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MCAS CHERRY POINT
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RECORD OF DECISION OPERABLE UNIT 1 (OU1) SITE 83 MCAS CHERRY POINT NC
8/1/2012
RHEA ENGINEERS & CONSULTANTS, INC

**RECORD OF DECISION
OPERABLE UNIT 1, SITE 83
MARINE CORPS AIR STATION CHERRY POINT
NORTH CAROLINA**



**Contract No. N40085-08-D-1409
CTO: 0002**

Rhēa Project No. 389

August 2012

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1.0 DECLARATION

1.1 Site Name and Location

This Record of Decision (ROD) presents the selected remedy for Site 83, located within Operable Unit (OU) 1, at Marine Corps Air Station (MCAS), Cherry Point, North Carolina.

1.2 Statement of Basis and Purpose

The remedy was selected in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

This ROD is based on information contained in the Administrative Record for the site. Information not specifically summarized in this ROD, but contained in the Administrative Record, is relevant to the selection of the remedy. Thus, the ROD is based upon, and relies upon, the entire Administrative Record for the site in making the remedy selection decision.

MCAS Cherry Point was placed on the National Priorities List (NPL) on December 16, 1994 (Comprehensive Environmental Response, Compensation, and Liability Information System [CERCLIS] National Superfund Database Identification Number: NC1170027261). As a result of the NPL listing, and pursuant to CERCLA, the United States Environmental Protection Agency (USEPA) Region 4, the North Carolina Department of Environment and Natural Resources (NCDENR), the United States Department of the Navy (Navy), and the United States Marine Corps (USMC) entered into a **Federal**

Facility Agreement (FFA)¹ (Reference [Ref.] 1) for MCAS Cherry Point in January 2005. The primary purpose of the **FFA** is to ensure that the environmental impacts associated with past and present activities at MCAS Cherry Point are thoroughly investigated. The Environmental Restoration Program (ERP) is responsible for ensuring that appropriate CERCLA response alternatives are developed and implemented as necessary to protect public health, welfare, and the environment. No enforcement activities have been recorded at OU1 Site 83.

As the lead agency, the Navy provides funding for site cleanup at MCAS Cherry Point under its ERP. The remedy set forth in this ROD has been selected by the Navy (consisting of the Naval Facilities Engineering Command [NAVFAC], Mid-Atlantic Division, the MCAS Cherry Point Environmental Affairs Department [EAD]), and the USEPA, Region 4. NCDENR, the support regulatory agency, actively participated throughout the investigation process and has, accordingly, reviewed this ROD, and the materials on which it is based, and concurs with the selected remedy.

1.3 Scope and Role of Response Action

OU1 is one of nine OUs of the ERP sites that are part of the comprehensive environmental investigation and cleanup currently being performed at MCAS Cherry Point under the CERCLA program. The status of all the ERP sites at MCAS Cherry Point can be found in the current version of the **Site Management Plan (SMP)** (Ref. 2), which is located in the Administrative Record.

OU1 is the designation for an industrial area in the southern portion of MCAS Cherry Point that includes 12 sites identified in the **FFA** (Ref. 1) (Sites 14, 15, 16, 17, 18, 42, 47, 51, 52, 83, 92, and 98). Additionally, Site 40 has been investigated as part of OU1 due to its proximity to the other sites within the OU1 boundary. This ROD documents the final remedial action for Site 83 only and does not include or affect any other sites at the facility. This ROD addresses only Site 83 – Building 96, Former Pesticide Mixing area.

The other OU1 sites are being or have been addressed separately under

¹**Bold blue text** identifies detailed site information available in the Administrative Record and listed in the References table in Section 4.2.

CERCLA as follows:

- + Sites 14, 15, 17, 18, and 40 are categorized as NFA Sites (**2010 ROD**) (Ref. 3).
- + Six sites are associated with the OU1 Central Groundwater Plume (sites 42, 47, 51, 52, 92, and 98).
- + Site 16 is being addressed under a separate ROD.

1.4 Description of Selected Remedy

The Selected Remedy at OU1 Site 83 is no further action (NFA). As evidenced by multiple investigations, contamination present in groundwater at Site 83 migrated there from the sites that make up the OU1 Central Groundwater Plume. Site 83 is not the source of the groundwater contamination. Hence, the contaminants identified as posing unacceptable risks/hazards to current or future receptors at Site 83 will be addressed under the OU1 Central Groundwater Plume groundwater remediation program. The Navy and EAD, in partnership with EPA and NCDENR agree that no further CERCLA actions are warranted for Site 83 and that current and future land use allows for unlimited use and unrestricted exposure (UU/UE) (except that there will be restrictions placed on groundwater use as part of the remedy for the separate OU1 Central Groundwater Plume). This determination is based on the evaluation of the information presented in various investigation reports for OU1 Site 83 (referenced throughout this ROD), which included risk assessments for human health and ecological receptors.

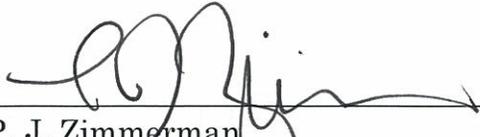
Groundwater contamination beneath Site 83 is caused by upgradient contamination from other sites within the OU1 Central Groundwater Plume and is not included in this ROD. This ROD addresses the other environmental media at the site, including soil, sediment, and surface water.

1.5 Statutory Determinations

The selected remedy of NFA is protective of human health and the environment. Extensive investigations of this site have shown that this remedy will not result in hazardous substances, pollutants, or contaminants remaining at OU1 Site 83 above levels that disallow UU/UE (except for the groundwater, which is being remediated as part of the OU1 Central Groundwater Plume); therefore, a Five Year Review will not be required, and no statutory determinations are necessary.

1.6 Authorizing Signatures

This ROD presents the NFA determination for OU1 Site 83 at MCAS Cherry Point, North Carolina.

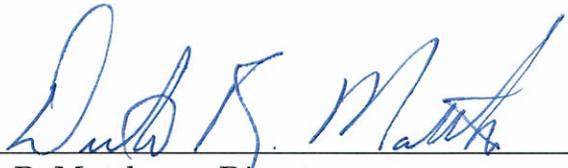


P. J. Zimmerman
Colonel, U.S. Marine Corps
Commanding Officer
MCAS Cherry Point

20120920

Date

The North Carolina Department of the Environment and Natural Resources concurs:



Dexter R. Matthews, Director
Division of Waste Management
North Carolina Department of Environment and Natural Resources

11-16-12

Date



Franklin E. Hill, Director
Superfund Division
U.S. Environmental Protection Agency Region 4

10/16/12

Date

2.0 DECISION SUMMARY

2.1 Site Name, Location, and Description

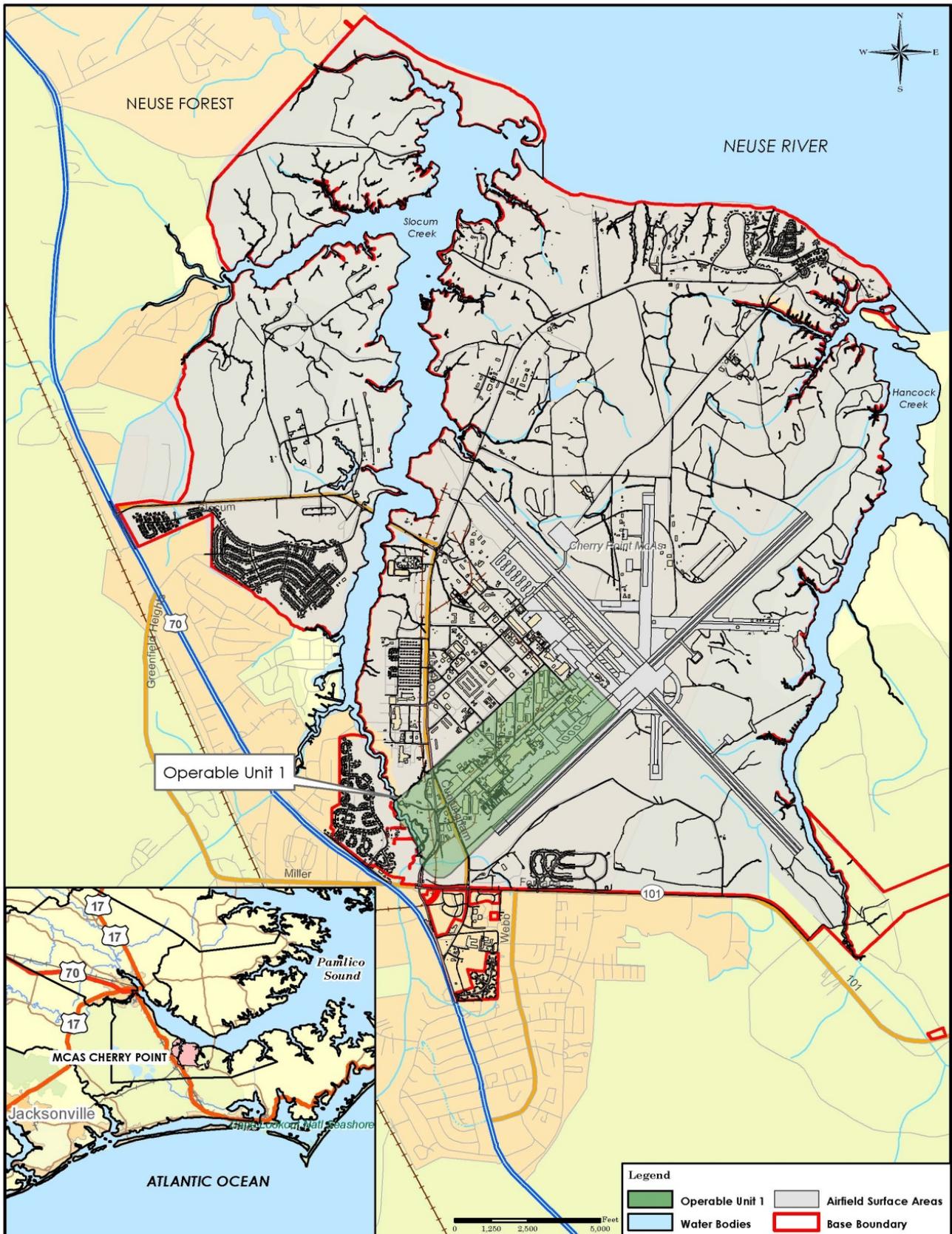
MCAS Cherry Point (**Figure 2-1**) is a military installation in southeastern Craven County, North Carolina, just north of the town of Havelock. This Air Station encompasses approximately 13,164 acres, and is situated on a peninsula north of Core and Bogue Sounds and south of the Neuse River. It is bounded on the east by Hancock Creek, on the south by North Carolina Highway 101, on the west by an irregular boundary line approximately 3/4 of a mile west of Slocum Creek, and on the north by the Neuse River. Surrounding areas primarily include commercial and residential development, and public land (Croatan National Forest).

MCAS Cherry Point was commissioned in 1942 to maintain facilities for training and supporting a Marine Aircraft Wing (MAW) and other units as designated by the Commandant of the USMC. Tenants of MCAS Cherry Point include the Second MAW, the Fleet Readiness Center East, or FRCE (formerly known as the Naval Aviation Depot [NADEP]), the Combat Service Support Detachment 21 of the Second Force Service Support Group (2nd FSSG), the Naval Air Maintenance Training Group Detachment, and the Defense Reutilization and Marketing Office (DRMO). This Air Station has facilities for training and support of the Fleet Marine Force (FMF) Atlantic aviation units, and is designated as a primary aviation supply point.

In 1994, MCAS Cherry Point was placed on USEPA's NPL, which was established under CERCLA §105(a) for sites contaminated by releases of hazardous substances. In May 2005, an **FFA** (Ref. 1) was executed for MCAS Cherry Point that developed a course of action for future work requirements at contaminated sites, including OU1.

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FIGURE 2-1
MCAS Cherry Point and OU1 Location Map



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OU1 is an industrial area in the southern portion of MCAS Cherry Point that covers approximately 565 acres (**Figure 2-1**). There are 12 FFA sites within OU1. These sites were assigned on the basis of their proximity to each other within the industrialized section of MCAS Cherry Point. This ROD solely addresses the final determination for OU1 Site 83 (excluding the groundwater), and does not include or affect any other sites within OU1 or the other OUs at MCAS Cherry Point. **Figure 2-2** depicts the location of Site 83 within OU1.

Site 83 is a former pesticide-mixing area. The original Site 83 boundary is approximately one acre in size and located in the southwest portion of OU1. Two buildings were formerly located at the site; Building 96 (former pesticide shop), and Building 418 (corrugated Quonset hut). These two buildings were joined with a corrugated metal roof.

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FIGURE 2-2
Site 83 within OU1



Constructed before 1948, Building 96 was reportedly used for pesticide mixing. Both Building 96 and Building 418 were used for storage from 1965 to 1981, and were subsequently used for equipment storage and administrative space until 1997. A bermed concrete wash rack, located adjacent to Building 418, drained from the wash rack to a slope in the west portion of OU1 Site 83. These two buildings and their associated structures have since been removed. In early 2006, the concrete foundation and slab of Building 96 were removed during a non-CERCLA demolition project. The area around former Building 96 is largely flat and covered by asphalt/concrete, with a grassy area and steep slope to the west that leads to a damp, low-lying area at the western end of the site.

2.2 Previous Investigations and Removal Actions

Previous environmental investigations at MCAS Cherry Point were conducted under several regulatory agency and Navy programs. Initially, investigations were performed under the Navy Assessment and Control of Installation Pollutants (NACIP) Program. In 1989, the Navy entered into an RCRA Administrative Order of Consent with USEPA to perform a **Resource Conservation Recovery Act (RCRA) Facility Investigation (RFI)** (Ref. 4).

Environmental investigations conducted at Site 83 are summarized in **Table 2-1**. The samples per environmental media (soil, groundwater, sediment, and surface water) collected during previous investigations are also summarized in **Table 2-1**. The total number of samples, taken at numerous sampling locations, depicted on **Figures 2-3 and 2-4**, demonstrate that effective sampling strategies were implemented to adequately characterize the site.

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TABLE 2-1
Previous Studies and Investigations

Previous Study / Investigation	Date	Investigation Activities	Associated Samples
<p>Facility Maintenance Department (FMD) Spill Response (Ref. 5)²</p>	<p>1996</p>	<p>Remedial activities conducted for cleanup of an oil spill near an FMD oil/water separator (OWS). The OWS was located south of the original Site 83 boundary, and the spill extended southwest of Site 83. Petroleum-contaminated soil was excavated to depths ranging from three to four feet below ground surface (bgs). Confirmation samples from the sides and bottom of the excavation were collected. The exact location of the excavation and samples is unknown. The excavation boundary and sample locations depicted on Figure 2-3 were extrapolated from the FMD Spill Response Summary Report figures into the MCAS Cherry Point GIS.</p> <p>Pesticides were observed in the soil based on visual and olfactory observations. Because pesticides were detected in the soil, the remedial action for the oil spill was stopped.</p>	<p>Ten soil samples (16-FMD-CP63CS070 to 16-FMD-CP63CS079) from the sides and bottom of the excavation were analyzed for chlordane.</p> <p>Figure 2-3</p>
<p>Solid Waste Management Unit (SWMU) Assessment (Ref. 6)</p>	<p>1997</p>	<p>MCAS Cherry Point notified NCDENR and USEPA that a new SWMU had been discovered at Building 96. The area was designated as Site 83. Soil, sediment, and groundwater samples were collected, and three monitoring wells were installed.</p> <p>Pesticides and PAHs were detected in the surface soil at concentrations that were determined to pose an unacceptable risk to industrial workers; however, these concentrations were detected beneath the building concrete slab, so there was not a complete exposure pathway. Fewer pesticides were detected with depth in the soil. No PAHs or pesticides were observed in groundwater.</p>	<p>Soil samples (83-SB-01 to 83-SB-13, 83-SS-01, and 83-SS-02).</p> <p>Figure 2-3</p> <p>Sediment samples</p> <p>Groundwater samples</p>

² More detail information on referenced documents included in Section 4.2.

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TABLE 2-1
Previous Studies and Investigations

Previous Study / Investigation	Date	Investigation Activities	Associated Samples
CERCLA Time-Critical Removal Action (TCRA), Debris Pile Removal (Ref. 7)	1997	A CERCLA TCRA was conducted southwest of Building 96 in 1997 related to numerous debris piles, tanks, empty storage vessels and other construction debris on the site. Asbestos-containing material, debris, and soil contaminated with petroleum hydrocarbons, asbestos, and lead were removed for off-site disposal. The exact location of the removal area is unknown. The locations depicted on Figure 2-3 were extrapolated from the from the CERCLA TCRA Debris Pile Removal document figures into the MCAS Cherry Point Geographic Information System (GIS)	Confirmation soil samples collected. Figure 2-3
2002 OU1 Remedial Investigation (RI) (Ref. 8)	2002	<p>The objective of the RI was to collect adequate chemical data to determine the nature and extent of chemicals of potential concern (COPCs), and to determine whether the COPCs presented an unacceptable risk to human health or the environment at OU1. The risks were evaluated through a Human Health Risk Assessment (HHRA) and an Ecological Risk Assessment (ERA). Data from historical site investigations were used in conjunction with additional soil, sediment, groundwater, and surface water samples collected for the RI. The RI determined the following:</p> <ul style="list-style-type: none"> + PAHs were identified in the soil located in the Site 83 area. + Pesticides in soil were detected in the area around the former pesticide shop. + Chlordane was identified in soil near the former surface debris pile area. + Two soil samples, in an area formerly used for fuel storage and downgradient from the former pesticide shop, contained lead above the USEPA Regional Screening Levels (RSLs) for industrial soil. 	Soil samples Sediment Samples Groundwater Samples (83MW001, 83MW002, 83MW003, MW50, MW51) Surface Water Samples Figure 2-3

TABLE 2-1
Previous Studies and Investigations

Previous Study / Investigation	Date	Investigation Activities	Associated Samples
		<p>Site 83 is encompassed by OU1 and shares groundwater properties with the surrounding sites within OU1. Volatile organic compounds (VOCs) detected above the screening criteria in groundwater are not the contaminants found at Site 83, but are associated with the OU1 Central Groundwater Plume, and are being addressed in separate documents. Inorganics detected above the screening criteria were determined to be naturally occurring.</p> <p>A baseline HHRA was performed to evaluate potential health risks for all media at OU1. Potential excess lifetime cancer risks (ELCRs) and non-cancer hazard indices (HIs) were calculated for several potential receptors, including construction workers, maintenance workers, full-time employees (including military personnel), adolescent trespassers, adult recreational users, and future child and adult residents. The OU1 baseline HHRA for the 2002 OU1 RI concluded the following:</p> <ul style="list-style-type: none"> • Soil – Soil samples from Sites 16, Site 83 area, and Base Realignment and Closure (BRAC) Site 5 were grouped together. Calculated cancer risks for exposure to the soil group exceeded USEPA’s target cancer risk range. The calculated HI for construction works and child residents exceeded USEPA’s target hazard level of 1.0. • Groundwater – The calculated HI and cancer risk for future potable use of the Surficial Aquifer were driven by samples collected elsewhere in OU1 and not by the groundwater sample results from Site 83. 	

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TABLE 2-1
Previous Studies and Investigations

Previous Study / Investigation	Date	Investigation Activities	Associated Samples
		<ul style="list-style-type: none"> • Sediment – Estimated cancer risk for exposure to OU1 sediment by child residents and lifetime residents exceeded USEPA’s target levels related to carcinogenic PAHs. However, the risk was associated with PAHs observed in one sediment sample within Schoolhouse Branch, which is not part of Site 83. All other receptors potentially exposed to sediment were below or within the USEPA’s target risk range. • Surface Water – HI and cancer risk levels were within EPA’s acceptable levels for OU1 surface water. <p>Steps 1 through 3a of the ERA process were conducted. The ecological risks were concluded to be possible to terrestrial plants, invertebrates, and terrestrial receptors, although widespread risks were considered unlikely.</p> <p>See Section 2.5 for a summary of site risks.</p>	
Step 3a Addendum (Ref. 9)	2003	The Step 3a Addendum further refined receptor exposure scenarios, delineated specific sources for COPCs, delineated the spatial extent of COPCs, developed a better understanding of potential risks to ecological receptors, and evaluated potential off-site contaminant releases to Slocum Creek. The report identified portions of the Site 83 area as primary areas posing potential ecological risk that should receive further evaluation through a Baseline Ecological Risk Assessment (BERA).	

2 DECISION SUMMARY

TABLE 2-1
Previous Studies and Investigations

Previous Study / Investigation	Date	Investigation Activities	Associated Samples
BERA Work Plan (Ref. 10)	2004	The results of the Step 3a Addendum were used to present the baseline problem formulation (Step 3b) in the BERA Work Plan. This plan included a refined conceptual site model (CSM), assessment and measurement endpoints, risk hypotheses, and plans for site-specific studies that included targeted/supplemental media sampling and toxicity testing, and ecological surveys in aquatic habitats of Sandy Branch and associated terrestrial habitats.	
BERA (Ref. 11)	2005	Additional soil samples and toxicity samples from small insects were collected at Site 83 to fill data gaps and address areas of uncertainty. No unacceptable risks were identified to the insectivorous mammalian species.	Soil samples (SO-100 to SO-116) – Semi-volatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs) metals and cyanide. Figure 2-3
Post-BERA Investigation Work Plan (Ref. 12)	2006	This report determined that the quality of the soil was too poor, and the hillside was too steep to be a good habitat for soil invertebrates. Potential ecological risks were determined to be not significant. The Navy, in partnership with the USEPA and NCDENR, agreed with the conclusions of this report.	
OU1 RI Addendum (Ref. 13)	2009	This report presented an updated evaluation of the site conceptual model, nature and extent of contamination in soil and groundwater, and potential risks to human health and the environment within OU1. This report focused on the OU1 Central Groundwater Plume Sites, and provided updates on the status of each OU1 site.	

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TABLE 2-1
Previous Studies and Investigations

Previous Study / Investigation	Date	Investigation Activities	Associated Samples
Site 83 Soil Investigation (Ref. 14)	2009	A soil investigation was conducted to confirm residual PAHs pesticides, and lead in soil, and further characterize the vertical and horizontal extent of constituents in soil at the Site 83 area. The horizontal and vertical extent of PAHs and pesticides was defined and lead was not detected above the screening levels.	183 soil samples were analyzed. Figure 2-4
2009 Additional Groundwater Investigation (Ref. 15)	2009	Additional field activities at OU1 were conducted to further characterize the extent of the chlorinated VOC groundwater plume. One monitoring well (16GW49) was installed in the Site 83 area. The new well and two additional wells were sampled for this investigation. The groundwater results show no leaching of Site 83 COPCs (pesticides or PAHs) from the soil to the groundwater at Site 83.	MW-50, MW-51, and 16GW49 Figure 2-4
Updated Human Health Risk (HHRA) Assessment (Ref. 16)	2010	Based on the data collected during the 2009 Site 83 Soil Investigation , the updated HHRA concluded that contact with surface soil and combined surface and subsurface soil at the Site 83 area would not result in carcinogenic risks above the USEPA target range of 1×10^{-6} to 1×10^{-4} or non-carcinogenic hazards above the USEPA target HI of 1.	

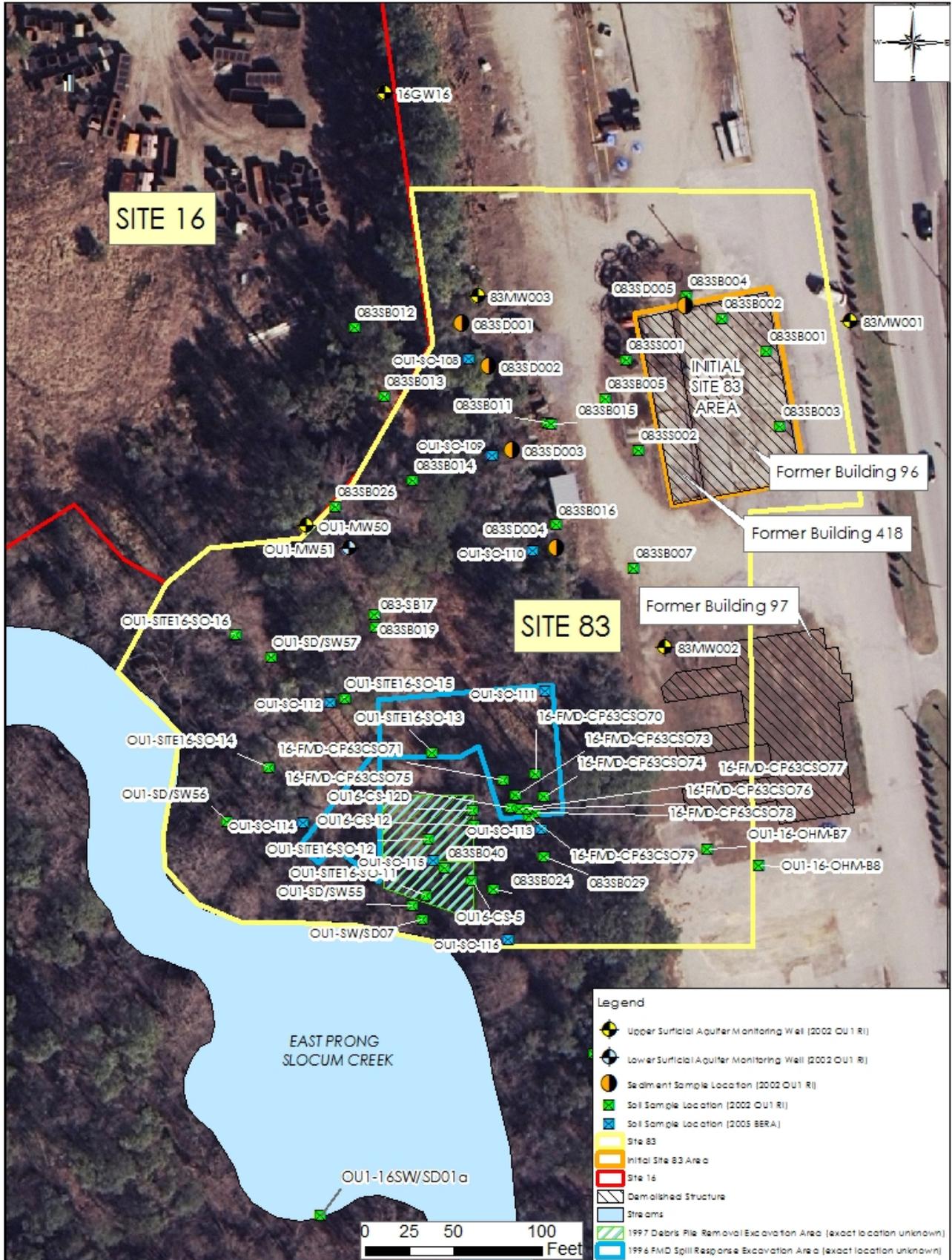
2 DECISION SUMMARY

TABLE 2-1
Previous Studies and Investigations

Previous Study / Investigation	Date	Investigation Activities	Associated Samples
Supplemental Remedial Investigation (SRI) (Ref. 17)	2011	<p>The Site 83 SRI reviewed the data and findings obtained from both historical and more recent investigations that had been conducted to characterize and summarize the nature and extent of COPCs in soil and groundwater in regards to potential environmental and human health risks.</p> <p>Based on the data collected from the Site 83 area, the SRI concluded that the environmental media have been adequately characterized. Site conditions indicate that no unacceptable risks to human health or the environment exist. Further, it was determined that previous removal actions (both debris and soil) eliminated potential future sources of contamination. The SRI recommended proceeding to an NFA Proposed Plan and ROD for Site 83.</p>	

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FIGURE 2-3
Previous Investigations Sample Locations



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FIGURE 2-4
2009 Soil and Groundwater Sample Locations



2.3 Site Characteristics

2.3.1 Physical Characteristics

OU1 generally consists of paved or concrete surfaces with buildings throughout the area. The ground surface is relatively flat, ranging in elevation from 18 to 24 feet above mean sea level (amsl). The initial Site 83 boundary consisted of the area of former Building 96 and former Building 418, and is relatively flat at approximately 24 feet amsl. Site 83 now covers an area west of the initial Site 83 boundary where the ground surface slopes significantly downward in a westerly direction, towards East Prong Slocum Creek, to an elevation of two feet amsl. This area west of initial Site 83 boundary consists of a damp, low-lying area and dense woods.

East Prong Slocum Creek is located to the west of Site 83. East Prong Slocum Creek flows into Slocum Creek and the Neuse River. East Prong Slocum Creek has been classified by NCDENR as a Class C fresh water body.

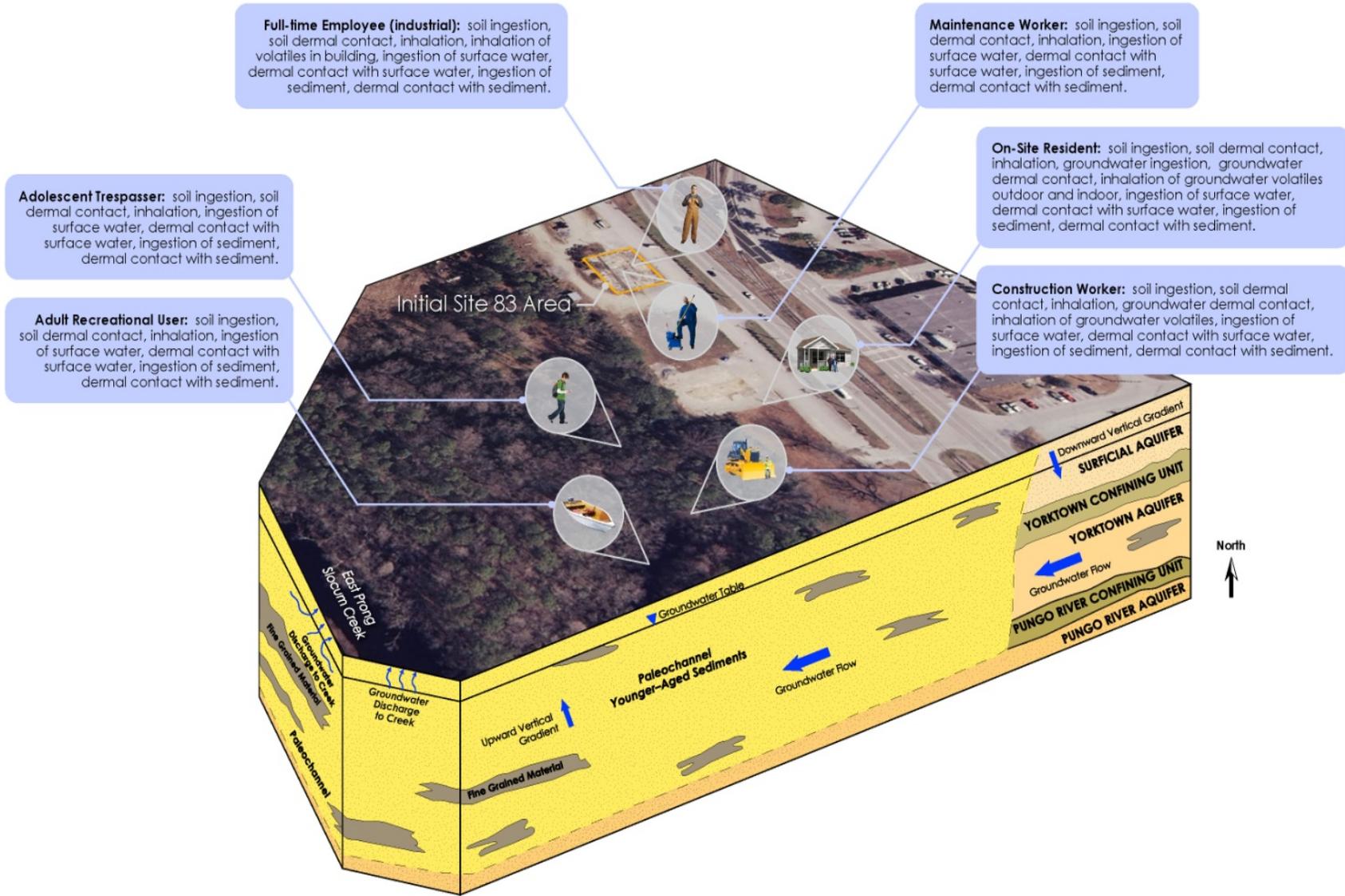
The depth to groundwater at Site 83 is approximately seven feet bgs near the former Building 96, and three feet bgs in low-lying area southwest of the site. The OU1 conceptual site model (CSM) is shown in **Figure 2-5**.

A regional, Pleistocene-age paleochannel eroded the Yorktown and Pungo River confining units and deposited younger-aged sediments in the southwestern portion of OU1. As a result, the uppermost aquifers from the eastern portion of OU1 may be in direct hydraulic communication within the paleochannel where the confining units are absent. Groundwater levels northeast of the paleochannel boundary (outside the paleochannel) show a discontinuity across the Yorktown confining unit (which acts as an aquitard), and a downward vertical gradient from the Surficial Aquifer to the Yorktown Aquifer. Groundwater levels southwest of the paleochannel boundary (within the paleochannel) generally show similar groundwater levels between the Surficial and Yorktown Aquifers, and an upward vertical gradient from the Yorktown Aquifer to the Surficial Aquifer. Site 83 is located within the paleochannel area.

Groundwater flows generally westward towards East Prong Slocum Creek at an average horizontal hydraulic gradient of approximately 0.003 feet per foot (ft/ft). The average linear horizontal groundwater velocity is estimated at approximately 0.1 to 0.2 feet per day (ft/day).

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FIGURE 2-5
OU1 Conceptual Site Model



2.3.2 Distribution of COPCs

The potential sources of COPCs at Site 83 include former Building 96, former Building 418, and former activities related to the pesticide mixing area from 1965 to 1981. Results of the historical site investigations performed at OU1 (including Site 83) from 1983 to 2000 were presented in the **2002 OU1 RI** (Ref. 8). In the Site 83 area, soil was found to contain pesticides, PAHs, and lead; however, the extent of the COPCs at Site 83 was not fully defined, and the data evaluated for potential risks to human health were grouped with data from other sites, making it difficult to evaluate Site 83 separately. As a result, an additional soil investigation and HHRA were more recently conducted at Site 83.

Site 83 is encompassed by OU1 and shares groundwater properties with the surrounding sites within OU1. The **2002 OU1 RI** (Ref. 8) also found that VOCs and inorganics concentrations were above groundwater screening criteria (North Carolina Administrative Code, Title 15A, Subchapter 2L Groundwater Standards [NC 2L GWS]) in areas adjacent to the site. The VOCs are not contaminants associated with the historical 83 activities, but were attributable to the sites that make up the OU1 Central Groundwater Plume. The inorganic constituents were determined to be naturally occurring.

The soil investigation conducted in July and August 2009 included a comprehensive, grid-based sampling approach to evaluate the current nature and extent of PAHs, pesticides, and lead in soils, and to confirm the results of the historical investigations. Results were presented in the **Site Soil Investigation Report, Operable Unit 1 — Site 83** (Ref. 14) and are summarized in Section 2.3.3 of this ROD. PAHs and pesticides were detected above the screening criteria (industrial RSLs and North Carolina soil screening levels [NC SSLs]), but lead was not detected above the screening criteria (Figure 2-4).

The installation and sampling of one monitoring well (16GW49) and sampling of two existing wells (MW-50 and MW51) were conducted in April 2009, as documented in the technical memorandum, **2009 Additional Investigation Activities, Operable Unit 1** (Ref. 15). This sampling was performed to assess the potential for leachability of Site 83 COPCs (PAHs and pesticides) from soil to groundwater at Site 83. Although PAHs and pesticides were detected above the NC SSLs in soil, these constituents were

not detected above screening criteria (NC 2L GWS). In addition, lead was not detected above screening criteria in groundwater. These results indicate that pesticides and PAHs in soil are not leaching to groundwater at Site 83. Tetrachloroethene (PCE) was the only constituent detected above screening criteria in the area of Site 83 during the **2009 Additional Investigation Activities, Operable Unit 1** (Ref. 15), and is related to the cVOC groundwater plume (OU1 Central Groundwater Plume) that originates upgradient of Site 83. PCE will be addressed as part of the OU1 Central Groundwater Plume. VOCs and inorganic constituents detected above screening criteria in groundwater adjacent to the site during the **2002 OU1 RI** (Ref. 8) were determined to be related to the OU1 Central Groundwater Plume and naturally occurring, respectively.

For comparative purposes, the nature and extent of PAHs and pesticides in Site 83 soil was evaluated using the results from the 2009 **Site 83 Site Soil Investigation** (Ref. 14), and the nature and extent of groundwater contamination at Site 83 is evaluated using the results from the **2002 OU1 RI** (Ref. 8) and the **2009 OU1 Additional Groundwater Investigation** (Ref. 15).

Regulatory Standards and Risk-Based Screening Values

The processes used to evaluate risks to human receptors and the consideration of a constituent as a chemical of potential concern is discussed in Section 2.5.1. However, to determine the nature of soil and groundwater contamination within Site 83, analytes were compared, as applicable, to the following screening values:

- + Soil samples were compared against applicable standardized screening levels as follows:
 - o USEPA - RSLs - for industrial soil (May 2010), adjusted as appropriate (for non-carcinogenic effects).
 - o NC SSLs - for the protection of groundwater.

- + Groundwater samples were compared against applicable standardized screening levels as follows:
 - o Federal Maximum Contaminant Levels (MCLs) and Secondary MCLs.

- NC 2L GWS for “Class GA Groundwater Quality.”
- USEPA RSLs - for tap water (May 2010), adjusted as appropriate (for non-carcinogenic effects).

Soil

The spatial distribution of samples collected from 111 locations across the Site 83 area provides sufficient coverage of the soil to assess the nature and extent of the COPCs. Samples were collected and analyzed for contaminants that exceeded the SSLs associated with Site 83 in the past. A total of 183 soil samples were collected and analyzed for select pesticides (dieldrin, heptachlor epoxide, heptachlor, dichloro-diphenyl-dichloroethene [4-4' DDE], dichloro-diphenyl-dichloroethane [4-4' DDD], dichloro-diphenyl-trichloroethane [4-4' DDT], and chlordane). A total of 156 soil samples were collected and analyzed for select PAHs (benzo[a]pyrene, benzo[a]-anthracene, benzo[b]fluoranthene, dibenzo[a,h]-anthracene, indeno [1,2,3-cd]pyrene). Fifteen samples were taken to examine for lead. Detailed evaluations are provided in the [Site 83 Soil Investigation Report](#) (Ref 15).

Polycyclic Aromatic Hydrocarbons

All five previously identified PAHs (benzo[a]anthracene, benzo[b]-fluoranthene, benzo[a] pyrene, dibenz[a,h]-anthracene, and indeno [1,2,3,-cd]pyrene) were detected above the screening criteria (industrial RSLs and NC SSLs).

Benzo(a)pyrene was the most frequently detected PAH above screening criteria. Fourteen samples were found to contain benzo(a)pyrene above the industrial RSL of 210 µg/kg, and 33 samples contained benzo(a)pyrene above the NC SSL of 59 micrograms per kilogram (µg/kg), with a maximum concentration of 24,000 µg/kg. Most exceedances of the screening criteria occurred in surface soil located within approximately 100 feet of former Building 96. Benzo(a)pyrene was observed above screening criteria in subsurface soil to a depth of four feet, generally in the areas near the former excavation areas. All other PAHs occurred less frequently. PAHs occurred primarily at one sample depth interval within the sample location, and did not migrate with depth.

Pesticides

Six of the seven pesticides (heptachlor, heptachlor epoxide, 4,4'-DDD, 4,4'-DDT, dieldrin, and chlordane) were detected at concentrations above a screening criterion. The seventh pesticide tested for, 4,4'-DDE, was not detected above screening criteria.

Chlordane was detected above the industrial RSL of 6,500 µg/kg at seven locations, and above the NC SSL of 68 µg/kg at 84 locations. Chlordane exceedances were typically limited to the surface soil (one foot), except for two sample locations where the impacted soil extended to the one- to two-foot interval. The maximum concentration of chlordane was detected in the surface soil at a concentration of 220,000 µg/kg. Chlordane generally occurred in surface soil from small localized areas within 80 feet to the west of the former building slab. However, chlordane was detected at a concentration of 200,000 µg/kg within one surface soil sample that was located approximately 175 feet further to the south.

Dieldrin was detected above the industrial RSL of 110 µg/kg in seven samples, and above the NC SSL of 0.81 µg/kg in 26 samples, with a maximum concentration of 1,500 µg/kg. Dieldrin was predominantly detected in surface soil in the vicinity of former Building 96.

Heptachlor, heptachlor epoxide, 4,4'-DDD, and 4,4'-DDT were detected less frequently above the industrial RSLs and NC SSLs. Heptachlor and heptachlor epoxide generally occurred where chlordane was observed, but less frequently. Localized occurrences of 4,4'-DDD and 4,4'-DDT exceeded the industrial RSLs (7,200 and 7,000 µg/kg, respectively) south of the former excavation areas, with maximum concentrations of 9,300 and 28,000 µg/kg, respectively.

Lead

Lead samples were collected from five locations at the north portion of the Site 83 slope from the zero- to one-foot and two- to three-foot intervals. All lead sample results were below both the NC SSL and the industrial RSL.

Groundwater

The monitoring well network at Site 83 consists of six wells that provide the basis for defining the nature and extent of contamination in groundwater.

Although PAHs and pesticides were detected above the NC SSLs in soil, these constituents were not detected above screening criteria in groundwater. In addition, lead was not detected above screening criteria in groundwater. These results indicate that Site 83 COPCs (PAHs and pesticides in soil) are not leaching to groundwater at Site 83. The physical properties of PAHs and pesticides cause them to bind to soil, so they are not likely to leach into groundwater.

PCE was the only constituent detected above screening criteria (NC 2L GWS) in the area of Site 83 during the **2009 Additional Groundwater Investigation** (Ref. 15). PCE is not a COPC of Site 83, and is related to the chlorinated VOC groundwater plume that originates upgradient of Site 83. PCE will be addressed as part of the OU1 Central Groundwater Plume. VOCs detected above screening criteria in groundwater adjacent to the site during the **2002 OU1 RI** (Ref. 8) are also not COPCs of Site 83, and were determined to be related to the OU1 Central Groundwater Plume. Inorganic constituents detected above screening criteria in groundwater adjacent to the site during the **2002 OU1 RI** (Ref. 8) were determined to be naturally occurring.

2.4 Current and Potential Future Land and Resource Uses

The area surrounding MCAS Cherry Point consists of commercial and residential developments, waterways, and the Croatan National Forest. Current land use at the installation includes military operations, training, maintenance and production, supply, medical administration, troop and family housing, community support, recreation, and utilities. MCAS Cherry Point is expected to remain as an active military installation in the foreseeable future.

OU1 is currently used for industrial purposes, and generally consists of the FRCE, the Industrial Wastewater Treatment Plant (IWTP), the DRMO, and several additional support facilities. Currently, Site 83 is vacant and is often used as a laydown area for construction materials and military vehicles.

Current land uses at the site and installation are reasonably anticipated to continue indefinitely to support the mission of the facility.

Groundwater from the Castle Hayne Aquifer is used as a potable resource at MCAS Cherry Point for domestic and industrial water supply, and is classified by the State of North Carolina as an existing or potential source of drinking water. The Surficial Aquifer is not currently an active groundwater resource and is not anticipated to be used as a future source of drinking water at MCAS Cherry Point. Under North Carolina's groundwater classification, the Surficial Aquifer is considered as Class GA, a potential source of drinking water.

Surface water is not used as potable water resource in or around MCAS Cherry Point. East Branch Slocum Creek adjacent to Site 83 is considered a Class C (freshwaters protected for secondary recreation, fishing, and aquatic life) water body, is currently used for recreation, and is expected to remain recreational.

2.5 Summary of Site Risks

Site 83 was evaluated for potential risks to human health and the environment as part of quantitative risk assessments documented in the **2002 OU1 RI** (Ref. 8). Site 83 was grouped with adjacent sites to assess potential risks from exposure to soil. An **Updated HHRA** (Ref. 16) was conducted based on the 2009 **Site 83 Soil Investigation** (Ref. 14) results to further evaluate the magnitude and probability of actual or potential harm to human health posed by the PAHs and pesticides in the Site 83 soil. The updated HHRA supersedes the HHRA performed as part of the 2002 OU1 RI in regards to the exposure to soils.

Potential ecological risks were evaluated in the **2002 OU1 RI** (Ref. 8), the **Step 3A Addendum** (Ref. 9), the **OU1 BERA** (Ref. 11), and the **Post-BERA Investigation Work Plan** (Ref. 12). The **Post-BERA Investigation Work Plan** (Ref. 12) summarized the ecological risk assessment at OU1. It was determined that there are no site-related risks for the southwest area of ecological concern (SW AOEC) receptors and that the quality of the soil was too poor, and the hillside too steep, to be a good habitat for soil invertebrates; therefore, the potential ecological risk was determined to be not significant in the area.

Potential risks from exposure to groundwater, surface water, and sediment were evaluated for aquifers and for surface water bodies present within OU1; however, they were not specific to Site 83.

An updated HHRA for groundwater impacts was performed as Part of the OU1 RI Addendum (**OU1 RI Addendum**, Ref. 13). The updated groundwater HHRA components in the **OU1 RI Addendum**, Ref. 13), supersede the groundwater components of the HHRA in the **2002 OU1 RI** (Ref. 11).

2.5.1 Human Health Risk Assessment Summary

2002 OU1 HHRA

A baseline HHRA was performed to evaluate potential health risks for all media at OU1. Potential excess lifetime cancer risks (ELCRs) and non-cancer hazard indices (HIs) were calculated for several potential receptors, including construction workers, maintenance workers, full-time employees (including military personnel), adolescent trespassers, adult recreational users, and future child and adult residents. All unacceptable risks for groundwater and sediment from the 2002 OU1 RI HHRA were based on data from other sites within OU1 and not that solely associated with Site 83.

Soil

Soil samples from Sites 16 and 83 and BRAC Site 5 were grouped together for evaluation. Calculated cancer risks for exposure to the soil group exceeded USEPA's target cancer risk range. The calculated HI for construction workers and child residents exceeded USEPA's target hazard level of 1.0. The results of the **Updated HHRA** (Ref. 16) that superseded the 2002 OU1 RI HHRA for exposure to soils are included in the following section.

Groundwater

Risks associated with exposure to groundwater were evaluated for the surficial, Yorktown, and Castle-Hayne Aquifers for all of OU1. The calculated HI and cancer risks for potential future potable use of the Surficial Aquifer exceeded USEPA's target levels. VOCs, carcinogenic PAHs, arsenic, iron, and thallium were the major risk contributors for the

2 DECISION SUMMARY

Surficial Aquifer; however, Site 83 COPCs do not include VOCs, arsenic, iron and thallium. Site 83 COPCs were not detected above the screening criteria and the carcinogenic PAH detections were associated with Sites 51 and 52, and were not related to Site 83.

Sediment

Estimated cancer risk for exposure to OU1 sediment by child residents and lifetime residents exceeded USEPA's target levels related to carcinogenic PAHs. However, the risk was associated with PAHs observed in one sediment sample within Schoolhouse Branch, which is not part of Site 83. All other receptors potentially exposed to sediment were below or within the USEPA's target risk range (2012 SRI, Ref. 19); therefore, evaluation of this media is considered complete. Sediment at Site 83 does not appear to present a risk to those potential receptors evaluated.

Surface Water

Cancer risk levels and HIs for all receptor groups exposed to OU1 surface water were within the USEPA's acceptable levels. Therefore, evaluation of this media is considered complete and Site 83 does not present a risk to those potential receptors evaluated.

Updated HHRA for Soil

An **Updated HHRA** (Ref. 16) was prepared for Site 83 using the data collected during the additional soil investigation study. Soil samples collected during the **2002 OU1 RI** (Ref. 8) were not included in the HHRA, because sampling conducted during the additional soil investigation study was more representative of current site conditions and overlapped previous sampling areas. Human health risks associated with exposure to constituents detected in soil were evaluated for potential exposure pathways based on existing site conditions and current and potential future site use. The 2010 Site 83 **Updated HHRA** (Ref. 16) for soil used current risk assessment methods, and **USEPA RSL table values** (USEPA, 2010) (Ref. 18). The **Updated HHRA** evaluated surface soil samples (zero to one foot bgs) and subsurface soil samples (two to five feet bgs) collected at Site 83.

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Based on the site topography, the site was evaluated as two exposure units, the “Upland Area” and the “Lowland Area.” The Upland Area consists of the flat area surrounding and including the former Building 96 location. The Lowland Area consists of the space west of the former Building 96 location and is covered by vegetation, including the slope adjacent to the Upland Area and the flat area at the bottom of the slope. The data were grouped according to these two exposure units for evaluation in the HHRA.

Detected constituents were screened by comparing the maximum detected concentration of each constituent in each medium to the USEPA residential soil RSLs and residential air RSLs.

Following **USEPA Region 4 Risk Assessment Guidance** (Ref. 19), any member of a chemical class that was detected and had other chemical class members selected as COPCs was retained as a COPC (i.e., if one carcinogenic PAH was selected as a COPC, all detected PAHs were retained as COPCs, because the maximum detected concentration exceeded the screening level).

All detected pesticides and PAHs in the Upland Area surface soil and the combined surface and subsurface soil exceeded the residential soil RSLs, with the exception of heptachlor epoxide, and were retained as COPCs. In the Lowland Area, all detected pesticides and PAHs in surface soil and combined surface and subsurface soil exceeded the residential soil RSLs, with the exception of benzo(a)anthracene, and were retained as COPCs. Benzo(a)anthracene was retained as a COPC based on the selection criteria of a chemical from the same class, carcinogenic PAHs. For the soil-to-air pathway for surface soil and combined surface and subsurface soil in each exposure area, there were no exceedances of the residential air RSLs; therefore, no constituents were retained as COPCs for soil-to-air pathway.

Exposure Evaluation for Soil

Based upon the exposure assessment, the current land use exposure routes for quantitative evaluation for both the Upland and Lowland Areas within Site 83 included the following:

- + Industrial worker—Incidental ingestion of and dermal contact with surface soil.

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- + Maintenance worker—Incidental ingestion of and dermal contact with surface soil.
- + Trespasser/visitor (adult, adolescent, and child)—Incidental ingestion of and dermal contact with surface soil.

The future land use exposure routes included the following:

- + Industrial worker—Incidental ingestion of and dermal contact with soil (combined surface and subsurface soil).
- + Maintenance worker—Incidental ingestion of and dermal contact with soil (combined surface and subsurface soil).
- + Trespasser/visitor (adult, adolescent, and child)—Incidental ingestion of and dermal contact with soil (combined surface and subsurface soil).
- + Construction worker—Incidental ingestion of and dermal contact with soil (combined surface and subsurface soil).
- + Resident (adult and child)—Incidental ingestion of and dermal contact with soil (combined surface and subsurface soil).

Risk Estimates

USEPA's target range for ELCRs associated with CERCLA sites ranges from 1 in 10,000 (1×10^{-4}) to 1 in 1,000,000 (1×10^{-6}). Similarly, the target noncarcinogenic HI is 1.0 or less. Risk estimates were calculated for potential receptors and exposure pathways using conservative assumptions for exposure factors and exposure point concentrations.

The results of the HHRA indicate that, for both current and potential future land use, Site 83 does not pose unacceptable health risks to any of the receptors evaluated. Contact with Upland Area and Lowland Area surface soil and combined surface and subsurface soil would not result in carcinogenic risks above the USEPA target range of 1×10^{-6} to 1×10^{-4} or

2 DECISION SUMMARY

noncarcinogenic hazards above the USEPA target HI of 1.0, as summarized in the table below.

TABLE 2-2
Summary of Updated HHRA Results

Receptor	Upland Area		Lowland Area	
	HI	Carcinogenic Risk	HI	Carcinogenic Risk
Current/Future Industrial Worker	0.1	6x10 ⁻⁵	0.3	2x10 ⁻⁵
Current/Future Maintenance Worker	0.02	1x10 ⁻⁵	0.06	4x10 ⁻⁶
Current/Future Adult Trespasser/Visitor	0.02	1x10 ⁻⁵	0.06	3x10 ⁻⁶
Current/Future Youth Trespasser/Visitor	0.03	7x10 ⁻⁶	0.09	2x10 ⁻⁶
Current/Future Child Trespasser/Visitor	0.2	2x10 ⁻⁵	0.5	7x10 ⁻⁶
Future Industrial Worker	0.06	2x10 ⁻⁵	0.1	6x10 ⁻⁶
Future Maintenance Worker	0.01	4x10 ⁻⁶	0.02	1x10 ⁻⁶
Future Adult Trespasser/Visitor	0.01	3x10 ⁻⁶	0.02	1x10 ⁻⁶
Future Youth Trespasser/Visitor	0.02	2x10 ⁻⁶	0.03	7x10 ⁻⁷
Future Child Trespasser/Visitor	0.1	7x10 ⁻⁶	0.2	2x10 ⁻⁶
Future Construction Worker	0.2	3x10 ⁻⁶	0.3	9x10 ⁻⁷
Future Adult Resident	0.08	NA	0.1	NA
Future Child Resident	0.7	NA	1	NA
Future Lifetime Resident	NC	7x10 ⁻⁵	NC	2x10 ⁻⁵

NA = not applicable

2.5.2 Ecological Risk Assessment Summary

As part of the **OUI BERA** (Ref. 11), additional soil samples and toxicity samples from small insects were collected at Site 83 to fill data gaps and address areas of uncertainty. Sixteen soil samples (SS-100 through SS-116) were collected and analyzed for SVOCs, pesticides, PCBs, metals, and cyanide. Other pesticides, including endosulfan II, endosulfan II sulfate, heptachlor, and heptachlor epoxide were detected in soil. Details are presented in the **OUI BERA** (Ref. 11).

The **OUI BERA** (Ref. 11) established two assessment endpoints: 1) protection of the soil invertebrate community; and 2) protection of populations of insectivorous mammalian species. Potential risks were

identified for the invertebrate community based on inorganics and pesticides. However, the BERA recommended that consideration be given to whether risk to the soil invertebrate community adjacent to Site 83 warranted remediation.

Due to the steep topography and position within the landscape at the edge of a semi-improved area, the hillside where the samples were collected will never be high quality habitat even if remediation is performed. The **OU1 BERA** (Ref. 11) identified no risks to the insectivorous mammalian species.

Because the quality of the soil and the steep hillside provide a poor habitat for soil invertebrates, Navy, in partnership with the USEPA and NCDENR, agreed that potential ecological risk is not significant.

2.6 Description of Selected Remedy

Based on the available data, there are no unacceptable human-health or ecological risks from sources attributable to Site 83. The selected remedy identified for Site 83 is NFA. The selected remedy in this ROD is the final action for Site 83 under CERCLA. The Site 83 remedy will not include or affect any other sites or OUs at MCAS Cherry Point. The groundwater beneath Site 83 will be addressed by the remedy selected for the OU1 Central Groundwater Plume.

The Navy, EAD, and USEPA Region 4, in partnership with NCDENR, agreed that NFA is appropriate for this site and meets the statutory requirements of CERCLA for protection of human health and the environment. Site conditions allow for UU/UE) (except that there will be restrictions placed on groundwater use as part of the remedy for the separate OU1 Central Groundwater Plume). No further remedial response action and no restrictions on land use are necessary at this site.

2.7 Community Participation

Community participation at MCAS Cherry Point includes a Restoration Advisory Board (RAB), public meetings, a public information repository, newsletters and fact sheets, public notices, and an ERP web site. The Community Involvement Plan for MCAS Cherry Point provides detailed information on community participation for the ERP.

2 DECISION SUMMARY

The RAB was formed in 1995 and consists of community members and representatives of the USEPA, NCDENR, Navy, and USMC. RAB meetings are held every three to six months, and are open to the public to provide opportunity for public comment and input. The investigations at OU1, the findings, and potential remedial approaches have been presented and discussed at the RAB meetings.

The Community Involvement Plan and technical reports supporting the remedial decision are available for public download via the MCAS Cherry Point ERP Public website, and can be accessed at <http://go.usa.gov/2EH>, by selecting the “Administrative Record File” link.

Note: Some internet browsers do not include Department of Defense (DoD) digital security certificates, which may result in a security warning recommending the user not to proceed. Though there is no harm in proceeding, to avoid such security alerts, first download the DoD Root CA Certificates by following the instructions at the following web site: <http://dodpki.c3pki.chamb.disa.mil/rootca.html>.

If you do not have personal access to the MCAS Cherry Point ERP public web site, a hardcopy version of this ROD may be obtained at the Havelock-Craven County Library (301 Cunningham Boulevard, Havelock, North Carolina 28532) during normal business hours. The library can be contacted at (252) 447-7509.

For additional information on the ERP, contact the following:

Public Affairs Office
NAVFAC Atlantic
6506 Hampton Blvd.
Norfolk, VA 23508-1278
757-322-8005

In accordance with Sections 113 and 117 of CERCLA, the Navy and MCAS Cherry Point provided a public comment period from April 10 through May 25, 2012, for the preferred alternative described in the **Proposed Plan** (Ref. 20) for OU1 Site 83. A public meeting to present the Proposed Plan was held at the Havelock Tourist and Event Center, located in Havelock, North Carolina, on April 24, 2012. Public notice of the meeting and availability of documents was placed in the *Sun Journal Newspaper* on April 9 and 12,

2012, the *Havelock News* on April 12, 2012, and the *Carteret County News-Times* on April 8, 2012.

No comments, concerns, or questions were received by the Navy, USEPA, or NCDENR during the public comment period. Upon finalization of this ROD, a notice of availability will be published in the *Sun Journal Newspaper*, the *Havelock News*, the *Windsock*, and the *Carteret County News-Times*.

2.8 Documentation of Significant Changes

There are no significant changes to the NFA determination as identified in the **Proposed Plan** (Ref. 20).

3.0 RESPONSIVENESS SUMMARY

No written comments, concerns, or questions were received by the Navy, USEPA, or NCDENR during the public comment period. Navy, USEPA, and NCDENR representatives were available to present the Proposed Plan (Ref. 20) for Site 83 during the April 24, 2012 public meeting and answer questions regarding the Proposed Plan and any other documents in the information repository. The transcript from the public meeting is provided in Appendix A.

4.0 ACRONYMS AND REFERENCES

4.1 Acronyms and Abbreviations

2 nd FSSG	Second Force Service Support Group
amsl	Above Mean Sea Level
BERA	Baseline Ecological Risk Assessment
bgs	Below Ground Surface
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
COPCs	Chemicals of Potential Concern
CSM	Conceptual Site Model
cVOCs	Chlorinated Volatile Organic Compounds
4-4' DDD	dichloro-diphenyl-dichloroethane
4-4' DDE	dichloro-diphenyl-dichloroethene
4-4' DDT	dichloro-diphenyl-trichloroethane
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EAD	Environmental Affairs Department
ELCRs	Excess Lifetime Cancer Risks
ERA	Ecological Risk Assessment
ERP	Environmental Restoration Program
FFA	Federal Facility Agreement
FMD	Facility Maintenance Department
FMF	Fleet Marine Force
FRCE	Fleet Readiness Center East
ft/day	Feet per Day
ft/ft	Feet per Foot
GIS	Geographic Information System

4 ACRONYMS AND REFERENCES

HHRA	Human Health Risk Assessment
HI	Hazard Index
IWTP	Industrial Wastewater Treatment Plant
MAW	Marine Aircraft Wing
MCAS	Marine Corps Air Station
MCLs	Maximum Contaminant Levels
NACIP	Navy Assessment and Control of Installation Pollutants
NADEP	Naval Aviation Depot
NAVFAC	Naval Facilities Engineering Command
Navy	United States Department of the Navy
NC 2L GWS	North Carolina Administrative Code, Title 15A, Subchapter 2L Groundwater Standards
NCDENR	North Carolina Department of Environment and Natural Resources
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NC SSLs	North Carolina Soil Screening Levels
NFA	No Further Action
NPL	National Priorities List
OU	Operable Unit
OWS	Oil/Water Separator
PAH	Polycyclic Aromatic Hydrocarbons
PCB	Polychlorinated Biphenyls
PCE	Tetrachlorethene
RAB	Restoration Advisory Board
RCRA	Resource Conservation Recovery Act
Ref.	Reference
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
RSLs	Regional Screening Levels
SARA	Superfund Amendments and Reauthorization Act of 1986
SMP	Site Management Plan
SRI	Supplemental Remedial Investigation

4 ACRONYMS AND REFERENCES

SSL	Soil Screening Level
SVOC	Semi-Volatile Organic Compound
SWMU	Solid Waste Management Unit
TCRA	Time-Critical Removal Action
USEPA	United States Environmental Protection Agency
USMC	United States Marine Corps
UU/UE	Unlimited Use/Unrestricted Exposure
VOC	Volatile Organic Compound

4.2 References

Reference Number	Reference Phrase in ROD	Location in ROD	Identification of Referenced Document
1	Federal Facility Agreement (FFA)	Section 1.2, 1.3, 2.1	Naval Facilities Engineering Command (NAVFAC), 2005. <i>Federal Facility Agreement for Marine Corps Air Station Cherry Point, North Carolina</i> . USEPA Administrative Docket Number CERCLA-04-2005-3766.
2	Site Management Plan (SMP)	Section 1.3	CH2M HILL. 2010. <i>Site Management Plan, Fiscal Year 2011</i> . Marine Corps Air Station, Cherry Point, North Carolina. August.
3	Record of Decision, OU1, Sites 14, 15, 17, 18, and 40	Section 1.3	CH2M HILL. 2010. <i>Record of Decision, Operable Unit 1, Sites 14, 15, 17, 18, and 40</i> . Marine Corps Air Station Cherry Point, North Carolina. August.
4	Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI)	Section 2.2	A.T. Kearney, Inc. 1988. <i>Interim RCRA Facility Report</i> . US Marine Corps Air Station Cherry Point, North Carolina 28533. June.
5	FMD Spill Response	Table 2-1	OHM, 1996. <i>FMD Spill Response Summary Report, Operable Unit 01, Site 16</i> .
6	SWMU Assessment	Table 2-1	B&R, 1998. <i>SWMU Assessment Report for Site 83, Building 96 Former Pesticide Mixing Area, Marine Corps Air Station Cherry Point, North Carolina</i> .
7	CERCLA Time-Critical Removal Action (TCRA), Debris Pile Removal	Table 2-1	OHM. 1998. <i>CERCLA Time-Critical Removal for OU1, Site 16 Debris Piles, Marine Corps Air Station, Cherry Point, North Carolina</i> . January.
8	2002 OU1 RI	Table 2-1 Section 2.3.2, 2.5, 2.5.1	Tetra Tech NUS, 2002. <i>Final Remediation Investigation for OU1, Marine Corps Air Station, Cherry Point, North Carolina</i> , November.
9	Step 3A Addendum to the ERA	Table 2-1 Section 2.5	CH2M HILL. 2003. <i>Step 3A Addendum to the Ecological Risk Assessment, Operable Unit 1, MCAS Cherry Point</i> . March.
10	BERA Work Plan	Table 2-1	CH2M HILL. 2004. <i>Baseline Ecological Risk Assessment Work Plan, Operable Unit 1, MCAS Cherry Point</i>

4 ACRONYMS AND REFERENCES

Reference Number	Reference Phrase in ROD	Location in ROD	Identification of Referenced Document
11	OU1 BERA	Table 2-1 Section 2.5, 2.5.2	CH2M HILL. 2005. <i>Baseline Ecological Risk Assessment for Operable Unit 1, Marine Corps Air Station Cherry Point, North Carolina</i> . August.
12	Post-BERA Work Plan	Table 2-1 Section 2.5,	CH2M HILL. 2006. <i>Final Post-BERA Investigation Work Plan for Operable Unit 1, Marine Corps Air Station Cherry Point, North Carolina</i> . July.
13	OU1 RI Addendum	Table 2-1 Section 2.5	CH2M HILL. 2009. <i>Final OU1 Remedial Investigation Addendum</i> . Marine Corps Air Station Cherry Point, Cherry Point, North Carolina. April.
14	Site 83 Soil Investigation	Table 2-1 Section 2.3.2, 2.5	Rhēa. 2010. <i>Site Soil Investigation Report, Operable Unit 1—Site 83, MCAS Cherry Point, North Carolina</i> . February.
15	2009 Additional Groundwater Investigation	Table 2-1 Section 2.3.2,	CH2M HILL. 2009. <i>2009 Additional Investigation Activities, Operable Unit 1</i> .
16	Updated HHRA	Table 2-1 Section 2.5, 2.5.1	CH2M HILL. 2010. <i>Summary of the Updated Human Health Risk Assessment—Site 83, OU1, Marine Corps Air Station Cherry Point, North Carolina</i> . July.
17	Supplemental Remedial Investigation (SRI)	Table 2-1	CH2M HILL. 2011. <i>Supplemental Remedial Investigation, Site 83, Operable Unit 1, Marine Corps Air Station Cherry Point, North Carolina</i> . May.
18	USEPA RSL table values	Section 2.5.1	USEPA. 2010. <i>Regional Screening Levels for Chemicals at Superfund Sites</i> . December.
19	USEPA Risk Assessment Guidance	Section 2.5.1	USEPA. 2000. <i>Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins</i> . EPA Region 4, originally published November 1995. Website version last updated May 2000. Office of Technical Services, USEPA Region 4. May. http://www.epa.gov/region4/waste/oftecser/healthbul.htm .

4 ACRONYMS AND REFERENCES

Reference Number	Reference Phrase in ROD	Location in ROD	Identification of Referenced Document
20	Proposed Plan	Section 2.7, 2.8, 3.0	Rhēa. 2012. <i>Proposed Plan, Operable Unit 1—Site 83, MCAS Cherry Point, North Carolina</i> . March.

APPENDIX A
Public Meeting
Transcript

PUBLIC MEETING

PROPOSED PLAN FOR SELECTED REMEDY
OPERABLE UNIT (OU) 1
SITE 83
MCAS CHERRY POINT, NORTH CAROLINA

APRIL 24, 2012

* * * * *

MEETING MODERATOR - MR. WILLIAM POTTER
CHERRY POINT'S ENVIRONMENTAL
AFFAIRS DEPARTMENT
INSTALLATION RESTORATION
PROGRAM MANAGER

PRESENTER - MS. ERICA DeLATTRE
RHEA ENGINEERS & CONSULTANTS, INC.
4951 WILLIAM FLYNN HIGHWAY
GIBSONIA, PENNSYLVANIA 15044

COURT REPORTER - LINDA W. LITTLE

CAROLINA COURT REPORTERS, INC.
105 Oakmont Professional Plaza
Greenville, North Carolina 27858
TEL: (252) 355-4700 (800) 849-8448
FAX: (252) 355-4707

INDEX OF ATTACHMENTS

ATTACHMENT [1] THE PROPOSED PLAN FOR SELECTED REMEDY
OPERABLE UNIT (OU) 1, SITE 83, MCAS
CHERRY POINT, NORTH CAROLINA

ATTACHMENT [2] ATTENDANCE LIST FOR RAB/PUBLIC MEETING
DATED APRIL 24, 2012

APRIL 24, 2012

1 COURT REPORTER'S NOTE: The public meeting
2 portion of the Proposed Plan for Selected Remedy, Operable
3 Unit (OU) 1, Site 83, MCAS Cherry Point, North Carolina,
4 convened April 24, 2012, at 6:12 p.m., at the Havelock
5 Tourist and Event Center, Havelock, North Carolina.

6 MR. WILLIAM POTTER: All right. Well, good
7 afternoon everyone. I'd like to welcome you to the Marine
8 Corp Air Station Cherry Point's Public Meeting for the
9 Proposed Remedial Action Plan for Site 83. Yeah, 83 in
10 Operable Unit 1. My name is William Potter, I am the
11 Installation Restoration Program Manager at Cherry Point
12 working at the Environment Affairs Department. And with me
13 tonight is my partner and team members. First of all, our
14 representative from Naval Facilities at Atlantic Engineering
15 Command -- Naval Facilities Engineering Command Mid-Atlantic,
16 Ms. Nicole Cowand. She is assuming the duties of Mr. Jason
17 Williams. You recall Jason, you met him in the last couple
18 of meetings, and Nicole is going to be resuming his duties,
19 and so everyone please welcome her. Also, we have a
20 representative from the Environmental Protection Agency,
21 Region 4, Ms. Gena Townsend. From the North Carolina
22 Department of Environment and Natural Resources we have Mr.
23 George Lane. And on the technical side we have our Remedial
24 Design -- Remedial Action Contractors. First of all, from
25 RHEA Engineers and Consultants we have Ms. Erica DeLattre.

1 Sorry, Erica. And from CH2M on the Hill we have Mr. Doug
2 Bitterman, Ms. Erin Twamley, and Mr. --

3 MR. BILL HANNAH: Bill Hannah.

4 MR. POTTER: Business with us tonight includes
5 from NAVFAC we have Ms. Rachel Watts, and we have from the
6 Environmental Affairs Department we have Mr. Jeff
7 Christopher. Okay.

8 The schedule for tonight's meeting -- we're going to
9 start off with the public meeting and after a short break
10 we're going to go into our Restoration Advisory Board
11 Meeting. Seeing as we don't have any other members from the
12 community this is going to be a RAB meeting tonight, it seems
13 like. And with that I will turn the floor over to Erica to
14 start the presentation.

15 MS. ERICA DeLATTRE: Okay. Thanks. Well, like
16 Will said, this is a presentation for the Proposed Plan for
17 the Selected Remedy for Site 83. You may have seen the
18 publication in the newspaper, I think it was around the week
19 of Easter, April 8th, and a couple of days that week that
20 announced that the plan was complete and published, available
21 at both the library and online. And so this -- and it also
22 announced the Public Meeting, which is what this is. Like
23 Will said, I'm Erica DeLattre with RHEA Engineers, and we,
24 with NAVFAC, wrote the proposed plan and the team reviewed
25 it. And this meeting will show the rationale for the

1 selected remedy for Site 83, and to give you a hint it's no
2 further action or what we call NFA. And it's also the
3 purpose of the Public Meeting is to solicit any questions or
4 comments from the public concerning the proposed plan. And
5 that public comment period goes through May 25th. It's a
6 casual meeting format so ask questions at any time. Get my
7 attention and clearly state your name so that we can get it
8 into the minutes.

9 CERCLA -- we're still going to go through all the
10 definitions even though most of you know what they are. It
11 stands for the Comprehensive Environmental Response,
12 Compensation, and Liability Act. It was enacted in 1980 and
13 amended in 1986 under the Superfund Amendment and
14 Reauthorization Act. And at that time that brought in the
15 Federal facilities and under the CERCLA program, established
16 a comprehensive, statutory framework for identifying,
17 investigating, and cleaning up releases of hazardous
18 substances into the environment.

19 There are several steps in the CERCLA process.
20 There's the preliminary assessment which basically identifies
21 the sites and what potential contaminants could be on them.
22 The remedial investigation, which is more in depth, where it
23 actually takes -- there are -- samples are taken and risks
24 are evaluated. And we are at the proposed plan stage where
25 the plan was implemented -- or not implemented -- the plan

1 was published and showed what the proposed remedy is for the
2 site. The record of decision, documents that agreed-upon
3 remedial action, and then the remedial design/remedial action
4 is implemented, it's the last step.

5 The presentation for the proposed plan follows the
6 outline of the proposed plan. So if you -- you can follow
7 along with the presentation notes, or I actually have copies
8 of the proposed plan here. Does anybody need any copies of
9 this? Will, will give them to you. The -- like I said, it
10 just follows what's in the proposed plan: site description
11 and background; summary of previous investigations;
12 description of the site characteristics; discussion of nature
13 and extent of the contamination; the summary of the site
14 risks; scope and role of the response action; information on
15 the community participation; references; and the glossary of
16 terms.

17 I put this map up here just to remind you of what
18 OU1 looks like and where Site 83 sits in there, and I also
19 have this map back here that also shows that. But basically
20 Operable Unit 1 is the -- outlined in yellow there. It's
21 that large area, and all the outlines in red are the various
22 sites that are identified in Operable Unit 1. Site 83 is the
23 only site we are talking about tonight and it's this site
24 right here that I put my arrow on. You can see where it's
25 located. The entrance to -- or the main gate to Cherry Point

1 is like over here. This is Roosevelt Boulevard. It's the
2 main drag through Cherry Point and Site 83 is located right
3 beside it. You'll also see a -- it's kind of small compared
4 to some of the other sites.

5 The background. Site 83 is a former pesticide
6 mixing area. There were two buildings on this site, Building
7 96 and 418. They are no longer there. Building 96 was
8 constructed before 1948 and used for pesticide mixing. Both
9 buildings were used for storage between '65 and '81. That
10 shows -- that map shows the location of these buildings
11 within Site 83. Basically Site 83 is identified as the
12 outline of these two buildings. This is Building 96 and this
13 is Building 418. They were joined together by, like, a
14 common roof. I think they finally -- just to keep rain off.
15 But Site 83 is a little -- we address the contamination that
16 comes from Site 83, so later on we'll talk about these other
17 areas, like, coming down this is a steep. This is a flatter
18 area down here. We'll be talking about those areas because
19 they are affected by the site. This gives a -- zooms out a
20 little bit. And so again, here's Site 83 here. Site 16
21 which is adjacent to Site 83. We're also showing -- this is
22 a recent google earth shot. So you can see down here, we had
23 done some clearing for sampling years ago, about three years
24 ago. And this also shows -- this is like -- like a garbage
25 or waste transfer facility. And -- the point of this is to -

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1 - there's no residences here. No one's about to go living in
2 here either, this is still industrial. This goes through the
3 previous investigations and cleanup activities. So we're
4 going to go through these fairly quickly in this part of the
5 presentation and then go into some of the other
6 investigations more in depth later on.

7 In 1996 there was a soil removal which was a response
8 action to an oil spill. They have to be excavated about
9 three to four feet of contaminated soils, and pesticides were
10 detected. Once they realized there were pesticide
11 contamination, the response action was terminated because
12 their goal really was to only get these -- the oil spill out
13 of there. In 1997 a debris pile was removed. It had
14 asbestos-containing materials, debris, and it also took out
15 remaining soil asso -- that also was associated with the oil
16 spill. There was also a SWMU assessment, or Solid Waste
17 Management Unit assessment conducted on Building 96. They
18 did soil sediment and groundwater samples. Oh, and three
19 monitoring wells were installed at that time.

20 2002, the remedial investigation was conducted for
21 all of OU1. It included, you know, additional sampling as
22 well as the historical sampling results. In 2009 a soil
23 investigation just for Site 83 was performed. This was done
24 to characterize the vertical and horizontal extent of the
25 constituents remaining after the soil removals. Basically,

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1 we didn't know exactly what was left. So we wanted to get a
2 good picture of what Site 83 was and what was out there. The
3 results of that soil investigation were used to reassess the
4 risk at this site. There was a risk assessment done for OUI
5 for various parts of OUI in 2002. But, Site 83 was not on
6 its own in that risk assessment. It was grouped with other
7 sites. So, since we have all this other data for 2009 we're
8 able to do another risk assessment. And the results of that
9 was that it was -- there was no -- there wasn't an
10 unacceptable risk. Also, and just a comment, too, it was
11 also done -- the original risk also had results from before
12 the soil removal. So it's gone now. So we wanted to use the
13 data that was most recent. And then from that supplemental
14 risk investiga -- the remedial investigation was done and
15 that determined that the environmental media was adequately
16 characterized.

17 This is a map to show you all the various things that
18 were done, associated with Site 83, all the removal actions
19 and investigations as best as we could on this map. This is
20 the 1996 where I have my cursor here. FMD Spill Response for
21 that oil spill I talked about. You can see where they
22 stopped due to the pesticide contamination they ran into.
23 The Green area is the -- where the 1997 debris pile was
24 removed and then some of the associated soils with that.
25 These things right here, that little symbol, those are

1 monitoring wells. There are six of them associated with Site
2 83. These dots that are -- kind of cover most of Site 83,
3 that's the 2009 soil investigation. Those are the sample
4 locations of the 2009 soil investigation. And then, of
5 course, we have the two buildings right there. That's it.

6 To give you an idea of what -- kind of what the
7 topography looks like, this upper picture is where the former
8 buildings were. We're looking basically south toward the
9 gate. And so the slope that I talked about goes off to your
10 right or toward the west here. And then this would be down
11 in that lower area. So your slope is off here to the left
12 and we're still looking south and this is -- this is about
13 two feet above sea level. This is about 24 feet above sea
14 level. Slocum Creek is very close to here. On the other
15 side where they're standing, where all the taller trees are
16 and the brushes is where Slocum Creek comes through there.

17 The nature and extent of the contamination. The
18 potential sources of the chemicals of potential concern, or
19 COPCs, include the buildings where pesticides were mixed, the
20 debris piles and the mixing activities that actually
21 occurred. The historical investigations between '83 and 2000
22 found that the soils were impacted with pesticides, obviously
23 from the pesticide mixing. PAHs or polycyclic aromatic
24 hydrocarbons from possibly the oil spill or the debris piles
25 and lead quite possibly from the debris piles. The initial

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1 extent of the chemicals of potential concern were not fully
2 defined nor was the data fully evaluated for potential risk
3 to human health. The data was evaluated for potential risk
4 of human health was grouped with other sites. I had
5 mentioned that before. As a result, the additional soil
6 investigation was conducted in 2009 and the updated human
7 health risk assessment risk was completed in 2010.

8 This goes into the soil -- the nature and extent of
9 contamination in the soil as found in the 2009 soil
10 investigation. That investigation, as you saw in that
11 previous slide, had a comprehensive grid-based sampling
12 approach. Samples -- the grid is a 25-foot grid. So many of
13 our samples were only 25 feet apart. And we took several
14 samples vertically as well. So we've got both the vertical
15 and horizontal extent of the contamination. The following is
16 a list of the constituents that were above the screening
17 criteria. They're listed there for you. I'm not going to
18 read them all off. But basically it was the PAHs in the
19 pesticides. And but -- lead was a -- we did sample for lead,
20 but it was not detected above the screening criteria.

21 This shows that grid again. It's a 25-foot sample
22 grid. And it was based -- those locations are based on where
23 we saw previous hits, and also based on the topography. We
24 wanted to see how it went over the slope, and if there was
25 any contamination on that slope and in the bottom area. The

1 yellow just show the location. If it's a yellow dot that
2 means the samples -- the chemicals weren't above the
3 screening level, if it's red it means they were for either
4 PAH or pesticide. This also shows some of the sampling
5 locations. Oh, yes.

6 MS. PAT McCLELLAN-GREEN: A quick question.
7 Where did the oil spill occur? Was it right in the building
8 or --

9 MS. DeLATTRE: No, no. It was --

10 MS. McCLELLAN-GREEN: Some place adjacent to it.

11 MS. DeLATTRE: It was south of it. Here, I'll
12 back up. Yeah, this will work. It's down, like, it landed
13 down in this area, but it was up in here and just went over
14 the slope.

15 MS. McCLELLAN-GREEN: From that -- ran
16 downwards.

17 MS. DeLATTRE: Yep, ran down the slope exactly.

18 MR. JEFF CHRISTOPHER: Actually, there was the
19 oil water separator --

20 MS. DeLATTRE: There was an oil water separator.

21 MR. CHRISTOPHER: -- that overflowed.

22 MS. McCLELLAN-GREEN: Which is --

23 MR. CHRISTOPHER: Gone.

24 MS. McCLELLAN-GREEN: -- yeah, it's gone now.

25 MS. DeLATTRE: But, it was right maybe about in

1 here. Wasn't it right along here?

2 MR. BILL HANNAH: Yeah, it's up in --

3 MS. DeLATTRE: In this area.

4 MR. HANNAH: This area in here.

5 MR. CHRISTOPHER: Yeah.

6 MS. DeLATTRE: Yeah. These are just showing
7 where we marked the samples just to give you an idea of how
8 close together they were. This is -- this picture on the
9 left is the -- that upper area where the buildings were. Up
10 there in the upper right, that's the steep slope. And down
11 at the bottom is the lower area we had to do a lot of
12 clearing on both the slope and the bottom. We had to take
13 out the trees and the brush in order to get the equipment in
14 there.

15 MR. ROBERT MEADOWS: Robert Meadows. What
16 constituted the oil spill?

17 MS. DeLATTRE: How did the oil get in the oil
18 water separator?

19 MR. CHRISTOPHER: That was a serviceable area
20 that had vehicles way back when. Back in the, I guess I'm
21 not sure the exact timeframe, but back in the 80's or 90's.
22 They would have had vehicles for the pesticide trucks. F&D
23 parked there and everything else so, probably, just over the
24 years of utilizing the oil water separator it either
25 overflowed or it basically broke. I'm not really sure.

1 MS. DeLATTRE: We also investigated groundwater.
2 We spent a lot of time looking at the soil. But at the Site
3 83 there are six wells. They were assessed to determine the
4 potential of the leachability of the contaminants from the
5 soil to the groundwater basically looking to see if these
6 PAHs and pesticides and lead could leach from the soil or get
7 out of the soil and migrate to the groundwater. What we
8 found was there is no PAHs, pesticides detected above the
9 groundwater screening criteria and no lead detected in the
10 groundwater. So therefore it was concluded that the COPCs
11 are not leaching into the groundwater. There was, I mean,
12 they didn't just sample for just these PAHs and pesticides,
13 there was a hint of tetrachloroethene (PCE) detected in the
14 groundwater. That is related to the chlorinated VOC plume
15 that originates. This is -- you'll see different images,
16 this is an older image but this is an image of what is called
17 the Central Groundwater Plume and is migrating down. So that
18 -- that is associated with the Central Groundwater Plume
19 which is being addressed in the CERCLA process on its own.
20 Where this is Site 83 and we're addressing the issues
21 associated with Site 83.

22 Risk Assessment. This is basically the base
23 definition assessment of characterization of the nature and
24 the magnitude of health risks to humans and ecological
25 receptors from chemical contaminants and other stressors. We

1 give a little example of other stressors there that might be
2 present in the environment. So it's what you know -- what
3 you know is out there based on the history of the site. It's
4 a four-step process. You analyze the contamination,
5 basically figure out how much of the chemical is present.
6 Estimate exposure, how much contact to the environmental
7 medium. Assess potential health dangers, the toxicity of the
8 chemical. And characterize risk, is it unacceptable or
9 acceptable.

10 A human health risk assessment was done as part of
11 the 2002 remedial investigation and it evaluated potential
12 exposures associated with the site soils for these various
13 people, I guess: construction and maintenance workers; full-
14 time employees; adolescent trespassers; adult recreational
15 users; and future child and adult residents. The potential
16 soil exposures may have included: direct contact with
17 contaminated soil; incidental ingestion of the soil; and
18 dermal absorption.

19 Now we have a new human health risk assessment. It
20 was completed in 2010. The updated human health risk
21 assessment indicated that for both current and potential
22 future land use, Site 83 does not pose unacceptable risks.
23 Current land use being workers there. Future land use could
24 be anything. It could be residential; it could be
25 recreational, anything on that site. The contact with the

1 surface and subsurface soil would not result in non-
2 carcinogenic hazards above the EPA's target health index of 1
3 or carcinogenic risks above the EPA's target range of 1×10
4 to the negative 6 to 1 times 10 to the negative 4.
5 Basically, target range of 1 in a million to 1 in 10
6 thousand. As a result, the EPA and DENR agreed that the
7 additional human health investigations or related actions are
8 not necessary at Site 83.

9 The ecological risk assessment was always -- was also
10 done. The -- they were evaluated through a step 3 addendum
11 from 2003. Baseline ecological risk assessment, BERA, in
12 2005, and a post-BERA investigation work plan in 2006.
13 Maximum mean soil exposure point concentrations and estimate
14 dose received by receptors were compared to benchmark values
15 that are protective of the ecological receptors. The post-
16 BERA investigation work plan concluded that the poor quality
17 of the soil, the steepness of the hillside at Site 83 made it
18 a poor habitat for soil invertebrates. No further ecological
19 investigations or related actions were necessary.

20 MS. McCLELLAN-GREEN: Adjacent to a creek
21 there's going to be very few invertebrates?

22 MS. DeLATTRE: That was the conclusion.

23 MR. HANNAH: Yeah, based on the ecological
24 survey of the area the real valuable habitat was actually the
25 trees itself for nesting. But the soil conditions at the

1 site were not prime.

2 MS. McCLELLAN-GREEN: Does this -- this is just
3 at the building site, this is not that down hill area where
4 the stuff ran?

5 MS. DeLATTRE: No, it included the slope. It
6 included the vegetation on the slope, I mean, they -- they
7 looked at the whole -- the area that's affected by Site 83.

8 MS. McCLELLAN-GREEN: Okay, so basically when
9 you did the tree removal you probably scraped off the top
10 layer of soil where most of the invertebrates were?

11 MS. DeLATTRE: No, we actually, when we did the
12 trees, we didn't remove them. They were just grounded down.

13 MS. McCLELLAN-GREEN: You ground down the trees?

14 MS. DeLATTRE: Uh-huh.

15 MS. McCLELLAN-GREEN: Yeah, I would like to see
16 that.

17 MS. DeLATTRE: It's actually pretty -- it's
18 pretty neat. It's a machine that basically starts at the top
19 of the tree. It's like a big chipper.

20 MR. CHRISTOPHER: It's a drum roller.

21 MS. DeLATTRE: Yeah, it just grinds it straight
22 down to the ground. So the chips stay on the ground.

23 MR. CHRISTOPHER: We use it all the time.

24 MS. McCLELLAN-GREEN: I'd like to see that
25 sometime.

1 MR. CHRISTOPHER: Well, you have a bulldozer and
2 it moves forward, and it's got a big drum on the front of it,
3 I mean big, and it's got spikes on it. What it does it
4 basically moves fast and it just chops it up.

5 MS. DeLATTRE: We've got other ones that are on
6 excavators that have a big arm.

7 MR. CHRISTOPHER: And it leaves all your wood in
8 place which you saw it there. It was pretty, you know,
9 grubby, I guess.

10 MS. DeLATTRE: Yeah.

11 MR. CHRISTOPHER: And what it does, it does not
12 destroy the roots, the root system. I'm sure it eventually
13 dies off but that's very slow.

14 MS. DeLATTRE: And you don't disturb the soil
15 which is important here because that's what we were
16 investigating was the soil contamination. So we didn't want
17 -- digging up the soil with this. And that one was tracked
18 that we used on that site. Sometimes you can have them in
19 rubber tires if you have good access.

20 MR. MEADOWS: When you found the contaminates,
21 did any of the contaminates get into Slocum Creek and affect
22 the habitat?

23 MS. DeLATTRE: No.

24 MR. MEADOWS: No, they did not?

25 MS. DeLATTRE: No, they did not. Also, we

1 didn't want the soil it -- we were able to find the edge of
2 the contamination and it didn't go past -- it didn't go all
3 the way to Slocum Creek.

4 MR. GEORGE LANE: And the other thing with -- I
5 had the State -- one of the State's toxicologists and the
6 environmental assessor look at this and they did not disagree
7 with the plan.

8 MR. DOUG BITTERMAN: One thing I might add.
9 Doug Bitterman. The specific constituents, the PAHs and the
10 pesticides, their properties are to cling to organic matter
11 which is why they likely didn't migrate to Slocum Creek
12 because they want -- they want to attach or absorb to organic
13 material. So unless that -- unless there's erosion of
14 sediment into the creek that would carry contamination, but
15 it's so vegetated there that we don't see a lot of erosion of
16 the land into the -- so that's why -- that's one of the
17 reasons why we don't think that it was washed into Slocum
18 Creek 'cause of those properties and those constituents.

19 MS. McCLELLAN-GREEN: What's the likelihood of
20 groundwater intrusion, like from a storm or something,
21 lifting the TCE up such that it would then dislodge the PAHs
22 and pesticides from the organic matter instead, as a solvent?

23 MR. BITTERMAN: We haven't seen it and the plume
24 has been there for dozens of decades, or several decades.
25 And you know the fluctuations are occurring all the time with

1 the water table.

2 MS. McCLELLAN-GREEN: So it's just not -- it's
3 not reaching where the -- so there's, like, an area in
4 between where the PAHs and the pesticides are and the TCE
5 coming up, they're not mixing?

6 MS. DeLATTRE: Yeah, they're fairly close to the
7 surface, the PAHs and pesticides.

8 MR. BITTERMAN: Well, keep in mind too, this is
9 the farthest downgrade and extent of that plume. So the
10 concentrations are very low relative to what they are up at
11 FRCE where the source area is.

12 MS. McCLELLAN-GREEN: Uh-huh.

13 MR. BITTERMAN: So we're talking like 10
14 micrograms per liter. And it's very close to the west -- the
15 western fringe I guess, the very western fringe there as
16 well.

17 MS. DeLATTRE: It is.

18 MR. BITTERMAN: I'm not sure if that
19 concentration is even materialized as a solvent --

20 MS. McCLELLAN-GREEN: Okay.

21 MR. BITTERMAN: -- you know what I mean? It's
22 so dilute that it's just a small magnitude of solvent. Ten
23 parts per billion.

24 MS. McCLELLAN-GREEN: It's not enough to pull
25 out --

1 MR. BITTERMAN: Probably not significant.

2 MS. DeLATTRE: And that solvent wasn't spilled
3 on this site, so you know, you don't have the migration
4 vertically either, I mean, to going downward to dissolve it.

5 MR. HANNAH: The similarity with those
6 constituents being as sticky as they are they also don't
7 leach down to groundwater as well.

8 MS. McCLELLAN-GREEN: Yeah. That's why I was
9 worried about the PCE coming up underneath them.

10 MR. HANNAH: Yeah, and the water table is very
11 shallow there.

12 MS. DeLATTRE: Yeah, in the lower area.

13 MR. BITTERMAN: So despite several decades of
14 the contaminates being in there, they haven't migrated even a
15 few feet down to the groundwater. So that also speaks to
16 that sticky nature of the constituents.

17 MS. DeLATTRE: The scope and role of the
18 response action. So the scope is there are no unacceptable
19 human health or ecological risks at Site 83. The role is
20 that the preferred remedy identified for Site 83 is no
21 further action. This allows for unlimited use and
22 unrestricted exposure at the site. So, again, no response
23 action required for NFA and no restrictions on the land use.

24 There's a public participation section in that
25 proposed plan as well, and it fulfills the public

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1 participation requirements for CERCLA section 117(a). That
2 section specifies that the lead agency must publish a plan
3 outlining any remedial alternatives that are evaluated or
4 removal actions completed for the site and identify the
5 proposed action. So the proposed plan fulfills that. The
6 public comment period, which is also a part of the public
7 participation, is from April 10, 2012, through May 25, 2012.
8 We are in the middle of that right now. You can submit
9 written questions or comments on the form that's on the last
10 page of the proposed plan, or you can ask them here.

11 The next step would be the record of decision and it
12 determines whether the NFA decision has to be modified based
13 on any public comments or questions. If there is no decision
14 modification, the Navy will prepare the ROD, and it will be
15 reviewed and signed by Cherry Point, EPA and North Carolina.

16 This is the Cherry Point Environment Restoration
17 Program Public web site which contains the administrative
18 record. So all the documents that were referenced and spoke
19 to the proposed plan, the investigations, and analytical
20 results are in the administrative record file and can be
21 accessed there. Computer access and the hard copy version of
22 the proposed plan are at -- you can get computer access and
23 the proposed plan at the library and we have the address and
24 the phone number there.

25 This talks about the OUI Sites just to give you an

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1 idea of how many there are, and what we're doing with each of
2 them. Two years ago I presented a very similar presentation
3 on a group of NFA sites. Those are highlighted in green
4 there, and then that ROD went through and was accepted. Site
5 16, which is called the landfill, is -- it's next to Site 83,
6 it's on the one side -- you can see it here, if that's Site
7 83, here's Site 16. It's currently being addressed --
8 addressed under a separate feasibility study and a separate
9 proposed plan. The other OU1 Sites, also referred to as the
10 OU1 Central Groundwater Plume, is currently in a feasibility
11 study that you guys will be seeing as well in the upcoming
12 meetings.

13 And that's it. Are there any other questions? Thank
14 you.

15 MR. POTTER: All right. If there are no
16 questions, then we will conclude this Public Meeting and take
17 a short break and we'll get on with the RAB Meeting.

18
19
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***** THE PUBLIC MEETING CONCLUDED AT 6:46 P.M. *****



**Proposed Plan for Selected Remedy
Operable Unit (OU) 1
Site 83
MCAS Cherry Point, North Carolina**

Public Meeting
Havelock Tourist and Event Center
Havelock, North Carolina
April 24, 2012



Introduction



➤ Introductions

➤ Purpose of Meeting

- Present the Proposed Plan
 - Rationale for the Selected Remedy
(No Further Action - NFA)
- Solicit public questions and comments during the 45 day comment period ending May 25, 2012

Introduction (Cont'd)



➤ Meeting Format

- Feel free to ask questions at any time
- Please clearly state your name prior to asking a question

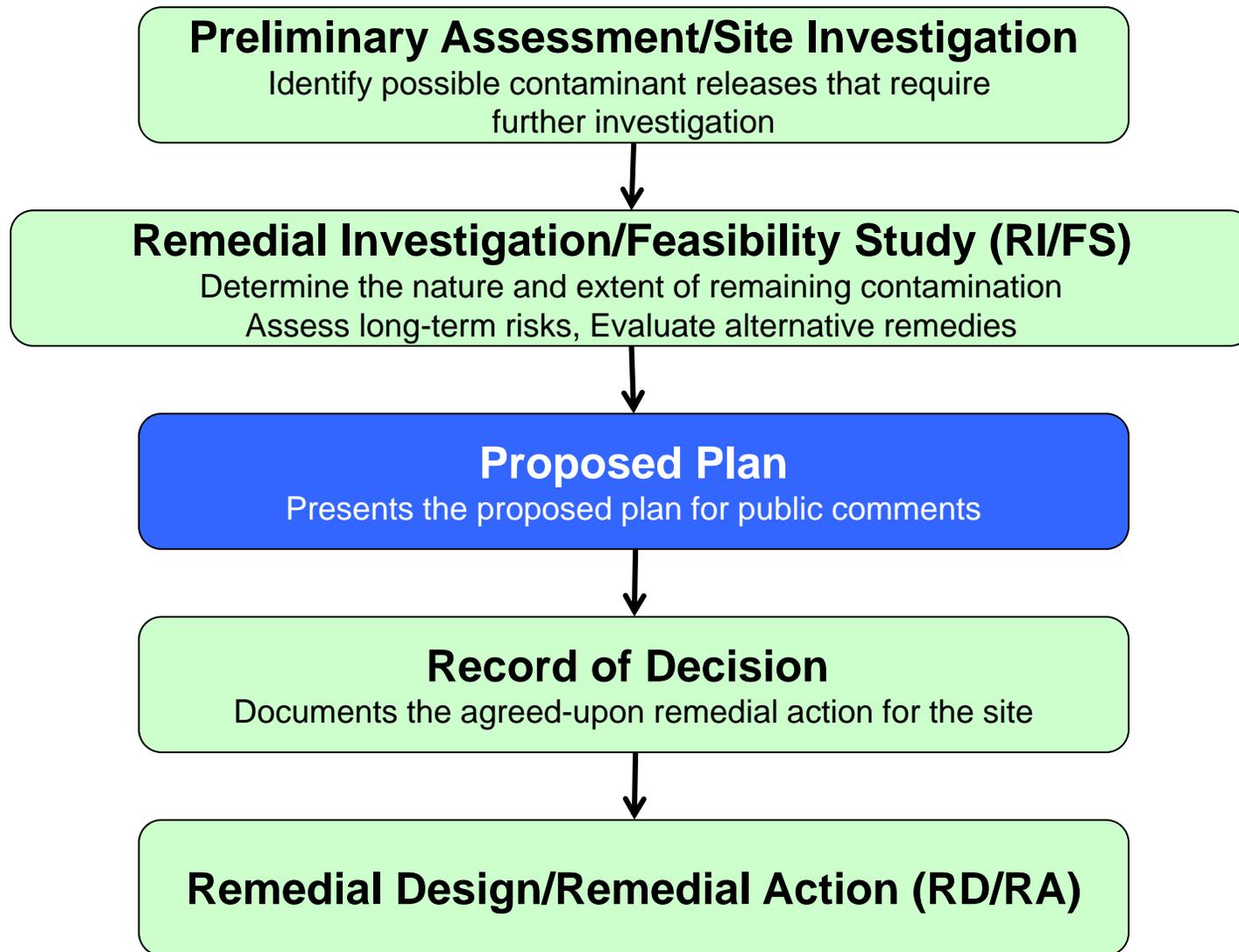
CERCLA



➤ **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**

- Federal statute enacted in 1980 and amended in 1986 by the Superfund Amendment and Reauthorization Act (SARA)
- Established a comprehensive, statutory framework for identifying, investigating, and cleaning up releases of hazardous substances to the environment

Steps in the CERCLA Process

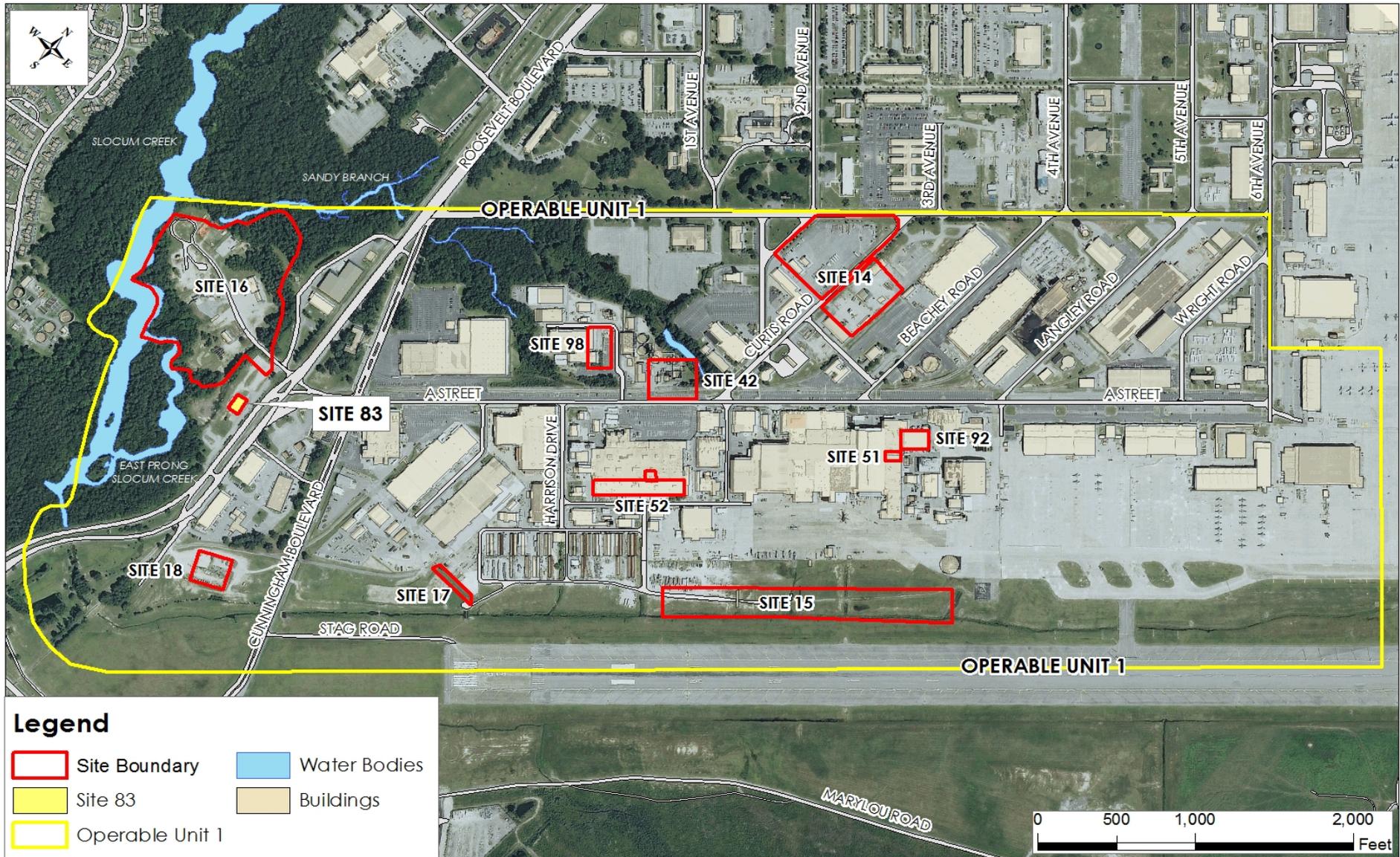


Proposed Plan Content



- **The Proposed Plan contains:**
 - Site description and background
 - Summary of previous investigations and cleanup actions
 - Description of site characteristics
 - Discussion of nature and extent of contamination
 - Summary of site risks
 - Scope and role of the response action
 - Information on community participation
 - References
 - Glossary of terms

MCAS CHERRY POINT: Operable Unit 1 Location Map



OU1 Site 83 Background



➤ Site 83

- Former pesticide-mixing area
 - Two former buildings on site:
Building 96 and Building 418
 - Building 96 constructed prior to 1948 and reportedly used for pesticide mixing
 - Both used for storage between 1965 and 1981 and have since been removed

Site 83 Location Map



Site 83 (Expanded View)



SITE 16

SITE 83

ROOSEVELT BOULEVARD

SLOCUM CREEK

0 50 100 200 Feet

Legend
Site 16 Boundary
Site 83 Boundary
Demolished Structure

Site 83 Previous Investigations/Cleanup



- 1996 - Soil removal response action to an oil spill excavated 3 to 4 feet of contaminated soils, pesticides were detected and the response action was terminated.
- 1997 - Debris pile removal - Asbestos-containing material, debris, and remaining soil contaminated with petroleum hydrocarbons, asbestos, and lead were removed.
- 1998 - Solid Waste Management Unit (SWMU) Assessment conducted at Building 96 – Soil, sediment, and groundwater samples were collected and three monitoring wells were installed.

Site 83 Previous Investigations/Cleanup



- 2002 - Remedial Investigation (RI) conducted for OU1.
- 2009 - Soil investigation was conducted to confirm and further characterize the vertical and horizontal extent of constituents remaining after soil removals.
- 2010 - Risk re-assessed using 2009 data would not result in an unacceptable risk. *(original assessment conducted in 2002 included pre-removal action data)*
- 2011 - Supplemental Remedial Investigation (SRI) - Determined that environmental media was adequately characterized.

Site 83 Investigation and Removal Action Locations



Site Characteristics



- East side of Site 83 (former building site) is flat (approx. 24 ft above mean sea level [amsl]) and covered by asphalt/concrete with grassy area and steep slope to the west towards Slocum Creek
- Area west of Site 83 (adjacent to Slocum Creek) consists of a damp, low-lying grassy area (approx. 2 ft amsl) surrounded by dense woods



Nature and Extent of Contamination



- Potential sources of chemicals of potential concern (COPCs) include the following:
 - Former Buildings 96 and 418
 - Former debris piles
 - Former on-site pesticide mixing activities between 1965 and 1981

- Historical investigations between 1983 and 2000 found soil to be impacted with pesticides, polycyclic aromatic hydrocarbons (PAHs), and lead.

Nature and Extent of Contamination



- The initial extent of COPCs was not fully defined and data evaluated for potential risks to human health was grouped with data from other sites.
- As a result, an additional soil investigation was conducted in 2009 and an updated HHRA was completed in 2010, based on the soil investigation results.

Nature and Extent of Contamination

Soil



- 2009 soil investigation included a comprehensive, grid-based sampling approach and evaluated current nature and extent of COPCs.
- The following constituents were detected above applicable screening criteria:
 - PAHs:
 - benzo(a)anthracene
 - benzo(b)-fluoranthene
 - benzo(a)pyrene
 - dibenzo(a,h)anthracene
 - indeno(1,2,3-cd)pyrene
 - Pesticides:
 - dieldrin
 - heptachlor epoxide
 - heptachlor
 - 4-4'-DDE
 - 4-4'-DDD
 - 4-4'-DDT
 - chlordane
- Lead not detected above screening criteria; therefore, previous detection assumed to be isolated occurrence

2009 Soil Investigation



Legend

- 2009 Soil Investigation Sample Location
- Exceedance of the Industrial RSL
- Site 83 25 ft. Grid Sampling
- ▭ Site 83
- ▭ Stream



Site 83 Soil Sampling Locations



West side (Upper Area) - Former Building Location



Steep slope between upper and lower areas



East side (Lower Area) - next to Slocum Creek

Nature and Extent of Contamination Groundwater



- Groundwater from the six Site 83 wells was assessed to determine the potential of leachability of contaminants from soil to groundwater at Site 83.
 - PAHs and pesticides not detected above groundwater screening criteria.
 - No lead detected in groundwater.

- Results indicated that soil COPCs are not leaching to groundwater.

- Tetrachloroethene (PCE) detected above groundwater screening criteria. PCE is related to the chlorinated VOC plume that originates upgradient of Site 83 and will be addressed as part of the Central Groundwater Plume.

Summary of Site Risks - Risk Assessment



- **Risk Assessment – characterization of the nature and magnitude of health risks to humans and ecological receptors from chemical contaminants and other stressors (e.g., mold, radiation, temperature change) that may be present in the environment.**

Four step process:

1. Analyze Contamination – how much of a chemical is present
2. Estimate Exposure – how much contact (environmental medium)
3. Assess Potential Health Dangers – toxicity of the chemical
4. Characterize Risk – acceptable or unacceptable

2002 Human Health Risk Assessment



- **Human Health Risk Assessment (HHRA)** completed as part of the 2002 RI and evaluated potential exposures associated with site soils for:
 - construction and maintenance workers
 - full-time employees (including military personnel)
 - adolescent trespassers
 - adult recreational users
 - future child and adult residents

- **Potential soil exposures may include:**
 - direct contact with contaminated soil
 - incidental ingestion
 - dermal absorption

2010 Updated HHRA



- An Updated HHRA was completed in 2010 based on the 2009 soil investigation results.
- The Updated HHRA indicated that for both current and potential future land use, Site 83 does not pose unacceptable risks.
- Contact with surface and/or subsurface soil would not result in non-carcinogenic hazards above the USEPA target Health Index of 1 or carcinogenic risks above the USEPA target range of 1×10^{-6} to 1×10^{-4} .
- As a result, the USEPA and NCDENR agreed that additional human health investigations or related actions at Site 83 were unnecessary.

Ecological Risk Assessment



- Potential ecological risks were evaluated in a Step 3A Addendum (2003), a Baseline Ecological Risk Assessment (BERA) (2005), and a Post-BERA Investigation Work Plan (2006).
- Maximum and mean soil exposure point concentrations and estimate dose received by receptors were compared to benchmark values that are protective of ecological receptors.
- The Post-BERA Investigation Work Plan concluded that the poor quality of soil and steepness of the hillside at Site 83 make it a poor habitat for soil invertebrates. No further ecological investigations or related actions were necessary.

Scope and Role of Response Action



- Scope – There are no unacceptable human health or ecological risks at Site 83.
- Role - The Preferred Alternative Remedy identified for Site 83 is No Further Action (NFA).
 - Site conditions allow for unlimited use and unrestricted exposure.

Site 83 Preferred Remedy



- No Further Action (NFA)
 - No response action required
 - No restrictions on land use

Public Participation



- The Proposed Plan fulfills the public participation requirements of CERCLA Section 117(a)
 - Specifies that the lead agency must publish a plan outlining any remedial alternatives evaluated or removal actions completed for the site and identifying the Proposed Action.

Public Participation



- Public comment period from April 10, 2012 through May 25, 2012
 - Submit written questions or comments (form included in Proposed Plan)

- Record of Decision (ROD) – determine whether the NFA decision should be modified based on public comments. If no decision modification, the Navy will prepare the ROD, which will be reviewed and signed by MCAS Cherry Point, EPA, and NCDENR.

Reference Documents



- MCAS Cherry Point Environmental Restoration Program Public web site, and can be accessed at:
 - <http://go.usa.gov/2EH>
 - then by clicking the “[Administrative Record File](#)” link.
 - A security warning may appear, but there is no harm in proceeding. A DoD Root CA Certificate can be downloaded at <http://dodpki.c3pki.chamb.disa.mil/rootca.html> to avoid the security alert.

- Computer access and hard copy version of the Proposed Plan is available at the Havelock-Craven County Library (301 Cunningham Boulevard, Havelock, North Carolina 28532). The library can be contacted at (252) 447-7509.

OU1 Sites - Summary



Site 14	Site 18	Site 52
Site 15	Site 42	Site 83
Site 16	Site 47	Site 92
Site 17	Site 51	Site 98

• **NFA – 2010 ROD**

• **scheduled - FY12 ROD**

• **Site 16 (landfill)- being addressed under a separate Feasibility Study and Proposed Plan, currently underway**

• **OU1 Sites (Sites 42, 47, 51, 52, 92, and 98) - being addressed collectively as part of the OU1 Central Groundwater Plume Feasibility Study, currently underway**

QUESTIONS?

