



# REVISED PROPOSED PLAN / DRAFT REMEDIAL ACTION PLAN

## Marine Corps Firing Range

Former Mare Island Naval Shipyard, Vallejo, California



March 2013

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### U.S. NAVY ANNOUNCES REVISED PROPOSED PLAN

The Navy invites you to attend a public meeting, where the Revised Proposed Plan (PP)/Draft Remedial Action Plan (RAP) will be presented on Thursday, March 28, 2013, at 6:00 pm at the Mare Island Conference Center, 375 G Street, Vallejo, California. The Navy will collect public comments on the Revised PP/Draft RAP at the public meeting. The public comment period begins on March 11, 2013, and ends on April 10, 2013.

### INTRODUCTION

The Department of the Navy (Navy) pursuant to the Navy’s Base Realignment and Closure (BRAC) Program invites the public to comment on this Revised Proposed Plan (PP)/Draft Remedial Action Plan (RAP) proposing a preferred remedial alternative for the Marine Corps Firing Range (MCFR), which consists of Parcel I-MCFR, Parcel Ib-MCFR, and Parcel XIX at the Former Mare Island Naval Shipyard (MINS). The Former MINS is located approximately 30 miles northeast of San Francisco in Vallejo, California immediately west of the Mare Island Strait (Figure 1).

In April 2010, an initial PP/RAP for the MCFR was presented to the public for comment during a public meeting held on April 21, 2010. After receipt of the public comments and during the development of the Record of Decision (ROD) and RAP, the Navy identified new issues to address further at the MCFR related to Solid Waste Management Units (SWMUs), groundwater beneficial use, former and existing buildings, abandoned above ground dredge pipelines, and areas requiring institutional controls (ARICs). Since then, the Navy has addressed and resolved the issues identified in 2010; SWMU 93 (storm sewer system lines) and SWMU 106 (sanitary sewer system lines) received regulatory closure, shallow groundwater at MCFR was granted a beneficial use exception, the former and existing buildings were researched and inspected, abandoned above ground dredge pipelines were inspected, and additional areas were identified for institutional controls (ICs). The existing and former features of the MCFR are shown on Figure 2.

The Navy has worked with the California Environmental Protection Agency Department of Toxic Substances Control (DTSC), the California Regional Water Quality Control Board, San Francisco Bay Region (Water Board), and the United States Environmental Protection Agency, Region 9 (USEPA), to evaluate remedial action alternatives for the MCFR, including the recommended alternative.

### PUBLIC COMMENT PERIOD

March 11, 2013  
to  
April 10, 2013

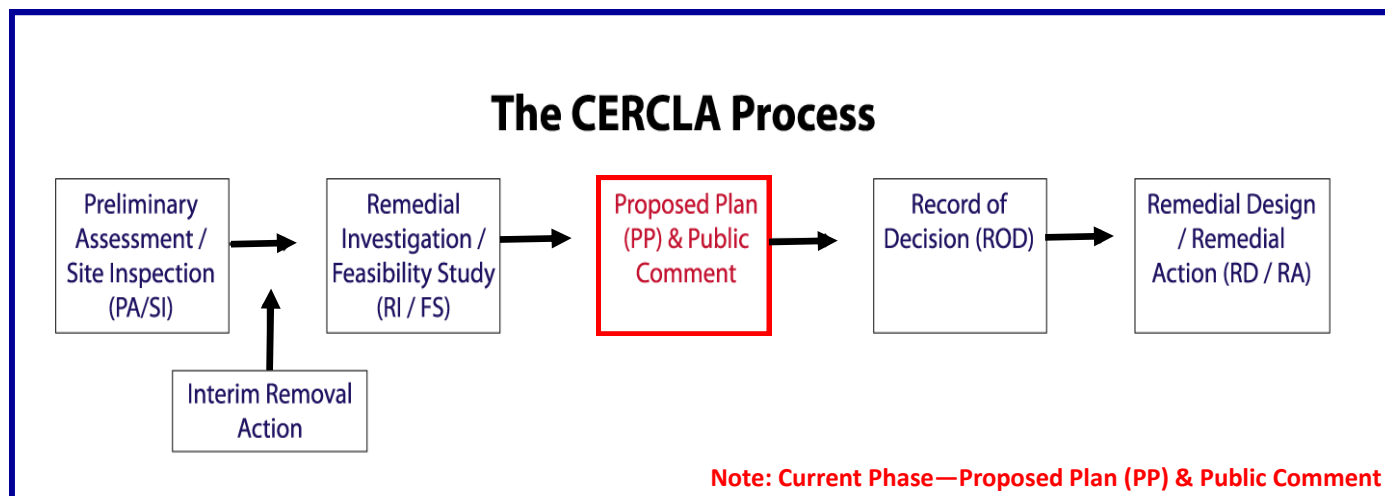
### PUBLIC MEETING

March 28, 2013 at 6:00PM

Mare Island Conference Center  
375 G Street, Vallejo, California

## THE CERCLA PROCESS

This Revised PP/Draft RAP details the Navy's preferred alternative and provides an overview of the environmental investigations, removal actions and risk assessments performed at the MCFR. As required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the community has an opportunity to comment on the Revised PP/Draft RAP, which describes how the recommended action will protect human health and the environment. Upon completion of the public comment period, the Navy will consider and respond to public comments during the preparation of the record of decision/remedial action plan (ROD/RAP), which documents the remedial alternative selected by the Navy.



## INVITATION TO COMMENT

The Navy is issuing this Revised PP/Draft RAP as part of its public participation responsibilities under Section 117(a) of CERCLA and Sections 300.430(f)(2) and (3) of the National Oil and Hazardous Substance Pollution Contingency Plan (NCP) to ensure that the public has the opportunity to comment. This Revised PP/Draft RAP summarizes information detailed in documents, including the Remedial Investigation / Feasibility Study (RI/FS), contained in the Administrative Record (AR) file for the MCFR. The Navy encourages the public to review these documents to gain an understanding of the environmental investigations, removal actions, and risk assessments that have been conducted. Documents generated for the MCFR are listed on page 5 and are available for public review at the information repositories listed on page 13. Some documents may also be available online at the Navy website: <http://www.bracpmo.navy.mil> and DTSC website: <http://www.envirostor.dtsc.ca.gov/public/>

## PREFERRED ALTERNATIVE

This Revised PP/Draft RAP recommends the use of ICs as the final remedial action at the MCFR. This alternative is preferred based on the results of numerous investigations, removal actions, and risk assessments conducted to date. The Navy in conjunction with the various federal and state regulatory agencies has determined that the recommended alternative is protective of human health and the environment and achieves the Remedial Action Objectives developed for the MCFR. The other alternative considered, the No Action alternative, while feasible, has been determined to be less effective at protecting human health and the environment over the long term. Detailed descriptions of the MCFR and the remedial alternatives considered are provided in this Revised PP/Draft RAP.

## PROPOSED PLAN / DRAFT RAP CONTENT

This Revised PP/Draft RAP summarizes the regulatory framework that governs the remedial alternative selection process, summarizes environmental investigations, removal actions, risk assessments, and remedial alternatives developed and evaluated for the MCFR, and presents the preferred alternative. The Navy and DTSC will consider public comments on this Revised PP/Draft RAP during the public comment period prior to selecting an alternative. The Navy encourages you to participate by submitting written or oral comments on this Revised PP/Draft RAP.



**IMPORTANT DATES  
TO  
REMEMBER**

**PUBLIC COMMENT  
PERIOD**

**March 11, 2013  
to  
April 10, 2013**

**PUBLIC MEETING**

**March 28, 2013 at 6:00PM**

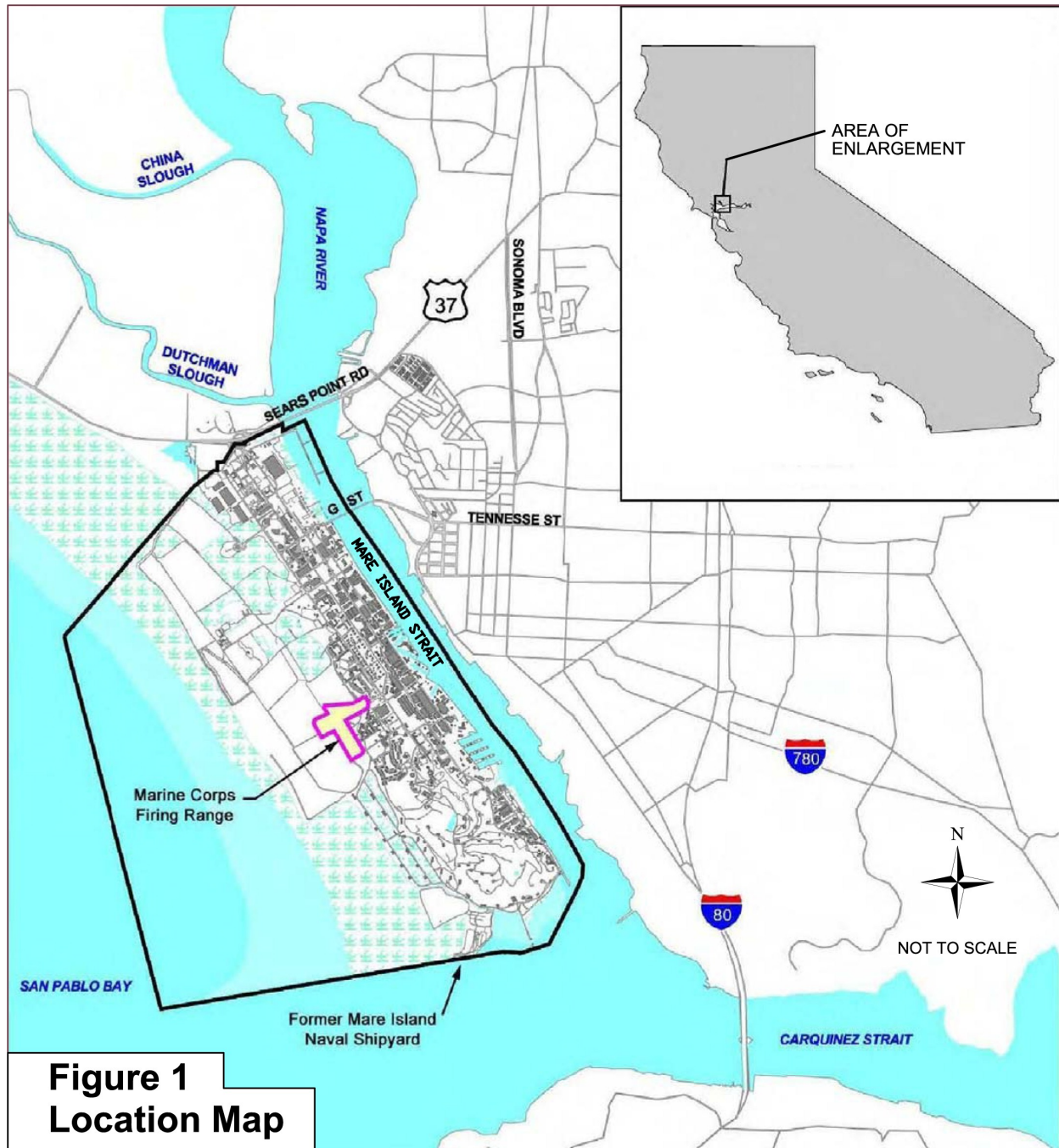
**Mare Island Conference Center  
375 G Street, Vallejo, California**

## SITE BACKGROUND AND OVERVIEW

### MARE ISLAND NAVAL SHIPYARD HISTORY

The Former MINS is located on a peninsula approximately 30 miles northeast of San Francisco in Vallejo, California immediately west of the Mare Island Strait (Figure 1). The peninsula is bounded to the east, south, and west by the Napa River (Mare Island Strait), Carquinez Strait, and San Pablo Bay, respectively. Mare Island was originally a tombolo, an island attached to the mainland by a narrow piece of land such as a spit or bar accessible only at low tide, covering approximately 1,000 acres, with surrounding wetlands of approximately 300 acres in size. Over time, the placement of fill and dredge materials transformed the island into the current peninsula, which covers over 5,600 acres.

The Navy acquired Mare Island in 1853 and started shipbuilding operations the following year. The primary ship construction and maintenance area of the Former MINS was established along the northeastern shore of the original island adjacent to Mare Island Strait. The entire facility saw vast transformations during its years of operation as shipbuilding technologies advanced from wooden to steel construction and wind power to nuclear propulsion. During World War II, MINS reached peak capacity for shipbuilding, repair, overhaul, and maintenance. Following the war, MINS was considered a primary station for construction and maintenance of the Navy's Pacific fleet of submarines. Due to decreasing Navy needs in the postwar environment, shipyard activity decreased, and MINS was closed on April 1, 1996, after 142 years of operation.

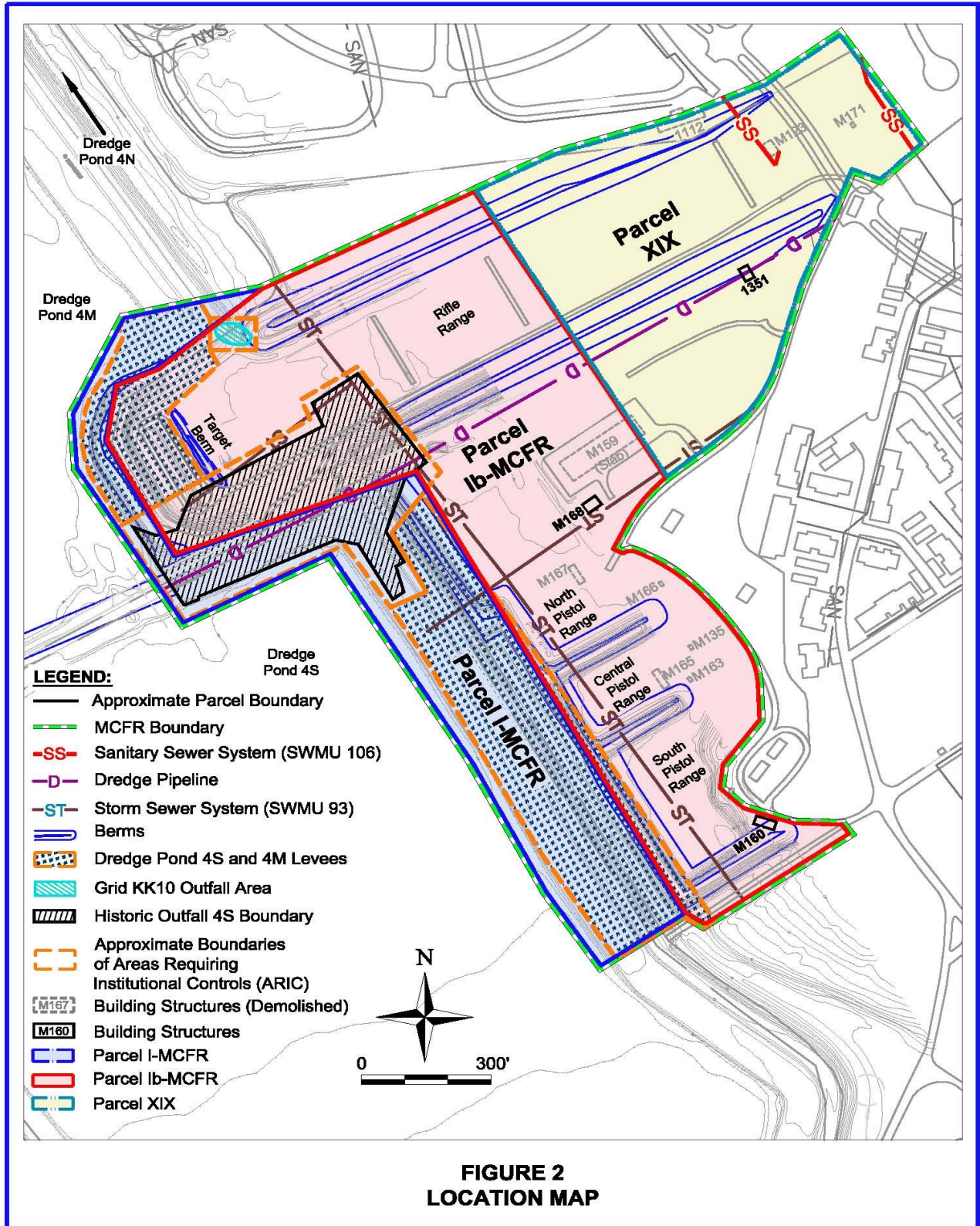


**Figure 1**  
**Location Map**



**SITE DESCRIPTION**

The MCFR is situated between the boundaries of the Eastern and Western Early Transfer Parcels and consists of the Rifle Range and three pistol range complexes (South, Central, and North), as shown on Figure 2. The MCFR was constructed in 1940 and the Rifle Range began operation at that time. The pistol ranges at MCFR began operation in 1949. The MCFR covers an area of approximately 48 acres in three parcels; Parcel I-MCFR (9.95 acres), Parcel Ib-MCFR (25.81 acres), and Parcel XIX (12.14 acres).



## SITE DESCRIPTION (CONTD.)

Large earthen berms with heights varying from 6 to 15 feet separate most of the range complex from the surrounding area. A five-acre portion located within the boundary of the MCFR is referred to as the Historic Outfall 4S area. This area runs east to west, south of the Rifle Range target berm and is the location of a former dredge outfall for Dredge Pond 4 South and includes a portion of the 4S Levee that separates Dredge Ponds 4S and 4M.

## CONCEPTUAL SITE MODEL

The dredge pond system at the former MINS was created along the west side of Mare Island in several stages between 1914 and 1965 to support the maintenance dredging of Mare Island Strait waterways and MINS ship berthing facilities. Dredge slurry was transported in 16-inch diameter pipelines from Mare Island Strait and deposited at outfalls within the dredge pond system. Debris, potentially containing munitions and explosives of concern (MEC) and radiological items, was carried with the dredged sediments and accumulated at the outfall locations resulting in debris masses at some former outfall locations. The MCFR contained two outfalls: Historic Outfall 4S and Grid KK10 Outfall. Dredge Pond 4S and 4M levees also defined the western perimeter of the MCFR (Figure 2). In addition, the use of the property as a firing range resulted in metal contamination (primarily antimony, lead, and copper) in the soil from the ammunition left behind.

## PREVIOUS INVESTIGATIONS AND REMOVAL ACTIONS

Key investigations, removal actions, and reports for the MCFR include:

- Resource Conservation and Recovery Act (RCRA) Facility Assessment performed in 1987;
- Preliminary Assessment (PA) and Site Inspection (SI) for Non Radiological Sites performed in 1995;
- Unexploded Ordnance (UXO) Site Investigation performed between 1995 and 1996;
- UXO Intrusive Investigation performed between 1998 and 2001;
- Radiological investigation/removal performed between 1999 and 2001;
- Wet Physical Separation Treatability Study performed in 1999;
- Action Memorandum prepared in 2003 (includes a discussion of the human health, ecological, MEC, and radiological risk for the site);
- Initial Time Critical Removal Action (TCRA) performed during 2003 and 2004;
- Final TCRA performed during 2005 and 2006;
- Infrastructure Development Area investigation and soil removal in 2005; and
- Remedial Investigation / Feasibility Study (RI/FS) report in 2009.

## RESULTS OF PREVIOUS INVESTIGATIONS AND REMOVAL ACTIONS

Previous investigations and removal actions focused on the removal and safe disposal of debris, MEC, and radiological items found at Rifle Range Floor, Historic Outfall 4S, and Grid KK10 Outfall located within the MCFR (Figure 2). In many cases, the removal actions extended to a depth of approximately 8 feet to the native Bay Mud layer. The Bay Mud was deposited naturally before dredge slurry was deposited.

Additional investigations and removal actions at the MCFR focused on identifying and removing soils containing constituents at concentrations higher than site-specific cleanup concentrations developed for the MCFR. The characterization results indicated that antimony, lead, and copper were the primary chemical constituents of concern related to the use of the MCFR as a small arms range. A detailed description of the previous work is included in the RI/FS report and is summarized below.

## MEC AND RADIOLOGICAL INVESTIGATIONS AND REMOVAL ACTIONS

The UXO Site Investigation (1995-96) performed geophysical surveys to find metallic anomalies in the MCFR and identified 390 anomalies, including some larger clusters of anomalies indicating outfall areas. From 1998 to 2001, the Navy conducted an intrusive investigation of the 390 dredge pond metallic anomalies for MEC. During the 1998 to 2001 Intrusive Investigation, 3,655 MEC and 42,026 small arms ammunitions were removed from Historic Outfall 4S. The MEC recovered were unfired with their fuze components unarmed, missing, or inoperable due to corrosion. In addition, 395 radiological items consisting mainly of luminescent markers containing radium or strontium were also recovered from Dredge Pond 4S. The MEC found represented less than 1% by weight of the debris removed from these areas. All other debris was removed from the MCFR.

From 2003 to 2006, the Navy conducted two TCRAs within the MCFR including Historic Outfall 4S and the Grid KK10 Outfall. During the TCRAs, the Navy performed two geophysical surveys at Historic Outfall 4S and adjacent Dredge Pond 4S levee area, and the 1,291 anomalies identified during the surveys were excavated. The Navy recovered an additional 1,167 MEC and 2,417 small arms ammunitions from Historic Outfall 4S and the Dredge Pond 4S levee and 124 MEC and 202 small arms ammunitions from the Grid KK10 Outfall. The Navy has removed the MEC and small arms ammunition identified within the MCFR as a result of the two TCRAs. The Navy surveyed the final excavated ground surface for metal and the survey results confirmed that potential MEC and small arms ammunition items had been removed.

Small arms ammunition recovered at the MCFR is related to the MCFR's use as rifle and pistol ranges.



There was no history of MEC use at the rifle and pistol ranges; MEC recovered at the MCFR was related to the MCFR's association with adjacent dredge ponds.

In addition during the 2003 to 2006 TCRA, the Navy recovered 377 radiological items from Historic Outfall 4S and the Dredge Pond 4S levee and 241 radiological items from the Grid KK10 Outfall. The Navy surveyed the final excavated ground surface for radiation and confirmed that radiological items had been removed.

## **CHEMICAL INVESTIGATIONS AT THE RIFLE AND PISTOL RANGES**

Over 1,200 soil samples were collected from the MCFR during the two TCRA's and were analyzed for constituents (primarily lead, copper, and antimony) due to use of small arms at the ranges. Twenty percent (255 soil samples) of the samples were also analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), California Code of Regulations (CCR) Title 22 total threshold limit concentration (TTL) metals, and polychlorinated biphenyls (PCBs). Sampling efforts provided comprehensive spatial coverage as well as an appropriate focus on areas where impacts were most likely, based on the historic uses of the small arms firing ranges. Locations where the cleanup goals for lead, copper, and antimony were exceeded were identified for excavation and removal, resulting in the excavation of over 35,000 cubic yards of soil.

Groundwater samples from twenty temporary monitoring wells were collected and analyzed for TTL metals. Five samples were also analyzed for VOCs, SVOCs, and PCB aroclors. Only two VOCs were detected: Benzene at 0.0007 milligrams per liter (mg/L) and n-butylbenzene at a concentration of 0.0006 mg/L. No SVOCs or PCB aroclors were detected in any of groundwater samples. Most of the metal compounds were within the background concentrations except for arsenic, antimony, cadmium, nickel, and selenium that were slightly above their respective background concentrations. The groundwater sample analytical results showed that the groundwater at the MCFR had not been significantly impacted by site activities.

## **RESOLUTION OF NEWLY IDENTIFIED ISSUES**

During the development of the Final ROD and RAP in 2010, the Navy identified several issues to be addressed further at MCFR related to SWMUs, groundwater beneficial use, former and existing buildings, abandoned above ground dredge pipelines, and ARICs. Since then, the Navy has resolved these data gaps as summarized below:

### **SOLID WASTE MANAGEMENT UNITS**

In the 1987 RCRA Facility Assessment, SWMU 93 was identified as the base wide storm sewer system and SWMU 106 was identified as the base wide sanitary sewer system. Portions of SWMU 93 (storm sewer system line) are located within Parcel I-MCFR, Parcel Ib-MCFR, and Parcel XIX. Portions of SWMU 106 (sanitary sewer system line) are located in Parcel XIX (Figure 2).

The 1995 PA/SI report did not include a recommendation for further action for SWMUs 93 and 106, but rather indicated that the Navy and regulatory agencies would reach a resolution on the SWMUs in future meetings. Sufficient information had been obtained during previous environmental investigations to obtain regulatory closure, but the results had not been presented to the DTSC in the form of a closure request. Therefore, on July 12, 2011 the Navy submitted a closure request to DTSC for the portions of SWMU 93 and SWMU 106 within the MCFR with supporting documentation and DTSC concurred in a letter dated October 28, 2011.

### **GROUNDWATER BENEFICIAL USE**

Groundwater at the Former MINS is not currently used nor has it been historically used for domestic, agricultural, or industrial water supply. Since, the shallow water bearing zone (approximately 5 to 20 feet below ground surface) is not present beneath the MCFR and the groundwater located within the MCFR intermediate zone (approximately 20 to 40 feet below ground surface) is of poor quality (high total dissolved solids content) and low quantity (yield), the Navy requested a municipal and domestic supply (MUN) Beneficial Use Exception for shallow groundwater (shallow and intermediate water bearing zones) at the MCFR and the Water Board concurred in a letter dated May 18, 2011.

### **FORMER AND EXISTING BUILDINGS**

A site visit and record search was conducted by the Navy in April 2011 to visually inspect existing and former demolished buildings within Parcels Ib and XIX. The vicinity around former demolished buildings; M123, M135, M159, M163, M165, M166, M167, M171, and 1112 were inspected (Figure 2) and no evidence of any releases or storage of hazardous materials or petroleum products were observed. Existing buildings M160, M168, and 1351, were inspected and no evidence of any releases or storage of hazardous materials or petroleum products was observed. Building M160 was temporarily used for storage of one 55-gallon drum containing the radiological items (i.e. luminescent markers containing radium or strontium) found during the TCRA in 2003/2004. Therefore, the Navy completed a radiological release survey of Building M160 in August 2012. The survey confirmed no evidence of radiological release at Building M160.

### **ABANDONED ABOVE GROUND DREDGE PIPELINES**

The TCRA activities from 2003 to 2006 included removal of some sections of the above ground dredge pipelines used to transport dredge slurry from Mare Island Strait to the dredge ponds. Portions of the remaining abandoned above ground dredge pipeline sections extending from Building 1351 towards dredge ponds (Figure 2) were visually inspected during the April 2011 site visit and found to contain no dredge material.

## **MONITORING OF AREAS REQUIRING INSTITUTIONAL CONTROLS**

The portions of the Dredge Pond 4S and 4M levees on property managed by City of Vallejo adjacent to the MCFR have ICs, however ICs were not proposed for the portions of the Dredge Pond 4S and 4M levees within the MCFR. In February 2012, the Navy performed a visual inspection of the dredge pond levees and outfalls on property managed by City of Vallejo adjacent to MCFR and Navy property to determine how to resolve this inconsistency. No MEC or radiological items were identified during the February 2012 inspection or during the previous quarterly inspections performed within the property managed by City of Vallejo since December 2002 with the exception of one MEC item encountered on June 26, 2003 on the levee road between Dredge Ponds 4M and 4N. As a result of the response actions performed at the dredge ponds and the 9 years of quarterly visual inspections, the Navy recommended implementation of ICs at the Dredge Pond 4S and 4M levees within the MCFR that are consistent with the ICs in place for the Dredge Pond 4S and 4M levees within the property managed by City of Vallejo with the exception of the placement of a 2-foot soil cover on the eastern face of the portions of the Dredge Pond 4S and 4M levees within the MCFR. The Navy does not consider the placement of a 2-foot soil cover on the eastern face of the portions of the Dredge Pond 4S and 4M east levees to be necessary because the levee slopes are stable and covered by vegetation. The ICs will require the Navy or the subsequent property owner to perform visual inspections of the Dredge Pond 4S and 4M Levees within the MCFR once every five years and following significant rain events exceeding 2.6 inches of rain in a 24-hour period or 5.0 inches of rain in a 5-day period (corresponding to local 5-year rainfall events). This recommendation was presented in the Final Technical Memorandum, Assessment of Dredge Pond Levee and Outfall Inspection Results dated June 2012.

## **SUMMARY OF SITE RISKS**

The various risk assessment results for the MCFR are summarized below.

### **HUMAN HEALTH RISK ASSESSMENT**

A baseline human health risk assessment (HHRA) for the MCFR was performed in 2003 that concluded that the constituents left in the soils at that time, prior to the Initial TCRA, posed a potential threat to human health. The results provided support for conducting the subsequent TCRA. The baseline HHRA was updated in 2009 using current risk assessment methodology and an updated and expanded data set from the TCRA activities. Risk calculations were based on conservative assumptions, which mean that the assumptions are designed to overestimate risk, resulting in conservative assessments that are protective of human health. The results of the human health risk assessment indicated that carcinogenic and non-carcinogenic risks were below the USEPA established thresholds for the protection of human health and the environment under a residential land use exposure scenario.

## **ECOLOGICAL SCOPING ASSESSMENT**

An Ecological Scoping Assessment for the MCFR was performed in 2003 to identify potential ecological receptors and potentially complete exposure pathways. The MCFR is covered primarily with invasive weed species not suitable for native wildlife habitat, therefore, risk to ecological receptors is not a key driver in developing remedial action objectives (RAOs). In addition, the remedial alternatives analyzed do not involve site disturbances.

### **MEC AND RADIOLOGICAL RISK EVALUATION**

The MEC risk evaluation conducted in 2003 for the Historic Outfall 4S area concluded that the MEC potentially present at the MCFR at that time posed a threat to human health and the environment and required removal. The risk evaluation for the radiological items potentially remaining at the Historic Outfall 4S area did not identify an unacceptable risk to human health or the environment, however, removal of radiological items was recommended. Extensive removal actions were conducted to remove the MEC and radiological items from the Historic Outfall 4S and Grid KK10 areas, followed by detailed field verification to demonstrate that the removal had been effective and complete. These removal actions eliminated the known explosive risks which had been identified regarding the presence of MEC items. The radiological items were removed simultaneously with the MEC items because they were intermingled, even though it had been demonstrated that the radiological items themselves did not pose a direct risk to human health and the environment based on planned land use.

### **MEC HAZARD ASSESSMENT**

An updated Hazard Assessment (HA) has been completed in accordance with the USEPA Interim Munitions and Explosives of Concern Hazard Assessment Methodology. The MEC HA is a systematic approach to assess the potential acute explosive hazards at a munitions response site given current site conditions and under various remedial or land use control alternatives. The detailed assessment and results are presented in the RI/FS report. The resulting Hazard Level score, reflecting previous removal actions, corresponds to a category 4 determination, which represents the lowest possible hazard level and indicates that the site has a low potential for an explosive incident under current and reasonably anticipated and appropriate future use conditions.

### **OVERALL CONCLUSIONS**

Based on the conceptual site model and risk assessment results, the human health and ecological risks associated with chemical constituents and radiological materials present at the MCFR have been addressed through previous removal actions, and do not warrant further action. Although extensive surveys and actions have removed the known MEC items from the MCFR, an action is warranted based on U.S. Environmental Protection Agency (EPA) Guidance for MEC hazard assessments methodology (U.S. EPA 2008) stating that there is an inherent risk at all sites where a MEC removal action has taken place because it is not possible to be certain that 100 percent of MEC items have been found and removed, regardless of the care taken during removal or subsequent geophysical surveys.

## REMEDIAL ACTION OBJECTIVES

The RI/FS report presented the development, evaluation, and comparative analysis of the remedial alternatives to achieve the RAOs for the MCFR.

The specific RAOs for the MCFR include:

- ◆ Protect human health and the environment by reducing the risk of potential exposure to constituents, including prevention of contact with a MEC hazard;
- ◆ Protect potentially sensitive environmental receptors, if any; and
- ◆ Achieve compliance with ARARs.

## SUMMARY OF REMEDIAL ALTERNATIVES

Five (5) different removal actions have been undertaken at the MCFR since 1998. Previous removal actions have reduced the chemical concentrations at the MCFR to levels appropriate for unrestricted uses, and the MEC and radiological items have been cleared in the areas of the outfalls and portions of levees where debris was deposited from dredge operations. As a result, further treatment alternatives and removal alternatives were not analyzed. Alternatives were developed based on EPA guidance stating that an inherent risk exists at sites where MEC removals have taken place since it is impossible to guarantee that all MEC items have been removed, regardless of the degree of care exercised. Descriptions of the evaluated alternatives developed for the MCFR are presented below.

### ALTERNATIVE 1 – NO ACTION

The no action alternative provides a baseline for comparing to other alternatives. No remedial actions, monitoring, or reporting are implemented under this alternative. There would be no restrictions on future activities or uses at the MCFR to prevent possible contact or movement of the soil.

### ALTERNATIVE 2 – INSTITUTIONAL CONTROLS (PREFERRED ALTERNATIVE)

Under this alternative, ICs are implemented to prevent exposure to people in areas where potential unacceptable risk remains at the MCFR. The Navy conducted a thorough removal action for chemical constituents, radiological items and MEC within the MCFR. However, due to the potentially acute risk associated with MEC, this alternative evaluated ICs to prohibit sensitive uses and restrict future invasive activities in the historic outfall and levee areas. ICs for the levees include inspections once every five years and after significant rain events, specifically those exceeding 2.6 inches of rain in a 24-hour period or 5.0 inches of rain in a 5-day period (corresponding to local 5-year rainfall events). ICs are legal and administrative mechanisms used to implement land use restrictions in order to limit the exposure of future landowner (s) or user(s) of the property to potentially hazardous substances present on the property, and to ensure the integrity of the remedial action.

Upon conveyance of the property from Navy possession, the subsequent property owner will be responsible for enforcing the ICs. Proprietary controls in the form of deed restrictions and a land use covenant (LUC) will be implemented to legally enforce the ICs. The LUC proposed for the MCFR will be limited to the Historic Outfall 4S, Grid KK10 Outfall, and the Dredge Pond 4S and 4M Levees within the MCFR. Restrictions will prevent:

- Land disturbing activity below the current land surface. These restrictions would not apply to any imported fill materials that may be placed over the MCFR during future development.

In addition, the following land uses will not be allowed in the areas with institutional controls:

- Residences, including any mobile homes or factory built housings, constructed or installed for use as residential human habitation
- Hospitals for humans
- Schools for persons under 21 years of age
- Daycare facilities for children

## EVALUATION OF REMEDIAL ALTERNATIVES

Both alternatives have undergone a detailed evaluation and analysis using the nine criteria set forth in the NCP, which are categorized into three groups: threshold criteria, primary balancing criteria, and modifying criteria. Threshold criteria must be satisfied in order for an alternative to be eligible for selection. Primary balancing criteria are used to weigh major tradeoffs among alternatives. The modifying criteria (State Acceptance and Community Acceptance) are not completely assessed until after public comment is received on the Revised PP/Draft RAP and reviewed with the various federal and state regulatory agencies to determine if the preferred alternative remains the most appropriate remedy. Therefore, only the first seven criteria (threshold and primary balancing criteria) are evaluated in the detailed analysis in the RI/FS report, and are discussed below.

## PUBLIC COMMENT PERIOD

**March 11, 2013  
to  
April 10, 2013**



1. *Overall Protection of Human Health and the Environment* — assesses whether a remedy provides adequate public health protection and tells how health risks posed by the site will be eliminated, reduced, or controlled. Both alternatives are protective of human health and the environment under the current and planned future uses of the MCFR. Alternative 2 achieves a higher level of protection than Alternative 1 for planned future uses and activities within the areas around the former outfalls and levees.
2. *Compliance with applicable or relevant and appropriate requirements (ARARs)* — addresses whether a remedy will meet all federal, state, and local environmental statutes or requirements. Due to the prior removal actions, there are no chemical-specific ARARs at the MCFR. ARARs are not applicable to the No Action Alternative. The Institutional Controls Alternative complies with location-specific and action-specific ARARs identified for the MCFR.
3. *Long-Term Effectiveness and Permanence* — refers to the ability of a remedy to protect human health and the environment over time, after the cleanup action is completed. Only Alternative 2 provides control over future activities, which limits potential exposure to MEC due to excavation, removal, or movement of soil in the areas of the historic outfalls and levees. Alternative 1 would not provide any protection from potential future exposures.
4. *Reduction of Toxicity, Mobility, or Volume* — refers to the degree to which a remedy uses treatment technologies to reduce: (1) harmful effects to human health and the environment (toxicity), (2) the contaminant's ability to move (mobility), and (3) the amount of contamination (volume). Treatment is not a component of either alternative. Therefore, neither of the proposed alternatives would reduce the toxicity, mobility, or volume of potential contamination through treatment. Reduction of the mobility and volume of contamination has already been achieved to existing regulatory standards for chemical contamination, and to the extent practicable for MEC contamination, through the completed TCRA actions.
5. *Short-Term Effectiveness* — assesses how well human health and the environment will be protected from impacts due to construction and implementation of a remedy. Neither alternative will introduce a risk to the community or the environment in the short term, since no active remedial action is performed.
6. *Implementability* — refers to the technical feasibility (how difficult the remedy is to construct and operate) and administrative feasibility (coordination with other agencies). Factors such as availability of materials and services needed are considered. Both Alternative 1 and Alternative 2 are straightforward to implement.
7. *Cost* — evaluates the estimated capital costs and present value in today's dollars required for design and construction and long-term operation and maintenance costs. No costs are associated with Alternative 1. Alternative 2 has low costs associated with implementing the LUC.

#### SUMMARY OF THE PREFERRED ALTERNATIVE

Table 1 summarizes the comparison between Alternatives 1 and 2 based on the NCP criteria. Based on an analysis of the alternatives, Alternative 2 achieves an overall higher level of performance than Alternative 1. Alternative 2 provides greater protection than Alternative 1 for planned future uses and activities within the areas around the former outfalls and levees. Under Alternative 2, ground disturbance activities are restricted through a LUC in the areas around the former outfalls and levees by restricting excavation, removal, or movement of those soils below the current land surface without prior approval of the regulatory agency, and only if environmental and worker safety control measures are implemented by properly trained personnel as specified in the LUC Remedial Design (LUC RD). Alternative 1 would not include restrictions on development or site activities; therefore, potential future use could result in exposure to human receptors or the uncontrolled movement of soil where MEC has been encountered.

## SUMMARY OF THE PREFERRED ALTERNATIVE (CONTD.)

The Navy expects Alternative 2 to satisfy the statutory requirements of CERCLA § 121(b) because it: (1) is protective of human health and the environment; (2) complies with ARARs; (3) is cost-effective; (4) establishes a long-term solution; and (5) does not require treatment due to prior removal actions and the risk profile of the MCFR.

Table 1 Ranking of Alternatives	ALTERNATIVES	
	Alternative 1: No Action	Alternative 2: Institutional Controls
CRITERIA		
Overall Protection of Human Health and the Environment	◐	●
Compliance with ARARs	N/A	●
Long-term Effectiveness and Permanence	◐	●
Reduction of Toxicity, Mobility, or Volume Through Treatment *	N/A	N/A
Short-term Effectiveness	●	●
Implementability	●	●
Cost	No Cost	●

Notes:  
Relative Performance in Satisfying the Criteria:  
 ◐ Fair      ● Good

\* Prior removal actions have already reduced the toxicity, mobility, and volume of contamination.  
ARARs = applicable or relative and appropriate requirements

### PUBLIC MEETING:

March 28, 2013 at 6:00 PM  
Mare Island Conference Center  
375 G Street, Vallejo, California

**PUBLIC COMMENT PERIOD:**  
March 11, 2013 to April 10, 2013

You are invited to attend a public meeting to discuss information presented in this Revised Proposed Plan/Draft Remedial Action Plan regarding the MCFR. Navy representatives will provide visual displays and information on the investigations, removal actions completed, and the cleanup alternatives evaluated. You will have the opportunity to ask questions and formally comment on the alternatives.

We encourage you to comment on this Revised Proposed Plan/ Draft Remedial Action Plan during the 30-day public comment period. You may submit written comments by mail, postmarked no later than April 10, 2013 to:

Ms. Janet Lear  
BRAC Program Management Office West  
1455 Frazee Road, Suite 900  
San Diego, CA 92108-4310

Comments may also be sent to Ms. Janet Lear by fax to (619) 532-0780 or via email at [janet.lear@navy.mil](mailto:janet.lear@navy.mil). Public comments received during this period or in person at the public meeting will be included in the Responsiveness Summary section of the ROD/RAP and considered in the final remedy decisions for the MCFR. Please see page 11 for more information.

## REGULATORY SUMMARY

### CALIFORNIA HEALTH AND SAFETY CODE

This Revised PP/Draft RAP has been prepared to meet the requirements of the California Health and Safety Code (HSC) Section 25356.1 for hazardous substance release sites. The HSC requires preparation of a RAP for sites that are not listed on the National Priorities List (NPL), such as Mare Island. Therefore, this document also serves as a Draft RAP to fulfill the public notice and comment requirements of the HSC. The final RAP will be incorporated in the ROD for the MCFR.

### CALIFORNIA ENVIRONMENTAL QUALITY ACT

As required by California state law (the California Environmental Quality Act or CEQA), DTSC has studied the risks associated with the residual chemical concentrations at the MCFR and possible effects of the proposed cleanup on human health and the environment. The findings of the study can be reviewed in a document called a Notice of Exemption (commonly referred to as a NOE). The NOE is prepared by DTSC based on the findings of the risk assessment. The NOE documents that the proposed cleanup will have no negative impact on human health or the environment.

### NONBINDING ALLOCATION OF RESPONSIBILITY

HSC Section 25356.1(e) requires DTSC to prepare a preliminary nonbinding allocation of responsibility among all identifiable potentially responsible parties. HSC Section 25356.3(a) allows potentially responsible parties with an aggregate allocation in excess of 50 percent to convene an arbitration proceeding by submitting to binding arbitration before an arbitration panel. Based on the available information regarding the former Mare Island Naval Shipyard, DTSC determines that the Navy is a responsible party with aggregate alleged liability in excess of 50 percent of the costs of removal and remedial action pursuant to HSC Section 25356.3. The Navy may convene arbitration if it so chooses.

### COMMUNITY PARTICIPATION—THE NEXT STEPS FOR THE MCFR

The Navy will present the Revised PP/Draft RAP for the MCFR at a public meeting on Thursday, March 28, 2013. After the public comment period ends on April 10, 2013, the Navy and DTSC will review and consider public comments concerning the preferred remedial alternative. The Navy's decision will be documented in a ROD/RAP, which will include all of the comments received, as well as the Navy's responses. A Public Notice will be published in the Vallejo Times-Herald announcing when the ROD/RAP is available to the public in the information repositories.

### MULTI-AGENCY ENVIRONMENTAL TEAM CONCURS WITH MCFR PREFERRED REMEDY

The BCT (BRAC Cleanup Team), composed of representatives from the Navy, DTSC, Water Board, and USEPA, was established with the primary goals of protecting human health and the environment, expediting the environmental cleanup, and coordinating the environmental investigations and cleanup at the installation.

The team also serves as the primary forum for assessing cleanup priorities and progress. The team obtains a consensus on issues regarding the installation's environmental activities and makes a concerted effort to integrate current and potential future uses into the cleanup decisions. The BCT has been involved in the review of all major documents and activities associated with the MCFR. This review included the Removal Action Completion Reports and the RI/FS Report for the MCFR, which included detailed risk assessments, an evaluation of the effectiveness of the remedial alternatives for the MCFR, and documentation that these alternatives meet the NCP evaluation criteria.

Based on reviews and discussions of key documents and activities, the multi-agency team concurs with the Navy's recommendation of Alternative 2, Institutional Controls.

For further information on the MCFR site, please contact one of the following representatives:

#### Ms. Janet Lear

BRAC Environmental Coordinator  
BRAC Program Management Office West  
1455 Frazee Road, Suite 900  
San Diego, CA 92108-4310  
Phone (619) 532-0976  
Fax (619) 532-0790

[janet.lear@navy.mil](mailto:janet.lear@navy.mil)

#### Ms. Janet Naito

Project Manager  
Department of Toxic Substances Control  
700 Heinz Avenue  
Berkeley, California 94710  
Phone (510) 540-3833  
Fax (510) 540-3738

[janet.naito@dtsc.ca.gov](mailto:janet.naito@dtsc.ca.gov)

#### Mr. Richard Perry

Public Participation Specialist  
Department of Toxic Substances Control  
700 Heinz Avenue  
Berkeley, California 94710  
Phone (510) 540-3910  
Fax (510) 540-3738

[richard.perry@dtsc.ca.gov](mailto:richard.perry@dtsc.ca.gov)



## DEFINITIONS OF CHEMICAL AND TECHNICAL TERMS

**Administrative Record (AR) File** is a collection of reports and historical documents used in the selection of remedial alternatives or environmental management activities.

**Applicable or relevant and appropriate requirements (ARARs)** are the Federal and State environmental laws and regulations that must be followed for the selected remedial alternative. These requirements may vary among sites and alternatives.

**Area requiring institutional control (ARIC)** is an area where institutional controls are established to limit human exposure to hazardous substances.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**, also known as Superfund, is a federal law that regulates environmental investigation and cleanup of sites identified as potentially posing a risk to human health and/or the environment.

**Human health risk assessment (HHRA)** is an analysis of the potential negative human health effects caused by potential exposure to hazardous substances released at a site.

**Institutional controls (IC)** are non-engineering mechanisms established to limit human exposure to contaminated soil, sediment, and/or groundwater.

**Land use covenants (LUC)** are proprietary controls that specify requirements or limit the use of real property and affect the title to the property.

**Munitions and explosives of concern (MEC)** is a term that distinguishes specific categories of military munitions that may pose unique explosives safety risks, including, but not limited to, unexploded ordnance (UXO).

**MEC hazard assessment** evaluates baseline explosive hazards to people based on current or reasonably anticipated land use activities and also to evaluate relative reduction of explosive hazards to people through removal or remedial actions.

**National Oil and Hazardous Substances Pollution Contingency Plan (NCP)** is the federal regulation that guides determination of the sites to be corrected under both the Superfund program and the program to prevent or control spills into surface waters or elsewhere.

**National Priorities List (NPL)** is the list of national priorities among known releases or threatened releases of hazardous substances, pollutants, or contaminants through the United States and its territories. The NPL is intended primarily to guide the EPA in determining which sites warrant further investigation.

**Polychlorinated biphenyl (PCB) aroclors** are a group of toxic, persistent chemicals used in electrical transformers and capacitors for insulating purposes, and in gas pipeline systems as lubricant. The sale and new use of these chemicals, also known as PCBs, were banned by law in 1979.

**Proposed Plan (PP)/Draft Remedial Action Plan (RAP).** PPs and RAPs are plans that meet federal and state requirements, respectively for site remedial activities at sites not listed on the National Priorities List and are available for the public to comment.

**Remedial Investigation/Feasibility Study (RI/FS).** The RI identifies the nature and extent of potential contaminants at a site and assesses human health and environmental risks. The FS is a study that identifies and evaluates remedial technologies for a site based on effectiveness, availability, cost, and other criteria.

**Record of Decision (ROD)/RAP** is a public document that explains the selected remedial alternative to be implemented at a specific site. The ROD/RAP is based on information and technical analysis generated during the RI/FS and on consideration of public comments received throughout the process and in response to the PP/Draft RAP.

**Remedial action** is a general term used to describe technologies used to contain, remove, or treat hazardous wastes to protect human health and/or the environment.

**Remedial action objectives (RAOs)** are goals established for the protection of human health and the environment.

**Semi-volatile organic compounds (SVOCs)** are organic (carbon-containing) compounds that volatilize slowly at standard temperature.

**Small arms ammunition** is ammunition without projectiles that contain explosives (other than tracers) that is .50 caliber or smaller, or for shotguns.

**Time Critical Removal Action (TCRA)** is a short-term action taken to clean up or remove released hazardous substances or substances that might pose a threat of a release. The NCP characterizes three removal actions (based on situation, the urgency of the threat of release, and the subsequent time frame in which the action must be initiated) as (1) emergency removal actions, (2) time-critical removal actions, and (3) non-time critical removal actions.

**Unexploded Ordnance (UXO)** are military munitions that have been primed, fuzed, armed, or otherwise prepared for action; and have been fired, dropped, launched, projected, or placed in such a manner as to constitute a hazard to operations, installations, personnel, or material; and remain unexploded whether by malfunction, design, or other cause.

**Volatile organic compounds (VOCs)** make up a general category of organic (carbon-containing) compounds that evaporate easily at room temperature. VOCs are commonly used for degreasing, paint stripping, and other industrial operations. Some VOCs are known cancer-causing compounds.

## HOW DO YOU PROVIDE INPUT TO THE NAVY?

There are two ways to provide comments during the public comment period from March 11, 2013 until April 10, 2013:

- Offer oral comments during the public meeting; or
- Provide written comments by mail, fax, or email to the Navy no later than April 10, 2013 (see contact information below).

The public meeting will be held on March 28, 2013, at the Mare Island Conference Center, Vallejo, California. Navy and DTSC representatives will provide information on the environmental investigations, completed removal actions, and remedial alternatives for the MCFR. You will have an opportunity to formally comment on the remedial alternatives summarized in this Revised PP/Draft RAP during that meeting.

**Additionally, written comments can be sent to:**

Ms. Janet Lear  
BRAC Program Management Office West  
1455 Frazee Road, Suite 900  
San Diego, CA 92108-4310  
Phone (619) 532-0976  
Fax (619) 532-0790  
[Janet.lear@navy.mil](mailto:Janet.lear@navy.mil)

## RESTORATION ADVISORY BOARD

The Navy provides information on the MCFR to the public through public meetings, the Administrative Record (AR) File for the site, and notices published in the local newspapers. Restoration Advisory Board (RAB) meetings are held monthly on the fourth Thursday of the month and are open to the public. Please visit the Navy's website for more RAB information: <http://www.bracpmo.navy.mil>.

## ADMINISTRATIVE RECORD FILE AND INFORMATION REPOSITORY

The collection of reports and historical documents used by the Navy, in conjunction with the regulatory agencies, in the selection of cleanup or remedial alternatives is the AR File. The AR File includes such documents as the RI/FS Report and other supporting documents and data for the MCFR.

Community members interested in the full technical details beyond the scope of this PP/Draft RAP can also find key supporting documents that pertain to the MCFR and a complete index of all MINS documents at the information repository.

The local Information Repository is located at the following address:

John F. Kennedy Library  
505 Santa Clara Street  
Vallejo, California 94590  
Phone (866) 572-7587

## OFFICIAL ADMINISTRATIVE RECORD LOCATION:

Naval Facilities Engineering Command,  
Southwest  
1220 Pacific Highway, Building 128 Mailroom  
Attn: Ms. Diane Silva, Administrative Records  
Coordinator  
Building 3519  
San Diego, CA 92132-5190

## SITE INFORMATION CAN ALSO BE OBTAINED FROM THE FOLLOWING LOCATION:

DTSC  
700 Heinz Avenue  
Berkeley, California 94710  
Phone (510) 540-3800  
(By Appointment Only)  
([http://www.envirostor.dtsc.ca.gov/public/profile\\_report.asp?global\\_id=48970002](http://www.envirostor.dtsc.ca.gov/public/profile_report.asp?global_id=48970002) )





**REVISED PROPOSED PLAN/DRAFT REMEDIAL ACTION PLAN**

**For the Marine Corps Firing Range at the Former Mare Island, Vallejo, California**

The public comment period for the Revised Proposed Plan/Draft Remedial Action Plan (PP/Draft RAP) for the Marine Corps Firing Range at Mare Island, Vallejo, California is from March 11, 2013 to April 10, 2013. A public meeting to present the Revised PP/Draft RAP will be held at the Mare Island Conference Center in Vallejo, California, on March 28, 2013 at 6:00pm. You may provide your comments verbally at the public meeting where your comments will be recorded by a court reporter. Alternatively, you may provide written comments in the space provided below or on your own stationary. After completing your comments and your contact information, please fold and mail this form to the address provided on the reverse side. **All written comments must be postmarked no later than April 10, 2013. You may also submit this form to a Navy representative at the public meeting.**

Comments are also being accepted by e-mail; please address e-mail messages to [janet.lear@navy.mil](mailto:janet.lear@navy.mil).

Name: \_\_\_\_\_

Representing: \_\_\_\_\_

Phone Number: \_\_\_\_\_

E-mail Address: \_\_\_\_\_

Address: \_\_\_\_\_

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Comments:

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**Don't forget to attend the Public Meeting on March 28, 2013 at 6:00PM**

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# **INVITATION TO COMMENT**

## **On the Proposed Remedial Action for the Marine Corps Firing Range, Former Mare Island Naval Shipyard**



### **IMPORTANT DATES TO REMEMBER**

**PUBLIC COMMENT PERIOD**  
**MARCH 11, 2013 TO APRIL 10, 2013**

**PUBLIC MEETING**  
**MARCH 28, 2013 AT 6:00 PM**  
**MARE ISLAND CONFERENCE CENTER**  
**375 G STREET, VALLEJO, CALIFORNIA**

[See details inside](#)

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**BRAC Program Management Office West**  
Attn: Ms. Janet Lear  
BRAC Environmental Coordinator  
1455 Frazee Road, Suite 900  
San Diego, CA 92108-4310







# **INVITATION TO COMMENT**

## **On the Proposed Remedial Action for the Marine Corps Firing Range, Former Mare Island Naval Shipyard**



### **IMPORTANT DATES TO REMEMBER**

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**MARCH 11, 2013 TO APRIL 10, 2013**

**PUBLIC MEETING**  
**MARCH 28, 2013 AT 6:00 PM**  
**MARE ISLAND CONFERENCE CENTER**  
**375 G STREET, VALLEJO, CALIFORNIA**

[See details inside](#)

**BRAC Program Management Office West**  
Attn: Ms. Janet Lear  
BRAC Environmental Coordinator  
1455 Frazee Road, Suite 900  
San Diego, CA 92108-4310



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