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: SWMU #3/Solid Waste Landfill
Contaminants: benzo(a)pyrene, arsenic, chromium, thallium
Media: Groundwater
Proposed Final Remedy: Landfill Cap (final cover system) with long-term groundwater monitoring

FACILITY DESCRIPTION

The existing landfill at U.S. Naval Activity Puerto Rico (NAPR) has been in operation since the mid-1960s on approximately 85 acres of land in the southeastern area of the base, positioned on a peninsula bounded by Ensenada Honda to the west and Puerca Bay to the south and east (**Figure 1**). It has been identified as solid waste management unit (SWMU) #3 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).

The landfill operation was initiated using trench fills (below grade) until it reached the original intended capacity in 1990. The operation of the site was performed by the U.S. Navy military and civilian personnel until approximately 1985. From 1985 to present, operation has been provided by private contractors.

The original design capacity of the active cell is 251,344 cubic yards (cy) of waste, with an expected life of 10 years. The design capacity for both solid waste and daily cover material is estimated at 314,180 cy. The original vertical expansion plans projected that the landfill would reach its design capacity in 2006, at which time the daily disposal rate was estimated to be 42.1 tons. Due to the implementation of a recycling program in 2002, and a reduction in personnel assigned to NAPR, the daily disposal rate was decreased from less than 40 tons to less than 20 tons in 2003.

It is estimated that 588,453 megagrams[1] (approximately 650,000 tons or 810,000 cy) of wastes have been disposed of at the NAPR Landfill from 1961 to 2004, with approximately 112,840 cy disposed of in the 10-acre expansion, to date (86,176 cy [including cover material] from June 2000-September 2003 and 14,551 cy from September 2003 to September 2004)[2].

The NAPR Landfill contains no monofills[3] but the original design contained a separate asbestos waste disposal area in the northeast corner of the vertical expansion (**Figure 2 - Area 3**). The Operating Plan for the vertical expansion (prepared for the Navy in March 1997 by Burns & McDonnell Waste Consultants, Inc.) states that asbestos wastes arriving at the facility will be weighed by the Control Building personnel and be directed to the asbestos waste disposal area of the landfill. However, the Navy decided not to dispose of asbestos in the new cells of the landfill, and since 1997 asbestos has not been disposed of at the landfill.

An unknown number of pre-1997 asbestos disposal pits are scattered throughout older sections of the landfill, specifically Area 1. The exact number and locations of the asbestos disposal pits are not known. During disposal, soil was reportedly excavated to a depth of approximately 3 feet prior to placement of the asbestos containing material into the excavation, which was then backfilled with soil. The backfilled soil was mounded on top of the asbestos in the pits to provide a method of locating the disposal areas. The asbestos disposal areas will be capped with 18 inches of soil as part of the final remedy for the landfill.

EXPOSURE PATHWAYS

Potential human receptors include on-site workers performing either disposal or on-site construction of the corrective measures (i.e. landfill capping), who may be exposed by inhaling airborne contaminants associated with landfill contaminants. Direct exposure to landfill waste is currently minimized by existing intermediate soil cover, and will be further prevented in the future by the proposed capping and site access and land usage restrictions. Potential exposures due to continued leaching of contaminants from the buried wastes into the groundwater will be controlled through long-term groundwater monitoring.

[1] Emission Calculations for Solid Waste Landfill, NAPR, Puerto Rico, Landfill WSTS-001, Command PWD, Title V ID:F-16
[2] E-mailed information from NAPR Public Works Department personnel 8/10/2004.
[3] RCRA contains no general statutory or regulatory definition of a "monofill." Its usage here is intended to convey that the NAPR landfill does not contain designated areas where only one type of waste was disposed, exception noted.

CONTAMINATION DETECTED AND CLEANUP GOALS						
Media	**Estimated Volume**	**Contaminant**	**Maximum Concentration[1]**	**Action Level[2] (µg/L)**	**Cleanup Goal[2] (µg/L)**	**Point of Compliance**
groundwater		Benzo(a)pyrene	0.5	0.2	0.2	R7GW01R
		Arsenic	0.0169	0.01	0.01	R7GW02
		Chromium	0.104	0.1	0.1	R7GW09
		Total thallium	0.034	0.002	0.002	R7GW04R
		Dissolved thallium	0.027	0.002	0.002	R7GW04R

1 Concentration represents sampling events from 1998, 2000, 2002, and 2005.
2 Action levels and cleanup goals are based on Federal drinking water maximum contaminant levels (MCLs).

PROPOSED REMEDY

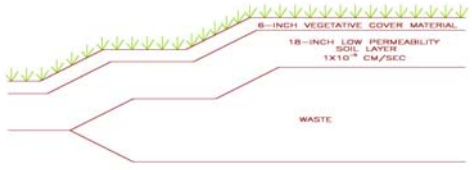
A low-permeability final cover system is the selected remedy for the NAPR Landfill. Closure standards require owners and operators to install a final landfill cover system that is designed to minimize soil erosion and infiltration of liquids through the cover. Both the USEPA Solid Waste and Hazardous Waste Regulations (Subpart F: Closure and Post-Closure Care Criteria) and the EQB Non-Hazardous Waste Regulations on closure and post-closure (Part IV-D Closure Criteria), require that all solid waste landfill facilities must install a final cover system designed and constructed to:

1. Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 1 x 10^{-5} cm/sec, whichever is less.

2. Minimize infiltration of precipitation through the closed landfill by the use of an infiltration layer that contains a minimum 18 inches of cover material (<= 1x10^{-5} cm/sec).

3. Minimize erosion of the final cover by the use of an erosion layer that contains a minimum 6 inches of cover material that is capable of sustaining native plant growth.

Because the 85-acre landfill has been constructed and operated using varying liner systems (ranging from no liner to 24 inches of compacted clay) and/or cover systems (ranging from no cover to 12 inches of uncompacted material), application of the final cover system can vary for each area. However, each area will ultimately meet the minimum requirements stated above. The final cover system is illustrated below:



Area 1 (inactive portion of the landfill) has not been used since 1990. Prior to that time, it was used to dispose of various types of waste generated by NAPR activities. The original foot-print and design of this area are not precisely known; however, the proposed cap is expected to include all areas of the landfill (both the “active” and “inactive” portions).

Areas 2, 3, and 4 (active portions of the landfill) comprise portions of the landfill that have some form of intermediate cover and/or an underlying low-permeability liner.

The cap is expected to minimize further migration of landfill contamination to the groundwater. However, long-term groundwater monitoring will be required under an Administrative Order on Consent between the Navy and USEPA, and will encompass all areas of the landfill (both the “active” and “inactive” portions).

The total estimated capital and operation and maintenance (O&M) costs associated with closure and long-term groundwater monitoring of the landfill are estimated to be $13,152,000 ($6,508,000 for the active portion and $6,644,000 for the inactive portion of the landfill). If exceedances of the above Action Levels are recorded, further actions may be required to meet the groundwater Clean-up Goals.

The average annual post-closure costs for the active portion of the landfill is estimated at $74,000, and includes annual groundwater monitoring. The average annual post-closure costs for the inactive portion of the landfill is estimated at $45,500.

PUBLIC PARTICIPATION Public review and comment on the proposed remedy for SWMU #3 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, closure activities, including installation of the final cap, are expected to be completed within 1 year of start-date. Post-closure activities, including groundwater monitoring, are planned for 30 years after closure.	
KEY DOCUMENTS: 1. Work Plan Existing Landfill Closure Naval Activity Puerto Rico, dated October 2004. 2. Landfill Closure and Post-Closure Plan, dated August 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/

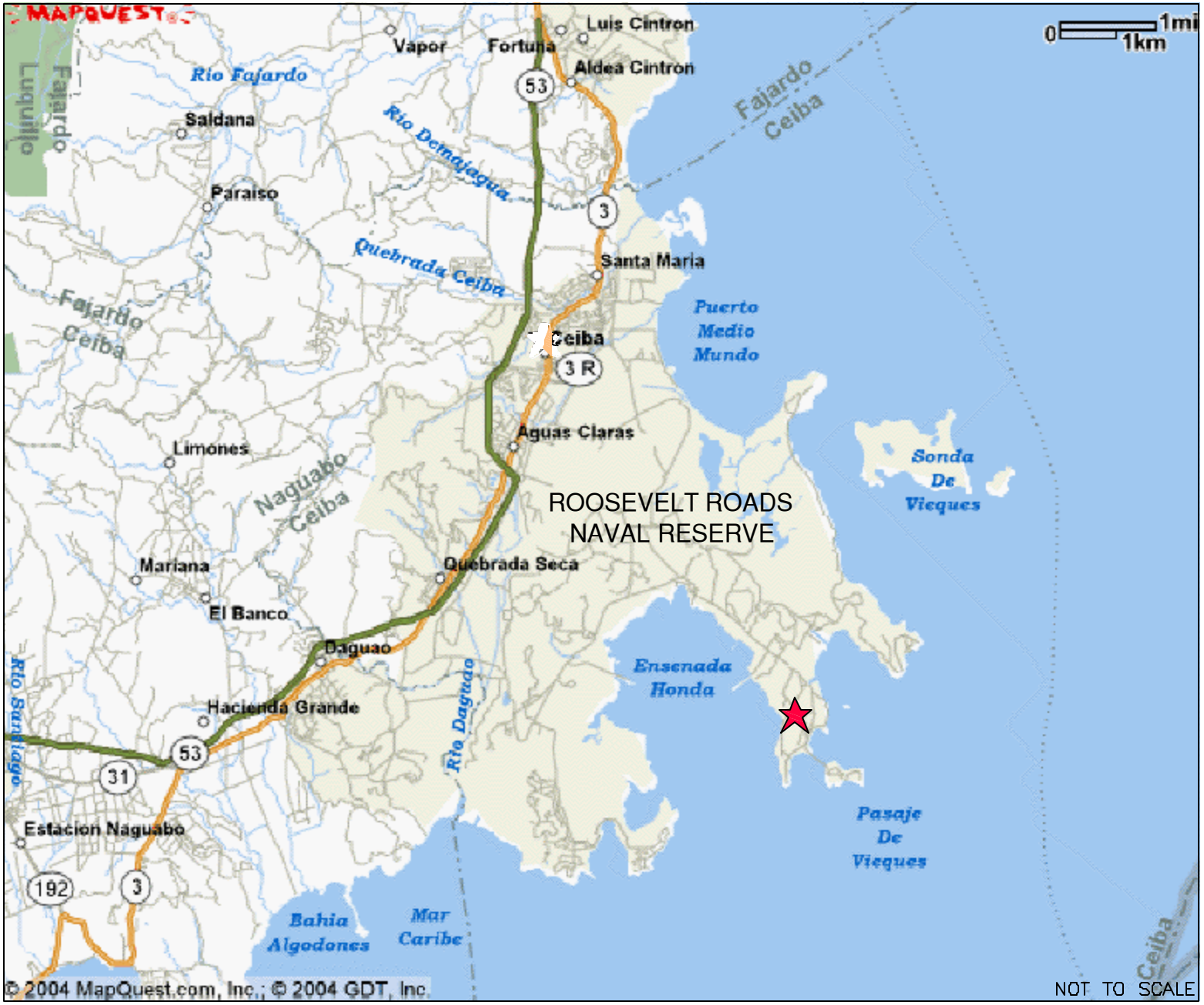


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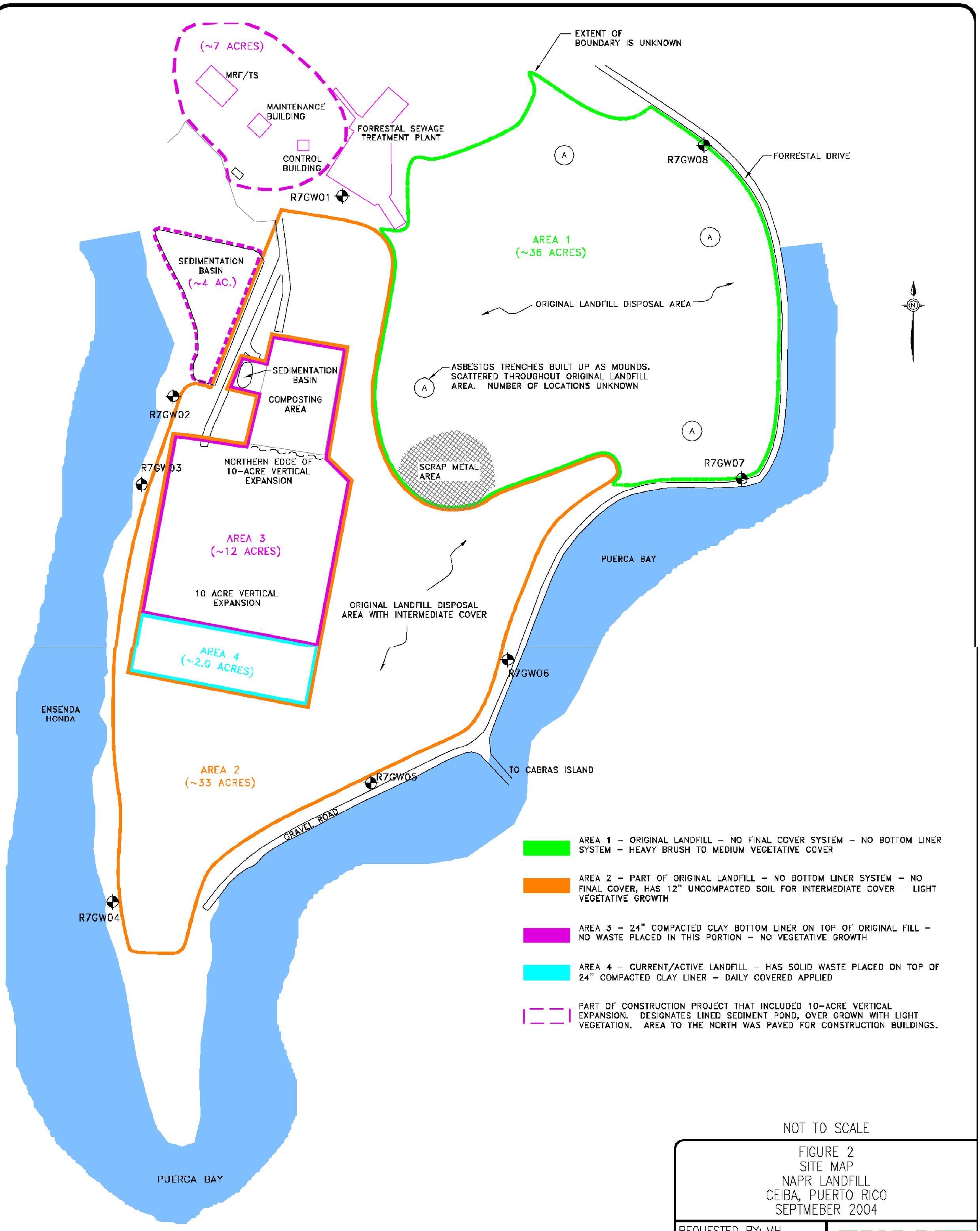
FIGURE 1
VICNIITY MAP

DWG DATE: 09SEPT04 | NAME: 5902013R003



NOT TO SCALE

FIGURE 2
SITE MAP
NAPR LANDFILL
CEIBA, PUERTO RICO
SEPTMEBER 2004

REQUESTED BY:	MH
DRAWN BY:	ER
DWG DATE:	02MAY05
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