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NASD VIEQUES
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PROPOSED REMEDIAL ACTION PLAN SOLID WASTE MANAGEMENT UNIT 6 (SWMU 6) ATLANTIC FLEET WEAPONS TRAINING AREA FORMER NAVAL AMMUNTION SUPPORT DETACHMENT (ENGLISH VERSION) VIEQUES ISLAND PUERTO RICO
10/01/2016
NAVFAC ATLANTIC

Proposed Remedial Action Plan

Solid Waste Management Unit 6

Atlantic Fleet Weapons Training Area —Vieques

Former Naval Ammunition Support Detachment

Vieques, Puerto Rico

October 2016

1. Introduction

This Proposed Plan identifies the preferred alternative and associated rationale for Solid Waste Management Unit (SWMU) 6, located at the former Naval Ammunition Support Detachment (NASD) in Vieques, Puerto Rico. SWMU 6, the former Mangrove Disposal Site, is also known as Operable Unit (OU) 08 in the Superfund Enterprise Management System (SEMS), which is a database maintained by the Environmental Protection Agency (EPA) to track the progress at hazardous waste sites. SWMU 6 is approximately 0.6 acre and is the site of a former disposal area for general solid waste during the 1960s and 1970s. The Proposed Plan summarizes this OU's history, the results of previous environmental investigations and removal action, and the preferred alternative, and it solicits and facilitates public review of and comment on the preferred alternative.

This document is issued by the Department of the Navy (Navy), Naval Facilities Engineering Command (NAVFAC) Atlantic, EPA Region 2, and the Department of the Interior (DOI), in consultation with the Puerto Rico Environmental Quality Board (PREQB), which has consulted with the Puerto Rico Department of Natural and Environmental Resources (PRDNER). The Proposed Plan fulfills the public participation requirements in Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and in Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

A previous removal action resulted in the removal of debris (contaminant source) and contaminated soil, and a follow-up investigation demonstrated the

Mark Your Calendar for the Public Comment Period

October 10 – November 23, 2016

Submit Written Comments

The Navy and EPA will accept written comments on the Proposed Plan during the public comment period. To submit comments or obtain further information, please refer to the insert page.

Attend the Public Meeting

November 16, 2016 at 6:00 p.m.

Punta Mulas Lighthouse
Route #200, Morropo Street

Isabel Segunda, Vieques, PR

The Navy will hold a public meeting to present and discuss the preferred remedial alternative. Verbal and written comments will also be accepted at this meeting.

Location of Administrative Record File

Online at: http://go.usa.gov/x2mRw

removal action addressed risks to human health and the environment and facilitated development of a productive lagoon ecosystem. Based on this information, and the current and future anticipated land use as part of the Vieques National Wildlife Refuge, the preferred alternative for SWMU 6 is **no further action** (NFA).

The Navy, EPA, and DOI, in consultation with PREQB and PRDNER, will make the final decision on the NFA alternative for SWMU 6 after reviewing and considering all information submitted during the 45-day **public comment period**. If warranted based on public comments and/or new information, the preferred alternative set forth in this document may be modified or an alternate remedy may be considered.

This Proposed Plan summarizes information that can be found in greater detail in the reports associated with the various investigations and removal action (see Section 2.3), which are contained in the **Administrative Record** for SWMU 6. A glossary of key terms used in this document is attached; these key terms are identified in bold print the first time they appear.

2. Site Background

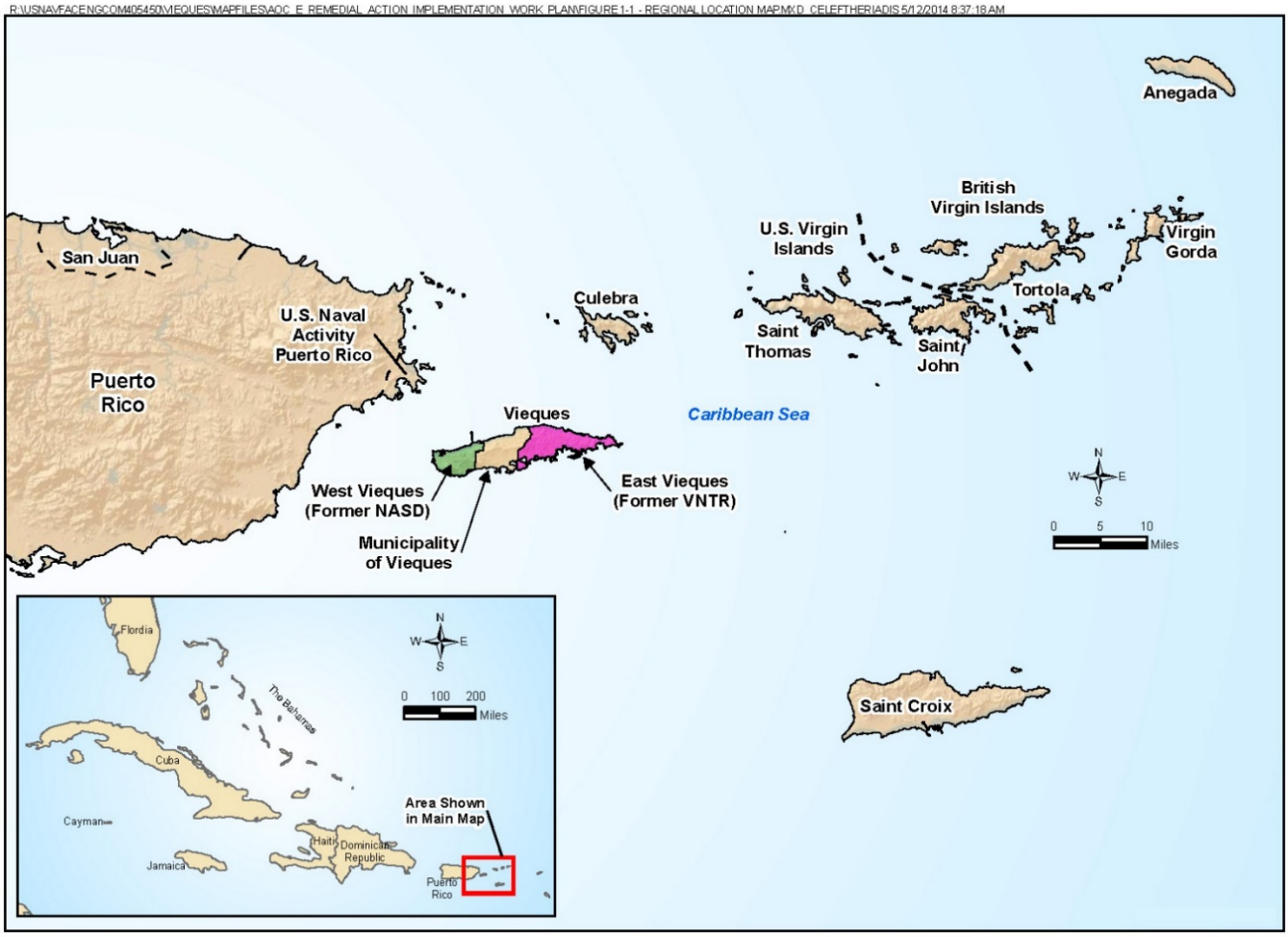
2.1 Facility Description and History

Vieques is located in the Caribbean Sea, approximately 7 miles southeast of the eastern tip of the island of Puerto Rico (Figure 1). Other than the main island of Puerto Rico, Vieques is the largest island of the Commonwealth. It is approximately 20 miles long and 4.5 miles wide, and has an area of approximately 33,088 acres (51 square miles).

The Navy purchased portions of Vieques in the early 1940s to conduct activities related to military training. Operations within the former NASD (western one-third of Vieques) consisted mainly of ammunition loading and storage, vehicle and facility maintenance, and some training. Operations within the former Vieques Naval Training Range (eastern one-half of Vieques) comprised various aspects of naval gunfire training, including air-to-ground ordnance delivery and amphibious landings, as well as housing the main base of operations for these activities at Camp García. In accordance with a January 30, 2000, Presidential Directive to the Secretary of Defense, the Navy ceased facility-wide operations on the former NASD on April 30, 2001, at which time the land was apportioned and transferred to the DOI, Municipality of Vieques, and Puerto Rico Conservation Trust (Figure 2).

On February 11, 2005, the Atlantic Fleet Weapons Training Area – Vieques (also known as AFWTA-Vieques) was added to the **National Priorities List (NPL)**, which required all subsequent environmental restoration activities for Navy Installation Restoration (IR) sites on Vieques to be conducted under CERCLA. On September 7, 2007, the Navy, DOI, EPA, and PREQB finalized a Federal Facility Agreement (FFA) that establishes the procedural framework and schedule for implementing the CERCLA activities for Vieques. The DOI is directed to protect and conserve its transferred land as a wildlife refuge, to be managed by the **United States Fish and Wildlife Service (USFWS)**, and the Navy retains the primary responsibility under the FFA for conducting the environmental investigations and cleanup of the property, as warranted.

Figure 1 – Regional Location Map



2.2 Site Description

SWMU 6 is located in the northwestern portion of the former NASD (Figure 2). During the 1960s and 1970s, SWMU 6 was used for the disposal of general solid waste from Navy operations within the former NASD. Waste discarded at the site included empty containers of lubricants, oil, solvents, and paints; glass; and rubble. No munitions and explosives of concern (MEC) were identified at the site; however, munitions-related items such as inert concrete-filled practice bombs, empty bomb dispensers, and empty shell casings were identified. This material, as well as the general solid waste and contaminated soil, was removed during a removal action in 2009. Prior to the disposal, the site was an estuarine, intertidal, forested wetland dominated by black mangrove. After the 2009 removal action, the site was a shallow marine lagoon environment, approximately 0.6 acre in area and 5 inches to 3 feet deep (Shaw, 2010; CH2M HILL, 2010), which was replanted with mangrove. Figure 3 shows the area prior to the 2009 removal action, and following the removal action in 2010. SWMU 6 is on U.S. property managed by DOI that has been designated part of the Vieques National Wildlife Refuge. USFWS will perform refuge management activities on portions of the former NASD, but there are no planned uses or activities at SWMU 6 other than to maintain the road that passes through the site.

Figure 2 – SWMU 6 Site Location Map

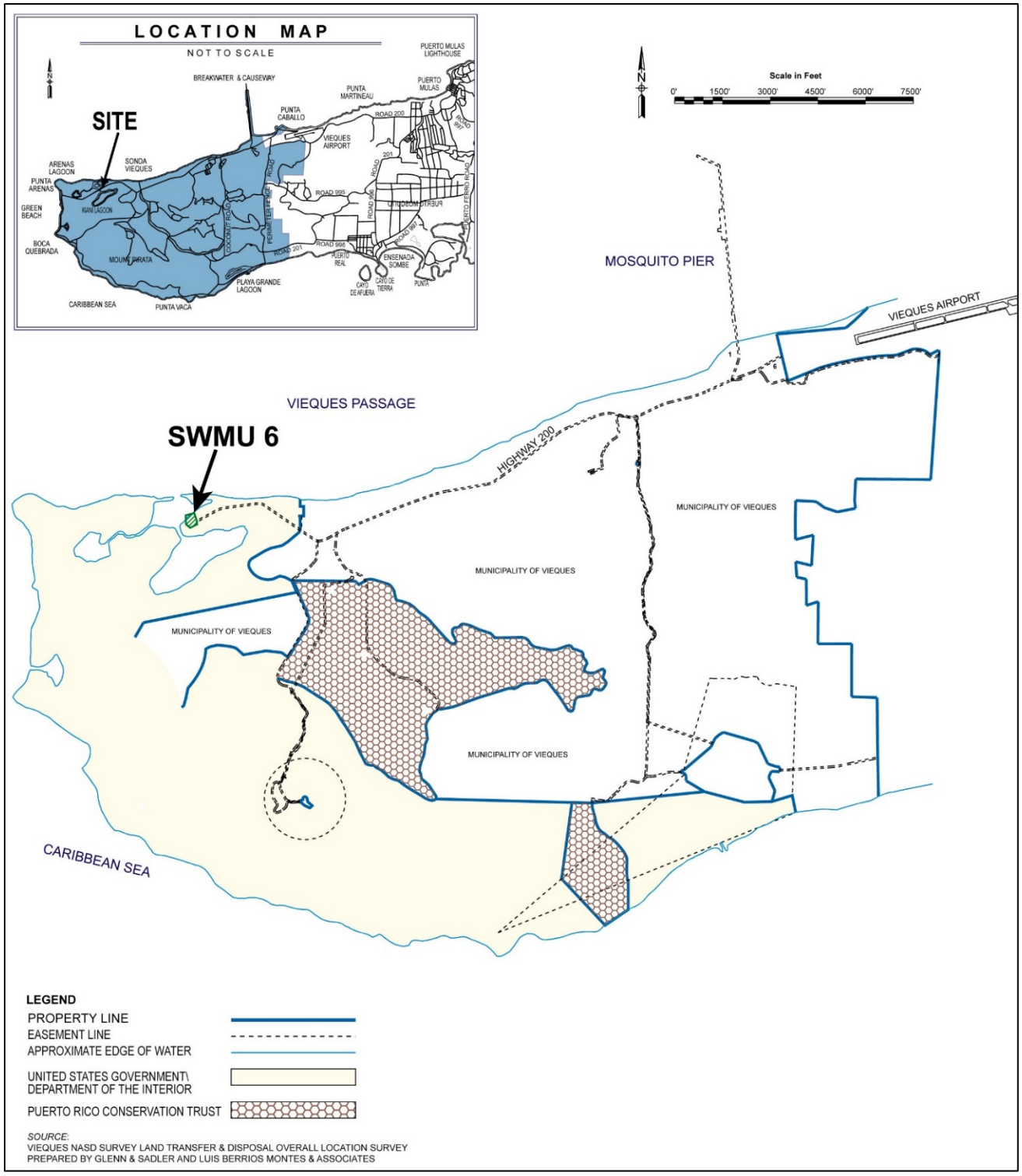


Figure 3 – SWMU 6 Aerial Map (2007 on left, 2010 on right)

2.3 Summary of Previous Investigations

Several environmental investigations and one removal action were conducted at SWMU 6, beginning in 1984. The following subsections briefly summarize the purpose, scope, and results of environmental investigations and the removal action completed to date. The dates provided in the subsection headings refer to the dates the investigations/removal action fieldwork was performed.

Initial Assessment Study and Confirmation Study (1984, 1986)

The Initial Assessment Study (Naval Energy and Environmental Support Activity, 1984) was conducted to identify and assess sites posing a potential threat to human health or the environment due to contamination from past hazardous waste operations and included a historical records search and site visit to SWMU 6 (at that time referred to as Site 2) in 1984. Based on the information gathered during the Initial Assessment Study, a Confirmation Study (Environmental Science and Engineering, 1986) was conducted in 1986 during which sampling was performed at the site to verify whether hazardous concentrations of contaminants were present.

Environmental Baseline Survey (2000)

An Environmental Baseline Survey (Program Management Company, 2000) was conducted in 2000 to disclose available and relevant information regarding the environmental condition of the Navy property. The information was used as a basis for determining the environmental suitability of the property for transfer.

Expanded Preliminary Assessment/Site Inspection (2000)

The Expanded Preliminary Assessment/Site Inspection (PA/SI) was conducted in 2000 (CH2M HILL, 2000) to determine whether a release of hazardous materials had occurred at 10 sites on the former NASD. Activities within SWMU 6 included a geophysical survey and collection of soil, groundwater, surface water, and sediment samples. Results of the

Expanded PA/SI demonstrated a Remedial Investigation (RI) was warranted.

Remedial Investigation (2003)

An RI (CH2M HILL, 2007) was conducted to assess the nature and extent of environmental media contamination and to assess potential risks to human health and environment at SWMU 6. Based on the RI Report, it was concluded that the contaminant concentrations did not pose an unacceptable risk to human health or ecological receptors. However, the Navy and regulatory agencies concurred that there was uncertainty associated with this conclusion because soil samples were collected adjacent to the debris rather than directly through the debris due to safety concerns. The agencies also concurred that the debris at SWMU 6 posed an unacceptable uncertainty regarding a potential future source of contamination and, therefore, warranted removal.

Non-Time-Critical Removal Action (2009)

A Non-Time-Critical Removal Action (NTCRA) was conducted in 2009 (Shaw, 2010) to remove the waste debris and contaminated soil within SWMU 6, followed by confirmation sampling and site restoration activities (i.e., mangrove planting).

Approximately 1,423 tons of soil and debris were removed from an area of 27,500 square feet, with an average excavation depth of 1 to 2 feet. Due to the low contaminant levels, the majority of the excavated soil was determined to be suitable for use as daily cover at the Municipality of Vieques landfill.

Post-Removal Supplemental Confirmatory Sampling (2011-2012)

Post-removal supplemental confirmatory sampling of soil, surface water, and sediment was performed in 2011 to characterize the site conditions after completion of the removal action. Information gathered during the sampling was used to demonstrate the need for biota (fish and blue crab) sampling that was conducted in 2012. The data collected during these sampling efforts were used to revise the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA).

Feasibility Study (2013)

Based on the post-removal supplemental confirmatory sampling and associated risk assessments, a Feasibility Study (FS) (CH2M HILL, 2013) was conducted to evaluate potential remedial alternatives to address sediment, in accordance with EPA guidance.

Six alternatives were developed and screened against feasibility evaluation criteria, as defined in the NCP. It is noted here that information gathered during the Supplemental RI (see below) demonstrated remedial action is ultimately not necessary to be protective of human health and the environment at SWMU 6.

Supplemental Remedial Investigation (2014)

In 2014, a Supplemental RI was performed at SWMU 6 (CH2M HILL, 2016). The primary purpose of the investigation was to determine if sediment within the lagoon warranted remedial action and, if so, the area and volume of sediment that needed to be addressed. To help make this determination, sediment preliminary remediation goals (PRGs) for poly-chlorinated biphenyls (PCBs), lead, and zinc were used for comparison to the sediment data collected during the Supplemental RI. These three constituents were identified for further evaluation by the post-removal HHRA and ERA. For PCBs (i.e., sum of Aroclors), 1 mg/kg was determined to be the PRG for protection of human health and ecological receptors, with the human health receptors being the more sensitive population. The lead PRG was determined to be 218 mg/kg and the zinc PRG was determined to be 410 mg/kg; these values are protective of both human health and ecological receptors, with ecological receptors being the more sensitive population. A secondary goal of the Supplemental RI was to perform a lagoon ecosystem evaluation to assess ecosystem conditions that had developed since the 2009 removal action.

The results of the study demonstrated there were no PCBs above the PRG (see Section 4.1) and that the ecological risk was acceptable (see Section 4.2), indicating remedial action is not warranted.

3. Site Characteristics

3.1 Physical Characteristics

SWMU 6 is predominantly a shallow, tidally influenced, saltwater lagoon that is hydraulically connected to the Kiani Lagoon complex through a small opening at the northern portion of the site (Figure 3). Areas around the perimeter of the site are periodically inundated with water due to tidal fluctuations. Sediment and soil consist of silty sand with organic material and well-graded sand with crushed shells. The lagoon supports a diverse and abundant community of fish and invertebrates that are typical of mangrove lagoons. Planted and naturally recruited mangroves and seagrass are successfully filling in open habitats created by the 2009 removal action, and the lagoon is providing forage for a variety of birds including many migratory species.

3.2 Nature and Extent of Contamination

As noted previously, the 2009 removal action eliminated approximately 1,423 tons of debris and contaminated soil. In 2011 and 2012, post-removal soil, sediment, surface water, and biota samples were collected to evaluate post-removal conditions. While several semivolatile organic compounds, metals, and pesticides/PCBs were detected in various samples, the post-removal HHRA and ERA indicated that only PCBs, lead, and zinc in sediment warranted further consideration. Therefore, additional sediment samples were collected in 2014 during the Supplemental RI. These data, collected across the areal extent of the lagoon, represent the most current conditions and the most robust horizontal and vertical distribution of these constituents in sediment. The risk-based conclusions reached based on evaluation of these data are provided in Section 4.

4. Summary of Site Risks

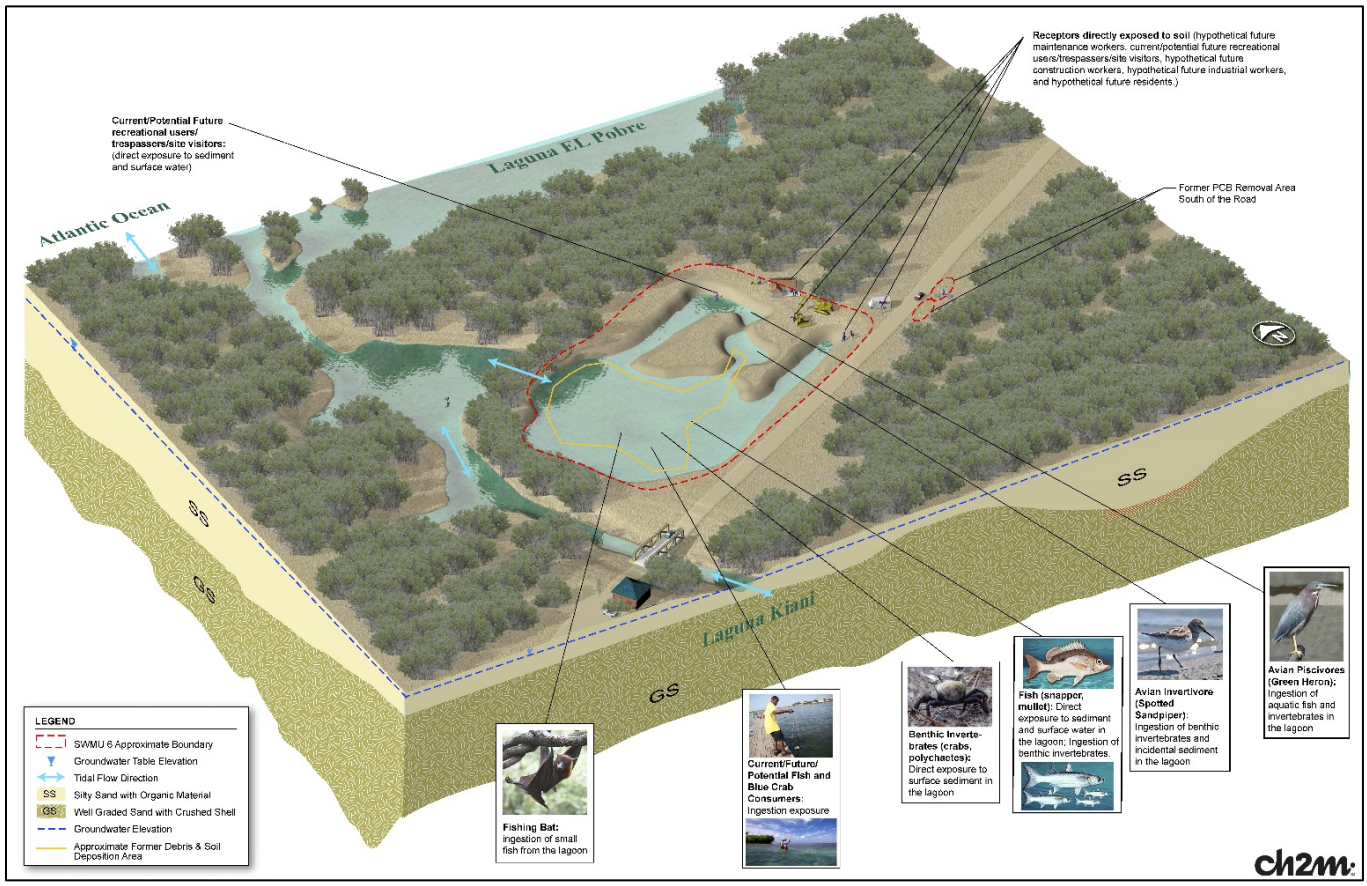
Figure 4 presents a graphical representation of the Conceptual Site Model (CSM) for SWMU 6. The figure includes the human and ecological receptors that were considered in the post-removal HHRA and ERA.

A summary of the post-removal HHRA and ERA results for SWMU 6 is included in the following subsections. The complete post-removal HHRA and ERA are provided in the FS Report (CH2M HILL, 2013) and the human health and ecological risk evaluations conducted during the Supplemental RI are provided in the RI Report Addendum (CH2M HILL, 2016), both of which are available in the Administrative Record File.

4.1 Human Health Risk Assessment

A post-removal HHRA was conducted to evaluate potential human health risks associated with exposure to constituents detected in soil, sediment, surface water, and biota collected in 2011 and 2012 at SWMU 6. Maximum detected concentrations of constituents were compared to EPA risk-based screening levels (RSLs), and constituents of potential concern (COPCs) were identified based on exceedances of these screening levels. Human health risks were evaluated for these COPCs for human receptors who may be exposed to environmental media at SWMU 6.

Figure 4 – SWMU 6 Conceptual Site Model



Fish and blue crab consumers may have direct contact with sediment and surface water at SWMU 6, and these exposure pathways were quantified under a recreational user/trespasser/site visitor exposure scenario. The exposure frequency and duration assumed for potential recreational users/trespassers/ site visitors can be used as conservative estimates for sediment and surface water exposures by potential fish or blue crab consumers since the lagoon would not support subsistence fishing/crabbing. At most, the lagoon could support recreational fishing and crabbing. Therefore, the exposure to sediment and surface water by a fisherman would be comparable to those by a recreational user.

Health risks are based on an estimate of the potential cancer risk and the potential non-cancer hazard, which is expressed as a hazard index (HI). Contaminants of Concern (COCs) were not identified for soil, sediment, or surface water since recreational users/trespassers/site visitors risk estimates for site-related chemicals did not exceed target levels.

Based on the results of the HHRA, PCBs were the only contaminants identified as potentially warranting remedial action (pending further evaluation, as discussed below) under a human consumption of fish and blue crab exposure scenario.

It should be noted that the calculated risk was based on an ingestion frequency of two meals per week comprising fish and blue crab from SWMU 6. However, based on observations made during the biota sampling event in 2012, it was apparent that the ingestion frequency of two meals per week was unrealistic for the lagoon due to the very small population of edible-size fish and blue crab the lagoon can support.

As noted in Section 2.3, based on the results of the post-removal HHRA, a sediment PRG of 1 mg/kg was determined for total PCBs based on levels deemed protective at multiple sites across the country and a Supplemental RI was subsequently implemented in 2014 to determine the horizontal and vertical extent of PCB concentrations above the PRG. The sediment delineation study included collection of 128 surface and subsurface sediment samples across the lagoon. Figure 5 shows the distribution of Supplemental RI samples and relevant historical samples; at most locations, samples were collected from multiple depths. As shown in Table 1, all total PCB concentrations were below the PRG.

Table 1 - SWMU 6 Sediment Concentrations Relative to PRGs

Chemical	Frequency of Detection	Minimum Concentration Detected	Maximum Concentration Detected	95% UCL of Mean	PRG	Frequency of PRG Exceedance by Max	Frequency of PRG Exceedance by 95% UCL of Mean
PCBs (MG/KG)							
Total PCBs	22 / 128	0.0161	0.406	N/A	1.0	0 / 128	N/A
Inorganics (MG/KG)							
Lead	127 / 128	0.84	731	122	218	12 / 128	0 / 128
Zinc	118 / 128	2.98	1,110	198	410	10 / 128	0 / 128

What is Human Health Risk and How is it Calculated?

A Human Health Risk Assessment (HHRA) estimates the likelihood of health problems occurring if no cleanup action were taken at a site. This is also referred to as "baseline risk." HHRAs are conducted using a step-wise process (as outlined in Navy and EPA HHRA policy and guidance). To estimate baseline risk at a site, the Navy performs the following four-step process:

Step 1: Data Collection and Evaluation

Step 2: Exposure Assessment

Step 3: Toxicity Assessment

Step 4: Risk Characterization

During Data Collection and Evaluation (Step 1), the concentrations of chemicals detected at a site are evaluated, including:

- Identifying and evaluating area(s) where site-related chemicals may be found (source areas) and at what concentrations
- Evaluating potential movement (transport) of chemicals in the environment
- Comparing site concentrations to risk-based screening levels to determine which chemicals may pose the greatest threat to human health (called "constituents of potential concern" [COPCs]). Constituents are not excluded from the risk assessment process if they are within the range of background.

In Step 2, the Exposure Assessment, potential exposures to the COPCs identified in Step 1 are evaluated. This step includes:

- Identifying possible exposure media (soil, air, groundwater, surface water, sediment)
- Evaluating if/how people may be exposed (exposure pathways)

- Evaluating routes of exposure (for example, ingestion)
- Identifying the concentrations of COPCs to which people might be exposed
- Identifying the potential frequency and length of exposure
- Calculating a "reasonable maximum exposure" (RME) dose that portrays the highest level of human exposure that could reasonably be expected to occur

In the Toxicity Assessment (Step 3), both cancer and non-cancer toxicity values are identified for oral, dermal, and inhalation exposures to the COPCs. The toxicity values are identified using the hierarchy of toxicity value sources approved by EPA.

Step 4 is Risk Characterization, where the information developed in Steps 1-3 is used to estimate potential risk to people. The following approach is used:

- Two types of risk are considered: cancer risk and non-cancer hazard
- The likelihood of developing cancer as a result of site exposure is expressed as an upper-bound probability; for example, a "1 in 10,000 chance." In other words, for every 10,000 people that might be exposed under the conditions identified in Step 2, one additional case of cancer may occur as a result of site exposure. Unacceptable risk exists when the Excess Lifetime Cancer Risk (ELCR) of 1×10^{-4} is exceeded.
- For non-cancer health effects, a "hazard index" (HI) is calculated. The HI represents the ratio between the "reference dose," which is the dose at which no adverse health effects are expected to occur, and the RME dose for a person contacting COPCs at the site. The key concept here is that a "threshold level" (measured as an HI of 1) exists below which no non-cancer health effects are expected to occur.
- The potential risks from the individual COPCs and exposure pathways are summed and a total site risk is calculated for each receptor. The uncertainties associated with the risk estimates are presented and their effects on the conclusions of the HHRA are discussed.

4.2 Ecological Risk Assessment

A post-removal ERA was conducted to evaluate potential risks to terrestrial and aquatic receptors exposed to contaminants detected in soil, sediment, and surface water collected at SWMU 6 in 2011. The risk assessment used established ecological effects values to assess risks from direct exposure by organisms as well as via the food chain.

What is Ecological Risk and How is it Calculated?

An Ecological Risk Assessment (ERA) is conceptually similar to a Human Health Risk Assessment except that it evaluates the potential risks and impacts to ecological receptors (plants, animals other than humans and domesticated species, habitats [such as wetlands], and communities [groups of interacting plant and animal species]). ERAs are conducted using a tiered, step-wise process (as outlined in Navy and EPA ERA policy and/or guidance) and are punctuated with Scientific Management Decision Points (SMDPs). SMDPs represent points in the ERA process where agreement among stakeholders on conclusions, actions, or methodologies is needed so that the ERA process can continue (or terminate) in a technically defensible manner. The results of the ERA at a particular SMDP are used to determine how the ERA process should proceed, for example, to the next step in the process or directly to a later step. The process continues until a final decision has been reached (i.e., remedial action if unacceptable risks are identified, or no further action if acceptable risks are identified). The process can also be iterative if data needs are identified at any step; the needed data are collected and the process starts again at the point appropriate to the type of data collected.

An ERA has three principal components:

1. Problem Formulation establishes the goals, scope, and focus of the ERA and includes:
   - Compiling and reviewing existing information on the habitats, plants, and animals that are present on or near the site
   - Identifying and evaluating area(s) where site-related chemicals may be found (source areas) and at what concentrations
   - Evaluating potential movement (transport) of chemicals in the environment
   - Identifying possible exposure media (soil, air, water, sediment)
   - Evaluating if/how the plants and animals may be exposed (exposure pathways)
   - Evaluating routes of exposure (for example, ingestion)
   - Identifying specific receptors (plants and animals) that could be exposed
   - Specifying how the risk will be measured (assessment and measurement endpoints) for all complete exposure pathways
2. Risk Analysis which includes:
   - Exposure Estimate - An estimate of potential exposures (concentrations of chemicals in applicable media) to plants and animals (receptors). This includes direct exposures of chemicals in site media (such as soil) to lower trophic level receptors (organisms low on the food chain such as plants and insects) and upper trophic level receptors (organisms higher on the food chain such as birds and mammals. This also includes the estimated chemicals dose to upper trophic level receptors via consumption of chemicals accumulated in lower food chain organisms.
   - Effects Assessment - The concentrations of chemicals at which an adverse effect may occur are determined
3. Risk Calculation or Characterization:
   - The information developed in the first two steps is used to estimate the potential risk to plants and/or animals by comparing the exposure estimates with the effects threshold
   - Also included is an evaluation of the uncertainties (that is, potential degree of error) associated with the predicted risk estimate and their effects on ERA conclusions

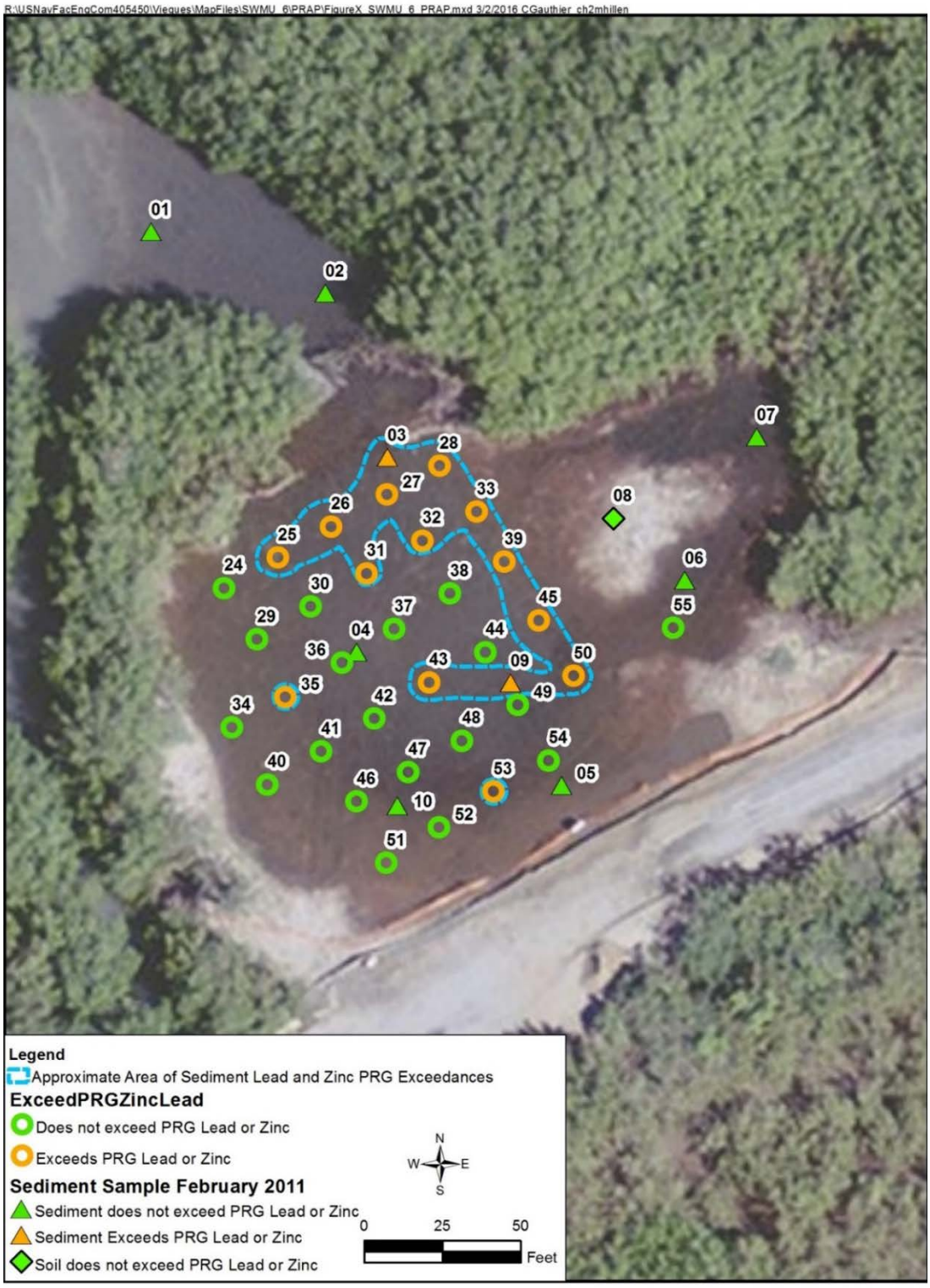
The three principal components of an ERA are implemented as an 8-step, 3-tier process as follows:

1. Screening-Level ERA (Steps 1-2; Tier 1) – The Screening Level ERA (SLERA) conducts an assessment of ecological risk using the three components described above and very conservative assumptions (such as using maximum chemical concentrations).
2. Baseline ERA (Steps 3-7; Tier 2) – If potential risks are identified in the SLERA, a Baseline ERA (BERA) is typically conducted. The BERA is a reiteration of the three components described above but uses more site-specific and realistic exposure assumptions, as well as additional methods not included in the SLERA, such as consideration of background concentrations. The BERA may also include the collection of site-specific data (such as measuring the concentrations of chemicals in the tissues of organisms, for example, fish) to address key risk issues identified in the SLERA.
3. Risk Management (Step 8; Tier 3) – Step 8 develops recommendations on ways to address any unacceptable ecological risks that are identified in the BERA and may also include other activities, such as evaluating remedial alternatives.

Based on the results of the ERA, lead and zinc were the only contaminants identified potentially warranting remedial action (pending further evaluation, as discussed below) based on potential risk to the benthic community.

As noted in Section 2.3, based on the results of the post-removal ERA, sediment PRGs for lead (218 mg/kg) and zinc (410 mg/kg) were identified, and the Supplemental RI characterized the horizontal and vertical extent of lead and zinc. As shown in Figure 5, the number of sediment samples that contained lead and/or zinc at concentrations above the PRG represented only a small portion of the lagoon (approximately 1/10th the total area, or about 0.07 acre). The distribution of these exceedances does not suggest widespread contamination within the lagoon or a localized hotspot, nor has contamination been transported into adjoining lagoon waters. Additionally, mean (versus maximum) concentrations are more representative of exposure to communities of benthic organisms which are widely distributed across the lagoon. As shown in Table 1, mean lead and zinc concentrations were below respective PRGs (i.e., neither of the two mean Hazard Quotients [HQs] exceeded 1), indicating negligible risk to the benthic community as a whole. Further, the lagoon ecosystem evaluation demonstrated increasing biological diversity and productivity, and overall continuing successful maturation of the habitat. As the lagoon sediment accumulates more total organic carbon, such as from leaf litter deposited by growing mangroves, it is expected that sulfides in the sediment will increase and further reduce or eliminate the bioavailability of remaining lead and zinc. Therefore, no unacceptable ecological risk was determined for SWMU 6.

Figure 5 – Area of Sediment Lead and Zinc Concentrations Above PRGs



5. Scope and Role of Response Action

In cooperation with EPA, PREQB, PRDNER, and USFWS and in accordance with the FFA and applicable guidance, the Navy performed investigations at SWMU 6 to evaluate the nature and extent of contamination and to assess the potential risks to human health and the environment. In addition, debris and contaminated soil were removed from the site. Based on information gathered following the removal action, the current conditions at SWMU 6 do not pose an unacceptable risk to human health or

the environment for unrestricted and unlimited land use and site conditions are compliant with applicable or relevant and appropriate requirements (ARARs) and to-be-considered (TBC) criteria. The response decision does not include or affect any other sites under the CERCLA process.

6. Preferred Alternative

The Navy, EPA, and DOI, in consultation with PREQB, which has consulted with PRDNER, agree that the preferred alternative for SWMU 6 is no further action. The preferred alternative meets the statutory requirements of CERCLA for protection of human health and the environment. The findings of environmental investigations conducted following removal of debris and contaminated soil, including an evaluation of the lagoon ecosystem conditions, support the conclusion that there are no unacceptable risks associated with unlimited and unrestricted exposure to media at the site. Therefore, no alternative other than the no further action alternative requires evaluation. Under this alternative, no additional response action will be performed at SWMU 6 and no restrictions on land use or exposure are necessary.

7. Community Participation

A community relations program has been ongoing for the Vieques environmental restoration program since 2001. The community relations program fosters two-way communication of investigation and remediation activities between the stakeholder agencies (Navy, EPA, PREQB, USFWS, and PRDNER) and the public. A Restoration Advisory Board was formed in 2004 to provide for expanded community participation. Regular meetings are held to provide an information exchange among community members, stakeholder agencies, and the Municipality of Vieques. These meetings are open to the public and are held approximately every 3 months.

Public input is a key element in the decision-making process. Nearby residents and other interested parties are strongly encouraged to use the comment period to relay any questions and comments about the preferred alternative for SWMU 6. Following the public comment period, the Navy will summarize and respond to substantive comments in a Responsiveness Summary, which will become part of the official Record of Decision (ROD) for SWMU 6.

This Proposed Plan fulfills the public participation requirements of CERCLA Section 117(a), which specifies that the lead agency (the Navy) must publish a plan outlining any remedial alternatives evaluated for a site and identify the preferred alternative. All documentation pertaining to the investigation of SWMU 6 and the development of the preferred alternative presented in this Proposed Plan is available for public review in the Administrative Record at the Information Repository.

The public comment period for the Proposed Plan provides an opportunity for input regarding the remedy selection process for SWMU 6. The public comment period will be from October 10 to November 23, 2016, and a public meeting will be held on November 16, 2016 at 7:00 p.m. at the Punta Mulas Lighthouse in Vieques, Puerto Rico. All interested parties are encouraged to attend the public meeting to learn more about the preferred alternative for SWMU 6. The meeting will provide an additional opportunity to submit comments on the Proposed Plan to the Navy.

Comments on the preferred alternative, or this Proposed Plan, must be postmarked no later than November 23, 2016. On the basis of comments or new information, the Navy, EPA, and DOI, in consultation with PREQB, which will consult with PRDNER, may modify the preferred alternative or choose another alternative. The comment page included as part of this Proposed Plan may be used to provide comments to the Navy.

The Community Involvement Plan and technical reports supporting the preferred alternative for SWMU 6 are available for public review online at:

http://go.usa.gov/x2mRw. From here, the user can search for any of the technical reports associated with SWMU 6 by date, document title, site name, or other keywords. In addition, paper copies of the SWMU 6 Proposed Plan are available at the EPA office in Vieques and the Navy office at Camp Garcia.

Questions or comments can be submitted to any of the individuals listed in the box below during the public comment period.

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Note: This Proposed Plan is presented in English and Spanish for the convenience of the reader. Every effort has been made for the translations to be as accurate as reasonably possible. However, readers should be aware that the English version of the Proposed Plan is the official version.

8. Glossary

Acceptable Risk: EPA's acceptable risk range for Superfund hazardous waste sites is 1×10^{-4} to 1×10^{-6}, meaning there is 1 additional chance in a population of 10,000 (1×10^{-4}) to 1 additional chance in a population of 1 million (1×10^{-6}) that a person will develop cancer if exposed to contaminants under the same scenarios described in the risk assessment at a site that is not remediated.

Administrative Record: A compilation of documents and information for CERCLA sites that is made available to the public for review.

Applicable or Relevant and Appropriate Requirements (ARARs): CERCLA Section 121 (d)(2)(A) requires that remedial actions meet any federal standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate.

Background Concentration: Concentrations of naturally occurring and anthropogenic (due to human activities) constituents, such as inorganic constituents, found in groundwater, soil, sediment, and surface water at levels not influenced by site-specific releases. Background concentrations of some inorganics and other constituents are often at levels that may pose a risk to human health or the environment. However, background concentrations of site chemicals are factored into risk management determinations to ensure remedial actions are not implemented for constituents whose concentrations are attributable to background conditions and not indicative of a site-related release.

Cancer Risk: Cancer risks are expressed as a number reflecting the increased chance that a person will develop cancer if exposed to chemicals or substances, as described in the Human Health Risk Assessment.

Contaminant of Concern (COC): A contaminant that contributes risk or hazard above acceptable levels to a receptor.

Constituent of Potential Concern (COPC): A chemical at the site that may be hazardous to human health or the environment due to its detected concentrations.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA): A Federal law passed in 1980 (United States Code Title 42, Chapter 103), commonly referred to as the "Superfund" Program, that provides for cleanup and emergency response in connection with numerous existing, inactive hazardous substance disposal sites that endanger public health and safety or the environment. CERCLA was amended by the Superfund Amendments and Reauthorization Act (SARA) in 1986.

Department of the Interior (DOI): Land owner of the National Wildlife Refuge.

Ecological Risk Assessment (ERA): An evaluation of the risk posed to ecological receptors (i.e., plants and animals) if remedial activities are not performed at the site.

Environmental Protection Agency (EPA): The Federal agency responsible for administration and enforcement of CERCLA (and other Federal environmental statutes and regulations).

Excess Lifetime Cancer Risk (ELCR): Potential carcinogenic effects that are characterized by estimating the probability of cancer incidence in a population of individuals for a specific lifetime from projected intakes (and exposures) and chemical-specific dose-response data.

Feasibility Study (FS): A study undertaken by the lead agency to develop and evaluate options for remedial action. The FS emphasizes data analysis and is generally performed concurrently with the RI. The data from the RI is used to define the objectives of the response action, to develop remedial action alternatives, and to undertake an initial screening and detailed analysis of the alternatives.

Hazard Index (HI): The HI represents a measure of the potential for non-carcinogenic effects from exposure to COPCs. A "threshold level" (measured as an HI of 1) exists below which no non-cancer health effects are expected to occur.

Hazard Quotient (HQ): The HQ represents a comparison between an environmental chemical concentration and the concentration potentially affecting human and ecological receptors. An HQ less than or equal to 1 indicates that unacceptable risks are unlikely, enabling a conclusion of negligible (acceptable) risk to be reached with high confidence.

Human Health Risk Assessment (HHRA): A qualitative and quantitative evaluation of the risk posed to human health by the presence of specific pollutants. Elements include: identification of the hazardous substances present in the environmental media; assessment of exposure and exposure pathways; assessment of the toxicity of the site's hazardous substances; and characterization of human health risks.

Media (singular, Medium): Soil, groundwater, surface water, or sediment at the site.

Munitions and Explosives of Concern (MEC): Distinguishes specific categories of military munitions that may pose unique explosive risks.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP): The Federal regulations (Code of Federal Regulations [CFR], Volume 40, Part 300 [40 CFR 300]) that guide determination of the sites to be corrected under both the Superfund (CERCLA) program and the program to prevent or control spills into surface waters or elsewhere.

National Priorities List (NPL): A list developed by EPA of uncontrolled hazardous substance release sites in the United States that are considered priorities for long-term remedial evaluation and response.

No Further Action (NFA): Cleanup actions are not necessary to be protective of human health and the environment.

Non-Cancer Hazard: Non-cancer hazards (or risk) are expressed as a quotient that compares the potential exposure to contaminants at a particular site to the acceptable level of exposure. There is a level of exposure (the reference dose) below which it is unlikely for even a sensitive population to experience adverse health effects. EPA's threshold level for non-cancer risk at Superfund sites is 1, meaning that if the exposure at a particular site exceeds the threshold, there may be a concern for potential non-cancer effects.

Non-Time-Critical Removal Action (NTCRA): A removal action conducted to address priority risks when a planning period of at least six months is available.

Preferred Alternative: With respect to the nine criteria specified in the NCP for evaluating remedial alternatives, the Preferred Alternative is the proposed remedy that meets the threshold criteria and is deemed to provide the best balance of tradeoffs among the other alternatives with respect to the balancing and modifying criteria.

Proposed Plan: A document that presents the preferred remedial alternative and requests public input regarding its proposed selection.

Public Comment Period: The time allowed for the members of a potentially affected community to express views and concerns regarding an action proposed to be taken at a site, such as a rulemaking, permit, or remedy selection.

Puerto Rico Department of Natural and Environmental Resources (PRDNER): The agency responsible for protecting natural resources, Commonwealth-owned conservation areas, submerged lands, and the coastal zone in the Commonwealth of Puerto Rico.

Puerto Rico Environmental Quality Board (PREQB): The agency responsible for protecting the quality of the environment of Puerto Rico through prevention and contamination control of: air, water, soil, and noise pollution.

Receptors: Humans, animals, or plants that may be exposed to contaminants related to a given site.

Record of Decision (ROD): A legal document that describes the cleanup action or remedy selected for a site, the basis for choosing that remedy, and reflects the public comments that were considered regarding the selected remedy.

Remedial Investigation (RI): A study in support of the selection of a remedy at a site where hazardous substances have been released. The RI identifies the nature and extent of contamination and assesses human health and ecological risk associated with the contamination.

To-be-considered (TBC) Criteria: Non-promulgated regulatory criteria, advisories, guidance, and proposed standards that have been issued by the Federal or State government that are not legally binding and do not have the legal status of ARARs. However, TBC criteria may be useful for developing remedial alternatives and for determining the necessary level of cleanup for the protection of human health and the environment.

Unacceptable Risk: Excess lifetime cancer risk that exceeds EPA's acceptable risk range for Superfund hazardous waste sites of 1×10^{-4} to 1×10^{-6} or a non-cancer hazard in excess of EPA's target level of 1.

United States Fish and Wildlife Service (USFWS): The Federal agency responsible for the management of the Department of the Interior-owned land and the protection of trust species (e.g., threatened and endangered species and migratory birds) on Vieques.

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