



FINAL FACT SHEET

Navy to Implement Remedial Action for Groundwater at IRP Sites 1 and 2 Former Marine Corps Air Station El Toro Irvine, California



February 2014

NAVY PROCEEDS WITH REMEDIAL ACTIONS FOR GROUNDWATER AT SITES 1 AND 2

The purpose of this Fact Sheet is to notify the community on the implementation of the remedial actions for Installation Restoration Program (IRP) Site 1 perchlorate-impacted groundwater and IRP Site 2 volatile organic compound (VOC)-impacted groundwater at Former Marine Corps Air Station (MCAS) El Toro. The selected remedy for IRP Site 1 perchlorate-impacted groundwater is In-Situ Bioremediation (ISB), Groundwater Monitoring, and Institutional Controls (ICs). The selected remedy for IRP Site 2 VOC-impacted groundwater is Monitored Natural Attenuation (MNA) and ICs.

SITE BACKGROUND

Former MCAS El Toro is situated in south central Orange County, California, and comprises approximately 4,740 acres (Figure 1). Former MCAS El Toro provided material support for Marine Corps aviation activities until it was closed in July 1999 under the Base Realignment and Closure (BRAC) Act. Most of the Former MCAS El Toro property has been transferred or leased by the Department of the Navy (DON) to public and private owners.

IRP Site 1, the former Explosive Ordnance Disposal (EOD) Training Range, is located in the northeastern portion of Former MCAS El Toro (Figure 1). EOD training exercises were conducted at IRP Site 1 from 1952 until closure of Former MCAS El Toro in July 1999. IRP Site 1 includes a Northern and a Southern EOD Training Range. The majority of the military EOD training took place at the Northern EOD Training Range. The Southern EOD Training Range was used for training by the Orange County Sheriff's Department and various Federal agencies. Military ordnance handled at the site included hand grenades, land mines, cluster bombs, smoke bombs, and rocket-propelled munitions. Civilian commercial-grade explosives, such as dynamite, and plastic and gelatinous explosives were also handled at the former EOD Training Range. Limited historical information suggests that rocket motors or Jet-Assisted Take-Off (JATO) units were also handled at IRP Site 1. Historical site activities have impacted both soil and groundwater at IRP Site 1. Impacted soil at IRP Site 1 is being addressed separately.

IRP Site 2, the Magazine Road Landfill, is located in the eastern portion of Former MCAS El Toro (Figure 1) and was an operational landfill from the late 1950s until about 1980. During the 1970s, all solid waste from MCAS El Toro and some waste from MCAS Tustin were disposed in this landfill. Some unauthorized disposal also occurred on an intermittent basis in three areas south of the operational landfill and this disposal was identified as the potential source of VOCs in groundwater. The final remedial action for soil at IRP Site 2, a landfill cap, was completed in February 2008. This remedial action also included consolidating wastes from the unauthorized disposal areas, prior to constructing the cap.

REMEDIAL ACTION OBJECTIVES

The remedies for IRP Site 1 perchlorate-impacted groundwater and IRP Site 2 VOC-impacted groundwater will be implemented to achieve the remedial action objectives:

- Minimize the potential for domestic use of groundwater impacted with chemicals of concern (COCs) at concentrations exceeding their respective remediation goals (RGs).
- Minimize off-Station migration of groundwater impacted with COCs at concentrations exceeding their respective RGs.

SELECTED REMEDIES

IRP Site 1 Perchlorate-Impacted Groundwater

The remedy for IRP Site 1 perchlorate-impacted groundwater includes ISB at the Source Area, downgradient of the Source Area, and near the Station Boundary (Figure 1). ISB is a technology that injects commercially available bioremediation amendments (e.g., bacterial food sources such as vegetable oil) into groundwater to stimulate naturally occurring bacteria to degrade perchlorate into innocuous (non harmful) substances. ISB will be implemented to treat and/or reduce relatively elevated concentrations of perchlorate at two locations to minimize downgradient migration from the Source Area. ISB will also be used near the Station Boundary to minimize the potential for off-Station migration of perchlorate at concentrations exceeding its RG.

Groundwater monitoring will be conducted to evaluate the effectiveness of ISB in achieving RGs and in reducing the potential for off-Station migration of perchlorate at concentrations exceeding its RG.

ICs, including groundwater-use restrictions, will be implemented until the RGs are achieved to minimize the potential for exposure of the current and future landowner (s) and/or user(s) to perchlorate-impacted groundwater. ICs are non-engineering, legal, and administrative mechanisms established to limit human exposure to contaminated groundwater. ICs will also be implemented to maintain the integrity of the remedy components such as groundwater monitoring wells.

IRP Site 2 VOC-Impacted Groundwater

The remedy for IRP Site 2 VOC-impacted groundwater (Figure 1) will rely primarily on MNA for remediating impacted groundwater. MNA includes two primary components, natural attenuation and groundwater monitoring. Natural attenuation includes a variety of physical, chemical, and/or biological processes including dilution, dispersion, and biodegradation that, under favorable conditions, act without human intervention to reduce concentrations of contaminants in groundwater.

Groundwater monitoring will be conducted to verify that natural attenuation is meeting site objectives and to evaluate the effectiveness of the remedy in achieving RGs. Based on the data collected to date, natural attenuation of COCs at IRP Site 2 is predominantly due to physical processes; therefore, the groundwater monitoring to evaluate the progress of natural attenuation focuses on concentration reduction trends. It should be noted that ISB implemented for perchlorate-impacted groundwater at the Station Boundary will create conditions that enhance biodegradation and reduce concentrations of VOCs in impacted groundwater associated with IRP Site 2.

ICs, including groundwater use restrictions, will be implemented as part of the IRP Site 2 groundwater remedy and will be similar to ICs described for IRP Site 1.

REMEDIAL DESIGN/REMEDIAL ACTION WORK PLAN

A Remedial Design/Remedial Action Work Plan (RD/RA WP) that details the methods and procedures for implementing the remedies for groundwater at IRP Sites 1 and 2 was prepared. The MCAS El Toro BRAC Cleanup Team, which includes representatives from the U.S. Environmental Protection Agency (U.S. EPA), California Department of Toxic Substances Control (DTSC), and California Regional Water Quality Control Board, Santa Ana Region (RWQCB), have reviewed and concurred with the RD/RAWP. The Final RD/RAWP is available at the Administrative Record (A/R) File and Information Repository (IR). The locations of the A/R and IR can be found on the BRAC PMO website: www.bracpmo.navy.mil.

PRE-DESIGN SAMPLING

Additional groundwater monitoring was conducted to supplement data collected during previous groundwater monitoring events. These additional data were used to help complete the RD/RAWP.

REMEDIAL ACTIONS

The remedial actions comprise the following primary activities:

Well Installation

Installation of groundwater monitoring and injection wells at locations within IRP Site 1, in the Intermediate Area downgradient from IRP Site 1, and near the Station Boundary for both IRP Site 1 and IRP Site 2.

ISB Amendment Injections

Injection of in situ bioremediation amendments into the groundwater to stimulate biodegradation of perchlorate. These amendments include food-grade emulsified vegetable oil (EVO) and food-grade high-fructose corn syrup (HFCS).

Routine Groundwater Monitoring

Routine groundwater monitoring will be conducted to evaluate the effectiveness of the remedies.

IC Implementation

ICs will be implemented as part of the remedies to limit exposure of future landowner(s) and/or users to perchlorate- and VOC-impacted groundwater and to maintain the integrity of the remedial components such as monitoring wells.

Reporting

Periodic reporting will be conducted during the implementation of the remedies. Once sufficient data are obtained, a formal determination will be made (with regulatory agency concurrence) that remedies for IRP Sites 1 and 2 are operating properly and successfully. In addition, the protectiveness of the remedies will be evaluated and reported every five years to comply with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as appropriate.

PROJECT SCHEDULE

- Final RD/RA WP: January 2014
- Remedial Action Construction: February-June 2014
- Begin Operation and Maintenance / Long-Term Monitoring: July 2014

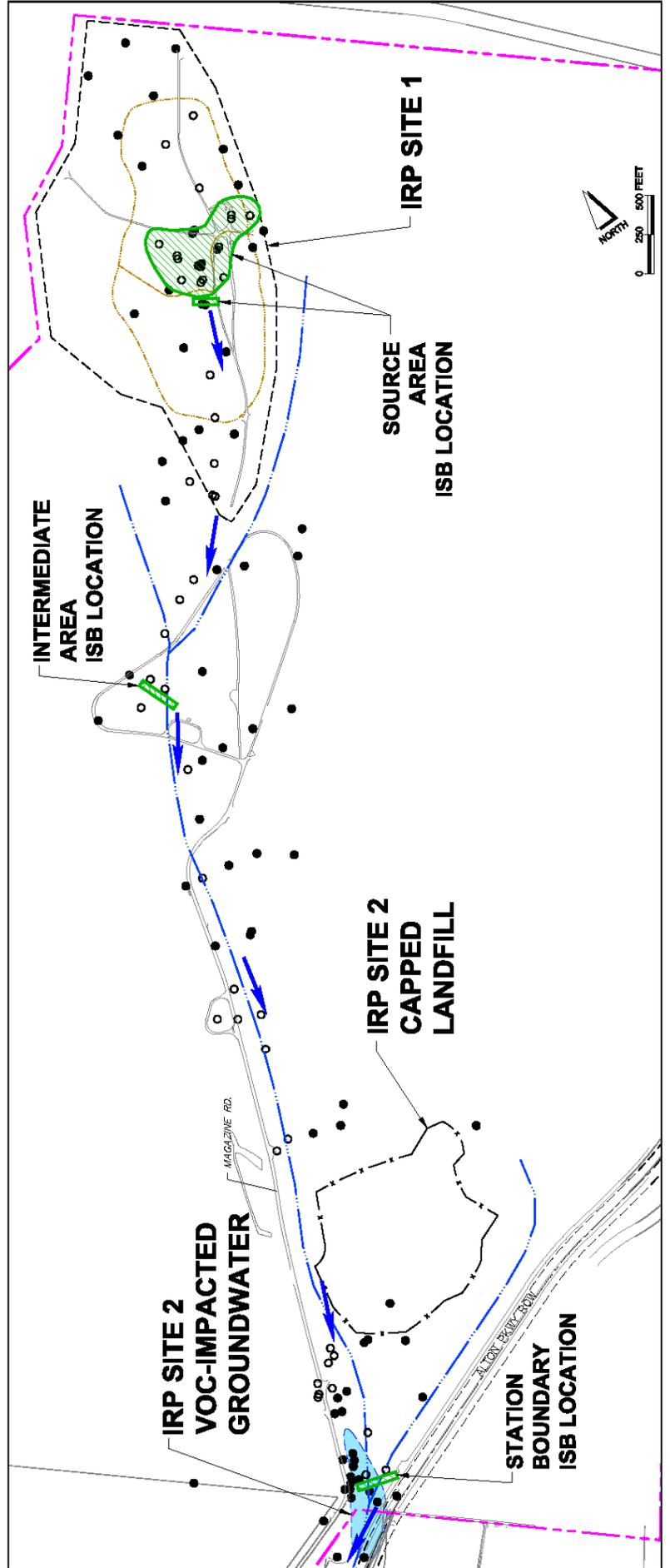
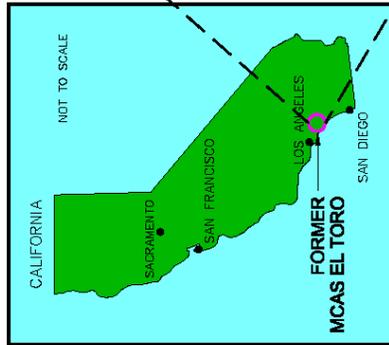
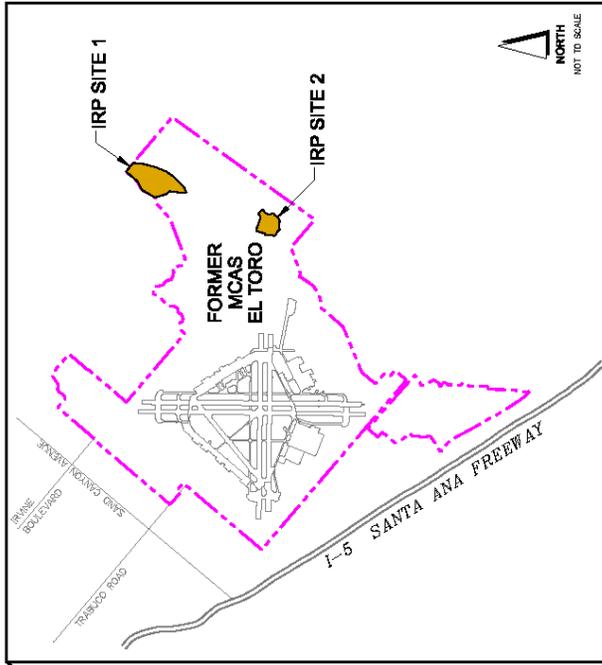
Periodic updates on the Former MCAS El Toro Environmental Restoration Program are provided at community-based Restoration Advisory Board meetings, which are open to the public and are held twice annually. For meeting dates and location information, please visit the BRAC PMO website: www.bracpmo.navy.mil.

Regulatory Agencies Agreed on Final Remedies for IRP Sites 1 and 2 Groundwater

The U.S. EPA, DTSC, and RWQCB concurred that the selected remedies, as presented above and in the Final Record of Decision (ROD) are the most appropriate and effective remedies for perchlorate-impacted groundwater at IRP Site 1 and for VOC-impacted groundwater at IRP Site 2. Concurrence on the final remedies was based in part on the feasibility study (FS) that was conducted to evaluate alternatives for site cleanup and on community input received on the Proposed Plan during the public comment period. The Groundwater ROD documenting the final remedies was issued in January 2012.

LEGEND:

- GROUNDWATER SAMPLING LOCATION (PERCHLORATE LESS THAN REMEDIATION GOAL)
- GROUNDWATER SAMPLING LOCATION (PERCHLORATE EXCEEDING REMEDIATION GOAL)
- FORMER MCAS EL TORO BOUNDARY
- FORMER EOD TRAINING RANGE BOUNDARY
- IRP SITE BOUNDARY
- EPHEMERAL STREAM OR WASH
- LANDFILL CAP BOUNDARY
- APPROXIMATE EXTENT OF VOCs EXCEEDING REMEDIATION GOALS (DASHED WHERE INFERRED)
- ISB TREATMENT AREA
- GENERAL GROUNDWATER FLOW DIRECTION



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Additional information including documents related to the remedial actions at IRP Sites 1 and 2 can be found in the Information Repository and Administrative Records File. The locations of the Information Repository and Administrative Record File can be found on the BRAC PMO website: www.bracpmo.navy.mil.