fiberglass UST. Also, when the steel UST was previously removed the tank pit was apparently lined with plastic. During removal of the fiberglass UST, the soil beneath the plastic and around the fill pipe was stained and indicated a strong petroleum odor. The tank pit was excavated to approximately 8 feet deep and roughly 45 cubic yards of soil were removed, most of which was from beneath the plastic liner. Two confirmation soil samples from the floor of the excavation indicated total petroleum hydrocarbon (TPH) concentrations of 1,300 parts per million (ppm) and 1,100 ppm, both of which exceeded the site-specific TPH cleanup goal of 500 ppm.

Based on the contamination identified during removal of the fiberglass UST, the Navy investigated SWMU 18, in accordance with the regulatory permit requirements. Media sampled at SWMU 18 included: subsurface soil (deeper than 12 inches below the surface) and fluvial deposits groundwater (the first usable groundwater beneath the site at approximately 60 feet below the surface).

Contaminant concentrations in SWMU 18 soil and groundwater were compared to USEPA screening values, which were calculated to be highly protective of health. By comparing these numbers, risk managers can evaluate whether conditions indicate the potential

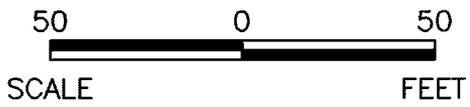
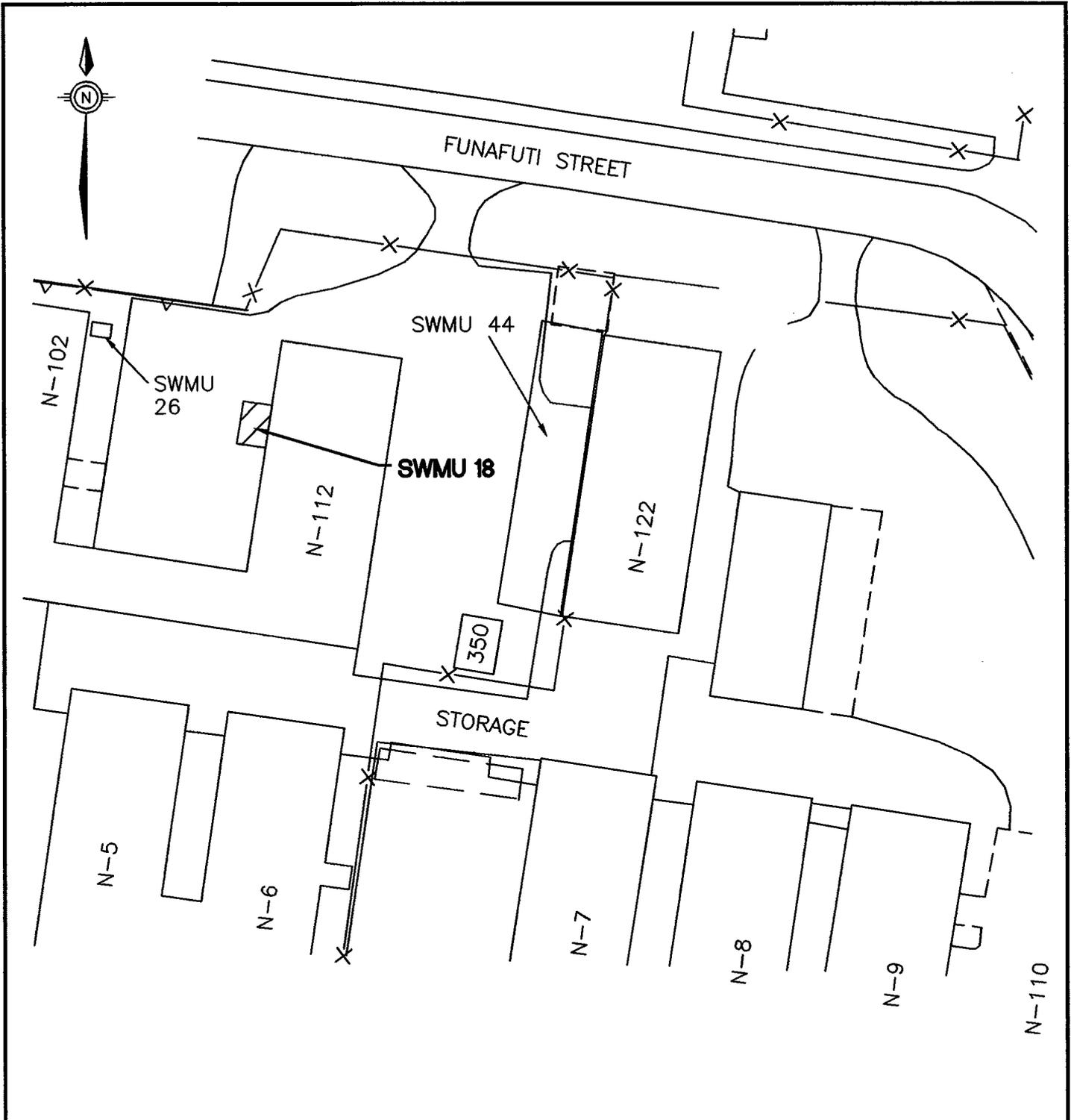
for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs). Also, a site-specific cleanup goal for TPH in soil was determined for SWMU 18 based on TDEC guidelines and site characteristics, including soil permeability and groundwater use.

SWMU 18 investigation results (subsequent to the tank removal) indicated minimal soil impact and low concentrations of contaminants in groundwater, with the following contaminants identified at concentrations exceeding screening values:

- **Fluvial Deposits Groundwater** — The VOCs trichloroethene, 1,2-dichloroethene, and tetrachloroethene exceeded their RBC for tap water or USEPA Maximum Contaminant Level for drinking water.

During the investigation, a second removal was conducted at SWMU 18 to address additional TPH-contaminated soil. In April 1998, approximately 100 cubic yards of soil were removed and transported offsite for proper disposal. The highest TPH concentration in confirmation soil samples following the second removal was 250 ppm, which was below the site-specific TPH cleanup goal of 500 ppm. Based on the available information following the second soil removal, the Navy recommended no further action for soil at SWMU 18.

SWMU 18 fluvial deposits groundwater was sampled again after the second removal and VOC concentrations in groundwater samples were relatively low and did not suggest the presence of a contaminant source area. Based on the groundwater sample results, the Navy has incorporated impacted groundwater at SWMU 18 into the Area of Concern A (Northside Fluvial Groundwater) investigation, to be evaluated as one unit rather than on an individual SWMU basis. For more details, see the Area of Concern A RFI report, which can be viewed at the Millington Public Library (see Section 8.0).



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMU 18  
BUILDING N-112 UNDERGROUND  
WASTE TANK

DWG DATE: 05/15/01 NAME: 0094001G010



#### 4.0 SUMMARY OF SITE RISKS

During the SWMU 18 RFI, the effects of long-term exposure to the compounds identified in groundwater were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer causing chemicals has been exceeded.

The preliminary risk evaluation of SWMU 18 groundwater indicated the human health risk did not exceed the USEPA hazard index acceptable levels for either residential or industrial scenarios. Additionally, the SWMU 18 human health risk exceeded the USEPA incremental lifetime cancer risk acceptable level for residential use, but it did not exceed the acceptable level for industrial use. Based on the human health preliminary risk evaluation, existing conditions at SWMU 18 are considered protective for industrial land use.

Ecological risk was assessed by observing that SWMU 18 consisted of buildings, streets, parking areas, and a runway apron. There were no complete exposure pathways because of the lack of ecological receptors. Therefore, there is no unacceptable ecological risk at SWMU 18.

Based on the human health preliminary risk evaluation and no unacceptable ecological risk, existing conditions at SWMU 18 are considered protective of human health and the environment for industrial land use.

#### 5.0 SCOPE OF CORRECTIVE ACTION

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to

investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 18, two VCAs were conducted to remove an UST and petroleum-contaminated soil; minimal impact was identified in soil; groundwater contaminants consisting of VOCs were identified and the SWMU 18 groundwater has been incorporated into the Area Of Concern A (Northside Fluvial Groundwater) investigation; a human health preliminary risk evaluation indicated SWMU 18 is suitable for industrial land use; and SWMU 18 has no unacceptable ecological risk.

The Navy's proposed remedy for SWMU18 is a limited action consisting of the following land use controls:

- The site must be reused for nonresidential purposes only.
- The use of shallow (loess and fluvial deposits) groundwater is prohibited. The installation of wells in the Memphis Sand or deeper aquifers must preclude the downward migration of contamination by using double-cased and grouted wells, and prior written authorization from the Navy and approval from the Memphis-Shelby County Health Department must be obtained.

Implementation and enforcement of the SWMU 18 land use controls are detailed in the Non-Airfield LUCIP and the non-airfield deed #6, which are available for review at the Millington Public Library. Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

Further investigation of SWMU 18 is deemed unnecessary and the proposed remedy of a limited action consisting of land use controls is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

#### 6.0 SUMMARY OF ALTERNATIVES

According to the property reuse plan prepared by the City of Millington, SWMU 18 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 18 were to demonstrate that human health risk was within acceptable levels



for industrial land use and that environmental risk was not significant. The assessment of human health risk indicated existing conditions are protective of human health and the environment for industrial land use and based on contaminants identified in groundwater, the SWMU 18 groundwater has been incorporated into the Area of Concern A (Northside Fluvial Groundwater) investigation. Additionally, no unacceptable ecological risk was identified at SWMU 18. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 18 — a limited action consisting of land use controls — is considered protective of human health and the environment for industrial land use.

#### **7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 18 is a limited action consisting of land use controls. Based on the information currently available, further releases were eliminated when two VCAs were conducted to remove a UST and petroleum-contaminated soil; contaminants remaining in soil at SWMU 18 meet USEPA and TDEC media cleanup standards; groundwater will be further investigated as part of the Area Of Concern A (Northside Fluvial Groundwater) investigation; a human health preliminary risk evaluation indicated the area is suitable for industrial land use; and there is no unacceptable ecological risk. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were considered.

Note: Above and beyond the SWMU 18 proposed remedy described here, land use control implementation plans prepared by the BCT are already in place for the transferred airfield and non-airfield parcels. They can be reviewed at the Millington Public Library (see Section 8.0). The *Land Use Control Implementation Plan for the Airfield Parcel* (November 1999), which includes SWMU 18, outlines implementation, maintenance, enforcement, modification, and termination procedures to ensure the

continued protection of human health and the environment.

#### **8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Since community input could affect selection of a final remedy for SWMU 18, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box on this page, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper. Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives of the Navy, TDEC, and

USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received copies of this SB for review. The public is invited to attend the Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 18. Public comments received at the

meeting or in writing will be summarized and included with the formal Response to Comment document.

The SWMU 18 RFI and VCA reports are part of the Administrative Record that can be reviewed in the Information Repository, which was established to provide public access to documents

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535



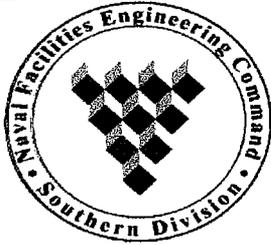
pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
1-901-872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMU 18, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on page 6.*



## STATEMENT OF BASIS

### **SWMU 21 — N-10 Underground Waste Tank Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 21, the N-10 Underground Waste Tank, at Naval Support Activity Mid-South, Millington, Tennessee. The N-10 Underground Waste Tank was a steel 3,000-gallon underground storage tank (UST) which stored used oil and hydraulic fluid from an automobile repair and aircraft maintenance shop (Figure 1).

The purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes information from the SWMU 21 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report, but it should not be considered a substitute for the report. The RFI report is the primary source of detailed information on SWMU 21; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and the information that supports them is encouraged and will be considered during selection of the final remedy for SWMU 21. Public participation could alter the final remedy selected from the one proposed here.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 21. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and

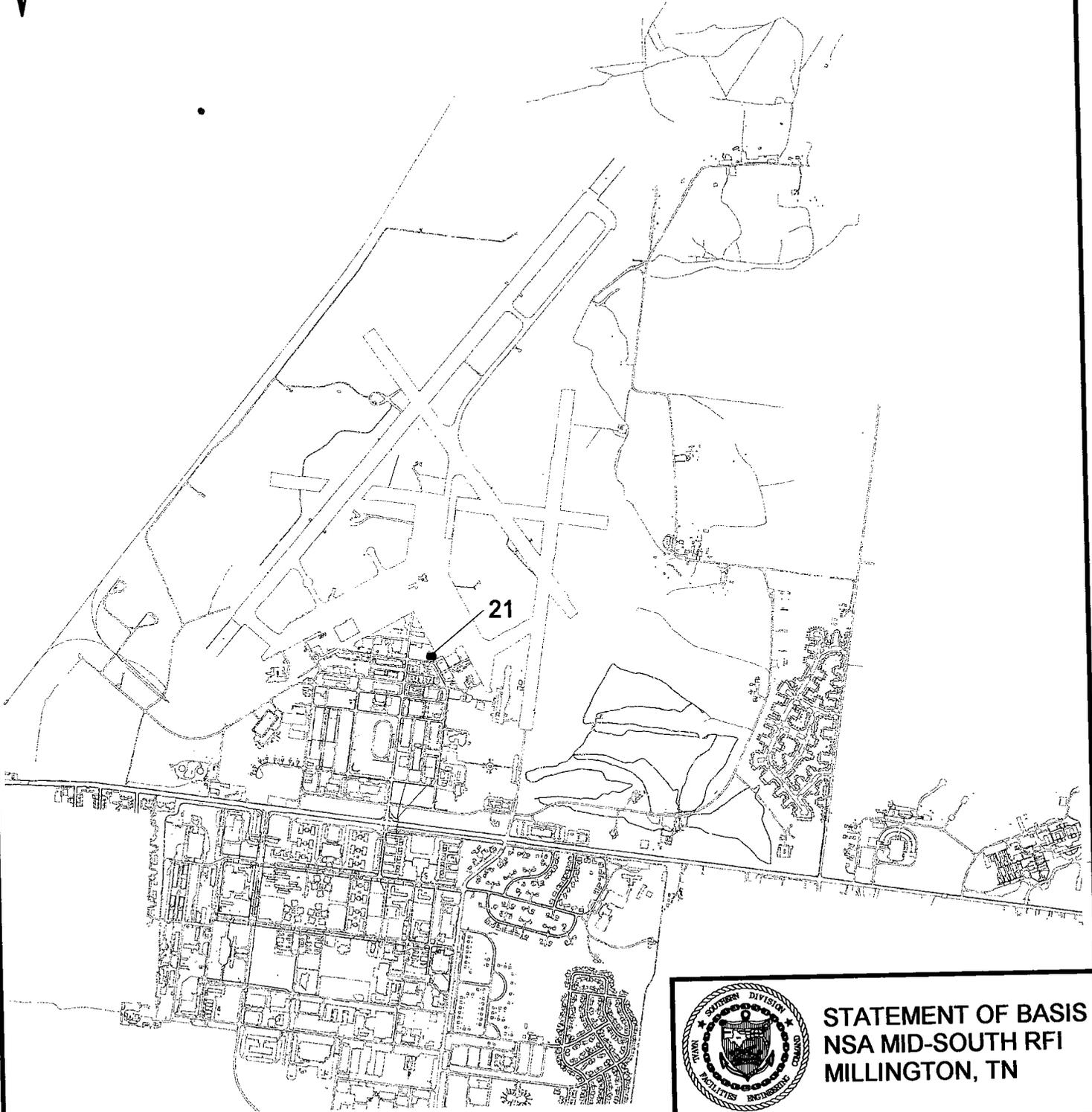
Conservation (TDEC) and the United States Environmental Protection Agency, Region IV (USEPA). Collectively, The Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY SUMMARY**

Investigation of SWMU 21 indicated minimal contamination in soil and groundwater. A human health preliminary risk evaluation indicated cancer risk for residential and industrial land use scenarios exceeded acceptable levels, assuming the use of fluvial deposits groundwater, and noncancer risk for residential land use exceeded acceptable levels, due to surface soil contaminants. The noncancer risk for industrial land use did not exceed acceptable levels. SWMU 21 is planned for continued industrial use and a municipal water supply is readily available, so human exposure to SWMU 21 groundwater should not occur. Therefore, current conditions at SWMU 21 are considered protective of human health for industrial land use if land use controls are implemented. An ecological risk assessment indicated no unacceptable ecological risk at SWMU 21.

Based on the available information, the Navy's proposed remedy for SWMU 21 is a limited action consisting of the following land use controls:

- The site must be reused for nonresidential purposes only.
- The use of shallow (loess and fluvial deposits) groundwater is prohibited. The installation of wells in the Memphis Sand or deeper aquifers must preclude the downward migration of contamination by using double-cased and grouted wells, and prior written authorization from the Navy and approval from the Memphis-Shelby County Health Department must be obtained.



 Roads  
 Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1  
SWMU 21  
N-10 Underground Waste Tank**



Implementation and enforcement of the SWMU 21 land use controls are detailed in the Airfield Land Use Control Implementation Plan (LUCIP) and the airfield deed, which are available for review at the Millington Public Library (see Section 8.0). Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision. Also, restrictions on groundwater use could be removed in the future as a result of successful remediation.

### 3.0 SITE BACKGROUND

The N-10 Underground Waste Tank was a steel 3,000-gallon UST, installed in 1943 and removed in 1991, that stored used oil and hydraulic fluid from an automobile repair and aircraft maintenance shop. SWMU 21 is approximately 200 feet southeast of Building N-9 and 250 feet west-northwest of the A-4 Hangar (Figure 2). A concrete pad, approximately 85 feet long by 40 feet wide, is immediately north of the former UST area and reportedly the former building on the pad was destroyed in the early 1960s after a small plane crashed into it and caught fire.

The Navy conducted a confirmatory sampling investigation at SWMU 21 in 1995 and an RFI in 1996, in accordance with the regulatory permit requirements. Media sampled during the investigations included: surface soil (zero to 12 inches below the surface), subsurface soil (deeper than 12 inches below the surface), loess groundwater (the first groundwater encountered beneath the site at approximately 10 to 12 feet below the surface), and fluvial deposits groundwater (the first usable groundwater beneath the site at approximately 40 feet below the surface). The loess groundwater is considered generally unusable due to low yield and poor quality.

Contaminant concentrations in SWMU 21 soil and groundwater were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for

contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation results indicated minimal soil or groundwater contamination at SWMU 21. The following contaminants exceeded screening values:

- **Surface Soil** — The semi-volatile organic compound (SVOC) benzo(a)pyrene, the pesticide dieldrin, the PCB Aroclor-1254, and the metal antimony in one sample each exceeded their residential RBCs. The SVOC benzo(a)anthracene, the pesticide dieldrin, and the metals antimony and silver in one sample each exceeded their SSLs.
- **Subsurface Soil** — Dieldrin and antimony in one sample each, silver in three samples, and nickel in four samples exceeded their SSLs.
- **Fluvial Deposits Groundwater** — The volatile organic compounds (VOCs) benzene, in one sample, and carbon tetrachloride, in four samples, exceeded their RBC for tap water and/or USEPA Maximum Contaminant Level for drinking water.

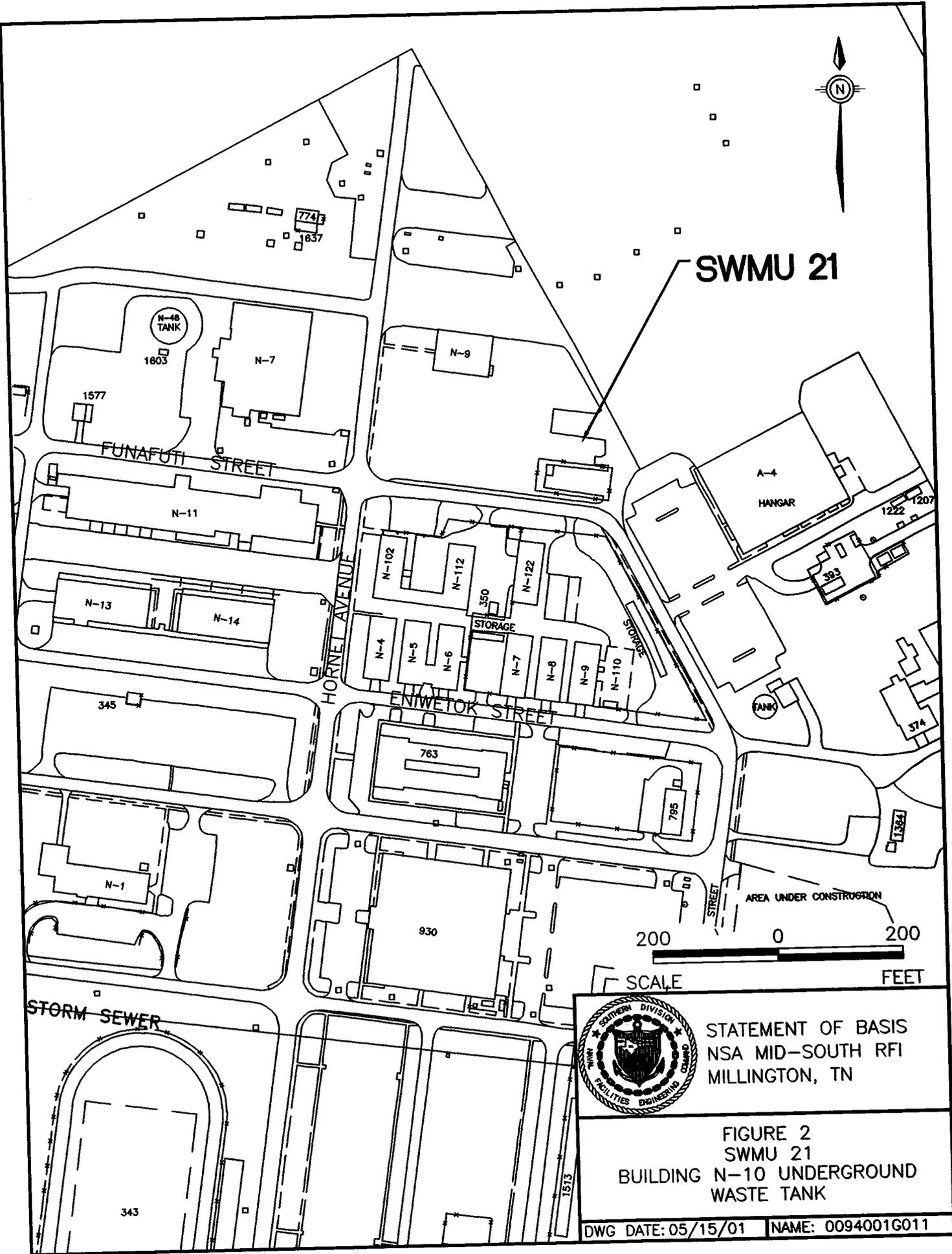
During the investigation, pesticides, PCBs, and metals identified in soil exceeding screening values were not found in fluvial deposits groundwater. This indicates they are sorbed (attached) onto soil and not leaching into groundwater. At the same time, VOCs were found in groundwater but not in soil. Based on the SWMU 21 soil and groundwater sample results, the soil investigation was considered complete while the Navy is addressing impacted groundwater at SWMU 21 as part of the Area of Concern A (Northside Fluvial Groundwater) investigation, which is evaluating groundwater as one unit rather than on an individual SWMU basis. For more details, see the Area of Concern A RFI report, which can be viewed at the Millington Public Library (see Section 8.0).

### 4.0 SUMMARY OF SITE RISKS

During the SWMU 21 RFI, the effects of long-term exposure to the compounds identified in soil and groundwater were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to



SWMU 21



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMU 21  
BUILDING N-10 UNDERGROUND  
WASTE TANK

DWG DATE: 05/15/01 NAME: 0094001G011



calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable cancer risk indicates the protective level for noncancer-causing chemicals has been exceeded.

The preliminary risk evaluation of SWMU 21 indicated the human health risk exceeded the USEPA risk index acceptable levels for residential and industrial uses, primarily due to benzene and carbon tetrachloride in fluvial deposits groundwater. The SWMU 21 human health risk exceeded the USEPA incremental lifetime cancer risk acceptable level for residential use, due to the PCB Aroclor-1254 and antimony in surface soil, but not the acceptable level for industrial use.

Based on the property reuse plan prepared by the City of Millington, the future land use for SWMU 21 is industrial, not residential, so there should be no future site residents. Additionally, the loess and fluvial deposits groundwater formations are not used as drinking water sources at Naval Support Activity Mid-South and if future land use changes to include site residents, the drinking water supply would be a municipal water source. Also, the Navy has incorporated the SWMU 21 groundwater into the Area Of Concern A (Northside Fluvial Groundwater) investigation. Therefore, there should not be future residents at SWMU 21 and human exposure to shallow groundwater should not occur, so existing soil and groundwater conditions are considered protective of human health for industrial land use if land use controls are implemented.

Ecological risk at SWMU 21 was assessed by observing that no complete exposure pathways existed because of the limited available habitat and the lack of ecological receptors. Therefore, there is no unacceptable ecological risk at SWMU 21.

Based on the human health preliminary risk evaluation and no significant ecological risk, existing conditions at SWMU 21 are considered protective of

human health and the environment for industrial land use if land use controls are implemented.

#### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 21, the UST and surrounding soil were removed; minimal impact was identified in soil; contaminants in SWMU 21 groundwater exceeded regulatory screening values and the groundwater investigation has been incorporated into the Area of Concern A (Northside Fluvial Groundwater) investigation; a preliminary risk evaluation indicated SWMU 21 soil was suitable for industrial land use if land use controls are implemented; and there is no unacceptable ecological risk.

The Navy's proposed remedy for SWMU 21 is a limited action consisting of the following land use controls:

- The site must be reused for nonresidential purposes only.
- The use of shallow (loess and fluvial deposits) groundwater is prohibited. The installation of wells in the Memphis Sand or deeper aquifers must preclude the downward migration of contamination by using double-cased and grouted wells, and prior written authorization from the Navy and approval from the Memphis-Shelby County Health Department must be obtained.

Implementation and enforcement of the SWMU 21 land use controls are detailed in the Airfield LUCIP and the airfield deed, which are available for review at the Millington Public Library. Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

Further investigation of SWMU 21 is deemed unnecessary and the proposed remedy of a limited action consisting of land use controls is considered protective of human health and the environment for industrial land use. Also, it meets the Navy's environmental program strategy.



**6.0 SUMMARY OF ALTERNATIVES**

According to the property reuse plan prepared by the City of Millington, SWMU 21 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 21 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The assessment of human health risk indicated existing conditions are protective of human health and the environment, if the fluvial deposits groundwater is not used and future property use is industrial. Also, the SWMU 21 groundwater has been incorporated into the Area of Concern A (Northside Fluvial Groundwater) investigation. No unacceptable ecological risk was identified at SWMU 21. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 21 — a limited action consisting of land use controls — is considered protective of human health and the environment for industrial land use.

**7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 21 is a limited action consisting of land use controls. Based on the information currently available, further releases were eliminated when the UST and surrounding soil were removed; a human health preliminary risk evaluation indicated soil conditions are suitable for industrial land use, while groundwater conditions exceed acceptable levels for residential and industrial land use; SWMU 21 groundwater will be further investigated as part of the Area Of Concern A (Northside Fluvial Groundwater) investigation; the use of shallow (loess and fluvial deposits) groundwater is prohibited; and SWMU 21 is planned for future industrial use. Therefore, the proposed remedy is considered protective of human health and the environment and no alternative remedies were evaluated.

Note: Above and beyond the SWMU 21 proposed remedy described here, land use control implementation plans prepared by the BCT are already in place for the transferred airfield and non-airfield parcels. They can be reviewed at the Millington Public Library (see Section 8.0). The *Land Use Control Implementation Plan for the Airfield Parcel* (November 1999), which includes SWMU 21, outlines implementation, maintenance, enforcement, modification, and termination procedures to ensure the continued protection of human health and the environment.

**8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Because community input could affect selection of a final remedy for SWMU 21, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box on this

page, and postmarked no later than December 14. Notification of the public comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and oral comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives from the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the board have already received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and



present comments and/or concerns regarding remedy selection for SWMU 21. Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

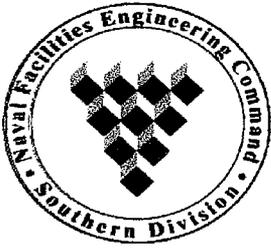
The SWMU 21 RFI report is part of the Administrative Record and can be reviewed in the Information Repository, which was established to provide public access to records and reports pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
(901) 872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMU 21, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.US](mailto:cbullington@mail.state.tn.US); or write to the address in the box on page 6.*



## STATEMENT OF BASIS

### **SWMU 27 — Northside Sewage Treatment Plant Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 27 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 27, the former Northside Sewage Treatment Plant, was constructed in 1943, used until the late 1940s or early 1950s, and demolished in the mid-1970s or early 1980s (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes information from the SWMU 27 Resource Conservation and Recovery Act (RCRA), Confirmatory Sampling Investigation (CSI) report and the Construction Completion report, but it should not be considered a substitute for these documents. These reports are the primary source of detailed information on SWMU 27; they can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMU 27. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 27. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of

Environment and Conservation (TDEC) and the United States Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

Investigation of SWMU 27 indicated minimal impact to soil or groundwater and a human health preliminary risk evaluation indicated the area is suitable for industrial land use. Unknown drums were identified near SWMU 27 in early 2001 and the investigation and removal of the drums was completed in August 2001. Minimal soil and groundwater contamination was identified during the drum removal, which was consistent with previous SWMU 27 investigations.

Based on the available information, the Navy's proposed remedy for SWMU 27 is a limited action consisting of the following land use controls:

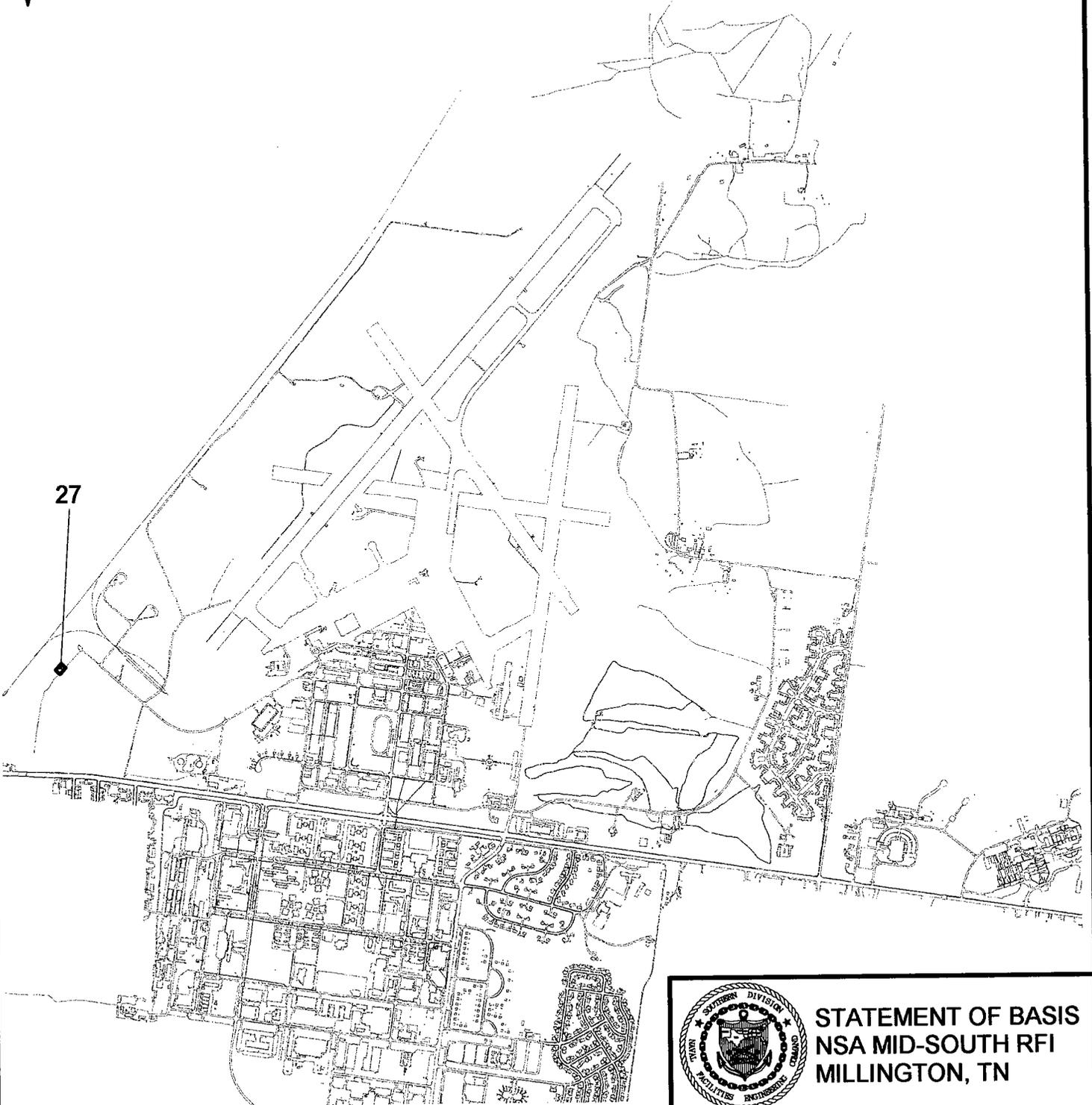
- The site must be reused for nonresidential purposes only.
- Following the 2001 drum removal and investigation, the Navy has requested no further investigation status for SWMU 27 from the BCT. Final implementation of the Navy's proposed remedy will follow the BCT's approval of no further investigation.

Implementation and enforcement of the SWMU 27 land use controls are detailed in the Non-Airfield Land Use Control Implementation Plan (LUCIP) and the non-airfield deed #3, which are available for review at the Millington Public Library (see Section 8.0). Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information and public input could affect the final remedy decision.



27



Roads  
Building



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 1  
SWMU 27  
Northside Sewage Treatment Plant

//gissafe/projects/nsa\_mem/status/swmu\_maps.apr Date: 5/16/2001



### 3.0 SITE BACKGROUND

SWMU 27, the former sewage treatment plant for the Northside of Naval Support Activity Mid-South, was constructed in 1943 and consisted of a digester tank (Building N-44), a control house, six treatment tanks (Building N-45), and four sludge drying beds (Building N-46). SWMU 27 is near Dakar Street Extended and Outlet Avenue (Figure 2). Reportedly the sewage received at the plant was mostly sanitary waste from the Northside of the Navy facility, while during the 1940s and 1950s, some industrial wastes (oils, solvents, and paints) were also discharged to the plant. Reports for when the sewage treatment plant was shut down vary from the late 1940s to the early 1950s and reports for when the plant was demolished vary from the mid-1970s to early 1980s.

At the time of the CSI, site features exhibited extensive vegetative growth, some trees appeared to be at least 20 years old, and remnants of the former sewage treatment plant were not visible.

During operation of the sewage treatment plant, water was removed from the sewage sludge by pumping it onto four 20-foot by 55-foot drying beds. Diagrams of the drying beds indicate they were open on the bottom to undisturbed earth; this interface was the most likely release point for sewage waste contaminants and is the only known process at SWMU 27 in which waste was likely to come in direct contact with native soil.

In 1995, the Navy conducted an investigation at SWMU 27, in accordance with the regulatory permit requirements. Media sampled at SWMU 27 included: surface soil (zero to 12 inches below the surface); subsurface soil (deeper than 12 inches below the surface); and fluvial deposits groundwater (the first usable groundwater beneath the site at approximately 44 feet below the surface).

Contaminant concentrations in SWMU 27 soil and groundwater were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

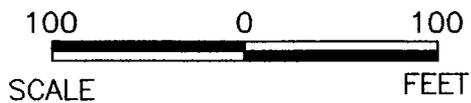
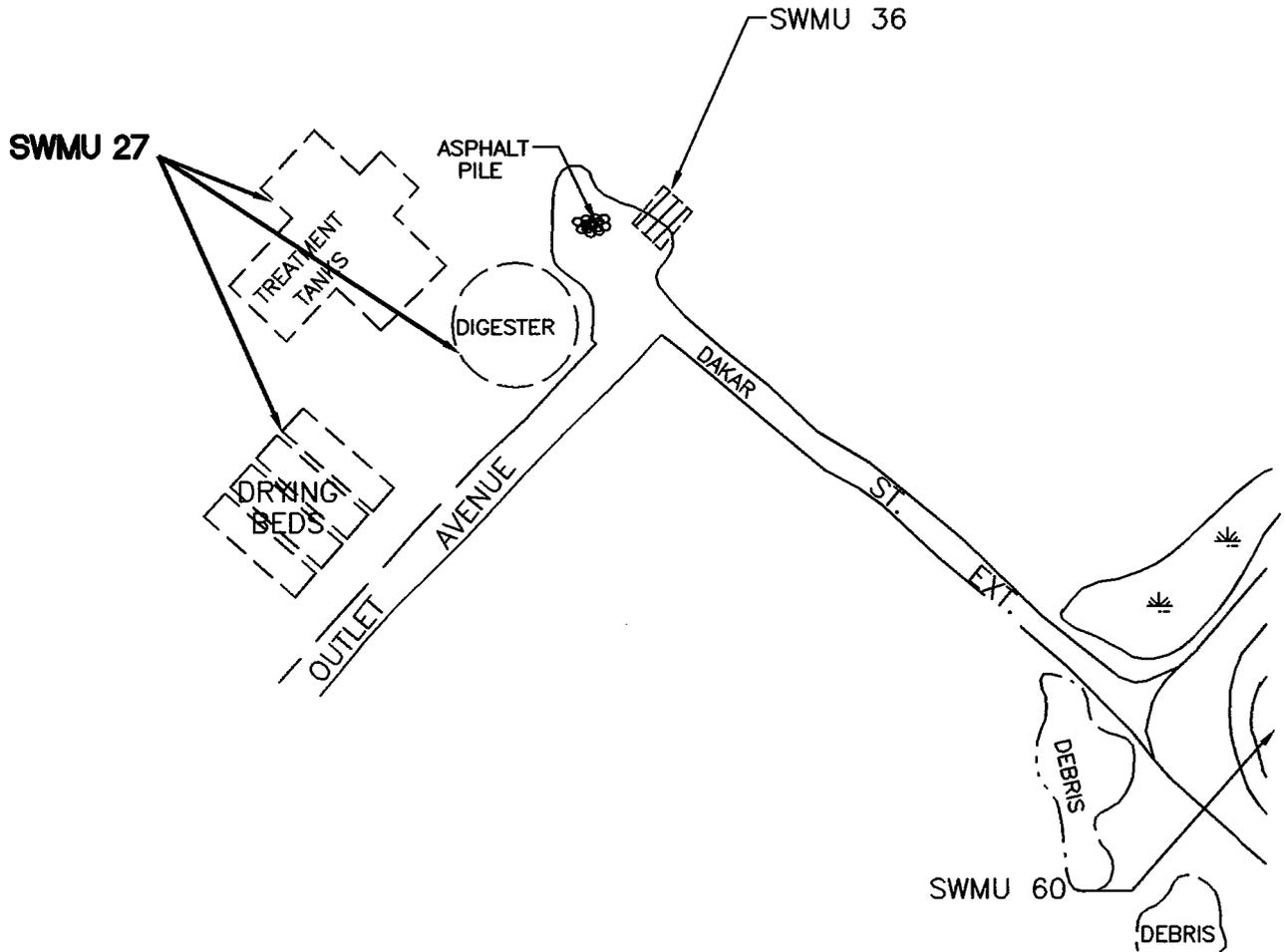
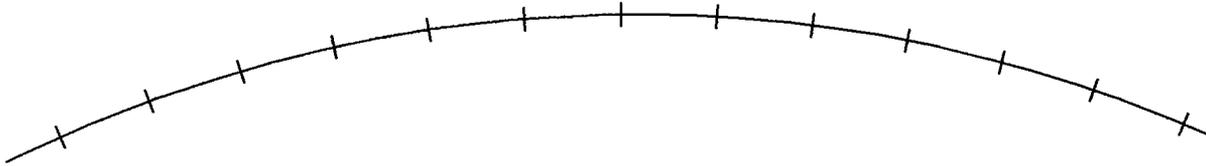
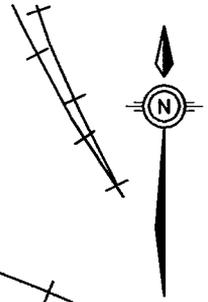
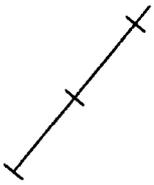
Investigation results indicated minimal soil or groundwater impact at SWMU 27, with the following contaminants identified at concentrations exceeding screening values:

- **Surface Soil** — The pesticides dieldrin and Aldrin; the semivolatile organic compounds benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, dibenz(a,h)anthracene, and chrysene; and the metals arsenic, barium, beryllium, and mercury, exceeded either their RBC or SSL in one or more samples.
- **Subsurface Soil** — The metals nickel and barium exceeded their SSL in one or more samples.

In early 2001, unknown drums were identified near SWMU 27 during clearing associated with a municipal water line installation. Investigation, removal, and proper disposal of the drums was completed in August 2001. Minimal soil or groundwater contamination was identified during the drum removal, which was consistent with previous SWMU 27 investigations. The Navy has requested no further investigation status for SWMU 27 from the BCT.

### 4.0 SUMMARY OF SITE RISKS

During the SWMU 27 CSI, the effects of long-term exposure to the compounds identified in soil were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable incremental lifetime cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMU 27  
NORTHSIDE SEWAGE  
TREATMENT PLANT



greater than 1 indicates the protective level for noncancer-causing chemicals has been exceeded.

The preliminary risk evaluation indicated an incremental lifetime cancer risk of one person in 10,000 for a residential scenario and 2 additional persons in 100,000 for an industrial scenario. Respectively, these are equal to and below the USEPA's acceptable risk threshold of one in 10,000.

The hazard indices for residential and industrial scenarios at SWMU 27 were 3 and 0.12, respectively. These are above and below the hazard index threshold, respectively. Therefore, the preliminary risk evaluation indicated existing conditions are protective of human health for industrial land use.

According to the property reuse plan prepared by the City of Millington, the future land use for SWMU 27 is industrial, not residential, so there should be no future site residents. Hence, existing conditions at SWMU 27 are considered protective of human health for industrial land use if land use controls are implemented.

Ecological risk at SWMU 27 was not assessed as part of the CSI. During the investigation, the site was covered with vegetation and some trees appeared to be at least 20 years old. In early 2001, the SWMU 27 area was cleared of vegetation prior to the installation of a municipal water line. Therefore, there are no significant features present which would provide shelter, substantive food or water, or a mixture of cover types to wildlife, so there is no significant ecological risk at SWMU 27.

Based on the human health preliminary risk evaluation, existing conditions at SWMU 27 are considered protective of human health for industrial land use if land use controls are implemented.

**5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of

contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 27, minimal impact was identified in soil or groundwater and a human health preliminary risk evaluation indicated the site is suitable for industrial use. Unknown drums were identified near SWMU 27 in early 2001 and the investigation and removal of the drums was completed in August 2001. Minimal soil or groundwater contamination was identified during the drum investigation.

The following land use controls are proposed at SWMU 27:

- The site must be reused for nonresidential purposes only.
- Following the 2001 drum removal and investigation, the Navy has requested no further investigation status for SWMU 27 from the BCT. Final implementation of the Navy's proposed remedy will follow the BCT's approval of no further investigation.

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

Implementation and enforcement of the SWMU 27 land use controls are detailed in the Non-Airfield LUCIP and the non-airfield deed #3, which are available for review at the Millington Public Library. Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

Further investigation of SWMU 27 is deemed unnecessary and the proposed remedy of a limited action consisting of land use controls is considered protective of human health for industrial land use. Also, it meets the Navy's environmental program strategy.

**6.0 SUMMARY OF ALTERNATIVES**

According to the property reuse plan prepared by the City of Millington, SWMU 27 will be reused for industrial purposes, not residential. Therefore, The BCT's goal at SWMU 27 was to demonstrate that



human health risk was within acceptable levels for industrial land use. The human health preliminary risk evaluation indicated the site is suitable for industrial land use. Because the BCT's goal for human health risk was met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 27 — a limited action consisting of land use controls — is considered protective of human health for industrial land use. Additionally, the unknown drums near SWMU 27 were investigated and properly disposed. Pending the BCT's approval of no further investigation status for SWMU 27, the Navy will implement the required land use controls.

#### **7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 27 is a limited action consisting of land use controls. Based on the information currently available, minimal impact was identified in soil or groundwater and a human health preliminary risk evaluation indicated the area is suitable for industrial use. The unknown drums found in 2001 were investigated and properly disposed. The Navy has requested no further investigation status for SWMU 27 from the BCT; upon approval of no further investigation status, the Navy will implement the proposed land use controls. Therefore, the proposed remedy is considered protective of human health for industrial land use and no alternative remedies were evaluated.

#### **8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Since community input could affect selection of a final remedy for SWMU 27, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box on page 5, and postmarked no later than December 14. Notification of the public comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives of the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 27. Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

The SWMU 27 CSI report is part of the Administrative Record that can be reviewed in the Information Repository, which was established to provide public access to documents pertaining to the Navy's environmental program.

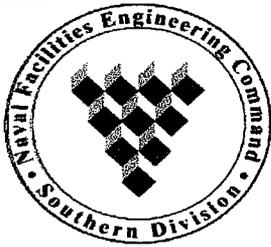
The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
1-901-872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMU 27, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on page 5.*



## STATEMENT OF BASIS

### **SWMU 60 — Northside Landfill Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 60, the Northside Landfill, at Naval Support Activity Mid-South, Millington, Tennessee. The Northside Landfill was periodically used between 1951 and 1986 for the disposal of demolition debris and rubble (Figure 1).

The purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes information from the SWMU 60 Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report and the SWMU 60 Voluntary Corrective Action (VCA) report, but it should not be considered a substitute for them. These reports are the primary source of detailed information on SWMU 60; they can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and the information that supports them is encouraged and will be considered during selection of the final remedy for SWMU 60. Public participation could alter the final remedy selected from the one proposed here.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 60. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC), and the United States Environmental Protection Agency,

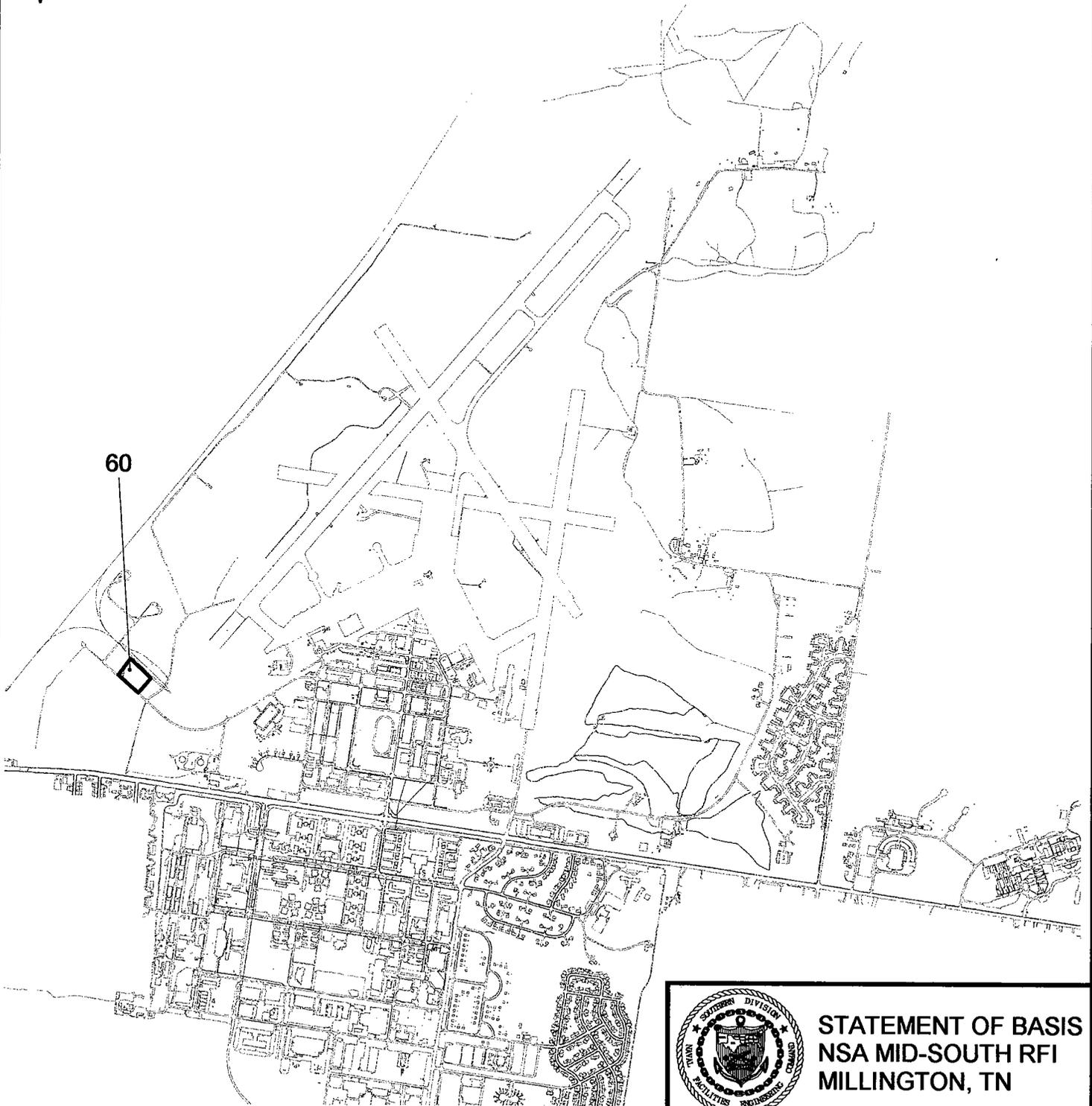
Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY SUMMARY**

Investigation of SWMU 60 indicated contamination in soil and groundwater. In 1997, four areas of petroleum-related soil contamination were excavated and the soil disposed of properly. Following excavation, confirmation samples indicated remaining contaminants in soil were below TDEC cleanup guidelines. Groundwater contaminant concentrations exceeded USEPA screening values, but were below TDEC cleanup guidelines. A human health risk assessment indicated remaining contaminant levels are protective of human health for industrial use, if groundwater at SWMU 60 is not ingested or inhaled. SWMU 60 is planned for continued industrial use and a municipal water supply is readily available, so human exposure to SWMU 60 groundwater should not occur. An ecological risk assessment indicated surface soil at SWMU 60 may pose a low risk to ecological receptors, but due to the low quality of habitat at the site the effect is expected to be little, if any.

Based on the available information, the Navy's proposed remedy for SWMU 60 is a limited action consisting of the following land use controls:

- The site must be reused for nonresidential purposes only.
- The excavation, drilling, or other disturbance of soil is prohibited without prior approval from the Navy.
- The use of shallow (loess and fluvial deposits) groundwater is prohibited. The installation of wells in the Memphis Sand or deeper aquifers must preclude the downward migration of contamination by using double-cased and grouted wells, and prior written authorization from the Navy and approval from the Memphis-Shelby County Health Department must be obtained.



 Roads  
Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1  
SWMU 60  
Northside Landfill**



Implementation and enforcement of the SWMU 60 land use controls are detailed in the Airfield Land Use Control Implementation Plan (LUCIP), the Non-Airfield LUCIP, the airfield deed, and the non-airfield deed #3, which are available for review at the Millington Public Library (see Section 8.0). Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision. Also, restrictions on groundwater use could be proposed for removal in the future as a result of successful remediation activities.

### 3.0 SITE BACKGROUND

Between 1951 and 1986, the Northside Landfill was periodically used for the disposal of demolition debris and rubble. In 1980, the presence of an abandoned aboveground storage tank at the Northside Landfill resulted in an RFI. SWMU 60 covers approximately 3.5 acres in the southwest portion of the Northside of Naval Support Activity Mid-South (Figure 2). Between 1991 and 1997, the Navy investigated SWMU 60 in accordance with regulatory permit requirements and conducted a voluntary removal of petroleum-contaminated soil.

Media sampled during the investigation included: sediment in a wetland area west of SWMU 60, surface soil (zero to 12 inches below the surface), subsurface soil (deeper than 12 inches below the surface), loess groundwater (the first groundwater encountered beneath the site at approximately 10 to 45 feet below the surface), and fluvial deposits groundwater (the first usable groundwater beneath the site at approximately 45 to 96 feet below the surface).

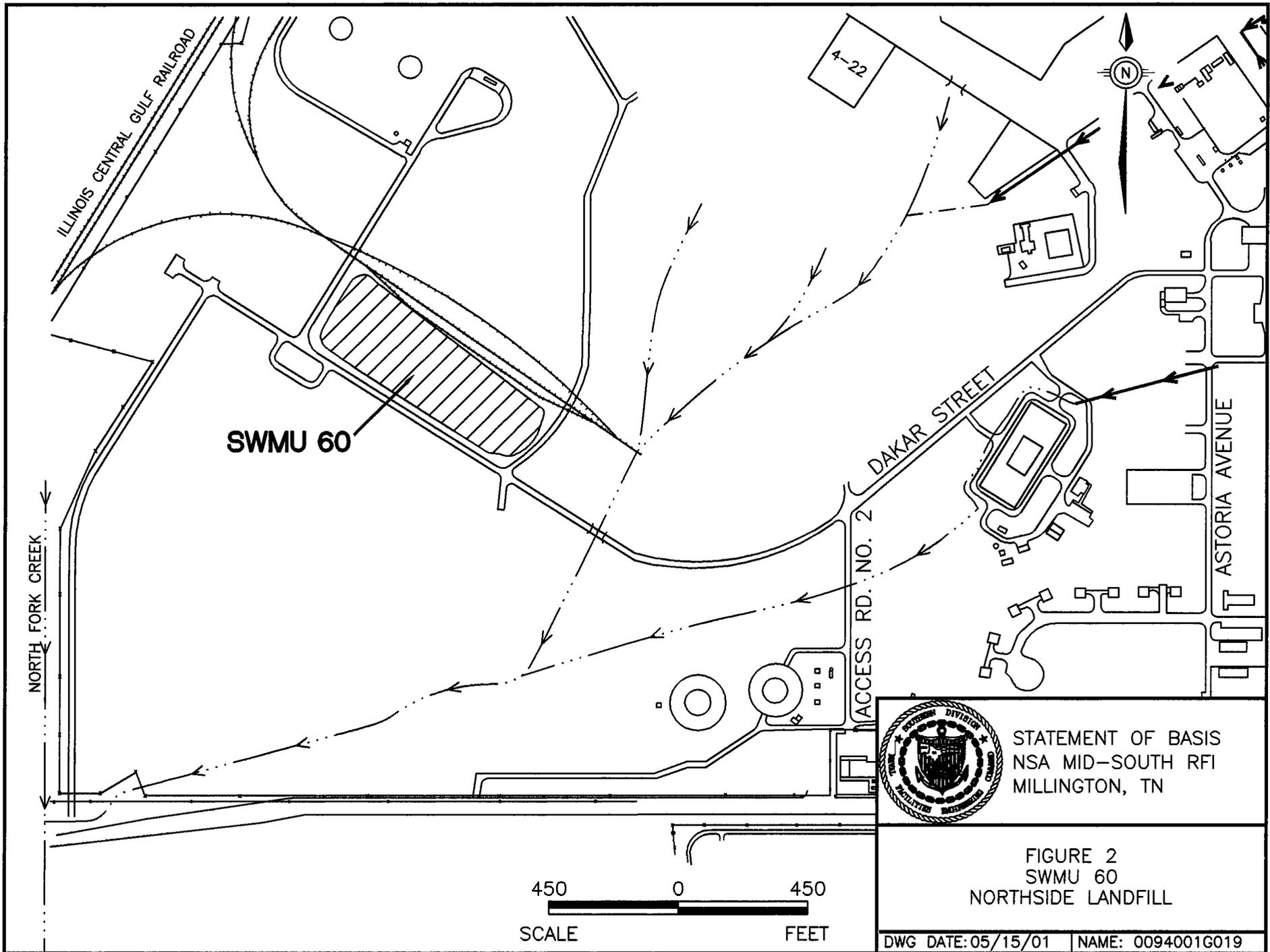
Contaminant concentrations in SWMU 60 soil and groundwater were compared to USEPA screening values, which were calculated to be highly protective of health. Risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs). Also, total petroleum hydrocarbon (TPH) concentrations were compared to the TDEC cleanup goals for TPH.

Investigation results indicated the following contaminants exceeding screening values:

- **Surface Soil** — Semi-volatile organic compounds and a pesticide exceeded both their residential and industrial RBCs, and TPH exceeded TDEC's cleanup guidelines.
- **Subsurface Soil** — TPH exceeded TDEC's cleanup guidelines.
- **Loess Groundwater** — The volatile organic compound (VOC) benzene and several metals exceeded their RBCs for tap water or USEPA Maximum Contaminant Level for drinking water. Benzene concentrations did not exceed the TDEC cleanup guidelines.
- **Fluvial Deposits Groundwater** — The VOC chloroform exceeded its RBC for tap water, but not its USEPA Maximum Contaminant Level for drinking water.

In November 1997, the petroleum-contaminated soil identified in the northwest section of the landfill and in low-lying areas was excavated as part of a VCA. Approximately 230 cubic yards of soil were excavated from the low-lying areas (to a depth of two feet) and the area in the northwest section (to a depth of eight feet). Confirmation soil samples collected from the excavation indicated TPH and benzene concentrations were all below TDEC cleanup guidelines. Based on the confirmation soil sample results, no further action was recommended concerning soil since the identified sources of contamination were excavated and disposed of properly.

Loess groundwater contamination was identified in the northwest section of the landfill, with benzene and several metals exceeding screening values. The source of benzene contamination was excavated during the VCA removal of contaminated soil. The source of metals contamination is believed to have been of naturally occurring metals attached to soil particles in the turbid loess groundwater samples rather than dissolved metals. Based on test results for fluvial deposits groundwater samples, contaminants in soil or loess groundwater have not migrated vertically downward.



SWMU 60



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMU 60  
NORTHSIDE LANDFILL

450 0 450  
SCALE FEET

DWG DATE: 05/15/01 NAME: 0094001G019



#### **4.0 SUMMARY OF SITE RISKS**

Following the removal of petroleum-contaminated soil, compounds identified in soil and groundwater were assessed to estimate the risk to human health or the environment, a scientific process commonly referred to as a "baseline risk assessment." Risk to human health was calculated for three hypothetical exposure scenarios: the site worker, the child trespasser, and the future site resident. All three scenarios were assessed for exposure to surface soil through ingestion (swallowing), inhalation (e.g., while showering), and dermal (skin) contact. For groundwater exposure, the site worker and future site resident scenarios were evaluated because they would be the only groups likely to be exposed to groundwater. Groundwater exposure was calculated for ingestion and inhalation.

Risk estimates for soil and groundwater were compared to USEPA's acceptable cancer risk and noncancer hazard levels. These levels were formulated by USEPA using conservative, protective assumptions about the duration of exposure, and the concentration and toxicity of the chemicals. The acceptable cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer-causing chemicals has been exceeded.

At SWMU 60, the acceptable cancer risk and hazard index thresholds were exceeded for the future site resident and site worker exposure scenarios. For future site residents, chemicals of concern were identified in soil, loess groundwater, and fluvial deposits groundwater. For site workers, chemicals of concern were identified in loess groundwater only. No contaminants of concern were identified for child trespassers.

According to the reuse plan prepared by the City of Millington, SWMU 60 will be reused for industrial purposes, not residential, and the area is within the runway "clear zone" for the airport which means structures cannot be built there. Therefore, there should be no future site residents. Additionally, the loess and fluvial deposits groundwater are not used as drinking water sources at Naval Support Activity Mid-South and if future land use changes to include site residents, the drinking water supply would be a municipal water

source. Finally, use of the loess groundwater as a drinking water source is unlikely due to low yield and poor aesthetic water quality. Therefore, there should not be future residents at SWMU 60 and human exposure to shallow groundwater should not occur, so existing soil and groundwater conditions are considered protective of human health for industrial land use if land use controls are implemented.

Ecological risk also was assessed. Several metals in surface soil at SWMU 60 pose a low to moderate risk to ecological receptors. However, due to the low quality of habitat at SWMU 60 (i.e., it will be mowed on a regular basis), it is predicted that little, if any, effect to ecological receptors will occur. Additionally, pesticides and metals identified in sediment samples from a small wetland area adjacent to SWMU 60 indicate a potential risk to ecological receptors. However, the sediment contaminants do not appear to be associated with soil at SWMU 60, and a new road is proposed through the wetland. The ecological risk at SWMU 60 may have to be reevaluated if a road is not built through the wetland.

Based on the human health risk scenarios and ecological risk assessed, existing conditions at SWMU 60 are considered protective of human health and the environment for industrial land use if land use controls are implemented.

#### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 60, the soil contamination that exceeded TDEC cleanup guidelines was excavated and disposed of properly in 1997; groundwater contamination exceeded USEPA screening values, but not TDEC cleanup guidelines; a human health risk assessment indicated current conditions were protective of human health for industrial land use, if groundwater is not used; and an ecological risk assessment indicated a low risk to ecological receptors but due to the low quality of habitat at the site the effect is expected to be minimal. According to property reuse plan prepared by the City of Millington, SWMU 60 is planned for continued industrial use and a municipal water supply is readily



available, so human exposure to shallow groundwater at SWMU 60 should not occur.

The Navy's proposed remedy for SWMU 60 is a limited action consisting of the following land use controls:

- The site must be reused for nonresidential purposes only.
- The excavation, drilling, or other disturbance of soil is prohibited without prior approval from the Navy.
- The use of shallow (loess and fluvial deposits) groundwater is prohibited. The installation of wells in the Memphis Sands or deeper aquifers must preclude the downward migration of contamination by using double-cased and grouted wells, and prior written authorization from the Navy and approval from the Memphis-Shelby County Health Department must be obtained.

Implementation and enforcement of the SWMU 60 land use controls are detailed in the Airfield LUCIP, the Non-Airfield LUCIP, the airfield deed, and the non-airfield deed #3, which are available for review at the Millington Public Library. Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

Further investigation of SWMU 60 is deemed unnecessary and the proposed remedy of a limited action consisting of land use controls is considered protective of human health and the environment. Also, it meets the Navy's environmental program strategy.

## 6.0 SUMMARY OF ALTERNATIVES

According to the property reuse plan prepared by the City of Millington, SWMU 60 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 60 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The assessment of human health risk indicated existing soil conditions for future site residents and shallow groundwater conditions for residential and industrial use scenarios exceed USEPA's acceptable limits. However, the SWMU 60 area is planned for continued industrial use and a municipal water supply is readily available, so human exposure to shallow groundwater at SWMU 60

should not occur. Therefore, existing soil and groundwater conditions are considered acceptable for industrial land use if land use controls are implemented. Additionally, an ecological risk assessment indicated a low risk to ecological receptors but due to the low quality of habitat at the site the effect is expected to be minimal. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 60 — a limited action consisting of land use controls — is considered protective of human health and the environment for industrial land use.

## 7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES

The proposed remedy for SWMU 60 is a limited action consisting of land use controls. Based on the information currently available:

- Further releases were eliminated when the source areas of soil contamination were excavated and disposed of properly.
- A human health risk assessment indicated the remaining contaminant concentrations are protective of human health for industrial land use, so long as human exposure to shallow groundwater at SWMU 60 does not occur.
- An ecological risk assessment indicated a low risk to ecological receptors, but due to the low quality of habitat at the site the effect is expected to be little, if any.

Therefore, the proposed remedy of a limited action consisting of land use controls is considered protective of human health and the environment for industrial land use and no alternative remedies were evaluated.

Note: Above and beyond the SWMU 60 proposed remedy described here, land use control implementation plans prepared by the BCT are already in place for the transferred airfield and non-airfield parcels. They can be reviewed at the Millington Public Library (see Section 8.0). The *Land Use Control Implementation Plan for the Airfield Parcel* (November 1999), which includes SWMU 60, outlines implementation, maintenance, enforcement, modification, and

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## Statement of Basis



Naval Support Activity Mid-South  
SWMU 60

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termination procedures to ensure the continued protection of human health and the environment.

### 8.0 PUBLIC PARTICIPATION

Public comment is requested on the proposed remedy described here, as well as others not addressed. Because community input could affect selection of a final remedy for SWMU 60, a public comment period has been established from October 31 to December 14. Comments should be submitted in writing to the address in the box below, and postmarked no later than December 14. Notification of the public-comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and oral comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board. Representatives from the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the board have received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 60.

Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

The SWMU 60 RFI and VCA reports are part of the Administrative Record and can be reviewed in the Information Repository, which was established to provide public access to records and reports pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
(901) 872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMU 60, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.US](mailto:cbullington@mail.state.tn.US); or write to the address in the box on this page.*

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535



## STATEMENT OF BASIS

### **SWMU 64 — Building N-16 Materials Storage Area Naval Support Activity Mid-South Millington, Tennessee**

#### **1.0 INTRODUCTION**

This Statement of Basis (SB) describes the proposed remedy for solid waste management unit (SWMU) 64 at Naval Support Activity Mid-South, Millington, Tennessee. SWMU 64 is the Building N-16 Materials Storage Area which was used by the Naval Support Activity Mid-South fire department for the storage of drums and equipment (Figure 1).

The primary purpose of this SB is to:

- Identify and explain the rationale for selecting the proposed remedy.
- Describe the remedies analyzed.
- Solicit public involvement in the remedy selection process.
- Provide information on how the public can be involved in the remedy selection process.

This SB summarizes the findings from the SWMU 64 Resource Conservation and Recovery Act (RCRA), Confirmatory Sampling Investigation (CSI) report, but it should not be considered a substitute for the report. The CSI report is the primary source of detailed information on SWMU 64; it can be reviewed at the Millington Public Library (see Section 8.0).

Public comment on all alternatives and on the information that supports the alternatives is encouraged and will be considered during selection of the final remedy for SWMU 64. Public participation could alter the final remedy selected from the one proposed in this SB.

Naval Support Activity Mid-South holds the regulatory permit that requires corrective action at SWMU 64. Therefore, it is responsible for completing the corrective action. Technical support for the investigation and corrective action has been provided by the United States Navy, Naval Facilities Engineering Command, Southern Division. Regulatory oversight is provided by the Tennessee Department of Environment and Conservation (TDEC) and the United States

Environmental Protection Agency, Region IV (USEPA). Collectively, the Navy, TDEC, and USEPA comprise the Base Realignment and Closure (BRAC) Cleanup Team (BCT), which was formed as a result of the 1993 decision to close a portion of Naval Air Station Memphis and realign the remainder as a Naval Support Activity.

#### **2.0 PROPOSED REMEDY**

Investigation of SWMU 64 indicated minimal impact to soil; a human health preliminary risk evaluation indicated the area is suitable for industrial use; and there is no unacceptable ecological risk.

Based on the available information, the Navy's proposed remedy for SWMU 64 is a limited action consisting of the following land use control:

- The site must be reused for nonresidential purposes only.

Implementation and enforcement of the SWMU 64 land use controls are detailed in the Non-Airfield Land Use Control Implementation Plan (LUCIP) and the non-airfield deed #6, which are available for review at the Millington Public Library (see Section 8.0). Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

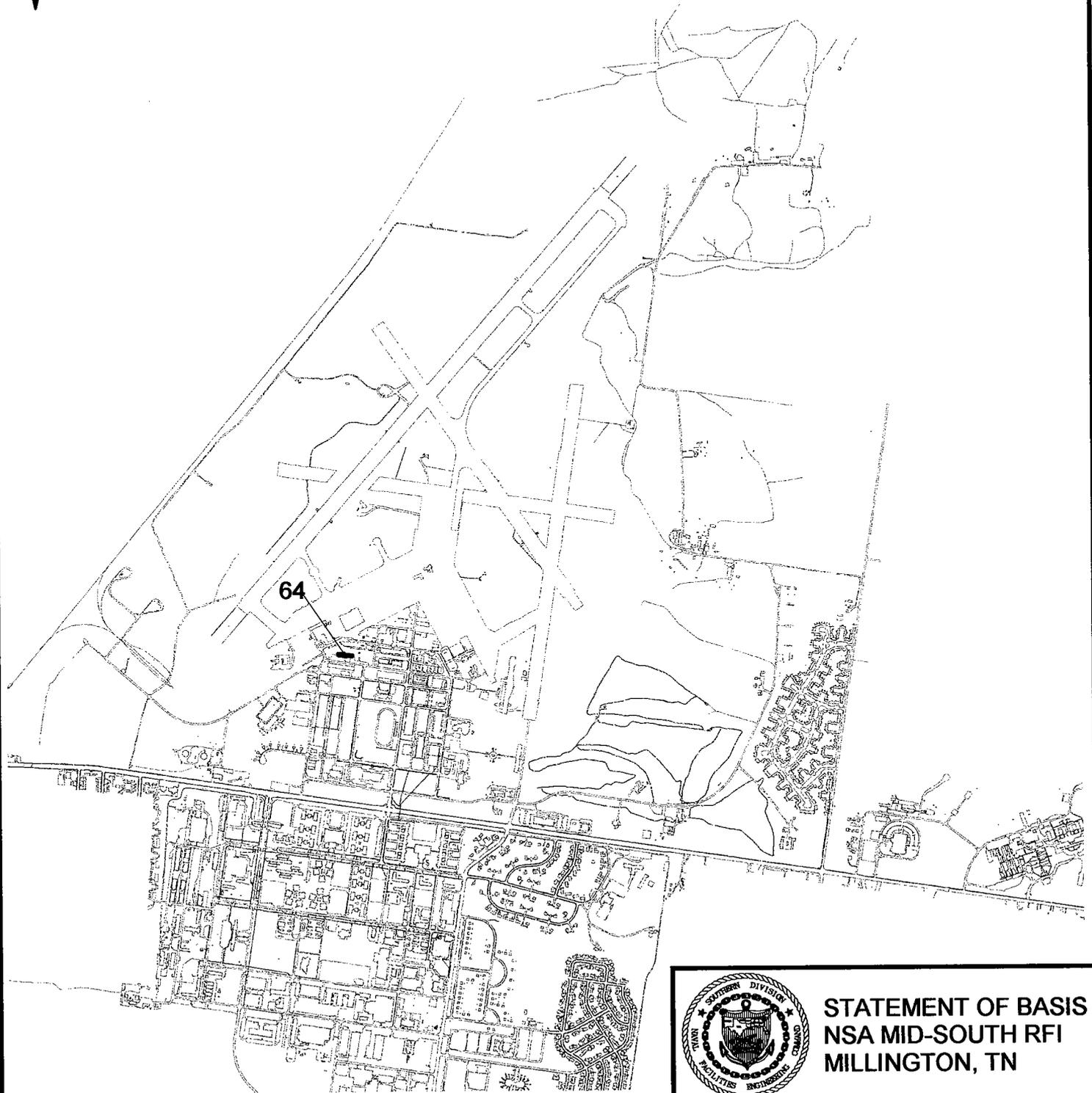
The basis for the proposed remedy is provided in Sections 3.0 and 4.0. New information or public input could affect the final remedy decision.

#### **3.0 SITE BACKGROUND**

SWMU 64 was approximately 200 feet north of Building N-16 and 1,200 feet southeast of the main runway (Figure 2). SWMU 64 consists of a concrete pad, approximately 22 feet by 200 feet long, which was used by the Naval Support Activity Mid-South fire department for the storage of drums and equipment.

Drum or container contents included used oil, aqueous film-forming fluid, and fire extinguishing agents. The SWMU 64 concrete pad was reportedly

N



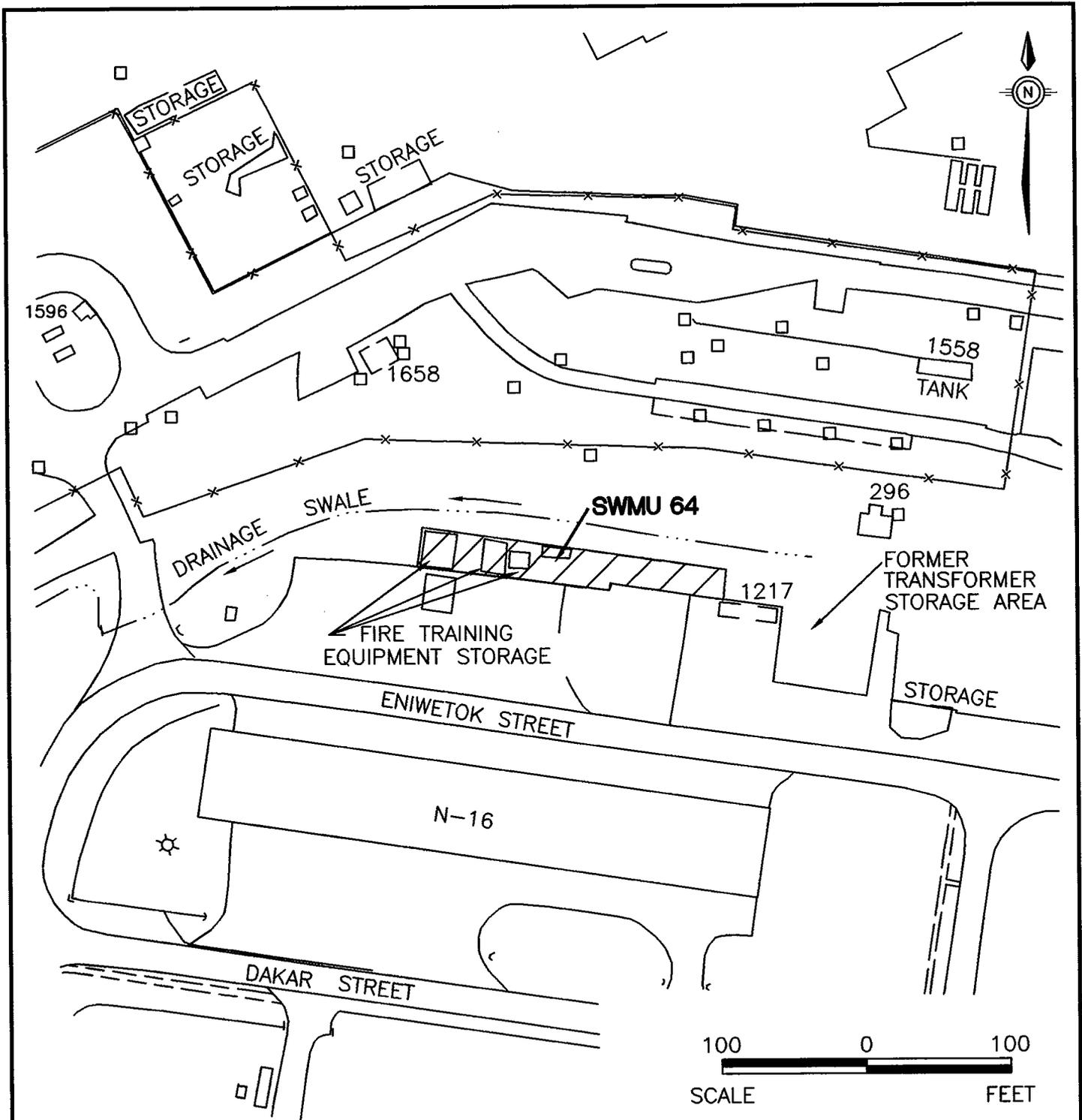
 Roads  
 Building



**STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN**

**FIGURE 1 - SWMU 64  
Building N-16 Materials  
Storage Area**

//gissafe/projects/nsa\_mem/status/swmu\_maps.apr Date: 5/16/2001



**LEGEND**

- PW-1      PRODUCTION WELL
- · — · —      DRAINAGE SWALE
- ←      SURFACE WATER FLOW DIRECTION
- - -      UNDERGROUND UTILITY
-       **SWMU 64**



STATEMENT OF BASIS  
NSA MID-SOUTH RFI  
MILLINGTON, TN

FIGURE 2  
SWMU 64  
BUILDING N-16 MATERIALS  
STORAGE AREA



the foundation for former Building 90 which had an unknown use. Reportedly transformers were stored on an unpaved area east of and adjacent to SWMU 64 and this area was included in the CSI.

Between 1995 and 1996, the Navy conducted a CSI at SWMU 64, according to the regulatory permit requirements. Media sampled at SWMU 64 included surface soil (zero to 12 inches below the surface) and subsurface soil (deeper than 12 inches below the surface).

Contaminant concentrations in SWMU 64 soil were compared to USEPA screening values, which were calculated to be highly protective of health. By comparing these numbers, risk managers can evaluate whether conditions indicate the potential for risk to human health by comparison to risk-based concentrations (RBCs) or the potential for contamination to migrate to groundwater by comparison to soil screening levels (SSLs).

Investigation results indicated minimal soil impact at SWMU 64, with the following contaminants identified at concentrations exceeding screening values:

- **Surface Soil** — The semivolatile organic compounds (SVOCs) benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, dibenz(a,h)anthracene; the polychlorinated biphenyl (PCB) Aroclor 1260; and the pesticide dieldrin exceeded their residential RBCs. In addition, arsenic in one sample exceeded its residential and industrial RBCs, while lead in one sample exceeded USEPA's established cleanup level for residential and industrial soil.
- **Subsurface Soil** — The SVOCs benzo(a)anthracene, carbazole, and chrysene; the pesticides Aldrin and dieldrin; the PCB Aroclor 1260; and nickel exceeded their SSLs.

Groundwater samples collected from Area of Concern A (Northside Fluvial Groundwater) wells which surround SWMU 64 have not indicated metals, SVOCs, or pesticides/PCBs that exceed RBCs for tap water or USEPA Maximum Contaminant Levels for drinking water.

#### **4.0 SUMMARY OF SITE RISKS**

During the SWMU 64 CSI, the effects of long-term exposure to the compounds identified in soil were assessed to estimate the risk to human health. This process is commonly referred to as a preliminary risk evaluation. The maximum concentration for each detected chemical and its corresponding RBC were compared to calculate the cumulative human health risk. A risk ratio was then calculated for carcinogenic (cancer-causing) and noncarcinogenic compounds for both residential and industrial settings. These ratios were totaled separately and compared to USEPA incremental lifetime cancer risk (carcinogenic) and hazard index (noncarcinogenic) acceptable levels which were formulated by USEPA using conservative assumptions about the toxicity, exposure duration, and quantity of chemicals. The acceptable cancer risk threshold is considered to be one case per 10,000 people. Exceeding the threshold indicates additional site investigation or remediation may be required. Similarly, a hazard index greater than 1 indicates the protective level for noncancer-causing chemicals has been exceeded.

The human health preliminary risk evaluation of SWMU 64 indicated the USEPA incremental lifetime cancer risk exceeded the acceptable level for a residential scenario, but did not exceed the acceptable level for an industrial scenario or the hazard index acceptable level for residential or industrial scenarios.

According to the property reuse plan prepared by the City of Millington, the future land use for SWMU 64 is industrial, not residential, so there should be no future site residents. Therefore, existing conditions are considered protective of human health for industrial land use and there should not be future residents at SWMU 64.

Ecological risk was assessed by observing SWMU 64 is covered with a concrete pad. Therefore, there are no viable long-term habitats for ecological receptors and no unacceptable ecological risk at SWMU 64.

Based on the human health preliminary risk evaluation and no unacceptable ecological risk, existing conditions at SWMU 64 are considered protective of human health and the environment for industrial land use.

#### **5.0 SCOPE OF CORRECTIVE ACTION**

Whenever possible, the strategy for the environmental program at Naval Support Activity



Mid-South has been to remove identifiable sources of contamination, to investigate remaining contamination, and to select remedies protective of human health and the environment. At SWMU 64, minimal impact was identified in soil; a human health preliminary risk evaluation indicated the area is suitable for industrial land use; and there is no unacceptable ecological risk.

Therefore, the following land use control will be implemented at SWMU 64:

- The site must be reused for nonresidential purposes only.

Implementation and enforcement of the SWMU 64 land use controls are detailed in the Non-Airfield LUCIP and the non-airfield deed #6, which are available for review at the Millington Public Library. Additionally, the Navy's RCRA permit will be modified to include specific land use controls and monitoring, reporting, and regulatory approval requirements.

Further investigation of SWMU 64 is deemed unnecessary and the proposed remedy of a limited action consisting of a land use control is considered protective of human health and the environment for industrial land use. Also, it meets the Navy's environmental program strategy.

### **6.0 SUMMARY OF ALTERNATIVES**

According to the property reuse plan prepared by the City of Millington, SWMU 64 will be reused for industrial purposes, not residential. Therefore, the BCT's goals at SWMU 64 were to demonstrate that human health risk was within acceptable levels for industrial land use and that environmental risk was not significant. The preliminary risk assessment indicated existing soil conditions are protective of human health for industrial land use and no unacceptable ecological risk was identified at SWMU 64. Because the BCT's goals for human health and ecological risks were met, no alternative remedies were evaluated. The Navy's proposed remedy for SWMU 64 — a limited

action consisting of a land use control — is considered protective of human health and the environment for industrial land use.

### **7.0 EVALUATION OF THE PROPOSED REMEDY AND ALTERNATIVES**

The Navy's proposed remedy for SWMU 64 is a limited action consisting of a land use control. Based on the information currently available, several contaminants remaining in soil at SWMU 64 exceed RBCs or SSLs, but a human health preliminary risk evaluation indicated the site is suitable for industrial land use. Also, there is no unacceptable ecological risk. Therefore, the proposed remedy is considered protective of human health and the environment for industrial land use and no alternative remedies were evaluated.

### **8.0 PUBLIC PARTICIPATION**

Public comment is requested on the proposed remedy described here, as well as others not addressed. Since community input could affect selection of a final remedy for SWMU 64, a public comment period has been established from October 31 to December 14.

Comments should be submitted in writing to the address in the box on this page, and postmarked no later than December 14. Notification of the public comment period has been published in *The Commercial Appeal*, a local daily newspaper.

Written and verbal comments will also be accepted at the next meeting of the Restoration Advisory Board, which will be held on December 4 at 6:30 p.m. at

Public comments should be submitted in writing to the address below, and postmarked by December 14.

Tennessee Department of Environment and Conservation  
Division of Solid Waste Management  
ATTN: Clayton Bullington  
Fifth Floor, L&C Tower  
401 Church Street  
Nashville, Tennessee 37243-1535

the following location:

**Baker Community Center  
7942 Church Street  
Millington, Tennessee**

In keeping with their environmental program policy of community outreach, the Navy has maintained two-way communication with the public through regular open meetings of the Restoration Advisory Board.



Representatives of the Navy, TDEC, and USEPA participate in the Restoration Advisory Board meetings and community members of the Restoration Advisory Board have already received copies of this SB for review. The public is invited to attend the next Restoration Advisory Board meeting and present comments and/or concerns regarding remedy selection for SWMU 64. Public comments received at the meeting or in writing will be summarized and included with the formal Response to Comment document.

The SWMU 64 CSI report is part of the Administrative Record that can be reviewed in the Information Repository, which was established to provide public access to documents pertaining to the Navy's environmental program. The Information Repository is maintained at:

**Millington Public Library  
4858 Navy Road  
Millington, Tennessee 38053  
1-901-872-1585**

The Millington Public Library hours are: Monday, Tuesday, and Wednesday from 10 a.m. to 8 p.m.; and Thursday, Friday, and Saturday from 10 a.m. to 6 p.m.

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*For more information on the proposed remedy for SWMU 64, the Restoration Advisory Board, or the environmental program at Naval Support Activity Mid-South, please call Clayton Bullington, TDEC, at 1-615-532-0859; email at [cbullington@mail.state.tn.us](mailto:cbullington@mail.state.tn.us); or write to the address in the box on page 5.*