

SITE MANAGEMENT PLAN  
FISCAL YEAR 2007  
NAVAL AIR STATION  
JOINT RESERVE BASE (NAS JRB)  
WILLOW GROVE, PENNSYLVANIA



Naval Facilities Engineering  
Command Mid-Atlantic

Contract No. N62472-03-D-0057  
Contract Task Order 003

SEPTEMBER 2007

PHIL-21153

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FISCAL YEAR 2007  
NAVAL AIR STATION JOINT RESERVE BASE (NAS JRB)  
WILLOW GROVE, PENNSYLVANIA**

**COMPREHENSIVE LONG-TERM  
ENVIRONMENTAL ACTION - NAVY (CLEAN) CONTRACT**

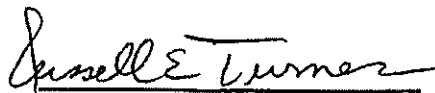
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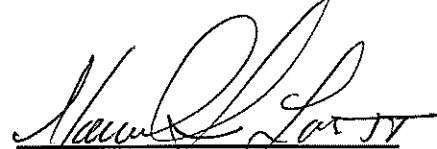
**SEPTEMBER 2007 .**

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## 1.0 INTRODUCTION

This report presents the fiscal year 2007 updated Site Management Plan (SMP) for Naval Air Station Joint Reserve Base (NAS JRB), Willow Grove, Pennsylvania. The SMP is the management tool for planning, reviewing, and setting priorities for all remedial response activities to be performed at the facility. This SMP presents the sequence of future investigation and remediation activities, the rationale for the prioritization of investigation and remediation events, and an estimated schedule for the completion of these activities. The SMP allows for adjustments to scheduled activities to account for potential impacts created by Federal budget constraints, changes in the scope of investigation or remediation activities, or other unanticipated events. A Federal Facilities Agreement (FFA) was finalized June 27, 2005 between the Navy, the U.S. Environmental Protection Agency (EPA) and the Pennsylvania Department of Environmental Protection (PADEP). The FFA ensures that environmental impacts associated with the sites are fully investigated and proper response actions are taken. The FFA also requires preparation and annual updates to this SMP. Requirements of the FFA are incorporated into this SMP.

In 2005, NAS JRB Willow Grove, Pennsylvania was designated for closure under the authority of the Defense Base Realignment and Closure Act (BRAC) of 1990, Public Law 101-510 as amended. BRAC legislation requires that the base closure be in full compliance with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA). Section 2 (Definitions) of the FFA identifies Navy Engineering Field Activity Northeast (EFANE) as the primary Navy local contact entity. Since the EFANE office was designated for closure under the 2005 round of BRAC, EFANE has been replaced by the BRAC Program Management Office Northeast, located at the former Philadelphia Navy Shipyard, as the primary local Navy contact office.

In May 2007, Special Legislation was enacted that said, "The Secretary of the Navy shall, notwithstanding any other provision of law, transfer to the Secretary of the Air Force, at no cost, all lands, easements, Air Installation Compatible Use Zones, and facilities at NASJRB Willow Grove designated for operation as a Joint Interagency Installation for use by the Pennsylvania National Guard and other Department of Defense components, government agencies, and associated users to perform national defense, homeland security, and emergency preparedness missions." Site cleanup under the FFA is expected to continue unabated by the May 2007 Special Legislation.

## **1.1 FACILITY DESCRIPTION**

NAS JRB Willow Grove is located in Horsham Township, Montgomery County in southeastern Pennsylvania; approximately 20 miles north of the city of Philadelphia (see Figure 1-1). NAS JRB Willow Grove occupies approximately 1,000 acres of 1,200 acres the Department of Defense (DoD) maintains at the Air Station. The Willow Grove Air Reserve Station (ARS) occupies approximately 200 acres of land in the northeastern section of the Air Station and shares common facilities with the NAS JRB. Figure 1-1 shows the location of NAS JRB Willow Grove and ARS. The Air Station is comprised of flat to slightly rolling terrain and is generally bounded by State Route 611 to the east, State Route 463 to the southwest, and Keith Valley Road to the north.

The primary mission of NAS JRB Willow Grove is to provide support for operations involving aviation training activities and to train Navy reservists. NAS JRB Willow Grove supports DoD tenants such as the Marine Reserve, and the Army Reserve, and shares facilities/services with the Air Force Reserve. The Base provides facilities, services, materials, and training in direct support of all assigned units. These units include a helicopter squadron, fleet logistic support squadrons, and other DoD units.

## **1.2 ENVIRONMENTAL STATUS AND PREVIOUS INVESTIGATIONS**

NAS JRB Willow Grove is being investigated through the Department of Defense's Installation Restoration Program (IRP). The identified sites are in various stages of the multi-step process toward final disposition within the IRP process the Navy is pursuing jointly with state and Federal regulatory agencies. Table 1-1 provides a list of NAS JRB Willow Grove sites and status in the Navy's IRP.

In 1986, the Department of Navy initiated an Initial Assessment Study (IAS) conducted by the Naval Energy and Environmental Support Activity (NEESA). The purpose of the IAS was to assess sites posing potential threats to human health or the environment resulting from hazardous materials handling at the facility. Historical records and aerial photographs were reviewed, interviews with site personnel were conducted, and field inspections were performed. Based on this information, nine potentially contaminated sites were identified. Each of these sites was evaluated for potential health or environmental impacts by evaluating the characteristics of potential contaminants and the migration pathways and potential receptors for these contaminants. The study concluded that five sites (Sites 1, 2, 3, 4, and 5) should be subject to a confirmation study.

The 1988 confirmation study included Site Inspection (SI) studies at 10 sites (the 9 sites identified in the IAS and the Navy Fuel Farm). These investigations included electromagnetic (EM) terrain conductivity surveys and soil vapor surveys, both performed in 1988 (EA Engineering, 1990). The surveys were

conducted to provide data for the placement of test borings and monitoring wells proposed for Site 3. EM surveys were conducted at Sites 2, 3, 4 and 7. Soil vapor surveys were conducted at Sites 3, 5, 7, 8 and 9 and the Navy Fuel Farm.

In 1989, additional field activities included the installation of monitoring wells at eight different sites and measurement of water levels from the wells to determine groundwater flow direction. Three rounds of groundwater sampling were conducted. Test borings in areas of soil vapor or EM anomalies were performed, and samples were obtained. Surface soil samples were also collected at two sites. To evaluate potential surface water impacts, aqueous and sediment samples were obtained along the surface water migration pathway at one off-site and 11 on-site locations (EA Engineering, 1990).

In 1990, results were presented in the Site Inspection Studies Report (EA Engineering, 1990) and the Plan of Action for Extended Site Inspections and Remedial Investigations (EA Engineering, 1991).

Recommendations were no further action at Sites 4, 6, 8, and 9 and the performance of a Remedial Investigation (RI) at Sites 1, 2, 3, and 5 and the Fuel Farm (Site 10). In addition, an Extended Site Inspection (ESI) was recommended for Site 7 because the SI data was inconclusive. The installation formed a technical review committee.

The ESI field work was conducted at Site 7 in 1991. The field work involved installation of an additional monitoring well, sampling test borings in the area of soil vapor readings from the 1968 Site Inspection (SI), and collection of surface soil samples to determine if the source of contamination was from upgradient, off-site sources. Results indicated no apparent threat to human health or the environment, and no further action was recommended (EA Engineering, 1992).

In 1992, two 210,000-gallon Underground Storage Tanks (USTs) were removed from Site 10. Site 10 petroleum product groundwater contamination clean up was performed in a series of pilot and full-scale active remediation systems in later years (EA, June 2001). During the construction of sewer lines and culverts near the aircraft parking apron, construction crews reported volatile odors. Samples analyzed for total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and xylene (BTEX) revealed the presence of these contaminants. This site was added as Site Screening Area (SSA) 11 and was also known as suspected "Site" 11 (Brown & Root Environmental, 1996).

In 1993, the RI for Sites 1, 2, 3, and 5 concluded that additional sampling was needed at all four sites to delineate the extent of contamination and/or the sources at the sites (Halliburton NUS, 1993).

In 1995, a Phase II RI work plan was issued for Sites 1, 2, 3 and 5 (Brown & Root Environmental, October 1996). In addition, the installation established a Restoration Advisory Board (RAB), which meets regularly.

In 1996, the Final Pilot Study Report for Product Recovery at Site 10 was completed (EA, November 1996).

In 1997, the RI fieldwork was conducted at Sites 1, 2, 3, and 5. The Site 10 Fuel Farm was not included in the scope of work of the RI. As part of RI activities, B&R Environmental installed monitoring wells, completed test borings and hand auger sampling locations, excavated test pits, and collected surface, subsurface, groundwater, surface water, and sediment samples. In addition, a draft SMP (Brown & Root Environmental, December 1996) and a Community Relation Plan (Brown & Root Environmental, December 1997) were developed.

In 1998, a draft Phase II RI report for Sites 1, 2, 3, and 5 (Brown & Root Environmental, April 1998) was submitted to regulators for review.

In 1999, the Navy decided de-link the reporting process for IR Sites 1, 2, 3, and 5 and submit four separate Phase II RI documents. An interim remedial action (IRA) for polychlorinated biphenyl (PCB) contaminated soil at Site 1 was completed (FWENC, November 1999). Approximately 1,100 tons of soil was removed.

In 2000, a Base-wide water-level study was completed (Tetra Tech, July 2002). The Navy completed pump replacement on the two Navy production wells that are in the vicinity of Site 1. These wells supply potable and emergency water to the Willow Grove facility. This project also allowed the Navy to obtain valuable geophysical data and analytical data for Site 1 groundwater, as requested by EPA. Additional fieldwork was completed at Site 5.

In 2001, the Navy discontinued active operation of the light non-aqueous phase liquids (LNAPL) recovery system at Site 10 (EA, June 2001). Quarterly bailing or recovery of product continued through 2002.

In 2002, the final RI report for Site 1 was submitted to the regulators and the RAB (Tetra Tech NUS, Inc. (Tetra Tech) July 2002). A draft (Navy internal) Site 2 RI (Tetra Tech February 2002) report was completed in 2002. The final RI report for Site 5 (Tetra Tech, February 2002) documented halogenated VOC contaminants in groundwater and a range of organic compounds (mainly polynuclear aromatic hydrocarbons (PAHs) in limited site surface soils. The Navy completed the draft Site 5 groundwater (OU 2) FS report (Tetra Tech, February 2002) and submitted it to regulators and the RAB.

In 2003, off-Base sources of the groundwater contamination at Site 1 were explored. PADEP supplied a compilation of investigations that identified groundwater contaminants and a potential significant source of solvents in groundwater upgradient of Site 1. The Navy contractor Resource Management Concepts (RMC) removed drums and debris and sampled soil at the EPIC drum and debris site (SSA 12) between Site 2 and Site 5 (RMC, 2003). The preliminary draft Site 2 RI report was on hold as the Navy evaluated results of this drum and debris removal at SSA 12. After reviewing the draft FS for Site 5 groundwater, RAB members requested that the Navy consider additional remedial alternatives, such as in-situ biological and chemical treatment processes, for the groundwater at Site 5. Also in 2003, the Navy completed fieldwork at IR Site 10, the Navy Fuel Farm. In January 2003, the Navy discontinued quarterly bailing for recovery of product at Site 10.

In 2004 the Navy completed a draft Proposed Remedial Action Plan (PRAP) for Site 1 soil. The PRAP, recommending no further action, was presented in a public meeting in October 2004. The Navy planned additional groundwater monitoring well installation and groundwater sampling at the upgradient Air Station property line from Site 1 to confirm the major source of groundwater contamination is off Base. Information from the drum removal and soil sampling report (RMC, July 2003) at SSA 12 was sent to the Navy's contractor Tetra Tech for tabulation, evaluation, and incorporation into a final report of cleanup. However, due to unacceptably high analytical detection limits, comparisons to typical health-based concentrations (e.g., EPA medium specific concentrations (MSCs) or PA ACT 2 cleanup levels) did not lead to a clear resolution of the status of the SSA 12 drum removal area between Site 2 and Site 5. Therefore, the draft Site 2 RI report remained on hold as the Navy waited to evaluate results of the drum and debris removal from this area. In response to requests from the RAB to include additional remedial alternatives for Site 5 groundwater, the 2002 draft Site 5 groundwater FS was revised and reissued as revised draft in 2004 (Tetra Tech, September 2004). The Navy submitted the Site 5 RI Addendum 1, PAH Confirmation and Analysis Report (Tetra Tech, October 2004) to confirm status of petroleum compounds in Site 5 soil. Based on the Navy's Final Report, Request for No Further Action, Installation Restoration (IR) Program Site 10 Ground Water (EA, September 2004), that recommended no further action for Site 10, the Navy and PADEP agreed that no further action at this time (under the current Air Station use scenario) for Site 10 was appropriate (PADEP, April 2004).

Following NAS JRB Willow Grove's designation as a BRAC 2005 facility slated for closure,, the No Further Action Record of Decision (ROD) for Site 1 Soil was prepared, underwent several levels of review and was signed by the Navy and EPA with concurrence from PADEP in 2006 (Tetra Tech, September 2006). Plans for installation of three new monitoring wells upgradient of Site 1 at the Base property line, completed by the Navy, were reviewed and approved by PADEP and EPA. The three new monitoring wells were installed and were sampled in 2006 by ECOR Solutions, Inc. (ECOR). In the draft Site 1 RI Addendum 5 for Groundwater (Tetra Tech, September 2006), the Navy concluded that results from the

three new upgradient monitoring wells confirmed that the major contributor to solvent contamination in groundwater beneath Site 1 is an off-Base source (Tetra Tech, September 2006). As a result of comments from EPA, the Navy will issue a revised draft Site 1 RI Addendum 5 for Groundwater report, planned for July 2007.

In 2006, based on discussions among EPA, PADEP and the Navy regarding the lack of any evidence of a relationship between Site 2 - Antenna Field Landfill and SSA 12, drum and debris removal area, these two areas were de-linked for investigation and reporting purposes. The Navy directed Tetra Tech to prepare a draft RI report for Site 2 for regulatory agency review. In May of 2007, after a preliminary draft (Navy internal) Site 2 RI report was reviewed, the Navy also instructed Tetra Tech to update the ecological risk assessment approach to comply with current EPA and Navy guidelines, including food-chain modeling.

To ensure compliance with the timetable for Base Closure stipulated by BRAC 2005, the Navy engaged its contractors ECOR and Tetra Tech to begin a series of IR program RI/FS tasks at Site 3. Reinstatement of the RI at Site 3 began in 2005, beginning with the installation of two new monitoring wells in one borehole to investigate potential sources located upgradient of Site 3, near the Army Reserve vehicle maintenance facility. Field work completed in 2005 included sampling and analysis of all Site 3 monitoring wells, additional sampling and analysis of soil near the Army Reserve Hangar upgradient of Site 3, and preparation of a new human health risk assessment (HHRA) to determine the eventual disposition of Site 3. Based on an internal Navy draft of the Site 3 RI report prepared in 2007, the Navy noticed an apparent data gap in soil quality sampling in the area of reported historical landfill operations. Based on this apparent data gap, the Navy prepared a work plan for test pits and soil sampling in April 2007. Site 3 test pits and soil sampling were carried out according to the approved work plan in May 2007.

The Navy submitted the Action Memorandum for Site 5 - Fire Training Area Soil Removal in August 2005 (Tetra Tech, August 2005) to deal with the relatively limited area of soil contaminated primarily with PAHs. Soil removal was performed by the Navy's contractor, RMC, in 2006. The draft Site 5 RI Addendum 6 for soil was submitted for regulatory agency review in May 2007. The final Site 5 soil PRAP and ROD are planned for fiscal year 2007.

The revised draft FS for Site 5 groundwater (submitted in September 2004) generated comments and questions from the EPA received in January 2005. The Navy responded with a series of RI work plans and reports of findings to address EPA concerns. Site 5 RI Addendum 2, Soil Investigation for Volatile Organic Compound (VOC) Soil to Groundwater Impact (Tetra Tech, March 2006) was submitted to independently verify the Navy's RI sample results for VOCs in soil obtained in 1997. Site 5 RI

Addendum 3, Technical Memorandum of Risk Assessment Evaluation for Site 5 Groundwater (Tetra Tech, February 2007) and Site 5 RI Addendum 4, Technical Memorandum of Risk Assessment Evaluation for Site 5 Soil (Tetra Tech, July 2006), applied current EPA HHRA guidance, toxicity factors and other current assumptions used for calculating estimated risk, and presented evaluations of variance from the HHRA performed in 1997. Site 5 RI Addendum 5, Remedial Investigation Addendum Report for Site 5 - Fire Training Area Groundwater (OU 2) (Tetra Tech, September 2006) presented results and conclusions from RI activities performed by the Navy in response to EPA comments on hydrogeological and geochemical issues in the revised draft FS for Site 5 groundwater (Tetra Tech, September 2004). EPA review and comment on the FS-inspired Site 5 groundwater-related reports was complete in 2007. The draft final and final FS for Site 5 groundwater are planned for fiscal year 2007.

Based on the inconclusive nature of the soil report (RMC, 2003) for the SSA 12, drum and debris removal area, the Navy contracted Tetra Tech to obtain confirmation samples from this area. After discussions with EPA and PADEP at a Team Meeting, the Navy prepared a draft Work Plan for SSA 12 Confirmation Sampling that was submitted for regulatory agency review in May 2007. Based on confirmation sampling results, expected later in 2007, evaluation and disposition of SSA 12 will proceed independently of IR Site 2.

In the period of 2005/2006, the Navy, EPA and PADEP had discussions regarding the "No Further Action Sites" (Sites 4, 6, 7, 8 and 9). EPA issued a letter of concurrence with the PADEP notice of agreement with the Navy for no further action (NFA) under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) at Sites 8 (Building 118 Abandoned Fuel Tank) and 9 (Steam Plant Building Tank Overfill) (EPA, October 2006). The letter of concurrence from EPA is dated October 4, 2006.

EPA's Biological Technical Assistance Group (BTAG) visited Sites 4 (North End Landfill) and 7 (Abandoned Rifle Range No. 2) on March 28, 2007. EPA and the BTAG did not recommend further action or investigation.

Based on discussion at the NAS JRB Willow Grove partnering meeting held at EPA Region 3 in June 2007 between the Navy, EPA and PADEP, the Navy will prepare individual site screening process consensus agreements for No Action at Sites 4, 6 and 7. The consensus agreements will be signed by the Navy BRAC Environmental Coordinator, EPA RPM and PADEP Case Manager.

### **1.3 REPORT ORGANIZATION**

The remainder of this report contains five sections. Section 2.0 presents a summary of the procedures to be followed as part of the CERCLA process. Section 3.0 presents a description of each of the sites included in this SMP (Sites 1 through 9, the Navy Fuel Farm (Site 10), SSA 11, and SSA 12). Section 4.0 discusses the ranking system used to prioritize the sites, provides the current status of each site, presents the generic schedule durations for planned CERCLA activities, and includes assumptions provided in the FFA used to develop the schedule and this SMP. A list of references used in this SMP follows Section 4.0.

## **2.0 CERCLA PROCESS ACTIVITIES**

Guidelines established by the EPA for the CERCLA process will continue to be followed for the sites at NAS JRB Willow Grove. The CERCLA process provides guidelines for investigation activities prior to the RI, including preliminary assessments (PAs) (completed at NAS JRB Willow Grove; IAS, 1986) and site inspections (SIs) (completed at NAS JRB Willow Grove Sites 1 through 10; EA Engineering, 1990, and SSA's 11 and 12 (U.S. Department of Defense, 1996). Because PA and SI activities for the sites addressed under this SMP have been completed, discussions of the CERCLA process activities for PAs and SIs are not included in this section. This section discusses the CERCLA processes required to complete investigative and remediation activities at the facility.

After the site inspection and risk screening process is conducted, if a site is deemed to present a potential risk to human health and/or the environment, the site is subject to the full remedial investigation/feasibility study (RI/FS) process. Depending on the severity of site conditions, a removal action or interim remedial action may be appropriate to mitigate immediate threats to human health or the environment. Potentially applicable CERCLA processes for the NAS JRB Willow Grove sites are described in the following sections.

### **2.1 IAS/SI PROCESS**

The IAS is a preliminary investigation usually consisting of review of available data and information on a site, interviews, and a non-sampling site visit to observe areas of potential waste disposal and migration pathways. The SI is a sampling investigation with the goal of identifying potential sources of contamination, types of contaminants, and potential migration of contaminants. The SI is conducted prior to the RI.

### **2.2 RI/FS PROCESS**

Figure 2-1 presents a schematic of the RI/FS process. The RI is a field investigation, more extensive than a SI, with the goal of determining the nature and extent of contamination at the site. The baseline risk assessment, performed as part of the RI, is an analysis of potential adverse health and/or ecological effects arising from site conditions in the absence of any mitigating actions. The FS presents options for cleanup by screening alternatives for remediation and conducting an analysis of the alternatives. Factors for evaluation include overall protection of health and the environment, short- and long-term effectiveness, and cost. The PRAP presents the proposed alternative for remediation of the site selected from the FS. The ROD, when signed by the Navy and EPA, presents the remedy selected after consideration of the public comments. The remedial design (RD) is the development of the actual design

of the selected remedy including the preparation of technical specifications and drawings. The remedial action (RA) is the construction, implementation, and operation of the selected remedy.

### **2.3 REMOVAL ACTIONS**

Removal actions are implemented to clean up or remove hazardous substances from the environment or mitigate, minimize, or prevent damage to human health or the environment from a release or threat of release by limiting exposure to those substances. Removal actions may be either time-critical or non-time-critical. Time-critical removal actions are taken when there is an imminent threat to human health and/or the environment. An example of such a threat would be corroded drums that are leaking hazardous substances that would threaten environmental or human health receptors. Non-time-critical removals are actions that may be delayed for six or more months without immediate risk to human health or the environment. Although removal actions often begin prior to the completion of RI/FS activities to reduce the spread of contaminants, they may occur at any point during the RI/FS process.

If a non-time-critical removal action is implemented, an Engineering Evaluation/Cost Analysis (EE/CA) is prepared rather than an FS. The EE/CA is prepared for the substances to be removed rather than all potentially contaminated media. Media not addressed in the EE/CA will still be considered in the RI/FS process. Figure 2-2 presents the general process for non-time-critical removals.

Removal actions generally are smaller in scope than a typical site RI/FS; therefore, the time required to perform a removal action, including preparation of an EE/CA, removal design, and implementation, is usually significantly less than the time needed to complete an RI/FS. Under a removal action, there is still evaluation of options and an opportunity for public comment, and the selected removal action is documented in a Removal Action Memorandum.

If the risk assessment from the RI/FS process indicates that no further remedial action is required for the entire site after a removal action is completed, the removal action may become the final remedial action. In that case, a no-further-action ROD would be prepared for signature by the concerned parties.

### **2.4 INTERIM REMEDIAL ACTIONS**

Interim remedial actions are designed to temporarily mitigate potential risks posed by site contaminants to human health and/or the environment until a final remedial action is implemented. Interim remedial activities usually occur prior to initiation of a full FS. Interim remedial actions, if implemented early in the CERCLA process, often reduce long-term remedial action (RA) costs by limiting the extent of contamination at a site. For example, installation of a groundwater pump and treat system to control

plume migration would be considered an interim remedial action, if initiated prior to selection of the final remedy. Interim remedial actions are limited in scope and should address only areas or media for which a remedy will be developed during the RI/FS process.

Figure 2-3 shows the interim remedial action process. Because these actions are usually taken prior to initiation of the full FS, a focused feasibility study (FFS) is prepared addressing only the media and contaminants subject to the interim remedial action. Results of the FFS are incorporated into a PRAP for the interim remedy that is subject to public comment. Similar to the full RI/FS process, after the public comment period, an interim ROD is prepared and signed, the interim remedial design is developed, and the interim action implemented. If the risk assessment from the RI/FS process indicates that no further remedial action is required for the entire site after an interim remedial action is completed, the interim action may become the final remedial action for the site.

## **2.5 TREATABILITY STUDIES**

Before a ROD is signed, and possibly even before final FS development, laboratory-based or pilot treatability studies may be required. These studies evaluate the effectiveness of a potential remedial technology's performance. The goal of performing treatability studies is for support of the remedial design process. Treatability studies are typically performed when insufficient data are available from the RI to support full-scale design and implementation of the preferred alternative.

## **2.6 ROD AND POST ROD ACTIVITIES**

The ROD is a legal document that describes the remedy selected for a Superfund facility, why the selected remedial actions were chosen and other candidate actions were not, how much the remedial actions are expected to cost, and how the public responded to the Proposed Alternative (combination of technologies proposed for site remediation).

## 3.0 SITE DESCRIPTIONS AND INVESTIGATIONS

### 3.1 SITE DESCRIPTIONS

This section presents a history of disposal practices and current status of each of the 12 sites addressed in this SMP. This information is based on data from previous investigations and progress made to date in the Navy's IR program. Site locations are identified on Figure 3-1.

#### 3.1.1 Site 1 - Privet Road Compound

The Privet Road Compound is located west of Privet Road, across from the steam plant (Building No. 6). The entire site area is approximately 2 acres and consists of a bowling alley, parking lot, and a 1/2-acre (formerly) fenced area. Trash handling operations at the Privet Road Compound began in 1967 when the Ninth Street Landfill (Site 3) was closed. To replace the landfill, regular trash pickup and off-site disposal were initiated. The Privet Road Compound site was used to process wastes from 1967 to 1975. A fence was erected around the compound area in 1972 to control waste disposal and handling within the compound. The suspected waste handling area, however, is believed to extend throughout Site 1, including the area where the Bowling Alley and parking lot are now located.

The Privet Road Compound was constructed as a transfer station to handle materials not accepted by the trash pickup service. During operations at the compound, wastes were temporarily stored on site to await off-site disposal or burned and/or buried on site. Burning and burial ceased by 1975; however, stored waste material was not completely removed from the site until 1977 (NEESA, 1986).

Wastes reportedly disposed at the site included paint wastes, paint stripper and solvents, Freon, general refuse, asbestos, battery acid, sewage sludge containing heavy metals, oils and lubricants, and mercury-containing dental amalgam. Transformers (containing polychlorinated biphenyls (PCBs)) were also stored at the site. PCB-containing liquids spilled when stored transformers overturned during an incident at the compound (NEESA, 1986).

B&R Environmental (formerly Halliburton NUS Corporation) conducted RI field activities at Site 1 in 1991. The RI concluded that additional sampling was needed to further delineate the extent of contamination and/or potential sources at the site. The RI recommended a Phase II RI and a feasibility study (FS) (Halliburton NUS, 1993).

In 1997, the Phase II RI fieldwork was conducted and in 1998, a draft Phase II RI report was submitted to regulators for review (Brown & Root, 1998).

In 1999, the Navy decided to de-link the reporting process for the IR sites (1, 2, 3, and 5) and submit four separate Phase II RI documents. Also in 1999, an interim removal action (IRA) for PCB-contaminated soil at Site 1 was completed in June. A total of approximately 1,100 tons of soil was removed for disposal off-site.

In 2000, Basewide water-level studies were completed in cooperation with local municipal authorities and the United States Geological Survey (USGS). The Navy contracted Tetra Tech, to procure new water well pumps, motors and associated piping and control systems (including installation services) to replace the two Navy water supply production well pumping systems originally installed in the 1940's. Replacement of these aged pumping systems was a compromise that resulted in IR program access to the two deep Navy production well boreholes (NW-1 and NW-2) for geophysical, groundwater quality, and production rate studies performed by the USGS. These two wells are the sole supply of potable and emergency (fire fighting) water for the entire Willow Grove Air Station facility. This project allowed the Navy to obtain the Navy supply well water quality analytical data requested by EPA to help analyze Site 1 groundwater conditions.

In 2002, the RI report was finalized and submitted to the regulators and the RAB (Tetra Tech, July 2002).

In 2004, a draft Addendum RI Report was submitted. The draft Addendum RI Report determined that the chlorinated solvents found in the local groundwater do not originate substantially from the Privet Road Compound area, but appear to be from an off-Base location southeast of Site 1 across Pennsylvania Route 611 in the vicinity of the former Kellet Aircraft manufacturing facility. Also in 2004, the Navy Public Works Officer had the fence removed from around the compound area and reseeded the soil with grass to improve the appearance of the area.

In September 2004, the Navy submitted the final Proposed Remedial Action Plan (PRAP) for Site 1 soil (Tetra Tech, September 2004). A public meeting was held to present the Navy's plan for no further action for Site 1 soil, based on the PCB-contaminated soil removal. A public comment period was set for September 27, through October 27, 2004 to encourage public participation in the decision process for the Privet Road Compound.

Based on concerns from EPA, the Navy performed two additional studies to support the no further action recommendation in the Site 1 soil PRAP. The Site 1 RI Addendum 1, Residual Risk Evaluation Letter

Report for Soil (Tetra Tech, June 2005) reviewed the residual risk remaining after the Site 1 soil removal was completed, and the Site 1 RI Addendum 4, Soil Investigation for Volatile Organic Compound Soil to Groundwater Impact (Tetra Tech, March 2006) confirmed earlier RI results regarding the absence of VOCs in soil. Both of these reports confirmed earlier RI results and the conclusions found in the PRAP, leading to the NFA recommendation.

The Site 1 Soil (OU 1) ROD (Tetra Tech, September 2006), specifying no further action for Site 1 soil, was accepted by PADEP (PADEP, September 2006) and signed by the Navy and EPA in September 2006.

The Navy installed three new monitoring wells upgradient of Site 1 at the Base property line based on a work plan prepared by the Navy that was reviewed and approved by PADEP and EPA. Three new monitoring wells were installed and were sampled in 2006 by ECOR. Results from the three new upgradient monitoring wells confirmed that the major contributor to solvent contamination in groundwater beneath Site 1 is an off-Base source (Site 1 RI Addendum 5 for Groundwater report, Tetra Tech, (Draft) September 2006). However, based on information presented in the Site 1 RI Addendum 5 for Groundwater report, EPA did not fully agree, asking that the document be reissued to include more of the background information from previous study reports that had been only referenced. At the request of EPA, the Navy plans to submit the revised draft Site 1 RI Addendum 5 for Groundwater report in July 2007.

The PRAP for Site 1 groundwater (OU 3), including land use controls (LUCs) to limit future use of the groundwater beneath Site 1, is currently on hold awaiting resolution of concerns EPA expressed regarding the documentation of the off-Base solvent plume source conclusion.

### **3.1.2 Site 2 - Antenna Field Landfill**

The Antenna Field Landfill is located in the southern portion of the Naval Air Station, southwest of Runway 10/28 (Figure 3-1). The landfill has been estimated to be approximately 9 acres in size.

The landfill was used between 1948 and 1960 as the principal disposal area for solid waste generated by the facility. Waste disposal activities included the excavation of trenches where wastes were subsequently burned and/or buried. In addition to general wastes, bulk items such as furniture, tires, and shingles were disposed. Paint wastes and sewage sludge were also reportedly disposed (NEESA, 1986).

In the mid 1990's, an antenna array consisting of five antennae was constructed at the site to replace an older antenna array.

B&R Environmental conducted RI field activities at Site 2 in 1991. The RI concluded that additional sampling was needed to further delineate the extent of contamination and/or the sources at the site. The RI recommended a Phase II RI and a FS (Halliburton NUS, 1993).

In 1997, the Phase II RI fieldwork was conducted and in 1998, a draft Phase II combined Sites 1, 2, 3, and 5 RI report was submitted to regulators for review (Brown & Root, 1998). In 1999, the Navy decided to de-link the reporting process for IR Sites 1, 2, 3, and 5, and submit four separate Phase II RI documents.

A draft (Navy internal) Site 2 RI report was completed in 2002 (Tetra Tech, 2002). During this time period, the Navy discovered debris and discarded empty drums between Site 2 and Site 5 (SSA 12). The Navy contracted with RMC Environmental (RMC) to remove the drums, obtain samples of the drum/contents (residues only) and soils that potentially could have been impacted. When field conditions were appropriate, RMC removed drums and sampled beneath the drums at SSA 12 (RMC, 2003). Information from the RMC Report was sent to the Navy's contractor Tetra Tech for tabulation, evaluation, and possible incorporation into a Final RI Report for Site 2. Tetra Tech combined the results and conclusions of the drum removal and confirmatory sampling into the revised draft Site 2 RI report (Navy internal review - 10/06/04). However, due to unacceptably high analytical detection limits, comparisons to typical health-based concentrations (e.g., EPA medium specific concentrations (MSCs) or PA ACT 2 cleanup levels) did not lead to a clear resolution of the status of SSA 12. The draft Site 2 RI report remained on hold as the Navy waited to evaluate results of the drum and debris removal from SSA 12. In September 2006, the Navy directed their contractor (Tetra Tech) to prepare a work plan to resample soils at SSA 12. At that time, the Navy also directed Tetra Tech to proceed with preparation of the draft RI report for Site 2 that will not include information about SSA 12.

In May of 2007, after a preliminary draft (Navy internal) Site 2 RI report was reviewed, the Navy instructed Tetra Tech to update the ecological risk assessment approach to comply with current EPA and Navy guidelines, including food-chain modeling.

### **3.1.3 Site 3 - Ninth Street Landfill**

The Ninth Street Landfill site is located at the western boundary of the facility, immediately north of Ninth Street. Disposal operations at the 9-acre site were initiated as a replacement for the Antenna Field Landfill in 1960. Wastes were disposed by burning and burial in excavated trenches. Wastes were similar to those at Site 2, including general wastes, bulk items, paint waste, asbestos, and sewage sludge (NEESA, 1986). Transformers containing PCBs were also stored and serviced in a salvage yard established on the landfill after the landfill's closure in 1967 (EA Engineering, 1990).

B&R Environmental conducted RI field activities at Site 3 in 1991. The RI concluded that additional sampling was needed to further delineate the extent of contamination and/or the sources at the site. The RI recommended a Phase II RI and a FS (Halliburton NUS, 1993).

In 1997, the Phase II RI fieldwork was conducted and in 1998, a draft Phase II RI report was submitted to regulators for review (Brown & Root, 1998). In 1999, the Navy decided to de-link the reporting process for the IR sites (1, 2, 3, and 5) and submit four separate Phase II RI documents. In response to comments, the Navy has performed minor investigations at Site 3 since the draft Phase II RI report was submitted to regulators for review in 1998. USGS performed geophysical logging of two irrigation wells owned by the golf course (the adjacent, downgradient off-site property) in March 1998. Sediments from the retention basin located north of Site 3 (part of the NAS JRB Willow Grove storm water control system) were sampled and analyzed for contamination in 2002 (Woodward and Curran 20543901, May 2002).

During the period from 1999 through 2004 progress at Site 3 was a lower priority than other IRP sites at NAS JRB Willow Grove. No individual Site 3 RI was prepared for submission or separate review, and Site 3 did not progress further past Phase II RI investigations due to funding and priority issues as well as a lack of cooperation from the nearby golf course. Requests for access to Golf Course monitoring wells for RI efforts were met with limited acceptance (for instance geophysical logging of some of the golf course wells was permitted). In 2007, at a request from the Navy for access to sample the flowing monitoring well and obtain two surface water samples on Lot 1, the managers of the Golf Course informed the Navy that they would allow those additional RI efforts on Golf Course property. These samples are planned for fiscal year 2007 collection.

With the passage of BRAC 2005, priority and funding issues changed for Site 3. To ensure compliance with the timetable for Base Closure stipulated by BRAC 2005, the Navy engaged its contractors ECOR and Tetra Tech to begin a series of IR program RI/FS tasks at Site 3. By agreement among the Navy, EPA and PADEP, two new monitoring wells were installed to investigate potential groundwater contamination sources upgradient of Site 3 near the Army Reserve vehicle maintenance facility. Fieldwork completed in 2005/2006 included resampling and analysis of all Site 3 monitoring wells (including the new upgradient wells) and additional sampling and analysis of soil near the Army Reserve Hangar. The Navy and EPA agreed on a methodology for preparation of a new HHRA that will help determine the eventual disposition of Site 3.

The preliminary (Navy internal) draft Site 3 RI report, showing low concentrations of solvents in groundwater and very little evidence of past landfill operations reported in the area, was completed in January 2007. Based on Navy review and comment, it was thought that insufficient data had been

gathered in several areas of reported historical landfill operations. To correct this apparent data gap, the Navy prepared a work plan for test pits and soil sampling in April 2007. Site 3 test pits and soil sampling were carried out according to the approved work plan in May 2007.

#### **3.1.4 Site 4 - North End Landfill**

Limited information exists on the operations at the North End Landfill; however, the landfill reportedly was used from approximately 1967 to 1969 to accept overflow wastes from the Privet Road Compound. The site is approximately 3.5 acres in size and is located between the northern end of Runway 15/33 and the Perimeter Road. Disposed waste materials are believed to be items not collected during routine trash pickup such as bulk items, sewage sludge, and oils and lubricants. During the site's operation, it is reported that wastes were covered; however, observations from the IAS showed waste materials, including oil, at the surface (NEESA, 1986).

Based on the SI (EA, MAY 1990), combined with the results of the site screening process, the Navy recommended NFA for this Site. PADEP concurred with the Navy recommendation for NFA at this site (PADEP, October 31, 2005). The Navy prepared a summary discussion of review and presented a status update at the scheduled December 19, 2006 Navy Willow Grove IRP Partnering Team Meeting. All available past investigation results, correspondence and notes were summarized and recommendations for future actions were presented for discussion among the team. EPA's Biological Technical Assistance Group (BTAG) visited Site 4 on March 28, 2007 to review conditions. BTAG did not recommend further investigation or action at this site.

Based on discussion at the NAS JRB Willow Grove partnering meeting held at EPA Region 3 in June 2007 between the Navy, EPA and PADEP, the Navy will prepare individual site screening process consensus agreements for No Action at Sites 4, 6 and 7. The consensus agreements will be signed by the Navy BRAC Environmental Coordinator, EPA RPM and PADEP Case Manager.

#### **3.1.5 Site 5 - Fire Training Area**

The Fire Training Area is located in the south-central portion of NAS JRB, approximately midway between Runway 10/28 and State Route 463 (Figure 3-1). The site is located immediately south of Taxiway Juliet and covers an irregularly shaped area of approximately 1.25 acres. The training area was used from 1942 to 1975 for large-scale firefighting exercises, which included the disposal and burning of flammable liquid wastes generated by the Naval Air Station. Wastes including solvents, paint chemicals, xylenes, toluene, and various petroleum compounds were consumed at the rate of up to 4,000 or more gallons per

year in these firefighting exercises. The area was also reportedly used for the drum storage of these flammable materials during the periods between burning exercises.

The Fire Training Area is primarily covered by grasses, with some woody and brushy vegetation present within the southern portion of the area. The burn area, consisting of the "burning ring" that has actually been found to have been a section of a partially buried steel tank, wide open at the top with an intact bottom below surrounding grade, was located in the south-central portion of the site (Tetra Tech, 2002).

B&R Environmental conducted RI field activities at Site 5 in 1991. The RI concluded that additional sampling was needed to further delineate the extent of contamination and/or the sources at the site. The Phase I RI report recommended a Phase II RI and a FS (Halliburton NUS, 1993).

In 1997 Phase 11 RI fieldwork was conducted and in 1998, a draft Phase II RI report was submitted to regulators for review (Brown & Root, 1998). In 1999, the Navy decided to de-link the reporting process for IR sites (1, 2, 3, and 5) and submit four separate Phase II RI documents.

In 2000 additional field work was completed at Site 5 to verify that site groundwater contamination was not moving off-Base toward the Horsham Township Municipal water supply well number 26 (HTMW 26). Sentinel monitoring wells installed on Navy property to monitor water quality between Site 5 and HTMW 26 are now sampled annually by the Base to verify contamination is not migrating closer toward the municipal water supply well.

The final RI report for Site 5, completed in February 2002, documented halogenated VOC contaminants in groundwater and a range of organic compounds (mainly polynuclear aromatic hydrocarbons [PAHs]) in limited site surface soils (Tetra Tech, February 2002). The final RI Report for Site 5 combined the results from the draft Phase II RI Report and previous findings for Site 5, with the results of activities performed from April 1998 through October 2000 (Tetra Tech, 2002).

In 2002, Tetra Tech prepared the draft FS report for Site 5 groundwater and submitted it to regulators and the RAB (Tetra Tech, February 2002). Based on RAB member comments, the Navy decided to reconsider emerging (biological and chemical treatment in-situ) technologies and resubmit a revised draft Site 5 groundwater FS for regulatory and public review. In response to requests from the RAB to include additional remedial alternatives for Site 5 groundwater, the 2002 draft Site 5 groundwater FS was revised and reissued as revised draft in 2004 (Tetra Tech, September 2004).

After submission of the RI Report (Tetra Tech, 2002), the Navy contracted for installation of an additional airport runway perimeter security fence. Part of the new security fencing was installed in or

near the area of known PAH soil contamination. Because of this potential change to Site 5 surface soil conditions in the area of the identified PAH "hot spots," surface and shallow subsurface soil samples were collected in June 2004 for a side-by-side comparison with the 1997 data. The Navy submitted the Site 5 RI Addendum 1, PAH Confirmation Sampling and Analysis Report (Tetra Tech, October 2004) to confirm status of petroleum compounds in Site 5 soil.

Based on the Action Memorandum for Site 5 - Fire Training Area Soil Removal (Tetra Tech, August 2005), a soil removal action for PAH-contaminated soil at Site 5 began in December 2005. Initial excavation confirmation samples indicated PAHs remained at some spots at concentrations above cleanup levels. A second round of excavation and confirmation samples (including sampling and analysis for dioxins as requested by EPA) was followed by soil backfill in October 2006. The Navy's Site 5 RI Addendum 6 for Soil, including the Navy's residual risk calculation approved by EPA, the RMC final closeout report and an analysis of the potential impact from dioxins, as requested by EPA, will be submitted in FY 07.

The revised draft FS for Site 5 groundwater (submitted in September 2004) generated a list of comments and questions from the EPA received in January 2005. The Navy responded with a series of RI work plans and reports of findings to address EPA concerns about past RI field sample collection practices, past HHRA practices, and the site conceptual model. In February 2007, EPA issued a letter of concurrence with the Navy Response to Comments (RTC) document laying out the Navy response to each of the EPA comments on the Site 5 groundwater FS. The draft final Site 5 groundwater FS will be submitted in FY 2007.

Site 5 RI Addendum 2, Soil Investigation for Volatile Organic Compound (VOC) Soil to Groundwater Impact (Tetra Tech, March 2006) was submitted to validate the Navy's RI samples for VOCs in soil obtained in 1997. 1997 RI sample and analysis results were very comparable to the results obtained from the same sample locations using the (new - 2006) EPA-preferred method of sample collection and preservation.

Site 5 RI Addendum 3, Technical Memorandum of Risk Assessment Evaluation for Site 5 Groundwater (Tetra Tech, February 2007), and Site 5 RI Addendum 4, Technical Memorandum of Risk Assessment Evaluation for Site 5 Soil (Tetra Tech, July 2006), applied current EPA HHRA guidance, toxicity factors and other current assumptions used for calculating estimated risk, and presented evaluation of variances from the HHRA performed in 1997. The HHRA Tech Memo for Site 5 soil concluded that the risk drivers and potential chemicals of concern (COCs) remained the same and highlighted any differences from the 1997 HHRA.

Site 5 RI Addendum 5, Remedial Investigation Addendum Report for Site 5 - Fire Training Area Groundwater (OU 2) (Tetra Tech September 2006) presented results and conclusions from RI activities performed by the Navy in response to EPA comments on the revised draft FS for Site 5 groundwater (Tetra Tech, September 2004). The Navy installed five new boreholes and eight new monitoring wells, performed geophysical logging, packer studies, and analysis of groundwater samples to respond to EPA hydrochemistry, hydrogeology and health risk concerns noted in these comments.

The final PRAP for Site 5 Soil (OU 4) (Tetra Tech, June 2006), proposing no further action for soil at Site 5, was presented for public comment at a public meeting held for that purpose on July 11, 2007. Several comments were received from the public during the public meeting, but no additional comments were received during the balance of the public comment period that ran from June 15, 2007 through July 30, 2007. The Record of Decision (ROD) for Site 5 Soil (OU 4) (Tetra Tech, September 2006), was produced, incorporating all comments from regulatory agency reviewers, as well as including comments from the public in the Responsiveness Summary Section. The final OU 4 ROD was signed by the Navy and forwarded to EPA on September 13, 2007 for EPA signature.

### **3.1.6 Site 6 - Abandoned Rifle Range No. 1**

Abandoned Rifle Range No. 1 is located adjacent to Horsham Road near the southwestern corner of the Marine Reserve Compound. The Marine Reserve Training Center building and parking area that was constructed in the mid 1990s now covers virtually all of what is estimated as Site 6.

The range was built in 1942 and consisted of a firing mat and an earthen rampart. The rampart was approximately 1 acre in size. It is not known when the range was closed; however, the second range was not built until 1965, so it is assumed that this site was active until that time. After the site was closed, the rampart was regraded. There are no records indicating if the lead from the fired rounds was removed; therefore, it is assumed that the lead was mixed with the earth from the rampart during the regrading (NEESA, 1986).

EA Engineering performed ESI fieldwork at Site 6 in 1991. Results indicated no apparent threat to health or the environment, and no further action was recommended (EA Engineering, 1992).

PADEP concurred with the Navy recommendation for NFA at this site (PADEP, October 31, 2005). The Navy prepared a summary discussion of review and presented a status update at the scheduled December 19, 2006 Navy Willow Grove IRP Partnering Team Meeting. All available past investigation results, correspondence and notes were summarized and recommendations for future actions were presented for discussion among the team.

Based on discussion at the NAS JRB Willow Grove partnering meeting held at EPA Region 3 in June 2007 between the Navy, EPA and PADEP, the Navy will prepare individual site screening process consensus agreements for No Action at Sites 4, 6 and 7. The consensus agreements will be signed by the Navy BRAC Environmental Coordinator, EPA RPM and PADEP Case Manager.

### **3.1.7 Site 7 - Abandoned Rifle Range. No. 2**

The site is located in the northwestern corner of the facility, west of the north end of Runway 15/33. Construction and operation of the range were similar to Site 6 and consisted of a 1-acre earthen rampart to collect fired rounds of ammunition. The range operated from 1965 until 1977, when the current range located in Building 176 at the Army Reserve Compound was constructed. The rampart, along with the spent ammunition, was regraded in 1977. This area was subsequently used as a landfill for inert materials including clean fill, broken concrete, asphalt, and cinderblocks. In addition, dry wastewater treatment sludge and emulsified oil and grease from on-site oil/water separators were reported to have been buried at the site (NEESA, 1986).

Based on the Extended Site Inspection Report (ESI) (EA, January 1992) combined with the results of the site screening process, the Navy recommended NFA for this Site. PADEP concurred with the Navy recommendation for NFA at this site (PADEP, October 31, 2005). The Navy prepared a summary discussion of review and presented a status update at the scheduled December 19, 2006 Navy Willow Grove IRP Partnering Team Meeting. All available past investigation results, correspondence and notes were summarized and recommendations for future actions were presented for discussion among the team. EPA's BTAG visited Site 7 on March 28, 2007 to review conditions. BTAG did not recommend further investigation or action at this site.

Based on discussion at the NAS JRB Willow Grove partnering meeting held at EPA Region 3 in June 2007 between the Navy, EPA and PADEP, the Navy will prepare individual site screening process consensus agreements for No Action at Sites 4, 6 and 7. The consensus agreements will be signed by the Navy BRAC Environmental Coordinator, EPA RPM and PADEP Case Manager.

### **3.1.8 Site 8 - Building 118-Abandoned Fuel Tank**

The site consists of a former underground 500-gallon heating fuel tank located approximately 50 feet north of Building 118. The tank was placed in service in 1959 and was abandoned in place in 1980 when it was replaced with a 290-gallon above ground tank. The tank contained only No. 2 heating fuel and serviced Building 118. In 1980, oil was observed seeping into the basement of Building 118. This occurred on an intermittent basis and the oil was removed after each occurrence. The tank was

investigated as a result of the seepage; the tank was empty and soils in the excavation around the tank did not indicate the presence of released materials; however, the fill and riser pipes were removed and the tank was buried in place (NEESA, 1986).

PADEP issued a notice of agreement (PADEP, October 31, 2005) with the Navy recommendation for NFA at Site 8 (Building 118 Abandoned Fuel Tank) under Pennsylvania storage tank regulations (Act No. 32; P.L. 169 and PA Code Title 25, Chapter 245). EPA sent a letter agreeing that the site had non-CERCLA issues and can be closed out from a CERCLA perspective (EPA, October 4, 2006).

### **3.1.9 Site 9 - Steam Plant Building 6 Tank Overfill**

When the main steam plant (Building 6) was converted from coal to oil in 1969-70, spill containment for fuel oil was not constructed. In 1978, a fuel oil supplier delivered No. 2 fuel oil to a filled tank while leaving the delivery truck unattended. The fuel backed up through the vent pipe, and approximately 3,000 to 5,000 gallons of fuel oil were released. The spill was located in the area between Building 6 and Building 114. This area is now bermed to contain spills resulting from fuel delivery.

The NAS JRB Willow Grove fire department responded to the spill event and flushed the fuel with water. Runoff was directed to drainage swales downstream of the steam plant. The spill was directed toward the Air Reserve Facility's detention basin on the northern side of the facility. The basin was equipped with oil spill containment devices. The total affected area was less than 1 acre (NEESA, 1986).

PADEP issued a notice of agreement (PADEP, October 31, 2005) with the Navy recommendation for NFA at Site 9 (Steam Plant Building 6 Tank Overfill) under Pennsylvania storage tank regulations (Act No. 32; P.L. 169 and PA Code Title 25, Chapter 245). EPA sent a letter agreeing that the site had non-CERCLA issues and can be closed out from a CERCLA perspective (EPA, October 4, 2006).

### **3.1.10 Site 10 - Navy Fuel Farm**

Site 10 is located south of the Air Reserve facility along the north side of Privet Road. The site formerly had two partially buried, 210,000-gallon fuel tanks (Tank No. 115 and Tank No. 116) containing aviation fuel. Two smaller underground storage tanks (USTs) were located in the southeastern corner of the site. One tank contained diesel fuel and the other was used for storage of waste oil. The waste oil tank was formerly used for fuel storage. In 1986, Tank No. 115 was overfilled and fuel was released to the ground. The same year during excavation for utility work on the southern side of the site, non-aqueous phase liquid (NAPL) was observed floating on top of the water in the trench. The NAPL was

observed in the area of a dry well located near the northeastern corner of Building 81, which is located south of the 210,000gallon tanks. The dry well was used to discharge effluent water siphoned from the bottom of the fuel tanks (EA Engineering, 1990). In March 1989, aviation fuel was detected emanating from two patches of dead grass on the west side of Tank No. 115. In 1991 the two main fuel tanks and the waste oil and diesel fuel USTs were removed. Inspection of the waste oil tank during removal revealed that the tank was not intact as holes up to 1 inch in diameter were reported.

In 1995, groundwater remediation pilot systems were being investigated to address the petroleum (aviation fuel) contamination at Site 10 (Navy Fuel Farm) under the Pennsylvania Department of Environmental Protection (PADEP) UST program. The Final Study Report for Product Recovery Pilot System was completed in 1996 (EA, 1996).

In 1998, a light non-aqueous phase liquid (LNAPL) recovery system designed to remediate the fuel spill was installed.

In 2001, the Navy discontinued active operation of the LNAPL recovery system for the jet fuel spill. Quarterly floating product recovery by bailing, or capture by absorption onto recovery "socks" placed in the well continued until January 2003.

PADEP approved the final Work Plan for various fieldwork efforts at Site 10 dated March 2003 (EA, 2003). Field work included installation and sampling of monitoring wells and soil borings to evaluate current site conditions.

A final RI for Site 10 soil was submitted in December 2003 to support no further investigation at this time (EA, 2003).

In September 2004, the Navy submitted the Request for No Further Action for IR Program Site 10 Groundwater (EA, September 2004). PADEP agreed with the Navy that no further remedial action or investigation at this time is appropriate for Site 10 soils or groundwater. However, PADEP noted in their letter (PADEP, April 2004) that groundwater and soil at Site 10 do not meet criteria for unrestricted use and that it may be appropriate to seek full closure under Act 2 if land use changes.

### **3.1.11 Site Screening Area 11 - Aircraft Parking Apron (SSA 11)**

In 1992, during construction of footers for an Air Force building, organic odors were detected by the construction crew. This area is located at the north end of the main runway, between the Navy and Air Force parking aprons. It is suspected that fuel was spilled in this area in the past. Although soil

samples were analyzed and the suspected contaminated soil was excavated, confirmation sampling was not conducted in 1992. Also, the analytical method was not stipulated and the laboratory reporting units were questionable (the samples consisted of soil; however, the reporting units indicated aqueous samples). Therefore, PADEP requested that confirmation soil samples be collected and evaluated to determine if attainment for Act 2 liability protection for closure could be demonstrated for the former excavated area (SSA 11). In addition, PADEP requested that groundwater be sampled downgradient of the site to determine if the petroleum-contaminated soil had affected the groundwater in the area.

PADEP approved the final Work Plan for various fieldwork efforts at suspected "site" 11 (SSA 11) dated March 2003 (EA, 2003). Field work included installation and sampling of monitoring wells and soil borings to evaluate current site conditions to determine if any of the previously reported petroleum contamination remained.

In March 2004 the Navy submitted the final report of PADEP Act 2 soil sampling and analysis (EA, March, 2004) at suspected Navy "site" 11 (SSA 11 - Aircraft Parking Apron). PADEP agreed with the Navy conclusion that this "site" did not meet the criteria necessary to be considered under any program for potential remediation. This "site" has never formally entered either the IR or UST program. It was agreed by PADEP and the Navy that no further action of any kind is required for SSA 11, the suspected "site" 11, former aircraft parking apron (PADEP, April 5, 2004). The Navy received a letter from EPA dated February 12, 2007 indicating concurrence that no further remedial actions are needed for SSA 11.

### **3.1.12 Site Screening Area 12- Drum and Debris Removal Area (SSA 12)**

The Navy contractor RMC removed drums and debris and sampled soil at the EPIC drum and debris site, SSA 12, (the site screening area between Site 2 and Site 5) in 2003. Information from the drum removal and soil sampling report (RMC, July 2003) at SSA 12 was sent to the Navy's contractor Tetra Tech for tabulation, evaluation, and incorporation into a final report of cleanup. However, due to unacceptably high analytical detection limits, comparisons to typical health-based concentrations (e.g., EPA MSCs or PA ACT 2 cleanup levels) did not lead to a clear resolution of the status of the SSA 12 drum removal area.

Based on the inconclusive nature of the soil report for the SSA 12, the Navy contracted Tetra Tech to obtain confirmation samples from this area. The draft Work Plan for Soil Investigation at Site Screening Area 12 (Tetra Tech, May 2007) was submitted for regulatory agency review and comment in May 2007.

## 4.0 SITE RANKING AND SMP SCHEDULES

### 4.1 SITE RANKING

A site ranking methodology was developed by the DoD to rank Defense Environmental Restoration Program (DERP) sites based on the degree of risk posed to human health and the environment. Results of the ranking were used to prioritize sites and focus investigation and remediation efforts. Sites were categorized into High, Medium and Low relative risk groups to assure that investigations of sites currently impacting human or ecological receptors, or with the potential for significant migration from the site, are conducted before sites posing less significant threats. Guidance for this methodology is presented in the Relative Risk Site Evaluation Primer (Appendix B) (United States Department of Defense, 1996).

The ranking system described in Appendix B was used in conjunction with other criteria through a process of "Risk Plus Other Factors" described in the FFA to help prioritize sites for further investigation activities at NAS JRB Willow Grove. Other factors, including planned or potential uses for the Facility, potential human or ecological impacts, regulatory requirements, BRAC requirements, and availability of funding or current funding allocations and proximity of sites to one another also affect site prioritization. The following list presents the status for site investigation and/or remediation activities:

- Site 1 (Decision Process)
- Site 2 (Investigation/Decision Process)
- Site 3 (Investigation/Decision Process)
- Site 4 (Screening Process)
- Site 5 (Feasibility Study/Decision Process)
- Site 6 (Screening Process)
- Site 7 (Screening Process)
- Site 8 (No Further Action Agreement)
- Site 9 (No Further Action Agreement)
- Site 10 (Remediation is complete. No further action unless major land use change occurs)
- SSA 11 - Aircraft parking apron area (No further investigation)
- SSA 12 - Drum and debris removal area (Screening Process)

Historical summaries for major investigative and project activities for each site are provided in Section 3.0. Projected schedules for the sites are presented in this section. These schedules are based on currently available information and are intended to be adjusted periodically during the decision making process or after new data become available. Appendix A presents master schedules showing milestones, up to and

including "remedy in place" (RIP) (also known as "project end date" in the FFA). Primary documents and review cycles planned for each site and SSA are shown in the Appendix A schedules.

## **4.2 SCHEDULING ASSUMPTIONS**

### **4.2.1 Document Preparation and Review Assumptions**

Durations for work plan and draft report preparation activities are based on available site information, site complexity, and the anticipated amount of new data to be generated by future field investigations. The time required for document review varies based on the length and complexity of the document. For purposes of this SMP, documents have been categorized as either primary or secondary. Primary documents are the major deliverables associated with each phase of the remedial process as discussed in Section 2.0. Secondary documents fulfill portions of phased requirements and are assumed to be relatively straightforward in complexity and shorter in length than primary documents. Table 4-1 presents the primary documents for the various remedial process phases and their associated secondary documents. Table 4-2 presents the schedule for completion of review and response to comments for primary and secondary documents.

Time required to complete draft deliverables has been based on historical data for preparation and submittal of similar documents. Estimated schedules will be included in site-specific work plans. These schedules will be adjusted to account for impacts from new data or availability of funding.

Estimated document preparation times for preliminary draft documents are presented in Table 4-3. These durations are the time required to complete various preliminary draft deliverables after completion of field activities. The review and comment process for draft and final documents is discussed in Section 10 (Consultation) of the FFA.

### **4.2.2 Field Investigation and Sample Analysis Validation Assumptions**

The schedule for field investigations includes mobilization/demobilization of all equipment and personnel, including procurement and oversight of subcontractors where required, and conduct all field activities. The schedule also allows for proper handling and disposal of investigation-derived wastes (IDW). The duration of these events is dependent on the number and types of samples collected, role of subcontractors (e.g., drilling and monitoring well installation, surveying, etc.), and accessibility of the site to complete the field activities.

It has been assumed for scheduling purposes that samples will be analyzed and reported using standard 28-day laboratory turnaround time. Data validation activities are scheduled for completion within 21 days of receipt of laboratory data.

#### **4.3 SITE MANAGEMENT PLAN ASSUMPTIONS**

The timely flow of work and report/milestone development durations outlined in this SMP assume that the necessary funding, when requested by the Navy in a timely manner, will be approved by Congress (see Section XXVII - FUNDING of the FFA). This SMP provides the document preparation durations for the NAS JRB Willow Grove sites. Schedules for RI/FS and RD/RA activities shown in Appendix A are compressed to the greatest extent possible by overlapping tasks and reducing redundancy in data collection efforts wherever possible. The degree of dependency between the various tasks and documents determines the extent of overlap. Key dependencies between tasks and related assumptions are:

- Remedial Investigation: Preparation of the preliminary draft RI report is assumed to start once all analytical data are received. Some RI tasks can begin before data are validated.
- Feasibility Study: Preparation of the preliminary draft FS may start as early as 2 months after the start of the RI report, provided there is general consensus between the Navy and the regulators and sufficient funding is available.
- Proposed Plan: Preparation of the preliminary draft Proposed Plan is assumed to start following receipt of EPA and state comments on the draft FS. Selection of the proposed remedial action(s) is dependent on regulatory approval of the recommended alternative(s) presented in the FS.
- Record of Decision: Preparation of the draft ROD is assumed to start after completion of the public comment period on the Proposed Plan. Community acceptance of the Proposed Plan must be considered in the selection of the interim or final remedial action(s).
- Remedial Design: The remedial alternative(s) must be selected prior to initiation of the remedial design; therefore, RD activities will commence following finalization of the ROD.

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## TABLES

**TABLE 1-1  
NAS JRB WILLOW GROVE  
INSTALLATION RESTORATION PROGRAM  
SITE SUMMARY**

<b>SITE</b>	<b>NAME</b>	<b>OPERABLE UNIT(OU)</b>	<b>STATUS</b>
1	Privet Road Compound	Soil - OU 1 Groundwater - OU 3	NFA ROD Signed September 2006 PRAP Pending
2	Antenna Field landfill	Soil - OU 5 Groundwater- OU 9	Draft (OU 5 and OU 9) RI Report Pending
3	Ninth Street Landfill	Soil - OU 6 Groundwater- OU 10	Draft (OU 6 and OU 10) RI Report Pending
4	North End Landfill	----	Preparation of Consensus Document for No Action underway
5	Fire training Area	Soil - OU 4 Groundwater - OU 2	Final NFA PRAP June 2007 Draft FS Comments
6	Abandoned Rifle Range No. 1	----	Preparation of Consensus Document for No Action underway
7	Abandoned Rifle Range No. 2	----	Preparation of Consensus Document for No Action underway
8	Site 8 - Building 118 Abandoned Fuel Tank	---	NFA Agreement
9	Steam Plant Building 6 Tank Overfill	----	NFA Agreement
10	Navy Fuel Farm	----	NFA at this time
SSA 11	Aircraft Parking Apron	---	Eliminated From Consideration
SSA 12	Drum and Debris Removal Area	---	Screening

**TABLE 4-1  
PRIMARY AND SECONDARY DOCUMENTS  
NAS JRB WILLOW GROVE**

Primary Documents	Secondary Documents
Site Screening Process (PA, SI) Work Plans	Health and Safety Plans
Site Screening Process Reports	Non-Time Critical Removal Action Plans
RI/FS and FFS Work Plans	Pilot/Treatability Study Work Plans
Remedial Investigation Reports	Pilot/Treatability Study Reports
FS and FFS Reports	N/A
Proposed Plans	Engineering Evaluation/Cost Analysis Reports
Record of Decision	N/A
Remedial Action Work Plans <ul style="list-style-type: none"> <li>• Remedial Action Sampling Plan</li> <li>• Remedial Action Construction Quality Assurance Plan</li> <li>• Remedial Action Environmental Monitoring Plan</li> <li>• Remedial Design for Land Use Controls (RD for LUCs) (formerly referred to as Land Use Control Implementation Plan (LUCIP))</li> </ul>	Preliminary Conceptual Design or Equivalent
Final Remedial Designs	Well Closure Methods and Procedures
Remedial Action Completion Reports	Prefinal Remedial Designs
Operation and Maintenance Plans	Periodic Review Assessment Reports
Site Management Plan	Removal Action Memoranda
Community Relations Plan	N/A
Long-Term Remedial Action Monitoring Plan	N/A

PA = Preliminary Assessment  
 SI = Site Inspection  
 RI/FS = Remedial Investigation/Feasibility Study  
 FFS = Focused Feasibility Study  
 N/A = Not Applicable

**TABLE 4-2  
DOCUMENT REVIEW AND REVISION  
SCHEDULE  
NAS JRB WILLOW GROVE**

Document	Review Duration	Response Duration <sup>(3)</sup>
Draft Primary or Secondary Document	60 Days <sup>(1)</sup>	60 Days
Draft Final Primary Document	N/A <sup>(3)</sup>	N/A
Final Primary Document	N/A	N/A

N/A = Not Applicable

<sup>(1)</sup> Agency (PADEP, EPA) Review

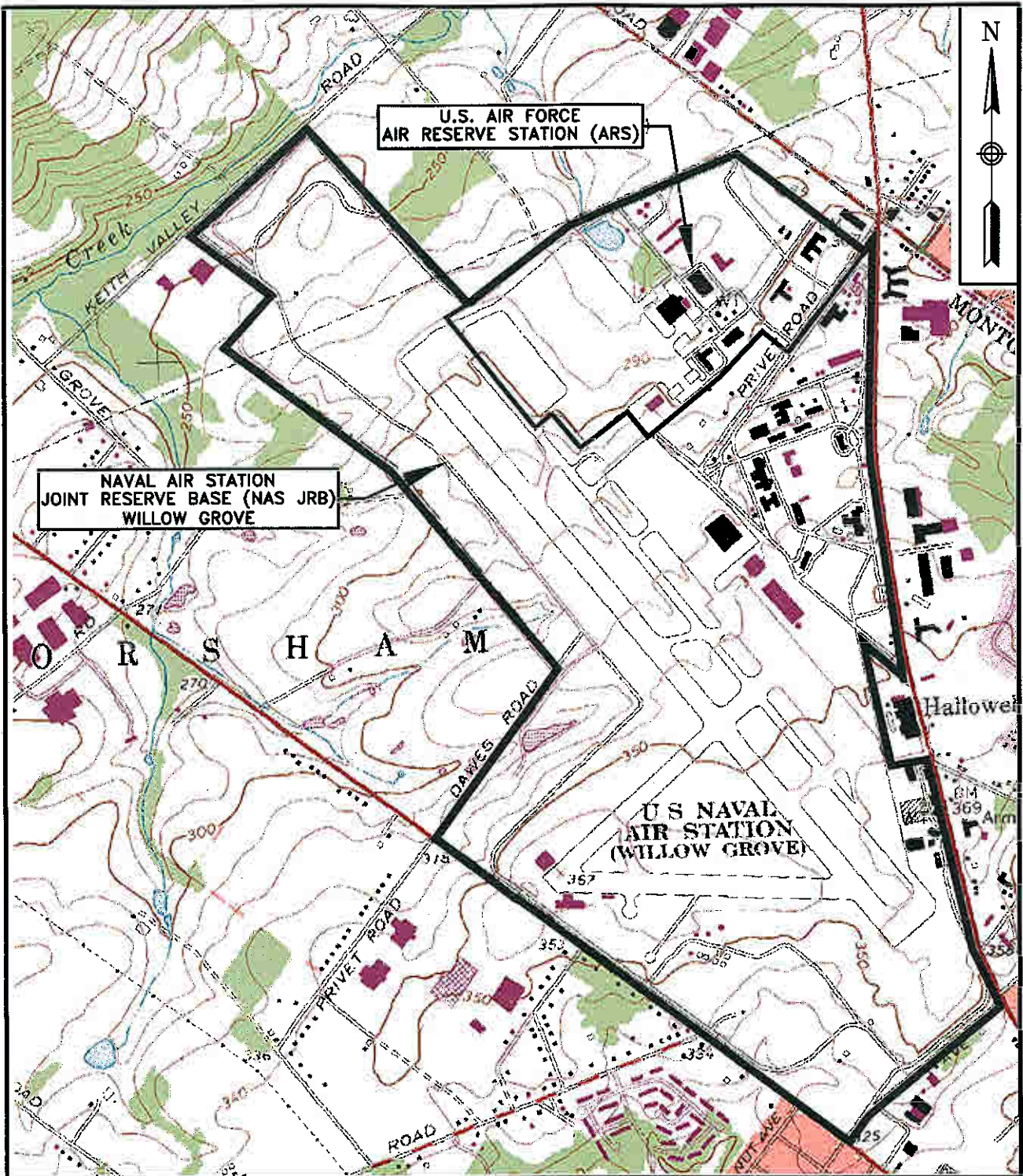
<sup>(3)</sup> Incorporation of comments on Draft Report and submittal of Draft Final Report shall occur within 60 days after close of the comment period on the Draft Report

**TABLE 4-3  
DOCUMENT PREPARATION  
DURATIONS  
NAS JRB WILLOW GROVE**

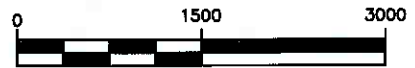
Document	Duration (Months) <sup>(1)</sup>
Site Inspection Report	2
Remedial Investigation Report	4
Feasibility Study	4
Proposed Plan	2
Record of Decision	2
Draft Remedial Design/Work Plan	5
Prefinal Remedial Design/Work Plan	2
Final Design/Work Plan	2
Engineering Evaluation/Cost Analysis, Focused Feasibility Study	1
Removal Action Memorandum	1
30% Removal Action Design	1
90% Removal Action Design	2
Final Removal Action Design	1
Treatability Study Work Plan	2
Treatability Study Report	1

<sup>(1)</sup> Durations represent estimated time required to complete preliminary draft documents after completion of field activities.

## FIGURES



BASE MAP IS A PORTION OF THE AMBLER, PA U.S.G.S. 7.5 MINUTE QUADRANGLE MAP, DATED 1963, PHOTOREVISED IN 1983.



TETRA TECHNUS, INC.

FACILITY LOCATION MAP  
 NAS JRB WILLOW GROVE  
 WILLOW GROVE, PENNSYLVANIA

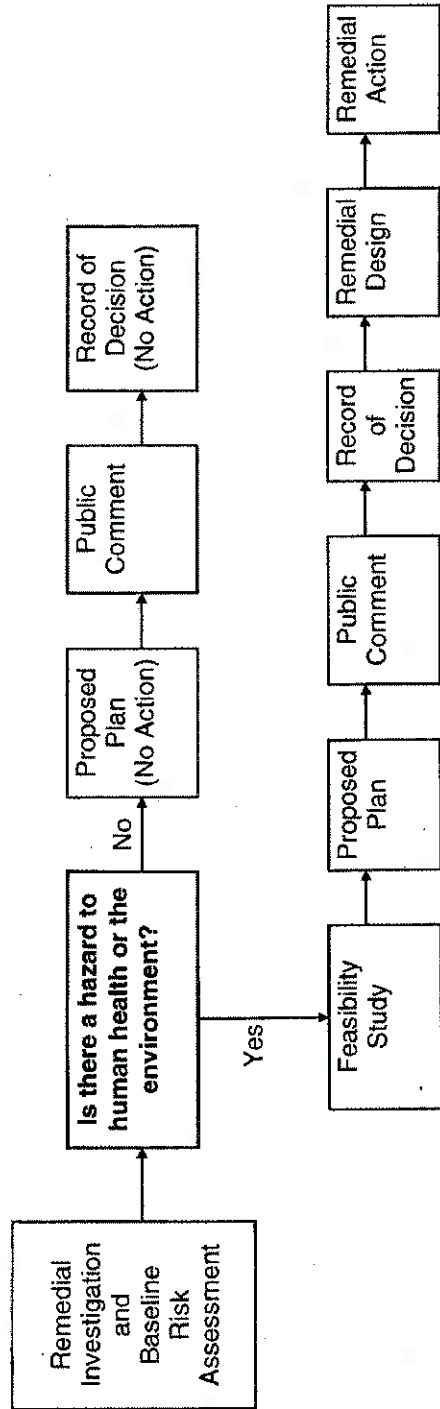
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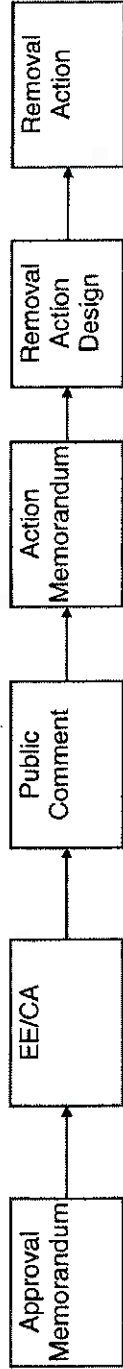
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FIGURE NUMBER FIGURE 1

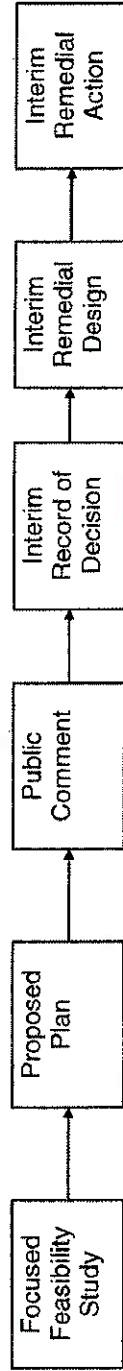
FIGURE 2-1  
RI/FS PROCESS

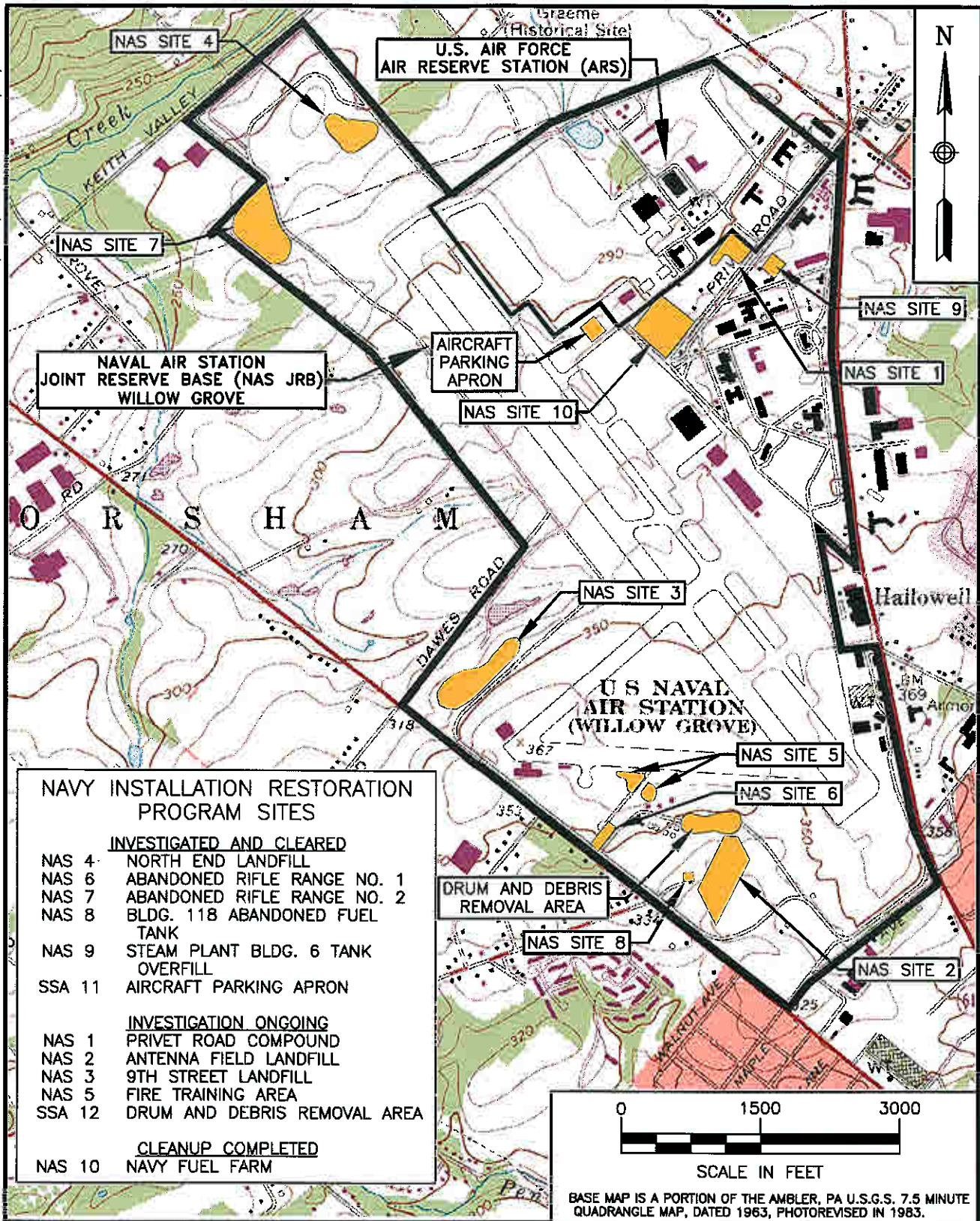


**FIGURE 2-2**  
**NON-TIME-CRITICAL REMOVAL ACTION PROCESS**



**FIGURE 2-3**  
**INTERIM REMEDIAL ACTION PROCESS**





**NAVY INSTALLATION RESTORATION PROGRAM SITES**

INVESTIGATED AND CLEARED

- NAS 4 NORTH END LANDFILL
- NAS 6 ABANDONED RIFLE RANGE NO. 1
- NAS 7 ABANDONED RIFLE RANGE NO. 2
- NAS 8 BLDG. 118 ABANDONED FUEL TANK
- NAS 9 STEAM PLANT BLDG. 6 TANK OVERFILL
- SSA 11 AIRCRAFT PARKING APRON

INVESTIGATION ONGOING

- NAS 1 PRIVET ROAD COMPOUND
- NAS 2 ANTENNA FIELD LANDFILL
- NAS 3 9TH STREET LANDFILL
- NAS 5 FIRE TRAINING AREA
- SSA 12 DRUM AND DEBRIS REMOVAL AREA

CLEANUP COMPLETED

- NAS 10 NAVY FUEL FARM

0 1500 3000



SCALE IN FEET

BASE MAP IS A PORTION OF THE AMBLER, PA U.S.G.S. 7.5 MINUTE QUADRANGLE MAP, DATED 1963, PHOTOREVISED IN 1983.



TETRA TECH NUS, INC.

**SITE LOCATION MAP  
NAS JRB WILLOW GROVE  
WILLOW GROVE, PENNSYLVANIA**

SCALE AS NOTED

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FIGURE NUMBER  
FIGURE 3-1

**APPENDIX A**

**MASTER SCHEDULES FOR ACTIVE REMEDIAL RESPONSE ACTIVITIES**

**(SEE LATEST SCHEDULES FROM QUARTERLY TEAM/PARTNERING MEETING)**

**APPENDIX B**  
**RELATIVE RISK SITE EVALUATION PRIMER**



Office of the Deputy Under Secretary of Defense  
(Environmental Security)

## Defense Environmental Cleanup Program Fact Sheet

### The Relative Risk Site Evaluation Concept

#### Introduction

The Department of Defense (DoD) considers environmental restoration as an integral part of its daily mission activities. At installations around the country, environmental restoration activities are underway to address contamination resulting from past DoD operations. Environmental analysis and cleanup activities address a wide variety of sites contaminated with fuels, solvents, chemicals, heavy metals, and common industrial materials.

Given the large number of sites to be addressed and limitations on money and people to work on these sites each year, DoD believes that a risk-based approach should be applied to work sequencing at active military installations, Base Realignment and Closure (BRAC) installations, and formerly used defense properties using relative risk as a key factor. The relative risk site evaluation framework described in this fact sheet provides a means of helping accomplish this objective.

The framework for evaluating site relative risk was published in September 1994, in the *Relative Risk Site Evaluation Primer (Interim Edition)* which contained instructions for performing relative risk site evaluations at sites across DoD. A revised edition of the Primer was issued in June 1996.

#### Definition of Relative Risk Site Evaluation

The relative risk site evaluation framework is a methodology used by all DoD Components to evaluate the relative risk posed by a site in relation to other sites. It is a tool used across all of DoD to group sites into high, medium, and low categories based on an evaluation of site information using three factors: the contaminant hazard factor (CHF), the migration pathway factor (MPF), and the receptor factor (RF). Factors are based on a quantitative evaluation of contaminants and a qualitative evaluation of pathways and human and ecological receptors in the four media most likely to result in significant exposure—groundwater, surface water, sediment, and surface soils. A representation of this evaluation concept is presented in Figures 1 and 2. Figure 1 also depicts possible opportunities for stakeholder input into the technical evaluation.

The relative risk site evaluation framework is a qualitative and easy to understand methodology for evaluating the relative risks posed by sites and should not be equated with more formal risk assessments conducted to assess baseline risks posed by sites. It is a tool to assist in sequencing environmental restoration work (i.e., known requirements such as remedial investigation or cleanup actions) to be done by a DoD Component. It is designed to handle the broad range of sites that exist at DoD installations and the broad range of data available. The grouping of sites into high,

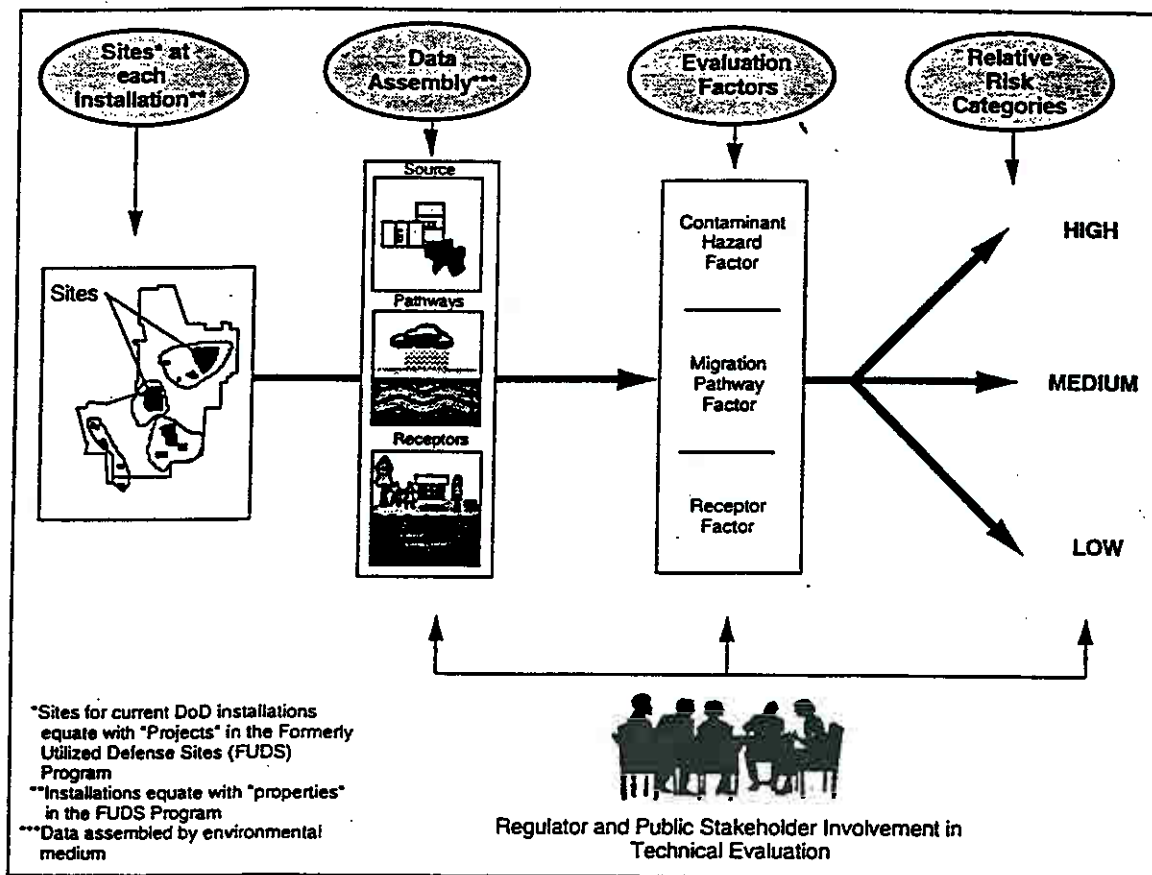


Figure 1. Relative Risk Site Evaluation Concept Summary

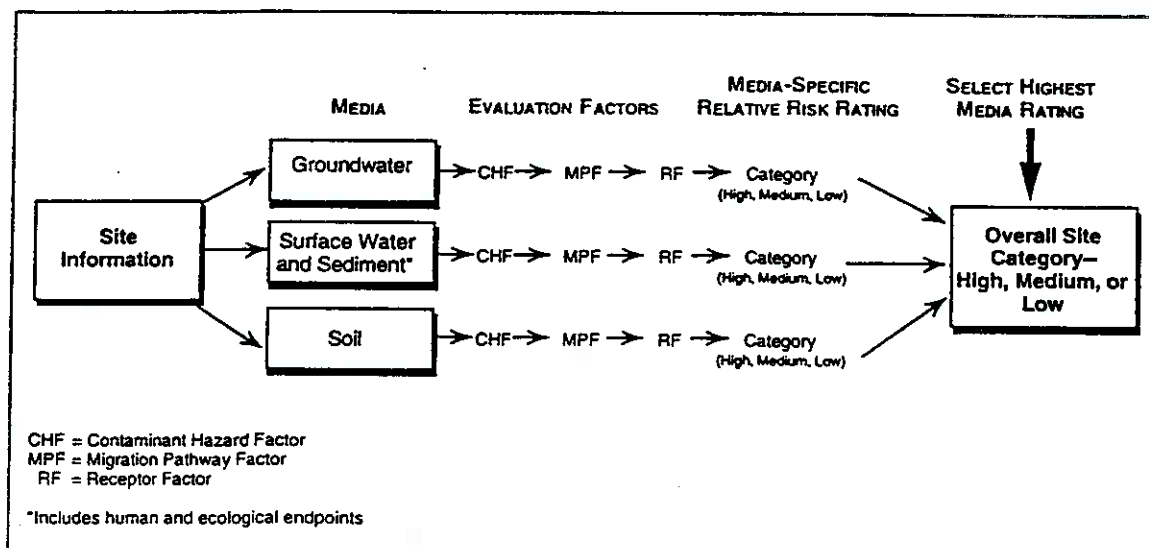


Figure 2. Flow Diagram of the Relative Risk Site Evaluation Framework

medium, or low relative risk categories is not a substitute for either a baseline risk assessment or health assessment; it is not a means of placing sites into a Response Complete/No Further Action category; and it is not a tool for justifying a particular type of action (e.g., the selection of a remedy).

Use of the relative risk site evaluation framework is restricted to environmental restoration sites and does not extend to unexploded ordnance (UXO) removal, building demolition/debris removal (BD/DR), potentially responsible party (PRP) activities, or compliance activities.

### Relative Risk and Funding Decisions

Relative risk is not the sole factor in determining the sequence of environmental restoration work, but it is an important consideration in the priority setting process. It should be factored into all priority setting decisions, and should be discussed with regulators and public stakeholders in the environmental restoration process.

The actual funding priority for a site is identified after relative risk information is combined with other important risk management considerations (e.g., the statutory and regulatory status of a particular installation or site, public stakeholder concerns, program execution considerations, and economic factors). These additional risk management considerations can result in a decision to fund work at a site that is not classified as a high relative risk. DoD Components have each developed guidelines for combining relative risk and risk management considerations as part of their planning, programming, and budgeting process.

The relative risk site evaluation framework does not address the question of whether work is necessary at a site; it only provides information for use in helping to determine the general sequence in which sites will be addressed. At the DoD headquarters level, it

also provides a framework for planning, programming, and budgeting requirements, a topic discussed below.

### Requirements for Relative Risk Site Evaluations

Relative risk site evaluations are required for all sites at active military installations, BRAC installations, and formerly used defense properties that have future funding requirements that are not classified as (1) having "all remedies in place," (2) "response complete," (3) lacking sufficient information, or (4) abandoned ordnance. These four situations are discussed in the following four paragraphs.

Relative risk site evaluations are not required (NR) for sites classified as having all remedies in place (RIP) even though they may be in remedial action operation (RAO) or long-term monitoring (LTM). A RIP determination requires that remedial action construction is complete for a site.

Relative risk site evaluations are not required (NR) for sites classified as response complete (RC). Sites classified as RC are those where a DoD Component deems that no further action (NFA) is required with the possible exception of LTM. An RC determination requires that one of the following apply: (1) there is no evidence that contaminants were released at the site, (2) no contaminants were detected at the site other than at background concentrations, (3) contaminants attributable to the site are below action levels used for risk screening, (4) the results of a baseline risk assessment demonstrate that cumulative risks posed by the site are below established thresholds, or (5) removal and/or remedial action operations (RAOs) at a site have been implemented, completed, and are the final action for the site. Only LTM remains.

Relative risk site evaluations should be based on the information currently available on contaminants, migration pathways, and receptors. Sites lacking sufficient information

for the conduct of a relative risk site evaluation should be given a "Not Evaluated" designation and should then be programmed for additional study, a removal action if warranted, or other appropriate response action, including deferral, before they are evaluated.

Sites comprised solely of abandoned ordnance are not subject to the relative risk site evaluation described in this Primer. Such sites should be evaluated using a separate risk procedure, which is discussed in the management guidance cited above (Office of the Under Secretary of Defense [Environmental Security], 1994).

#### **Implementation of the Relative Risk Site Evaluation Framework**

DoD's goal is to conduct relative risk site evaluations at the field level with the involvement of the regulators and public stakeholders (see Figure 1). The technical evaluation of sites using the evaluation framework can serve as a basis for discussion and negotiation with regulators and public stakeholders. In particular, regulators and public stakeholders can help identify receptors, and can make judgments about the extent of contaminant migration in various environmental media at a site. Where they exist, Restoration Advisory Boards (RABs) are an excellent forum for obtaining public stakeholder input on these aspects of site relative risk. Other opportunities for public stakeholder involvement may also be appropriate. Regulators and public stakeholders should always be given the opportunity to participate in the development and review of relative risk site evaluation data before the data is used in planning and programming.

#### **Management Uses of Relative Risk Information**

DoD and DoD Components are using the relative risk site evaluation framework as a tool to help sequence work at sites and as a headquarters program management tool. As a

program management tool, the framework is being used by DoD and DoD Components to periodically identify the distribution of sites in each of three relative risk categories—high, medium, and low. A series of discrete relative risk site evaluations provides headquarters program managers with a macro-level view of changes in relative risk distributions within DoD over time.

The relative risk site evaluation framework and resulting data also provide DoD with a basis for establishing goals and performance measures for the environmental restoration program. In this regard, DoD has established goals for all DoD Components to reduce relative risk at sites in Defense Environmental Restoration Account (DERA) and BRAC programs or to have remedial systems in place where necessary for these sites, within the context of legal agreements. DoD and DoD Components are tracking progress towards these relative risk reduction goals as one of several program measures of merit (MOMs) at the headquarters level. Another MOM tracks the number of sites where cleanup action has been taken and relative risk has been reduced in one or more media. Resultant information is used to provide the necessary feedback to develop and adjust program requirements and budget projections, as well as to assess whether established goals reflect fiscal reality.

#### **For More Information**

At the Installation, contact

At DoD Headquarters, contact the Office of the Deputy Under Secretary of Defense (Environmental Security - Cleanup) at 703/697-7475.



ACQUISITION AND  
TECHNOLOGY

THE UNDER SECRETARY OF DEFENSE  
3010 DEFENSE PENTAGON  
WASHINGTON, D.C. 20301-3010



JUL 09 1996

MEMORANDUM FOR ASSISTANT SECRETARY OF THE ARMY  
(INSTALLATIONS, LOGISTICS, AND THE ENVIRONMENT)  
ASSISTANT SECRETARY OF THE NAVY  
(INSTALLATIONS AND ENVIRONMENT)  
ASSISTANT SECRETARY OF THE AIR FORCE  
(MANPOWER, RESERVE AFFAIRS, INSTALLATIONS  
AND ENVIRONMENT)  
DIRECTOR, DEFENSE LOGISTICS AGENCY (D)

SUBJECT: Revised Relative Risk Site Evaluation Primer

I am pleased to provide you with a camera ready copy of the revised Relative Risk Site Evaluation Primer for printing and distribution. This revised edition of the Primer replaces the Relative Risk Site Evaluation Primer (Interim Edition, Summer 1994) and will be the basis for future relative risk site evaluations starting with the Fall 1996 data call that supports the FY 1996 Annual Report to Congress. Also, attached is a table that summarizes changes that have been made in the Primer.

The revised Primer contains enhanced technical guidelines for performing relative risk site evaluations which have been added in response to Department initiatives, as well as questions and comments received from Component field elements, regulatory agencies, and public stakeholders. The Interservice Relative Risk Work Group, supported by your staff, has produced a product that is comprehensive and filled with valuable information about implementation and use of relative risk site evaluation in the restoration program.

Relative risk site evaluations have become an integral part of the Department's risk management strategy. The site evaluations are a tool to help sequence work and to provide a basis for establishing goals and performance measures, as well as to assess progress and whether established goals reflect fiscal reality.

Attachment  
As Stated

*Paul Kaminski*  
Paul G. Kaminski



# Department of Defense



Office of the Deputy Under Secretary of Defense  
(Environmental Security)

## Relative Risk Site Evaluation Primer

A Resource for Remedial Project Managers and  
Other Interested Parties



Implementing the Relative Risk Concept in  
Management Guidance for the Execution of the  
Defense Environmental Restoration Program (DERP)

ENCLOSURE (1)

Summer 1996 (Revised Edition)