

<b>STATEMENT OF BASIS / PROPOSED FINAL SOIL REMEDY DECISION</b>	<b>REGION 2 ID# PR2170027203</b>
<b>NAVAL ACTIVITY PUERTO RICO (former Naval Station Roosevelt Roads) Ceiba, Puerto Rico (August 2010)</b>	
<b>Facility/Unit Type:</b> SWMUs 7 & 8, Tow Way Fuel Farm (fuel storage and possible sludge disposal pits)	
<b>Contaminants:</b>	
<b>Surface Soil:</b> arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene	
<b>Subsurface Soil:</b> benzo(a)pyrene	
<b>Proposed Final Remedy:</b>	
No further action is recommended for arsenic, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene in site soils.	

<p><b><u>FACILITY DESCRIPTION</u></b></p> <p>The Tow Way Fuel Farm and Tow Way Fuel Farm Sludge Disposal Pits at Naval Activity Puerto Rico (NAPR) have been identified as solid waste management units (SWMUs) 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 (EPA). The Tow Way Fuel Farm (TWFF) is 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). The tanks were used for the storage of marine diesel fuel, jet fuel (JP-5), and Bunker C fuel. Closure for Tanks 56A and 56B was completed in November 1996. Seven USTs remain: 82, 83, 84, 85, 1080, 1082, and 1088. However, on March 31, 2004, base operations, including the storage and distribution of fuel, were discontinued and all USTs were drained and are currently empty. During the facility's operational history, numerous releases of various quantities have occurred from the various storage tanks, resulting in the release of petroleum hydrocarbons to the environment.</p> <p><b><u>CORRECTIVE MEASURES STUDY</u></b></p> <p>In November 2005, Baker Environmental Inc. (Baker) prepared a Corrective Measures Study (CMS) for NAPR. The report was an all encompassing document that established Corrective Action Objectives (CAOs) and remedial approaches to address cleanup of soil and groundwater at multiple SWMUs across the NAPR, including cleanup activities at SWMUs 7 and 8. The EPA approved the CMS in February 2006.</p>	<p>The regulatory-approved remedial action to address soil contamination at SWMUs 7 and 8 includes the excavation of the upper 2-feet of soil in three areas of concern where the PAH compounds benzo(a)-anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene, along with arsenic, exceeded their respective CAOs (Figure 2). The CAOs for the contaminants of concern are presented below in Table 1. Baker developed the CAOs using an industrial classification risk-exposure scenario involving construction worker contact with surface and subsurface soil.</p> <p><b><u>FIELD INVESTIGATION</u></b></p> <p>On January 22 and 23, 2009, AGVIQ-CH2M HILL personnel marked locations of sampling grids (grid spacing of 50-feet) covering the three areas of concern identified in the CMS. However, due to the presence of obstructions (tanks and piping) and variations in topography (steep hillsides), several sampling locations had to be either moved or omitted. The sample locations are depicted on Figure 2.</p> <p>Soil sampling activities were conducted between June 1 and 4, 2009. In areas accessible by vehicle, a truck-mounted direct push technology (DPT) rig was used to collect continuous soil samples from the upper 2-feet of soil (0 to 2 feet below ground surface [bgs]). A hand auger was used to collect soil samples from the upper 2 feet of soil in areas that could not be accessed by the DPT rig. The homogenized soil was transferred to 4-ounce glass jars provided by the laboratory for chemical analysis. All samples were analyzed for arsenic using EPA Method 6010B, and select samples were analyzed for benzo(a)anthracene, benzo(a)pyrene, benzo(b)-fluoranthene, and indeno(1,2,3-cd)pyrene using EPA Method 8270C.</p>
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<b>Table 1</b>					
<b>Chemical</b>	<b>Maximum Observed Concentration</b>	<b>Surface Soil CAO*</b>	<b>Subsurface Soil CAO*</b>	<b>Total Soil CAO**</b>	
Arsenic	4.3	2.65	NA	NA	
Benzo(a)anthracene	6J	2.9	NA	73	
Benzo(a)pyrene	23J	2.9	7.3	7.3	
Benzo(b)fluoranthene	5.9J	2.9	NA	73	
Indeno(1,2,3-cd)pyrene	5.3J	2.9	NA	73	
CAO Corrective Action Objective * Based on industrial worker protection ** Based on construction worker protection J Estimated NA Not Applicable All values reported in milligrams per kilogram (mg/kg) Surface Soil – 0 to 2 feet Subsurface Soil – 0 to 10 feet					

<p><b><u>DISCUSSION OF RESULTS</u></b></p> <p><b>PAH</b></p> <p>Eighteen samples were collected and analyzed for PAH compounds benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene. PAHs were not detected in the upper 2 feet of soil in the areas of concern indicated by the CMS.</p> <p><b>ARSENIC</b></p> <p>Seventy-two samples were collected and analyzed for arsenic. Arsenic was detected in 69 of the 72 samples at concentrations ranging from 0.81J (C2) to 4.3 mg/kg (B23). Of the 69 samples collected, arsenic was detected above the CAO of 2.65 mg/kg in the following nine borings: A30, B9, B14, B23, B26, C3, C7, C9, and C12 (Figure 2). However, results of a statistical evaluation indicate the current comparable statistical value (UCL95%) for arsenic is 2.5 mg/kg. Therefore, site arsenic levels are within background levels and are below the CAO of 2.65 mg/kg.</p> <p><b><u>PROPOSED FINAL REMEDY</u></b></p> <p>Based on the analytical results for the surface soil samples, there is no soil contamination at the site that requires corrective actions. PAH concentrations are below detection limits and do not present human or ecological exposure concern. Therefore, no further action at SWMUs 7 and 8 is recommended for PAHs in site soils.</p>	<p>Based on the extensive sampling conducted across the site, detected arsenic is randomly distributed across the site. The distribution patterns indicate absence of specific elevated areas, and statistical evaluation of the data indicate site arsenic upper-bound estimates are between 1.9 mg/kg and 2.5 mg/kg, which are below the CAO target level of 2.65 mg/kg. No single detection is indicative of extremely elevated values. Therefore, the detected arsenic levels at SWMUs 7 and 8 are considered naturally occurring within the surface soil and no further action is recommended for arsenic in site soils.</p> <p>In summary, no land use restrictions are necessary for site soils, as residual concentrations are similar to background levels for arsenic and PAHs are below detection levels.</p> <p><b><u>PUBLIC PARTICIPATION</u></b></p> <p>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 EPA. A public notice of that public comment period will be published in both Spanish and English in select Puerto Rico newspapers.</p>
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**NEXT STEPS**

Following completion of public review and comment on the proposed remedy, the EPA will advise of any required modifications based on the public comments, or its acceptability.

**KEY DOCUMENTS**

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

Corrective Measures Study Addendum SWMUs 7 and 8 – Revised Soil Remedy, dated February 2010.

**FURTHER INFORMATION**

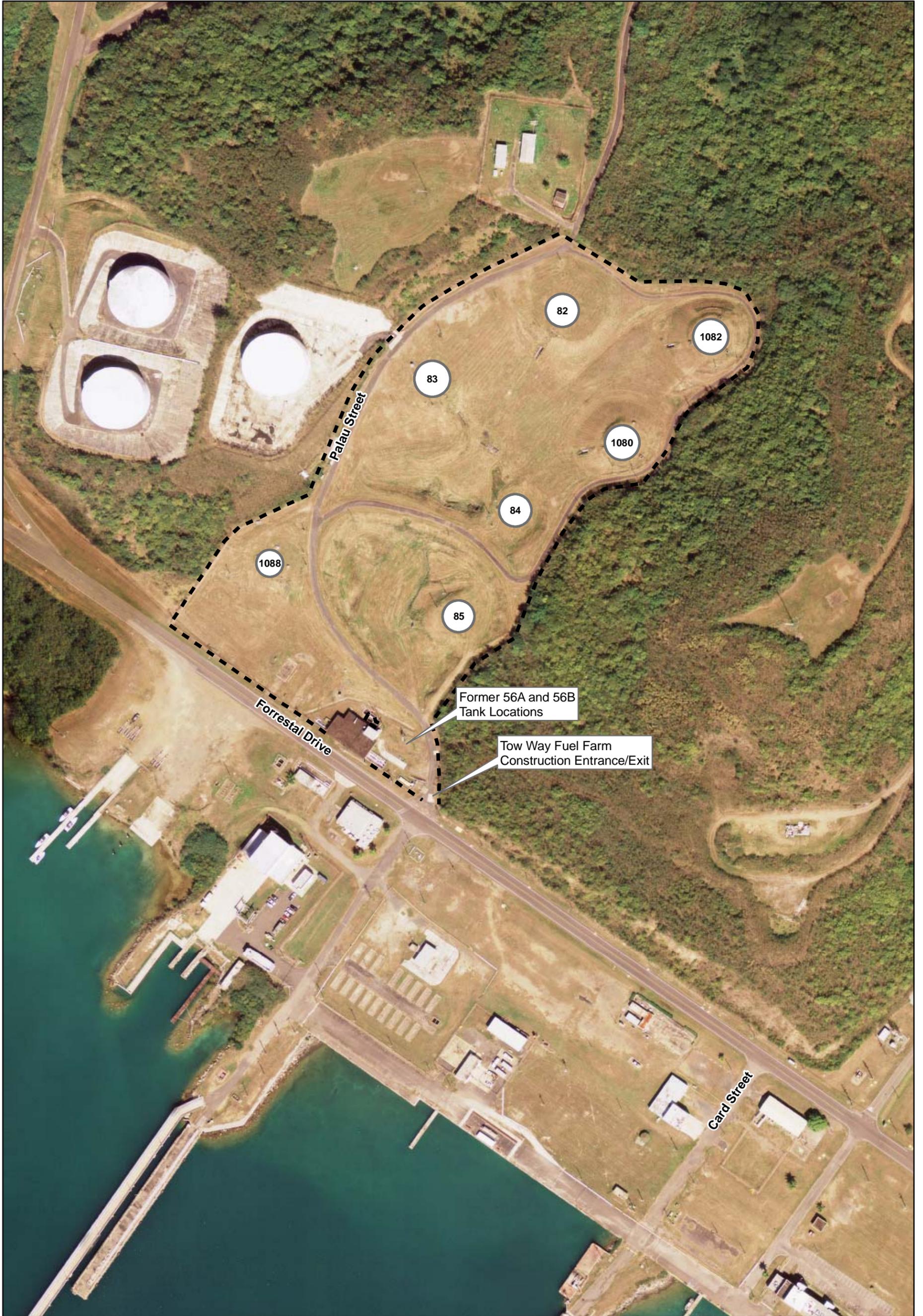
The key documents may be reviewed at:

U.S. Environmental Protection Agency,  
Region 2 RCRA File Room  
290 Broadway, 15<sup>th</sup> 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. Wilmarie Rivera, phone 787- 767-8181  
Ext. 6141

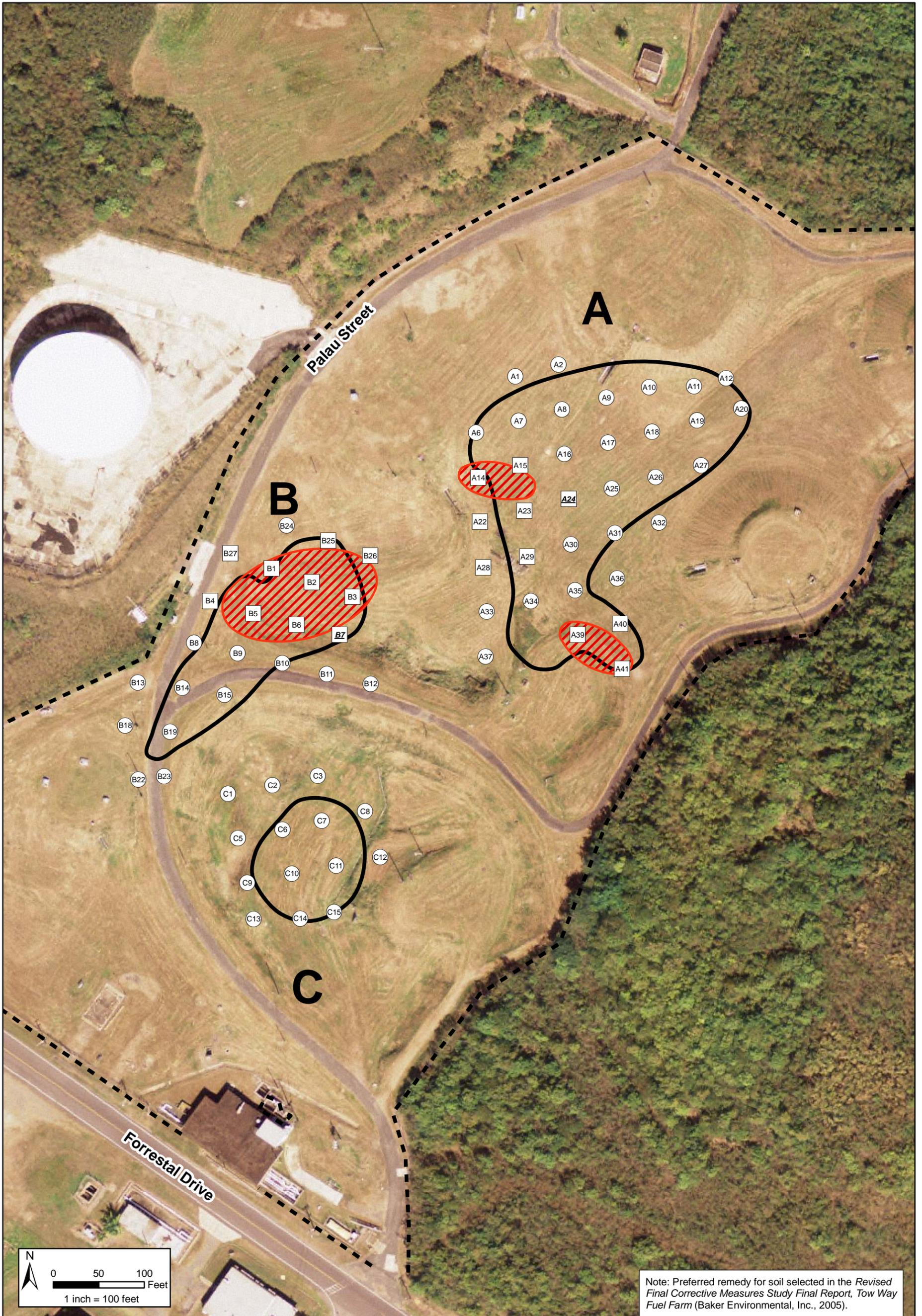
Or at the following internet web page address:  
<http://nsrr-ir.org/>



- Fence
- Former Fuel Tank



FIGURE 1  
 SWMU 7/8 Base Map  
 Tow Way Fuel Farm  
 Naval Station Roosevelt Roads, Puerto Rico



**Soil Delineation Sampling Point**

- Arsenic
- Arsenic and Polynuclear Aromatic Hydrocarbons (PAHs)

- - - Fence
- ▭ Assumed Arsenic Impacted Soil Area (See Note)
- ▨ PAH Excavation Area (See Note)

PAHs = Benzo(a)anthracene  
 Benzo(a)Pyrene  
 Benzo(a) fluoranthene  
 Benzo(1,2,3-cd)Pyrene

A24 = Asphalt present in soil sample. Sample only tested for arsenic.

Note: Preferred remedy for soil selected in the Revised Final Corrective Measures Study Final Report, Tow Way Fuel Farm (Baker Environmental, Inc., 2005).

**FIGURE 2**  
 Soil Delineation Sample Locations  
 Tow Way Fuel Farm  
 Naval Station Roosevelt Roads, Puerto Rico