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PRO-DESIGN INVESTIGATION WORK PLAN IN SUPPORT OF MIL CON P-125 PROJECT WITH TRANSMITTAL NAVAL ACTIVITY PUERTO RICO
7/18/2002
BAKER ENVIRONMENTAL, INC.

Baker

**Baker Environmental, Inc.**
*A Unit of Michael Baker Corporation*

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July 18, 2002

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street
Norfolk, Virginia 23511-2699

Attn: Mr. Kevin Cloe, P.E., Code EV23KC
Navy Technical Representative

Re: Contract N62470-95-D-6007
Navy CLEAN, District III
Contract Task Order (CTO) 0265
U.S. Naval Station Roosevelt Roads (NSRR), Puerto Rico
Pre-Design Investigation Work Plan
In Support of MIL CON P-125 Project

Dear Mr. Cloe:

Baker Environmental, Inc. (Baker) is providing you with one copy of the Pre-Design Investigation Work Plan in Support of MIL CON P-125 project. The field investigation for this project will be initiated following your approval of the attached work plan.

If you have questions regarding this submittal, please contact me at (412) 269-2009. Additional distribution has been made as indicated below.

Sincerely,

**BAKER ENVIRONMENTAL, INC.**

Mark E. Kimes, P.E.
Activity Manager

MEK/lp
Attachments

cc: Mr. Sindulfo Castillo, NSRR Environmental (1 copy)
Mr. James Rice, NSRR Deputy Fuels Officer (1 copy)
Mr. Rollie Burford, LANTDIV Code AQ112 (w/out attachment)
Ms. Lee Anne Rapp, LANTDIV Code EV31LAR (w/out attachment)
Mr. John Tomik, CH2M Hill Virginia Beach (1 copy)

# Pre-Design Investigation Work Plan
# MIL-CON P-125 Project

Naval Station Roosevelt Roads

Ceiba, Puerto Rico

Prepared For

**Department of the Navy**

**Atlantic Division**

**Naval Facilities Engineering Command**

**Norfolk, Virginia**

Contract No. N62470-95-D-6007

CTO-0265

**July 18, 2002**

**Prepared by**

CH2M HILL

**Baker**
Environmental, Inc.

**CDM**
Federal Programs Corp.

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## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| Baker | Baker Environmental, Inc. |
| bgs | below ground surface |
| BTEX | Benzene, Toluene, Ethylbenzene, and Xylene |
| CTO | Contract Task Order |
| D | Duplicate |
| GPS | Global Positioning System |
| IAS | Initial Assessment Study |
| IDW | Investigation Derived Waste |
| LANDTDIV | Atlantic Division, Naval Facilities engineering Command |
| MS | Mass Spectrometry |
| NSRR | Naval Station Roosevelt Roads, Ceibe, Puerto Rico |
| PID | Photoionization Detection |
| QA/QC | Quality Assurance/Quality Control |
| TPH/DRO | Total Petroleum Hydrocarbons/Diesel Range Organics |

# 1.0 INTRODUCTION

This document presents the Pre-Design Investigation Work Plan to conduct soil sampling in support of the MIL-CON P-125 project for the replacement of cross-country pipeline connecting the JP-5 Bulk Storage facility and the airfield fuel hydrant system, facility 430 at the Naval Station Roosevelt Roads (NSRR), Ceiba, Puerto Rico. The data obtained from this investigation will be utilized to determine what if any impacts the October 1999 fuel spill associated with Tank 429 has on the installation of the proposed pipeline project. This work plan has been prepared by Baker Environmental, Inc. (Baker) under contract to the Atlantic Division, Naval Facilities Engineering Command (LANTDIV), Contract Number N62470-95-D-6007, Contract Task Order (CTO) 0265.

## 1.1 Objectives

The objective of this investigation is to determine what if any impacts the October 1999 fuel spill associated with Tank 429 has on the installation of the proposed pipeline project. This objective will be met by collecting surface and subsurface soil samples along the proposed right-of-way of the new pipeline in the impacted area of the fuel spill. All of the samples will be submitted to a fixed base laboratory for analysis.

## 1.2 Site Setting

The physical setting of NSRR was documented in the 1984 Initial Assessment Study (IAS) (NEESA, 1984). This information is summarized below.

### 1.2.1 Climatology

The climate of the Roosevelt Roads area is characterized as warm and humid, with frequent showers occurring throughout the year. A major factor affecting the weather is the pattern of trade winds associated with the Bermuda High, the center of which is in the vicinity of 30° North, 30° West. The prevailing wind direction reflects the easterly trade winds. The area receives a surface flow varying between the northeast to the southeast about 75 percent of the year, and as much as 95 percent of the time in July when the easterly winds are strongest. The differential heating of the land and sea during the day tends to give a more northerly component to the flow on the northern side of the island and a more southerly component on the southern side. During the night, a land breeze causes a prevailing southeasterly flow in the north and a prevailing northeasterly flow over the southern coast. The mean annual wind velocity is 5.5 knots, with a minimum in November and a maximum in August. Gales associated with westward moving disturbances in the trade winds or hurricanes passing either north or south of the area have the highest probability of occurrence from June through October.

Uniform temperatures prevail, with small diurnal ranges as a result of insular exposure and the relatively small land areas. The warmest months are August and September, while the coolest are January and February. Mean annual maximum temperature range from 82.0°F in January to 88.2°F in August. The mean annual minimum temperatures vary from 64.0°F in January to 73.2°F in June. The highest maximum temperature recorded was 95°F, while the lowest minimum was 59°F. Rain usually occurs at least nine days in every month, with an average of 60 inches per year although a dry winter season occurs from December through April. About 22 thunderstorm-days occur per year, with maximum frequencies of three days per month from May through October.

The hurricane season is from June 1st through November 30; maximum winds exceed 95 knots during severe hurricanes. An average of two tropical storms per year occur in the study area, one of which usually reaches hurricane intensity.

### 1.2.2 Topography

The regional area of Roosevelt Roads consists of an interrupted, narrow coastal plain with small valleys extending from the Sierra de Luquillo range, which has been severely eroded by streams into valleys several hundreds of feet deep. Slopes of up to 60 percent are common.

In the immediate area of the station, elevations range from sea level to approximately 295 feet. Immediately to the north of the NSRR boundary, the hills rise abruptly to heights of 800 to 1,050 feet above sea level, with the tallest peak located within two kilometers of the station boundary. There is a series of three hilly areas on the station, two of which separate the southern airfield area from the Port/Industrial, Housing and Personnel Support areas. The third set of hills is in the Bundy area. These ridge lines not only separate sections of the station, but dictate the degree of allowable development. The ridge line south of the airfield provides an excellent barrier which effectively decreases the aircraft-generated noise which reaches the Unaccompanied Enlisted Personnel Housing areas to an acceptable level. Relief is low along the shoreline. Lagoons and mangrove swamps are common.

## 1.3 Geology

The underlying geology of the station area is predominantly volcanic (composed of lava and tuff), as well as sedimentary (rocks derived from discontinuous beds of limestone). These rocks all range in age from early Cretaceous to middle Eocene. The volcanic rocks and interbedded limestones have been complexly faulted, folded, metamorphosed and variously intruded by dioritic rocks. This complex geological structuring occurred sometime after the deposition of the limestone during the middle Tertiary, when Puerto Rico was separated from the other major Antillean Islands by block faulting, and was arched, uplifted and tilted to the northeast. Culebra, Vieques, and the Virgin Islands are part of the Puerto Rican block; they are separated from the main island simply because of the drowning that resulted from the tilting.

In addition to the predominant volcanic and sedimentary rock, the northwestern and western sectors of the base are underlain by unconsolidated alluvial and older deposits from the Quaternary period.

The primary geologic formations on and near NSRR are various beach deposits, alluvium, quartdiorite and granodiorite, quartz keratophyre, the Daguao Formation, and the Figuera Lava. The station is traversed by the Peña Pobre fault zone.

### 1.3.1 Soils

The soil associations found at the station are predominantly of two types typical of humid areas, namely the Swamps-Marshes Association and the Mabi-Rio-Arriba-Cayagua Association, as well as the Descalabrado-Guayama Association, which is typical of dry areas. In addition, isolated areas of the Caguabo-Mucara-Naranjito Association, the Coloso-Toa-Bajura Association, and the Jacana-Amelia-Fraternidad Association are found at the station.

The Swamps-Marshes and Mabi-Rio-Arriba-Cayagua associations cover over one half of the station's surface area and are equally distributed. The remaining area is covered primarily by the Descalabrado-Guayama and Caguabo-Mucara-Naranjito associations.

The Swamps-Marshes Association consists of deep, very poorly drained soils. This association is found in level or nearly level areas that are slightly above sea level but are wet, and when the tide is high, are covered or affected by saltwater or brackish water. The soils are sandy or clayey, and contain organic materials from decaying mangrove trees. They are underlain by coral, shells and marl at varying depths. The high concentration of salt inhibits the growth of all vegetation except mangrove trees, and in small scattered patches, other salt-tolerant plants.

The Mabi-Rio-Arriba-Cayagua Association consists generally of deep, somewhat poorly drained and moderately well-drained, nearly level to moderately steep soils found on foot and side slopes, terraces and alluvial fans. Soils of this association at the station are basically clayey.

The Descalabrado-Guayama Association generally consists of shallow, well-drained, strongly sloping to very steep soils on volcanic uplands. Soils of this association are found primarily in the hilly areas located directly inland and adjacent to the soils of the Swamps-Marshes Association.

## 1.4 Regional Hydrology

The surface waters that flow across the northeastern plain of Puerto Rico, where the Station is located, originate on the eastern slopes of the Sierra de Luquillo mountains. Surface runoff is channeled into various rivers and streams which eventually flow into the Caribbean Sea. The Daguao River and Quebrada Seca Stream (a tributary to Rio Daguao) collect surface waters from the hills immediately north of the station, and in periods of heavy rain, on-station flooding occurs. The Daguao-Quebrada Seca watershed comprises an area of approximately 7.6 square miles (4,900 acres), and the river falls some 700 feet from its source to sea level. Increased development in the Town of Ceiba, especially in areas adjacent to the station's northern boundary, has significantly increased the surface runoff reaching the station, causing ponding and erosion in the Boxer Drive area. Boxer Drive, for a major portion of its length, is subject to surface water flooding, as are Hangar 200 and AIMD Hangar 379 and adjacent apron areas. This condition has been alleviated by the construction of the new highway (Route 3) immediately outside the fence and the realignment of Boxer Drive both with attendant stormwater management features.

## 1.5 Report Organization

Section 1.0 includes the introduction, objectives of this work plan and a description of the area. Section 2.0 discusses the facilty background including a description of the facility and the site history. The technical approach for performing the investigation is presented in Section 3.0. The site management responsibilities for this project are provided in Section 4.0. Section 5.0 describes the reporting to be conducted following the field investigation. The schedule for conducting this work is provided in Section 6.0 with the references being presented in Section 7.0.

## 2.0 FACILITY BACKGROUND

This section contains a description of the physical layout and background history of NSRR, as well as a description of the site history.

### 2.1 Facility Description

NSRR occupies over 33,500 acres on the northern side of the east coast of Puerto Rico, along Vieques Passage with Vieques Island lying to the east about 10 miles off the harbor entrance. The north entrance to NSRR is about 35 miles east along the coast road (Route 3) from San Juan. The closest large town is Fajardo (population approximately 37,000), which is about 10 miles north of NSRR off Route 3, Ceiba (population approximately 17,000) adjoins the west boundary of NSRR (Figure 1).

NSRR was commissioned in 1943 as a Naval Operations Base and redesignated as a Naval Station in 1957. The current primary mission of NSRR is provision of full support for Atlantic Fleet weapons training and development activities. NSRR has administrative and command responsibilities for some operations separated from the main base on Vieques Island.

### 2.2 Site History

In October 1999 a fuel spill of approximately 100,000-gallons of JP-5 occurred from Fuel Tank No. 429 located at the NSRR airfield. The release occurred during the transfer of JP5 fuel from Fuel Tank No. 381 to Fuel Tank No. 429. The approximate area of this release is presented on Figure 2.

NSRR responded to the release through containment and collection of the fuel spill. An investigation was conducted December 7 through December 8, 1999 to determine if the containment of the fuel spill was adequate. This investigation was conducted by Baker and the results of which are presented in the Final Fuel Spill Sampling Report for Naval Station Roosevelt Roads, Ceiba, Puerto Rico (Baker, 2001). This report concluded that contamination was widespread with the highest concentrations near the storage tank, decreasing with increasing distance from the spill site, with highest contamination in the mangrove area at the end of the storm drainage system (in the vicinity of the Marina Bypass). This report also stated that it appeared from the analytical results that the JP-5 fuel spill did not adversely effect the surface water. The sampling results from this investigation in the vicinity of Tank 429 are presented on Figure 3.

## 3.0 FIELD INVESTIGATION AND SAMPLING PROGRAM

This section describes the field investigation and sampling program to be conducted at Tank 429 in support of the MIL-CON P-125 project. It is estimated that this work will be conducted during the week of July 22, 2002 following LANTDIV approval of the work plan. The detailed soil sampling procedures outlined in the Baker Final RFI Management Plans (Baker 1995) will be consulted, as appropriate. Table 1 details the anticipated number of surface and subsurface soil samples, sample identification, and the laboratory analysis.

### 3.1 Overview

The field investigation tasks will consist of:

- Mobilization
- Surface and subsurface soil sampling
- Global Positioning System (GPS) Survey of all sampling locations
- Investigative Derived Waste (IDW) Management
- Demobilization

The following presents a general overview of the field activities that will be conducted at Tank 429.

#### 3.1.1 Mobilization/Demobilization

Mobilization consists of obtaining the necessary equipment and supplies to perform the field investigation tasks. For this project, minimal equipment/supplies will be required such as, but not limited to: digital camera, stainless steel spoons, stainless steel hand auger, health and safety equipment, GPS survey equipment, and field log books. Demobilization consists of removing, packaging and shipping all of the non-disposable equipment and supplies back to the United States.

#### 3.1.2 Surface and Subsurface Soil Sampling

A total of twelve sampling locations have been identified along the proposed pipeline right-of-way as indicated on Figure 4. A total of three samples will be collected from each sample location. One surface soil sample from 0-6" below ground surface (bgs), and two subsurface soil samples from 2.5'-3' bgs and 5'-6' bgs. All 36 soil samples will be screened in the field with a photo-ionization detector (PID) to assist in delineating the extent of contamination along the proposed pipeline right-of-way. All soil samples will be containerized in laboratory prepared sample containers and sent to the mainland laboratory for analysis of benzene, toluene, ethylbenzene, and xylene (BTEX), napthalene, and total petroleum hydrocarbons/diesel range organics (TPH/DRO) as described in Section 3.4. All samples will be analyzed with a 28-day turn around time.

The surface soil samples will be collected from the top 6-inches of soil, after removal of vegetative material, using clean, dedicated disposable stainless steel spoons or trowels. The soil from all twelve locations will be placed in the appropriate sample container and stored in a cooler with ice pending transport to the laboratory.

The subsurface soil samples will be collected utilizing dedicated clean decontaminated hand augers with 3.5" diameter buckets from all twelve locations. The soil from all twelve locations will be placed in the appropriate sample container and stored in a cooler with ice pending transport to the laboratory.

Sample locations will be identified in the field with a wooden stake or pin flag. The sampling points will be located horizontally utilizing GPS survey equipment.

### 3.1.3 Investigation Derived Waste

It is anticipated that only minimal IDW will be generated during site investigation activities. This IDW will be associated with the decontamination fluids from the hand auger and stainless steel spoon decontamination procedures. All IDW will be containerized in a fifty five-gallon drum and labeled stating contents, date of generation, and consultant. The IDW will be sampled following completion of work and will be disposed of in accordance with local and federal regulations.

## 3.2 Quality Assurance/Quality Control Samples

Quality Assurance/Quality Control (QA/QC) requirements for the investigation are as follows and are identified in the sample matrix presented in Table 1.

### 3.2.1 Trip Blanks

Trip blanks will accompany the samples due to the BTEX and naphthalene samples scheduled for collection.

## 3.3 Sample Designation

In order to identify and accurately track the samples, all samples collected during this investigation, including QA/QC samples, will be designated with a unique number. The number will serve to identify the sample media, sample location, and QA/QC qualifiers.

The sample designation format will be as follows:

Surface and Subsurface Soil Samples:

Site # - Media – Sequence – Sample Depth Designator

| | | | |
|---|---|---|---|
| Site # | 429 | | |
| Media | SS, or SB | = | Surface Soil (0 to 6-inches), or Subsurface Soil (6" to 6') |
| Sequence | 01 through completion of samples | | |
| Depth | 00 = 0-6" bgs, 01 = 2.5'–3' bgs, 02 = 5'–6' bgs | | |
| QA/QC | TB | = | Trip Blank |

Under this designation format, the example sample number 429-SB05-02 refers to:

| | |
|---|---|
| <u>429</u>-SB05-02 | Tank 429 |
| 429-<u>SB</u>05-02 | Subsurface Soil Sample |
| 429-SB<u>05</u>-02 | Sample Location #05 |
| 429-SB05-<u>02</u> | Sample depth 5'-6' bgs |

## 3.4 Analytical Requirements

As indicated in Subsection 3.1, the surface and subsurface soil samples will be analyzed for benzene, toluene, ethylbenzene, and xylene (BTEX) and napthalene by mass spectrometry (MS) SW 846 Method 8260 and total petroleum hydrocarbons/diesel range organics (TPH/DRO) SW 846 Method 3550/8015. All samples will be analyzed with a 28-day turn around time.

## 3.5 Chain-of-Custody

Chain-of-Custody procedures will be followed to ensure a documented, traceable link between measurement results and the sample/parameter that they represent. These procedures are intended to provide a legally acceptable record of sample preparation, storage, and analysis.

To track sample custody transfers before ultimate disposition, sample custody will be documented using a similar chain-of-custody form as shown in Appendix A.

A chain-of-custody form will be completed for each container in which the samples are shipped. The shipping containers for the soil samples will usually be coolers. After the samples are properly packaged, the shipping container will be sealed and prepared for shipment to the analytical laboratory. Custody seals will be placed on the outside of the containers to ensure that the samples are not disturbed prior to reaching the laboratory.

## 3.6 Health and Safety Procedures

The Health and safety procedures to be employed during the Site Investigation are provided in the NSRR RFI Project Plans (Baker, 1995).

## 4.0 SITE MANAGEMENT

This section outlines the responsibilities and reporting requirements of field personnel.

### 4.1 Project Team Responsibilities

Mr. Mark Kimes, P.E, will manage the Baker Project Team. His responsibilities will be to direct the technical performance of the project staff, costs and schedule, ensuring that QA/QC procedures are followed during the course of the project. He will maintain communication with the LANTDIV NTR, Mr. Kevin Cloe, P.E.

The field portion of this project will consist of one field team managed by the Environmental Scientist, Mr. Jon C. Edel, Jr. Mr. Edel's responsibilities include directing the Baker field team and subcontractors.

### 4.2 Reporting Requirements

The Environmental Scientist will maintain a daily summary of each day's field activities. The following information will be included in this summary:

- Baker and subcontractor personnel on site
- Major activities of the day
- Samples collected
- Problems encountered
- Other pertinent site information

The Environmental Scientist will receive direction from the Project Manager regarding any changes in scope of the investigation.

## 5.0 REPORTING

This section outlines the reporting activities that are associated with the field investigation. A Pre-Design Investigation Report will be developed and will discuss the findings of the site investigation sampling effort. The report shall include at a minimum:

- Site History
- Scope and Objectives
- Physical Characteristics of Study Area
- Field Investigation (Soil Sampling Procedures)
  - Site Investigation Sampling
  - Laboratory Sampling Parameters and Methods
- Field Investigation Results
  - Comparison of Field Sample Data to EPA Region III RBCs
  - OSHA Evaluation
  - Determination of Impacted Media
- Conclusions and Recommendations

## 6.0 SCHEDULE

A schedule for the implementation of this work plan is provided as Figure 5.

## 7.0 REFERENCES

Baker Environmental, Inc. (Baker), 1995. Final RCRA Facility Investigation Management Plans, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. September 1995. Coraopolis, Pennsylvania.

Baker, 2001. Final Fuel Spill Sampling Report, Naval Station Roosevelt Roads, Ceiba, Puerto Rico. January 2001. Coraopolis, Pennsylvania.

Naval Energy and Environmental Support Activity (NEESA), 1984. Initial Assessment Study of Naval Station Roosevelt Roads, Puerto Rico. NEESA 13-051. September 1984.

# TABLES

**TABLE 1**

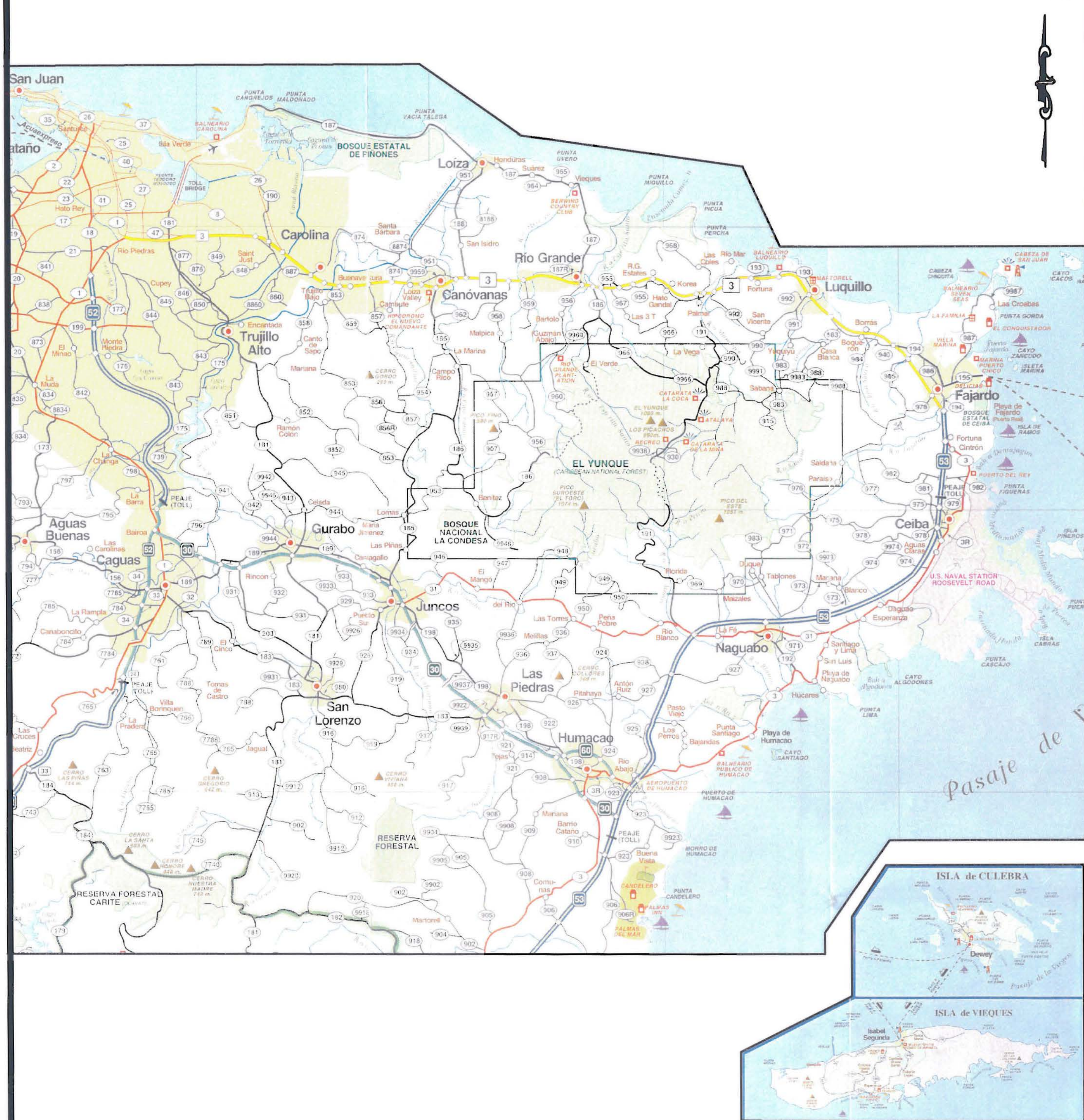
**SUMMARY OF SURFACE AND SUBSURFACE SOIL SAMPLING AND ANALYTICAL PROGRAM**
**TANK 429 PRE-DESIGN INVESTIGATION**
**NAVAL STATION ROOSEVELT ROADS, CEIBA, PUERTO RICO**

| Sample ID | Solid Samples Analysis Requested | | | Aqueous Samples Analysis Requested | | | Comments |
|---|---|---|---|---|---|---|---|
| | BTEX(1) | Naphthalene(1) | TPH/ DRO(2) | BTEX(1) | Naphthalene(1) | TPH/ DRO(2) | |
| **SURFACE SOIL SAMPLES** | | | | | | | |
| 429-SS01-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| 429-SS02-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| 429-SS03-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| 429-SS04-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| 429-SS05-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| 429-SS06-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| 429-SS07-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| 429-SS08-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| 429-SS09-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| 429-SS10-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| 429-SS11-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| 429-SS12-00 | X | X | X | | | | Surface Soil Sample 0-6" bgs |
| **SUBSURFACE SOIL SAMPLES** | | | | | | | |
| 429-SB01-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB01-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| 429-SB02-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB02-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| 429-SB03-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB03-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| 429-SB04-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB04-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| 429-SB05-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB05-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| 429-SB06-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB06-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| 429-SB07-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB07-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| 429-SB08-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB08-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| 429-SB09-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB09-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| 429-SB10-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB10-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| 429-SB11-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB11-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| 429-SB12-01 | X | X | X | | | | Subsurface Soil Sample 2.5-3' bgs |
| 429-SB12-02 | X | X | X | | | | Subsurface Soil Sample 5-6' bgs |
| **TRIP BLANKS** | | | | | | | |
| 429-TB-01 | | | | X | X | | |
| 429-TB-02 | | | | X | X | | |

Notes: BTEX - benzene, toluene, ethylbenzene, and xylene
TPH/DRO - total petroleum hydrocarbons/diesle rnage organics
bgs - below ground surface
(1) - BTEX and Naphthalene to be analyzed together by mass spectrometry SW846 Method 8260
(2) - TPH/DRO to be analyzed by SW846 Method 3550/8015

# FIGURES

2285300W



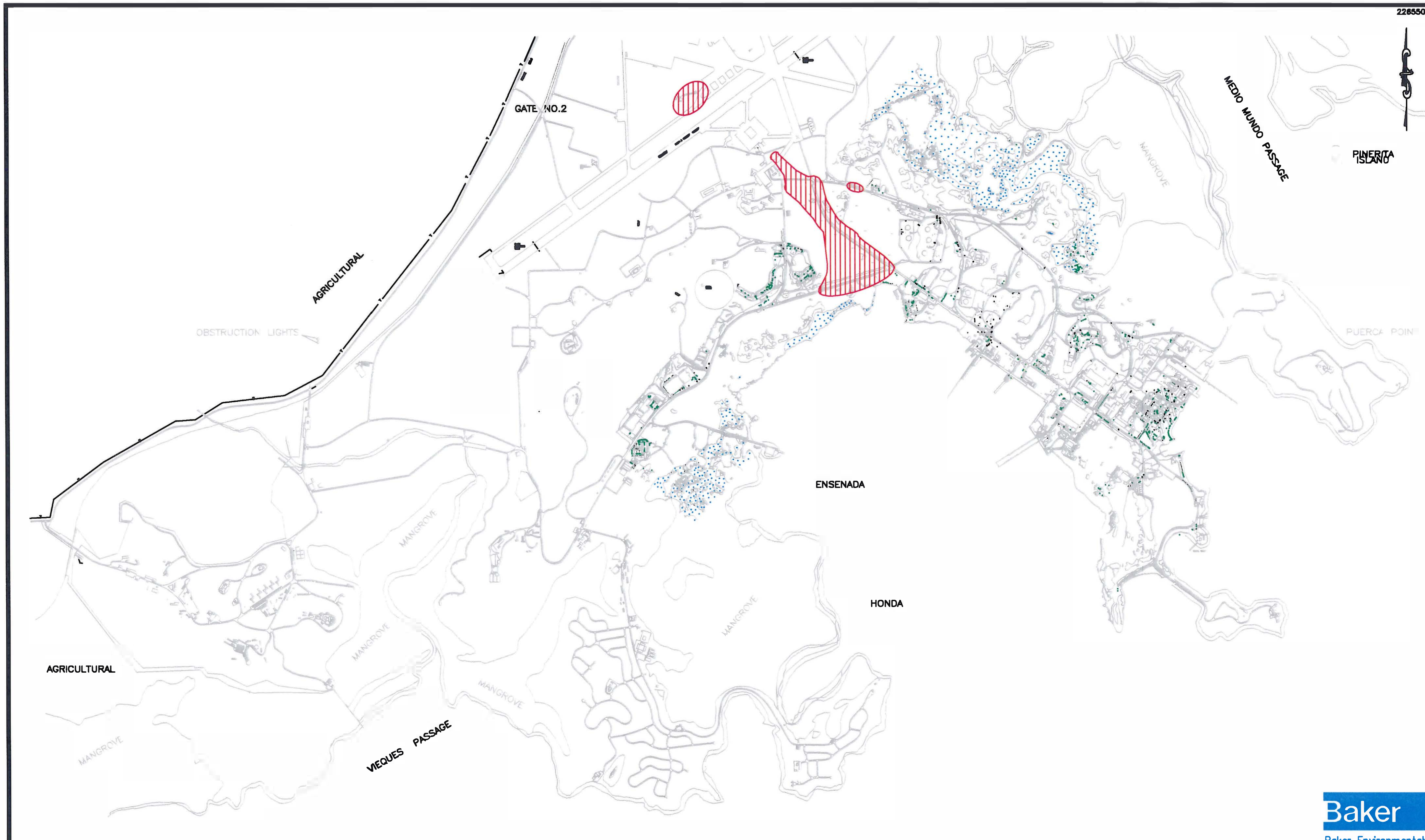

4 0 2 4 8

1 inch = 4 miles

# FIGURE 1
# REGIONAL LOCATION MAP

NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

SOURCE: METRODATA, INC., 1999.




Baker
Baker Environmental Inc.

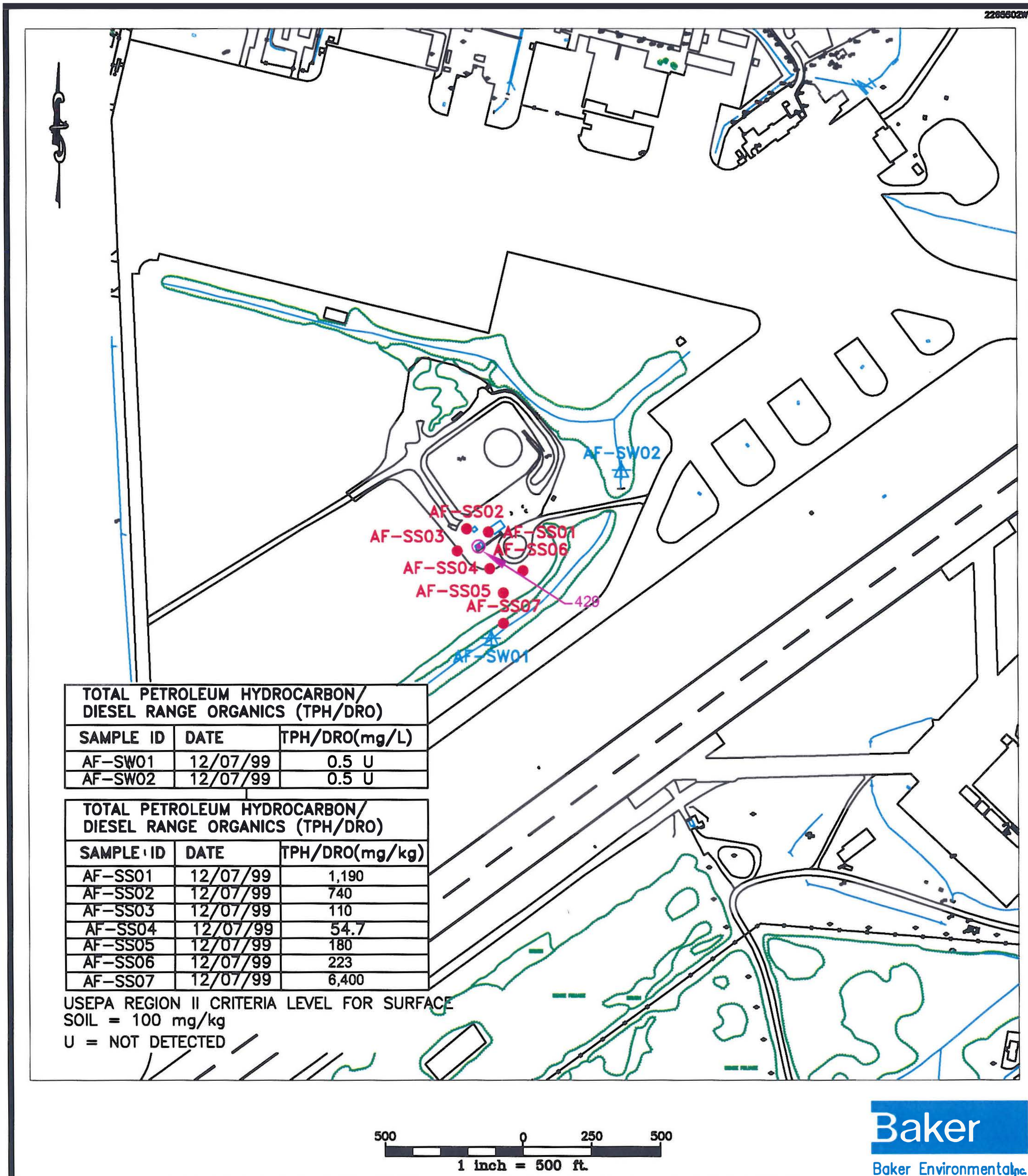
LEGEND

– INVESTIGATION AREA

SOURCE: LANTDIV, FEB. 1992/1997

2500 0 1250 2500
1 inch = 2500 ft.

FIGURE 2
APPROXIMATE IMPACTED AREA MAP
NAVAL STATION ROOSEVELT ROADS
PUERTO RICO




| TOTAL PETROLEUM HYDROCARBON/ DIESEL RANGE ORGANICS (TPH/DRO) | | |
|---|---|---|
| SAMPLE ID | DATE | TPH/DRO(mg/L) |
| AF-SW01 | 12/07/99 | 0.5 U |
| AF-SW02 | 12/07/99 | 0.5 U |

| TOTAL PETROLEUM HYDROCARBON/ DIESEL RANGE ORGANICS (TPH/DRO) | | |
|---|---|---|
| SAMPLE ID | DATE | TPH/DRO(mg/kg) |
| AF-SS01 | 12/07/99 | 1,190 |
| AF-SS02 | 12/07/99 | 740 |
| AF-SS03 | 12/07/99 | 110 |
| AF-SS04 | 12/07/99 | 54.7 |
| AF-SS05 | 12/07/99 | 180 |
| AF-SS06 | 12/07/99 | 223 |
| AF-SS07 | 12/07/99 | 6,400 |

USEPA REGION II CRITERIA LEVEL FOR SURFACE SOIL = 100 mg/kg

U = NOT DETECTED

Baker Environmental Inc.

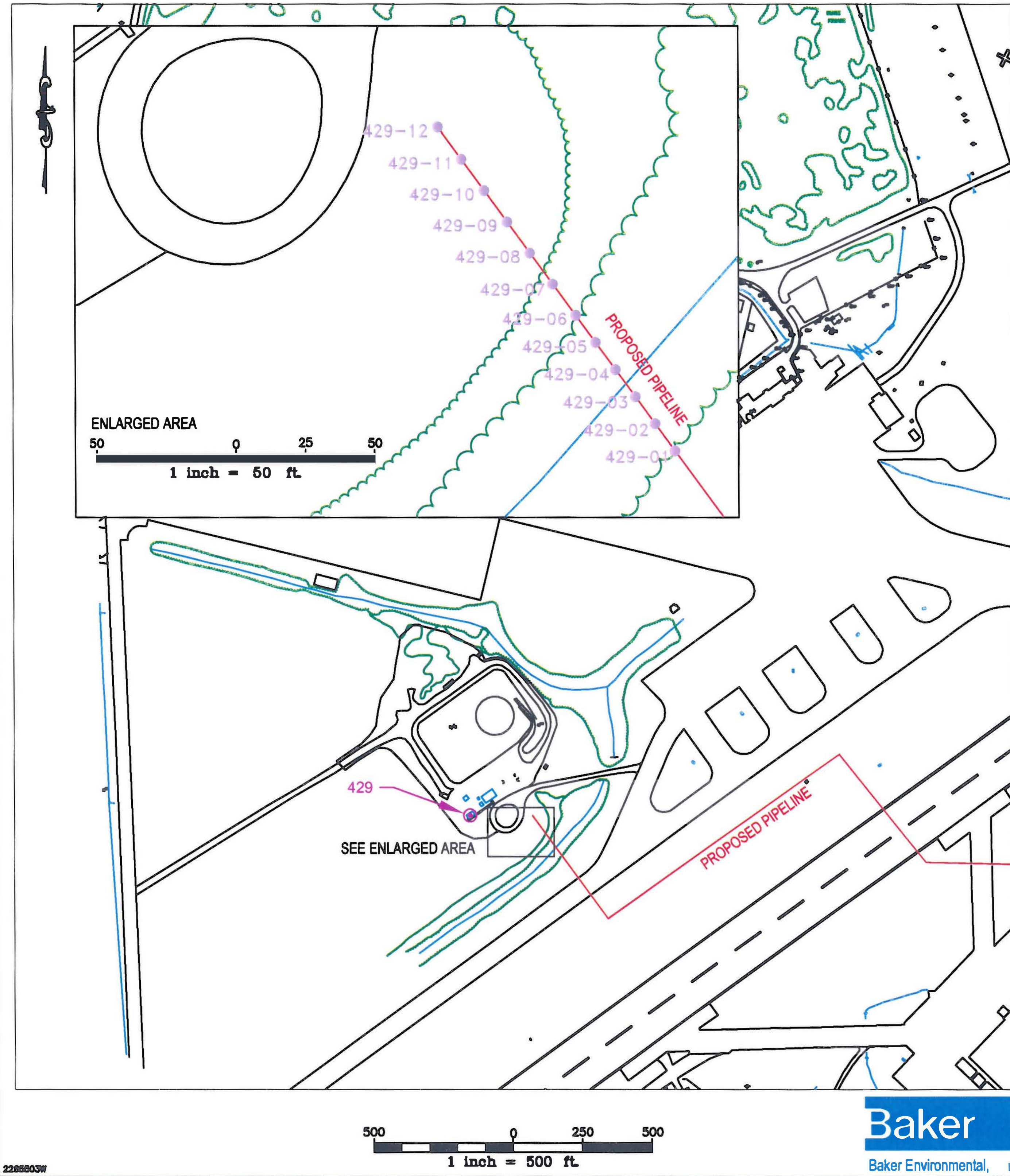
## LEGEND

- SURFACE SOIL SAMPLE
- SURFACE WATER SAMPLE
- CONCRETE MONUMENT
- MANGROVE
- PAVED ROADS (TO SCALE)
- MH - MANHOLE
- CATCH BASIN
- TREE LINE
- FENCE
- FUEL TANK

SOURCE: PUBLIC WORKS DEPARTMENT - NAVAL STATION ROOSEVELT ROADS 1999. DEPT. OF NAVY - PW DRAWING NO.5400

FIGURE 3
TOTAL PETROLEUM HYDROCARBON/
DIESEL RANGE ORGANIC CONCETRATIONS
FUEL SPILL SAMPLING REPORT

NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

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## LEGEND

- PROPOSED SOIL SAMPLE LOCATION
- FUEL TANK
- MANGROVE
- PAVED ROADS (TO SCALE)
- MH - MANHOLE
- CATCH BASIN
- TREE LINE
- —x— - FENCE

SOURCE: PUBLIC WORKS DEPARTMENT - NAVAL STATION ROOSEVELT ROADS 1999.
DEPT. OF NAVY - PW DRAWING NO.5400

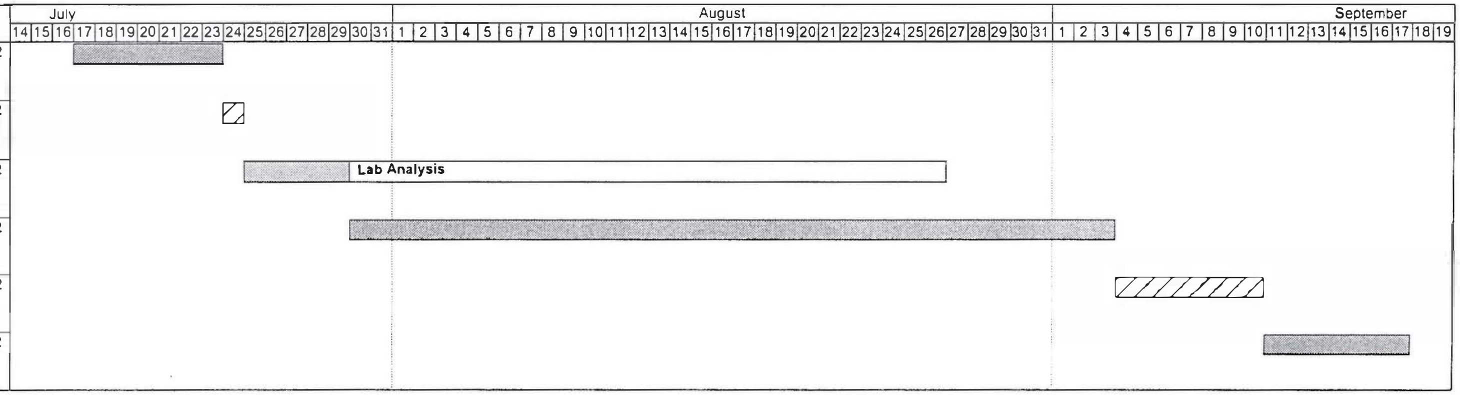
# FIGURE 4
# PROPOSED SAMPLE LOCATION MAP
# PRE-DESIGN INVESTIGATION
# AT TANK 429

NAVAL STATION ROOSEVELT ROADS
PUERTO RICO

FIGURE 5

PROPOSED PROJECT SCHEDULE
PRE-DESIGN INVESTIGATON TANK 429
NAVAL STATION ROOSEVELT ROADS, CEIBA, PUERTO RICO

| Task Name | Duration | Start | Finish |
|---|---|---|---|
| Pre-Design Investigation Work Plan | 7 edays | 7/17/02 | 7/24/02 |
| Navy Review | 1 eday | 7/24/02 | 7/25/02 |
| Pre-Design Investigation Sampling | 32 edays | 7/25/02 | 8/26/02 |
| Draft Pre-Design Investigation Report | 36 edays | 7/30/02 | 9/4/02 |
| Navy Review | 7 edays | 9/4/02 | 9/11/02 |
| Final Pre-Design Investigation Report | 7 edays | 9/11/02 | 9/18/02 |




Project: TANK429
Date: 7/18/02

Task | Navy Review | Progress

# APPENDIX A
# CHAIN OF CUSTODY FORM

Baker

**Baker Environmental, Inc.**
Airport Office Park, Bldg. 3
420 Rouser Road
Coraopolis, PA 15108
412-269-6000
412-269-6097 (fax)

# CHAIN-OF-CUSTODY RECORD



Lab and BOA #: ______________________
Delivery Order # ______________________
Project Number: ______________________
Project Name: ______________________
Field Team: ______________________
SEND RESULTS TO: ______________________

| | | | | | | Analytical Methods | | | | | | | | | | | | General Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | |
| | | | | Matrix Type (1) | | Type of Container(s) (3) | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| Sample Number | Date | Time | Sample Location | GB (2) | COM (2) | Number of Container(s) | | | | | | | | | | | | Remarks |
| | | | | | | | | | | | | | | | | | | |
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Relinquished By: ______________________ Date: ________ Time: ________
Received By: ______________________ Date: ________ Time: ________
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ ______________________

Relinquished By: ______________________ Date: ________ Time: ________
Received By: ______________________ Date: ________ Time: ________
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ ______________________

Relinquished By: ______________________ Date: ________ Time: ________
Received By: ______________________ Date: ________ Time: ________
Shipped by (check one): Hand ☐ Overnight ☐ Other ☐ ______________________

Sample Stored at 4 Degrees C: Yes ☐ No ☐
Chain-of-custody seal on cooler: Yes ☐ Number: __________ No ☐
Analysis turnaround: Priority ☐ ________ hrs. Regular ☐
See Work Order ☐
See Analysis Request Form ☐
Sample Disposal Return to Baker ☐ Lab Disposal ☐
Archive until: ______________________ (date)

NOTES:

(1) A - Air
GW - Groundwater
L - Leachate
S - Spring
SS - Surface Soil
SB - SubSurface Soil
SW - Surface Water
W - Waste
WP - Wipe
WW - Wastewater

(2) GB - Grab
COM - Composite

(3) P - Plastic
G - Glass

**White - Return with analytical results; Yellow - Laboratory Copy; Pink - Field Copy**

**Courier Name:** ______________________
**Courier Pickup Number:** ______________________
**File Name:** ______________________