Statement of Basis for SWMU 69

Naval Activity Puerto Rico, Ceiba, Puerto Rico

April 2015

1. Introduction

This Statement of Basis is issued consistent with public participation provisions of the Resource Conservation Recovery Act (RCRA), to document and provide the rationale for the proposed final remedy for all media associated with Solid Waste Management Unit (SWMU) 69, at Naval Activity Puerto Rico (NAPR), Ceiba, Puerto Rico. Based on previous investigation results and associated data evaluations, the United States Environmental Agency (USEPA), the lead regulatory agency, in consultation with the Navy and the Puerto Rico Environmental Quality Board (PREQB), has determined that there have been past releases at SWMU 69 warranting further action. Detailed information documenting environmental investigations at SWMU 69 can be found in the Revised Final Corrective Measures Study (CMS) Report for SWMU 69 (Baker, 2014) and other documents contained in the Administrative Record File.

Soil, groundwater, and freshwater drainage ditch sediment are the media associated with SWMU 69. Limited removal actions are proposed for surface soil (0.0 to 1.0 feet below ground surface [bgs]), subsurface soil (1.0 to 3.0 feet bgs), and fresh water drainage ditch sediment (0.0 to 1.0 feet bgs) in this Statement of Basis based on unacceptable risks to ecological receptors. No potentially unacceptable site-related risks to human health were identified for SWMU 69 in the CMS (Baker, 2014). However, groundwater potable use and residential development restrictions are currently in place for the site because ownership of the property was transferred from the Navy to the Puerto Rico Ports Authority (PRPA) with land and groundwater use restrictions prior to the completion of the CMS investigation/remedial action.

Documents associated with RCRA investigations at NAPR, including previous investigation reports for SWMU 69, can be accessed through the Administrative Record at: http://go.usa.gov/8mnm.

The public is invited to comment on the proposed corrective action determination for SWMU 69. This Statement of Basis includes information on how the public can participate in this decision making process. The EPA, in consultation with the Navy and PREQB, will make a final decision on the determination for SWMU 69 after reviewing and considering information submitted during the 30-day public comment period and may modify the proposed determination, based on new information and/or public comments. Therefore, community involvement is critical in the decision-making process, and the public is invited and encouraged to review and comment on this Statement of Basis. Following review and consideration of all information submitted during the public review and comment period, a Response to Comments document will be issued.

2. NAPR Background

NAPR, formerly Naval Station Roosevelt Roads (NSRR), consists of approximately 8,600 acres (USEPA, 2007) of land located on the east coast of Puerto Rico (**Figure 1**). NAPR is bordered to the west by mainland Puerto Rico, with the nearest municipality, Ceiba, to the west and north, and the municipality of Naguabo to the southwest. Fajardo is the nearest major town, located 8 miles to the north. NAPR is bordered on its remaining sides by water: the Atlantic Ocean is to the north, and the Vieques Passage, which opens up into the Caribbean Sea, is to the south and east.

Military activity in the area started in 1941 when Fort Bundy was established on what is now the southwest portion of NAPR (LANTDIV, 2005). Fort Bundy was the headquarters for coastal artillery emplacements. In 1943, NSRR was established on the northeast portion of what is now NAPR. NSRR provided both training and support to the Atlantic fleet operations throughout the Caribbean. Fort Bundy and NSRR both remained active until the end of World War II, and were then maintained between World War II and 1957, both being deactivated and reactivated several times throughout this time. In 1957, Fort Bundy was incorporated into NSRR. NSRR then became home to the Atlantic Fleet Guided Missile Training Operations Center, which provided missile support facilities and training to Atlantic fleet submarine units. The facility was then commissioned separately as the Atlantic Fleet Weapons Training Facility shortly after the Cuban Missile Crisis in 1963. As a result of the United States treaty with Panama in 1979 that stipulated the United States would remove its military presence from Panama, the United States relocated the Special Operations Command South to NSRR in 1999 and 2000.

When the 2004 Defense Appropriations Act was signed on September 30, 2003, it stipulated that NSRR was to be disestablished within 6 months, and that the real estate disposal and transfer would be carried out according to procedures outlined in Base Realignment and Closure 1990 (LANTDIV, 2005). Therefore, on March 31, 2004, NSRR was closed and NAPR was established to oversee the property as caretaker and to assist in the property transfer (LANTDIV, 2005). Currently, the PRPA owns the land that contains SWMU 69. The Navy transferred the land on February 7, 2008; however, the Navy retained the responsibility for site characterization and, if necessary, corrective action. Groundwater and soil land use controls (LUCs) were implemented at SWMU 69 as part of the Quit Claim deed for the airfield parcel, as the site has been used as an aircraft parking area.

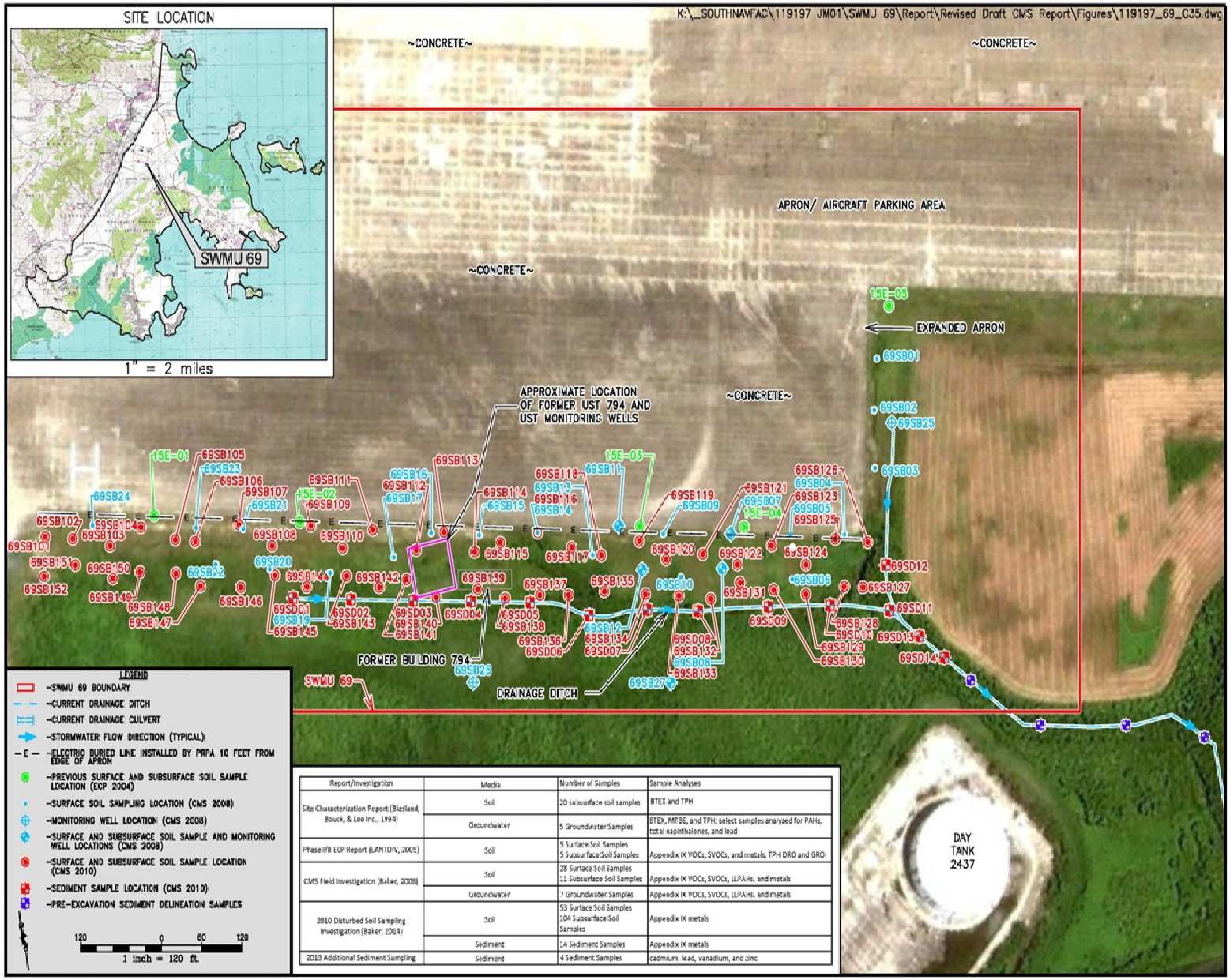
In anticipation of the NSSR closure and the sale and transfer of property, a Draft Phase I Environmental Condition of Property (ECP) Report (LANTDIV, 2004) was prepared to document the environmental conditions of NSRR based on investigations, interviews, and a review of available information and data. The objective of the ECP Report was to categorize all of the property on NSRR and to determine the presence, likely presence, release, or likely release of any hazardous substance or petroleum product. A Phase II ECP investigation was performed to provide supplemental data to evaluate the SWMUs, areas of concern (AOCs), and ECP sites that had been identified and to determine the path forward for each. The Phase I/II ECP Report (LANTDIV, 2005) recommended that further investigation activities occur for many sites, including SWMU 69 (formerly ECP Site 15), in the form of a CMS.

3. SWMU 69 Description and Background

SWMU 69 covers an area of about 30 acres and is located on the northwestern side of Ofstie Field, on the northern aircraft parking area (see Figure 1). SWMU 69 has historically been used as an aircraft parking area.

Interviews confirmed numerous past spills of petroleum, oils, and lubricant (POL) and hazardous materials from the 1950s to the 1990s, and former use of the concrete apron as an aircraft wash down area is considered likely. The site was first identified through an aerial photography analysis presented in the ECP Report (NAVFAC Atlantic, 2005) showing stains/liquid extending off the edge of the aircraft parking area to a surrounding drainage ditch from 1958 through 1965. A concrete channel is estimated to have been constructed between 1985 and 1995 in the area of the stained soil next to the concrete apron. Ownership of the airfield parcel (Ofstie Field) was transferred from the Navy to the Puerto Rico Ports Authority (PRPA) on February 7, 2008. The Ports Authority has developed the Ofstie Field into a regional airport (Jose Aponte de la Torre Airport).

FIGURE 1
SWMU 69 Site Map



Report/Investigation	Media	Number of Samples	Sample Analyses
Site Characterization Report (Blasland, Bouck, & Lee Inc., 1994)	Soil	20 subsurface soil samples	BTEX and TPH
	Groundwater	5 Groundwater Samples	BTEX, MTBE, and TPH; select samples analyzed for PAHs, total naphthalenes, and lead
Phase I/II ECP Report (LANTDIV, 2005)	Soil	5 Surface Soil Samples 5 Subsurface Soil Samples	Appendix IX VOCs, SVOCs, and metals, TPH DRO and GRO
CMS Field Investigation (Baker, 2008)	Soil	28 Surface Soil Samples 11 Subsurface Soil Samples	Appendix IX VOCs, SVOCs, LLPAHs, and metals
	Groundwater	7 Groundwater Samples	Appendix IX VOCs, SVOCs, LLPAHs, and metals
2010 Disturbed Soil Sampling Investigation (Baker, 2014)	Soil	53 Surface Soil Samples 104 Subsurface Soil Samples	Appendix IX metals
	Sediment	14 Sediment Samples	Appendix IX metals
2013 Additional Sediment Sampling	Sediment	4 Sediment Samples	cadmium, lead, vanadium, and zinc

4. Previous Investigations

Several investigations have been conducted at SWMU 69, including a Site Characterization (Blasland, Bouck, and Lee, Inc., 1994), Phase I/II ECP (LANTDIV, 2005), 2008 CMS investigation (Baker, 2008), 2010 Disturbed Soil Sampling investigation (Baker, 2014), and 2013 additional sediment sampling to evaluate and determine whether a release of hazardous waste or constituents has occurred from past RCRA-related activities, and if so, determine whether the suspected release warrants further investigation or action. A summary of previous investigations for SWMU 69 is provided in **Table 1**.

TABLE 1
SWMU 69 Previous Investigations

Investigation/Report	Results/Summary
Site Characterization Report (Blasland, Bouck, & Lee, Inc., 1994)	A site characterization of Underground Storage Tank (UST) 794 was performed in June and July of 1994. Ten soil borings were advanced for soil and groundwater collection and five borings were converted to monitoring wells. Twenty subsurface soil samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX) and total petroleum hydrocarbons (TPH). BTEX were not detected in soil, while TPH was detected above the PREQB limit of 100 milligrams per kilogram (mg/kg) in one location. Five groundwater samples were analyzed for BTEX, methyl-tert-butyl ether (MTBE), and TPH; and three samples were also analyzed for polynuclear aromatic hydrocarbons (PAHs), total naphthalenes, and lead. No groundwater concentrations of benzene, BTEX, MTBE, TPH, PAHs, total napthalenes, or lead exceeded method detection limits or PREQB target levels for UST sites. The site characterization report concluded that subsurface soil contamination was present at the site but that the groundwater was not impacted by the release of fuel compounds.
Phase I/II ECP (LANTDIV, 2005)	The Phase II ECP investigation performed in 2004 observed evidence of staining on the surface of the southern portion of the expanded aircraft apron. A total of five soil borings were advanced around the southern and eastern perimeters of the expanded aircraft apron. One surface soil and one subsurface soil sample was collected from each soil boring location and analyzed for Appendix IX volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, and TPH diesel range organics (DRO) and gasoline range organics (GRO). Dibenzo(a,h)anthracene and benzo(a)pyrene were detected in surface soil at concentrations greater than EPA Region III residential risk-based concentrations (RBCs) but less than industrial RBCs. DRO was detected in two samples at concentrations greater than PREQB criteria of 100 mg/kg. Arsenic, barium, cadmium, chromium, and vanadium also exceeded one or more of the screening values. Lead exceeded its residential screening level of 400 mg/kg but not the industrial screening level of 800 mg/kg. Based on the results, it appeared that past activities had impacted the environment at this location and the contamination at the site was primarily related to fuel compounds. The ECP Report recommended continued RCRA corrective measures activities, which was the basis for conducting a CMS at SWMU 69.
CMS Field Investigation – Draft CMS Report for SWMU 69 (Baker, 2008)	The SWMU 69 field investigation was conducted from April through June, 2008. Twenty-five surface soil samples and 10 subsurface soil samples were collected and analyzed for Appendix IX VOCs, SVOCs, LLPAHs, and metals. VOCs and SVOCs were detected at low concentrations near detection limits in surface and subsurface soil. Arsenic, barium, cadmium, chromium, lead, mercury, nickel, selenium, tin, vanadium, and zinc were detected at concentrations in excess of NAPR basewide background in surface soil. Arsenic, cobalt, copper, mercury, and vanadium exceeded NAPR basewide background screening values in a limited number of subsurface soil samples. Seven groundwater samples were collected and analyzed for Appendix IX VOCs, SVOCs, LLPAHs, and total and dissolved metals. Three VOCs and six SVOCs were detected in the groundwater at low concentrations near detection limits. Of the detected total and dissolved metals, only dissolved barium exceeded its NAPR basewide background screening value. The human health risk assessment (HHRA) did not indicate adverse risk to human health from site media. The ecological risk assessment (ERA) identified four metals (barium, cadmium, lead, and zinc) as chemicals of concern (COCs) in surface soil. However, shortly after the submittal of the Draft CMS Report (Baker, 2008), significant disturbances to soil at SWMU 69 occurred from the PRPA's conversion of the airfield to a commercial facility. Therefore, analytical results for surface and shallow subsurface soil collected during the 2008 CMS investigation were no longer representative of current site conditions, and the Navy retracted the Draft CMS due to changed site conditions in a letter dated December 3, 2008.

TABLE 1
SWMU 69 Previous Investigations

Investigation/Report	Results/Summary
2010 Disturbed Soil Sampling Investigation – Revised Final CMS Report for SWMU 69 (Baker, 2014)	The 2010 Disturbed Soil Sampling Investigation was conducted in August and November 2010 to re-characterize the site and involved the collection of surface soil, subsurface soil, and sediment samples. Subsurface soil data greater than 3 feet bgs and groundwater data from the 2008 CMS investigation were still considered representative of site conditions as they were not altered by the PRPA's activities. A total of 53 surface soil, 104 subsurface soil and 14 sediment samples were collected and analyzed for Appendix IX metals. Arsenic, barium, cadmium, cobalt, lead, mercury, selenium, vanadium, and zinc were detected at concentrations in excess of NAPR basewide background in surface soil. Arsenic, barium, copper, mercury, selenium, and vanadium were detected at concentrations in excess of NAPR basewide background in subsurface soil. Arsenic, cadmium, chromium, copper, lead, nickel, vanadium, and zinc were detected at concentrations in excess of NAPR basewide background in sediment. The HHRA did not identify any COCs or unacceptable risks to human receptors from potential exposure to site-related constituents detected in site media. The ERA identified vanadium in surface soil and cadmium, lead, vanadium, and zinc in sediment as COCs. Corrective Action Objectives (CAOs) were developed to mitigate ecological risk and a presumptive remedy of excavation and off-site disposal with institutional controls to address background levels of cobalt in groundwater was developed in compliance with all applicable laws and regulations.
2013 Additional Sediment Sampling	Based on the results of the CMS, it was determined that further delineation of potential COCs in the sediment was warranted. Therefore, an additional sampling event was conducted in October 2013 in order to collect additional sediment samples. Four sediment samples were collected and analyzed for cadmium, lead, vanadium, and zinc. The results indicated that the sediment had been delineated.

5. Risk Assessment Summary

The Revised Final CMS included human health and ecological risk evaluations for soil, groundwater, and sediment associated with SWMU 69 (Baker, 2014). A summary for each medium is as follows:

- *Soil* – A HHRA was completed and included calculated risk estimates for trespassers, on-site workers, future construction workers, and future industrial/commercial workers). A hypothetical future residential scenario was included as a conservative approach. The HHRA determined that the cumulative incremental lifetime cancer risk (ILCR) and hazard index (HI) for soil are within the USEPA's acceptable levels. The ERA evaluated the exposures of contaminants in soil on ecological receptors and one chemical, vanadium, was identified as a COC for surface (Hazard Quotient [HQ] = 8.59) and subsurface soil (HQ = 11.85). The range of vanadium concentrations detected in SWMU 69 soil is provided in **Table 2**.
- *Groundwater* – The HHRA determined that the ILCR for groundwater was within the USEPA's acceptable risk range. Although SWMU 69 total site HIs were greater than USEPA's target level of 1.0 (adult HI = 1.4, young child HI = 4.6) for the hypothetical residential scenario (i.e., unrestricted use), refinement of total site risks determined that unacceptable risks to residential receptors were calculated from exposure to background levels of cobalt in groundwater. Consequently, the Revised Final CMS Report recommended institutional controls as a means of communicating this background risk to future property owners. However, since there were no unacceptable human health risks related to past site activities, no corrective action is required. Based on the refined risk evaluation completed as part of the ERA, no ecological COCs were identified for groundwater; consequently ecological CAOs were not developed for the groundwater for SWMU 69.
- *Sediment* - The HHRA determined that the cumulative ILCR and HI for sediment are within the USEPA's acceptable levels. The ERA evaluated the exposures of contaminants in sediment on ecological receptors and cadmium (HQ = 13.58), lead (HQ = 9.86), vanadium (HQ = 4.34), and zinc (HQ = 2.56) were identified as COCs for sediment. The range of concentrations of these chemicals detected in SWMU 69 sediment is provided in **Table 3**.

6. Proposed Corrective Action

The goal of the proposed remedy is to provide permanent protection of human health and the environment.

A presumptive remedy of soil and sediment excavation and off-site disposal was proposed as an implementable and cost effective technology for this site. Excavation and off-site disposal is proven and commonly used at remediation and general construction sites. It is reliable, effective, easily implemented and complies with all applicable laws and regulations. Clean-up goals could be achieved using this method and it could provide an immediate benefit to the environment. Furthermore, the presumptive remedy approach is consistent with the requirements of the RCRA § 7003 Administrative Order on Consent as well as the National Contingency Plan (NCP), and only a limited volume and extent of soil and drainage ditch sediment requires cleanup. Consistent with the use of a presumptive remedy, additional and/or innovative technologies were not evaluated for this site.

The proposed remedy for the soil and sediment contamination at SWMU 69 consists of the excavation and off-site disposal of approximately 2,221 cubic yards (CY) of soil (to a depth of two feet below ground surface for Areas 1, 3, and 5, and a depth of three feet below ground surface for Areas 2 and 4) and 192 CY of sediment (to a maximum depth of one foot within the drainage ditch) (see **Figure 2**). Soil samples will be collected from the sidewall of the excavation to confirm removal of the contaminated soil to below the CAOs (see **Table 2**). Confirmation samples will also be collected from the bottom of the excavation of Areas 1, 3, and 5 (see **Figure 2**). Upon reaching the limit of soil excavations, existing excavated areas will be backfilled with clean fill. Any disturbed areas will be graded and re-vegetated.

FIGURE 2
Conceptual Design for Soil and Sediment Excavation

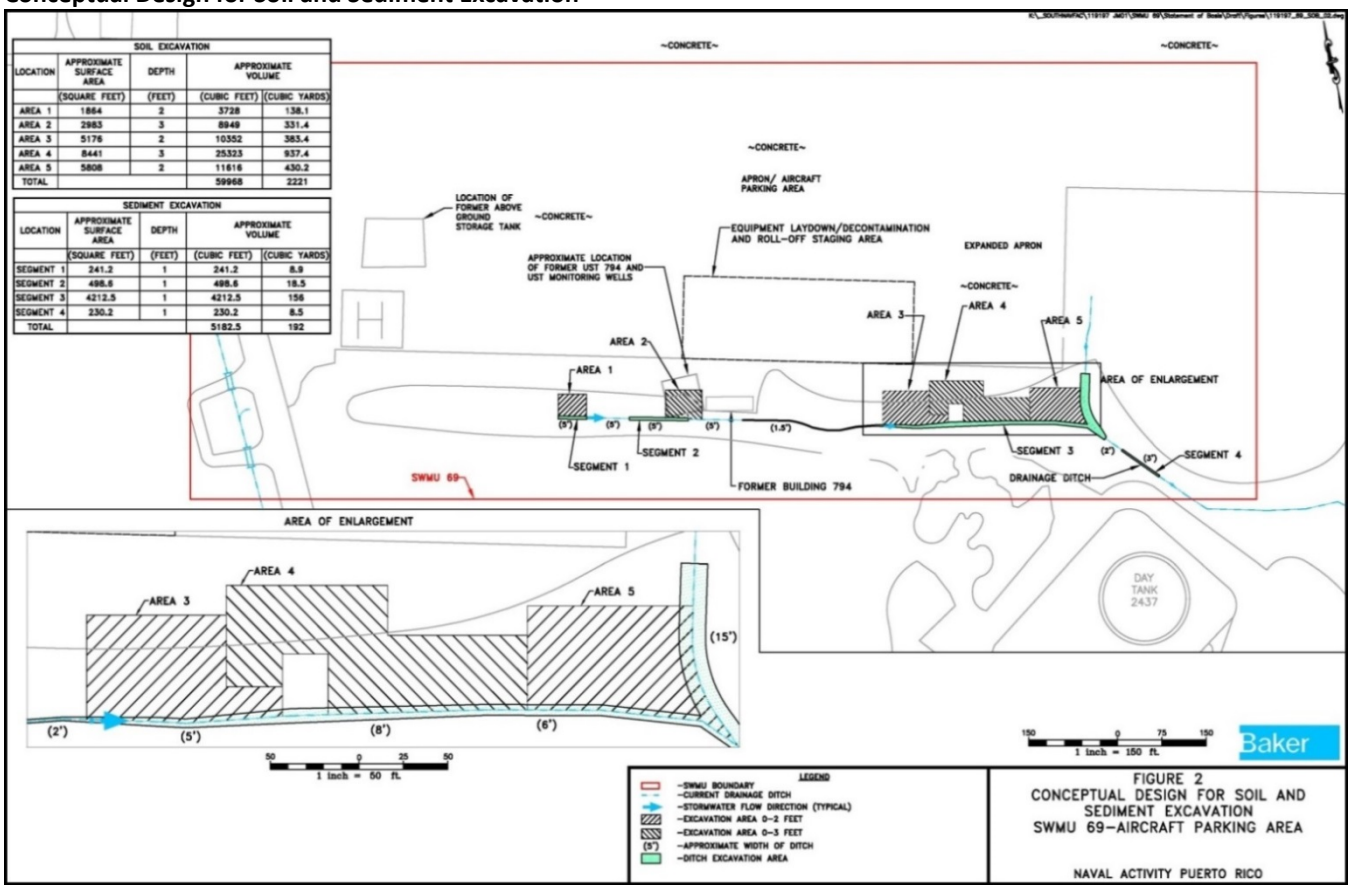


TABLE 2
Surface and Subsurface Soil Corrective Action Objectives

Chemical	Range of Positive Detections (mg/kg)	CAO (mg/kg)	Source of CAO
Vanadium (surface soil)	9 - 550	367	Background
Vanadium (subsurface soil)	170 – 380	367	Background

Concerning sediment excavation, the removal of the upper one foot of drainage ditch sediment removes the potential pathways to ecological receptors. As such, any contamination in excess of the CAOs (see **Table 3**) remaining below the one foot excavation will not pose a risk to ecological receptors because the excavation will be lined with geotextile, backfilled with one foot of compacted low permeability soil, and armored with riprap. Confirmation samples will be collected along the edge of excavation that extends perpendicular to the channel to verify the extent of contamination has been removed.

TABLE 3
Freshwater Drainage Ditch Sediment Corrective Action Objectives

Chemical	Range of Positive Detections (mg/kg)	CAO (mg/kg)	Source of CAO
Cadmium	0.38 – 24J	1.0	Plant and Invertebrate Screening Value
Lead	6.4 – 680J	35.8	Plant and Invertebrate Screening Value
Vanadium	67J – 370J	241	Background
Zinc	40 – 490J	148	Background

Successful implementation of the presumptive remedy will remove the identified ecological risks. Although SWMU 69 total site noncancer risks were greater than USEPA's target level for the hypothetical residential scenario, refinement of total site risks determined that unacceptable risks to residential receptors were calculated from exposure to background levels of cobalt in groundwater. Consequently, the Revised Final CMS Report recommended institutional controls as a means of communicating this background risk to future property owners. However, since there were no unacceptable human health risks related to past site activities, no corrective action is required. Therefore, after completion of the remedy, no additional controls are required for this site (Corrective Action Complete without Controls).

Since the property was transferred prior to completion of the investigation and risk assessments, the Quit Claim deed includes controls as a conservative measure to protect human health and the environment. These controls include restricting future residential and groundwater use along with restricting soil and sediment excavation. To maintain compliance with the restrictions established in the deed, annual monitoring of site conditions is required. Upon completion of the remedy, there will be no restrictions and inspections per the land transfer agreement will no longer be required. The restrictions in the Quit Claim deed can be removed or changed through the real estate process once the Statement of Basis (this document) and the Finding of Suitability to Transfer (FOST) are finalized.

Long-term or operation and maintenance costs are not required since contamination will be removed from the site. The overall estimated capital cost for implementation of the excavation of contaminated soil and sediment and off-site disposal corrective measure is $1,704,897.

7. Public Participation

The public is encouraged to provide comments regarding the proposed final site determination provided in this Statement of Basis. The EPA, in consultation with PREQB, will make a final decision on the determination for SWMU 69 after reviewing and considering information submitted during the 30-day public **comment period** and may modify the proposed determination, based on new information and/or public comments. The public comment period will extend from May 15, 2015 through June 15, 2015.The public can review information on the RCRA program at: https://www.bracpmo.navy.mil/brac_bases/southeast/former_ns_roosevelt_roads.html

Mark Your Calendar for the Public Comment Period

Public Comment Period

May 15, 2015 through June 15, 2015

Submit Written Comments

Written comments on this Statement of Basis for SWMU 69 will be accepted during the public comment period. To submit comments or obtain further information on the proposed no action determination for SWMU 69 or request a public meeting, please provide written correspondence to:

Douglas M. Pocze
USEPA Project Manager
ERRD-SPB-FFS
290 Broadway
New York, NY 10007-1866

If requested during the Public Comment Period, a public meeting will be held to respond to any oral comments or questions regarding the proposed determination. The public will be notified of the date, time, and place of any public meeting as soon as it is scheduled.

Following completion of the public comment period for the proposed Corrective Action Complete without Controls determination for SWMU 69, the USEPA will advise the Navy of any required modifications based on the public comments, or its acceptability. A Responsiveness Summary will be prepared to address substantive comments received during the public comment period and will be included with the final version of this Statement of Basis. If the proposed soil and sediment removal action is accepted, SWMU 69 will achieve Corrective Action Complete without Controls and the Quit Claim deed will be modified through the real estate process to remove applicable LUCs.

The Administrative Record Documents can be reviewed at:

http://go.usa.gov/8mnm

During regular business hours, a hardcopy of the Statement of Basis and reference documents listed on Table 1 will be available for public review.

Puerto Rico Environmental Quality Board
Land Pollution Control Area – 3rd Floor
Hazardous Wastes Permits Division
San José Industrial Park
1375 Ponce de Leon Ave.
State Road 8838, El Cinco
Río Piedras, PR 00926
Attn. Ms. Gloria Toro (Project Manager), phone 787-767-8181 x3586 or x3581 (Secretary)

Ceiba Library – Ceiba Mayor's Office
Lauro Piñero Avenue
Plaza de Recreo
Ceiba, PR 00735, phone 787-885-2180

8. References

Baker, 2014. *Revised Final Corrective Measures Study Report for SWMU 69*. Naval Activity Puerto Rico, Ceiba, Puerto Rico. August 28, 2014.

Blasland, Bouck & Lee, Inc. (BB&L), 1994. *Site Characterization Site 794*. Roosevelt Roads Naval Station, Ceiba, Puerto Rico. October 1994.

Naval Facilities Engineering Command Atlantic (NAVFAC Atlantic), 2005. *Final Phase I/II Environmental Condition of Property, Former U.S. Naval Station Roosevelt Roads, Ceiba, Puerto Rico*. Norfolk, Virginia.

USEPA, 2007. RCRA § 7003 Administrative Order on Consent. *In the Matter of: United States. The Department of the Navy, Naval Activity Puerto Rico formerly Naval Station Roosevelt Roads, Puerto Rico*. Environmental Protection Agency, EPA Docket No. RCRA-02-2007-7301. January 29, 2007.