

**FINAL  
EXPLANATION OF SIGNIFICANT DIFFERENCES  
OPERABLE UNIT 2B  
INSTALLATION RESTORATION PROGRAM  
SITES 2 AND 17  
FINALIZING THE INTERIM FINAL RECORD OF  
DECISION  
FORMER MARINE CORPS AIR STATION  
EL TORO, CALIFORNIA**

June 2009

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## APPENDIX

A	Regulatory Comments
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## ACRONYMS AND ABBREVIATIONS

§	Section
Cal. Code Regs.	California Code of Regulations
CIWMB	California Integrated Waste Management Board
COPCs	chemicals of potential concern
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
DTSC	Department of Toxic Substances Control, California
DON	Department of the Navy
ESD	Explanation of Significant Differences
ET	evapotranspiration
FFA	Federal Facility Agreement
IRP	Installation Restoration Program
LEA	Local Enforcement Agency
LUCICP	Land-Use Control Implementation and Certification Plan
MCAS	Marine Corps Air Station
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
O&M	operation and maintenance
ROD	Record of Decision
RWQCB	Regional Water Quality Control Board, Santa Ana
U.S.EPA	United States Environmental Protection Agency
VOC	volatile organic compound



# 1. INTRODUCTION

## 1.1 SITE NAME AND LOCATION

Former Marine Corps Air Station (MCAS), El Toro  
Operable Unit 2B  
Installation Restoration Program (IRP) Site 2, Magazine Road Landfill  
IRP Site 17, Communication Station Landfill  
Irvine, California

National Superfund Database Identification Number: CA6170023208

## 1.2 STATEMENT OF PURPOSE

This Explanation of Significant Differences (ESD) for IRP Sites 2 and 17 at former MCAS El Toro, California documents changes to the selected remedies for the sites established in the Final Interim Record of Decision (ROD) (DON 2000) for the vadose zone and groundwater at IRP Site 17 and for the vadose zone at IRP Site 2, and concludes that the Final Interim ROD will serve as the Final ROD for these sites. The Final Interim ROD for IRP Sites 2 and 17 was issued by the Department of Navy (DON) in April 2000 pursuant to DON's authority as the lead federal agency for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) remedy selection at former MCAS El Toro; pursuant to Sections 104 and 120 of CERCLA, Executive Order 12580, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [C.F.R.] part 300). The lead regulatory agency for overseeing site cleanup at former MCAS El Toro is the United States Environmental Protection Agency (U.S. EPA). In addition to the U.S. EPA, state agencies including the California Regional Water Quality Control Board, Santa Ana Region (RWQCB) and the California Department of Toxic Substances Control (DTSC) oversee the site cleanup at former MCAS El Toro.

This ESD will become part of the Administrative Record File for IRP Sites 2 and 17 and is available for public review at the following locations:

- Heritage Park Regional Library  
MCAS El Toro Information Repository  
  
14361 Yale Avenue  
Irvine, CA 92604  
Hours: Monday – Thursday: 10:00 A.M. to 9:00 P.M.  
Friday and Saturday: 10:00 A.M. to 5:00 P.M.  
Sunday: Noon to 5:00 P.M.
- MCAS El Toro Administrative Record File  
BRAC Office, Building 307  
Former MCAS El Toro  
(949) 726-5398

This ESD also documents significant and non-significant changes in certain components of the selected remedies for IRP Sites 2 and 17 presented in the Final Interim ROD. In addition, this ESD documents that no fundamental changes are required to the selected remedies (as documented in the

Final Interim ROD) for the vadose zone and groundwater at IRP Site 17 and for the vadose zone at IRP Site 2 as a result of radiological investigations and groundwater evaluation for perchlorate conducted at the sites after the Final Interim ROD was issued. A more detailed discussion of circumstances that led to the need for this ESD and information supporting the significant differences to the selected remedy are presented in Section 3.

## **2. SITE HISTORY, CONTAMINATION AND SELECTED REMEDY**

### **2.1 SITE BACKGROUND**

Former MCAS El Toro is situated in south central Orange County, California, approximately 8 miles southeast of Santa Ana and 12 miles northeast of Laguna Beach. Former MCAS El Toro covers approximately 4,738 acres.

IRP Site 2, Magazine Road Landfill, is located in the eastern portion of former MCAS El Toro. IRP Site 2 consists of the Magazine Road Landfill (comprised of Areas A and B) and Areas C1, C2, and D2, which contain surficial waste from unauthorized dumping. Solid waste generated at former MCAS El Toro and some solid waste from former MCAS Tustin was disposed at IRP Site 2 from the late 1950s until about 1980.

IRP Site 17, Communication Station Landfill, is also located in the eastern portion of former MCAS El Toro. IRP Site 17 consists of the Communication Station Landfill and Areas B and C, which consist of surface accumulation of construction debris from former Marine Corps activities. The IRP Site 17 landfill served as an active former MCAS El Toro disposal facility for basewide activities from 1981 to 1983. However, aerial photographs indicate landfilling possibly began in 1970 and continued through 1986.

### **2.2 SUMMARY OF SELECTED REMEDY**

The selected remedy for the vadose zones at IRP Sites 2 and 17, as documented in the Final Interim ROD, included the components listed below. Each component below applies to both IRP Sites 2 and 17 unless otherwise noted.

- A single-layer, minimum 4-foot-thick monolithic soil cap to prevent contact with landfill materials and to reduce infiltration into landfill contents.
- On-site waste consolidation prior to capping.
- Erosion control features to control surface water flow and protect the integrity of the cap.
- Fencing, signs, and gates with locks to restrict access to the sites.
- Land use restrictions to protect the integrity of the landfill cap, restrict irrigation, prevent use of groundwater at IRP Site 2, assure that contact with landfill materials does not occur, and allow DON, Federal Facility Agreement (FFA) signatories, and California Integrated Waste Management Board (CIWMB) and/or its Local Enforcement Agency (LEA) access to the sites for the purpose of conducting or overseeing monitoring and maintenance;
- Natural resource/habitat mitigation measures will be coordinated with the United States Fish and Wildlife Service;
- Monitoring of soil gas and leachate to detect any migration of contaminants from the landfills;

- Groundwater monitoring to detect any releases of contaminants from the landfills. Monitoring wells will be secured to prevent damage.
- The cap, drainage features, settlement monuments, and security features will be inspected and maintenance will be performed as necessary to assure the integrity of the landfill cap and prevent unauthorized access.
- Periodic reviews (at least every 5 years) to evaluate the monitoring results and verify that the action remains protective of human health and the environment.

The U.S. EPA, DTSC, RWQCB, CIWMB, and the County of Orange have reviewed the Remedial Design (Earth Tech 2005) and Remedial Action Work Plans (ERRG 2005, 2008), which contain specifications and implementation procedures. The FFA signatories also provided their concurrence on these documents. Construction was initiated in December 2005 and cover placement was completed at Site 2 in May 2007 and at Site 17 in July 2008. Habitat restoration efforts are on-going. As required in the ROD, a Land-Use Control Implementation and Certification Plan (LUCICP) (Land-Use Control Plan) is presented as an attachment to the Operation and Maintenance (O&M) Plan. The Final O&M Plan (Earth Tech 2009) was issued in February 2009 and incorporates comments from the FFA signatories on the draft and draft final versions of the document.

### **3. BASIS FOR THE ROD CHANGES**

The Final Interim ROD for IRP Sites 2 and 17 was issued in April 2000. This ROD presented the selected remedy for the vadose zones at IRP Sites 2 and 17. Based on available data, the Final Interim ROD concluded that groundwater at IRP Site 17 does not require remediation. The selection of a remedy for IRP Site 2 groundwater was postponed. The Final Interim ROD for Sites 2 and 17 was designated as interim because:

- Ongoing radiological investigations were not complete at the time the ROD was issued. Therefore, the results of these investigations could not be incorporated into the remedy selection.
- The selection of the remedy for IRP Site 2 groundwater was postponed pending completion of additional investigations, including sampling for perchlorate.
- The evaluation of results for perchlorate confirmation sampling for IRP Site 17 groundwater was not complete.

The radiological investigations for groundwater and soil, and perchlorate confirmation sampling groundwater at IRP Sites 2 and 17 have been completed. The evaluation of radionuclides in groundwater at IRP Sites 2 and 17 was conducted as a part of a station-wide radionuclide assessment at former MCAS El Toro (Earth Tech 2000 and Earth Tech 2001). Based on this investigation, it was concluded that radionuclides in groundwater at former MCAS El Toro are naturally occurring. Therefore, the landfills are not adversely impacting groundwater by releasing radionuclides and radiological constituents are not chemicals of potential concern (COPCs) for groundwater at IRP Sites 2 and 17.

The radiological investigations for soil at IRP Sites 2 and 17 were completed in November and December 2001 (Weston 2004). Based on results from these investigations, a Technical Memorandum (Earth Tech 2006) was prepared to evaluate the performance of the selected remedy in the Final Interim ROD, with respect to radionuclides, using the nine evaluation criteria identified in the NCP (40 C.F.R. Section [§] 300.430 [e][9][iii]). This evaluation confirmed prior assessments

presented in the regulatory agency-concurred Final Remedial Design Submittal for Sites 2 and 17 (Earth Tech 2005) that the selected vadose zone remedies for the two sites are protective of human-health and the environment with respect to radionuclides.

Results from confirmation sampling for perchlorate in groundwater at IRP Site 17 indicate that perchlorate did not exceed laboratory reporting limits at the site. These sampling results are presented in the Final O&M Plan for IRP Sites 2 and 17 (Earth Tech 2009). Therefore, no modification to the selected remedy is required to protect human-health and the environment with respect to perchlorate in groundwater at IRP Site 17.

The remedy documented in the Final Interim ROD represents the final remedial action for the vadose zone and groundwater at IRP Site 17 and the vadose zone at IRP Site 2. The groundwater response action alternatives for IRP Site 2 are being updated to reflect supplemental investigation results. The updated evaluation will be documented in a Feasibility Study (FS) Report, which will also address IRP Site 1 groundwater. The preferred remedy for IRP Site 2 groundwater will be presented in a new Proposed Plan. The selected remedy for IRP Site 2 groundwater will be addressed in a separate ROD in conjunction with IRP Site 1 groundwater.

This ESD also documents non-significant changes in certain components of the selected remedy presented in the Final Interim ROD. These non-significant changes are presented in section 4.2.

#### **4. DESCRIPTION OF CHANGES**

In accordance with NCP Section 300.435(c)(2), and U.S. EPA guidance on preparing superfund proposed plans, records of decision, and other remedy selection decision documents (U.S. EPA 1999), the post-ROD changes can be categorized as nonsignificant or minor changes, significant changes, and fundamental changes. The evaluation of the nature of change consists of consideration of the change with respect to scope, performance, and/or cost.

Nonsignificant changes are minor changes that usually arise during design and construction, when modifications are made to the functional specifications of the remedy to optimize performance and minimize cost. This may result in minor changes to the remedy implementation, which could be documented in a memo to file. If the change involves changes to components of the remedy and does not fundamentally alter the selected remedy, it is regarded as a significant change. If the change in remedy fundamentally alters the ROD in such a manner that the proposed action, with respect to scope, performance, or cost, is no longer reflective of the selected remedy in the ROD, the lead agency is required to issue a notice of availability and brief description of the proposed amendment to the ROD. The changes to the selected remedies documented in the Final Interim ROD for IRP Sites 2 and 17 are non-significant as well as significant. In accordance with NCP Section 300.435(c)(2)(i) and CERCLA Section 117(c), the significant changes can be documented through an ESD. In addition, this ESD is being used to document the non-significant changes to the selected remedy. Significant and non-significant changes to the selected remedies documented in the Final Interim ROD for IRP Sites 2 and 17 are addressed in the following sections.

A side-by-side comparison of the remedy as presented in the Final Interim ROD and the actual changes to the remedy components in this ESD are presented in Table 1. In summary, there is no fundamental change in the performance or cost due to the changes proposed. This ESD designates that the selected remedy presented in the Final Interim ROD is the final remedy for IRP Site 17 and for the vadose zone at IRP Site 2. The selected remedy for IRP Site 2 groundwater will be addressed in a separate ROD. This ROD will address VOC-impacted groundwater at IRP Site 2 and perchlorate-impacted groundwater originating from IRP Site 1.

## **4.1 SIGNIFICANT CHANGES**

Three significant changes were identified during this review process.

### **4.1.1 Overall Scope of Remedial Action**

This ESD documents that no modifications to the selected remedy, as documented in the Final Interim ROD, for vadose zone and groundwater at IRP Site 17 and the selected remedy for the vadose zone at IRP Site 2 are required as a result of radiological investigations and groundwater evaluation for perchlorate (see Section 3 for details). The Final Interim ROD, as modified through this ESD, will serve as a Final ROD for IRP Site 17 and the vadose zone at IRP Site 2.

### **4.1.2 Refinements to Post-Closure Monitoring**

The Final Interim ROD stated that the number and location of post-closure monitoring components as well as modifications to the conceptual design would be finalized in the remedial design. The Final Remedial Design (Earth Tech 2005) presented the modifications to the conceptual design and a post-closure monitoring summary consistent with the Final Interim ROD. However, the Final Remedial Design indicated that post-closure monitoring analyses and frequencies would be further refined in the O&M Plan. This refined post-closure monitoring summary is presented in Table 2 of this ESD and it serves to document the final post-closure monitoring specifics for IRP Sites 2 and 17.

### **4.1.3 Site 2 Groundwater Remedy and Groundwater Extraction Restrictions**

The Final Interim ROD stated that the remedy for groundwater at IRP Site 2 will be addressed in the final ROD. As documented in Section 4.1.1, the Final Interim ROD, as modified through this ESD, will serve as a Final ROD for the vadose zone at IRP Site 2. Therefore, the selected remedy for VOCs in groundwater at IRP Site 2 will be addressed in a separate IRP Site 2 groundwater ROD (in conjunction with IRP Site 1 groundwater). If required, the restrictions pertaining to IRP Site 2 groundwater will be included in that separate ROD. Therefore, the land-use restriction in the Final Interim ROD that prohibits exposing or extracting groundwater from the shallow or principal aquifer at IRP Site 2 without prior DON approval is not part of the selected remedy for the vadose zone.

## **4.2 NON-SIGNIFICANT CHANGES**

### **4.2.1 Land Use Restrictions**

The institutional controls associated with the selected remedy, documented in the Final Interim ROD, include prohibitions on various types of activities to maintain the integrity of the remedy components including cap and associated monitoring equipment, and prevent land use that presents unacceptable risk to human health and the environment. The Final Interim ROD indicated that the description, implementation, maintenance, and inspection procedures for institutional controls will be included in the LUCICP. The ROD further stated that LUCICP will be included as an attachment to the O&M Plan for IRP Sites 2 and 17. The components of the LUCICP are now presented in a Land-Use Control Plan which is included as Appendix C in the O&M Plan for IRP Sites 2 and 17 (Earth Tech 2009).

The institutional controls documented in the Land-Use Control Plan for IRP Sites 2 and 17 (Earth Tech 2009) will remain in place until remedial action objectives and remediation goals have been achieved and it can be demonstrated that concentrations of hazardous substances in the landfills are at levels that allow for unrestricted use.

A major portion of Sites 2 and 17 has been transferred to the Federal Aviation Authority (FAA) under a Memorandum of Understanding (MOU). The MOU assigns FAA responsibility for compliance with and enforcement of the land-use restrictions. The FAA is responsible for conducting inspections and preparing annual reports associated with compliance of the ICs. The Navy retains ultimate responsibility for remedy integrity.

Within existing lease areas (Carve-outs II-V and II-F), the Navy will be responsible for implementing, inspecting, reporting, maintaining, and enforcing the institutional control objectives and the land-use restrictions specified in the Interim Final ROD and as modified by this ESD until property transfer. The Navy may transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means; however, the Navy will retain ultimate responsibility for remedy integrity.

Some of the land-use restrictions documented in the Final Interim ROD prohibit the following activities at IRP Sites 2 and 17:

- Irrigating the surface of the landfill;
- Exposing or extracting groundwater from the shallow or principal aquifer at Site 2 without prior approval of the DON; and
- Land-disturbing activity on lands adjacent to the landfill that may cause adverse effects upon the landfill through erosion of the surface or diversion of off-site surface water runoff onto the landfill, unless the land owner of the adjacent property provides for mitigation of such adverse effects (e.g. through structural drainage and erosion control measures such as diversion channels, riprap) and obtains the prior approval of DON and FFA signatories.

The following sections clarify the nature and intent of changes to land use restrictions. The updated land-use restrictions are presented in Appendix C of the O&M Plan for IRP Sites 2 and 17 (Earth Tech 2009).

#### *4.2.1.1 RESTRICTIONS ON IRRIGATION*

In accordance with the Final Interim ROD and the Final Remedial Design Submittal for IRP Sites 2 and 17 (Earth Tech 2005), the landfill cap at these two sites consists of an evapotranspiration (ET) cover. The ET cover consists of a vegetated cover with a sufficiently deep soil profile so that the infiltrated water is stored until removal by evapotranspiration. Irrigation of the landfill surface is critical during the initial stages of O&M of the ET cover to establish vegetation or at certain points during the lifetime of the cover when repair or maintenance of vegetation is needed. Therefore, the land-use restriction in the Final Interim ROD that prohibits irrigation of the surface of the landfill has been modified to allow irrigation for establishment, repair, and maintenance of vegetation for effective performance of the cap.

#### *4.2.1.2 LAND-DISTURBING RESTRICTIONS*

The restriction pertaining to prohibition of land-disturbing activity on lands adjacent to IRP Sites 2 and 17 landfills has been modified to clarify that it pertains only to land currently or formerly owned by the DON.

### **4.2.2 Anticipated Changes to the Buffer Zone**

The Final Interim ROD for IRP Sites 2 and 17 prohibits construction of structures within 1,000 feet of the edge of the landfill without prior approval of the DON. The primary purpose of restricting

land-use in the buffer zone is to protect the environmental control systems including landfill gas probes and groundwater monitoring wells, and to minimize the potential for unacceptable risk to human health due to potential landfill gas migration or groundwater use. If the landfill gas monitoring results do not indicate significant potential for the production and/or migration of landfill gas, the width of the buffer zones will be reevaluated and/or reduced/adjusted following discussions with and obtaining concurrence from the CIWMB and the FFA signatories. If a buffer zone boundary is adjusted in a future ESD, the relevant deed(s) and covenant(s) will be amended accordingly.

#### **4.2.3 Cap Mowing**

The post-closure monitoring presented in the final interim ROD included mowing of the cap to facilitate inspection of the cap and surface drainage control features. Mowing during the first 5 years of the operation is inconsistent with the intent of coastal sage habitat restoration being implemented at IRP Sites 2 and 17 landfill caps, and is not necessary to complete a satisfactory inspection of the cap and surface drainage controls features. Therefore, the requirement for annual mowing during the first 5 years will be removed from the monitoring/maintenance program.

#### **4.2.4 Off-Site Handling of Incidental Material/Waste**

The Final Remedial Design submittal for IRP Sites 2 and 17 indicated that a small amount of material/waste that could not be consolidated may be encountered. Such material /waste would be segregated and handled in accordance with applicable transportation and disposal regulations at an off-site facility. During waste consolidation at IRP 17, a small volume (approximately 100 cubic yards) of waste that could not be consolidated within the final cover was transported off-site for disposal and recycling. This action is consistent with the off-site disposal that was conducted at Site 2. The off-site handling of this material/waste at both sites was performed in consultation with FFA signatories.

### **5. SUPPORT AGENCY COMMENTS**

To be completed subsequent to receipt of comments on the Draft ESD. Regulatory comments will be presented in Appendix A.

### **6. STATUTORY DETERMINATIONS**

The remedy as changed pursuant to this ESD remains protective of human health and the environment and continues to comply with applicable or relevant and appropriate requirements identified in the Final Interim ROD, in accordance with CERCLA Section 121(d)(2) and NCP Section 300.430(f)(1)(ii)(B)(1) and (2).

### **7. PUBLIC PARTICIPATION COMPLIANCE**

This ESD will become a part of the Administrative Record for Sites 2 and 17 in accordance with NCP section 300.435(c)(2)(i)(A) and 300.825(a)(2). The address of the information repository along with the hours of availability of the Administrative Record file is presented in Section 1.2. The public can also access this ESD by contacting Diane Silva, Naval Facilities Engineering Command, Southwest Division, at (619)532-3676, or by email at [diane.silva@navy.mil](mailto:diane.silva@navy.mil).

Following regulatory agencies review, a notice of availability, and a brief description of the ESD will be published in a major local newspaper of general circulation as required by NCP Section 300.435(c)(2)(i)(B).



Signature: James T. Callian  
Mr. James T. Callian  
BRAC Program Management Office West  
BRAC Environmental Coordinator  
Former Marine Corps Air Station El Toro

Date: June 18, 2009

Signature: Claire Tambadore, acting for  
Mr. Michael M. Montgomery, Chief  
Federal Facility and Site Cleanup Branch  
United States Environmental Protection Agency, Region 9

Date: 7/29/2009

Signature: John E. Scandura, for  
Mr. John E. Scandura, Chief  
Southern California Operations  
Office of Military Facilities  
Department of Toxic Substances Control

Date: June 23, 2009

Signature: Gerard Thibeault  
*for* Mr. Gerard Thibeault,  
Executive Officer  
California Regional Water Quality Control Board, Santa Ana Region

Date: 7/3/09



**Table 1: Side-By-Side Comparison of the Remedy Presented in the Final Interim ROD and the Remedy in the ESD**

Criteria	Remedy for Sites 2 & 17 as Presented in the Final Interim ROD	Final Remedy for Sites 2 & 17 as Presented in the ESD	Remarks	Differs from the Final Interim ROD
Remediation Approach and Technology	A single-layer soil cap with institutional controls and monitoring was selected as a remedy for vadose zones at IRP Sites 2 and 17. Based on the available data it was concluded in the Final Interim ROD that remediation of groundwater at IRP Site 17 is not required. The remedial action for VOCs in groundwater at IRP Site 2 will be addressed in the final ROD.	The remediation approach and technology for IRP Site 17 and vadose zone of IRP Site 2 is identical to the remedy presented in the Final Interim ROD. The selected remedy for IRP Site 2 groundwater will be addressed in a separate ROD. This ROD will address VOC-impacted groundwater at IRP Site 2 and perchlorate-impacted groundwater originating from IRP Site 1..	--	Yes
Overall Scope of Remedial Action	A single-layer soil cap with institutional controls and monitoring was selected as an interim action for remediation of vadose zones at IRP Sites 2 and 17. Based on the available data, it was concluded that remediation of groundwater at IRP Site 17 is not required.	A single-layer soil cap with institutional controls and monitoring represents the final remedial action for the vadose zones at IRP Sites 2 and 17.	The selected remedy documented in the Final Interim ROD represents the final remedial action for IRP Site 17 (soil and groundwater) and the vadose zone at IRP Site 2. As a result, the Final Interim ROD will serve as a final ROD for IRP Site 17 and vadose zone at IRP Site 2. The selected remedy for groundwater at IRP Site 2 will be addressed in a separate ROD addressing both IRP Sites 1 and 2.	No
Perchlorate Sampling Results	The Final Interim ROD stated that groundwater sampling results for perchlorate will be presented in the Final ROD.	Perchlorate sampling results are presented in the O&M Plan for IRP Sites 2 and 17 landfill caps (Earth Tech 2009). Perchlorate did not exceed its reporting limits during groundwater confirmation sampling at IRP Site 17. Therefore, remediation of groundwater at IRP Site 17 is not required. In addition, perchlorate sampling results for IRP Site 2 will be presented in a separate ROD. This ROD will include the selected remedy for VOC-impacted groundwater at IRP Site 2 and perchlorate-impacted groundwater originating from IRP Site 1.	--	Yes
Landfill Cap Design	The Final Interim ROD stipulates a single-layer, minimum 4-foot monolithic soil cap for landfills at IRP Sites 2 and 17. The U.S. EPA, DTSC, RWQCB, CIWMB, and the County of Orange have reviewed and provided concurrence on the remedial design (Earth Tech 2005) and remedial action (ERRG 2005) work plans containing detailed design specifications and implementation procedures.	None	No change is proposed in the landfill cap design in the ESD.	No

**Table 1: Side-By-Side Comparison of the Remedy Presented in the Final Interim ROD and the Remedy in the ESD**

Criteria	Remedy for Sites 2 & 17 as Presented in the Final Interim ROD	Final Remedy for Sites 2 & 17 as Presented in the ESD	Remarks	Differs from the Final Interim ROD
Institutional Controls	<p>The land-use restrictions presented in the Final Interim ROD prohibit several activities at IRP Sites 2 and 17. Some of these activities include the following:</p> <ul style="list-style-type: none"> <li>• Irrigating the surface of the landfill.</li> <li>• Exposing or extracting groundwater from the shallow or principal aquifer at Site 2 without prior approval of the DON.</li> <li>• Land-disturbing activity on lands adjacent to the landfill that may cause adverse effects upon the landfill through erosion of the surface or diversion of off-site surface water runoff onto the landfill, unless the land owner of the adjacent property provides for mitigation of such adverse effects (e.g. through structural drainage and erosion control measures such as diversion channels, riprap) and obtains the prior approval of DON and FFA signatories.</li> </ul>	<p>For the reasons explained in Section 3, the restriction pertaining to groundwater use at IRP Site 2 will be addressed in a separate ROD for groundwater. The remaining land use restrictions have been modified as follows:</p> <ul style="list-style-type: none"> <li>• Irrigating the surface of the landfill is prohibited except when it is used for establishment, repair, and maintenance of vegetation cover required for effective performance of the cap.</li> <li>• Land-disturbing activity on lands adjacent to the landfill and currently or formerly owned by DON that may cause adverse effects upon the landfill through erosion of the surface or diversion of off-site surface water runoff onto the landfill, are prohibited unless the land owner of the adjacent property provides for mitigation of such adverse effects (e.g. through structural drainage and erosion control measures such as diversion channels, riprap) and obtains the prior approval of DON, U.S.EPA Region 9, DTSC, and RWQCB.</li> </ul>	--	Yes
Documentation of Institutional Controls	<p>The Final Interim ROD indicated that description, implementation, maintenance, and inspection procedures for institutional controls will be included in the Land-Use Control Implementation and Certification Plan. The ROD further stated that LUCICP will be included as an attachment to the O&amp;M Plan for IRP Sites 2 and 17.</p>	<p>The description, implementation, maintenance, and inspection procedures for institutional controls are now presented in a Land-Use Control Plan which is included as Appendix C in the O&amp;M Plan for IRP Sites 2 and 17 (Earth Tech 2009).</p>	--	Yes
Buffer Zone	<p>One of the land-use restrictions presented in the Final Interim ROD for IRP Sites 2 and 17 prohibits construction of structures within 1,000 feet of the edge of the landfill without prior approval of the DON.</p>	<p>The Final Interim ROD for IRP Sites 2 and 17 prohibits construction of structures within 1,000 feet of the edge of the landfill without prior approval of the DON. The primary purpose of restricting land-use in the buffer zone is to protect the environmental control systems including landfill gas probes and groundwater monitoring wells, and to minimize the potential for unacceptable risk to human health due to potential landfill gas migration or groundwater use. If the landfill gas monitoring results do not indicate significant potential for the production and/or migration of landfill gas, the width of the buffer zones will be reevaluated and/or reduced/adjusted following discussions with and obtaining concurrence from the CIWMB and the FFA signatories. If a buffer zone boundary is adjusted in a future ESD, the relevant deed(s) and, covenant(s) will be amended accordingly.</p>	--	Yes

**Table 1: Side-By-Side Comparison of the Remedy Presented in the Final Interim ROD and the Remedy in the ESD**

Criteria	Remedy for Sites 2 & 17 as Presented in the Final Interim ROD	Final Remedy for Sites 2 & 17 as Presented in the ESD	Remarks	Differs from the Final Interim ROD
Post Closure Monitoring	The proposed postclosure monitoring summaries for IRP Sites 2 and 17 landfills are presented in Tables 9-3 and 9-4 of the Final Interim ROD, respectively. The postclosure monitoring includes visual inspection of the landfill cap, vegetation, and surface control and site security features. In addition, sampling is proposed for landfill gas, vadose zone gas, groundwater, and leachate.	Consistent with the intent presented in the Final Interim ROD, the post-closure monitoring presented in Table 9-3 and 9-4 of the ROD has been refined as part of the remedial design. The post-closure monitoring design is presented in the O&M Plan and it incorporates findings from investigations conducted subsequent to the issuance of the Final Interim ROD. This plan refines and optimizes the analytes monitored and their sampling frequencies. Table 2 presents a summary of the Final Post Closure Monitoring.	--	Yes
O&M Requirement Pertaining to Mowing	The post-closure monitoring presented in the Final Interim ROD included inspection of the cap and surface control features. In this context, the ROD assumed that annual mowing will be undertaken as necessary at IRP Sites 2 and 17 landfill caps for the first 5 years to facilitate inspection of the cap and surface control features. The ROD further states that mowing will be discontinued at that time to allow for revegetation of the landfill cap with coastal sage.	The mowing during the first 5 years of operation is inconsistent with the intent of coastal sage habitat restoration being implemented at IRP Sites 2 and 17 landfill caps. In addition, mowing is not required for satisfactory inspection of the cap and surface controls features. Therefore, the requirement for annual mowing during the first 5 years will not be part of monitoring/maintenance due to the fact that landfill covers are being used as restoration areas for critical habitat for the California coastal gnatcatcher.	--	Yes
Off-site Handling of Incidental Material/Waste	The remedy presented in the Final Interim ROD for vadose zones at IRP Sites 2 and 17 does not include off-site handling of incidental material/waste.	The approved Final Remedial Design identified that during waste consolidation, a small amount of material/waste that could not be consolidated may be encountered. This material/waste would require off-site handling in accordance with applicable transportation and disposal regulations at an off-site facility. Therefore, incidental off-site handling of waste was accounted for in the Remedial Design for IRP Sites 2 and 17.	--	Yes
Level of Performance as assessed by NCP criteria	The selected remedy presented in the Final Interim ROD satisfies the threshold NCP criteria of overall protection of human health and the environment, and compliance with ARARs. The selected remedy in the Final Interim ROD achieves high level of performance when assessed using NCP evaluation criteria of long-term effectiveness, short-term effectiveness, implementability, and cost.	The changes to the remedy in this ESD do not change evaluation of the selected remedy with respect to NCP evaluation criteria.	There is no change in the level of performance of the selected remedy assessed by NCP criteria due to changes presented in this ESD.	No

**Table 1: Side-By-Side Comparison of the Remedy Presented in the Final Interim ROD and the Remedy in the ESD**

Criteria	Remedy for Sites 2 & 17 as Presented in the Final Interim ROD	Final Remedy for Sites 2 & 17 as Presented in the ESD	Remarks	Differs from the Final Interim ROD
Regulatory Compliance	The selected remedy presented in the Final Interim ROD complies with all ARARs identified and documented in the Final Interim ROD.	The remedy presented in this ESD will comply with all ARARs identified and documented in the Final Interim ROD.	--	No
Cost	\$13.0 million (IRP Site 2) \$5.9 million (IRP Site 17)	None.	The costs for the selected remedy do not change significantly due to the changes presented in this ESD.	No

**Table 2: IRP Sites 2 and 17 – Final Post-Closure Monitoring Summary**

Target Analyte/Description	Test Method	Locations at IRP Site 2	Locations at IRP Site 17	Monitoring Frequency
<b>LFG Perimeter Probes</b>				
VOCs	EPA Method TO-15			
Fixed Gases <sup>a</sup>	ASTM Method D-1946	02PGW01A, 02PGW02, 02PGW03, 02PGW04, 02PGW05	17PGW01, 17PGW02, 17PGW03, 17LYS1, 17LYS2, 17LYS3	Quarterly for the first year, semiannually for next 4 years, and followed by optimization. The lysimeters (17LYS1, 17LYS2, 17LYS3) will be analyzed semiannually for the first 5 years, and optimize thereafter. Laboratory analysis will be conducted during the first year, and followed by field measurements using field instrumentation during the subsequent years
<b>Groundwater Monitoring Wells</b>				
VOCs	EPA Method 8260B	02NEW11, 02UGMW25, 02NEW16, 02DGMW59, 02NEW15, 02PZ01, 02PZ02	17NEW01, 17NEW02, 17DGMW82	Quarterly for the first year, semiannually for next 5 years, and optimize thereafter
General Chemistry <sup>b</sup>	EPA Method 300, 310 and SM 2540			
Total metals	EPA 6000/7000 Series Methods			
SVOCs	EPA Method 8270C	02NEW11, 02UGMW25, 02NEW16, 02DGMW59, 02NEW15, 02PZ01, 02PZ02	17NEW01, 17NEW02, 17DGMW82	Two events (Year 1 and 6), and optimize thereafter
Herbicides	EPA Method 8151A			
Pesticides/PCBs	EPA Methods 8081/8082			
<b>Lysimeters (IRP Site 17 Only)</b>				
General Chemistry <sup>c</sup>	EPA Method 300, 310 and SM 2540	NA	17LYS1, 17LYS2, 17LYS3	Quarterly for the first year, semiannually for next 5 years, and optimize thereafter
Total Metals	EPA 6000/7000 Series Methods	NA		
SVOCs	EPA Method 8270C	NA	17LYS1, 17LYS2, 17LYS3	Two events (Year 1 and 6), and optimize thereafter
<b>Landfill Cover Monitoring</b>				
CSS and Mulefat	NA	--	--	Per the Final Restoration Plan
Settlement Monuments	NA	12	7	Quarterly until stabilized, annually thereafter and an aerial topographic survey once every five years.
Erosion	NA	--	--	Quarterly and following significant events <sup>d</sup>
Drainage System	NA	--	--	Semiannually for 5 years, and then annually for 25 years (before and after the rainy season <sup>e</sup> )
Site Security Features	NA	--	--	Semiannually for 5 years, and then annually for 25 years
Access Roads	NA	--	--	

<sup>a</sup> Fixed Gases – Oxygen, nitrogen, carbon dioxide, carbon monoxide, and methane.

<sup>b</sup> General Chemistry – Total dissolved solids, pH, electrical conductivity, chloride, sulfate, sulfide, and nitrate as nitrogen.

<sup>c</sup> General Chemistry – Total dissolved solids, pH, electrical conductivity, alkalinity, chloride, sulfate, sulfide, and nitrate as nitrogen.

<sup>d</sup> A significant event is defined as a rainfall with more than 2 inches of rain in 24 hours, a seismic event greater than a magnitude of 4, or other events such as wildfires that may affect the cover.

<sup>e</sup> Rainy season starts in October.



## 8. REFERENCES

- Bechtel National, Inc. 1997a. Draft Final Phase II Feasibility Study Report, Operable Unit 2B – Site 2, Marine Corps Air Station El Toro, California. September.
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- Department of Navy (DON). 2000. *Final Interim Record of Decision, Operable Unit 2B, Landfill Sites 2 and 17, Marine Corps Air Station El Toro, California*. San Diego, California. April.
- Earth Tech, Inc. (Earth Tech). 2000. *Technical Memorandum, Evaluation of Radionuclides in Groundwater, Marine Corps Air Station, El Toro, California. Draft*. Honolulu, HI. March.
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- . 2005. *Final Design Submittal, Remedial Action, Operable Unit – 2B, Landfill Sites 2 and 17, Former Marine Corps Air Station, El Toro, California*. November.
- . 2006. *Final Technical Memorandum Evaluation of the Selected Remedy With Respect To Radionuclides Operable Unit 2B IRP Sites 2 and 17, Former Marine Corps Air Station, El Toro, California*. May.
- . 2007. *Draft Operation and Maintenance Plan, Installation Restoration Program Sites 2 and 17, Former Marine Corps Air Station, El Toro, California*.
- . 2008. *Draft Final Operation and Maintenance Plan, Installation Restoration Program Sites 2 and 17, Former Marine Corps Air Station, El Toro, California*.
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- . 2008. *Remedial Action Work Plan, Operable Unit-2B, Sites 2 and 17, Former Marine Corps Air Station El Toro, California*. April.
- United States Environmental Protection Agency (U.S. EPA). 1999. *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and other Remedy Selection Decision Documents*. EPA 540-R-98-031. July.
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**Appendix A**  
**Regulatory Comments**

**Document Title:**

Draft Explanation of Significant Differences, Operable Unit 2B, Installation Restoration Program Sites 2 And 17, Finalizing the Interim Final Record of Decision, Former Marine Corps Air Station El Toro, California

Reviewer: Rich Muza, Remedial Project Manager, Superfund Division, United States Environmental Protection Agency Region IX; comments dated 16 December 2008.

Comment No.	Section/Page No.	Comment	Response
<b>General COMMENTS</b>			
1.		The Draft ESD does not include a signature page for endorsement by Navy and regulatory agencies' approving officials.	A signature page for endorsement by Navy and regulatory agencies' approving officials will be added to the ESD.
<b>SPECIFIC COMMENTS</b>			
2.	Section 2.2, Page 3	It is recommended that the status of regulatory approval of the Draft Final O&M Plan be updated in future versions of the ESD.	The Final O&M Plan was issued in February 2009; therefore the status of regulatory approval of the Final O&M Plan has been reflected in the Draft Final ESD. The text in Section 2.2 will be revised as follows:  <i>"As required in the ROD, a Land-Use Control Implementation and Certification Plan (LUCICP) (Land Use Control Plan) is presented as an attachment to the Operation and Maintenance (O&amp;M) Plan. The Final O&amp;M Plan (Earth Tech 2009) was issued in February 2009 and incorporates comments from the FFA signatories on the draft and draft final versions of the document.</i>
3.	Section 4.2.1, General	The discussion of ICs does not include information on the duration of the ICs. As these sites include two former base landfills and waste is proposed to be left in place but isolated, it would be assumed that the ICs would run with the land. It is recommended that the following language on the duration of the ICs be included in the ESD: "ICs will remain in place until RAOs and remediation goals have been achieved and it can be demonstrated that concentrations of hazardous substances in the landfills are at levels that allow for unrestricted use." (Note: Recommended language is modified from Section 7.2.2.1 of the ROD for Sites 3 & 5.)	The suggested text regarding duration of institutional controls (ICs) will be included in Section 4.2.1 of the ESD.

**Document Title:**

Draft Explanation of Significant Differences, Operable Unit 2B, Installation Restoration Program Sites 2 And 17, Finalizing the Interim Final Record of Decision, Former Marine Corps Air Station El Toro, California

Reviewer: Rich Muza, Remedial Project Manager, Superfund Division, United States Environmental Protection Agency Region IX; comments dated 16 December 2008.

Comment No.	Section/Page No.	Comment	Response
4.	Section 4.2.1, General	EPA recommends that the following statement be added to this Section of the ESD: "The Navy will be responsible for implementing, inspecting, reporting, maintaining, and enforcing the IC objectives and the land-use restrictions specified in the Interim Final ROD." (Note: Recommended language is modified from Section 7.2.2.1 of the ROD for Sites 3 & 5.)	<p>Since a major portion of the Area Requiring Institutional Controls (ARICs) has been transferred to the Federal Aviation Administration (FAA) at Site 2 and 17 under a Memorandum of Understanding (MOU), the text provided in the ROD for Sites 3 &amp; 5 does not apply to this situation. Some of these Institutional Control (IC) responsibilities have been transferred to the FAA. The following text will be added to Section 4.2.1 of the ESD to address this situation:</p> <p><i>"A major portion of Sites 2 and 17 has been transferred to the Federal Aviation Authority (FAA) under a Memorandum of Understanding (MOU). The MOU provides for the FAA to be responsible for compliance with and enforcement of the land-use restrictions. The FFA is responsible for conducting inspections and preparing annual reports associated with compliance of the ICs. The Navy retains ultimate responsibility for remedy integrity."</i></p> <p>For the portion of the property still under lease, the following text will be added to Section 4.2.1 of the ESD:</p> <p><i>"Within existing lease areas (Carve-outs II-V and II-F), the Navy will be responsible for implementing, inspecting, reporting, maintaining, and enforcing the IC objectives and the land-use restrictions specified in the Interim Final ROD and as modified by this ESD until property transfer. The Navy may transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means; however, the Navy will retain ultimate responsibility for remedy integrity."</i></p>
5.	Section 4.2.1, General	EPA recommends that the following statement be added to this Section of the ESD: "Although the Navy may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or other means, the Navy shall retain ultimate responsibility for remedy integrity." (Note: Recommended language is verbatim from Section 7.2.2.1 of the ROD for Sites 3 & 5.)	The suggested text will be included in Section 4.2.1 of the ESD.

**Document Title:**

Draft Explanation of Significant Differences, Operable Unit 2B, Installation Restoration Program Sites 2 And 17, Finalizing the Interim Final Record of Decision, Former Marine Corps Air Station El Toro, California

*Reviewer: Rich Muza, Remedial Project Manager, Superfund Division, United States Environmental Protection Agency Region IX; comments dated 16 December 2008.*

Comment No.	Section/Page No.	Comment	Response
6.	Table 1	EPA found review of this table to be a little confusing. For clarity of purpose, it is recommended that the second and third columns of the table be titled "Remedy for Sites 2 & 17 as Presented in the Final Interim ROD" and "Final Remedy for Sites 2 & 17 as Presented in the ESD", respectively.	Table 1 will be revised as suggested.



**Document Title:**

Draft Explanation of Significant Differences, Operable Unit 2B, Installation Restoration Program Sites 2 And 17, Finalizing the Interim Final Record of Decision, Former Marine Corps Air Station El Toro, California

Reviewer: Quang Than, Remedial Project Manager, Brownfields and Environmental Restoration Program, Department of Toxic Substances Control; comments dated 02 January 2009.

Comment No.	Section/Page No.	Comment	Response
<b>SPECIFIC COMMENTS</b>			
1.	Section 1.2, page 1	The sentence immediately above the bullets states that the Administrative Record File is available for public review at the MCAS El Toro Information Repository at Heritage Park Regional Library. We suggest that the sentence be revised to read "This ESD will become part of the Administrative Record File for IRP Sites 2 and 17 and is available for public review at the following locations:"	The text will be revised as suggested
2.	Section 4, page 4, last sentence and Table 1, page 9, second row, third column	Please revise the text to show that the remedy in the Site 2 groundwater ROD will also address perchlorate contamination.	The perchlorate in IRP Site 2 groundwater originated from IRP Site 1 and will be addressed as part of the groundwater remedial action for IRP Site 1. Based on this, the referenced text in Section 4 and Table 1 will be revised as follows: <i>"The selected remedy for IRP Site 2 groundwater will be addressed in a separate ROD. This ROD will address VOC-impacted groundwater at IRP Site 2 and perchlorate-impacted groundwater originating from IRP Site 1."</i>
3.	Section 4.1.3, page 5, last sentence	Please confirm that although the land-use restriction in the Final Interim ROD [that prohibits exposing or extracting groundwater from the shallow or principal aquifer at IRP Site 2 without prior DON approval] is not part of the selected remedy for the vadose zone, it is still valid until contamination in Site 2 groundwater no longer poses a hazard to human health and the environment.	The Navy's interpretation is consistent with the Department of Toxic Substances Control's (DTSC's) understanding that although the land-use restriction pertaining to groundwater in the Final Interim ROD (prohibition on exposing or extracting groundwater from the shallow or principal aquifer at Site 2 without prior approval of the DON) is not part of the selected remedy for the IRP Site 2 vadose zone, it is still valid until IRP Site 2 groundwater no longer poses a hazard to human health and the environment.
4.	Section 4.2.2, page 6, next-to-last sentence and Table 1, page 10, fourth row, third column	Please revise the sentence to show that concurrence from regulatory agencies are also needed [in addition to discussions] to reduce/adjust the width of the buffer zones.	The referenced sentence in Section 4.2.2 and Table 1 will be revised as follows: <i>"If the landfill gas monitoring results do not indicate significant potential for the production and/or migration of landfill gas, the width of the buffer zones will be reevaluated and/or reduced/adjusted following discussions with and obtaining concurrence from the CIWMB and the Federal Facility Agreement (FFA) signatories."</i>

**Document Title:**

Draft Explanation of Significant Differences, Operable Unit 2B, Installation Restoration Program Sites 2 And 17, Finalizing the Interim Final Record of Decision, Former Marine Corps Air Station El Toro, California

Reviewer: Quang Than, Remedial Project Manager, Brownfields and Environmental Restoration Program, Department of Toxic Substances Control; comments dated 02 January 2009.

Comment No.	Section/Page No.	Comment	Response
5.	Table 1, page 9, fourth row, third column, last sentence	Please revise the sentence to show that the remedy for perchlorate, in addition to perchlorate sampling results, will also be presented in a separate ROD.	The following text will be added after the referenced sentence: <i>"This ROD will include the selected remedy for VOC-impacted groundwater at IRP Site 2 and perchlorate-impacted groundwater originating from IRP Site 1."</i>