



FINAL

PROPOSED PLAN / DRAFT REMEDIAL ACTION PLAN FORMER MARE ISLAND NAVAL SHIPYARD Production Manufacturing Area

Vallejo, California

October 2020



NAVY ANNOUNCES PROPOSED PLAN/DRAFT REMEDIAL ACTION PLAN

The Navy encourages the public to provide comments on its proposed plan for the Production Manufacturing Area (PMA) at the former Mare Island Naval Shipyard. The Navy has worked with the California Department of Toxic Substances Control (DTSC) and the San Francisco Bay Regional Water Quality Control Board (Regional Water Board) to evaluate the environmental cleanup options for the PMA presented in this proposed plan.

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* Words in **bold** type are defined in the Glossary on page 11.

INTRODUCTION

The Navy is responsible for investigating and remediating contamination that resulted from historical Navy operations at the Production Manufacturing Area (PMA) at the former Mare Island Naval Shipyard (MINS) (Figure 1). These investigations were completed according to the requirements of the **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)**. The Navy, in consultation with the regulatory agencies, will select a final remedial action for the site in the **Record of Decision (ROD)/Final Remedial Action Plan (RAP)** after all information submitted during the public comment period has been reviewed and considered. The Navy may modify its proposed plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives. See the instructions on how to comment on page 8.

This **Proposed Plan (PP)/Draft Remedial Action Plan (RAP)** summarizes the remedial alternatives on page 5 and explains the basis for identifying the preferred alternative for the PMA on page 6. The Navy proposes to select Alternative 2, Land Use Controls, to address residual hazards associated with potential **munitions and explosives of concern (MEC)** remaining on site. Alternative 2 includes:

- **Engineering controls (ECs)** to alert future site users to the potential presence of MEC
- **Institutional controls (ICs)** to restrict specific land uses and activities.

Public comments on this PP/Draft RAP will be accepted from November 5 through December 21, 2020. Public comments can be submitted via mail, e-mail, or fax throughout the comment period. Please see page 8 for more information on how to submit comments.

A virtual public meeting will be held at 7:00 PM on November 19, 2020. Members of the public may submit written and verbal comments on this PP/Draft RAP at the virtual public meeting. Please see page 9 for Instructions on how to attend the meeting.

Public Comment Period

November 5 through December 21, 2020

You are invited to review and comment on this Proposed Plan during the 45-day public comment period.

Virtual Public Meeting

November 19, 2020 7:00 PM

Attend by computer or mobile app at
<https://tinyurl.com/MARENOV19>

Attend by telephone at
1-408-418-9388

See instructions on page 9



Figure 1. Site Location

THE CERCLA PROCESS

The Navy is addressing the PMA pursuant to CERCLA and the **National Oil and Hazardous Substances Pollution Contingency Plan (NCP)**. The Navy is issuing this PP/Draft RAP as part of its public participation responsibilities under CERCLA and the NCP. This PP/Draft RAP has been prepared to highlight key information and conclusions from the Navy's investigations of MEC at the PMA and evaluations of alternatives presented in the Final **Remedial Investigation (RI)/Feasibility Study (FS)**, issued in 2019. The flowchart (shown on Figure 2) illustrates the status of the PMA in the CERCLA process. This PP/Draft RAP also satisfies requirements of California law as described on page 7.

The ROD/Final RAP will identify the selected remedy and the **remedial action objectives (RAOs)** that must be met to protect human health and the environment. After the ROD/Final RAP, the remedial design (RD) and **remedial action (RA)** are the next steps in the CERCLA process and involve planning and implementing the selected remedial alternative.

SITE BACKGROUND

Mare Island is located within the incorporated boundaries of the City of Vallejo in Solano County, California, northeast of San Francisco (Figure 1). Mare Island is bordered by Highway 37 to the north, Mare Island Strait (Napa River) to the east, Carquinez Strait to the south, and San Pablo Bay to the west. The Navy began shipbuilding operations at Mare Island in 1854.

During World War II, the former MINS reached peak capacity for shipbuilding, repair, overhaul, and maintenance. Due to decreasing Navy needs in the postwar environment, shipyard activity decreased, and the former MINS was closed on April 1, 1996.

The PMA comprises about 60 acres on the southeastern shore of Mare Island (Figure 1). Since the beginning of naval operations on Mare Island, munitions were manufactured and stored at the PMA. Munitions production at the PMA ended in 1973. After munitions production ended in 1973, many key production buildings, magazines, and warehouses were used to store inert materials and munitions-related supplies, and some buildings were converted for use as office space. The buildings have been unoccupied since the former MINS closed in 1996.

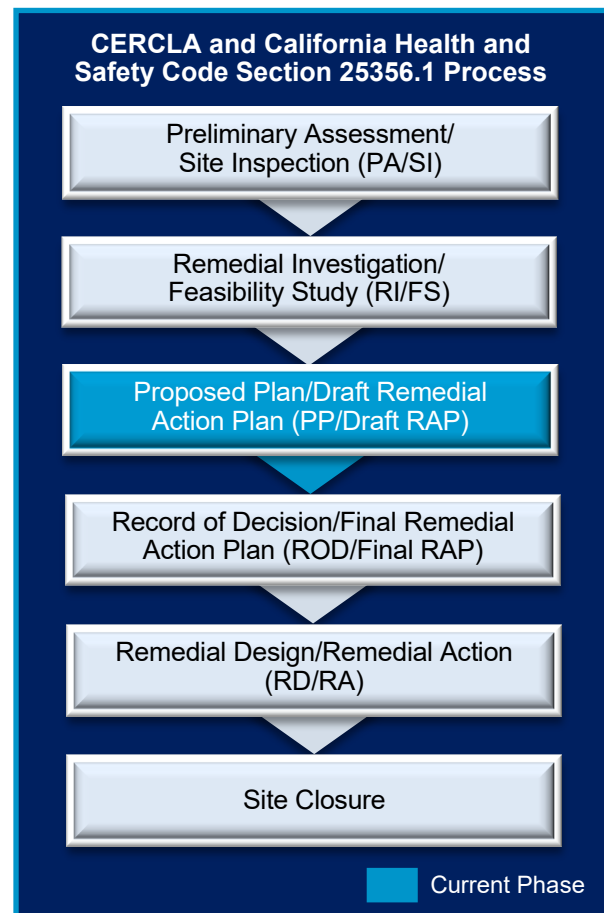


Figure 2. The CERCLA and California Health and Safety Code Process

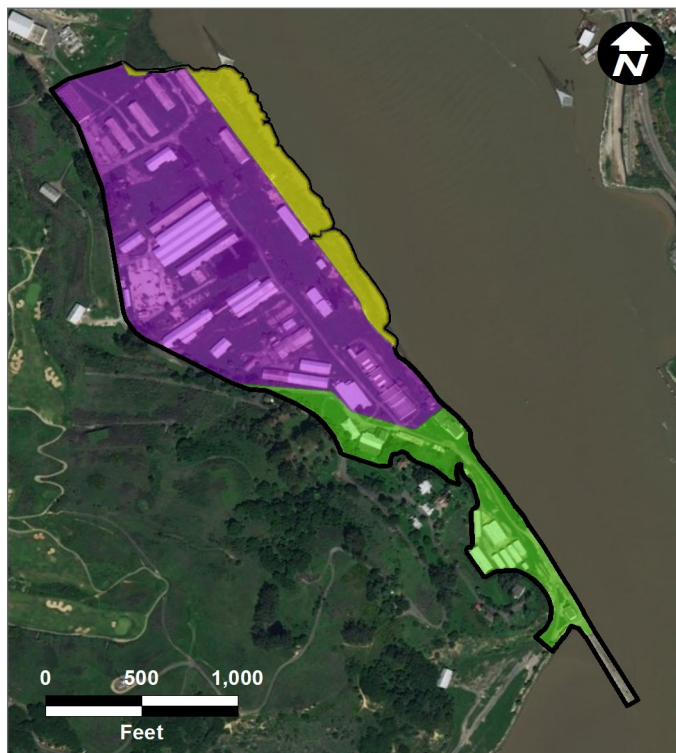


Figure 3. Future Reuse of the PMA

INVESTIGATIONS AND REMOVAL ACTIONS

Environmental characterization of the former MINS has been conducted since 1983 and has included investigations to identify the potential presence of munitions at the PMA and removal actions to remove munitions at the PMA.

A summary list of key investigations and reports follows:

- Initial Assessment Study, 1983
- Environmental Baseline Survey, 1993
- Emergency Munitions Response Actions 1993-1995
- Preliminary Assessment and Site Inspection, 1995
- Unexploded Ordnance Site Investigation, 1996
- Unexploded Ordnance Intrusive Investigation, 1997-2000
- Building Characterization, 2002
- Shoreline Munitions and Explosives of Concern Investigation, 2003-2006
- Digital Geophysical Mapping (DGM) Survey, 2006
- Building Decontamination, 2010-2011
- Non Time-Critical **Removal Action** (NTCRA), 2012-2013
- RI/FS Report, 2019

These documents, and other reports completed during the investigations at the PMA, are available for review in the locations listed on page 7.

In 2006, a comprehensive DGM survey, which is an electromagnetic survey to find and detect munitions in the subsurface, was conducted for all accessible areas of the PMA and the shoreline interface of Mare Island Strait and the PMA. In 2012-2013, a NTCRA was conducted to investigate and remove subsurface metallic items identified in the 2003 shoreline investigation and the 2006 DGM survey and to characterize areas beneath buildings and in other areas (including wetlands) not previously surveyed. The NTCRA identified areas deemed most likely by site usage and past observations and removals to contain MEC and related items. These areas were the primary focus of the NTCRA removals. The rest of the site, where the probability of encountering MEC was considered low, was the secondary focus of subsurface metallic item removals. In all, investigations and removals in 2006 and 2012-2013 resulted in the investigation of 10,206 targets (buried metallic objects identified by detection instruments) in open areas, 1,060 targets on the PMA hillside, and 15,558 targets within accessible building crawlspaces. These investigations, along with the historical removals conducted in the 1990s, have produced significant quantities of data characterizing the occurrence of munitions items and related debris at the PMA.

CURRENT AND FUTURE USE

The PMA is no longer in use, is fenced, and access must be arranged with the Navy. Maintenance workers from the Navy, the City of Vallejo, and Island Energy visit the site occasionally to perform basic site maintenance and to check electrical substations and towers. The Navy is currently maintaining the PMA as an industrial area by clearing vegetation periodically for fire protection.

The site will be transferred to the City of Vallejo. Future planned reuse by the City of Vallejo for the PMA is mixed industrial (including both light and heavy industrial uses) for the northern and central portion of the site, open space on the northeastern portion of the site (the wetland area), and a regional park on the southern portion of the site (Figure 3).

NATURE AND EXTENT OF CONTAMINATION

The PMA is the site name by which the Navy is investigating and addressing munitions, munitions-related items, and **munitions constituents** under the Munitions Response Program (MRP). The PMA site boundary is identical to the Investigation Area (IA) F1 site, which is the site name by which the Navy is investigating and addressing chemical releases, under the Installation Restoration Program (IRP). In 2012, the Navy completed an RI for the IA F1. Because the IA F1 and the PMA comprise the same area, data generated for IA F1 was also utilized to characterize the PMA. Those data were used to conduct human health and ecological risk assessments, which included assessment of munitions constituents. Because the data characterizes both IA F1 and the PMA, the risk results from the IA F1 risk assessments are appropriate for use in characterizing the risks for munitions constituents at the PMA.

In 2019, the Navy completed a revised RI/FS for the PMA that presented the evaluation of the risk posed by possible munitions constituents and confirmed the conclusions of the IA F1 RI relating to munitions constituents. Munitions constituents can include energetic compounds and metals. However, for the PMA, only energetic compounds were identified as munitions constituents. Metals in soil and groundwater were determined not to be related to munitions and, so, are not munitions constituents for the PMA. Instead, metals are being addressed under the IA F1 site in the CERCLA process.

The primary source of energetic compound impacts at the PMA was the production buildings and their associated structures, such as drainage system piping. A secondary source was the accumulation of energetic compounds on the ground surface in discrete locations.

The 2019 RI/FS for the PMA also evaluated the probability for injury associated with potential munitions items and munitions constituents at the site, discussed below in the MEC Hazard Assessment.

SITE RISK DETAILS

Risk under the IRP for the IA F1 site is the likelihood or probability that a chemical, when released to the environment will cause adverse effects (such as cancer or other illnesses) to exposed human or ecological receptors. The Navy evaluated the risk to human and ecological receptors from exposure to chemicals in site soil and chemicals evaporating from groundwater.

To assess risk under the MRP at the PMA site, the Navy reviewed the risk assessment results for energetic compounds in the IA F1 RI to determine potential adverse effects associated with energetic compounds. The results concluded that the extent of energetic compounds at the site is defined and there is no unacceptable risk posed to human health or ecological receptors from residual energetic compounds.

Human Health Risk Assessment

The Navy conducted a **human health risk assessment (HHRA)** in accordance with Federal and State guidelines. An HHRA estimates the likelihood of health problems occurring if no action were taken at a site to prevent exposure. Table 1 presents EPA's risk ranges, which were established to protect human health and assist with risk management decisions.

Because the planned reuse for the area is mixed industrial, open space, and regional park, potential future human receptors include commercial/industrial workers; construction workers; and hypothetical residents.

The Navy determined that shallow groundwater meets the criteria for an exception to sources of drinking water policy for municipal and domestic uses and the Regional Water Board concurred. Therefore the groundwater ingestion pathway is incomplete and risk from drinking shallow groundwater was not evaluated.

The only potential exposure to energetic compounds in groundwater at the PMA was volatilization from the groundwater to indoor air or to a construction trench. The evaluation concluded that there was no unacceptable risk from exposure to energetic compounds volatilizing from groundwater at the PMA.

The cancer and noncancer risks calculated for energetic compounds at the PMA are presented in Table 2.

Ecological Risk Assessment

The Navy's screening-level **ecological risk assessment (ERA)** for the PMA evaluated the exposure of plants, invertebrates, birds, and mammals to energetic compounds. Energetic compounds were only detected in the upland area of the PMA and were not detected in the wetland. Thus, the review of potential ecological risk focused only on upland receptors.

The screening level ERA concluded that energetic compounds in soil did not pose unacceptable risk to ecological receptors. Further, ecological receptors are not expected to be exposed to groundwater, since groundwater occurs at a depth below the expected depth of burrowing mammals.

The ERA results for energetic compounds at the PMA are presented in Table 2.

MEC Hazard Assessment

The Navy completed a **MEC hazard assessment (HA)**, which is a method for establishing the probability for injury from an encounter with possible remaining MEC (munitions items and munitions constituents), for the entire PMA. The MEC HA framework provides for four unique hazard levels, with a hazard level 1 being the highest potential for an explosive hazard and hazard level 4 being a low potential for an explosive hazard.

TABLE 1. RISK RANGES TO PROTECT HUMAN HEALTH

Health Risks	Unacceptable Risks	Generally Acceptable Risks	Acceptable Risks
Cancer	More than one additional cancer case in a population of 10,000 (greater than 10^{-4})	One additional cancer case in a population of 10,000 to one additional cancer case in a population of 1,000,000 (10^{-4} to 10^{-6})	Less than one additional cancer case in a population of 1,000,000 (less than or equal to 10^{-6})
Noncancer	A hazard index (HI) greater than 1	—	An HI less than or equal to 1

TABLE 2. SUMMARY OF RISK RESULTS FROM ENERGETIC COMPOUNDS

HHRA Results				ERA Results
Receptor	Medium	Cancer Risk	Hazard Index	
Commercial/Industrial worker	Soil (0 to 2 feet bgs)	-- ⁽¹⁾	0.00012	No unacceptable risk to ecological receptors (plants, invertebrates, birds, and mammals)
	Groundwater Vapor Intrusion	8.9×10^{-10}	0.0000069	
Construction Worker	Soil (0 to 10 feet bgs)	7.6×10^{-9}	0.19	
	Groundwater Trench Inhalation	9.8×10^{-14}	0.000000019	
Hypothetical Resident*	Soil (0 to 10 feet bgs)	1.9×10^{-7}	0.048	
	Groundwater Vapor Intrusion	9.7×10^{-9}	0.000073	

Notes:

(1) The only chemical of concern identified for the commercial/industrial worker was picric acid. Picric acid is not a known carcinogen; thus, cancer risks were not calculated.

* Estimate for hypothetical resident is protective of a recreational receptor

bgs Below ground surface

HHRA Human health risk assessment

ERA Ecological risk assessment

TABLE 3. SUMMARY OF REMEDIAL ALTERNATIVES

Remedial Alternative	Components of Remedial Alternatives	Cost
Alternative 1: No Action	The No Action alternative is required by CERCLA to be evaluated for comparison purposes. Under this alternative, nothing would be done at the PMA.	\$0
Alternative 2: Land Use Controls	Alternative 2 includes ECs in the form of signs to alert future users to the potential presence of buried MEC and to notify users of a prohibition on unauthorized digging or soil disturbance. In addition, ICs will be implemented to prohibit sensitive uses (such as residential, daycare, or hospital use), and land disturbing activity without approval from the Navy and the regulatory agencies and appropriate management plans and safety precautions. Alternative 2 also includes a MEC educational awareness program. The land use controls will be inspected and maintained as long as the potential for MEC remains at the PMA.	\$756,000

Notes: Preferred alternative indicated in table by blue shading.

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

EC Engineering control

IC Institutional control

MEC Munitions and explosives of concern

PMA Production Manufacturing Area at the former Mare Island Naval Shipyard

The MEC HA evaluated four different scenarios for the PMA: historical baseline, current site use (limited, aboveground maintenance), future site uses with no other action to protect against potential encounters with MEC, and future site uses with land use controls to mitigate risk of MEC encounter. The MEC HA found a hazard level of 4, a low potential for an explosive hazard, for each scenario evaluated.

FEASIBILITY STUDY

The Navy evaluated remedial alternatives for the PMA because of the uncertainty related to the presence of possible residual MEC in the subsurface. The following RAO was established for the PMA:

- Manage/mitigate the potential explosive safety hazards to receptors (future commercial/industrial workers, construction workers, and recreational users) by minimizing potential contact with potential residual munitions items in the subsurface.

SUMMARY OF REMEDIAL ALTERNATIVES

There is some uncertainty about whether residual MEC are buried at the PMA, therefore the site is not appropriate for some future uses. So, two alternatives were evaluated to achieve the RAO:

- *Alternative 1: No Action*
- *Alternative 2: Land Use Controls*

Table 3 describes remedial alternatives evaluated in the RI/FS and presents the costs that reflect the Navy's current estimate to implement each alternative. The Navy has identified Alternative 2, shown in the blue shaded row, as the preferred remedial alternative.

EVALUATION OF REMEDIAL ALTERNATIVES

The Navy evaluated each alternative against the first seven of the nine NCP cleanup action evaluation criteria (shown on Figure 4). Both alternatives were given a rating based on the capability of each alternative to meet the NCP criteria. A rating of low indicates the alternative is unlikely to or will not meet the criteria, while a rating of high indicates the alternative will meet the criteria. The results of the evaluation are summarized in Table 4. The last two NCP criteria (state acceptance and community acceptance) will be addressed through public comment and regulatory agency review of this PP/Draft RAP, and are not evaluated here.

SUMMARY AND RATIONALE OF THE PREFERRED ALTERNATIVE

The preferred remedy for the PMA is Alternative 2: Land Use Controls. This alternative is preferred for the reasons summarized below:

- It provides overall protection to human health and the environment by constructing signs, restricting land use and future activities, and informing site users how to avoid the potential for contact with residual MEC.
- It meets federal and state **applicable or relevant and appropriate requirements (ARARs)**.
- It would allow redevelopment of the site in a manner consistent with the City of Vallejo's 2008 Mare Island Specific Plan as amended.

A final decision will not be made until all community and agency comments are considered as submitted during the public comment period. Community acceptance will be evaluated after the public comment period for this PP/Draft RAP. The Navy will document and address comments in a Responsiveness Summary presented in the ROD/Final RAP.

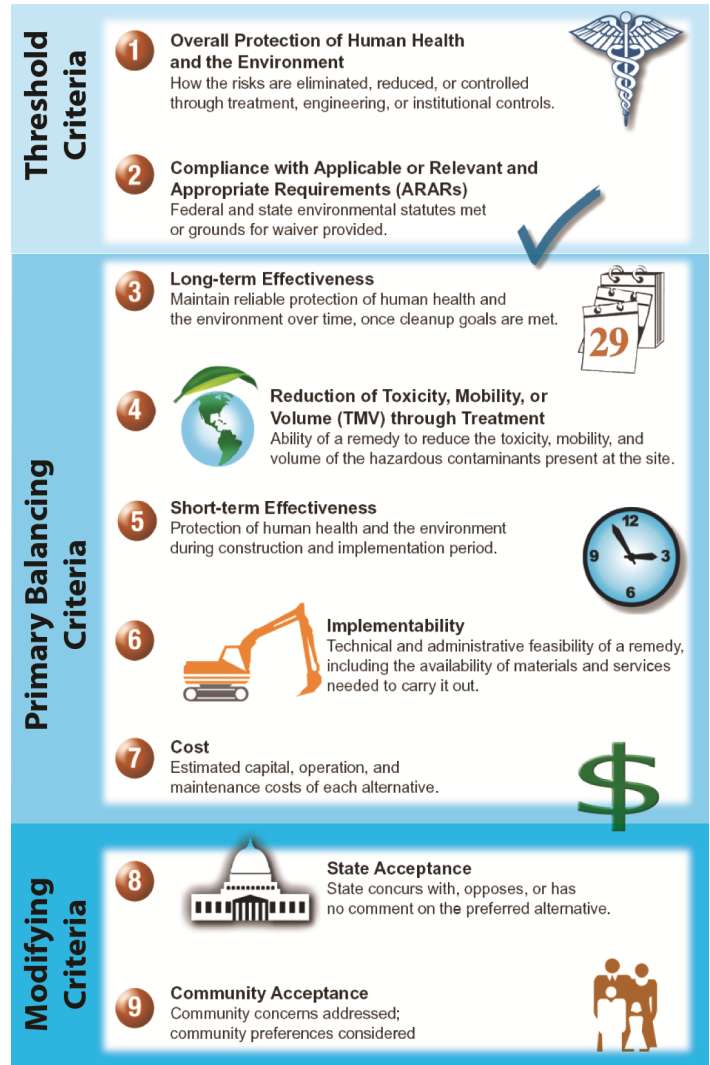


Figure 4. NCP Cleanup Action Evaluation Criteria

TABLE 4. RANKING PMA REMEDIAL ALTERNATIVES FOR NCP CRITERIA

NCP Criteria	Alternative 1 – No Action	Alternative 2 – Land Use Controls
Overall Protection of Human Health and the Environment ¹	No	Yes
Compliance with ARARs ¹	NA ²	Yes
Long-Term Effectiveness and Permanence	Low	High
Reduction of Toxicity, Mobility, or Volume Through Treatment	Low	Low
Short-Term Effectiveness	High	High
Implementability	High	High
Cost	NA	Moderate
Overall Ranking	2	1

Notes:

- ¹ Overall protection of human health and the environment and compliance with ARARs are threshold criteria that an alternative must meet to be selected as the remedy for a site. Both criteria are rated "yes" or "no" on its ability to meet the threshold criteria.
- ² Not Applicable. ARARs do not apply to the No Action alternative.

ARARs Applicable or relevant and appropriate requirements
NA Not applicable

STATE OF CALIFORNIA LAWS

California Health and Safety Code

This PP meets applicable requirements for RAPs contained in California Health and Safety Code (HSC) section (§) 25356.1 for hazardous substance release sites listed by DTSC pursuant to California HSC § 25356. This PP serves as a Draft RAP to fulfill the public notice and comment requirements of the California HSC, and the CERCLA ROD for the PMA will serve as the Final RAP.

California Environmental Quality Act

DTSC has determined that the remedial action proposed for the PMA (land use controls) does not result in a direct physical change to the environment. Therefore, the proposed remedial action does not meet the definition of a project under the California Environmental Quality Act (CEQA) and is not subject to the requirements of CEQA. If the remedy changes, the remedy may be re-evaluated to determine if it meets the definition of a project that requires further review pursuant to CEQA requirements.

Nonbinding Allocation of Responsibility

California HSC § 25356.1(e) requires DTSC to prepare a nonbinding allocation of responsibility among all identifiable potentially responsible parties. Based on the available information regarding the former MINS, DTSC has determined that the Navy is the only identifiable responsible party.

COMMUNITY PARTICIPATION — THE NEXT STEPS

Public comments on this PP/Draft RAP received during the period from November 5, 2020, through December 21, 2020, will be considered by the Navy, in consultation with the regulatory agencies, prior to selecting a final remedy for the PMA. Responses to comments will be addressed in a Responsiveness Summary, presented in the ROD/Final RAP. The ROD/Final RAP will formally document the selected remedy for the PMA. Additional information on opportunities to comment on this PP/Draft RAP can be found on page 8.

A Public Notice will be posted in the local papers announcing when the PMA ROD/Final RAP is available to the public in the information repositories listed below.

The PP/Draft RAP may also be viewed online at the Navy website:

https://www.bracpmo.navy.mil/brac_bases/california/former_shipyard_mare_island.html.

Restoration Advisory Board

The Navy provides information on the PMA to the public through public meetings, the **administrative record (AR)** file for the site, the local library, and notices published in the local newspapers. Restoration Advisory Board (RAB) meetings are generally held every other month on the fourth Thursday of the month and are open to the public. Please visit the Navy's website for more RAB information and current RAB meeting dates and times:

https://www.bracpmo.navy.mil/brac_bases/california/former_shipyard_mare_island/meeting_material.html.

INFORMATION REPOSITORIES

The John F. Kennedy Library provides public access to technical reports and other information that support this PP/Draft RAP. The Navy AR file is a collection of reports and historical documents used to select remedial alternatives.

John F. Kennedy Library

505 Santa Clara Street
Vallejo, California 94590

Library Hours (by appointment only):

Monday-Thursday: 9 a.m.– 6 p.m.

Friday: 9 a.m.- 5 p.m.

Phone: (866) 572-7587

Library hours of operation may change due to ongoing COVID-19 restrictions.

Official Administrative Record Location

Naval Facilities Engineering Command Southwest
2965 Mole Road, Building 3519

Attn: Ms. Diane Silva, Administrative Records Coordinator

Naval Base San Diego

San Diego, CA 92136

Phone: (619) 556-1280

Email: Diane.Silva@navy.mil

*The Navy AR file hours are Monday through Friday,
8:00 am to 5:00 pm.*

OTHER SITE DOCUMENTS

The Navy is issuing this PP/Draft RAP as part of its public participation responsibilities under CERCLA § 117(a) and § 300.430(f)(2) and (3) of the NCP to ensure that the public has the opportunity to comment. This PP/Draft RAP summarizes information detailed in previous documents, including the RI/FS Report, contained in the AR file for the PMA. 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 PMA that are listed on page 3 are available for public review at the information repositories listed on this page.

Some documents may also be available online at the Navy website,

https://www.bracpmo.navy.mil/brac_bases/california/former_shipyard_mare_island.html,

and at the DTSC website:

<http://www.envirostor.dtsc.ca.gov/public>.

MULTI-AGENCY ENVIRONMENTAL TEAM CONCURS WITH THE PMA REMEDY

The Base Realignment and Closure (BRAC) Cleanup Team (BCT), composed of representatives from the Navy, DTSC, Regional Water Board, and U.S. Environmental Protection Agency, 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 BCT 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 PMA. This review included the recent RI/FS Report for the PMA, which included risk assessments, an evaluation of the effectiveness of the remedial alternatives for the PMA, and documentation that these alternatives meet the NCP evaluation criteria.

Based on reviews and discussions of key documents and activities, the BCT recommends Alternative 2: Land Use Controls.

HOW DO YOU PROVIDE INPUT TO THE NAVY?

There are two ways to provide comments during the public comment period from November 5 through December 21, 2020:

1. Offer oral comments during the public meeting
2. Provide written comments by mail, fax, or email to the Navy no later than December 21, 2020 (see contact information below). A mail-in comment form is provided as pages 9 and 10.

Virtual Public Meeting November 19, 2020 — 7:00 PM

Attend by computer or mobile app at: <https://tinyurl.com/MARENOV19>

Attend by telephone at: 1-408-418-9388

Instructions for attending are on page 9

Navy and DTSC representatives will provide information on the environmental investigations, completed removal actions, and remedial alternatives for the PMA. You will have an opportunity to formally comment on the remedial alternatives summarized in this PP/Draft RAP during that meeting.

Additionally, written comments can be sent to:

BRAC Program Management Office West
Attn: Mr. Scott Anderson
BRAC Environmental Coordinator

PROJECT REPRESENTATIVES

For further information on the environmental program at former Mare Island Naval Shipyard or the PP/Draft RAP, please contact one of the following representatives:

Mr. Scott Anderson

BRAC Environmental Coordinator
BRAC PMO West
33000 Nixie Way
Building 50, Suite 207
San Diego, California 92147
Phone (619) 524-5808
Fax (619) 524-5260
scott.d.anderson@navy.mil

Mr. Ryan Ahrling

Project Manager
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, CA 94710
Phone (510) 540-3817
Fax (510) 540-3738
ryan.ahrling@dtsc.ca.gov

Ms. Asha Setty

Public Participation Specialist
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, California 94710
Phone (510) 540-3910
Fax (510) 540-3819
asha.setty@dtsc.ca.gov

FOLD ALONG DASHED LINE

Your Return Address:

*Place
Postage
Here*

Navy BRAC Program Management Office West

Attn: Mr. Scott Anderson
BRAC Environmental Coordinator
33000 Nixie Way
Building 50, Suite 207
San Diego, California 92147

GLOSSARY OF TECHNICAL TERMS

Administrative record (AR) file is a collection of reports and historical documents used in the selection of a cleanup approach 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.

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.

Ecological risk assessment (ERA) is an evaluation of the likelihood that ecological receptors (plants and animals) exposed to contaminants at a site may suffer harm.

Engineering controls (ECs) are engineered (constructed) mechanisms to limit human exposure to contamination. These mechanisms may include fences and signs.

Feasibility Study (FS) is an evaluation of different actions to prevent exposure by humans or ecological receptors to contamination at a site.

Hazard Index (HI) is the sum of more than one hazard quotient for multiple substances and/or multiple exposure pathways. The hazard index is calculated separately for chronic, subchronic, and shorter-duration exposures.

Human health risk assessment (HHRA) is an evaluation of the likelihood that humans exposed to contaminants at a site would suffer harm.

Institutional controls (ICs) are non-engineering mechanisms established to limit human exposure to contamination. These mechanisms may include deed restrictions, covenants, easements, laws, and regulations.

Land use controls include ECs and ICs and help to minimize the potential for exposure to contamination and are typically designed to limit land or resource use by modifying or guiding human behavior at a site.

Munitions and explosives of concern (MEC) MEC includes: (1) unexploded ordnance; (2) discarded military munitions; or (3) munitions constituents present in high enough concentrations to pose an explosive hazard.

Munitions constituents are materials originating from unexploded ordnance, discarded military munitions, or other military munitions, including energetic compounds, explosive and nonexplosive materials, and the emission, degradation, or breakdown elements of such ordnance or munitions.

MEC Hazard Assessment (HA) is a method for establishing the probability for injury from an encounter with MEC and is intended to support site management decisions specifically related to explosive hazards. Site-specific information on munitions is used to assign a hazard level score on the potential for an explosive hazard at the site ranging from 1 to 4. A hazard level score of 1 is the highest potential for an explosive hazard at a site and a hazard level score of 4 is the lowest potential for an explosive hazard at a site.

National Oil and Hazardous Substances Pollution Contingency Plan (NCP) are the federal regulations that guide investigation and cleanup of CERCLA sites.

Proposed Plan (PP)/Draft Remedial Action Plan (RAP) is a document that reviews the remedial alternatives presented in the Feasibility Study (FS), summarizes the recommended remedial action, explains the reasons for recommending the action and solicits comments from the community. The RAP is required under Health and Safety Code (HSC) Section (§) 25356.1 for sites that are not listed on the Superfund National Priorities List, such as Mare Island. A Draft RAP is the California HSC equivalent of the Navy's Proposed Plan.

Record of Decision (ROD)/Final Remedial Action Plan (RAP) is a decision document that identifies the selected remedy to be implemented at a specific site. The ROD/Final RAP is based on information and technical analysis generated during the Remedial Investigation (RI)/FS and consideration of public comments received throughout the process and in response to the PP/Draft RAP. A Final RAP is the California HSC equivalent of the Navy's ROD.

Remedial action (RA) is a general term used to describe the implementation of the selected remedy.

Remedial action objective (RAO) is the goal to be achieved by the remedial action for the protection of human health and the environment.

Remedial investigation (RI) is an in-depth study to gather data needed to determine the nature and extent of the contamination at a site and to evaluate risks to human health and the environment posed by the contamination.

Removal action is an action taken to clean up or prevent exposure to contamination before final cleanup decisions for the site have been made.



Navy BRAC Program Management Office West
33000 Nixie Way
Building 50, Suite 207
San Diego, California 92147

INVITATION TO COMMENT

**On the Proposed Remedial Action for
the Production Manufacturing Area,
Former Mare Island Naval Shipyard**

See details inside.

IMPORTANT DATES TO REMEMBER

PUBLIC COMMENT PERIOD: VIRTUAL PUBLIC MEETING:
November 5 through November 19, 2020 at 7:00 PM
December 21, 2020