

STATEMENT OF BASIS/ PROPOSED FINAL REMEDY DECISION	REGION 2 ID# PR2170027203
NAVAL ACTIVITY PUERTO RICO (former Naval Station Roosevelt Roads) Ceiba, Puerto Rico (March 21, 2006)	
Facility/unit Type: SWMUs 7 & 8 Tow Way Fuel Farm (fuel storage and possible sludge disposal pits) Contaminants: Surface Soil: arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene Combined Surface and Subsurface Soil: benzo(a)pyrene Groundwater: 1,2,4-trimethylbenzene, benzene, ethylbenzene, PSH (phased separated hydrocarbons) Proposed Final Remedy: Soil: Excavation and disposal of polyaromatic hydrocarbons (PAHs) and arsenic contaminated soils up to 2 feet below ground surface, and Land Use Restrictions. Groundwater: Monitored Natural Attenuation (MNA) for dissolved constituent plumes; Containment/Collection of free product/ "phase separated hydrocarbon" (PSH) via collection wells using "Skimming" Institutional Controls to Restrict usage of groundwater	

<p><u>FACILITY DESCRIPTION</u></p> <p>The Tow Way Fuel Farm and Tow Way Fuel Farm Sludge Disposal Pits have been identified as solid waste management units (SWMU) #7 and #8, respectively under the 1994 Resource Conservation and Recovery Act (RCRA) permit issued to the former Naval Station Roosevelt Roads by the U. S. Environmental Protection Agency (USEPA). They are located on a hillside along Forrestal Road north of Ensenada Honda (Figure 1). The fuel farm was constructed prior to 1957 and originally consisted of nine bomb-proof underground storage tanks (USTs). In May, 2003, two of the original USTs were removed. All of the tanks have reportedly been used solely for the storage of marine fuel and jet fuel since their construction. SWMU 8 consists of two pits located near Tanks 83 and 1080 where Bunker C fuel-sludge was disposed of between 1971 and 1972. Previous investigations were unable to precisely locate these pits.</p>	<p>There have been numerous spills of small and large quantities of fuels stored in the Tow Way Fuel Farm. The below table outlines the contaminants of concern (COCs) at the Tow Way Fuel Farm that are the focus of the remediation process.</p> <p><u>EXPOSURE PATHWAYS</u></p> <p>Potential human exposure to groundwater contaminants of concern (COCs) may occur from volatilization of those COCs into buildings over the contaminant plumes. Until the clean-up levels are achieved, this pathway will be removed by land usage restrictions on building of offices over the contaminant plumes. The contaminant levels in groundwater will be reduced over time, but until the groundwater remedial action is complete, the exposure to groundwater COCs will be prevented with land use control restrictions.</p> <p>The potential exposure route from COCs in the soils will be is removed through excavation and disposal of soils. Until the excavation of the contaminated soils is complete, land use control restrictions will be implemented.</p>
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Media	Contaminant	Maximum Observed Concentration/ thickness of PSH	Clean-up Objective	Most Recently Observed Maximum
Surface Soil (mg/kg)	Arsenic	3.4	2.7	NA
	Benzo(a)anthracene	6 J	2.9	NA
	Benzo(a)pyrene	23 J	2.9	NA
	Benzo(b)fluoranthene	5.9 J	2.9	NA
	Indeno(1,2,3-cd)pyrene	5.3 J	2.9	NA
Subsurface Soil (mg/kg)	Benzo(a)pyrene	23 J	7.3	NA
Groundwater Dissolved contaminants (ug/L)	1,2,4-trimethylbenzene	4,600	3,300	4,600
	Benzene	26,000	550	19,000 D
	Ethylbenzene	95,702	1,000	18,000
Groundwater PSH (phase separated hydrocarbons) - feet of PSH above water table	PSH	13.2	0.01	3.31

J – Estimated value
 D – Result value based on dilution analysis
 NA – Not applicable

PROPOSED REMEDY

Soils: Excavation of all polyaromatic hydrocarbons (PAHs) and arsenic contaminated soil to 2' below ground surface will be completed. Approximately 1,919 cubic yards of PAH contaminated soil and 5,852 cubic yards of arsenic contaminated soil is expected to be removed. The excavated soil will be disposed of at an approved landfill facility. If the below listed surface soil clean-up objectives are achieved, land use controls would not be required.

Groundwater: Dissolved contaminant plumes in the groundwater only occur in the 470-well area (see Figure 2). Sampling has shown that the dissolved plume has not moved and has favorable natural attenuation parameters. When the PSH is removed from this area, the naturally occurring parameters should mitigate this plume.

The PSH will be reduced to 0.01 feet or less using a PSH skimming system. The design calls for 60 recovery wells equipped with passive PSH skimmers (i.e., no draw-down of the water table by active pumping), linked to at least two self-contained portable skimming systems. These systems will be trailer mounted with small tanks for PSH recovery located on the trailer. Solar cells that charge onboard batteries will be used to operate the pumps and controls. These systems will provide the ability to respond to newly identified wells with measurable PSH in them.

From the Fall of 1995 through the Summer of 2000, several interim PSH recovery systems, including multistage product recovery, interim corrective measures (ICM), Clean OX, and pneumatic fracturing have been pilot-tested, both to control PSH migration and as part of the evaluation process leading to development of the proposed Remedy. Those interim systems have recovered a cumulative total of 16,562 gallons of PSH.

After two years of operation of the passive skimming system, an Engineering Evaluation Report (EER) will be developed to evaluate the effectiveness of passive skimming to meet the clean-up objective of 0.01 feet or less of measurable PSH in wells at the TWFF. If based on the EER an alternative PSH thickness level is proposed as the clean-up objective, that will be subject to USEPA review and approval. Other technologies may also be evaluated in the EER should the passive skimming system prove ineffective at removing the PSH.

The cost estimate of the selected remedy is \$6,204,079.

PUBLIC PARTICIPATION

Public review and comment on the proposed remedy for SWMUs #7 and #8 will be implemented as part of the public comment period for the proposed Administrative Order on Consent between the Navy and USEPA. A public notice of that public comment period will be published in both Spanish and English in select Puerto Rico newspapers.

NEXT STEPS

Following completion of public review and comment on the proposed remedy, the USEPA will advise of any required modifications based on the public comments, or its acceptability. Following USEPA's approval of the Proposed Remedy, NAPR will implement the approved Remedy. After two years of operation of the passive skimming system option, an Engineering Evaluation Report (EER) will be developed to evaluate the effectiveness of passive skimming to meet the clean-up objective of 0.01 feet or less of measurable PSH in wells at the TWFF and the approved risk-based clean-up objective for dissolved constituents in the groundwater.

KEY DOCUMENTS

Revised Final Corrective Measures Study Report Final Report Tow Way Fuel Farm, dated November 22, 2005.

FURTHER INFORMATION

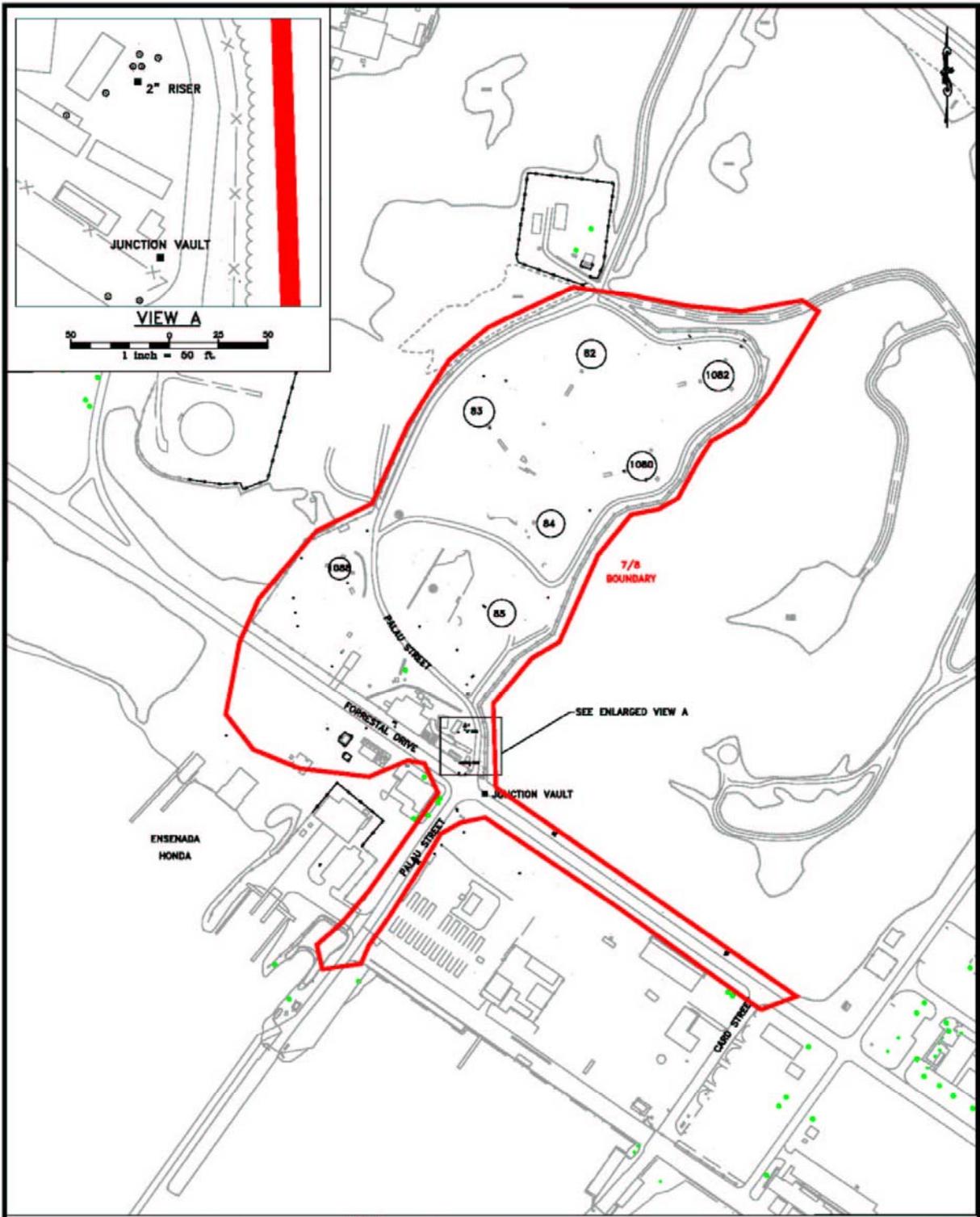
The key documents may be reviewed at:

U.S. Environmental Protection Agency, Region 2
RCRA File Room
290 Broadway, 15th floor
New York, NY 1007-1866
Attn: Mr. David Abrines, phone 212 - 637-3043; or

U. S. Environmental Protection Agency
Caribbean Environmental Protection Division
Centro Europa Building, Suite 417
1492 Ponce de Leon Ave
Santurce, PR 00907-4127
Attn: Mr. Luis Negron, phone 787- 977-5855
and

Puerto Rico Environmental Quality Board
Oficina del Presidente – Piso 5
Ave. Ponce de Leon #1308
Carr Estatal 8838
Sector El Cinco
Rio Piedras, PR 00926
Attn: Ms. Yarissa Martinez, phone 787- 365-8573

Or at the following internet web page address:
<http://nsrr-ir.org/>



VIEW A
 0 25 50
 1 inch = 60 ft.

0 125 250
 1 inch = 250 ft.

NOTE:
 DATUM PLAN USED IS MEAN LOW WATER = 100.00 FT. AS ESTABLISHED BY
 U.S. NAVY SURVEY SECTION AS OF NOVEMBER 1941.

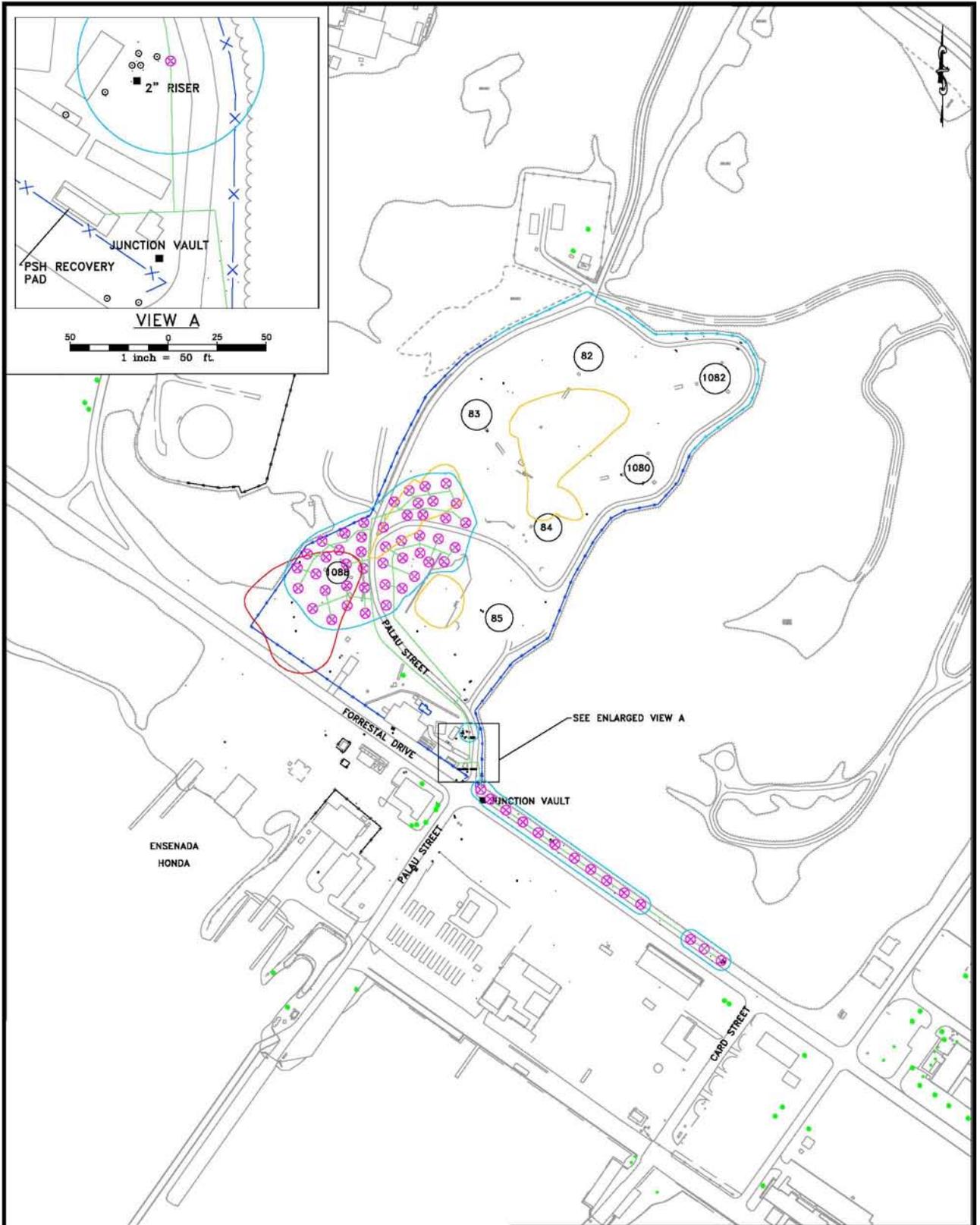


SOURCE: LANTIDY, FEB. 1982/1987

LEGEND

FIGURE 1
SITE MAP

TOW WAY FUEL FARM
NAVAL ACTIVITY PUERTO RICO



NOTE:
 DATUM PLAN USED IS MEAN LOW WATER = 100.00 FT. AS ESTABLISHED BY
 U.S. NAVY SURVEY SECTION AS OF NOVEMBER 1941.

SOURCE: LANTDRV, FEB. 1992/1997



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- LEGEND**
- PSH RECOVERY WELL
 - ZONE OF INFLUENCE
 - CONVEYANCE PIPING
 - FENCE
 - 470 WELL AREA
 - IMPACTED SOIL AREAS

FIGURE 2
 ALTERNATIVE 1 CONCEPTUAL LAYOUT
 CORRECTIVE MEASURES STUDY – FINAL REPORT
 TOW WAY FUEL FARM
 NAVAL ACTIVITY PUERTO RICO



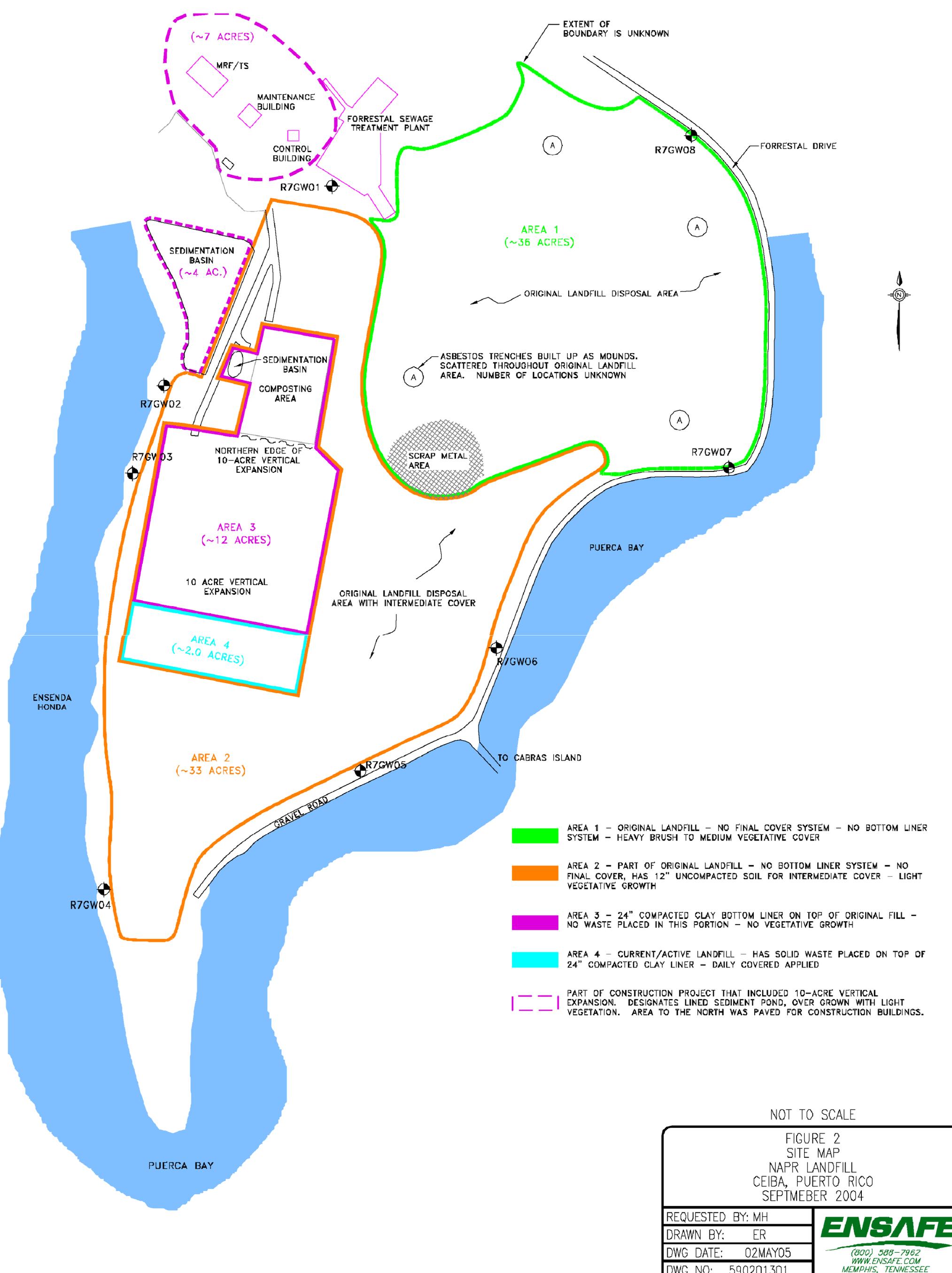
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FIGURE 1
 VICINITY MAP

DWG DATE: 09SEPT04

NAME: 5902013R003



- AREA 1 - ORIGINAL LANDFILL - NO FINAL COVER SYSTEM - NO BOTTOM LINER SYSTEM - HEAVY BRUSH TO MEDIUM VEGETATIVE COVER
- AREA 2 - PART OF ORIGINAL LANDFILL - NO BOTTOM LINER SYSTEM - NO FINAL COVER, HAS 12" UNCOMPACTED SOIL FOR INTERMEDIATE COVER - LIGHT VEGETATIVE GROWTH
- AREA 3 - 24" COMPACTED CLAY BOTTOM LINER ON TOP OF ORIGINAL FILL - NO WASTE PLACED IN THIS PORTION - NO VEGETATIVE GROWTH
- AREA 4 - CURRENT/ACTIVE LANDFILL - HAS SOLID WASTE PLACED ON TOP OF 24" COMPACTED CLAY LINER - DAILY COVER APPLIED
- PART OF CONSTRUCTION PROJECT THAT INCLUDED 10-ACRE VERTICAL EXPANSION. DESIGNATES LINED SEDIMENT POND, OVER GROWN WITH LIGHT VEGETATION. AREA TO THE NORTH WAS PAVED FOR CONSTRUCTION BUILDINGS.

NOT TO SCALE

<p>FIGURE 2 SITE MAP NAPR LANDFILL CEIBA, PUERTO RICO SEPTEMBER 2004</p>	
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