

**WORK PLAN
FOR
REMEDATION OF THE PRIVET ROAD SITE
WILLOW GROVE NAVAL AIR STATION
WILLOW GROVE, PENNSYLVANIA**

Issued:

MAY 1999

Prepared for:

**NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
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**Contract No. N62472 - 94 - D - 0398 (Remedial Action Contract)
Delivery Order No. 0022**

Revision
0

Date
5/27/99

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Pages Affected:
0

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1.0 INTRODUCTION

Foster Wheeler Environmental Corporation (FWENC) has been contracted by the Northern Division, Naval Facilities Engineering Command to provide remedial action at Site 1 located at the Naval Air Station (NAS) Willow Grove, Pennsylvania. This Work Plan has been prepared to satisfy requirements of Remedial Action Contract Number N62472-94-D-0398, Delivery Order #0022 for removal of polychlorinated biphenyls (PCBs) contaminated soil at Site 1 and the Site 1 Spot Locations located outside the main excavation area.

This remedial action is required to remove soils contaminated with PCBs at the Privet Road Compound in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300 and as identified the "Action Memorandum" dated March 1999. A copy of the "Action Memorandum" is included in Attachment A. Additionally, Attachment A contains the site location map and provides locations for Site 1, the TSCA and Spot Location areas.

This Work Plan presents the proposed implementation of the remediation project. Site description information is presented in Section 2.0. The implementation of on-site activities is provided in Section 3.0. Field sampling and analytical procedures and requirements are discussed in Section 4.0. Project management is presented in Section 5.0. Regulatory compliance is addressed in Section 6.0.

The Health and Safety Plan (HASP) is being prepared for submittal to the Navy under separate cover.

2.0 SITE DESCRIPTION

2.1 Project Location

The Willow Grove NAS is located approximately 25 miles north of Philadelphia, PA, in Willow Grove, Montgomery County, PA. The NAS property is bordered to the north by the intersection of Keith Valley Road, County Line Road and Graeme State Park. Easton Road (Route 611) borders the east and Horsham Road (Route 463) borders the southwest side of the NAS property.

2.2 Site 1

Site 1 is located adjacent to the Bowling Alley on Privet Road. The area measures approximately 70-feet wide by 155-feet in length. The area contains two (2) Honey Locust trees which will be removed during the excavation effort. Additionally, analytical data has indicated that the main area contains one area in which the PCB levels exceeded 50 ppm. This material will be considered a TSCA waste.

Site 1 also contains 6 spot locations located outside the main excavation area which contain elevated levels of PCBs which require excavation and off-site disposal. These areas are located to the north, east and south of the Bowling Alley.

3.0 SCOPE OF WORK

3.1 Mobilization

FWENC personnel shall include a Site Superintendent, Site Health and Safety Officer and craft workers.

During the mobilization phase, FWENC shall obtain the necessary "Dig Safe" permits from NAS personnel and the local utilities.

Additionally during the mobilization phase, FWENC shall have a registered surveyor "layout" the area of concern at Site 1 and the six Spot Location areas. The survey crew shall also layout the one area identified as potentially containing TSCA waste. A 20-foot by 20-foot area around former sample point 01SB03 will be identified as the TSCA area of concern.

3.2 Site Preparation

FWENC shall conduct pre-excavation soil sampling for the purposes of waste characterization at Site 1. The proposed area of excavation was divided into five equal sampling grids, covering approximately 3,000 square feet each. A 5-point composite soil sample was collected from each area and analyzed for the full PA Form U parameters. A sample shall also be collected from each of the Spot Location areas for the purposes of waste characterization. The analysis will be submitted to the WMX G.R.O.W.S facility for acceptance of the non-TSCA material.

Additionally, one soil sample shall be collected from the 20-foot by 20-foot TSCA area for the purposes of waste characterization. The analysis shall be submitted to the WMX Model City, NY facility for acceptance as TSCA waste.

Site preparation activities shall also include the establishment of work zones which meet the specification requirements for the excavation of PCB contaminated soils. Work zones will be delineated using orange construction fencing and or caution tape (banner guard). A temporary personnel decontamination station will be established at the perimeter fencing. Since the site topography is relatively flat, no regrading, diversion berms, or swales will be required to prevent infiltration or run-off of storm water. FWENC shall install the required erosion barrier (silt fence) around the perimeter of the area of excavation prior to the start of the removal effort.

Additionally, the two Honey Locust trees located within the foot print of Site 1 will be removed during the site preparation phase. The trees will be cut into manageable pieces and placed adjacent to the excavation area for future use.

3.3 Execution

3.3.1 Site 1

During the removal effort at Site 1, FWENC shall utilize a hydraulic excavator, CAT 300 or equivalent, to direct load the transport vehicles for disposal of the PA Residual waste soil at the WMX G.R.O.W.S facility in Morrisville, PA or the WMX Tullytown, PA facility.

Transport vehicles shall be staged along the perimeter of the excavation area during the loading phase of the operation. FWENC personnel will place visquene on the ground at the loading area. The transport vehicles will back onto the visquene for loading. Any material spilled during the loading operation shall be cleaned up immediately. Since the levels of PCBs in the soil are less than 50 ppm, the use of box liners will not be necessary. However, the transport vehicles will be equipped with sealed tailgates to prevent the spillage of any material. Additionally, all transport vehicles shall be tarped prior to leaving the site.

The area shall be excavated to a depth of two feet. Upon completion of the excavation effort, the Navy's Clean Contractor shall conduct on-site analytical testing of the sidewall and bottom of the excavation area. The Clean Contractor shall collect the soil samples in accordance with the PADEP ACT II guidance document. The Clean Contractor shall utilize an immunoassay method or equivalent to generate the analytical data.

Once completed, the immunoassay data will be utilized to determine if additional excavation shall be required or confirmatory soil sampling shall be conducted. In the event additional soil excavation is required, soil shall only be removed as identified, by the immunoassay analytical testing, as having a PCB concentration of greater than 1 ppm. An area 10-foot by 10-foot by 1-foot deep shall be removed around sample point identified as having a PCB concentration greater than 1 ppm. Once the soil has been removed, the Clean Contractor shall re-sample the area and analyze the samples using the immunoassay method. In the event the area fails to meet the 1 ppm cleanup objective, FWENC shall temporarily suspend the excavation and review the analytical results with the Navy. Excavation shall only proceed upon Navy directive.

If the immunoassay analytical data indicates the cleanup objectives meet the cleanup criteria of less than 1 ppm, FWENC shall collect confirmatory soil samples in accordance the PADEP ACT II guidance. FWENC shall forward the confirmatory analytical data to the Navy for review prior to backfilling the area.

3.3.2 TSCA Area

FWENC shall remove the soil from the TSCA Area located within Site 1 utilizing a hydraulic excavator. The soil, from the 20-foot by 20-foot area, shall be loaded directly onto off-site transport vehicles for disposal at the WMX Model City, New York, facility.

Transport vehicles shall be staged along the perimeter of the excavation area during the loading phase of the operation. FWENC personnel will place visquene on the ground at the loading area.

The transport vehicles will back onto the visquene for loading. Any material spilled during the loading operation shall be cleaned up immediately. Since the levels of PCBs in the soil are greater than 50 ppm, box or bed liners will be utilized. The transport vehicles will be equipped with sealed tailgates to prevent the spillage of any material. Additionally, all transport vehicles shall be tarped prior to leaving the site.

Upon completing the removal effort in the TSCA area, a dry decontamination shall be performed on the bucket of the excavator prior to initiation of any additional excavation efforts. FWENC does not anticipate traveling through the TSCA area with the tracks of the excavator.

Once the TSCA area has been completed, soil sampling shall be performed in accordance with Section 3.3.1.

3.3.3 Spot Locations

FWENC shall excavate the six spot locations outside the main area of excavation in the same manner as identified in Section 3.3.1. Each 4-foot by 4-foot Spot Location shall be excavated to a depth of 2-feet. Once the excavation effort has been completed, soil sampling shall be performed in accordance with Section 3.3.1.

3.3.4 Site Restoration

Once analytical analysis indicates the cleanup objectives have been achieved, the area will be backfilled with clean material from an off-site barrow source to within 6-inches of existing grade. The remaining 6 inches will be backfilled with topsoil and seeded.

4.0 FIELD SAMPLING AND ANALYSIS PLAN

4.1 Introduction

The remediation activities require field sampling and laboratory analysis for the decision making process. This section describes the program which ensures the chemical data meets the requirements for completeness, precision, accuracy, representativeness, comparability, dependability and legal defensibility presented in the interim guidance document, *Navy Installation Restoration Laboratory Quality Assurance Guide*, Naval Facilities Engineering Service Center, February 1996.

4.2 Sampling Procedures

4.2.1 Sample Tracking System

Each sample shall be designated by an alpha-numeric code which shall identify the site, sample type and contain a sequential sample number. The site code shall be the initials for the site name, in this case: Willow Grove Naval Air Station (WG) and up to three additional letters/numbers to

designate a specific location. Sample types shall be identified by a two-letter code, while each sample number shall be identified by a two-digit number.

FIRST SEGMENT	SECOND SEGMENT	
WGAAA	AA	NN
Site/Location	Sample Type	Sample Number
Symbol Definition:	A = Alphabetic	
	N = Numeric	

Sample Type:

WC = Waste Characterization

CS = Confirmatory Samples

For example, the confirmatory sample to be collected would be labeled WGWC01

4.2.2 Sampling Objectives

Data generated by implementation of the field sampling and analysis plan are expected to be used to characterize waste streams (both solid and liquid) for off-site disposal and to perform confirmatory sampling.

Table 4-1 presents the analytical testing requirements. Table 4-2 provides the analytical methodology and bottleware. A description of the sample material and locations shall be submitted to the Navy with the analytical results. Air sampling and other health and safety related sampling is discussed in the HASP.

TABLE 4-1 WILLOW GROVE NAVAL AIR STATION DELIVERY ORDER NO. 0022 ANALYTICAL TESTING REQUIREMENTS			
Sample Type	Location/Objective	Analytical Parameters	Estimated Sample Quantity
Soil sample from each area	Characterize soil for off-site disposal.	Pennsylvania Form U ⁽¹⁾	10
Water samples from decontamination pad.	Characterize water for off-site disposal.	PCBs/Pesticides	2

Notes:

- (1) Pennsylvania Form U Analysis consists of the following analyses: TCLP organics, pH, Ignitability, Reactive Cyanide and Sulfide, Paint Filter Test, PCBs, Total Solids, Total Volatile Solids and Oil and Grease. In addition, ASTM Leach (D-3987-85) will be conducted and the following analyses will be performed on the leachate sample; Chemical Oxygen Demand, Total Solids, Ammonia-N and Oil and Grease.

TABLE 4-2
WILLOW GROVE E NAVAL AIR STATION
DELIVERY ORDER NO. 0022
SUMMARY OF ANALYTICAL TESTING PROCEDURES

Sampling Locations	Analytical Method	Sample Matrix (Number)	Sample Container	Sample Preservative
Soil excavation areas	Pennsylvania Form U ^(1 & 2)	Soil (10)	1 - 40 oz. jar 1 - 16 oz. jar 1 - 8 oz. jar	Cool to 4 °C
Decontamination water	PCBs/Pesticides SW846 8082	Water (2)	1 - 16 oz. jar	Cool to 4°C

Notes:

- (1) Pennsylvania Form U Analysis⁽²⁾ and Asbestos SW-846 1311 followed by 8260, 8270, 8150 and 6010/7471. USEPA 150.1, SW-846 Section 7.3, 9095 and 8080. USEPA 160.3, 160.4 and 413.1 ASTM D-3987-85 followed by USEPA 410.1, 160.3, 350.1 and 413.1.
- (2) Pennsylvania Form U Analysis consists of the following analyses: TCLP organics, pH, Ignitability, Reactive Cyanide and Sulfide, Paint Filter Test, PCBs, Total Solids, Total Volatile Solids and Oil and Grease. In addition, ASTM Leach (D-3987-85) will be conducted and the following analyses will be performed on the leachate sample; Chemical Oxygen Demand, Total Solids, Ammonia-N and Oil and Grease.

4.3 Standard Operating Procedures

Standard operating procedures (SOPs) for sampling of solids (soils) are provided in Attachment B.

4.4 Quality Assurance/Quality Control (QA/QC)

4.4.1 Sample Shipping and Packaging

Chain-of-Custody forms, sample labels, custody seals and other sample documents shall be completed as specified in the above-referenced manual. All entries shall be made in permanent ink. If errors are made when completing any of these forms, the error shall be crossed out with a single line, initialed, and dated by the sampler.

Each sample shall be labeled with the following information:

1. Site name
2. Field identification or sample station number
3. Date and time of sample collection
4. Designation as a grab or composite sample
5. Sample type (matrix)
6. The signature of the sampler
7. Sample preservation and preservative used
8. The general types of analyses to be conducted.

Each environmental sample shall be properly identified and sealed in a polyethylene (PE) bag. The bag shall then be placed in a fiberboard cooler which has also been lined with a large PE bag. The samples shall be packed with sufficient ice (sealed in PE bags) to cool the samples to 4° C. Enough non-combustible adsorbent cushioning material shall be filled to minimize the possibility of container breakage. The large PE bag in the cooler shall be sealed and the container closed. Custody seals and nylon strapping tape shall be affixed to the cooler. All samples shall be shipped within 24 hours of collection via a common carrier. All sample coolers and samples shall be shipped in accordance with Pennsylvania DOT requirements and regulations.

A Chain-of-Custody (COC) record shall be used to record the custody of the samples, and shall accompany the samples at all times. The following information shall be contained on the COC record:

1. Project name
2. Signature of samplers
3. Sampling station number, date and time of collection, grab or composite designation
4. Signatures of individuals involved in the sample transfer (i.e., relinquishing and accepting the samples)
5. Sample matrix
6. Types of analysis to be conducted
7. Sample preservation and preservatives used.

4.4.2 Laboratory Data Reporting

As a minimum, laboratory reports presenting data shall contain the following:

- Title of the project;
- Date report was prepared;
- Name, address and telephone number of the contractor;
- Sample identification numbers;
- Type of sample;
- Date on which analysis was performed;
- Any special observations, circumstances or comments which may be relevant for interpretation of the data; and,
- The signature of the laboratory manager.

Each parameter tested shall include: name of parameter, USEPA or other approved testing procedure references, detection limits, results of analysis and the unit of the reported results.

4.4.3 Records

4.4.3.1 Field Sampling and Monitoring Records

Records of field activities, which shall support the integrity of the samples and field monitoring, shall be entered in a bound logbook with numbered pages. The records shall be dated and signed or otherwise authenticated on the day of entry. The logbook shall document vital information, such as sample source, sampling methods, sample conditions, and field measurements. Any problems encountered and the corrective actions taken in the field shall be documented in the logbook.

An on-site individual shall keep a site logbook which summarizes the daily sampling and monitoring activities. The logbook shall address any specific problems that arose during the day, final resolutions, and their impact on the outcome of the field investigation.

4.4.3.2 Laboratory Records

In addition to the data set deliverables, the laboratory shall maintain records, that shall contain, at a minimum, the following information:

- Copies of relevant analyst notebook pages;
- Copies of relevant instrument logs;
- Raw instrument outputs (chromatograms, ion spectra, absorbance value, etc.);
- QC charts;
- Documentation of Corrective Actions;
- Chain-of-custody information;
- Automated data processing system output and/or calculations;
- Calibration data; and,
- Blank, spike and spike duplicate results.

5.0 PROJECT MANAGEMENT

The project management team shall be responsible for all technical and administrative aspects of the remediation project.

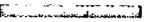
5.1 Project Schedule

Figure 5-1 represents the project schedule.

5.2 Project Staffing Plan

The organization chart for this project is provided in Figure 5-2. The field staff shall consist of a Project Superintendent (PS), the SHSO and craft.

Early Start	Early Finish	Percent Complete	1999		
			MAY	JUN	JUL
JOB C					
PCB AREA					
07JUN99*	08JUN99	0		MOBILIZATION	
09JUN99	10JUN99	0		SITE PREPARATION	
14JUN99	16JUN99	0		SITE 1 EXCAVATION	
16JUN99	16JUN99	0		EXCAVATION OF SPOT LOCATIONS	
16JUN99	18JUN99	0		IMMUNOASSAY TESTING	
17JUN99	17JUN99	0		TSCA EXCAVATION	
21JUN99	28JUN99	0		CONFIRMATION TESTING	
29JUN99	05JUL99	0		SITE RESTORATION	

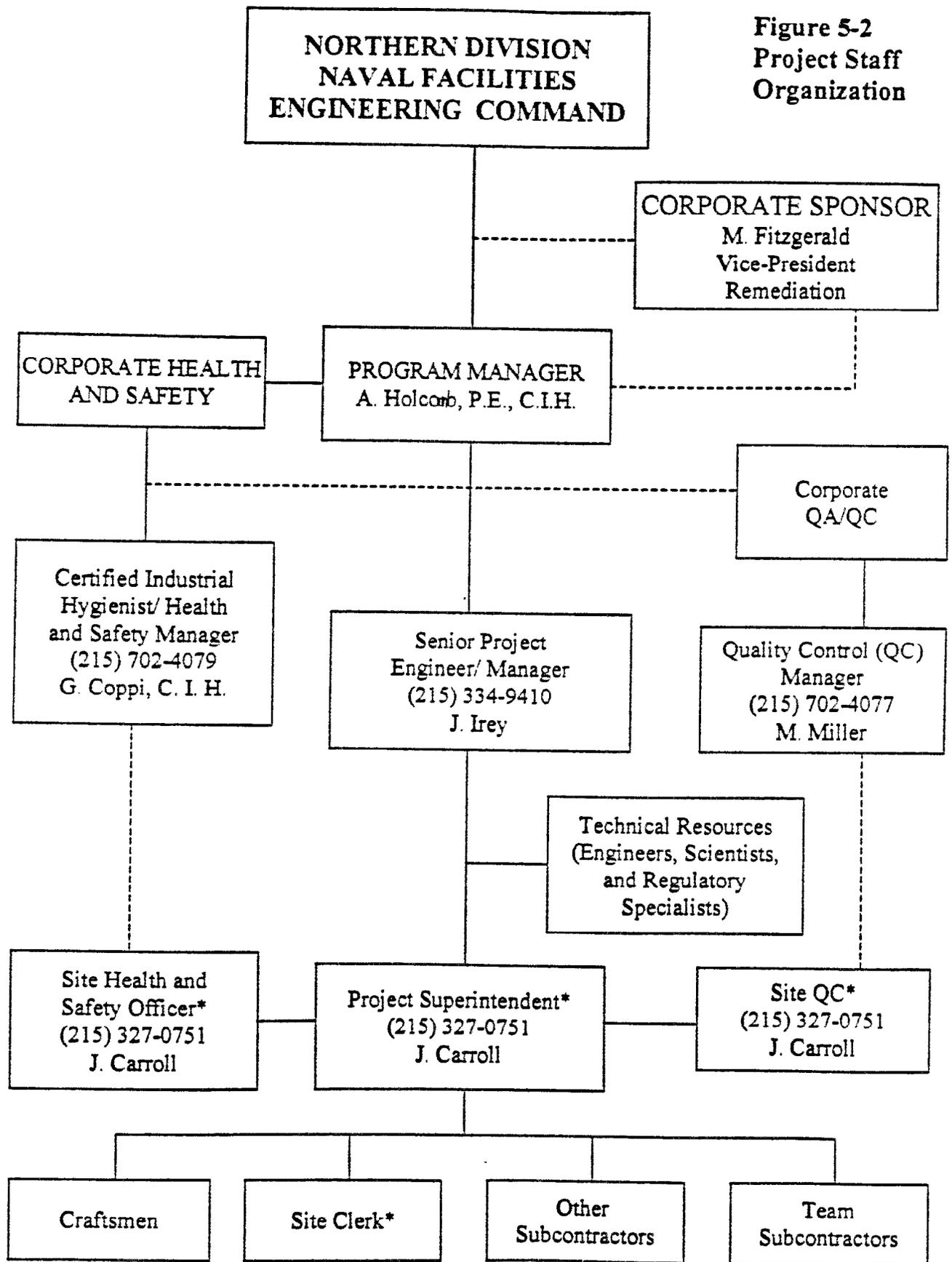
Project Start	24AUG98	 Early Bar
Project Finish	05JUL99	 Progress Bar
Data Date	23APR99	 Critical Activity
Run Date	27MAY99	

WG22

Sheet 1 of 1

NAS - WILLOW GROVE, PA
 DELIVERY ORDER 22
 PRIVET ROAD - PCB AREA

**Figure 5-2
Project Staff
Organization**



*Field Staff

5.2.1 Project Superintendent

Mr. John Carroll is the Project Superintendent (PS) for the project. The PS will coordinate all daily site operations and enforce HASP implementation. Mr. Carroll shall also be responsible for the coordination of all FWENC subcontractors.

5.2.2 Site Health and Safety Officer (SHSO)

Mr. John Carroll is the SHSO for the project. The SHSO will assist the PS in the enforcement of the HASP, air monitoring, sampling, training, and coordination of medical surveillance for all site personnel. The SHSO has a direct reporting line to the PS and a communication line to the Program Health and Safety Manager. The SHSO also has "stop work" authority if unsafe conditions arise.

5.3 Quality Control

5.3.1 Reviewing, Certifying, Approving Authority

The QC organization shall be responsible for reviewing and certifying that submittals are in compliance with the contract requirements. The approving authority shall be Mr. Miller, Quality Control Manager (QCM). The Project Superintendent shall act as the Site Quality Control Representative (SQCR), provide on-site QC support, interact with the QCM, and implement the three phases of Quality Control identified in Section 5.3.2. All submittals shall be accompanied by a transmittal form identifying the submittal package and providing a unique tracking number.

The following items shall be submitted as part of the D.O. 22 Q.C. Program:

- Work Plan
- Health & Safety Plan
- Daily Contractor Quality Control Reports
- Waste Profile
- Waste Manifests
-

5.3.2 Three Phases of Control

The SQCR will perform the three phases of control to ensure that work complies with contract requirements. The Three Phases of Control will adequately cover the following for each definable feature of work. A definable feature of work is a task which is separate and distinct from other tasks and requires separate control requirements.

5.3.2.1 Preparatory Phase

The preparatory phase will be conducted with the SQCR, the superintendent, and the foreman responsible for the definable feature, documenting the results of the preparatory phase actions in the

daily CQC Report. The following will be performed prior to beginning work on each definable feature of work:

- Review each paragraph of the applicable Work Plan sections;
- Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required;
- Review the testing plan and ensure that provisions have been made to provide the required QC testing;
- Examine the work area to ensure that the required preliminary work has been completed;
- Examine the required materials, equipment, and sample work to ensure that they are on hand and conform to the approved shop drawings and submitted data;
- Review the safety plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met, and that required Material Safety Data Sheets (MSDS) are submitted; and
- Discuss construction methods.

5.3.2.2 Initial Phase

When construction crews are ready to start work on a definable feature of work, the initial phase will be conducted with the SQCR, the superintendent, and the foreman responsible for that definable feature of work. The initial segment of the definable feature of work will be observed to ensure that the work complies with contract requirements. The results of the initial phase will be documented in the daily CQC Report. The initial phase will be repeated for each new crew to work on-site, or when acceptable levels of specified quality are not being met. The following will be performed for each definable feature of work:

- Establish the quality of workmanship required;
- Resolve conflicts;
- Review the Health and Safety Plan and the appropriate activity hazard analysis to ensure that applicable safety requirements are met; and
- Ensure that testing is performed by the approved laboratory.

5.3.2.3 Follow-up Phase

The following will be performed for ongoing work daily, or more frequently as necessary, until the completion of each definable feature of work, and documented in the daily CQC Report:

- Ensure the work is in compliance with contract requirements;
- Maintain the quality of workmanship required;
- Ensure that testing is performed by the approved laboratory; and
- Ensure that rework items are being corrected.

5.4 Meetings

5.4.1 Pre-Construction Meeting

Prior to mobilization, the Project Superintendent shall conduct a pre-construction meeting in the ROICC office. The date and time for the pre-construction meeting shall be approved by the ROICC NTR.

5.4.2 Daily Safety Meeting

Prior to starting work, a daily safety meeting will be conducted by the Foster Wheeler Environmental Site Superintendent. All of the day's planned activities will be reviewed with particular attention focused on PPE and risk. All personnel are required to attend the meeting.

6.0 REGULATORY COMPLIANCE

6.1 Regulatory Reporting Compliance

There are no regulatory notifications required for this work.

6.2 Waste Management

Waste materials that are determined to be non-hazardous shall be managed in compliance with Pennsylvania residual waste regulations. If hazardous waste is removed during this project, it shall be managed in accordance with the storage and disposal provisions of Federal and state regulations. Therefore, following identification and classification of the waste materials, an assessment shall be made of the applicability of other Federal and state hazardous waste regulations. Pennsylvania regulations applicable to the conduct of this project are contained in Subpart D, Article III, Hazardous Waste Management, of Title 25 of the Pennsylvania regulations, and include Chapter 261, Criteria, Identification, and Listing of Hazardous Wastes, Chapter 262, Generators of Hazardous Waste, and Chapter 263, Transportation of Hazardous Waste. Applicable Federal regulations are contained in 40 CFR Parts 260-268.

6.2.1 RCRA Hazardous Wastes

On-site management of RCRA hazardous wastes shall be conducted by Foster Wheeler Environmental in accordance with Federal and Commonwealth of Pennsylvania requirements as specified in 40 CFR 262 and 25 Pa. Code Chapter 262. All RCRA hazardous wastes are subject to the above regulations immediately upon generation or excavation. Federal and Pennsylvania requirements for the on-site storage and management of RCRA hazardous wastes shall be managed as follows:

- All hazardous wastes shall be placed in US DOT approved containers for off-site shipment and disposal

- Each container shall be marked with the accumulation start date, which is the date when waste is first placed in the container.
- Each container must be clearly marked "Hazardous Waste" and must identify the waste's major risks (e.g., Toxic,) so that it is clearly visible to employees, emergency response personnel, and the public. Commercially available "Hazardous Waste" labels may be used.
- All stored hazardous wastes shall be removed from the project site for off-site disposal within 90 days of first being accumulated.
- All hazardous waste storage areas shall be marked with signs stating "Hazardous Waste"
- For waste containers containing free liquids, the container storage areas shall have a containment system capable of collecting and holding spills, leaks and precipitation. The containment system shall have an impervious base underlying the containers that is free of leaks, gaps or cracks. The capacity shall be sufficient to contain either the entire volume of the largest container or 10% of the entire volume of all of the containers, whichever is larger. Run-on into the containment system shall be prevented. Spilled or leaked waste and accumulated precipitation shall be removed from the containment system in as timely a manner as necessary to prevent overflow of the containment system.
- For waste containers that do not contain free liquids, a secondary containment system shall not be provided; however, the storage area shall be designed and operated to drain and remove liquid resulting from precipitation or the containers shall be elevated and removed from contact with accumulated precipitation.
- Containers holding reactive or ignitable waste shall be stored at least 50 feet (15 meters) from the property line.
- Each container of hazardous waste shall be marked and labeled in accordance with US DOT requirements under 40 CFR 172.
- Each container of hazardous waste of 110 gallons or less shall be marked in accordance with US DOT requirements under 49 CFR 173.204 with the following:

HAZARDOUS WASTE-FEDERAL LAW PROHIBITS IMPROPER DISPOSAL. If found, contact the nearest police or public safety authority or the Environmental Protection Agency.

Generator name and Address _____
 Manifest Document Number _____

- Waste shall be placed in containers in good condition. If container begins to leak, the contents shall be transferred from the defective container into a good container.

- The containers used shall be made of, or lined with, a material that does not react with, and is compatible with, the waste.
- The containers shall remain closed during storage except when waste is added to or removed from the container.
- The containers shall not be opened, stored, or handled in a manner that shall cause the container to leak.
- The containers shall be labeled to accurately identify their contents.
- The storage area and containers shall be inspected at least weekly to identify leaks and/or deterioration. Inspection reports shall be documented in writing and copies of these reports shall be provided to the Navy ROICC office.
- Incompatible wastes shall not be placed within the same container or in an unwashed container that previously held an incompatible waste or material.
- A container holding a waste that is incompatible with other wastes or materials shall be segregated from the other materials or protected by means of a an impermeable dike, wall, berm or other device
- Upon project closure, all hazardous waste and hazardous waste residues shall be removed from the containment system. The containment system shall be decontaminated and all wastes shall be disposed off-site at a permitted disposal facility.
- All empty containers that once contained RCRA hazardous waste shall be inspected by and certified to be "RCRA empty" prior to off-site disposal.
- Appropriate hazardous training shall be provided to site personnel as per 40 CFR 265.16.
- A Contingency Plan shall be developed to handle any fire, spill, or emergency and appropriate emergency response equipment (spill cleanup materials, fire protection equipment, communication devices and alarms to notify workers of an emergency) shall be present as required under 40 CFR 265 Subparts C & D. This contingency plan shall be written as part of the site specific Health and Safety Plan.

6.2.2 Hazardous & TSCA Waste Disposal

Each waste stream generated during this project shall be evaluated to ensure that it meets the waste acceptance criteria and packaging requirements for the proposed treatment, storage, and disposal (TSD) facilities prior to transport. Hazardous waste shall be transported off-site to a permitted hazardous waste disposal facility.

The disposal facility must be approved under Foster Wheeler Environmental Subcontracting Procedures which require that the disposal facility:

- Is in physical compliance with RCRA or other applicable federal and state laws;
- Is not releasing any hazardous wastes, hazardous constituents or hazardous substances;
- Meets minimum technology requirements; and
- Has a corrective action program in place to address all releases, including environmentally significant releases at non-receiving units.

The facility must demonstrate a properly designed system, and must presently operate (and historically have operated) in a manner that controls the types of materials accepted for disposal. Landfill operators shall return invoices verifying that the waste was received and properly disposed. Foster Wheeler Environmental shall provide a copy of the facility compliance check documentation to the Navy with the Waste Profile.

Foster Wheeler Environmental shall be responsible for preparation of the waste disposal manifests. The manifests shall be reviewed and signed by the Navy as generator of the waste. Manifests shall be carried by the transporters and must include the following:

- The generator's name, mailing address, site address if different from the mailing address, and phone number;
- The generator's EPA I.D. number;
- The hauler (or haulers) name, phone number;
- The hauler (or haulers) EPA I.D. number;
- The treatment, storage or disposal facility's name, address, and telephone number (designated facility);
- The treatment, storage, or disposal facility's EPA I.D. number;
- The name, type, and quantity of hazardous waste being shipped, proper DOT shipping name, hazard class, and I.D. number;
- Special handling instructions and any other information required on the form to be supplied by the generator;
- When shipping hazardous waste to a waste reuse facility, the generator must enter the waste reuse facility I.D. number in section G; and,
- The proper codes that accurately describe the shipment of hazardous waste.

Before allowing the manifested waste to leave the property, the appropriate Navy Public Works representative must:

- Sign the manifest certification by hand;
- Obtain the handwritten signature of the initial hauler and date of acceptance on the manifest;
- Retain one copy; and
- Give the remaining copies of the manifest form to the hauler.

6.2.3 Pennsylvania Residual Waste Management

The Pennsylvania Department Of Environmental Protection (DEP) defines residual wastes as any non-hazardous industrial waste including but not limited to industrial process wastes, contaminated soils, materials contaminated with petroleum hydrocarbons or polychlorinated biphenyls, sludges from POTWs and wastewater treatment plants, industrial equipment, and contaminated piping, storage tanks and building materials. Residual wastes do not include municipal solid wastes or construction demolition debris from residential and commercial buildings. Residual wastes must be disposed only at facilities permitted by Pennsylvania DEP to accept residual wastes. Wastes shall be approved for disposal at particular facilities based upon the design of the facility and approval of the facility's Waste Analysis Plan by the DEP.

A Form U Application shall be completed by Foster Wheeler Environmental for each residual waste stream to be disposed at each facility. The application shall contain the following information:

1. Name, Address, Permit Number and contact person of the facility accepting the waste.
2. Name of generator, address, residual waste ID number and contact person.
3. A Waste Description that includes the physical state and appearance, waste description, its origin and containerization, waste volume, applicable waste types, and a detailed chemical analysis fully characterizing the physical and chemical characteristics of the waste, using EPA SW-846 test methods or comparable methods approved by the DEP or EPA. Generator knowledge can be used to meet the analytical requirements.
4. A description of the process by which the waste was generated, a physical description of the waste, and a comprehensive site sampling and analysis plan that includes site history, source of contamination, and a description of quality assurance and quality control procedures to ensure an accurate representative sampling of the waste.

The completed application shall be submitted to a disposal facility permitted by the DEP to accept the types of waste to be generated by the remediation projects. After review and approval of the application and analytical data by the disposal facility, the Form U Application shall be submitted to the DEP for approval. The agency has fifteen business days to review and approve or reject the application. If the agency does not respond within the 15 allotted days, then the waste stream is automatically approved.

Off-site shipments of Pennsylvania Residual Wastes must be accompanied by a Pennsylvania Residual Waste Manifest. Foster Wheeler Environmental shall complete this manifest for each waste shipment and submit the completed manifests to the designated Navy representative for review and signature prior to off-site shipment. Copies of the TSDf signed manifests indicating waste receipt shall be returned to the Navy.

Manifest copies shall be maintained in the Foster Wheeler Environmental Project Files.

On-site storage of residual wastes must meet the following requirements:

- Residual wastes must not be mixed with RCRA Hazardous or special wastes (i.e., asbestos or PCBs)
- Residual wastes must not be stored in proximity to solid wastes if the risk of fire, explosion or release of harmful gases may exist.
- Residual wastes may not be stored on-site for more than one year.
- Residual wastes may not be stored outside of storage areas.
- Storage areas must be routinely inspected and inspection records retained.
- Surface water run-on and run-off from storage areas must be minimized.
- Storage may not cause groundwater degradation.
- Storage containers must be corrosion resistant and must be maintained in sufficient number.
- Residual waste storage tanks must comply with standards under the Pennsylvania Storage Tank and Spill Prevention Act.
- Residual waste storage piles must be protected from wind and rain, must not contain free liquids, must be surrounded by berms to collect leachate and runoff and must be separated from the seasonally high water table by at least four feet unless a liner or pad system is used to prevent groundwater contamination
- Liner and pad systems must be designed to collect leachate or runoff and prevent the migration of leachate through the pad; they must not be adversely affected by the characteristics of the wastes or leachate. Liner and pad systems may be constructed of earthen or non-earthen material and include a monitoring system, if required by DEP; they must be designed, constructed and maintained to protect system integrity throughout the life of the facility,.
- Residual waste storage impoundments must be permitted under the Pennsylvania Clean Streams Law and must comply with technical requirements for residual waste disposal impoundments under 25 Pa. 299.144.

Transportation of residual wastes must comply with the following requirements:

- Residual wastes must be completely enclosed during transportation, unless the wastes can not be dispersed.

- Putrescible residual wastes (waste liable to enter into a state of putrefaction, the typically anaerobic splitting of proteins by bacteria and fungi with the formation of foul-smelling, incompletely oxidized products) must not be stored in a vehicle for more than 24 hours while non-putrescible residual wastes cannot be stored in a vehicle for more than five days.
- Roll-off containers must be constructed to prevent leaks and littering and must be fireproof if combustible wastes are transported within.
- Transporters must be permitted by DEP to transport residual wastes.
- Each transportation vehicle must be outfitted with safety equipment, protective clothing, and first aid supplies for use in responding to emergencies. Vehicles transporting liquid residual wastes must have absorbent mats and materials to handle leaks.
- A copy of a transporter contingency plan must be prepared and kept in the cab of each transportation vehicle.
- Each vehicle used to transport solid or residual waste must be marked with the name and business address of the vehicle owner and the specific type of waste being transported in letters at least six inches high.
- The transporter must immediately report any discharges or releases of residual waste during transportation to the DEP, the local police, and the County Emergency Management Agency official. The transporter must immediately clean up such discharges or releases.

6.3 Air Pollution Control

Fugitive dust emissions may result from project operations. Consequently, engineering controls shall be used as necessary to control dust emissions. This may include keeping surfaces adequately wet during removal activities and covering materials being transported to prevent fugitive dust emissions.

6.4 Wastewater and Stormwater Management

All rinsate generated during decontamination of personnel and equipment using clean water shall be containerized, characterized, and disposed off-site or treated in an on-site water treatment plant. Stormwater shall be controlled using existing stormwater management systems.

6.5 Transport

To ensure safe transport of the waste, only transporters who have demonstrated competence and the required license and permits for transporting waste shall be used. Foster Wheeler Environmental policies and procedures for subcontracting shall be followed. Transporter EPA/State identification numbers shall be kept in project and compliance files. Trucks shall be covered to prevent fugitive releases of material during transport.

6.6 DOT Requirements

Hazardous material must be properly classed, described, packaged, marked, labeled and in condition for shipment as required by 49 CFR 171.

Waste that does not exhibit one of the nine DOT hazard class characteristics (i.e., explosive, flammable, poison, combustible, etc.) is not regulated under DOT rules for the transportation of hazardous material. If waste is suspected to be hazardous, then it must be shipped under the suspected hazard class. If a particular hazard class is unable to be determined, then the soil or water may be shipped under either of the following:

Shipping Name	Hazard Class	ID Number	Packing Group	Label
Environmentally hazardous substances, liquid, n.o.s.	9	UN3082	III	CLASS 9
Environmentally hazardous substances, solid, n.o.s.	9	UN3077	III	CLASS 9

When using either one of these "n.o.s." (not otherwise specified) shipping names, at least two technical names must follow (i.e., "Environmentally hazardous substances, liquid, n.o.s. [Benzene and Acetone]").

The shipping name, identification number, packing group, instructions, cautions, weights, EPA waste code numbers, and consignee/consignor designations must be marked on packages for shipment. Labeling provides information regarding the DOT hazard class. The label to be placed on material will depend upon the results of sampling. Once the waste is characterized, reference should be made to the Hazardous Materials Table in 49 CFR 172.101 to determine the appropriate label. The package (or drum) must be marked and labeled as specified in 49 CFR 172.301.

The person offering hazardous material for shipment must offer placards (49 CFR 172.506). Any quantity of material listed in Table 1 of the regulations must be placarded. However, if there is less than 1,000 lb. of a Table 2 material, no placard is required. No Class 9 placard is required for domestic shipments. If a placard is required, the label referenced above must be affixed on each side and each end of the vehicle(s).

Hazardous material shipping papers must have the following description of the hazardous material, in the following order:

- Proper shipping name;
- Hazard class or division;

- Identification number;
- Packaging group;
- Total quantity (must appear either before or after the above information); and,
- Technical and chemical group names may be entered in parentheses between the proper shipping name and hazard class or following the basic description (e.g., "Flammable liquids, n.o.s. [contains xylene and benzene], 3 UN1993, PG II").

Other required information includes:

- EPA identification (manifests);
- Emergency Response Guidebook numbers;
- Twenty-four (24) hour emergency response number, supplied by the generator and answered by a knowledgeable person;
- Signatures;
- Shipper's certification

6.7 Release Reporting/Notification

If petroleum contamination is detected in underlying or excavated soils, then notification to PADEP is required because the contamination has the potential to enter groundwater. Under the Pennsylvania Clean Streams Law (3SP.S.S 691) and Special Water Pollution Control regulations (25 PA Code, Chapter 101.2), verbal notification must be provided to the PADEP Southeastern Regional Office at (215) 270-1900 (7 days a week, including holidays and weekends)

If the above number cannot be contacted, a call must be placed to the PADEP Central Office at (717) 787-4343. FWENC will immediately notify the Navy if contamination is present and will discuss the reporting requirements with the Navy official. As per this discussion, the responsible party for reporting will be determined.

Under the Clean Stream Law, there is no specific time limit for reporting; however, releases should be reported in a timely manner.

If contamination is present, FWENC will immediately takes steps to prevent injury to property and to protect downstream uses of the waters. The contamination will be removed within 15 days and disposed off-site at a permitted soil recycling facility.

7.0 TEMPORARY EROSION AND SEDIMENTATION POLLUTION CONTROL PLAN

7.1 Erosion and Sediment Control

Filter fabric silt barriers shall be installed around the perimeter of the excavation. Installation and restrictions are listed below. The silt barriers shall remain in place during the construction phase and will be removed at the completion of the project.

Installation

- A trench will be plowed or otherwise excavated to the required depth with little, if any, disturbance to the downslope side of the trench. The bottom of the trench and the fence top will be placed at level grade.
- Support stakes will be driven to the 12-inch minimum depth below the existing ground surface, at 8-foot maximum intervals.
- Stretch and fasten fabric to the upslope side of the support stakes (if a reinforced section, fasten reinforcement mesh prior to fastening the fabric).
- Where ends of fabric come together, they will be overlapped, folded and stapled to prevent sediment bypass.
- The toe anchor will be backfilled and compacted to a density equal to surrounding soils.
- If constructing a reinforced section, attach guy wires to support stakes. Provisions should be made for easy loosening and removal of guy wires to allow for access to perform maintenance work.

Restrictions

- The formation of concentrated flows on the drainage slope above a filter fabric fence installation is not permitted. If concentrated flows do occur, direct slope stabilization measures must be employed to prevent such conditions.
- Filter fabric fences will not be placed in any area of concentrated flows such as ditches, swales, channels, etc.
- Filter fabric fences will not be used in areas where rock or rocky soils prevent the full and uniform anchoring of the fence toe.
- Filter fabric material will not be placed across the entrance to pipes or culverts and will not be wrapped around the principal spillway structures of sediment traps or basins.

ATTACHMENT "A"

ACTION MEMORANDUM

ACTION MEMORANDUM



REMOVAL OF SOILS CONTAMINATED WITH POLYCHLORINATED BIPHENYLS (PCBs) SITE 1 - PRIVET ROAD COMPOUND

NAVAL AIR STATION JOINT RESERVE BASE (NASJRB)
WILLOW GROVE, PENNSYLVANIA

Prepared By
NORTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
10 INDUSTRIAL HIGHWAY
MAIL STOP 82
LESTER, PENNSYLVANIA 19113-2090

In Conjunction With:

NAVAL AIR STATION JOINT RESERVE BASE
WILLOW GROVE, PENNSYLVANIA 19090-5010

MAY 1999

ACTION MEMORANDUM
Site 1 – Privet Road Compound
NASJRB Willow Grove, Pennsylvania

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**ACTION MEMORANDUM FOR THE
REMOVAL OF SOILS CONTAMINATED WITH
POLYCHLORINATED BIPHENYLS (PCBs)
SITE 1 - PRIVET ROAD COMPOUND
AT
NAVAL AIR STATION JOINT RESERVE BASE (NASJRB)
WILLOW GROVE, PENNSYLVANIA**

1.0 PURPOSE

The purpose of this Action Memorandum is to document the necessity to conduct a removal action to remove soils contaminated with polychlorinated biphenyls (PCBs) from Site 1 – Privet Road Compound located within the Naval Air Station Joint Reserve Base (NASJRB) Willow Grove, Pennsylvania. The Department of the Navy is identified as the lead agency pursuant to Executive Order 12580 and has written this Action Memorandum to describe the relevant site conditions of Site 1, the components of the removal action, and the rationale for selecting the preferred alternative.

NASJRB Willow Grove is located in Horsham Township, Montgomery County in southeastern Pennsylvania and is approximately fifteen miles north of the City of Philadelphia.

An investigation was performed at Site 1 in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300, which indicated that hazardous substances were present which potentially posed a threat to human health and the environment due to the presence of PCB-contaminated soils.

2.0 SITE CONDITIONS AND BACKGROUND

SITE DESCRIPTION

The Privet Road Compound, which lies within a heavily developed section of the installation, is adjacent to the Willow Grove Air Reserve Facility and is comprised of a fenced area that is approximately one half acre in size. The fenced compound is covered with Dense Grade Aggregate (DGA) and is currently used to store construction and maintenance equipment. However, the historic waste-handling area is suspected to extend beyond the limits of the fenced compound and once covered a total of more than 2 acres including the present location of the Bowling Alley (Building 192) and the parking area.

The Navy tested soils throughout Site 1 since it was reported that electrical transformers were historically stored at the Privet Road Compound and there was a potential that the transformers may have leaked fluids containing PCBs. Analytical results indicated that PCBs were present in surface soils and shallow subsurface soils.

Soil and well borings consistently encountered a variably thick overburden section underlain by weathered sandstone. The overburden consisted of sandy silt, silty sand, and silty clay. The thickness of the overburden (or the depth to the top of the weathered bedrock) ranged from approximately 4 feet in the vicinity east of Privet Road to about 9 feet in the northeastern corner of the compound. Gravel-rich fill material was encountered within 2 feet of the surface at most location within the former compound, but was not encountered beyond the limits of the suspected waste area.

RELEASE OR THREATENED RELEASE OF A HAZARDOUS SUBSTANCE, POLLUTANT OR CONTAMINANT

Activities at Site 1 have resulted in the release of PCBs into the soils presumably through spills of transformer oil. PCBs are considered a hazardous substance as defined by Section 101 (14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).

NPL STATUS

NASJRB Willow Grove has been listed on the National Priorities List (NPL) since September 1995.

MAPS, PICTURES, AND OTHER GRAPHIC REPRESENTATIONS

Attachments are located at the end of this Action Memorandum and include the following:

- Figure 1 - Site Location Map
- Figure 2 - Immunoassay Sampling Locations
- Figure 3 - Laboratory Results confirming Immunoassay Concentrations
- Figure 4 - Soil Boring Locations
- Figure 5 - Locations where PCBs exceed 1 ppm
- Figure 6 - PCB Ranges (Excavation Plan)

OTHER ACTIONS TO DATE

Previous actions include the completion of a Phase I Remedial Investigation (RI) Report in February 1993. A Phase II RI Workplan was issued in May 1997 and fieldwork commenced that summer. The primary goal of the Phase II RI was to fill data gaps that were identified in the Phase I RI Report at several Installation Restoration (IR) sites including Privet Road. Analytical data was collected and the Navy issued a Draft Phase II RI Report in April 1998. This draft report is currently being reviewed by the regulatory community as well as by members of Willow Grove's Restoration Advisory Board (RAB).

3.0 THREAT TO PUBLIC HEALTH OR WELFARE AND THE ENVIRONMENT

Results of the human health risk assessment that was conducted as part of the RI indicated that a slight risk existed that was above the EPA's acceptable risk range for exposure to PCBs in site soils. Conditions at the Privet Road Compound do pose a threat to human health, welfare, and the environment. Section 300.415 of the NCP, 40 CFR Section 300.415, outlines the factors to be considered in determining the appropriateness of a removal action. Under Section 300.415, paragraphs (b) (2) (i) (iv) (viii) apply to the situation that currently exists at this site. They are as follows:

THREATS TO PUBLIC HEALTH OR WELFARE

300.415 (b)(2)(i): "Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants"

The Privet Road Compound is a combination of a partially grassy field that is occasionally mowed and a fenced area that is DGA-based and is used as a storage area for construction and maintenance equipment. The equipment storage area is surrounded by a secured chain link fence. Disturbance of the site soils during dry conditions could potentially cause air borne dust and create an inhalation exposure. Although the compound is fenced, dermal contact is possible by anyone using the equipment within the compound. The vegetation in the contaminated area does not appear to be stressed.

THREATS TO THE ENVIRONMENT

300.415 (b)(2)(iv): "High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate"

Analytical results regarding PCB contamination in surface soil samples taken from Site 1 indicate a high frequency of positive detections with 230 parts per million (ppm) being the maximum concentration detected. There is the potential that the contamination would migrate as surface runoff from precipitation resulting in additional exposures. These additional exposures could be from dermal contact with soil, inhalation of dust, or ingestion of soil.

300.415 (b)(2)(v): "Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released"

The average annual precipitation in this area is 44.5 inches. The average annual snowfall is 21.5 inches. This moderately high amount indicates that surface runoff could cause PCB contaminated sediments to migrate down gradient especially if the vegetative cover were to be disturbed by site development. There are no storm drain inlets immediately down gradient of the contaminated area.

4.0 ENDANGERMENT DETERMINATION

Actual or threatened release of pollutants and contaminants from this site, if not addressed by implementing the response action selected and described in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment. Human studies of short-term exposures to PCBs show that skin irritations such as acne-like lesions and rashes can occur in PCB exposed workers. Other studies of occupational exposure suggest that PCBs may cause liver cancer. Reproductive and developmental effects may also be related to occupational exposure and eating contaminated fish. The role of PCBs in producing cancer and, reproductive and developmental effects in humans has not been clearly delineated; but EPA considers PCBs to be probable cancer causing chemicals in humans. Although the site is located in a commercial portion of the station and terrestrial habitat was concluded to be minimal in extent and quality, ecological risk screening identified a potential risk to receptors (from PCBs in the soil). Excess risk to ecological receptors would apparently be ameliorated sufficiently by PCB remedial action such as contaminated soil removal.

5.0 PROPOSED ACTIONS

The primary objective of the removal action is to totally eliminate the threat to human health and the environment by removing all soils that were found to contain PCBs at a concentration in excess of EPA's risk-based concentration for a residential scenario which is 1.0 ppm. This will be done by excavating contaminated soils from the site and properly disposing of the soils in a permitted landfill. The removal and disposal of PCB-contaminated soils at this site would mitigate potential risks to human and ecological receptors. In addition, implementation of this removal action will result in the elimination of any land use restrictions that might inhibit this area's ability to be used for future expansion.

DESCRIPTION OF ALTERNATIVE TECHNOLOGIES

Several factors and assumptions were taken into consideration to assess the feasibility of different technological methods for the remediation of PCB-contaminated soils. First, it can be assumed from past experience that the hazardous waste disposal site at Model City, New York will be utilized which is approximately 404 miles from NASJRB Willow Grove. Second, that two of the alternative methods use the Model City Site as part of their process; (1) incineration and (2) excavation with landfill disposal. Third, the quantities used for this estimate are as follows: 750 CY (Cubic Yards) and 1,108 T (Tons of Soil).

Incineration - \$5,068,402

Estimate includes: bulk loading into trucks, minimum charge for shipment of PCB material, transportation of bulk solid hazardous waste, charge for incineration of PCB-contaminated soils, and overhead and profit.

Low Temperature Thermal Desorption - \$794,526

Estimate includes: wheel loader, operating labor cost for a pretreatment system, minimum mobilization/ demobilization charges, direct firing low temperature desorption process, triple tray vibrating screening unit, 34' auto inclined conveyor, use of filter press for moisture reduction, and overhead and profit.

Excavation and Landfill Disposal - \$348,514

Estimate includes: bulk loading into trucks, minimum charge for shipment of bulk hazardous waste, transportation of bulk solid hazardous waste, truck wash out, bulk hazardous waste landfill fee, and overhead and profit.

In reviewing these different alternative methods of remediation, due consideration was made with regards to intrusion time at the site for each method, amount of disruption to base operations, the possibility of spreading contaminants, cost effectiveness of each method, and experience with each method. Based on these factors, the Navy is proposing that Excavation with Landfill Disposal should be the preferred alternative that is selected.

6.0 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS)

The Removal Action set forth in this Action Memorandum will comply with the following applicable or relevant and appropriate environmental and health requirements:

Toxic Substances Control Act (TSCA) - PCB Spill Cleanup Policy (40 CFR 761 Subpart G) - This policy establishes the criteria the EPA uses to determine the adequacy of the clean-up of spills resulting from the release of materials containing PCBs at concentrations of 50 ppm or greater.

Resource Conservation and Recovery Act (RCRA) - Preparedness and Prevention (40 CFR 264-30-264.37) - this regulation outlines requirements, safety equipment, and spill control for hazardous waste facilities. Part of the regulation includes a requirement that the facility be designed, maintained, constructed, and operated to minimize the possibility of an unplanned release that could threaten human health or environment.

RCRA - Contingency Plan and Emergency Procedures (40 CFR 264.50-264.56) - This regulation outlines the requirement for emergency procedures to be used following explosions, fires, etc.

RCRA - Land Disposal Restrictions (40 CFR 268) - The soils excavated will be considered waste subject to LDRs.

RCRA - Standards Applicable to Generators of Hazardous Waste - For any wastes shipped off-site, the material must be properly contained, accurately marked and labeled, and the transporter must display proper placards. All waste shipments must be accompanied by an appropriate manifest.

Occupational Safety and Health Act (OSHA) - General Industry Standards (29 CFR Part 1910) Monitoring will be performed where warranted by site conditions and proper respiratory equipment will be worn if it is not possible to maintain the work atmosphere below regulated levels. Workers performing activities would be required to have completed specific training requirements.

OSHA - Record Keeping, Reporting, and Related Regulations (29 CFR 1904) - These requirements apply to all site contractors and subcontractors, and must be followed during all site work.

Department of Transportation (DOT) Rules for Transportation of Hazardous Materials (49 CFR Parts 107, 171-172.558) - Contaminated material will be packaged, manifested, and transported to a licensed off-site disposal facility in compliance with these regulations.

Solid Waste Management Act, Title 25 of the Pennsylvania Code, Chapter 75, Subchapter 75 (25 Pa. Code S75.75.21 - 75.38) General Standards - Sets forth provisions relative to municipal and residual waste; applies to any person, municipality, county, or authority, storing, collecting, transporting, processing or disposing of non-hazardous waste.

Solid Waste Management Act, Title 25 of the Pennsylvania Code, Chapter 75, Subchapter 287 (25 Pa. Code S287) General Standards - Standards for Collection, Storage and Transportation of Residual Waste - Definition of PCB contamination and specifies general procedures and rules for persons who manage or handle residual waste.

Solid Waste Management Act, Title 25 of the Pennsylvania Code, Chapter 75, Subchapter 299 (25 Pa. Code S287) Standards for Collection, Storage and Transportation of Residual Waste - Definition of PCB contamination and specifies general procedures and rules for persons who manage or handle residual waste.

Worker and Community Right to Know Act, Title 34 of the Pennsylvania Code, Subchapter 303 (34 Pa. Code S303) - Requirement to notify workers and public of any environmental hazards.

7.0 ENFORCEMENT

This site is regulated under the Comprehensive, Environmental, Response, Compensation, and Liability Act (CERCLA). Although the Department of the Navy is the lead agency for removal actions at this facility, the lead regulatory agency is the United States Environmental Protection Agency, Region III with support from the Pennsylvania Department of Environmental Protection (PADEP) and all environmental actions are first reviewed by these regulatory agencies prior to the Navy's implementation.

8.0 OUTSTANDING POLICY ISSUES

There are no outstanding policy issues associated with this site or this removal action.

APPROVED: _____

THOMAS F. NAGELIN, JR., CAPT., CEC, USN
Commanding Officer, Naval Air Station
Joint Reserve Base, Willow Grove

DATE

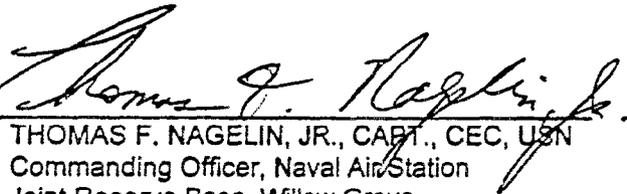
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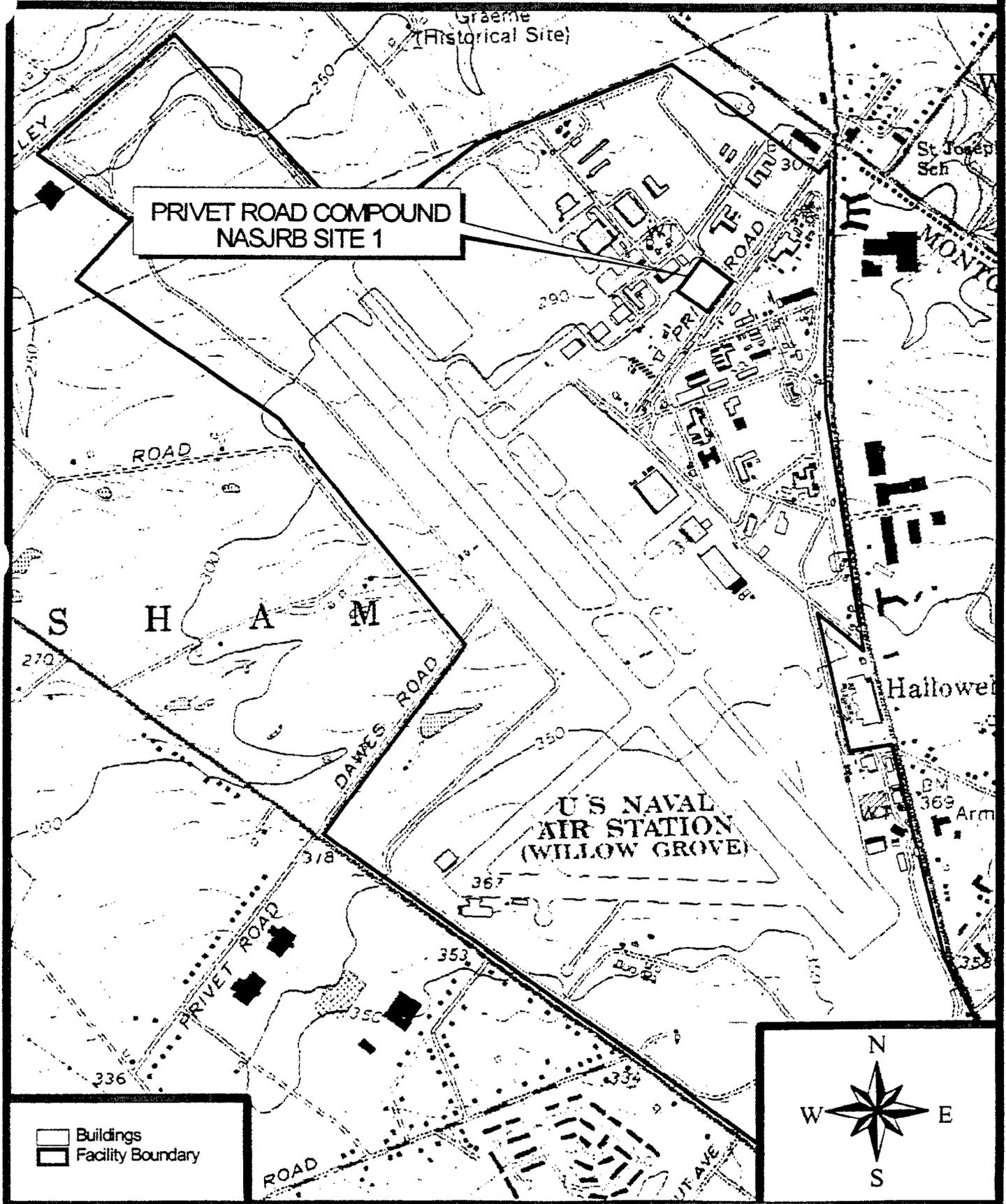
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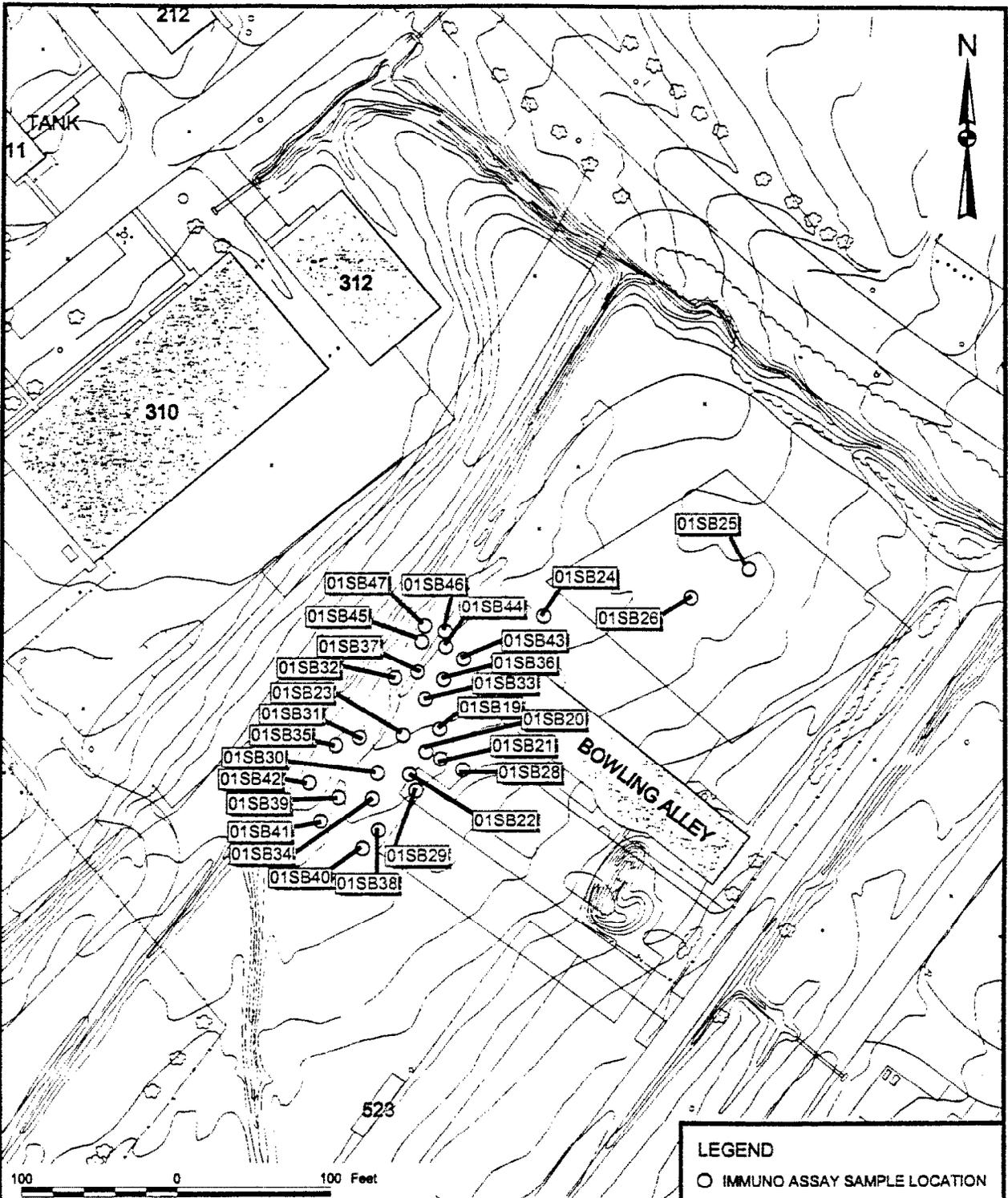

THOMAS F. NAGELIN, JR., CAPT., CEC, USN
Commanding Officer, Naval Air Station
Joint Reserve Base, Willow Grove

19 MAY 99
DATE

ATTACHMENT A
FIGURES

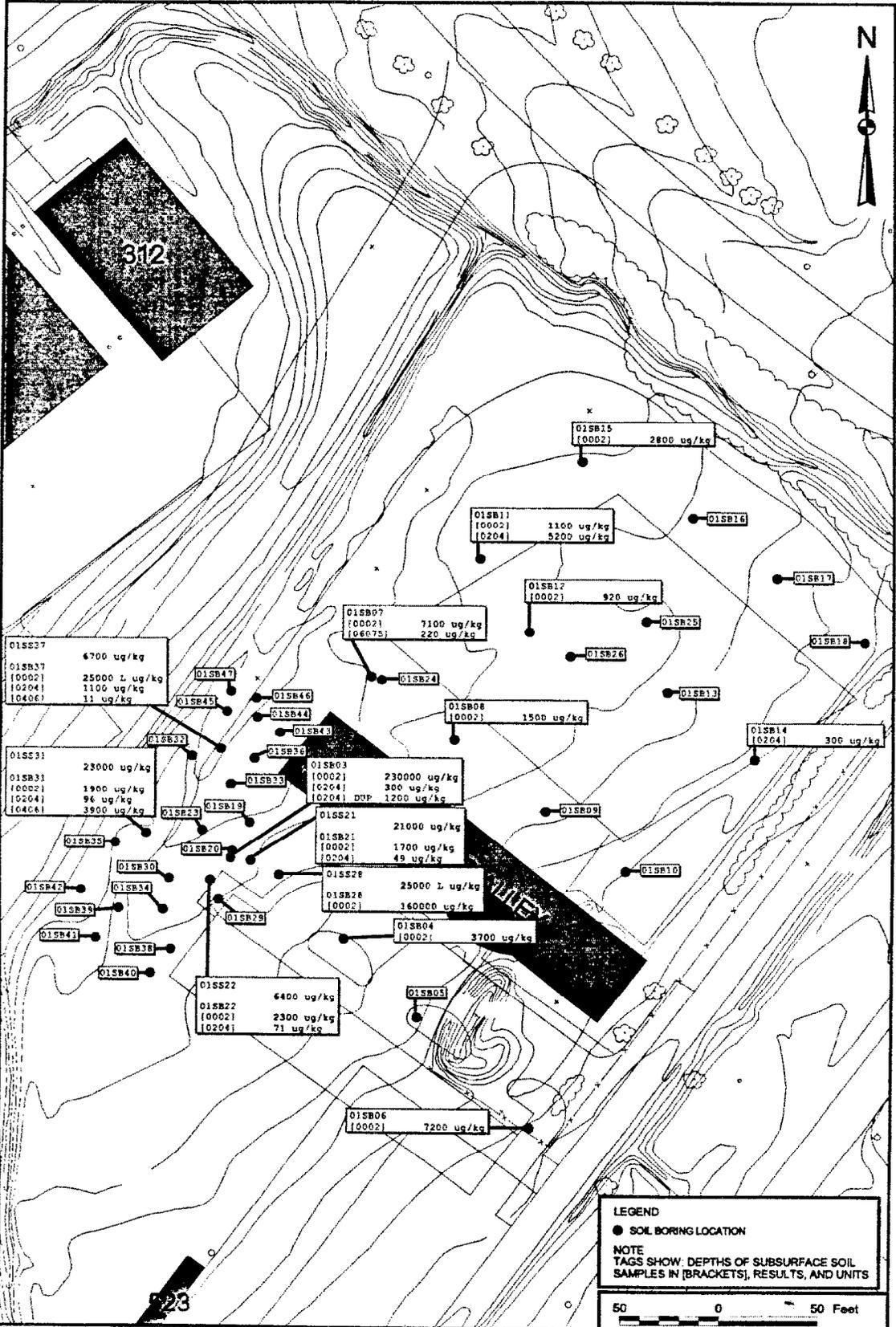
FIGURE 1 - SITE LOCATION MAP



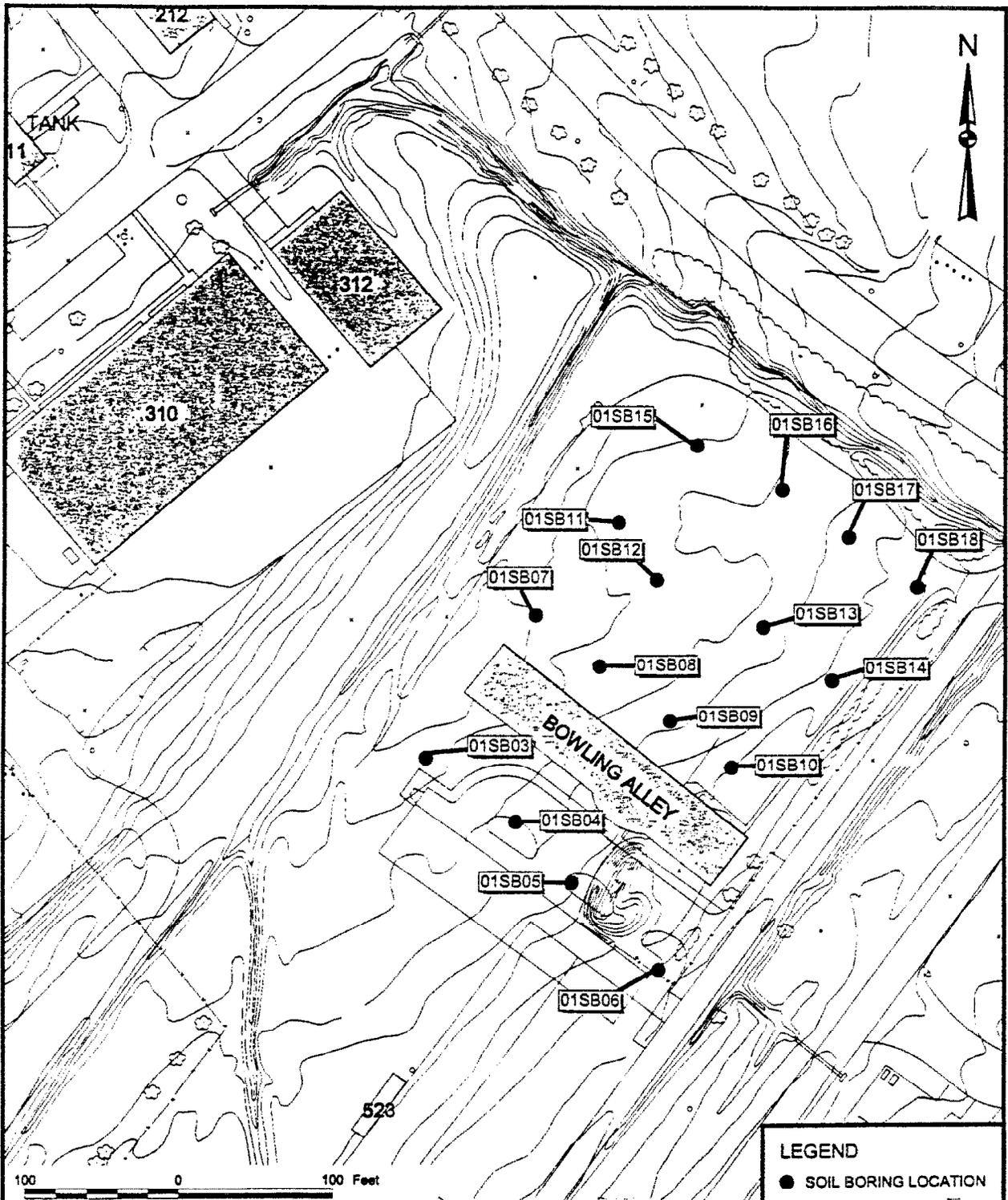


LEGEND
 ○ IMMUNO ASSAY SAMPLE LOCATION

DRAWN BY D. PERRY	DATE 11-FEB-99	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5466	OWNER NO ---
CHECKED BY ---	DATE ---		APPROVED BY ---	DATE ---
COST/SCHEDULE-AREA ---		IMMUNO ASSAY SAMPLE LOCATIONS SITE 1 - PRIVET ROAD NASJRB WILLOW GROVE	APPROVED BY ---	DATE ---
SCALE AS NOTED			DRAWING NO FIGURE 2	REV 0

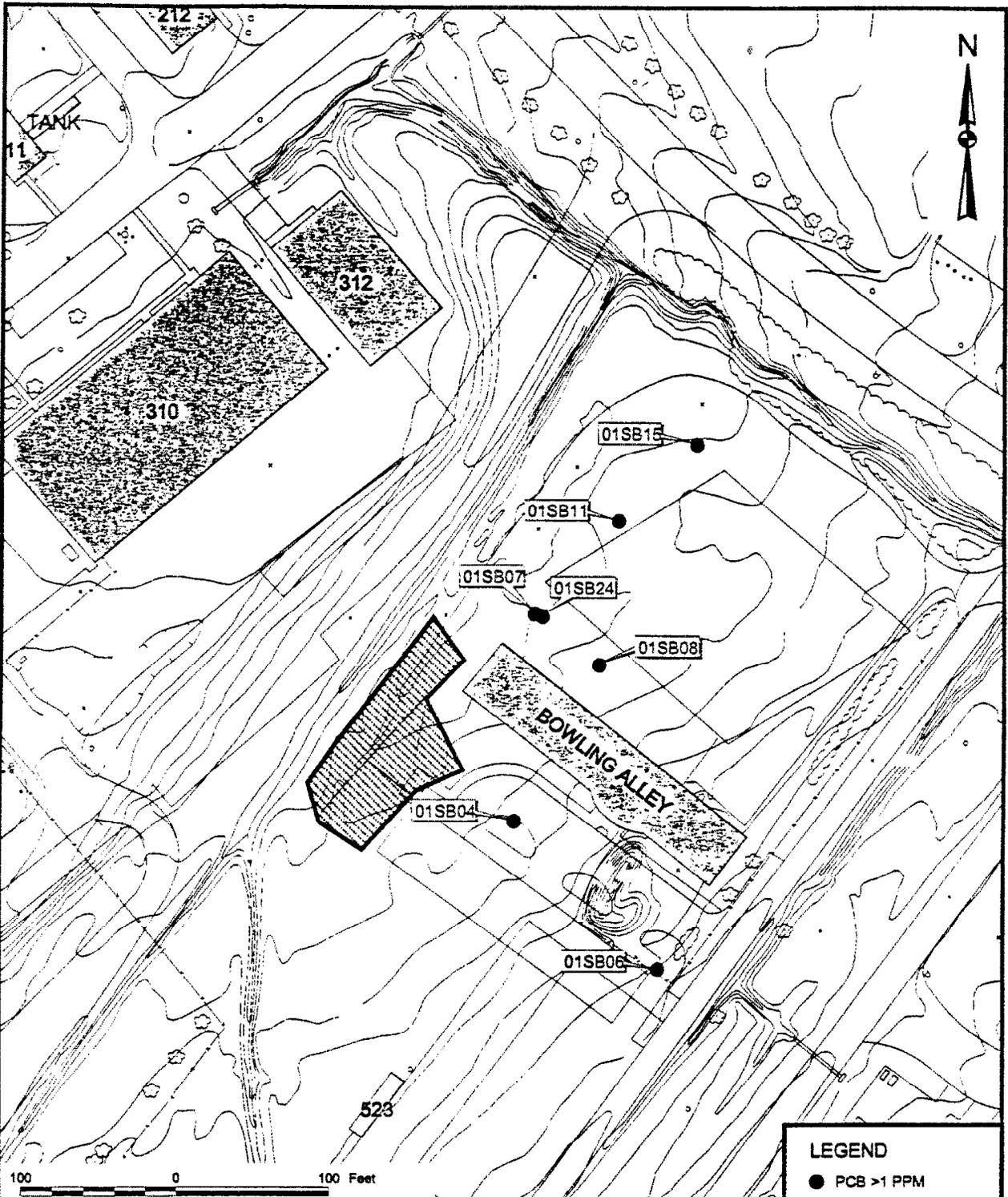


DRAWN BY C. PERRY	DATE 11-FEB-99	Tetra Tech NUS, Inc.	CONTRACT NUMBER 8406	OWNER NUMBER
CHECKED BY	DATE		APPROVED BY	DATE
CONTINGENT AREA		PCB RESULTS BY DEPTH (LABORATORY RESULTS ONLY) SITE 1 - PRIVET ROAD HAS, RB WILLOW GROVE	APPROVED BY	DATE
SCALE AS NOTED			DRAWING NO FIGURE 3	REV 0



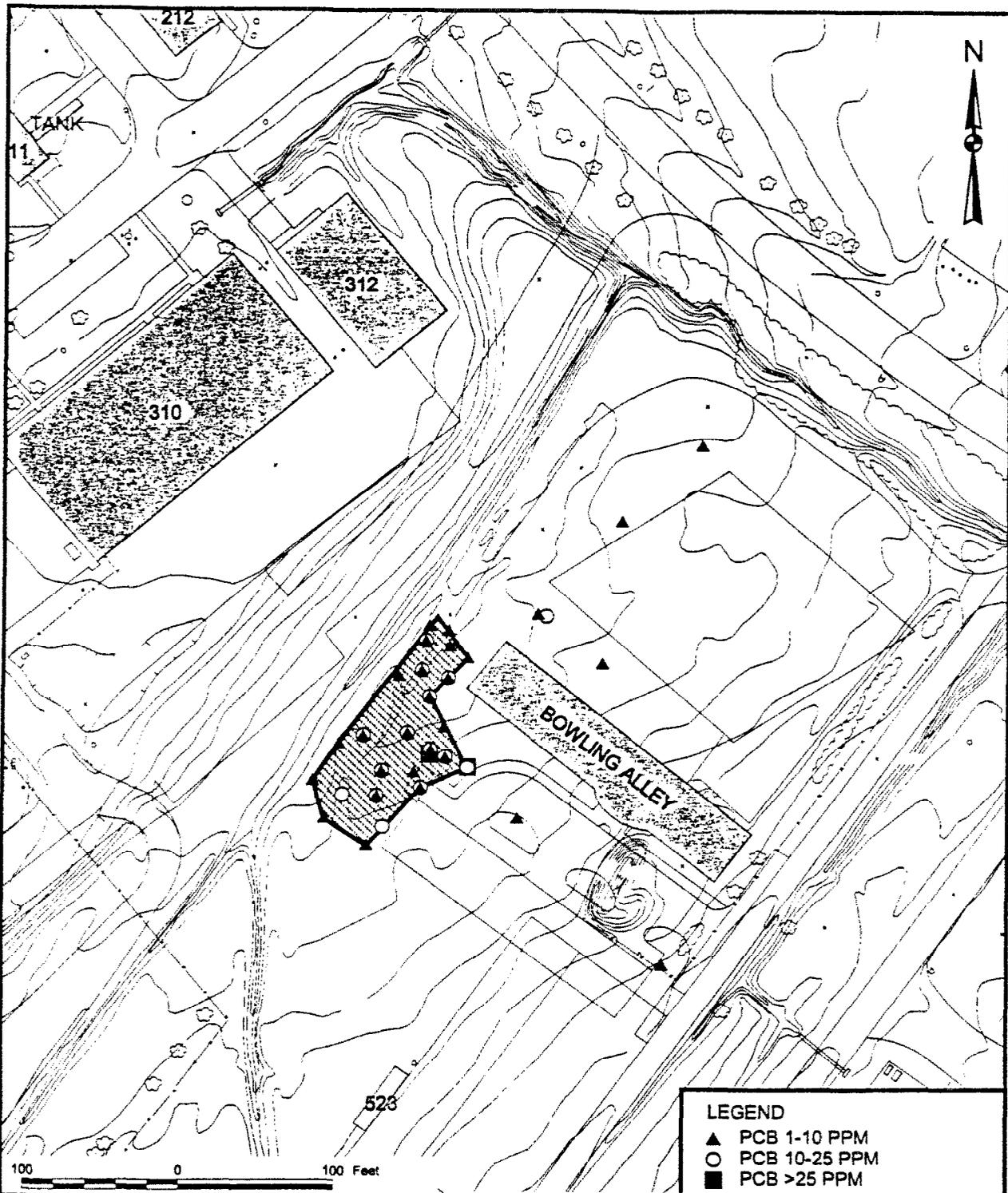
DRAWN BY S. TABLER	DATE 3/23/98	 Tetra Tech NUS, Inc. SOIL BORING LOCATIONS SITE 1 - PRIVET ROAD NASJRB WILLOW GROVE	CONTRACT NUMBER 5466	OWNER NO ---
CHECKED BY ---	DATE ---		APPROVED BY ---	DATE ---
COST/SCHEDULE-AREA ---			APPROVED BY ---	DATE ---
SCALE AS NOTED		DRAWING NO FIGURE 4	REV 0	

P:\GIS\WILLOWSITE1\APR 24-FEB-98 DNP SITE 1 SOIL BORING LOCATIONS LAYOUT



DRAWN BY D. PERRY	DATE 11-FEB-98	Tetra Tech NUS, Inc.	CONTRACT NUMBER 5466	OWNER NO ---
CHECKED BY ---	DATE ---		APPROVED BY ---	DATE ---
COST/SCHEDULE-AREA ---		LOCATIONS WITH PCBs GREATER THAN 1 PPM SITE 1 - PRIVET ROAD NASJRB WILLOW GROVE	APPROVED BY ---	DATE ---
SCALE AS NOTED			DRAWING NO. FIGURE 5	REV 0

P:\GIS\WILLOWSITE1\APR 24-FEB-98 DNP PCB(1-10)PPM LAYOUT



LEGEND	
▲	PCB 1-10 PPM
○	PCB 10-25 PPM
■	PCB >25 PPM

DRAWN BY D. PERRY CHECKED BY COST/SCHEDULE-AREA SCALE AS NOTED	DATE 10-FEB-88 DATE DATE DATE	Tetra Tech NUS, Inc. PCB RANGES SITE 1 - PRIVET ROAD NASJRB WILLOW GROVE	CONTRACT NUMBER 5466 APPROVED BY APPROVED BY DRAWING NO. FIGURE 6	OWNER NO. DATE DATE REV 0
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ATTACHMENT B
RESPONSES TO REGULATORY COMMENTS ON
DRAFT ACTION MEMORANDUM

COMMENT RESPONSES FROM NORTHERN DIVISION, NAVFAC
REGARDING
DRAFT ACTION MEMORANDUM AND DRAFT WORKPLAN
FOR PCB REMOVAL ACTION AT SITE 1 - PRIVET ROAD COMPOUND
NASJRB WILLOW GROVE, PENNSYLVANIA

Upon acceptance of the following responses to your comments, the Draft Workplan will be revised accordingly and a Final Workplan issued. Initiation of the removal action will commence shortly after issuance of the Final Workplan.

COMMENTS FROM U.S. EPA, REGION III DATED DECEMBER 15, 1998:

COMMENT: To help our review of the PCB Removal Action Memo/Workplan, can you forward the following:

- 1) Attachments 1, 2 and 3 (or Figures 1, 2 and 3) referred to on Page 3 of the Removal Action Memo.
- 2) Figure 1 referred to in the Foster Wheeler Workplan of 9/15/98
- 3) The following info referred to on page 4-9 of the Draft Phase II RI of 4/98:
 - Map with the 28 locations where surface soil samples were collected for TCL and/or PCB immunoassay analysis (Figure 4-1 does not provide these locations as indicated)
 - Map indicating any subsurface soil sample locations not provided on the map referenced directly above

RESPONSE: A revised Action Memo is being forwarded reflecting changes to the Action Memo's format. The figures listed below have also been added to the Action Memo in order to address your comments.

- **Figure 1** shows the site location of the Privet Road Compound
- **Figure 2** shows all of the locations where immunoassay test kits were used during the Phase 2 RI to screen the extent of PCB contamination
- **Figure 3** is a "Tag Map" showing laboratory-generated analytical results for those soil borings that were sent for laboratory analysis. This approach is consistent with the Phase 2 RI workplan that called for a percentage of the immunoassay samples to be sent for laboratory verification. Figure 3 is a compilation of both the Phase 1 and Phase 2 RI efforts. For those locations where a "Tag" is not shown means that the location is either an immunoassay location or a non-detect result from laboratory analysis
- **Figure 4** shows all Phase 1 and Phase 2 RI soil boring locations. All samples taken from these locations were sent for laboratory analysis
- **Figure 5** shows the limits of excavation for the highly concentrated PCB locations as well as the seven "spot" locations where PCBs were detected above the 1.0 ppm cleanup goal.
- **Figure 6** shows the locations and ranges of PCB detections, both from immunoassay testing and laboratory analysis.

In addition, a table of analytical results for all soil boring and immunoassay locations has been attached to this comment response document. This table along with Figures 5 and 6 will be used in the revised version of the Site 1 PCB Removal Action Workplan.

FOLLOW-UP COMMENT: Please also provide any available information regarding the target "cleanup levels" and the basis/rationale for the levels; (Neither the Action Memo nor the Workplan provide this info).

RESPONSE: The target cleanup level for this removal action was set at 1 ppm although the risk analysis conducted for this chemical indicated that risk associated with the PCBs in soils at Site 1 was between 1×10^{-4} and 1×10^{-6} . Therefore, the concentrations of PCBs in soils represented a "potential" risk to human health. One of the most economic ways of reducing this potential risk is through the use of land use restrictions.

However, use of this type of institutional control was found to be unacceptable to the Commanding Officer (CO) of the installation since it is his goal to eliminate the use of land restrictions that would inhibit his ability to use this area for future expansion.

To address the CO's concern, Northern Division decided to set the cleanup goal for this removal action at 1 ppm which is the standard cleanup concentration for PCBs in soils in a residential scenario. Remediating PCBs in soils at levels that exceed the residential cleanup standard will meet the CO's goal and allow unrestricted future use of this property.

As stated above, Figure 6 shows the planned areas that will be excavated to address PCB contamination in Site 1 soils. For the soils located to the south and west of the Bowling Alley, a rectangular area will be excavated to a depth equal to the deepest PCB detection and will fully encompass the area where the PCB detections are the most concentrated. After excavation is completed, confirmation sampling will be conducted in accordance with PADEP's ACT II guidance (i.e. 12 confirmation samples since volume of excavated soils are less than 3000 cu. yds. but greater than 125 cu. yds.).

There are also seven (7) other samples shown at six (6) separate spot locations outside of the main excavation area where PCBs were detected at a concentration in excess of 1 ppm. These 6 locations will also be excavated to the appropriate depths and confirmation samples taken from within each excavated area which is expected to be at least 4 feet x 4 feet in area. Confirmation samples taken from these locations will consist of 2 sidewall samples and 2 samples from the bottom of each 4 x 4 box. This translates into a total of 24 confirmation samples for the six separate spot locations. It is expected that the cubic yardage generated for these 6 locations, in total, will be in excess of 125 cu. yd. but less than 3,000 cu. yds., therefore requiring a minimum of 12 confirmation samples, in accordance with PADEP's ACT II guidance.

IMMUNOASSAY SAMPLE LOCATIONS	SOIL BORING LOCATIONS	CONCENTRATION OF PCBs > 1.0 ppm	DEPTH (bgs)	COORDINATES	
				NORTHING	EASTING
		230.00	2 feet		
	01SB03	1.20	4 feet	329397.85	2696093.57
	01SB04	3.70	2 feet	329325.15	2696454.48
	01SB05				
	01SB06	7.20	2 feet	329255.68	2696304.22
	01SB07	7.10	2 feet	329489.18	2696223.32
	01SB08	1.50	2 feet	329455.98	2696265.32
	01SB09				
	01SB10				
		1.10	2 feet		
	01SB11	5.20	4 feet	329550.58	2696277.82
	01SB12				
	01SB13				
	01SB14				
	01SB15	2.80	2 feet	329601.58	2696329.22
	01SB16				
	01SB17				
	01SB18				
		10.00	surface		
		1.90	2 feet		
01SB19		1.10	4 feet	329413.08	2696162.29
		8.10	surface		
01SB20		25.00	2 feet	329398.35	2696153.58
		21.00	surface		
01SB21		1.70	2 feet	329393.46	2696162.93
		6.40	surface		
01SB22		2.30	2 feet	329383.3	2696142.72
		25.00	surface		
01SB23		25.00	2 feet	329409.02	2696138.6
01SB24		15.40	surface	329487.49	2696228.51
01SB25					
01SB26					
		25.00	surface		
01SB28		160.00	2 feet	329386.19	2696177.4
		20.00	surface		
		21.00	2 feet		
01SB29		1.00	4 feet	329372.85	2696146.88
01SB30		16.00	surface	329384.06	2696121.99
		23.00	surface		
		1.90	2 feet		
01SB31		3.90	6 feet	329407.53	2696110.27
01SB32		2.20	2 feet	329447.28	2696133.12
		3.90	surface		
		5.80	2 feet		
01SB33		25.00	4 feet	329433.18	2696152.96

IMMUNOASSAY SAMPLE LOCATIONS	SOIL BORING LOCATIONS	CONCENTRATION OF PCBs > 1.0 ppm	DEPTH (bgs)	COORDINATES	
				NORTHING	EASTING
01SB34		25.00	surface	329367.58	2696118.91
01SB35		1.00	surface	329402.51	2696094.79
		1.90	2 feet		
01SB36		25.00	surface	329446.07	2696164.66
		25.00	2 feet		
01SB37		25.00	surface	329450.94	2696147.76
		25.00	2 feet		
		1.10	4 feet		
01SB38		25.00	surface	329346.84	2696122.78
01SB39		25.00	surface	329368.18	2696096.65
01SB40		2.30	surface	329334.75	2696112.56
01SB41		1.70	surface	329352.9	2696085.09
01SB42		1.00	surface	329377.87	2696077.51
01SB43		6.40	surface	329459.53	2696177.53
		5.80	2 feet		
01SB44		3.90	surface	329467.7	2696165.99
		2.20	2 feet		
01SB45		18.00	surface	329470.71	2696150.59
		1.90	2 feet		
01SB46		8.10	surface	329477.58	2696165.49
		2.00	2 feet		
01SB47		8.10	surface	329481.07	2696152.68
		1.10	2 feet		

ATTACHMENT "B"

STANDARD OPERATING PROCEDURES

STANDARD OPERATING PROCEDURE
for
SURFACE SOIL SAMPLING

Surface soil samples will be obtained using a dedicated, disposable, stainless steel scoop, spoon or trowel to avoid cross-contamination and minimize decontamination of sampling equipment. The following procedures apply to the collection of surface soils from a depth of 0-6 inches using a stainless steel scoop, spoon or trowel:

1. Wear protective gear as specified in the Health and Safety Plan. Samplers will don new sampling gloves prior to sampling at each new location.
2. Use a dedicated stainless steel scoop/spoon/trowel to scrape away surficial organic material (grass, leaves, etc.).
3. Obtain soil sample using the scoop/spoon/trowel by scooping soil from the surface to 3 inches below the surface.
4. Empty contents of the scoop/spoon/trowel into a dedicated stainless steel pan.
5. Fill volatile sample bottles immediately so as not to compromise sample integrity.
6. Homogenize soil in the pan using a dedicated utensil and transfer samples into the appropriate containers. Homogenization will be completed as per the following procedure:

After collection of the volatile sample(s), the soil in the pan will be scraped from the sides, corners and bottom of the pan, rolled to the middle of the pan, and initially mixed. The soil will be quartered and moved to the four corners of the pan. Each corner will then be mixed individually, and when completed be rolled to the center of the pan and mixed once again.
7. Fill appropriate sample containers with homogenized materials randomly selected.
8. Place analytical samples in cooler and chill with ice. Samples will be shipped within 24 hours to the designated laboratory.
9. Fill out field logbook, custody seals, labels, and Chain-of-Custody forms.

STANDARD OPERATING PROCEDURE
for
SUBSURFACE SAMPLING FROM TEST PIT

1. Prepare the test pit trench excavation area and equipment. This will include staking out the proposed area and placing plastic or a tarp on grade upon which excavated soils will be placed. All equipment will be decontaminated prior to the initial sampling event and between each test pit area.
2. Excavate the test pit trench in several depth increments. Practical depth increments range from 1 to 2 feet. After each increment, the sampling team will inspect the trench from grade level. Sample selection for chemical analysis will be made based upon visual observations (i.e., soil staining or presence of waste) regarding the identification of unique types of waste materials and contaminated soil.
3. The equipment operator will immediately be directed to cease digging if any of the following conditions are encountered:
 - Any fluid phase, product, tar, oil or groundwater seepage into the trench occurs;
 - A pipe or other subsurface structure is encountered;
 - Any drums, other waste containers, obstructions, or utility lines are exposed; or
 - Distinct changes in soil composition are observed.

These steps are necessary to permit the proper sampling of the trench and to prevent a breach of safety protocols.

4. Remove loose material from the trench with the bucket to the greatest extent practical. Under no circumstances will entry into the trench be allowed.
5. The bucket will be brought to the surface and set on a plastic liner at grade away from the open trench. Samples will be collected directly from the backhoe bucket in an area where the sample material is not in direct contact with the bucket.
6. The sample will be collected using a field decontaminated stainless steel trowel or spatula. The soil sample will be homogenized in a field decontaminated stainless steel mixing bowl and then placed in the appropriate sample jars.
7. Fill out sample log, labels and Chain-of-Custody form.
8. Preserve samples.
9. Backfill trench with excavated material.

STANDARD OPERATING PROCEDURE
for
SUBSURFACE SOIL SAMPLING USING A HAND AUGER

Shallow subsurface soil samples are defined as samples collected from a depth greater than 0.5 feet. For subsurface soil sampling, the following procedures will be used:

1. Use a decontaminated hand-driven stainless steel bucket auger;
2. Begin turning the auger with a clockwise direction and continue until the hand auger bucket is full;
3. Fill jars with soil using stainless steel spatulas or spoons. Volatile sample containers are filled directly from the hand auger prior to any homogenization. After collecting volatile samples, homogenization of remaining samples will be conducted as follows:

First, remove rocks, twigs, leaves and other debris if they are not considered part of the sample. The soil should be removed from the sampling device and placed in a stainless steel pan, then thoroughly mixed using a stainless steel spoon. The soil in the pan should be scraped from the sides, corners and bottom of the pan, rolled to the middle of the pan, and initially mixed. The sample should then be quartered and moved to the four corners of the pan. Each quarter of the sample should be mixed individually, then rolled to the center of the container and the entire sample mixed again.

4. Repeat Steps 2 and 3, if necessary; and
5. Cap the sample container, attach label, record all pertinent data in the field logbook and complete the Chain-of-Custody forms.

CONTRACT NO. N62472-94-D-0398	DELIVERY ORDER # B022	ACTIVITY LOCATION NAS Willow Grove, PA
PROJECT TITLE: REMEDICATION OF THE PRIVET ROAD SITE		
FROM: Foster Wheeler Environmental Corp. - Program QCM: Mark Miller		DATE May 28, 1999
TO: J Briggs (2 copies)		DATE May 28, 1999

- THE CONTRACTOR SUBMITTALS LISTED BELOW ARE FORWARDED FOR YOUR REVIEW AND RECOMMENDATIONS.
 - APPLY APPROPRIATE STAMP IMPRINT TO EACH SUBMITTAL AND INDICATE REVIEW COMMENTS, AS REQUIRED.
 - RETAIN ONE (1) COPY OF THIS TRANSMITTAL FORM AND RETURN REMAINING COPIES WITH REVIEWED SUBMITTALS TO ROICC.
- THESE SUBMITTALS SHOULD BE RETURNED TO THIS OFFICE BY _____
- _____

COPY TO:

ROICC
 Lt. JG C. Smith (1 copy)

Mark Miller 5-28-99
 SIGNATURE AND DATE

FROM: DESIGNER	DATE
TO: ROICC	DATE

- THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE RETURNED, WITH ACTION TAKEN AS INDICATED.
- _____

COPY TO:

ROICC DESIGNER

SIGNATURE AND DATE

FROM: ROICC	DATE
TO: CONTRACTOR	DATE

- THE SUBMITTALS LISTED BELOW HAVE BEEN REVIEWED AND ARE APPROVED/DISAPPROVED AS SHOWN BELOW AND ON EACH STAMP IMPRINT.

COPY TO:

ROICC OTHER

FOR COMMANDING OFFICER, NORTHERN DIVISION NAVAL FACILITIES ENGINEERING COMMAND DATE

ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
14b	SD-18, Records; Work Plan for Privet Road PCB Removal - R0	M Miller			