

STATEMENT OF BASIS/ PROPOSED FINAL REMEDY DECISION		REGION 2 ID# PR2170027203																																										
NAVAL ACTIVITY PUERTO RICO (former Naval Station Roosevelt Roads) Ceiba, Puerto Rico (July 19, 2010)																																												
Facility/unit Type: SWMU 53 - Former Malaria Control Building Contaminants: Pesticides (4,4'-DDT, 4,4'-DDE, chlordane, heptachlor epoxide, kepone) and Inorganics (arsenic, chromium and zinc) Media: Soil Proposed Final Remedy: Excavation and off-site disposal of 262.62 tons of non-hazardous contaminated soil and 55.55 tons of hazardous soil for a total of 318.17 tons of soil.																																												
<p><u>FACILITY DESCRIPTION</u></p> <p>On October 20, 1994, a Final Resource Conservation and Recovery Act (RCRA) Part B permit was issued by the USEPA Region 2 to Naval Station Roosevelt Roads (NSRR). This permit contained requirements for RCRA Facility Investigation (RFI) activities at specified Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs), including SWMU 53.</p> <p>SWMU 53 is the area of Building 64, known as the Malaria Control Building, which was built in 1942 and condemned in 1980. The building was used to store pesticides such as aldrin and 4,4'-dichlorodiphenyltrichloroethane (DDT). No wastes are known to have been disposed at the unit and there are no known releases related to this unit. The information gathered from the visual site inspection revealed that there are no known wastes dumped at this facility, nor was there any evidence of source contamination. However, there were indications of possible past leakage of chemicals on the storage shelves inside the building and identified migration pathways along the floor leading to the outside. Therefore, soils investigations were performed.</p> <p>Several investigations have been performed at SWMU 53 including: a Phase I Environmental Assessment (EAs), Sampling and Analysis Investigation (SAI), a RFI, and a Corrective Measures Study (CMS), as follows:</p> <table border="1"> <thead> <tr> <th>Investigation</th> <th>Year</th> <th>Soil Samples</th> </tr> </thead> <tbody> <tr> <td>Phase I EA</td> <td>2000</td> <td>No samples</td> </tr> <tr> <td>SAI</td> <td>2001</td> <td>15 surface, 7 subsurface</td> </tr> <tr> <td>RFI</td> <td>2002</td> <td>16 surface, 16 subsurface</td> </tr> <tr> <td>CMS Invest</td> <td>2003</td> <td>22 surface</td> </tr> </tbody> </table> <p>The extent of several metals and pesticides were delineated in soils by the investigations. The data were used to develop remedial goals for the site.</p> <p><u>EXPOSURE PATHWAYS</u></p> <p>Based on data from the various investigations, risk screening of soil data from SWMU 53 resulted in unacceptable risks for on-site future residents as well as terrestrial invertebrate and plant communities. Pathways for future residents and ecological receptors were eliminated by removal of soils above the approved remedial goals.</p>	Investigation	Year	Soil Samples	Phase I EA	2000	No samples	SAI	2001	15 surface, 7 subsurface	RFI	2002	16 surface, 16 subsurface	CMS Invest	2003	22 surface	<p><u>SELECTED REMEDY</u></p> <p>Based on the potential of the site for residential use, remedial goals at SWMU 53 were selected for the most likely future potential human receptors, as well as the current ecological receptors present at the site. These remedial goals are protective of any future property use scenario and no engineering controls or property use restrictions are necessary to protect human and ecological health. Human health screening criteria were established as the remedial goals for heptachlor epoxide and arsenic. Ecological screening criteria were established as remedial goals for 4,4'-DDT, 4,4'-Dichlorodiphenyldichloroethylene (DDE), chlordane, kepone, lead, zinc, and chromium.</p> <p>The following table summarizes the remedial goals for SWMU 53.</p> <table border="1"> <thead> <tr> <th>Compound</th> <th>Remedial Goal (mg/kg)</th> </tr> </thead> <tbody> <tr> <td>Pesticides</td> <td></td> </tr> <tr> <td>4,4'-DDT</td> <td>0.396</td> </tr> <tr> <td>4,4'-DDE</td> <td>0.106</td> </tr> <tr> <td>Chlordane</td> <td>0.099</td> </tr> <tr> <td>Heptachlor epoxide</td> <td>0.053</td> </tr> <tr> <td>Kepone</td> <td>0.099</td> </tr> <tr> <td>Inorganics</td> <td></td> </tr> <tr> <td>Lead</td> <td>49.5</td> </tr> <tr> <td>Arsenic</td> <td>3.9</td> </tr> <tr> <td>Zinc (surface soil)</td> <td>106</td> </tr> <tr> <td>Zinc (subsurface soil)</td> <td>98.5</td> </tr> <tr> <td>Chromium (surface soil)</td> <td>44.1</td> </tr> <tr> <td>Chromium(subsurface soil)</td> <td>148</td> </tr> </tbody> </table> <p>Soils were excavated to achieve the remedial goals. No long term restrictions, controls or monitoring are required with this remedy.</p> <p><u>INNOVATIVE TECHNOLOGIES CONSIDERED</u></p> <p>Excavation and off-site disposal of contaminated soil was a presumptive remedy for this SWMU. Excavation and off-site disposal is proven and commonly used at remediation and general construction sites. It is reliable, effective and easily implemented. Clean-up goals could be achieved using this method and it could provide an immediate benefit to the environment. Therefore, no innovative technologies were considered.</p> <p><u>CORRECTIVE ACTION COMPLETED</u></p> <p>Heavy equipment was mobilized on April 10, 2006. It</p>	Compound	Remedial Goal (mg/kg)	Pesticides		4,4'-DDT	0.396	4,4'-DDE	0.106	Chlordane	0.099	Heptachlor epoxide	0.053	Kepone	0.099	Inorganics		Lead	49.5	Arsenic	3.9	Zinc (surface soil)	106	Zinc (subsurface soil)	98.5	Chromium (surface soil)	44.1	Chromium(subsurface soil)	148
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was obtained from local suppliers. Site preparation included verification of utility locations with on-site Navy personnel, installing erosion controls, clearing and grubbing, constructing lay-down and staging areas, establishing access routes for equipment and transport vehicles, and delineating work areas.

As delineated in the work plan, Building 64 (including the concrete pad) was demolished and removed as construction debris before commencing excavation. Excavation proceeded to the predetermined locations to the surveyed boundaries and planned depth. The excavation was completed with appropriately sized heavy equipment, primarily a backhoe and included the removal of 318.17 tons of soils. This included 262.62 tons of non-hazardous waste and 55.55 tons of hazardous waste.

Field sampling results showed high concentrations of chromium in several areas and high concentrations of zinc and lead in one area. The results indicated that vertical and horizontal over-excavation was required. A strip of soil was removed from the north and northeast walls of the excavation, as well as from the southwest wall, and the floor was vertically over-excavated in areas where contaminant concentrations were high. Post over-excavation samples were collected from five walls. Two floor samples indicated that chlordane concentrations were still higher than the remedial goal, but the concentrations remaining on site were acceptable based on site-wide ecological risk calculations. Backfill was placed in the excavated areas at SWMU 53 in January 2009.

PUBLIC PARTICIPATION

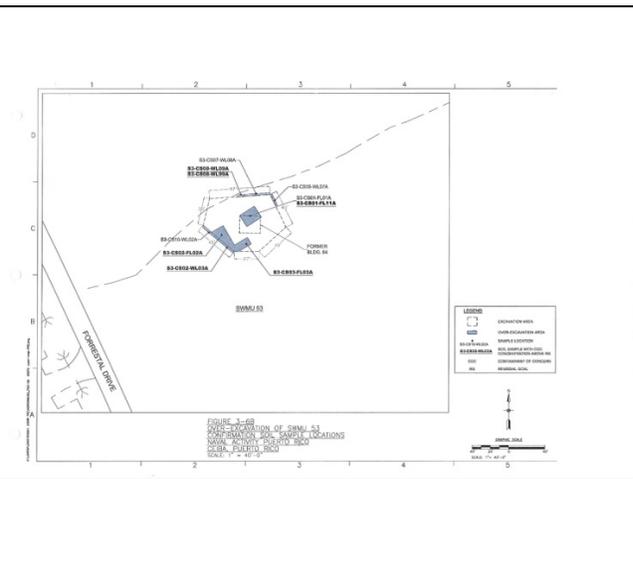
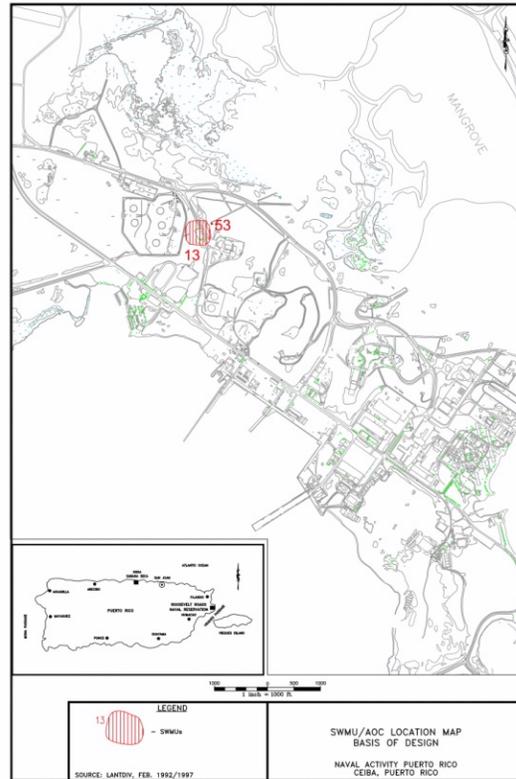
Public review and comment on the completed remedy for SWMU 53 will be implemented as required by the USEPA. A public notice of the public comment period will be published in both Spanish and English in select Puerto Rico newspapers.

NEXT STEPS

Following completion of public review and comment on the completed remedy, the USEPA will advise Naval Activity Puerto Rico (NAPR) of any required modifications based on the public comments, or its acceptability. Following USEPA's input concerning the implemented remedy, NAPR will amend the remedy (if required). Corrective Action Complete without controls is recommended for this SWMU.

KEY WORDS

SWMU 53, Building 64, Malaria Control Building, surface soil, subsurface soil, pesticides, 4,4'-DDT, DDT, 4,4'-DDE, chlordane, heptachlor epoxide, kepone, inorganics, arsenic, chromium, zinc, excavation, off-site disposal, NAPR, NSRR, CAC, corrective action complete



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