



FINAL
**RECORD OF DECISION/
FINAL REMEDIAL ACTION PLAN
INSTALLATION RESTORATION SITE 05,
DREDGE POND 7S, AND
WESTERN MAGAZINE AREA**
Former Mare Island Naval Shipyard,
Vallejo, California

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Prepared for

**Department of the Navy
Base Realignment and Closure
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LIST OF ATTACHMENTS

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Attachment 4	Public Meeting Transcript and Written Comments
Attachment 5	Reponses to the Regulatory Agency Comments on the Draft ROD/RAP (Final ROD/RAP only)

ABBREVIATIONS AND ACRONYMS

ABM	abrasive blast material
ARAR	Applicable or Relevant and Appropriate Requirement
BCT	BRAC Cleanup Team
bgs	below ground surface
BO	Biological Opinion
BRAC	Base Realignment and Closure
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COC	chemical of concern
COPEC	chemical of potential ecological concern
CRUP	Covenant to Restrict Use of Property
DDD	4,4'-dichlorodiphenyldichloroethane
DDE	4,4'-dichlorodiphenyldichloroethene
DDT	4,4'-dichlorodiphenyl-trichloroethane
DGM	digital geophysical mapping
DMM	discarded military munitions
DON	U.S. Department of the Navy
DP7	Dredge Pond 7
DP7S	Dredge Pond 7S
DTSC	California Environmental Protection Agency Department of Toxic Substances Control
DWBZ	deep water-bearing zone
EC	engineering control
EPA	U.S. Environmental Protection Agency
ERA	Ecological Risk Assessment
FFSRA	Federal Facility Site Remediation Agreement
FOST	Finding of Suitability to Transfer
FS	Feasibility Study
HHRA	Human Health Risk Assessment
HSA	Horse Stables Area
IA	Investigation Area
IAS	Initial Assessment Study
IC	institutional control
IR	Installation Restoration
IR05	Installation Restoration Site 05
IWBZ	intermediate water-bearing zone

ABBREVIATIONS AND ACRONYMS (Continued)

LUC	Land-Use Control
MC	munitions constituent
MDAS	material documented as safe
MEC	munitions and explosives of concern
MINS	Mare Island Naval Shipyard
MRA	munitions response action
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
PCB	polychlorinated biphenyl
PP	Proposed Plan
RAB	Restoration Advisory Board
RAO	Remedial Action Objective
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
Regional Water Board	San Francisco Bay Regional Water Quality Control Board
RI	Remedial Investigation
ROD	Record of Decision
SVOC	semivolatile organic compound
SWBZ	shallow water-bearing zone
SWMU	solid waste management unit
TCRA	time-critical removal action
TDS	total dissolved solid
UST	underground storage tank
UXO	unexploded ordnance
VOC	volatile organic compound
WMA	Western Magazine Area

1. DECLARATION

This Record of Decision (ROD)/Remedial Action Plan (RAP) presents the basis for the selected remedy, Land-Use Controls (LUCs), for the Installation Restoration (IR) Site 05 (IR05), Dredge Pond 7S (DP7S), and Western Magazine Area (WMA) sites located at the former Mare Island Naval Shipyard (MINS) on Mare Island in Vallejo, California (Figure 1). Bold blue underlined text found in this ROD/RAP identifies detailed site information that is available in the [Administrative Record Index_{\(1\)}](#) and listed in the Table of References, Attachments 1 and 2 of this document, respectively. This ROD/RAP is also available on compact disk whereby bold blue underlined text serves as a hyperlink to the reference information. To the extent that there are any inconsistencies between the referenced information available via hyperlinks and the information in this ROD/RAP, the ROD/RAP language prevails.

The selected remedy was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended by the Superfund Amendments and Reauthorization Action of 1986 (Title 42 of the United States Code, Section 9601 et. seq.), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (Title 40 Code of Federal Regulations [CFR] Part 300). The selected remedy also satisfies the California Environmental Protection Agency Department of Toxic Substances Control (DTSC) RAP requirements for hazardous substance release sites pursuant to California Health and Safety Code Section 25356.1. This decision is based on the documents referenced in the CERCLA [Administrative Record Index_{\(1\)}](#) for this site (Attachment 1).

The U.S. Department of the Navy (DON), as the lead federal agency, provides funding under the Base Realignment and Closure (BRAC) program for site cleanups at the former MINS, and is vested with the authority to select CERCLA cleanup remedies at the former MINS. The Federal Facility Site Remediation Agreement (FFSRA) for Mare Island documents how the DON meets and implements CERCLA requirements in partnership with the DTSC and the San Francisco Bay Regional Water Quality Control Board (Regional Water Board). The DON chose LUCs as the selected remedy for the IR05, DP7S, and WMA sites with concurrence from the DTSC, the Regional Water Board, and the U.S. Environmental Protection Agency (EPA).



The former MINS is located on the Mare Island peninsula in Solano County, California, northeast of San Francisco, California (Figure 1). The Napa River (Mare Island Strait) lies to the east and separates the Mare Island peninsula from the City of Vallejo; the remainder of the peninsula is bounded by Highway 37 to the north, the Carquinez Strait to the south, and San Pablo Bay to the west.

Originally, Mare Island consisted of approximately 1,000 acres of dry land and 300 acres of surrounding wetlands. Over time the placement of fill and dredge materials has increased the size of Mare Island to approximately 5,600 acres. To facilitate environmental cleanup, the former MINS has been divided into multiple sites and investigation areas.

IR05 occupies approximately 35 acres and DP7S occupies approximately 24 acres, both located along the southern shore of Mare Island (Figure 2). IR05 and adjacent DP7S were created by the natural accretion of sediments behind Dike 12 (built in 1908-1910) and later augmented by the deposition of dredge spoils and upland fill material in the 1930s and 1940s. IR05 was established in 1947 and was used to support the open burning and open detonation of unwanted munitions until its closure in the late 1960s. IR05 was also used by the Mare Island Naval Ammunition Depot as an open storage area for munitions and munitions-related components (powder cans, cartridge cases, etc.) and was later used for inert item storage by MINS after closure of the Naval Ammunition Depot in 1975. DP7S and adjacent Dredge Pond 7 (DP7) were used as an active dredge spoils disposal area through the 1970s, when a berm was built to divide the large area into two smaller ponds after which DP7S was no longer used for sediment deposition and it reverted to native habitat. No buildings are currently present within IR05 or DP7S.

The WMA occupies approximately 106 acres of the southern portion of Mare Island just north of IR05/DP7S and is located between a hilly upland area to the east and San Pablo Bay tidal wetlands to the west (Figure 2). The WMA was created by the deposition of upland fill on tidal wetland areas in the late 1930s in anticipation of World War II. The primary purpose of the WMA was to store gun ammunition for use aboard Navy ships. The WMA storage magazines were used for this purpose through the Vietnam War era.



The DON presented the [Proposed Plan \(PP\)/Draft RAP_{\(2\)}](#) for the IR05, DP7S, and WMA sites for open comments at a public meeting on March 26, 2015. This ROD/RAP has been prepared to meet the requirements of the California Health and Safety Code Section 25356.1 for hazardous substance release sites. The California Health and Safety Code requires preparation of a RAP for sites that are not listed on the National Priorities List, such as the former MINS. Therefore, this document also serves as the final RAP to fulfill the public notice and comment requirement of the California Health and Safety Code. It incorporates all public comments received during the public meeting and [PP/Draft RAP_{\(2\)}](#) review period.

1.1 SELECTED REMEDY

The Selected Remedy for the IR05, DP7S, and WMA at the Former MINS is the implementation of LUCs. This response action was selected to protect public health, welfare, and the environment from actual or potential releases of contaminants from the site that may present an imminent and substantial endangerment to public health or welfare. Considering the site-specific conditions, potential exposure routes, and planned future use of the sites, the following specific LUCs were identified:

1. Ground disturbance of existing soils will be prohibited, unless authorized in writing by DTSC and the DON.
2. Sensitive land uses will be prohibited, including the construction of residences, schools, hospitals, or daycare facilities.
3. Signs and/or interpretive panels to warn the public of the historical activities at the property and to provide the appropriate response if a suspected munitions item is observed.

The details of the LUCs, engineering controls (ECs) and institutional controls (ICs), will be defined in the LUC Remedial Design (RD) and the Covenant to Restrict Use of Property (CRUP) after continued discussions with the stakeholders, but will be consistent with the concepts presented in this ROD/RAP.

The DON has determined that the selected remedy is protective of human health and the environment and that it achieves the Remedial Action Objective (RAO) for the sites established in the [Feasibility Study \(FS\)_{\(3\)}](#); to control direct exposure and protect future human receptors

from the low residual risk posed by potential buried MEC. In addition, the selected remedy complies with all federal and state Applicable or Relevant and Appropriate Requirements (ARARs), is cost effective, and utilizes permanent solutions to the maximum extent practicable. The other alternative considered, No Action, has been determined to be less effective at protecting human health and the environment over the long term. A detailed description of the selected remedy is provided in the [FS\(3\)](#).

Although [EPA guidance documents\(4\)](#) includes a statutory preference for treatment as a principal element of a selected remedy, no additional active treatment is required at the IR05, DP7S and WMA sites because the previous removal actions have successfully reduced the volume of chemicals of concern (COCs) identified in soil to levels that are protective of human health and the environment. Between 2007 and 2010, the DON excavated and relocated contaminated soil and building materials from the IR05 and WMA sites to the Investigation Area (IA)-H1 Containment Area on Mare Island, therefore the removal actions for soil do not constitute treatment in terms of total reduction of toxicity or mobility, although overall mobility could be considered reduced as the material is now placed in the capped and monitored landfill. Contaminated soil removed from the sites before 2007 and after 2010 was disposed of at an appropriate offsite facility.

Chemical contaminants, radiological items, and to the extent practical munitions and explosives of concern (MEC) hazards that impacted soil above standards appropriate for use as recreational and wetland areas were removed during multiple response and removal actions conducted from 1990 to 2011. As specified in the [Mare Island Specific Plan\(5\)](#), the planned reuse for the sites includes recreational and wetland areas. Because MEC detection methods are not 100 percent effective and residual hazards may remain in areas after a response action is completed, regardless of the care taken during removal or subsequent geophysical surveys, the selected remedy for the sites involves LUCs to prevent human receptors from being exposed to potential buried MEC.

Although it is not a requirement of CERCLA, appropriate MEC notifications will be provided to future land owners as required in Section 14-14 of Office of the Chief of Naval Operations Instruction 8020.14A [Ammunition and Explosives Safety Ashore\(6\)](#).

Annual inspections will be performed to evaluate the LUCs and perform any repairs necessary for maintenance of the engineering controls. Statutory five-year reviews pursuant to CERCLA Section 121 and the NCP will be conducted within five years after initiation of the remedial action, and every five years thereafter until the DTSC deems them no longer necessary, to ensure that the selected remedy for soil continues to be protective of human health and the environment. DTSC could remove the requirement for five-year reviews if it decides that the risk has been removed and reviews are no longer necessary. If site conditions changed in the future and it could be demonstrated to the satisfaction of the DON and the State that potential exposure to buried MEC no longer posed an unacceptable risk to human health, the proposed institutional controls could be removed.

1.2 RECORD OF DECISION DATA CERTIFICATION CHECKLIST

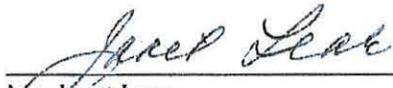
Table 1 contains the data certification checklist for the IR05, DP7S, and WMA sites, and the information is detailed in Section 2 of this ROD/RAP. Additional information can be found in the CERCLA [Administrative Record Index^{\(1\)}](#) (Attachment 1).

Table 1 Data Certification Checklist	
Data	ROD/RAP Section
COCs	2.3.4
Risk represented by the COCs	2.5
Remediation goals established for COCs and the basis for these levels	2.7
How source materials constituting principal threats are addressed	2.6
Current and reasonably anticipated future land use assumptions used in the risk assessment	2.5
Potential land and groundwater use that will be available at the site as a result of the selected remedy	1.1
Estimated capital, annual operation and maintenance, total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected	2.8.2
Key factors that led to selecting the remedy	2.9.3

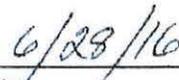
1.3 AUTHORIZING SIGNATURES

Under Executive Order 12580, the DON is the lead agency responsible for the cleanup effort, and the DTSC, with support from the Regional Water Board, provides regulatory oversight. EPA Region 9 also provides regulatory support to DTSC on the CERCLA work conducted at the former MINS.

This signature page documents the DON selected remedy to use LUCs at the IR05, DP7S, and WMA sites as documented in this ROD/RAP. In addition, the signatures from the State of California (DTSC and Regional Water Board) document concurrence with the ROD/RAP recommendations.



Ms. Janet Lear
BRAC Environmental Coordinator
BRAC Program Management Office West
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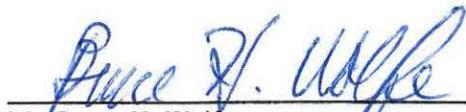
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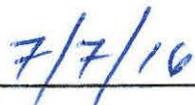
Ms. Janet Naito
Branch Chief
Brownfields and Environmental Restoration Program
Department of Toxic Substances Control



Date



Mr. Bruce H. Wolfe
Executive Officer
California Environmental Protection Agency
California Regional Water Quality Control Board
San Francisco Bay Region



Date

2. DECISION SUMMARY

2.1 SITE DESCRIPTION AND HISTORY

The DON acquired Mare Island in 1853 and started shipbuilding operations the following year. The primary ship construction and maintenance area was established along the northeastern shore of the former MINS adjacent to the Mare Island Strait. The entire facility saw vast transformation during its years of operation as shipbuilding technologies advanced from wooden to steel construction and from 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 DON Pacific Fleet of submarines. Due to decreasing DON needs in a postwar environment, shipyard activity decreased, and MINS was closed on April 1, 1996, after 142 years of operation. Several parcels have been transferred from the DON ownership to others as Economic Development Conveyance, Public Benefit Conveyance or Reversionary Parcels. Other parcels have been transferred to federal entities as Fed-to-Fed transfers. In all, the DON has transferred over 3,900 acres of the former MINS property through various mechanisms.

The southeastern portion of Mare Island was used for munitions operations beginning in 1857. IR05 and WMA later became part of these operations. The primary purpose of the munitions facility, classified as a Naval Magazine between 1857 and 1935, was to store and process the ammunition used aboard naval ships. The Naval Magazine was upgraded to a Naval Ammunition Depot in 1936 when munitions manufacturing operations began. Control of the Naval Ammunition Depot was turned over to Naval Magazine Port Chicago in 1942, and the facilities were consolidated into Naval Weapons Station Concord in 1957. Since then the area of munitions storage and maintenance operations at Mare Island was commonly referred to as the “Concord Annex”. The ammunition facility remained an annex of Naval Weapons Station Concord until 1975 when munitions operations were discontinued and ownership was transferred to the former MINS. Many key production buildings and warehouses were subsequently used to store inert materials or used as office space.

2.1.1 Installation Restoration Site 05

The 35-acre IR05 site is located along the Dike 12 breakwater at the southern end of Mare Island (Figure 2). IR05 was created by the natural deposition of sediments north of Dike 12 in addition to fill from hillside excavations and dredge spoils. IR05 was used as an inert munitions storage and disposal area between 1947 and 1975. From 1947 until 1951, the northeastern portion of IR05 was most likely used for [open storage of munitions^{\(7\)}](#). By 1953, this area was established as an inert materials storage area used to store empty cartridge cases, ammunition containers, and miscellaneous ordnance-related material. The southeastern portion of IR05 was established as an [ordnance burning, detonation, and disposal area^{\(8\)}](#). Burning and detonation facilities included [smokeless powder burn pads, high explosives burn pads, detonation pits, primer/tracer burning ovens, and pyrotechnic burn pits^{\(9\)}](#). There are currently 0.65 acres of non-tidal wetlands in the northwestern portion and 15.6 acres of tidal wetlands in the southern portion of IR05. There are no buildings at IR05.

MEC items recovered from IR05 most likely originated from [intentional disposal^{\(10\)}](#), where damaged or surplus munitions items were buried in the ground. A less common deposition mode, relating to the incidental loss of munitions during handling, storage, and transportation activities, was also believed to be responsible for some of the recovered MEC items at IR05. No radiological items have been found at IR05.

2.1.2 Dredge Pond 7S

The 24-acre DP7S is adjacent to the western boundary of IR05 (Figure 2). Beginning in the early 1940s, DP7, which at the time included the area of the present day DP7S, was used for the deposition of dredge sediments originating from the Carquinez Strait and lower Mare Island Strait berth and pier areas. A berm was built to divide the large area of DP7 into two smaller ponds in the 1970s after which DP7S was no longer used for sediment deposition. With the exception of a suspected former dredge outfall in the northeastern corner, there has been no infrastructure in DP7S. There are currently 9.7 acres of non-tidal wetlands in the western portion of DP7S. There are no buildings at DP7S.

MEC items recovered from DP7S were [deposited with dredge spoils^{\(11\)}](#) at the suspected historic outfall location during Mare Island Strait dredge operations. No evidence was found during investigation of the DP7S eastern perimeter area to indicate that MEC items were present as a result of kickout, ejection of undetonated devices, from previous IR05 disposal operations. No radiological items have been found at DP7S.

2.1.3 Western Magazine Area

The 106-acre WMA is located in the southern portion of Mare Island just north of IR05/DP7S between a hilly upland area to the east and San Pablo Bay tidal wetlands to the west (Figure 2). The initial stage in the formation of the WMA was the deposition of sediments by natural accretion behind Dike 12, which had been constructed in 1908 to expand the boundaries of Mare Island. Additional fill material was then taken from upland borrow pits in the 1930s and placed on the accumulated sediments to create usable land and to support roadways, railroad lines, and buildings which were used as storage magazines. The upland portion of the WMA currently consists of approximately 64 acres and the estimated remaining 42 acres are tidal wetlands.

There are 21 buildings, including portions of buildings (Figure 2), that served as munitions storage magazines in the WMA; seven set into the cutouts in the hillside to the east (Buildings A147 through A152, and A170) and 14 supported by piles constructed on fill material in former wetlands to the west (Buildings A166, A169, A173 through A175, and A178 through A186). The buildings set into the hillsides were constructed in 1931, while those supported by piles on fill material to the west were built between 1938 and 1939. The buildings were all constructed similarly: concrete floors (without sumps or floor drains) and walls and corrugated steel ceilings. The buildings had a total combined capacity of more than 132,500 square feet of storage space. Many types of munitions and munitions constituents (MC) were stored in the buildings before being transported by rail or truck for loading aboard ships or shipment to another facility.

A system of roads and railroad lines that provided access to the magazines was also constructed in 1938 and 1939. The [railroad lines were removed^{\(12\)}](#) from the site in 1994. Available maps and aerial photographs indicate that the flat raised storage areas within the southeast wetland area were established between 1945 and 1949. Apparent outfall sites visible on [aerial photographs](#)

[from 1949](#)⁽¹³⁾ suggest that the two northern wetland areas were used to deposit dredge spoils during that timeframe, although no notation of that use is present on shipyard maps of the period.

The WMA served as the primary munitions storage location during active manufacturing between the 1930s and through 1975. With the exception of interim storage use for recovered MEC and MDAS items in Buildings A180 and A169, respectively, the WMA infrastructure is currently not in use.

The Horse Stables Area (HSA) located at the intersection of Weyraugh Road and Gridley Street within the WMA (Figure 2) was previously known as the Mare Island Saddle Club and the former circular horse corral. There were two additional WMA buildings associated with this area, Buildings A155 and A166A. Building A155 was a 3,840 square foot structure that was built in 1930. The building was initially known as the “S&A Maintenance Warehouse” and was likely used for general storage because “S&A” in the former MINS lexicon denoted the Supply and Accounts Department. The structure was later used as horse stables for the Mare Island Saddle Club. The exact date of its conversion to a horse stable is unknown, but it is assumed to be in the mid-1970s or later. The MINS Morale, Welfare, and Recreation Department was responsible for activities at Building A155 and near Building A166A that was referred to as the horse barn. Former Building A155 was demolished in 2008 during the [HSA Time-Critical Removal Action \(TCRA\)](#)⁽¹⁴⁾ to facilitate removal of abrasive blast material found on the earthen floor of the structure.

An apparently intentional battery dumpsite encountered near Building A166 was excavated during the [WMA Unexploded Ordnance \(UXO\) Intrusive Investigation](#)⁽¹⁵⁾ along with 450 cubic yards of soil requiring removal to access the batteries. Although the discarded carbon zinc dry cell batteries were largely intact and still in their original packaging material and no suspicious soil or groundwater was encountered, sampling in and around the excavation areas was performed to identify potential metals contamination. Soil sample results from the bottom and just outside of the excavation area were comparable to ambient levels for metals on Mare Island. With regulatory concurrence the excavation was backfilled.

The most likely deposition mode for MEC at the WMA was [intentional disposal](#)⁽¹⁰⁾, where damaged or surplus munitions items were buried on land or were [deposited with dredge](#)

[spoils^{\(11\)}](#) at the historical outfall locations. A less common deposition mode was the incidental loss of munitions during handling, storage, and transportation activities. Because radiological items were only recovered from the historical outfall locations in the northern WMA, they were most likely [deposited with dredge spoils^{\(11\)}](#) at the outfalls.

2.2 PREVIOUS INVESTIGATIONS AND REMOVAL ACTIONS

Environmental conditions at the former MINS have been investigated in studies beginning in 1981. The primary focus of the initial studies involved identifying potentially contaminated areas, characterizing soil and groundwater conditions, and implementing environmental compliance programs. These studies were developed in conjunction with the FFSRA, with input from DTSC, EPA, and the Regional Water Board.

Table 2 summarizes previous investigation, studies, and removal actions conducted at the IR05, DP7S, and WMA sites.

Table 2 Previous Investigations and Removal Actions		
Previous Investigation/ Removal Action	Date	Investigation/Removal Action Activities
Initial Assessment Study (IAS)⁽¹⁶⁾	1982	The IAS was performed to identify sites where hazardous materials were stored, transferred, processed, and disposed at Mare Island. The IAS identified Installation Restoration Site 05 (IR05) as a potential munitions area of concern based on its past use as a munitions disposal site.
Verification Study Report⁽¹⁷⁾	1987	The IR05 verification study consisted of collecting surface water samples, surface soil samples, sludge samples, drilling five monitoring wells, collecting groundwater samples from the wells, and performing chemical analyses on the samples. For IR05, recommendations included removing the residue in the storm drains, installing two to three additional groundwater monitoring wells, sampling the proposed and existing monitoring wells quarterly for one year, and sampling surface water at the site.
Sampling, Cleaning, and Inspection Plan for Storm Drains within the Concord Annex⁽¹⁸⁾	1988	As recommended in the Verification Study Report⁽¹⁷⁾ , an assessment and cleanup of the storm water pipelines at IR05 was conducted. The report recommended no further cleanup of the storm water pipeline.

Table 2
Previous Investigations and Removal Actions

Previous Investigation/ Removal Action	Date	Investigation/Removal Action Activities
<u>Site Characterization Study⁽¹⁹⁾</u>	1990-1992	<p>From 1990 to 1992, a site characterization study, referred to as Phase I of the Remedial Investigation (RI), was performed at 19 of the 24 sites listed in the Installation Restoration Program, including IR05. At IR05, the Phase I RI consisted of drilling soil borings, collecting soil samples, converting soil borings to monitoring wells, collecting groundwater samples, performing chemical analyses on the samples collected, performing slug tests on monitoring wells, conducting a subsurface geophysical survey to delineate the round pit, and creating a topographic map to define surface drainage patterns. The magnetic field contours of the limited geophysical survey near the round pit indicated the presence of a large buried mass.</p> <p>The sampling investigation at IR05 focused on the “round pit area”, the “detonating pit” and the “detonating ovens”. Recommendations from this investigation included further evaluation of antimony, arsenic, and beryllium concentrations in soil and groundwater; collection of additional arsenic and lead data around the former detonating ovens, the round pit, up-gradient from the round pit; and conducting a baseline risk assessment to evaluate the potential risks to human receptors exposed to chemicals in soil.</p>
<u>Munitions Emergency Response Actions⁽²⁰⁾</u>	1990-1994	A series of emergency response actions were completed by the Navy Explosive Ordnance Disposal Mobile Unit Nine between 1990 and 1994 to remove MEC at two locations within the Western Magazine Area (WMA).
<u>Basewide Quarterly Groundwater Sampling⁽²¹⁾</u>	1992-1994	Groundwater sampling was conducted at IR05 during six quarters between December 1992 and May 1994. Four monitoring wells were sampled in December 1992 and April 1993; eight monitoring wells were sampled in August and November 1993; and four monitoring wells were sampled in February and May 1994.
<u>RI Phase II Geophysical Survey⁽²²⁾</u>	1993-1994	Subsurface geophysical surveys of IR05 were completed in 1993 and 1994. An initial geophysical survey in July 1993 recorded magnetometer data at 50-foot intervals. A second survey in April 1994 was conducted with using a magnetometer with continuous data recording along lines spaced 50 feet apart.
<u>RI Phase II Geoprobe, Hand-Auger, and Sediment Sampling⁽²³⁾</u>	1993-1996	Soil/sediment and groundwater samples were collected from IR05 to assess underlying stratigraphy and evaluate the extent of contamination. Geoprobe® borings were advanced to collect soil and grab ground water samples. Hand-augered borings were completed near the storm water pipeline, at the bermed pond and detonation pit to assess the contaminant concentrations. A sediment sample was collected from within the drainage ditch on the north boundary of IR05 to assess whether the storm water pipeline was acting as a conduit for contaminant migration.

**Table 2
Previous Investigations and Removal Actions**

Previous Investigation/ Removal Action	Date	Investigation/Removal Action Activities
<u>RI Phase II Cone Penetrometer Test Survey₍₂₄₎</u>	1994	A cone penetrometer test survey was conducted at IR05 to assess lithology and identify the optimum locations and screened intervals for additional wells to be installed at the site.
<u>IR05 Surface Sweep₍₂₅₎</u>	1994	A preliminary visual surface sweep of IR05 was conducted in January 1994. Numerous metallic munitions items (live and inert) and grains of smokeless gunpowder were located. The search therefore confirmed the presence of surface and near surface MEC. There were no environmental samples collected for chemical analysis during this study.
<u>RI Phase II Tidal Influence Study₍₂₆₎</u>	1995	Tidal influence at IR05 was monitored in six wells and a nearby location in the Carquinez Strait from June 23 to 27, 1995. The study concluded that most of the wells at IR05 are not significantly influenced by tidal actions. There were no environmental samples collected for chemical analysis during this study.
<u>Ordnance Preliminary Assessment (PA)₍₂₇₎</u>	1995	Ordnance PA activities included interviews, file and document reviews, and a visual inspection of the filled areas to verify fill materials. IR05 was not addressed by the PA because it had already been identified as an area of concern based on its former use as a munitions disposal site. There were no environmental samples collected for chemical analysis during this study.
<u>UXO Site Investigation (SI)₍₂₈₎</u>	1995-1997	During the UXO SI geophysical survey, magnetometer surveys were completed in the northwest corner of Dredge Pond 7S (DP7S) believed to represent a former outfall site, and all accessible former storage and handling areas of the WMA. Numerous magnetic anomalies, representing potential MEC, were identified in the survey areas. There were no environmental samples collected for chemical analysis during this study.
<u>IR05 UXO Time-Critical Removal Action (TCRA)₍₂₉₎</u>	1995-1997	<p>Between 1995 and 1997, the IR05 UXO TCRA was conducted to remove ordnance items that posed a potential hazard to public safety and associated contaminated soil. Over 35 acres in IR05 and DP7S were cleared of MEC items using a process that included a visual search of 100 percent of the soil surface, magnetometer search, metal detector search, munitions clearance, removal confirmation, and site restoration. All detected magnetometer and metal detector anomalies were investigated.</p> <p>More than 457,000 pounds of scrap metal (including inert ordnance items such as melted ordnance debris, minor and medium caliber brass cartridge cases) were either disposed or recycled offsite. A total of 490 cubic yards of contaminated soil were also removed.</p>

**Table 2
Previous Investigations and Removal Actions**

Previous Investigation/ Removal Action	Date	Investigation/Removal Action Activities
<u>WMA UXO Intrusive Investigation</u> ₍₁₅₎	1997-1998	Between September 1997 and June 1998, the WMA UXO Intrusive investigation was performed to investigate the anomaly locations identified during the UXO SI. A total of 151 MEC items were recovered from the eastern historic dredge outfall location and 22 MEC items were recovered from the area between Buildings A148 and A169. More than 19,877 inert munitions items, 130,000 pounds of scrap metal, and 30,000 pounds of discarded carbon zinc dry cell batteries were also recovered during the UXO Intrusive Investigation. Approximately 450 cubic yards of soil was excavated from the former battery dumpsite followed by confirmation soil sampling.
<u>Onshore Ecological Risk Assessment (ERA)</u> ₍₃₀₎	1997-1999	The Basewide ERA was conducted to assess if chemical contamination resulting from DON practices in the area posed a significant risk to the environment and to provide preliminary recommendations for risk management or further investigation if necessary. Soil/sediment samples were collected for chemical analyses from the IR05, DP7S, and WMA wetlands and berms. Hazard quotients calculated using the high toxicity reference value were not greater than 1.0 for any receptor modeled at IR05, indicating no significant or immediate risk. Hazard quotients calculated using the low toxicity reference value for the average doses were greater than 1.0 for arsenic, cadmium, copper, lead, manganese, mercury, and zinc, indicating that these chemicals pose potential risk to the Salt Marsh Harvest Mouse in the wetland areas of IR05.
<u>Draft RI Report, Investigation Area (IA)</u> ₍₃₁₎	1997-1999	The Draft RI Report for IA-I included the IR05/DP7S and WMA sites. The human health risk calculations for IR05, which included DP7S, were within the risk management range of 10 ⁻⁶ to 10 ⁻⁴ . Based on conclusions of the ecological risk assessment, an FS was warranted to address lead and zinc for ecological concerns in the upland area. The screening-level risk evaluation for the WMA indicated an FS is not warranted because contaminant concentrations generally did not exceed the comparison criteria for human health risk in the upland or wetland areas. The ecological risk assessment concluded that there was limited or no risk to ecological receptors in the wetland areas.

**Table 2
Previous Investigations and Removal Actions**

Previous Investigation/ Removal Action	Date	Investigation/Removal Action Activities
<u>Underground Storage Tank (UST) Compliance Program⁽³²⁾</u>	1997 and 2003	<p>UST investigations were conducted at two sites at IR05. After an extensive field search using magnetic detection instruments, only UST IR05-2 was located. UST IR05-2 was removed on October 2, 1997 along with approximately 60 cubic yards of contaminated soil. In September 2003, a temporary monitoring well was installed as close to the former UST as possible. Results of groundwater sampling indicated that there was no residual contamination from the UST. Concurrence for no further action for UST IR05-2 was received from the Regional Water Board on December 8, 2010.</p> <p>Five potential USTs were identified at the WMA, UST A202, UST A229-1, UST A229-2, UST A230, and UST A231. UST A202 (septic tank and fuel oil tank) was removed in September 1997 as part of the <u>WMA UXO Intrusive Investigation⁽¹⁵⁾</u>. Concurrence for no further action for UST A202 was received from the Regional Water Board on April 28, 2006. Suspected USTs A229-1 and A229-2 were investigated based on the discovery of disturbed soil indicative of a former excavation. Searches in 2003 confirmed the area contained only two large steel plates, one overlying the other. A trench was dug to a depth of six feet to ensure USTs were not below the steel plates. Based on soil and groundwater sample results from the suspected UST locations, they were recommended for no further action. Concurrence for no further action regarding suspected USTs A229-1 and A229-2 was received from the Regional Water Board on April 28, 2006. USTs A230 and A231 were removed in July 1990. Closure of UST A231 was documented on November 5, 1996. UST A230 was recommended for no further action following completion of a soil boring. Concurrence for no further action for USTs A230 and A231 was received from the Regional Water Board on May 27, 2010.</p>
<u>Basewide Quarterly Groundwater Sampling⁽³³⁾</u>	1999-2000	<p>As part of the base-wide quarterly groundwater sampling program, three additional monitoring wells were installed at IR05. Fourteen soil samples were collected from the borings prior to well installation. Eight previously installed monitoring wells were sampled in February and June 1999 and the three additional monitoring wells were sampled in April and June 1999, October 1999, and February 2000.</p>

**Table 2
Previous Investigations and Removal Actions**

Previous Investigation/ Removal Action	Date	Investigation/Removal Action Activities
<u>Dredge Spoils Ponds UXO Intrusive Investigation</u> ₍₃₄₎	1998-2001	Anomalies identified during the <u>UXO SI</u> ₍₂₈₎ were investigated and MEC items were removed. MEC items recovered from DP7S showed no evidence of having been fired and all were classified as discarded military munitions (DMM). No indication of additional munitions material, other than at the suspected former outfall location, was noted during the investigation. Radiological screening was performed during the intrusive investigation because radium buttons had been previously identified at several other dredge outfall locations. There were no radiological items encountered at the DP7S outfall. There were no environmental samples collected for chemical analysis during this study.
<u>Dredge Spoils Ponds Radiological Investigation</u> ₍₃₅₎	2000-2001	A high-density radiological survey was performed on the entire ground surface within 300 feet of each of 16 Mare Island dredge outfall locations. No radiological anomalies were found at the suspected DP7S outfall during the survey. Because the historic dredge outfall locations on the northern end of the WMA had not been discovered before this investigation, they were not included in these radiological surveys. Radiological surveys at the historical dredge outfall locations in the WMA were performed during the <u>munitions response action (MRA)</u> ₍₃₆₎ .
<u>Draft RI Report IA-H1, IR05, and WMA</u> ₍₃₇₎	2002	<p>The Draft RI Report for IA-H1, IR05 (including DP7S), and the WMA concluded that soil at the IR05 and WMA sites pose an unacceptable risk to humans and ecological receptors based on exceedances of soil and sediment screening levels and poses a potential threat to groundwater from soil leaching. At IR05, the human health risk drivers included arsenic in soil; and 1,2-dichloroethene, trichloroethene, and vinyl chloride in groundwater. The ecological risk drivers at IR05 included lead and zinc. At the WMA, the human health risk driver was arsenic in surface water. There were no ecological risk drivers at the WMA.</p> <p>The IR05, DP7S, and WMA sites <u>RI Report</u>₍₄₃₎ was finalized in 2013, following several removal actions to address soil contamination identified in the IR05 and WMA areas. These removal actions are presented in the following rows.</p>
<u>Site Inspection of the Horse Stables Area (HSA)</u> ₍₃₈₎	2003-2004	A site inspection of the HSA was conducted to characterize concentrations of chemicals in the soil and groundwater that were impacted by the presence of abrasive blast material (ABM). No evidence exists to suggest that paint-blasting activities occurred in the HSA. It was assumed that ABM was brought to the HSA for use as fill material as has occurred in other areas of Mare Island. A total of 342 cubic yards of ABM-impacted soil was removed from the HSA. Soil samples were collected to assess soil contamination. A removal action was recommended and completed as part of the <u>HSA TCRA</u> ₍₁₄₎ .

Table 2
Previous Investigations and Removal Actions

Previous Investigation/ Removal Action	Date	Investigation/Removal Action Activities
<u>Data Gaps Sampling</u> ₍₃₉₎	2007-2008	Soil/sediment samples were collected from the IR05, DP7S, and WMA sites to further characterize and delineate soil and groundwater contamination. One round of groundwater monitoring sampling was conducted. Surface water samples were also collected at IR05 and from the WMA tidal wetlands.
<u>MRA Digital Geophysical Mapping (DGM) and “Mag and Flag” Anomaly Excavations</u> ₍₄₀₎	2006-2010	<p>DGM surveys of all accessible areas within the IR05, DP7S, and WMA sites and below 14 buildings at the WMA with accessible crawl spaces were completed in 2006 utilizing updated DGM equipment with the latest technology. A minimum 20 percent of the selected DGM anomalies in all surveyed grids were excavated. However, in areas where MEC items or munitions debris were recovered, a 100 percent anomaly excavation was performed to establish the lateral extent of the deposit and to ensure the removal of all MEC items within the step-out area. “Mag and Flag” surveys were performed in areas not conducive to DGM surveys. Each discrete anomaly location in the uplands was excavated to a minimum depth of 4 feet below the ground surface and a lateral radius of 2 feet. Each discrete anomaly location in the wetland areas was excavated to a minimum depth of 2 feet below the ground surface and a lateral radius of 2 feet.</p> <p>A total of 323 MEC items and 3,180 munitions materials documented as safe (MDAS) items were recovered from IR05 and DP7S during anomaly excavations. A total of 769 MEC, 4,960 MDAS, and 34 radiological items were recovered from the WMA. Screening for radiological items was performed at all anomaly locations excavated, which included over 16,000 locations. The only radiological items were recovered from the two historic dredge outfall locations at the north end of the WMA. No MEC, MDAS, or radiological items were encountered below the buildings.</p>
<u>HSA TCRA</u> ₍₁₄₎	2007-2010	During the HSA TCRA activities approximately 4,430 cubic yards of ABM-impacted soil as well as 820 cubic yards of building materials, from the demolition of Building A155, were removed and transported to the IA-H1 Containment Area for use as subgrade material under the engineered landfill cap. Consistent with prior metallic anomaly intrusive investigation results in the area, no MEC items or munitions debris were encountered during the HSA TCRA.

**Table 2
Previous Investigations and Removal Actions**

Previous Investigation/ Removal Action	Date	Investigation/Removal Action Activities
IR05 TCRA⁽⁴¹⁾	2007-2011	<p>During the IR05 TCRA activities approximately 33,660 cubic yards of soil were removed from the lowland, upland, and wetland excavation areas. An additional 220 cubic yards were removed from three excavation areas centered on pothole locations in 2011. Excavation areas were based on sample locations that exceeded screening criteria evaluated during the Draft RI Report IA-H1, IR05, and WMA⁽³⁷⁾ and Data Gaps Sampling⁽³⁹⁾.</p> <p>Soil excavated between 2007 and 2009 was transported to the IA-H1 Containment Area on Mare Island for use as subgrade material under the engineered landfill cap. Soil excavated in 2011 was disposed at the Hay Road Landfill in Vacaville, California. In accordance with the 2009 Biological Opinion (BO) obtained from United States Fish and Wildlife Service (USFWS) for this action, the southeastern portion of the site was backfilled to an elevation of 5.5 to 6 feet above mean sea level to establish a muted tidal environment, and pickleweed cuttings were distributed to encourage establishment of wetland habitat. As noted in the 2015 Annual Monitoring Report⁽⁴²⁾, the area has been monitored for 5 years and the functions and values of the restored wetland area exceed the temporal loss of the habitat originally impacted. Additionally, in accordance with the BO, and to compensate for habitat temporarily affected at IR05, the DON set aside 1.04 acres of pickleweed-dominated habitat under a conservation easement or similar instrument in a non-reversionary area of Mare Island.</p>

Table 2
Previous Investigations and Removal Actions

Previous Investigation/ Removal Action	Date	Investigation/Removal Action Activities
RI Report₍₄₃₎	2013	<p>The IR05, DP7S, and WMA RI Report concluded that there were no unacceptable human health risks from chemicals of potential concern, including munitions constituents, or significant or immediate incremental site-related risk identified for the ecological receptors from chemicals of potential ecological concern, including munitions constituents, in soil/sediment and surface water. The probability of humans or ecological receptors coming into contact with MEC items at the IR05, DP7S, and WMA sites was described as extremely low following the 2006-2010 MRA₍₃₆₎ which included excavation of over 16,200 anomaly locations as well as a 100 percent visual inspection of all accessible areas. There were no radiological hazards encountered at the IR05 or DP7S sites and although there is a remote possibility that isolated radiological items may still exist below the surface at the historic WMA outfall locations, given the extensive radiological screening performed at the outfall locations and during the MRA geophysical anomaly excavations, no unacceptable radiological hazards are believed to remain in the subsurface of the WMA.</p> <p>The RI recommended that the Feasibility Study (FS)₍₃₎ evaluate alternatives to address the risk to potentially exposed human populations from MEC items at the IR05, DP7S, and WMA sites. The RI also recommended that the remote possibility of radiological hazards at the WMA historic outfalls be further evaluated in the FS.</p>
FS₍₃₎	2014	<p>Remedial action objectives (RAOs) for soil/sediment and groundwater were developed for the IR05, DP7S, and WMA sites in the FS. The RAO for soil/sediment is to control direct exposure and protect future human receptors from the low residual risk posed by potential buried MEC. Based on the extensive radiological screening performed at the WMA historical outfall locations and during the MRA₍₃₆₎ anomaly excavations, no unacceptable radiological hazards are believed to remain in the subsurface of the WMA. Therefore RAOs were not developed to address potential buried radiological hazards. The RAO for groundwater was to prevent any unauthorized use. In lieu of a remedial action, a restriction to prohibit the installation of groundwater wells for any purpose will be included in appropriate real property transfer documents. To meet the soil/sediment RAO, two remedial alternatives were evaluated in the FS; no action, Alternative 1, and land-use controls (LUCs), Alternative 2.</p>
PP/Draft RAP₍₂₎	2015	<p>The PP/Draft RAP recommended Alternative 2, LUCs consisting of engineering and institutional controls to meet the soil/sediment RAO.</p>

2.2.1 Resource Conservation and Recovery Act Solid Waste Management Units

A number of solid waste management units (SWMUs) were identified at the IR05, DP7S, and WMA sites during the [Basewide Environmental Baseline Survey/Community Environmental Response Facilitation Act Report^{\(44\)}](#), addressed in the [Preliminary Assessment/Site Inspection Final Summary Report^{\(45\)}](#), and listed in the [Hazardous Waste Facility Permit^{\(46\)}](#). Basewide SWMUs including the Storm Sewer System (SWMU 93) and the Sanitary Sewer System (SWMU 106) are not located at the IR05, DP7S, and WMA sites. The Concord Annex Storm Sewers (SWMU 81) are located in IR05. There are several small storm drain segments at the WMA to direct storm water runoff from the upland areas into the wetland areas; however, these storm drain segments are not connected to the Mare Island Storm Sewer System (SWMU 93). The storm sewer segments at the WMA were not associated with any waste activities. There are no storm sewers located in DP7S and there are no sanitary sewer lines at any of the sites. The SWMUs identified at the IR05, DP7S and WMA sites are described as follows:

- SWMU 79—Concord Annex Circle Pit (also referred to as the “round pit disposal area”)
- SWMU 80—Concord Annex Ordnance Disposal Area
- SWMU 81—Concord Annex Storm Sewers
- SWMU 101—Concord Annex Ordnance and Addition Sites (IR05)
- SWMU 125—South End of Island

Unlike SWMUs 79, 80, and 81 which are specific locations at IR05, SWMUs 101 and 125 may include larger areas. As stated in the [Hazardous Waste Facility Permit^{\(46\)}](#), SWMU 101 is described as the Concord Annex Ordnance and Addition Sites; however is noted as being located in IR05. Based on the location description in the Permit, the DON concludes that SWMU 101 is fully encompassed within the boundaries of IR05. SWMU 125 is described as the south end of island. SWMU 125 therefore includes the IR05, DP7S, and WMA sites as well as other ordnance areas on the southern end of Mare Island. SWMU 125 was identified to determine if potential contamination was associated with ordnance storage and disposal activities on the south end of Mare Island. SWMUs 79, 80, 81, 101, and 125 were incorporated into the overall IR Program and included into the IR05, DP7S, and WMA sites to be remediated under the CERCLA process. The [Federal Facility Site Remediation Agreement^{\(47\)}](#) listed the IR05, DP7S, and WMA sites as ongoing DON environmental responsibility. As documented in the [Remedial Investigation](#)

[\(RI\) Report^{\(43\)}](#), all historical use areas in the IR05, DP7S, and WMA sites, including SWMUs 79, 80, 81, 101, and 125 have been adequately addressed under the CERCLA program. Therefore, SWMUs 79, 80, 81, and 101 are closed in their entirety and SWMU 125 is closed at the IR05, DP7S, and WMA sites. Once DTSC has approved the Final LUC RD, DTSC will issue a Resource Conservation and Recovery Act (RCRA) Corrective Action Complete Determination closing SWMUs 79, 80, 81, 101 and the portion of SWMUs 125 within the IR05, DP7S, and WMA sites and remove the sites from the facility RCRA permit boundaries.

2.2.2 Exception to Sources of Drinking Water Policy

State Water Resources Control Board Resolution 88-63 (Sources of Drinking Water Policy) establishes that, with a few exceptions, all groundwater is considered suitable or potentially suitable for municipal or domestic supply. In 2011, the [Regional Water Board^{\(48\)}](#) concurred with the DON's conclusion that the shallow groundwater (within the shallow water-bearing zone [SWBZ] and intermediate water-bearing zone (IWBZ) beneath the IR05, DP7S and WMA sites, at a depth of approximately 1 to 40 feet bgs, meets an exception to the Sources of Drinking Water Policy. Based on this concurrence letter, the DON is not required to clean up COCs in shallow groundwater to levels below the maximum contaminant levels. In addition, while not addressing an RAO, the DON will include a restriction in appropriate real property transfer documents that will prohibit the installation of groundwater production wells for any purpose.

2.3 SITE CHARACTERISTICS

2.3.1 Physical and Surface Features

IR05 occupies approximately 35 acres and DP7S occupies approximately 24 acres, both located along the southern shore of Mare Island (Figure 2). The southern portion of the site is currently a tidal wetland at elevations of 5.5 to 6 feet above mean sea level with an upland access road running parallel to Dike 12. Except for the Non-Tidal Wetland Area adjacent to the western IR05 boundary, the remaining northern portion of IR05 is uplands is relatively flat at elevations of 10 to 15 feet above mean sea level. A formerly used dredge pipeline runs along the northern border and crosses the northernmost portion of IR05, before ending at the outfall location in DP7. There are no known dredge spoils outfall locations associated with IR05. There are

currently eight groundwater monitoring wells at IR05. DP7S and adjacent DP7 were used as an active dredge spoils disposal area through the 1970s, when a berm was built to divide the large area into two smaller ponds after which DP7S was no longer used for sediment deposition and it reverted to native habitat. The western portion of DP7S is a Non-Tidal Wetland Area. A suspected former dredge outfall was located on the northeastern boundary of DP7S. No buildings are currently present within IR05 or DP7S.

The WMA is approximately 106 acres located on the southern portion of Mare Island between a hilly upland area to the east and San Pablo Bay tidal wetlands to the west (Figure 2). There are four tidal wetland areas each surrounded by upland areas containing access roads for the 21 storage magazines. There are two historical outfall locations previously located in the northern portion of the site. There are several small storm drain segments at the WMA to direct storm water runoff from the upland areas into the wetland areas.

2.3.2 Geology and Hydrogeology

The geology of Mare Island can be characterized as an eroded bedrock surface that is exposed in the southern part of the peninsula, overlain by a blanket of unconsolidated Quaternary sediments and artificial fill material at most other locations. The bedrock surface is irregular and deeply incised in some areas, and up to 186 feet of unconsolidated materials overlie the bedrock at some locations on the peninsula. The eroded bedrock forms a subsurface ridge, which appears to coincide with the original extent of Mare Island in 1869 and extends northwest along the axis of the Mare Island peninsula. Three principal geologic units have been identified at Mare Island, and the two uppermost units have been identified based on borings drilled at the site. From top to bottom stratigraphically, these are (1) artificial fill material, (2) unconsolidated natural deposits, and (3) bedrock. The artificial fill material is a heterogeneous unit consisting of clay, silt, sand, gravel, and debris in varying proportions. The unconsolidated natural deposits consist primarily of two thick sequences of silty clays commonly referred to as “Young Bay Mud” and “Old Bay Mud,” respectively, as well as intermediate and lower sand units of the San Antonio Formation. The bedrock consists of sandstone, siltstone, and shale.

The IR05, DP7S, and WMA sites were initially created by natural deposition of sediments north of Dike 12. Fill from hillside excavations and dredge spoils completed the land mass at IR05.

DP7S originally part of a larger DP7 was formed by dredge spoils. Additional fill material from upland borrow pits was used to completed the upland areas at the WMA. Due to the extensive land reclamation activities at MINS, a highly heterogeneous surficial layer of fill material is ubiquitous at those locations outside of the original footprint of the island including the IR05, DP7S, and WMA sites.

Mare Island is located where Napa River meets the Carquinez Strait, which is the confluence of the Sacramento and San Joaquin rivers. The Sacramento and San Joaquin rivers carry runoff from about 13,500 square miles of land, extending from headwaters in the Sierra Nevada, Klamath Mountains, and the Cascade Range to the Golden Gate at the western edge of San Francisco Bay. The volume of fresh water carried by these rivers that reaches the Sacramento River Delta depends on the amount of incident precipitation and can vary from year to year. With heavy winter and spring storms, the waters of the Delta may become completely fresh as far west as eastern San Pablo Bay. During summer and fall periods of low freshwater discharge, horizontal salinity gradients develop and stabilize over large areas of the Delta.

The Napa River drains a 230-square-mile area to the north of the Mare Island peninsula. The river typically becomes brackish because of tidal influence where it becomes Mare Island Strait, northeast of Mare Island. With seasonal variability in salinity, flow, and sediment deposition, the aquatic environment surrounding Mare Island is highly dynamic.

Typically, three water-bearing zones have been identified at Mare Island. These include the SWBZ, IWBZ and deep water-bearing zone (DWBZ). The SWBZ includes both artificial fill and naturally deposited materials that intersect the water table. The IWBZ and DWBZ correlate to the intermediate and lower sands, respectively, and are separated by a silty clay layer.

The SWBZ is the most shallow unit in which groundwater is encountered at Mare Island. The upper boundary of the SWBZ is the water table, indicating that this zone is unconfined. This zone is a heterogeneous unit consisting of saturated artificial fill material and the upper portion of the Young Bay Mud. The lower portion of the Young Bay Mud is apparently a zone of lower hydraulic conductivity separating the SWBZ from the IWBZ, if present. The transition between the bottom of the SWBZ and the top of the zone of lower hydraulic conductivity within

the Young Bay Mud is currently defined by moisture content and is likely gradational and variable throughout Mare Island.

A hydraulic connection between IR05 and the WMA within the SWBZ is generally assumed; however, the only significant parameter indicating a potential influence is TDS. [Tidal influence^{\(49\)}](#) studies have characterized impacts to groundwater elevations and flow patterns to be minimal. The SWBZ includes both coarse-grained fill materials and fine-grained fill and native materials. All IR05 groundwater monitoring wells are screened in the SWBZ. Groundwater within the WMA has not been directly measured; however, based on similar geologic conditions it would be initially assumed that groundwater flows from the upland area located to the east to the low lying tidal mudflats to the west and eventually the San Pablo Bay. Groundwater elevations ranging from approximately 4 to 6 feet below ground surface (bgs) were recorded in several soil borings. These elevations (located on the upland elevated berms surrounding the wetlands) correspond approximately to the surface elevations of the four wetlands located within depressions of the WMA; therefore, it is assumed that a connection exists between the surficial water of the four wetlands and the SWBZ.

The IWBZ is comprised of Late Pleistocene alluvium. The Late Pleistocene alluvium is not present in IR05 and DP7S, and presumably the southern end of the WMA; therefore, the IWBZ is not considered present in these areas. This conclusion is also based in part on information collected from borings advanced to the north and northwest of the WMA indicating that the Late Pleistocene Alluvium is absent or pinching out toward the south and west. The IWBZ is present in the lower Young Bay Mud and as confined lenses at the northern boundary of the WMA.

The DWBZ consists of Pleistocene alluvium deposits. The lower sand is a tan, fine to medium-grained silty sand unit, which is estimated at depths of 55 feet bgs at IR05. The DWBZ has not been directly measured within IR05; information for the DWBZ within IR05 has been inferred from cone penetrometer test CPT logs indicating that the DWBZ is present at approximately 50 to 55 feet bgs. The DWBZ consists of an uppermost sandy portion and a deeper portion with sand lenses within a silty clay unit. The potential for interconnection of the various sand lenses or units is possible; however, it is unknown whether a direct hydraulic connection exists.

The DWBZ in the vicinity of IR05 flows consistently in a west to northwesterly direction in areas surrounding IR05. Historic Mare Island static DWBZ groundwater elevations indicate that groundwater in this zone occurs under confined or semi-confined conditions. Additionally, the DWBZ dips away from the original island margin, which leads to increasing depth of burial by less-permeable silty clays farther from the original island. The primary sources of recharge for this unit are leakage or interconnection with the SWBZ and infiltration at the original island margin. However, this migration is expected to be limited because of the low permeability of the silty clay layers separating these zones.

2.3.3 Sensitive Ecosystems

There are approximately 15.6 acres and 42 acres of tidal wetland areas at the IR05 and WMA sites, respectively. Additionally, there are 0.6 acres of Non-Tidal Wetland Areas at IR05 and 9.7 acres of Non-Tidal Wetland Areas at DP7S. The wetland areas on Mare Island provide habitat for the Salt Marsh Harvest Mouse (*Reithrodontomys raviventris*). The Ridgeway's Rail (*Rallus obsoletus*) is much less likely to be encountered at the sites based on marginal habitat for these species. The Salt Marsh Harvest Mouse and the Ridgeway's Rail are both federal- and state-listed endangered species, as well as state fully protected.

2.3.4 Nature and Extent of Contamination

The following section summarizes the nature and extent of contamination at the IR05, DP7S, and WMA sites following completion of all remedial actions.

2.3.4.1 Summary of Soil Concentrations

Installation Restoration Site 05 and Dredge Pond 7S

The chemicals exceeding the RI screening criteria in the IR05 and DP7S soil/sediment were as follows:

- Upland Area surface soil (0 to 2 feet bgs)—Aluminum, antimony, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, silver, and zinc, and organochlorine pesticides (4,4'-dichlorodiphenyldichloroethene [DDE] and 4,4'-dichlorodiphenyl-trichloroethane [DDT])

- Upland Area subsurface soil (greater than 2 feet bgs)—Copper, zinc, and a semivolatile organic compound (SVOC) (benzo[a]pyrene)
- Non-Tidal Wetland Area surface soil/sediment (0 to 2 feet bgs)—Silver, zinc; pesticides (4,4'-dichlorodiphenyldichloroethane [DDD], 4,4'-DDT, dieldrin, gamma-chlordane, and hexachlorobenzene); and a polychlorinated biphenyl (PCB) (Aroclor-1260)
- Non-Tidal Wetland Area subsurface soil (greater than 2 feet bgs)—No chemicals were detected at concentrations exceeding the RI screening criteria
- Tidal Wetland Area surface soil/sediment (0 to 2 feet bgs)—Chromium, copper, lead, nickel, selenium, silver, zinc; pesticides (4,4'-DDD; 4,4'-DDE; and 4,4'-DDT); and PCBs (Aroclor-1254 and Aroclor-1260)
- Tidal Wetland Area subsurface soil (greater than 2 feet bgs)—Arsenic, copper, vanadium, zinc; SVOCs (benzo[a]pyrene and phenol); total petroleum hydrocarbons (as diesel); and a volatile organic compound (VOC) (vinyl chloride)

Although several inorganic constituents did not exceed the RI screening criteria, they were evaluated during the risk assessment process. These inorganic constituents are either naturally occurring or are a result of land development activities, such as the large areas of man-made land at Mare Island, which represent conditions that existed before potential impacts from site-specific activities. Evaluation of the ambient/background conditions is a valuable addition to risk management strategies. Several organic constituents detected below RI screening criteria were also evaluated during the risk assessment process because of cumulative effects of these chemicals. Additional chemicals evaluated during the risk assessment process for IR05 and DP7S were as follows:

- Upland Area surface soil (0 to 2 feet bgs)—Arsenic, barium, 4,4'-DDD, and dioxin
- Upland Area subsurface soil (greater than 2 feet bgs)—Arsenic, lead, manganese, and nickel
- Non-Tidal Wetland Area surface soil/sediment (0 to 2 feet bgs)—Arsenic, barium, molybdenum, and dioxin
- Non-Tidal Wetland Area subsurface soil (greater than 2 feet bgs)—Aluminum, arsenic, and manganese

- Tidal Wetland Area surface soil/sediment (0 to 2 feet bgs)—Arsenic, barium, manganese, molybdenum, tin, and dioxin
- Tidal Wetland Area subsurface soil (greater than 2 feet bgs)—Aluminum and manganese

Western Magazine Area

The chemicals exceeding the RI screening criteria in the WMA surface soil/sediment were as follows:

- Upland Area surface soil (0 to 2 feet bgs)—Aluminum, barium, chromium, cobalt, copper, iron, lead, manganese, nickel, selenium, vanadium, zinc, and pesticides (4,4'-DDD, 4,4'-DDE, 4,4'-DDT, dieldrin, endrin, endrin aldehyde, and endrin ketone)
- Upland Area subsurface soil (greater than 2 feet bgs)—Nickel
- Tidal Wetland Area surface soil/sediment (0 to 2 feet bgs)—Arsenic, lead, nickel, selenium, silver, zinc; pesticides (4,4'-DDD, 4,4'-DDE, 4,4'-DDT, alpha-chlordane, dieldrin, endosulfan I, and gamma-chlordane); PCBs (Aroclor-1260); and SVOCs (anthracene and fluoranthene)
- Tidal Wetland Area subsurface soil (greater than 2 feet bgs)—No chemicals were detected at concentrations exceeding the RI screening criteria

Like the IR05 and DP7S sites, several inorganic constituents did not exceed the RI screening criteria; however, they were evaluated during the risk assessment process for the WMA. These inorganic constituents are either naturally occurring or are a result of land development activities, such as the large areas of man-made land at Mare Island, which represent conditions that existed before potential impacts from site-specific activities. Evaluation of the ambient/background conditions is a valuable addition to risk management strategies. The additional chemicals evaluated during the risk assessment process for the WMA were as follows:

- Upland Area surface soil (0 to 2 feet bgs)—Arsenic, molybdenum, and tin
- Upland Area subsurface soil (greater than 2 feet bgs)—Arsenic, lead, manganese, and selenium
- Tidal Wetland Area surface soil/sediment (0 to 2 feet bgs)—Barium, manganese, and molybdenum

- Tidal Wetland Area subsurface soil (greater than 2 feet bgs)—Aluminum, arsenic, and manganese

2.3.4.2 Summary of Groundwater and Surface Water Concentrations

Installation Restoration Site 05 and Dredge Pond 7S

Groundwater samples were collected from the SWBZ at the IR05 and DP7S sites. The following chemicals were detected at concentrations exceeding the RI screening criteria in the SWBZ at IR05 and DP7S: arsenic, cadmium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, zinc, SVOCs (1,4-dichlorobenzene), and VOCs (1,4-dichlorobenzene, chlorobenzene, cis-1,2-dichloroethene, trichloroethene, and vinyl chloride). Manganese was also evaluated during the risk assessment process for the SWBZ. In the surface water only arsenic, copper, nickel, and thallium exceeded the RI screening criteria.

Western Magazine Area

There are no groundwater wells within the WMA. Groundwater samples from the nearby dredge pond wells were collected several times from 2003 to 2008 and used to evaluate groundwater quality in the vicinity of the WMA. The following chemicals were detected at concentrations exceeding the RI screening criteria in SWBZ wells located at the nearby DP7 (the groundwater monitoring wells are in the vicinity of WMA but not within the WMA boundaries): arsenic, barium, cadmium, cobalt, copper, and selenium and pesticides (alpha- and gamma-chlordane). Manganese was also evaluated during the risk assessment process for the SWBZ. In the surface water only arsenic, copper, and nickel exceeded the RI screening criteria.

2.4 CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

In accordance with the Defense Base Closure and Realignment Act of 1990, MINS operations were closed in April 1996. With the exception of interim storage use for recovered MEC and munitions materials documented as safe (MDAS) items in WMA Buildings A180 and A169, respectively, the IR05, DP7S, and WMA infrastructure is currently not in use. As specified in the [Mare Island Specific Plan^{\(5\)}](#), the planned reuse for the sites is open space. Domestic and municipal use of groundwater is not anticipated because all water on Mare Island is supplied through the municipality. State Water Resources Control Board Resolution 88-63 (Sources of

Drinking Water Policy) establishes that, with a few exceptions, all groundwater is considered suitable or potentially suitable for municipal or domestic supply. In 2011, the [Regional Water Board\(48\)](#) concurred with the DON's conclusion that the shallow groundwater (within the SWBZ and IWBZ) beneath the IR05, DP7S and WMA sites, at a depth of approximately 1 to 40 feet bgs, meets an exception to the Sources of Drinking Water Policy. Based on this concurrence letter, the DON was not required to cleanup COCs in the shallow groundwater to concentrations below the maximum contaminant levels. In addition, while not addressing an RAO, the DON will address concerns with unauthorized use of groundwater by including a restriction in appropriate real property transfer documents that will prohibit the installation of groundwater production wells for any purpose.

2.5 SUMMARY OF SITE RISKS

The conceptual site model presented in the [RI Report\(43\)](#) provides a framework for the risk assessment by identifying relevant receptors and potentially complete exposure pathways. The exposure medium and potential exposure pathways for human receptors were refined in the conceptual site model based on the risk assessment. The human health risk assessment (HHRA) and ecological risk assessment (ERA) are summarized in the following sections.

2.5.1 Summary of Human Health Risk Assessment

A baseline HHRA was prepared for the Upland, Non-Tidal, and Tidal Wetland Areas of the IR05 and DP7S sites and the Upland and Tidal Wetland Areas of the WMA. The HHRA characterized potential cancer risks and adverse non-cancer health effects associated with COCs in soil/sediment, groundwater, and surface water for both current and planned future reuse as open space. Risk estimates for human health for recreational users and construction workers are summarized in Table 3. Conclusions of the HHRA indicate there are no unacceptable risks from COCs to receptors, recreational users and construction workers, given the current or future planned reuse. Although several aluminum and manganese concentrations were greater than ambient values for metals in the Tidal and/or Non-Tidal Wetland Areas of the sites, these areas have saturated soil conditions which limit potential dust inhalation. Therefore, these metals were not considered risk drivers to human health. Several VOC and manganese concentrations were identified as potential risk drivers in SWBZ groundwater for a construction worker; however,

using the most recent sampling results from 2008, the risks from VOCs were reduced to below one-in-one million. Manganese groundwater concentrations were at ambient levels and therefore do not contribute to additional risk for a construction worker. Based on these facts, VOCs and manganese are no longer considered risk drivers in groundwater. No chemicals were identified as risk drivers in surface water at the IR05, DP7S, and WMA sites.

**Table 3
Human Health Risk Assessment Summary**

Exposure Area	Exposure Medium	Risk from Chemical Contaminants			Unacceptable Risk from Potential Chemical Risk Drivers
		Cancer Risk (>1E-06)	Cancer Risk (>1E-04)	Non Cancer Hazard Index (>1 for target organ)	
		Receptor: C-RU, F-RU, and F-CW	Receptor: Not Applicable	Receptor: F-CW	
		Potential Risk Driver	Potential Risk Driver	Potential Risk Driver	
IR05/DP7S Upland Area	Surface Soil (0 to 2 feet bgs)	Arsenic	Not Applicable	None	No - all potential risk drivers at or below ambient concentrations in soil. All potential risk drivers in groundwater show decreasing concentrations.
	Subsurface Soil (2 to 10 feet bgs)	Arsenic and benzo(a)pyrene	Not Applicable	Manganese	
	Indoor Air from Soil	None	Not Applicable	None	
	Indoor Air from Groundwater	Trichloroethene and vinyl chloride	Not Applicable	None	
	Groundwater	1,4-Dichlorobenzene, trichloroethene, and vinyl chloride	Not Applicable	Manganese	
	Surface Water	None	Not Applicable	None	
IR05/DP7S Non-Tidal Wetland Area	Surface Soil (0 to 2 feet bgs)	Arsenic	Not Applicable	None	No - all potential risk drivers at or below ambient concentrations in soil. All potential risk drivers in groundwater show decreasing concentrations.
	Subsurface Soil (2 to 10 feet bgs)	Arsenic	Not Applicable	Aluminum and manganese	
	Indoor Air from Soil	None	Not Applicable	None	
	Indoor Air from Groundwater	Trichloroethene and vinyl chloride	Not Applicable	None	
	Groundwater	1,4-Dichlorobenzene, trichloroethene, and vinyl chloride	Not Applicable	Manganese	
	Surface Water	None	Not Applicable	None	

**Table 3
Human Health Risk Assessment Summary**

Exposure Area	Exposure Medium	Risk from Chemical Contaminants			Unacceptable Risk from Potential Chemical Risk Drivers
		Cancer Risk (>1E-06)	Cancer Risk (>1E-04)	Non Cancer Hazard Index (>1 for target organ)	
		Receptor: C-RU, F-RU, and F-CW	Receptor: Not Applicable	Receptor: F-CW	
		Potential Risk Driver	Potential Risk Driver	Potential Risk Driver	
IR05 Tidal Wetland Area	Surface Soil (0 to 2 feet bgs)	Arsenic	Not Applicable	None	No - all potential risk drivers at or below ambient concentrations in soil. All potential risk drivers in groundwater show decreasing concentrations.
	Subsurface Soil (2 to 10 feet bgs)	Arsenic	Not Applicable	Aluminum and manganese	
	Indoor Air from Soil	None	Not Applicable	None	
	Indoor Air from Groundwater	Trichloroethene and vinyl chloride	Not Applicable	None	
	Groundwater	1,4-Dichlorobenzene, trichloroethene, and vinyl chloride	Not Applicable	Manganese	
	Surface Water	None	Not Applicable	None	
WMA Upland Area	Surface Soil (0 to 2 feet bgs)	Arsenic	Not Applicable	None	No – all potential risk drivers at or below ambient concentrations in soil.
	Subsurface Soil (2 to 10 feet bgs)	Arsenic	Not Applicable	Manganese	
	Indoor Air from Soil and Groundwater	None	Not Applicable	None	
	Groundwater	None	Not Applicable	Manganese	
	Surface Water	None	Not Applicable	None	

**Table 3
Human Health Risk Assessment Summary**

Exposure Area	Exposure Medium	Risk from Chemical Contaminants			Unacceptable Risk from Potential Chemical Risk Drivers
		Cancer Risk (>1E-06)	Cancer Risk (>1E-04)	Non Cancer Hazard Index (>1 for target organ)	
		Receptor: C-RU, F-RU, and F-CW	Receptor: Not Applicable	Receptor: F-CW	
		Potential Risk Driver	Potential Risk Driver	Potential Risk Driver	
WMA Tidal Wetland Area	Surface Soil (0 to 2 feet bgs)	Arsenic	Not Applicable	None	No – all potential risk drivers at or below ambient concentrations in soil.
	Subsurface Soil (2 to 10 feet bgs)	Arsenic	Not Applicable	Aluminum and manganese	
	Indoor Air from Soil and Groundwater	None	Not Applicable	None	
	Groundwater	None	Not Applicable	Manganese	
	Surface Water	None	Not Applicable	None	

Notes:

- bgs below ground surface
- C-RU current recreational user
- DP7S Dredge Pond 7S
- F-CW future construction worker
- F-RU future recreational user
- IR05 Installation Restoration Site 05
- WMA Western Magazine Area

Based on results of the 2006-2010 [Munitions Response Action \(MRA\)_{\(36\)}](#), which included excavation of over 16,200 geophysical anomalies, the probability of coming into contact with MEC items at the IR05, DP7S, and WMA sites is low. In addition, the risk of injury due to contact with MEC items is even lower. MEC items are not expected to be present on the surface because 100 percent of accessible areas were visually inspected during the 2006-2010 [MRA_{\(36\)}](#). Potential exposure to any remaining MEC hazards would likely result from contact with buried items exposed by intrusive activities, such as trenching for utility installation or repairs.

MC may be present due to damage to the munitions where contaminants were released to the environment or from the degradation of munitions components from partially or non-functioned munitions exposed to the environment. Contaminants commonly associated with deteriorating munitions that could have been released to the environment include explosives compounds and heavy metals. These MCs were evaluated under chemical exposure for which no unacceptable risk was found.

Uncertainty Analysis

All risk assessments contain some elements of uncertainty. Each component of the HHRA, such as selection of COCs, exposure assessment, and toxicity assessment, involves uncertainties that result from various inputs. These include intrinsic measurement errors, potential sampling bias, literature-based exposure and toxicity values used to calculate risk, model-derived calculations in lieu of actual data, and risk characterization across multiple media and exposure pathways. Uncertainties may result in the overestimation or underestimation of varying degrees of risk. Therefore, risk estimates should not be taken as absolute indicators of whether adverse health effects occur. The EPA [Risk Assessment Guidance for Superfund Volume I, Human Health Evaluation Manual Part A_{\(50\)}](#) and [Part D_{\(51\)}](#) methods employed in this risk assessment are based on estimates of reasonable maximum exposure. As a result, in general, the risk assessment process is based on conservative (health-protective) assumptions that overestimate likely levels of exposure and risk.

2.5.2 Summary of Ecological Risk Assessment

A baseline ERA was prepared for the three exposure areas at the IR05 and DP7S sites including the Upland Area, Non-Tidal Wetland Area, and Tidal Wetland Area; and two exposure areas

within the WMA including the Upland Area and Tidal Wetland Area. The approach for the ERAs corresponds to Steps 3 through 8 of the [EPA Guidance for Superfund: Process for Designing and Conducting ERAs](#)⁽⁵²⁾.

The risk modeling for chemicals of potential ecological concern (COPECs) was conducted initially using conservative assumptions including the maximum recorded concentration of the constituent in the area of concern as the exposure point concentration; assuming 100 percent of the target species' home range is affected by the COPEC in the identified media; assuming 100 percent of the diet of the indicator species is affected by the selected COPEC; and assuming there is a foraging area for the indicator species within the affected property. Those COPECs with a hazard quotient less than one indicate that they pose negligible ecological risk. For those COPECs with a hazard quotient greater than one, the risk estimates were refined based on adjusting the exposure parameters to more reasonable assumptions including using the 95 percent upper confidence limit on the arithmetic mean as the exposure point concentration and using a fraction of the indicator species' home range being affected by the COPEC in the identified media.

During the risk characterization stage of the ERA, sites are defined in qualitative terms as posing: (1) negligible risk, (2) little or no risk, (3) potential risk, (4) significant and immediate total risk, or (5) significant and immediate incremental site-related risk. For sites with negligible or little or no risk, no further action is required. For sites with potential risk and sites with significant and immediate total risk, either additional data will be collected, including an evaluation of ambient risk, or a risk management decision will be made to refine the conclusions and to focus risk management decisions. If significant and immediate incremental site-related risk is present at these sites, the feasibility of conducting removal actions should be evaluated. The ERA results are summarized in Table 4.

**Table 4
Ecological Risk Assessment Summary**

Exposure Area	Exposure Medium	Receptor	Chemical Risk to Ecological Receptors			
			Screening Level HQ > 1(low TRV)	Screening Level HQ > 1(high TRV)	Baseline (Refined) HQ > 1(low TRV)	Baseline (Refined) HQ > 1(high TRV)
			Potential Risk Drivers	Potential Risk Drivers	Potential Risk Drivers	Potential Risk
IR05/DP7S Upland Area	Surface Soil (0 to 2 feet bgs)	Gray Fox	Lead, nickel, zinc	None	None	None
		Northern Harrier	Copper, lead, zinc	None	Lead	
		Western Meadowlark	Chromium, copper, lead, nickel, silver, zinc, DDD, DDT, total DDT, dioxin	Chromium	Chromium, copper, lead, nickel, DDT, total DDT, dioxin	
		Ornate Shrew	Barium, chromium, copper, lead, manganese, nickel, silver, zinc, dioxin	Silver	Chromium, copper, lead, manganese, nickel, silver, zinc, dioxin	
		California Vole	Manganese, molybdenum, nickel,	None	Molybdenum, nickel	
	Subsurface Soil (2 to 10 feet bgs)	Gray Fox	Copper, lead, nickel, zinc	None	None	None
IR05/DP7S Non-Tidal Wetland Area	Surface Soil/Sediment (0 to 2 feet bgs)	Salt Marsh Harvest Mouse	Barium, molybdenum, zinc, dioxin	None	Barium, molybdenum, zinc, dioxin	None
		Killdeer	Barium, zinc		Zinc	
		Mallard–Breeding	Zinc		None	
		Mallard–Non-Breeding	DDD, DDT		None	
		Great Blue Heron	None		None	

**Table 4
Ecological Risk Assessment Summary**

Exposure Area	Exposure Medium	Receptor	Chemical Risk to Ecological Receptors			
			Screening Level HQ > 1(low TRV)	Screening Level HQ > 1(high TRV)	Baseline (Refined) HQ > 1(low TRV)	Baseline (Refined) HQ > 1(high TRV)
			Potential Risk Drivers	Potential Risk Drivers	Potential Risk Drivers	Potential Risk
IR05 Tidal Wetland Area	Surface Soil/Sediment (0 to 2 feet bgs)	Salt Marsh Harvest Mouse	Barium, copper, lead, manganese, molybdenum, nickel, selenium, tin, zinc, dioxin	Molybdenum	Barium, copper, lead, manganese, molybdenum, nickel, selenium, dioxin	None
		Killdeer	Barium, chromium, copper, lead, manganese, nickel, zinc, dioxin	Chromium, manganese	Chromium, copper, lead, manganese, nickel, zinc, dioxin	Chromium, manganese
		Mallard–Breeding	Chromium, copper, lead, manganese, nickel, zinc, DDD, DDT, total DDT	Chromium, manganese	Lead	None
		Mallard–Non-Breeding	Lead, DDD, DDT, total DDT	None	Lead, total DDT	None
		Great Blue Heron	Chromium, lead, selenium	Selenium	Lead, selenium	None

**Table 4
Ecological Risk Assessment Summary**

Exposure Area	Exposure Medium	Receptor	Chemical Risk to Ecological Receptors			
			Screening Level HQ > 1(low TRV)	Screening Level HQ > 1(high TRV)	Baseline (Refined) HQ > 1(low TRV)	Baseline (Refined) HQ > 1(high TRV)
			Potential Risk Drivers	Potential Risk Drivers	Potential Risk Drivers	Potential Risk
WMA Upland Area	Surface Soil (0 to 2 feet bgs)	Gray Fox	Copper, lead, nickel, selenium, vanadium, zinc	None	Selenium	None
		Northern Harrier	Copper, lead, selenium, zinc	Selenium	Lead	None
		Western Meadowlark	Chromium, copper, lead, nickel, selenium, vanadium, zinc, DDD, DDT, and total DDT	Chromium, selenium, vanadium	Chromium, copper, lead, nickel, selenium, vanadium, DDD, DDT, and total DDT	None
		Ornate Shrew	Barium, chromium, copper, lead, manganese, nickel, selenium, tin, vanadium, zinc	Barium, selenium, vanadium	Barium, copper, lead, manganese, nickel, selenium, vanadium, zinc	Vanadium
		California Vole	Barium, chromium, copper, molybdenum, nickel, selenium, vanadium	Nickel	Nickel, selenium, vanadium	None
	Subsurface Soil (2 to 10 feet bgs)	Gray Fox	Lead, nickel, selenium	None	None	None

**Table 4
Ecological Risk Assessment Summary**

Exposure Area	Exposure Medium	Receptor	Chemical Risk to Ecological Receptors			
			Screening Level HQ > 1(low TRV)	Screening Level HQ > 1(high TRV)	Baseline (Refined) HQ > 1(low TRV)	Baseline (Refined) HQ > 1(high TRV)
			Potential Risk Drivers	Potential Risk Drivers	Potential Risk Drivers	Potential Risk
WMA Tidal Wetland Area	Surface Soil/Sediment (0 to 2 feet bgs)	Salt Marsh Harvest Mouse	Arsenic, barium, lead, manganese, molybdenum, nickel, selenium, DDD, DDT, total DDTs	Barium, molybdenum	Arsenic, barium, lead, manganese, molybdenum, nickel, selenium	Molybdenum
		Killdeer	Arsenic, lead, manganese, molybdenum, nickel, zinc, DDD, DDT, total DDT	None	Lead, manganese, molybdenum, nickel, zinc, DDD, DDT, total DDT	None
		Mallard–Breeding	Lead, manganese, nickel, zinc, DDD, DDT, total DDT	None	Lead	None
		Mallard–Non-Breeding	Lead	None	Lead	None
		Great Blue Heron	Lead, selenium, DDD, DDT, total DDT	None	Lead, selenium	None

Notes:

- bgs below ground surface
- DDD 4,4'-dichlorodiphenyldichloroethane
- DDT 4,4'-dichlorodiphenyl-trichloroethane
- HQ hazard quotient
- TRV toxicity reference value

Because the refined analysis indicated a potential risk to several ecological receptors from exposure to COPECs, additional focused risk management decisions were considered for the IR05, DP7S, and WMA sites. Based on the focused risk management decisions, the ERA derived the following conclusions:

- Upland Area of the IR05 and DP7S sites—There is not a significant or immediate total risk to mammal and bird species from exposure to COPECs in soil.
- Non-Tidal Wetland Area of the IR05 and DP7S sites—There is not a significant or immediate incremental site-related risk to mammal and bird species from exposure to COPECs in soil/sediment.
- Tidal Wetland Areas of the IR05 and DP7S sites—There is not a significant or immediate incremental site-related risk to mammal and bird species from exposure to COPECs in soil/sediment.
- Upland Area of the WMA site—There is not a significant or immediate incremental site-related risk to mammal and bird species from exposure to COPECs in soil.
- Tidal Wetland Area of the WMA site—There is not a significant or immediate incremental site-related risk to mammal and bird species from exposure to COPECs in soil/sediment.

Based on the lack of significant or immediate total and incremental site-related risk, there is adequate information to conclude that ecological risks posed by residual chemical contamination from COPECs at the IR05, DP7S, and WMA sites do not warrant further evaluation.

As described for human exposure, based on the type, condition, and location of MEC items previously recovered throughout Mare Island, the probability of coming into contact with MEC items at the IR05, DP7S, and WMA sites is low, and the risk of injury due to contact with MEC items is even lower.

The ecological exposure pathways for flora and fauna from MCs are primarily through release from discarded munitions. Flora and fauna would be affected via uptake of soil or groundwater contaminated by munitions constituents. Contaminants commonly associated with deteriorating munitions include lead, copper, and zinc, and explosive compounds. Soil and sediment within the IR05, DP7S, and WMA sites have been tested for munitions-related chemicals, and the ERA

has determined that these chemicals do not pose a significant and immediate risk to ecological receptors.

2.5.3 Basis for Response Action

The response action selected in this ROD/RAP was chosen to protect the public health, welfare, and the environment from actual or potential releases of hazardous substances into the environment. Previous removal actions have removed COCs in sediment/soil. As specified in the [Mare Island Specific Plan^{\(5\)}](#), the planned reuse for the sites includes recreational and wetland areas. Because MEC detection methods are not 100 percent effective and residual hazards may remain in areas after a response action is completed, regardless of the care taken during removal or subsequent geophysical surveys, the selected remedy for the sites involves LUCs to prevent human receptors from being exposed to potential buried MEC.

2.6 PRINCIPAL THREAT WASTE

EPA guidance documentation defines principal threat wastes as highly toxic or highly mobile source materials that can continue to contaminate surrounding media such as soil and groundwater. Principal threat wastes cannot be easily contained and pose a significant risk to human health or the environment if exposure were to occur. Due to the extensive excavations at the IR05, DP7S, and WMA sites, sources of chemicals, radiological items, and to the extent practical, MEC impacts in soil are considered to have been removed. As concluded in the [RI Report^{\(43\)}](#), remaining concentrations of chemical constituents in soil do not pose a significant risk to human health or the environment. Because of the previous removal actions at the sites, no further response action or source treatment is required for the chemical constituents or radiological items in soil.

2.7 REMEDIAL ACTION OBJECTIVES

RAOs are statements containing a cleanup goal for the protection of human or ecological receptors from contaminants in specific media, such as soil, groundwater, or air. RAOs are based on the specific constituents and potential exposure routes and receptors at the sites, thereby guiding the development and evaluation of remedial alternatives during the feasibility study.

The RAO for the IR05, DP7S, and WMA sites is to control direct exposure and protect future human receptors from the low residual risk posed by potential buried MEC.

2.8 DESCRIPTION AND COMPARATIVE ANALYSIS OF REMEDIAL ALTERNATIVES

The purpose of the [FS_{\(3\)}](#) is development and evaluation of the appropriate remedial alternatives to address risks at the site. Remedial alternatives are cleanup options available to contain, remove, or treat hazardous waste to protect human health and/or the environment. Because previous response actions have removed the principle risks, including chemical constituents and radiological items in soil, as well as MEC hazards to the extent practical, the FS was streamlined to accelerate the evaluation process. Steps associated with the identification and screening of remedial technologies and development of screening alternatives normally included in a feasibility study were not required. Therefore, only two remedial alternatives were considered, Alternative 1-No Action, and Alternative 2-LUCs. Based on results of the 2006-2010 [MRA_{\(36\)}](#), which included excavation of over 16,200 geophysical anomalies, the probability of coming into contact with MEC items at the IR05, DP7S, and WMA sites is low and the risk of injury due to contact with MEC items is even lower. However, EPA Guidance suggests that due to technical limitations [removal of MEC to the degree that allows unrestricted use_{\(53\)}](#) is often not possible. MEC detection methods are not 100 percent effective and residual hazards may remain in areas after a response action is completed, regardless of the care taken during removal or subsequent geophysical surveys.

Descriptions of the evaluated alternatives are presented below.

2.8.1 Description of Remedial Alternatives

Alternative 1—No Action

The No Action alternative provides a baseline for comparing 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 site to prevent possible contact with buried MEC. The NCP requires that the No Action alternative be evaluated.

Alternative 2—Land-Use Controls

The LUCs alternative may include ECs and ICs for risk and hazard management such as warning signage to protect human health. LUCs will be applied to all of the IR05, DP7S, and WMA sites.

Signage to alert future users to the potential presence of buried MEC is included in Alternative 2. Signage is considered an EC and would be used together with ICs to prohibit inadvertent disturbance of the soil by future users. Signs would be posted to notify future users of the prohibition against unauthorized digging or soil disturbance due to the potential for buried MEC items at the IR05, DP7S, and WMA sites.

ICs would include legal and administrative mechanisms used to implement land-use restrictions to limit the exposure of future landowner(s) or user(s) of the property to potential buried MEC. The IR05, DP7S, and WMA sites are currently owned by the DON. The DON has determined that it will rely upon controls in the form of an environmental restrictive covenant, as provided in the [Memorandum of Agreement^{\(54\)}](#) between the DON and DTSC. ICs associated with the IR05, DP7S, and WMA sites will be documented in the LUC RD. ICs will also be incorporated into any future quitclaim deed with deed restrictions and a *land use covenant* will be implemented to legally enforce the ICs. A Covenant to Restrict Use of Property will be offered to DTSC and would also run with the land along with the deed restrictions. Upon conveyance of the property from the DON possession, the subsequent property owner will be responsible for enforcing the ICs. If site conditions changed in the future and it could be demonstrated to the satisfaction of the DON and the State that potential buried MEC no longer posed an unacceptable risk to human health, the proposed institutional controls could be removed.

The items below are potential ICs on land use considered for the purposes of alternative development and evaluation. Activity restrictions will at a minimum include the following:

- Soil/sediment disturbing activities without the approval of DTSC in consultation with the DON
- Removal of or damage to security features such as signs, if required

Unrestricted reuse is not appropriate at the IR05, DP7S, and WMA sites and therefore the following land uses will be prohibited:

- A residence, including any mobile home or factory built housing, constructed or installed for use as residential human habitation
- A hospital for humans
- A school for persons under 21 years
- A daycare facility for children

Annual inspections will be performed to evaluate compliance with the LUCs and perform any repairs necessary for maintenance of the engineering controls. Statutory five-year reviews pursuant to CERCLA Section 121 and the NCP will be conducted within five years after initiation of the remedial action, and every five years thereafter until the DTSC deems them no longer necessary, to ensure that the selected remedy for soil continues to be protective of human health and the environment.

2.8.2 Comparative Analysis of Alternatives

The remedial alternatives developed in the [ES₃](#) were evaluated against seven of the nine NCP criteria [40 CFR 300.430(e)(9)(iii)] described in Table 5. The FS presented the comparison of the remedial alternatives against the first seven criteria (two threshold criteria and five primary balancing criteria). The two final criteria (modifying criteria) are State Acceptance and Community Acceptance and are evaluated as part of this ROD/RAP.

**Table 5
NCP Criteria for Comparison of Cleanup Alternatives**

Threshold Criteria				
Overall Protection of Human Health and the Environment How the risks are eliminated, reduced, or controlled through treatment, engineering, or institutional controls.		Compliance with Applicable or Relevant and Appropriate Requirements Federal and state environmental statutes met or grounds for waiver provided.		
Primary Balancing Criteria				
Long-term Effectiveness Maintain reliable protection of human health and the environment over time, and once cleanup goals are met.	Reduction of Toxicity, Mobility, or Volume Through Treatment Ability of a remedy to reduce the toxicity, mobility, and volume of the hazardous contaminants present at the site through treatment.	Short-term Effectiveness Protection of human health and the environment during the construction and implementation period including times to meet cleanup objectives.	Implementability Technical and administrative feasibility of a remedy, including the availability of materials and services needed to carry it out.	Cost Estimated capital, operation, and maintenance costs of each alternative.
Modifying Criteria				
State Acceptance State concurs with the preferred alternative.		Community Acceptance Community concerns addressed and community preferences considered.		

Threshold criteria must be satisfied 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) were assessed following the public comment period on the [PP/Draft RAP_{\(2\)}](#). The public comment period ended on April 17, 2015. Alternatives were reviewed with the various federal and state regulatory agencies to determine if the preferred alternative remains the most appropriate remedy. Table 6 summarizes the comparative analysis of the two alternatives, which is detailed in the following sections.

**Table 6
Comparative Analysis of Remedial Alternatives**

NCP Criterion	Alternative 1 No Action	Alternative 2 Land-Use Controls¹
Overall protection of human health	○	●
Compliance with ARARs	Not Applicable ²	●
Long-Term Effectiveness	○	●
Reduction in Toxicity, Mobility, and Volume through Treatment	Not Applicable ³	Not Applicable ³
Short-Term Effectiveness	●	●
Implementability	●	●
Cost	No Cost	\$144,088
State Acceptance	The State of California agrees with the selected alternative.	
Community Acceptance	The Proposed Plan/Draft Remedial Action Plan was presented to the community and discussed in a public meeting on March 26, 2015. See Responsiveness Summary Section 3.	

Notes:

- low performance
- high performance

1 Selected alternative is Land-Use Controls.

2 Compliance with applicable or relevant and appropriate requirements (ARARs) is not evaluated for the No Action Alternative.

3 The reduction in toxicity, mobility, and volume through treatment is not evaluated in either alternative because treatment is not a component of either alternative.

2.8.2.1 Threshold Criteria

Overall Protection of Human Health and the Environment

Because Alternative 1—No Action would not include restrictions on development or site activities, future reuse may result in the uncontrolled movement of soil potentially containing MEC, thereby creating unsafe conditions. Under Alternative 2, LUCs will restrict disturbance of soil by prohibiting excavation, removal, or movement of soil from the site without prior approval of DTSC, and only if environmental and worker safety control measures are implemented by properly trained personnel. Therefore, Alternative 2—LUCs achieves a higher level of protection than Alternative 1—No Action by ensuring that the exposure pathway to subsurface soil is controlled.

Compliance with ARARs

Alternative 1—No Action is not evaluated for this criterion because ARARs are applicable only when a response action is taken. Alternative 2—LUCs is compliant with all identified ARARs.

2.8.2.2 Balancing Criteria

Long-Term Effectiveness and Permanence

Alternative 1—No Action would not provide any protection from potential future exposures. Under Alternative 2—LUCs, risks to human health would be addressed by controlling future activities, which limits potential exposure to MEC due to excavation or movement of soil. Ongoing effectiveness of LUCs would be verified through annual inspections and the 5-year review process.

Reduction of Toxicity, Mobility, or Volume

Neither of the proposed alternatives would reduce the toxicity, mobility, or volume of potential buried MEC through treatment, because treatment is not a component of either alternative.

Short-Term Effectiveness

The short-term effectiveness evaluation addresses protection of human health and the environment during remedy implementation. Alternative 1—No Action has no effect on human health or the environment in the short term because no action would be performed. Under Alternative 2—LUCs, ECs such as signage will be posted at the sites and ICs will be implemented before transfer from the DON. The two alternatives therefore have practically the same short-term effectiveness.

Implementability

Both Alternative 1—No Action and Alternative 2—LUCs are straightforward to implement. Alternative 2—LUCs can be readily prepared and implemented because the DON currently retains ownership of the property. As the property owner, the DON can implement ECs and incorporate ICs in the deed when the land is transferred to a new owner.

Cost

No active construction or operational activities would occur under Alternative 1—No Action; therefore, there are no associated costs. The capital costs associated with Alternative 2—LUCs include preparation of a LUC RD to describe the ICs and administrative requirements that are assumed to occur in the first year of the operation and maintenance period. The operation and maintenance costs include annual compliance monitoring and 5-year reviews. The cost for Alternative 2—LUCs is estimated to be \$144,088 over a 30-year period.

2.8.2.3 Modifying Criteria

State Acceptance

The BRAC Cleanup Team (BCT), composed of representatives from the DON, DTSC, Regional Water Board, and EPA, was established with the primary goals of protecting human health and the environment, expediting the environmental cleanup, and coordinating the environmental investigation and cleanup at the installation. The BCT obtains a consensus on issues regarding the former MINS environmental activities and makes a concerted effort to integrate current and potential future uses into the cleanup decisions. The BCT has reviewed all major documents and activities associated with the IR05, DP7S, and WMA sites.

As required by California state law under the California Environmental Quality Act, DTSC has studied the risks associated with the residual contamination at the IR05, DP7S, and WMA sites and the possible effects of the proposed action on human health and the environment. The findings of the study can be reviewed in the [Notice of Exemption^{\(55\)}](#). The Notice of Exemption was prepared by DTSC and documented that the proposed action will have no negative impact on human health or the environment.

Based on reviews and discussions of key documents and activities, the multi-agency BCT recommends Alternative 2—LUCs for the IR05, DP7S, and WMA sites as stated in the [PP/Draft RAP^{\(2\)}](#). In addition, while not addressing an RAO, the DON will include a restriction in appropriate real property transfer documents that will prohibit the installation of groundwater production wells for any purpose.

Community Acceptance

The [PP/Draft RAP_{\(2\)}](#) was issued for a 30-day public review beginning March 18, 2015. In addition, the [PP/Draft RAP_{\(2\)}](#) was discussed at a public meeting on March 26, 2015. Verbal comments received during the public meeting were partially addressed in the meeting and the responses to verbal comments are expanded and further clarified in the Responsiveness Summary, Section 3 of this ROD/RAP. Written comments were not received during the public comment period. The transcript of the public meeting is included in Attachment 3 to this ROD/RAP.

2.9 SELECTED REMEDY

The [PP/Draft RAP_{\(2\)}](#) identified Alternative 2—LUCs as modified herein, as the preferred alternative for the IR05, DP7S, and WMA sites.

Rationale for Selected Remedy

As summarized in Table 6, Alternative 2 satisfies the statutory requirements of CERCLA Section 121(b) because it is protective of human health and the environment, complies with ARARs and establishes short-term and long-term solutions and can be implemented at a reasonable cost.

Based on an analysis of the alternatives, Alternative 2—LUCs achieves an overall higher level of protectiveness than Alternative 1—No Action. LUCs will restrict disturbance of soil by prohibiting excavation, removal, or movement of soil from the site without prior approval of DTSC, and only if environmental and worker safety control measures are implemented by properly trained personnel.

Description of Selected Remedy

ECs such as signage to alert future users to the potential presence of buried MEC will be incorporated with ICs to prohibit inadvertent disturbance of the soil by future users. ICs are legal and administrative mechanisms used to implement land-use restrictions in order to limit the exposure of future landowner(s) and/or user(s) of the property to hazardous substances or items present on the property, and to maintain the integrity of the remedial action. ICs remain in place

until site conditions are changed or it could be demonstrated to the satisfaction of the DON and the State that potential buried MEC no longer pose an unacceptable risk to human health. At that time, the proposed institutional controls could be removed. Legal mechanisms include controls such as restrictive covenants, negative easements, equitable servitudes, and deed notices. Administrative mechanisms include notices, public education, adopted local land use plans and ordinances, construction permitting, or other existing land use management systems that are intended to ensure compliance with land use or activity restrictions.

The sites are planned for reuse as recreational and wetland areas as documented in the [Mare Island Specific Plan\(s\)](#). The DON has determined that it will rely upon administrative mechanisms as well as legal controls in the form of environmental restrictive covenants. Restrictive covenants will be included in one or more quitclaim deed(s) from the DON to the property recipient(s).

ICs associated with the IR05, DP7S, and WMA sites will be documented in the LUC RD. ICs will also be incorporated into any future quitclaim deed with deed restrictions and a land use covenant will be implemented to legally enforce the ICs. A CRUP will be offered to DTSC and would also run with the land along with the deed restrictions. Upon conveyance of the property from the DON possession, the subsequent property owner will be responsible for enforcing the ICs.

The IC objectives will be achieved through land use prohibitions and activity restraints to restrict disturbance of soil by preventing excavation, removal or movement of soil at the IR05, DP7S, and WMA sites without prior approval as described in the remedy. The ICs will ensure that any necessary measures to protect human health have been taken. The ICs will be defined in the LUC RD.

2.9.1 Access

The deed(s) and Covenant to Restrict Use of Property will provide that the DON and DTSC, as FFSRA signatories and their authorized agents, employees, contractors, and subcontractors, have the right to enter the IR05, DP7S, and WMA sites to conduct investigations, tests, or surveys;

inspect field activities; or construct, operate, and maintain any response or remedial action as required or necessary under the cleanup program.

2.9.2 Implementation

The DON will address and describe LUC implementation and maintenance actions, including periodic inspections and reporting requirements in the LUC RD to be developed pursuant to this ROD/RAP and post-ROD guidance memorandum. The LUC RD will define the long-term monitoring, reporting requirements, property owner responsibilities, and agreements necessary to provide for the long-term effectiveness and periodic evaluation of the LUCs.

The DON is responsible for implementing, inspecting, maintaining, reporting on, and enforcing the LUCs. Although the DON may later transfer these procedural responsibilities to another party by contract, property transfer agreement, or through other means, the DON will retain ultimate responsibility for the remedy integrity. Should any of the IC objectives fail, the DON will ensure that appropriate actions are taken to reestablish the protectiveness of the remedy and may initiate legal action to either compel action by a third party(ies) and/or recover the costs incurred by the DON for mitigating any discovered IC violation(s).

2.9.3 Expected Outcomes of the Selected Remedy

Previous response actions have removed COCs in sediment/soil to the extent suitable for the planned reuse for the IR05, DP7S, and WMA sites, which includes recreational and wetland areas. Because MEC detection methods are not 100 percent effective and residual hazards may remain in areas after a response action is completed, regardless of the care taken during removal or subsequent geophysical surveys. The selected remedy is intended, through enforcement of LUCs, to protect human health by restricting disturbances to soil.

2.9.4 Statutory Determinations

Under CERCLA and in accordance with the NCP, the selected remedy meets the following statutory determinations.

Protection of Human Health and the Environment—With the previous investigations and removal actions that have occurred at the IR05, DP7S, and WMA sites, the selected remedy will be protective of human health by restricting activities in the areas requiring LUCs that may lead to potential contact with buried MEC.

Compliance with ARARs—The selected remedy meets all federal and state standards, requirements, criteria, or limitations that have been determined to be ARARs (Attachment 3) for the IR05, DP7S, and WMA sites.

Cost-Effectiveness—The low costs associated with implementing the selected remedy are considered cost-effective. While higher than costs under Alternative 1—No Action, the costs are proportional to overall effectiveness by achieving long-term effectiveness and permanence that would not be achieved with No Action.

Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable—The selected remedy represents the maximum extent to which permanent solutions can be used in a practicable manner at the IR05, DP7S, and WMA sites. Previous removal actions that have occurred at the site confirm that additional treatment is not necessary for site soil. The selected ICs will provide a permanent solution through monitored controls of access to potential buried MEC.

Preference for Treatment as a Principal Element—The selected remedy does not include treatment as a principal element, because the previous removal actions have successfully reduced the contaminants of concern or hazardous items at the sites to levels that are protective of human health and the environment. The previous removal actions do not constitute treatment in terms of total reduction of toxicity or mobility of contaminants of concern because the DON excavated and disposed of contaminated soil and building materials; however, mobility can be considered reduced as the soil and building materials are now placed in a capped and monitored landfill. Therefore, active treatment is not necessary as part of the selected remedy.

2.10 COMMUNITY PARTICIPATION

On March 13, 2015, the DON issued the [PP/Draft RAP_{\(2\)}](#) as part of its public participation responsibilities under CERCLA and the NCP to ensure that the public has the opportunity to

comment. The [PP/Draft RAP\(2\)](#) was presented and discussed at a public meeting on March 26, 2015. During the 30-day public comment period from March 18, 2015 to April 17, 2015, the public was encouraged to use the comment form included with the [PP/Draft RAP\(2\)](#) to send written comments to the BRAC Environmental Coordinator.

Verbal comments received during the public meeting were partially addressed in the meeting, and the responses to verbal comments are expanded and further clarified in Section 3 Responsiveness Summary. The transcript of the public meeting is included in Attachment 4 of this ROD/RAP.

Key documents for the IR05, DP7S, and WMA sites are available for public review at the following information repositories:

John F. Kennedy Library

505 Santa Clara Street, Vallejo, California 94590

(866) 572-7587

Hours: Mon & Wed 10:00am - 9:00pm

Tues & Thurs 10:00am - 6:00pm

Fri & Sat 10:00am - 5:00pm

Sun 1:00pm - 5:00pm

Administrative Record File

Contact: Ms. Diane Silva, Records Manager

Naval Facilities Engineering Command Southwest

Naval Base San Diego, Building 3519

2965 Mole Road

San Diego, California 92132-5190

(619) 556-1280

3. RESPONSIVENESS SUMMARY

The Responsiveness Summary summarizes the public and support agency opinions about the selected remedy as well as general concerns about the site that were submitted during the public review period, from March 18 to April 17, 2015. Public comments were integrated into the decision-making process via a public meeting held on March 26, 2015, which was attended by community members, Restoration Advisory Board (RAB) members, and representatives of the DON, DTSC, and the Regional Water Board.

The questions and concerns received during the meeting were addressed at the public meeting and are documented in the Public Meeting Transcript (Attachment 4). The DON reviewed all verbal comments submitted during the public meeting and the PP/Draft RAP public comment period and elaborated on the responses as described below.

Public Meeting Comments

1. Comment from Ms. Myrna Hayes, RAB Community Co-Chair: *When you say “suspected dredge outfall,” you never found one, you looked for one, or you didn’t look for one?*

Response to Comment 1: Although no outfall mass was encountered, based on the debris materials encountered at the northeastern corner of Dredge Pond 7S, a dredge outfall is suspected to have been located in this area.

2. Comment Ms. Paula Tygielski, RAB Member: *In the past I have been very hesitant to agree to institutional controls, but at this site with the very low risk possibilities, I think institutional controls will be adequate.*

Response to Comment 2: No response required.

3. Comment from Mr. Chris Rasmussen, RAB Member: *When these sites are transferred either to the State Lands Commission or to the city or a combination, however that’s done, is there an expectation that there will be much, if any, human activity out there in those areas? Will this sort of be secured just because of the nature of the land and the intended use of it, or is it known yet?*

Response to Comment 3: The planned use for the IR05, DP7S and WMA sites includes recreational and wetland areas. The southernmost portion of the WMA that is north of

Dredge Pond 7 and IR05 is part of Reuse Area 12 which is planned to be a part of the Regional Park complex. It is anticipated that the public will be able to access this area.

4. Comment from Ms. Myrna Hayes, RAB Community Co-Chair: *I want to know in the areas between the magazines, the Navy had an agreement with the U.S. Fish and Wildlife Service Endangered Species Unit for development of a conservation easement which they completed. I believe that the agreement was in 1987 which included the development of and protection of the Salt Marsh Harvest Mouse habitat in those waterways between the magazines. And I believe there was a conservation easement associated with that. Can you [Dwight Gemar, WESTON Project Manager] or Janet [Lear, Navy Co-Chair] comment on the status of that agreement and how that will go forward as a conservation easement?*

Response to Comment 4: The agreement with the U.S. Fish and Wildlife Service indicates that a certain acreage of the former Mare Island Naval Shipyard be set aside as conservation areas. The details of these conservation areas will be provided in the appropriate deeds during the property transfer process.

5. Comment from Ms. Myrna Hayes, RAB Community Co-Chair: *Will that be identified as a component of the finding of suitability for transfer? Where will it be in the process? Where will it be documented in the public process?*

Response to Comment 5: Conservation areas will be identified in the Finding of Suitability to Transfer (FOST) and the legal descriptions are recorded in the deed when the land is transferred.

6. Comment from Ms. Myrna Hayes, RAB Community Co-Chair: *On page seventeen [of the presentation] you indicate a summary of site risks, accessible areas, making the probability of coming into contact with MEC low. While I'm going to agree with my fellow community member for the last 21 years next week, Paula Tygielski, that I generally am not real keen on land use controls, covenants, or whatever those are called, for ensuring land use, I'd rather see everything pristine and clean; but the fact is, that's not possible. And so we have gone along with various institutional controls, for instance, at the landfill area. And that seems to be working pretty well.*

One thing that I encounter in managing the Mare Island Shoreline Heritage Preserve for the last now almost eight years, I can assure you that, well we believe that there, as managers of that property, that there is an ongoing need for public education, and the Navy has supplied pretty simple but effective written material that we have distributed well over 2,000 informational handouts through our visitors center. We meet up with a lot of very eager amateur metal detectors. And they aren't always the swiftest people in the world. I mean, in terms of sophistication about what they might discover in a former ammunition depot. I think that it's interesting to workers and tedious when you're picking up absolutely tens of thousands, hundreds of thousands of bits and pieces of scrap metal, some of which have been donated to our visitors center to show kind of some interesting things that got found along with munition-related items or components and some munition items. So by suggesting to people that they shouldn't metal detect in a former munition area, that sometimes can kind of backfire. And they think that it's going to be even more interesting than it might be to be searching for five dollar gold pieces or silver pieces in gold country. While I understand your desire to and your belief that you can use institutional controls to manage this property, and while I do agree with you that there is a pretty low risk of exposure, I also am quite amazed at, you know, the people I meet and what they're up to, having been a manager of this adjacent property for the last going on eight years.

So I would really encourage you to think about education in the most robust way. I don't think that has to be cost prohibitive or, you know, a great cost, but I know I've nattered and nagged and pled and cajoled and every other word in the dictionary related to that. I have asked in a very nice way, in a kind of firm and maybe irritating way for a video, for action, for interviews, for something other than, "I hope to God you meet Myrna Hayes and she gives you a compelling reason, you know, not to go mess around." So I don't think it would be very costly. It could be done, using the Internet. Now it can be pretty simple, but I just really would like to see this as it is going to be the first property, significant piece of property brought into the recreational area Regional Park Preserve that does have deed restrictions. And not that we've had a lot of people digging, you know, they don't seem to do that, especially if you have some nice rattlesnake warning signs. But similar to the trail where along the landfill we urge people to stay on the trail, you know, to stay clear of ticks, that

seems to be another, you know, sort of terribly terrifying thing to people. So I'd like to see us utilize all the tools we have.

Response to Comment 6: Engineering controls, such as signage are part of the LUCs alternative selected for the IR05, DP7S, and WMA sites. The content of the signage (e.g. warnings and/or educational components) and other details of the LUCs will be included in the forthcoming LUC Remedial Design.

7. Comment Ms. Paula Tygielski, RAB Member: *Some signage would be a good idea. "Do not grow garden here."*

Response to Comment 7: See response to comment 6.

8. Comment from Ms. Myrna Hayes, RAB Community Co-Chair: *Yeah, because we do envision a very robust use. We have been working with the Navy, and we're so proud [that in] another few months now of negotiating with the Navy for public access to these locations. And we've been doing that for now almost twenty years on a monthly basis, first with the Sierra Club and the San Francisco Bay Flyway Festival, and now through the Mare Island Heritage Trust. And I certainly would like to see that, you know, become even more robust, and I know that the community would as well.*

So, I know I've gone on and on, but I hope I can make the point that we are going to need public education. And I will agree with you in the criteria under cost that I think it is reasonable and not too costly to be able to adequately make that education possible. And that, you know, one thing that we know, Tierrasanta is the only reason why DTSC is as hypersensitive as they are to munition issues; that education over time is what is critical, not to drop the ball, or drop the bomb, that is, that's when children were killed at Tierrasanta. That was a different situation, that was a maneuver range, training range, had only been surface cleared to two feet. This is a different set of circumstances. But I would hope that if you need my help in helping you develop an effective land-use control that can be effectively implemented and that can have a circle back around, not just for those five years, but for 25 years and 45 years, I hope that you would, you know, work with me and others who throughout the nation are implementing these kinds of restrictions, and aligned with public recreation on most of those sites, as many as, I think the number's in the 1,600 different sites in the U.S. (I might be up or down on that) where public access is envisioned or is currently

taking place on, and primarily recreational uses, on former munition operation, areas with munition operations. So, I just want to go on and on about that, please, but I'll try to stop as long as you think you got the picture.

Response to Comment 8: See response to comment 6.

9. Comment from Ms. Myrna Hayes, RAB Community Co-Chair: *I think that you might have a little typo here. Does the final ROD/RAP really take place in winter of 2015 which we just passed a couple of days ago or would it be the winter of 2015/2016?*

Response to Comment 9: The ROD/RAP is planned to be finalized by December 2015.

10. Comment from Ms. Myrna Hayes, RAB Community Co-Chair: *And then at what point following the ROD/RAP does the FOST and the transfer itself usually take place? What kind of timeline do you usually look at?*

Response to Comment 10: The Navy is anticipating transfer of the property a year and a half after the ROD is finalized.

11. Comment from Ms. Myrna Hayes, RAB Community Co-Chair: *Well, then that gives us some time to follow up with Chris' question [Comment #3], this is just, you know, my experience it has, it was certainly not in any kind of formal or official response, but these areas were and have been envisioned from the point of the reuse plan in '94, the development of the reuse plan, and then the development beyond that of two specific plans that I can think of, and they're probably looking at yet another update of a specific plan for Mare Island. But in all of those documents the property that over; when you don't have a complete master plan and you don't have every square inch of that property, you know, identified for what its ultimate use is going to be, you usually have interim uses that are temporary and considered, you know, not permanent or not the ultimate use. For example, you haven't seen any development of, you know, like state or federal funded trail systems in our preserve. We have some mowing that connects to some existing roadways, some sort of informal, but other than the paved road we have a policy, I do as a preserve manager, of "Do no harm before you do good." So in the case of this property we wouldn't just envision, you know, we would work with the city like we have, but we wouldn't just envision that because it is still wedged in among two other parcels that aren't transferable, we wouldn't envision just opening the gates*

one day and anybody and everybody getting to pop into the property; partly because of sensitive endangered species habitat, and partly because of these restrictions, and partly because of the land in the adjacent properties. So I hope that isn't too vague and is specific enough that it lays out at least the way my understanding would be of how the property might come to be used. But, as Heather [Wochnick, Navy Lead Remedial Project Manager] said, that's some ways off yet it sounds like, another maybe as much as two years.

Response to Comment 11: No response required.

Based on an evaluation of the public comments received and responses provided above, it is determined that no significant changes to the preferred alternative, as originally identified in the [PP/Draft RAP_{\(2\)}](#), are necessary or appropriate. Accordingly, Alternative 2—LUCs, is selected as the final remedy for the IR05, DP7S, and WMA sites.

Written Comments

No written comments were received on the PP/Draft RAP during the public comment period.

ATTACHMENT 1
CERCLA ADMINISTRATIVE RECORD INDEX

CERCLA Administrative Record Index
Record of Decision/Remedial Action Plan
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Document Number	Date	Title	Sites	Doc Type	Author Affiliation
000201	3/1/1983	INITIAL ASSESSMENT STUDY (NEESA 13-012)	SITE 00004, SITE 00005, SITE 00006, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014	REPORT	ECOLOGY AND ENVIRONMENT, INC.
002390	7/19/1984	TRANSMITTAL OF THE INITIAL ASSESSMENT STUDY (ENCLOSURE IS RECORD # 201)	SITE 00004, SITE 00005, SITE 00006, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014	CORRESPONDENCE	MARE ISLAND - VALLEJO, CA
000200	11/1/1984	VERIFICATION STUDY WORK PLAN	SITE 00002, SITE 00004, SITE 00005, SITE 00012	REPORT	RICHESIN AND ASSOCIATES, INC.
000133	3/12/1986	REVIEW AND COMMENTS ON THE VERIFICATION STUDY WORK PLAN, SCOPE OF WORK (SEE RECORD # 200 - VERIFICATION STUDY WORK PLAN)	SITE 00003, SITE 00005, SITE 00006, SITE 00007, SITE 00013	CORRESPONDENCE	CALIFORNIA DEPARTMENT OF HEALTH SERVICES - BERKELEY, CA
000186	12/2/1987	REVIEW AND COMMENTS ON THE 1) INITIAL ASSESSMENT STUDY, 2) VERIFICATION STUDY WORK PLAN, AND 3) VERIFICATION STUDY REPORT	SITE 00002, SITE 00004, SITE 00005, SITE 00012, SITE 00014	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
000121	5/25/1988	REVISED DRAFT SAMPLING, CLEANING, AND INSPECTION PLAN FOR STORM DRAINS WITHIN CONCORD ANNEX	SITE 00005	REPORT	IT CORPORATION
000285	7/21/1988	CONCORD ANNEX - NOTICE OF VIOLATION CLEANING OF STORM DRAINS	SITE 00005	CORRESPONDENCE	CRWQCB - VERIFY OFFICE
000158	9/7/1988	RESPONSES TO COMMENTS ON THE SAMPLING, CLEANING AND INSPECTION PLAN FOR STORM DRAINS AT CONCORD ANNEX FACILITY (SEE RECORD # 285 - CONCORD ANNEX NOTICE OF VIOLATION CLEANING OF STORM DRAINS)	SITE 00005	CORRESPONDENCE	MARE ISLAND - VALLEJO, CA
000255	10/1/1988	SAMPLING, CLEANING, AND INSPECTION PLAN FOR STORM DRAINS WITHIN CONCORD ANNEX	SITE 00005	REPORT	IT CORPORATION
000251	11/3/1988	TRANSMITTAL OF THE SAMPLING, CLEANING, AND INSPECTION PLAN, STORM DRAIN AT CONCORD ANNEX	SITE 00004, SITE 00005	CORRESPONDENCE	NAVFAC - WESTERN DIVISION
000437	12/16/1991	SAMPLING, CLEANING, AND INSPECTION OF STORM DRAINS WITHIN THE CONCORD ANNEX	SITE 00005	REPORT	HAZWRAP - VERIFY AFFILIATION
000431	1/7/1992	RESPONSES TO COMMENTS ON THE REPORT OF SAMPLING, CLEANING, AND INSPECTION OF STORM DRAINS WITHIN CONCORD ANNEX FACILITY	SITE 00005	CORRESPONDENCE	NAVFAC - WESTERN DIVISION
000432	1/7/1992	TRANSMITTAL OF THE REPORT SAMPLING, CLEANING, AND INSPECTION STORM DRAINS WITHIN CONCORD ANNEX FACILITY	SITE 00005	CORRESPONDENCE	NAVFAC - WESTERN DIVISION
000659	10/30/1992	PHASE II REMEDIAL INVESTIGATION, FINAL HEALTH AND SAFETY PLAN	SITE 00001, SITE 00002, SITE 00003, SITE 00004, SITE 00005, SITE 00006, SITE 00007, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014, SITE 00015, SITE 00016, SITE 00017, SITE 00018, SITE 00019, SITE 00020, SITE 00021, SITE 00022, SITE 00023, SITE 00024, UST 00007	REPORT	PRC ENVIRONMENTAL MANAGEMENT, INC.
000947	9/13/1994	DRAFT WORK PLAN FOR UNEXPLODED ORDNANCE SITE INVESTIGATION OF ABOVE GROUND MAGAZINE AREA	UXO 000008	REPORT	NAVY - VERIFY AFFILIATION
000945	9/22/1994	TRANSMITTAL OF THE DRAFT WORK PLANS FOR UNEXPLODED ORDNANCE SITE INVESTIGATION OF DREDGE SPOILS PONDS AND ABOVE GROUND MAGAZINE AREA	UXO 000003, UXO 000004, UXO 000008	CORRESPONDENCE	NAVFAC - WESTERN DIVISION
000956	9/30/1994	DRAFT FINAL DETAILED WORK PLAN FOR BASELINE HUMAN HEALTH RISK ASSESSMENTS	SITE 00001, SITE 00002, SITE 00003, SITE 00004, SITE 00005, SITE 00006, SITE 00007, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014, SITE 00015, SITE 00016, SITE 00017, SITE 00018, SITE 00019, SITE 00020, SITE 00021, SITE 00022, SITE 00023, SITE 00024	REPORT	PRC ENVIRONMENTAL MANAGEMENT, INC.
000955	10/4/1994	TRANSMITTAL OF THE DRAFT FINAL DETAILED WORK PLAN FOR BASELINE HUMAN HEALTH RISK ASSESSMENTS	SITE 00001, SITE 00002, SITE 00003, SITE 00004, SITE 00005, SITE 00006, SITE 00007, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014, SITE 00015, SITE 00016, SITE 00017, SITE 00018, SITE 00019, SITE 00020, SITE 00021, SITE 00022, SITE 00023, SITE 00024	CORRESPONDENCE	NAVY - VERIFY AFFILIATION
001002	10/6/1994	REVIEW AND COMMENTS ON THE DRAFT WORK PLAN FOR UNEXPLODED ORDNANCE SITE INVESTIGATION OF DREDGE SPOILS PONDS (SEE RECORD # 946 - DRAFT WORK PLAN FOR UNEXPLODED ORDNANCE SITE INVESTIGATION OF DREDGE SPOILS PONDS)	UXO 000004, UXO 000008	CORRESPONDENCE	RESTORATION ADVISORY BOARD MEMBER

CERCLA Administrative Record Index
Record of Decision/Remedial Action Plan
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Document Number	Date	Title	Sites	Doc Type	Author Affiliation
001047	11/10/1994	REVIEW AND COMMENTS ON THE TIME CRITICAL REMOVAL ACTION FOR THE CONCORD ANNEX DISPOSAL AREA	SITE 00005	CORRESPONDENCE	INTERIOR, FISH AND WILDLIFE SERVICE - SACRAMENTO, CA
001003	11/21/1994	REVIEW AND COMMENTS ON THE DRAFT WORK PLAN FOR UNEXPLODED ORDNANCE SITE INVESTIGATION OF ABOVE GROUND MAGAZINE AREA [SEE RECORD # 947 - DRAFT WORK PLAN FOR UNEXPLODED ORDNANCE SITE INVESTIGATION OF ABOVE GROUND MAGAZINE AREA]	UXO 000008	CORRESPONDENCE	DTSC - BERKELEY, CA
001048	11/23/1994	REVIEW AND COMMENTS ON THE REMOVAL WORK PLAN FOR THE PROPOSED TIME CRITICAL REMOVAL ACTION FOR THE CONCORD ANNEX DISPOSAL AREA	SITE 00005	CORRESPONDENCE	DTSC - BERKELEY, CA
001006	12/2/1994	REVIEW AND COMMENTS ON THE DRAFT WORK PLAN FOR UNEXPLODED ORDNANCE SITE INVESTIGATION OF ABOVE GROUND MAGAZINE AREA [SEE RECORD # 947 - DRAFT WORK PLAN FOR UNEXPLODED ORDNANCE SITE INVESTIGATION OF ABOVE GROUND MAGAZINE AREA]	UXO 000008	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
003011	12/5/1994	REVIEW AND COMMENTS ON THE DRAFT FINAL DETAILED WORK PLAN FOR BASELINE HUMAN HEALTH RISK ASSESSMENTS	SITE 00001, SITE 00002, SITE 00003, SITE 00004, SITE 00005, SITE 00006, SITE 00007, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014, SITE 00015, SITE 00016, SITE 00017, SITE 00018, SITE 00019, SITE 00020, SITE 00021, SITE 00022, SITE 00023, SITE 00024	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
001049	12/7/1994	REVIEW AND COMMENTS ON THE REMOVAL WORK PLAN AND ACTION MEMORANDUM FOR THE PROPOSED TIME CRITICAL REMOVAL ACTION FOR THE CONCORD ANNEX DISPOSAL AREA	SITE 00005	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
000972	12/7/1994	REVIEW AND COMMENTS ON THE DRAFT FINAL DETAILED WORK PLAN FOR BASELINE HUMAN HEALTH RISK ASSESSMENT	SITE 00001, SITE 00002, SITE 00003, SITE 00004, SITE 00005, SITE 00006, SITE 00007, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014, SITE 00015, SITE 00016, SITE 00017, SITE 00018, SITE 00019, SITE 00020, SITE 00021, SITE 00022, SITE 00023, SITE 00024	CORRESPONDENCE	DTSC - VERIFY OFFICE
002073	2/13/1995	TRANSMITTAL OF THE 1) DRAFT FINAL WORK PLAN UNEXPLODED ORDNANCE SITE INVESTIGATION DREDGE SPOILS PONDS, AND 2) DRAFT FINAL WORK PLAN UNEXPLODED ORDNANCE SITE INVESTIGATION ABOVE GROUND MAGAZINE AREA	UXO 000003, UXO 000004, UXO 000008	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
002075	2/13/1995	RESPONSES TO COMMENTS ON THE DRAFT UNEXPLODED ORDNANCE, ABOVE GROUND MAGAZINE AREA SITE INVESTIGATION (SI) WORK PLAN (WP)	UXO 000008	CORRESPONDENCE	NAVY - VERIFY AFFILIATION
001013	2/13/1995	DRAFT FINAL SITE INVESTIGATION FOR UNEXPLODED ORDNANCE ABOVE GROUND MAGAZINE AREA [SEE RECORD # 2073 - NAVFAC SWDIV TRANSMITTAL LETTER]	UXO 000008	REPORT	BRAC ENVIRONMENTAL TECHNICAL DIVISION - VALLEJO, CA
001050	2/15/1995	SITE SPECIFIC HEALTH AND SAFETY PLAN, TIME CRITICAL REMOVAL ACTION PART 4 OF THE REMOVAL WORK PLAN	SITE 00005	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
001052	3/6/1995	REGULATORY COMMENT RESPONSES, ORDNANCE REMOVAL WORK PLAN FOR THE TIME CRITICAL REMOVAL ACTION	SITE 00005	CORRESPONDENCE	NAVY - VERIFY AFFILIATION
001053	3/14/1995	TRANSMITTAL OF THE ACTION MEMORANDUM, ORDNANCE REMOVAL WORK PLAN SITE SPECIFIC HEALTH AND SAFETY PLAN, AND RESPONSES TO COMMENTS ON THE TIME CRITICAL REMOVAL ACTION	SITE 00005	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
001054	3/21/1995	ORDNANCE SURVEY AND REMOVAL PROJECT	SITE 00005	CORRESPONDENCE	NAVFAC - EFA WEST
001008	3/22/1995	REVIEW AND COMMENTS ON THE DRAFT FINAL SITE INVESTIGATION FOR UNEXPLODED ORDNANCE ABOVE GROUND MAGAZINE AREA [SEE RECORD # 1013 DRAFT FINAL SITE INVESTIGATION FOR UNEXPLODED ORDNANCE ABOVE GROUND MAGAZINE AREA]	UXO 000008	CORRESPONDENCE	DTSC - BERKELEY, CA
001055	3/28/1995	REVIEW AND COMMENTS ON THE LETTER DATED 21 MARCH 1995, ORDNANCE SURVEY AND REMOVAL PROJECT	SITE 00005	CORRESPONDENCE	U.S. DEPARTMENT OF INTERIOR, FISH AND WILDLIFE SERVICE -
001056	4/3/1995	REVIEW AND COMMENTS ON THE ORDNANCE REMOVAL ACTION MEMORANDUM, AND WORK PLAN	SITE 00005	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA

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001057	4/13/1995	REVIEW AND COMMENTS ON THE DRAFT ORDNANCE REMOVAL WORK PLAN	SITE 00005	CORRESPONDENCE	DTSC - BERKELEY, CA
000998	4/14/1995	TRANSMITTAL OF THE DRAFT WORK PLAN, UNEXPLODED ORDNANCE SITE INVESTIGATION OF THE UPLAND MAGAZINE AREA AND ORDNANCE RESERVOIR [ENCLOSURE IS RECORD # 999]	UXO 000008	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
001058	4/17/1995	REVIEW AND COMMENTS ON THE ORDNANCE REMOVAL WORK PLAN FOR THE TIME CRITICAL REMOVAL ACTION	SITE 00005	CORRESPONDENCE	CRWQCB - OAKLAND, CA
001011	5/1/1995	INVESTIGATION OF DREDGE SPOILS AND ABOVE GROUND MAGAZINE AREA DRAFT FINAL WORK PLANS [SEE RECORDS # 1002, # 1003, # 1006, # 1008, AND # 2075 - COMMENTS]	UXO 000003, UXO 000004, UXO 000008	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
001014	5/15/1995	TRANSMITTAL OF THE PRELIMINARY ASSESSMENT DRAFT FINAL SUMMARY REPORT FOR ORDNANCE SITES [ENCLOSURE IS RECORD # 1015]	UXO 000003, UXO 000004, UXO 000008	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
001015	5/15/1995	PRELIMINARY ASSESSMENT DRAFT FINAL SUMMARY REPORT FOR ORDNANCE SITES [SEE RECORD # 1014 - NAVFAC SWDIV TRANSMITTAL LETTER]	UXO 000003, UXO 000004, UXO 000008	REPORT	PRC ENVIRONMENTAL MANAGEMENT, INC.
002082	6/16/1995	REVIEW AND COMMENTS ON THE DRAFT FINAL SUMMARY PRELIMINARY ASSESSMENT REPORT, ORDNANCE SITES	UXO 000002, UXO 000004, UXO 000008	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
002083	6/19/1995	REVIEW AND COMMENTS ON THE DRAFT FINAL SUMMARY PRELIMINARY ASSESSMENT REPORT, ORDNANCE SITES	UXO 000003, UXO 000004, UXO 000008	CORRESPONDENCE	DTSC - BERKELEY, CA
001036	7/7/1995	TRANSMITTAL OF THE 1) RESPONSES TO COMMENTS ON THE OFFSHORE AREA WORK PLAN; 2) RESPONSES TO COMMENTS ON THE SOUTH SHORE AREA WORK PLAN; AND 3) RESPONSES TO COMMENTS ON THE UPLAND MAGAZINE AREA AND ORDNANCE RESERVOIR WORK PLAN FOR THE [SEE COMMENTS]	UXO 000006, UXO 000007, UXO 000008, UXO 000011, UXO 000012	CORRESPONDENCE	NAVFAC - EFA WEST UNKNOWN - VERIFY AFFILIATION
001060	7/12/1995	DRAFT FINAL ACTION MEMORANDUM, CONCORD ANNEX DISPOSAL AREA REGULATORY COMMENT RESPONSES, ORDNANCE REMOVAL WORK PLAN FOR THE TIME CRITICAL REMOVAL ACTION	SITE 00005	REPORT	NAVY - VERIFY AFFILIATION
001059	7/12/1995	ORDNANCE REMOVAL WORK PLAN AND INTERIM REMEDIAL ACTION PLAN FOR TIME CRITICAL REMOVAL ACTION; INCLUDED: PART 1 REMOVAL WORK PLAN, PART 2 STAND	SITE 00005	CORRESPONDENCE	NAVY - VERIFY AFFILIATION
001061	7/13/1995	VARIANCE TO MAGNETOMETER SEARCH METHOD FOR BURIED UNEXPLODED ORDNANCE IN THE ABOVE GROUND MAGAZINE AREA [SEE RECORD # 1013 - DRAFT FINAL SITE INVESTIGATION WORK PLAN FOR UNEXPLODED ORDNANCE IN THE ABOVE GROUND MAGAZINE AREA]	UXO 000008	REPORT	NAVY - VERIFY AFFILIATION
001038	7/20/1995	TRANSMITTAL OF THE INTERIM REMEDIAL ACTION PLAN; ACTION MEMORANDUM, ORDNANCE REMOVAL WORK PLAN AND INTERIM REMEDIAL ACTION PLAN, REGULATORY	SITE 00005	CORRESPONDENCE	NAVY - VERIFY AFFILIATION
001062	7/24/1995	FINAL SUPPLEMENT TO INSTALLATIONS RESTORATION SITES, DETAILED WORK PLAN FOR BASELINE HUMAN HEALTH RISK ASSESSMENTS	SITE 00001, SITE 00002, SITE 00003, SITE 00004, SITE 00005, SITE 00006, SITE 00007, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014, SITE 00015, SITE 00016, SITE 00017, SITE 00018, SITE 00019, SITE 00020, SITE 00021, SITE 00022, SITE 00023, SITE 00024	REPORT	PRC ENVIRONMENTAL MANAGEMENT, INC.
001043	7/24/1995	DRAFT FINAL WORK PLAN SITE INVESTIGATION OF THE UPLAND MAGAZINE AREA AND ORDNANCE RESERVOIR (SEE RECORD # 1044 - NAVFAC SWDIV TRANSMITTAL LETTER)	UXO 000008	REPORT	BRAC ENVIRONMENTAL TECHNICAL DIVISION - VALLEJO, CA
001044	7/24/1995	DRAFT FINAL WORK PLAN UNEXPLODED ORDNANCE SITE INVESTIGATION OF THE UPLAND MAGAZINE AREA AND ORDNANCE RESERVOIR	UXO 000008	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
001082	7/25/1995	TRANSMITTAL OF THE FINAL SUPPLEMENT TO INSTALLATIONS RESTORATION SITES, DETAILED WORK PLAN FOR BASELINE HUMAN HEALTH RISK ASSESSMENTS	SITE 00001, SITE 00002, SITE 00003, SITE 00004, SITE 00005, SITE 00006, SITE 00007, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014, SITE 00015, SITE 00016, SITE 00017, SITE 00018, SITE 00019, SITE 00020, SITE 00021, SITE 00022, SITE 00023, SITE 00024	CORRESPONDENCE	NAVY - VERIFY AFFILIATION

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001044	7/26/1995	TRANSMITTAL OF THE 1) SITE INVESTIGATION OF THE UPLAND MAGAZINE AREA AND ORDNANCE RESERVOIR, DRAFT FINAL WORK PLAN; AND 2) SITE INVESTIGATION OF THE SOUTH SHORE AREA, DRAFT FINAL WORK PLAN [ENCLOSURE 1 IS RECORD # 1043 AND ENCLOSURE 2 IS RECORD # 1042]	UXO 000008	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
001069	9/29/1995	ACTION MEMORANDUM, CONCORD ANNEX DISPOSAL AREA	SITE 00005	REPORT	UNKNOWN - VERIFY AFFILIATION
001070	9/29/1995	ORDNANCE REMOVAL WORK PLAN AND INTERIM REMEDIAL ACTION PLAN FOR THE TIME CRITICAL REMOVAL ACTION; PART 1 - REMOVAL WORK PLAN	SITE 00005	REPORT	NAVY - VERIFY AFFILIATION
002002	10/5/1995	INITIAL STUDY; STATE NEGATIVE DECLARATION TO REMOVAL ACTION	SITE 00005	REPORT	DTSC - BERKELEY, CA
002003	10/6/1995	PUBLIC NOTICE - ANNOUNCING THE PROPOSED REMOVAL ACTION, INTERIM REMEDIAL ACTION PLAN AND NEGATIVE DECLARATION	SITE 00005	PUBLIC NOTICE	TIMES-HERALD - VALLEJO, CA
001065	11/13/1995	REQUEST FOR IDENTIFICATION OF STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY	SITE 00001, SITE 00002, SITE 00003, SITE 00004, SITE 00005, SITE 00006, SITE 00007, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014, SITE 00015, SITE 00016, SITE 00017, SITE 00018, SITE 00019, SITE 00020, SITE 00021, SITE 00023, SITE 00024	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
001068	11/13/1995	TRANSMITTAL OF THE ACTION MEMORANDUM, CONCORD ANNEX DISPOSAL AREA ORDNANCE REMOVAL WORK PLAN; AND INTERIM REMEDIAL ACTION PLAN	SITE 00005	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
003065	11/20/1996	TECHNICAL MEMORANDUM, TIDAL INFLUENCE STUDY	SITE 00001, SITE 00003, SITE 00005, SITE 00007, SITE 00009, SITE 00015, SITE 00020	REPORT	PRC ENVIRONMENTAL MANAGEMENT, INC.
003081	1/7/1997	DRAFT UPLAND MAGAZINE AREA AND ORDNANCE RESERVOIR REPORTS, SITE-SPECIFIC HEALTH AND SAFETY PLAN	UXO 000008	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
003080	1/7/1997	DRAFT UPLAND MAGAZINE AREA AND ORDNANCE RESERVOIR REPORTS, UNEXPLODED ORDNANCE INTRUSIVE INVESTIGATION WORK PLAN	UXO 000008	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
003079	1/21/1997	TRANSMITTAL OF THE 1) DRAFT UPLAND MAGAZINE AREA AND ORDNANCE RESERVOIR REPORTS, UNEXPLODED ORDNANCE INTRUSIVE INVESTIGATION WORK PLAN, AND 2) DRAFT UPLAND MAGAZINE AREA AND ORDNANCE RESERVOIR REPORTS, SITE-SPECIFIC HEALTH AND SAFETY PLAN	UXO 000008	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
003083	1/23/1997	TRANSMITTAL OF THE 1) RESPONSES TO COMMENTS FOR DIKES 12 AND 14 AREA, AND 2) ABBREVIATED FIELD SAMPLING AND ANALYSIS PLAN FOR THE ORDNANCE RESERVOIR, OFFSHORE	UXO 000006, UXO 000007, UXO 000008, UXO 000010, UXO 000011, UXO 000012	CORRESPONDENCE	PRC ENVIRONMENTAL MANAGEMENT, INC.
003085	1/23/1997	ABBREVIATED FIELD SAMPLING AND ANALYSIS PLAN FOR THE ORDNANCE RESERVOIR, OFFSHORE ECOLOGICAL RISK ASSESSMENT	UXO 000006, UXO 000007, UXO 000008, UXO 000010, UXO 000011, UXO 000012	CORRESPONDENCE	PRC ENVIRONMENTAL MANAGEMENT, INC.
003103	2/14/1997	FINAL UPLAND MAGAZINE AREA AND ORDNANCE RESERVOIR UNEXPLODED ORDNANCE INTRUSIVE INVESTIGATION WORK PLAN	AOC 000049, AOC 000050, UXO 000008	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
003120	2/21/1997	DRAFT WESTERN MAGAZINE AREA UNEXPLODED ORDNANCE INTRUSIVE INVESTIGATION WORK PLAN	BASEWIDE	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
003121	2/21/1997	DRAFT WESTERN MAGAZINE AREA SITE-SPECIFIC HEALTH AND SAFETY PLAN	BASEWIDE	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
003102	2/27/1997	TRANSMITTAL OF THE FINAL UPLAND MAGAZINE AREA AND ORDNANCE RESERVOIR UNEXPLODED ORDNANCE INTRUSIVE INVESTIGATION WORK PLAN	AOC 000049, AOC 000050, UXO 000008	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
003119	3/18/1997	TRANSMITTAL OF THE 1) DRAFT WESTERN MAGAZINE AREA UNEXPLODED ORDNANCE INTRUSIVE INVESTIGATION WORK PLAN, AND 2) DRAFT WESTERN MAGAZINE AREA SITE-SPECIFIC HEALTH AND SAFETY PLAN	BASEWIDE	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
003161	4/14/1997	FINAL WESTERN MAGAZINE AREA UNEXPLODED ORDNANCE INTRUSIVE INVESTIGATION WORK PLAN	BASEWIDE	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
003162	4/21/1997	FINAL WESTERN MAGAZINE AREA SITE SPECIFIC HEALTH AND SAFETY PLAN, PART 6 (APPENDIX A) OF THE UNEXPLODED ORDNANCE TECHNICAL WORK DOCUMENT FOR SITES	BASEWIDE	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
003160	5/5/1997	TRANSMITTAL OF THE 1) FINAL WESTERN MAGAZINE AREA UNEXPLODED ORDNANCE INTRUSIVE INVESTIGATION WORK PLAN, AND 2) FINAL WESTERN MAGAZINE AREA SITE SPECIFIC HEALTH AND SAFETY PLAN	BASEWIDE	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION

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003263	12/19/1997	DRAFT SUMMARY REPORT FOR THE UNEXPLODED ORDNANCE, TIME CRITICAL REMOVAL ACTION	SITE 00005	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
003262	1/7/1998	TRANSMITTAL OF THE DRAFT SUMMARY REPORT FOR THE UNEXPLODED ORDNANCE, TIME CRITICAL REMOVAL ACTION	SITE 00005	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
003297	5/22/1998	FINAL SUMMARY REPORT, UNEXPLODED ORDNANCE TIME CRITICAL REMOVAL ACTION	SITE 00005	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
003296	6/2/1998	TRANSMITTAL OF THE FINAL SUMMARY REPORT, UNEXPLODED ORDNANCE TIME CRITICAL REMOVAL ACTION	SITE 00005	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
003328	7/31/1998	DRAFT SUMMARY REPORT, UNEXPLODED ORDNANCE (UXO) INTRUSIVE INVESTIGATION, WESTERN MAGAZINE AREA	AOC 000062	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
003327	8/6/1998	TRANSMITTAL OF THE DRAFT SUMMARY REPORT, UNEXPLODED ORDNANCE INTRUSIVE INVESTIGATION, WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 3328)	AOC 000062	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
003364	10/16/1998	FINAL SUMMARY REPORT, UNEXPLODED ORDNANCE INTRUSIVE INVESTIGATION, WESTERN MAGAZINE AREA	BASEWIDE	REPORT	SSPORTS ENVIRONMENTAL DETACHMENT - VALLEJO, CA
003363	12/14/1998	TRANSMITTAL OF THE FINAL SUMMARY REPORT, UNEXPLODED ORDNANCE INTRUSIVE INVESTIGATION, WESTERN MAGAZINE AREA	BASEWIDE	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
003459	1/25/2000	LETTER FORWARDING RESPONSE TO COMMENTS TO DTSC ON THE 1998 TO 1999 INTERIM GROUNDWATER MONITORING PLAN (W/ ENCLOSURE)	OU 0000003, SITE 00001, SITE 00002, SITE 00003, SITE 00005, SITE 00006, SITE 00007, SITE 00008, SITE 00009, SITE 00011, SITE 00012, SITE 00015, SITE 00016, SITE 00017, SITE 00018, SITE 00019, SITE 00020, SITE 00021, SITE 00023, SITE 00024	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
003456	3/20/2000	JUNE/JULY 1999 INTERIM FACILITY-WIDE GROUNDWATER MONITORING PROGRAM QUARTERLY REPORT (3 VOLUMES)	SITE 00001, SITE 00003, SITE 00005, SITE 00006, SITE 00007, SITE 00012, SITE 00015, SITE 00016B-1, SITE 00016B-2, SITE 00016B-3, SITE 00016B-4, SITE 00016B-5, SITE 00017, SITE 00018, SITE 00020, SITE 00021, SITE 00023, SITE 00024	REPORT	TETRA TECH EM, INC.
000018	7/7/2000	QUARTERLY REPORT (SEE RECORD # 1803 - NAVFAC SWDIV TRANSMITTAL LETTER)	SITE 00001, SITE 00004, SITE 00005, SITE 00007, SITE 00014, SITE 00017, SITE 00020, SITE 00021	REPORT	TETRA TECH EM, INC.
000063	5/14/2001	DRAFT INVESTIGATION AREA I REMEDIAL INVESTIGATION REPORT (3 VOLUMES)	SITE 00005	REPORT	TETRA TECH EM, INC.
000535	8/17/2001	REVIEW AND COMMENTS ON THE UNDERGROUND STORAGE TANKS STATUS AND REQUEST FOR CLOSURE FOR UNDERGROUND STORAGE TANKS AND INSTALLATION RESTORATION SITES WITHIN INVESTIGATION AREA	SITE 00005, SITE 00005-2, UST 0000505, UST 0000505-1, UST 0000505-2, UST 0000505-3	CORRESPONDENCE	CRWQCB - SAN FRANCISCO, CA
000098	8/23/2001	23 AUGUST 2001 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES	SITE 00005	MINUTES	NAVFAC - SOUTHWEST DIVISION
000099	9/27/2001	27 SEPTEMBER 2001 RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES	SITE 00005	MINUTES	NAVFAC - SOUTHWEST DIVISION
000192	2/20/2002	DRAFT RESPONSES TO COMMENTS ON THE DRAFT FINAL ONSHORE ECOLOGICAL RISK ASSESSMENT [INCLUDES NAVFAC SWDIV TRANSMITTAL LETTER]	SITE 00001, SITE 00002, SITE 00004, SITE 00005, SITE 00006, SITE 00010, SITE 00013, SITE 00016, SITE 00024	CORRESPONDENCE	TETRA TECH EM, INC.
000194	2/22/2002	RESTORATION ADVISORY BOARD (RAB) ORIENTATION PACKET [INCLUDES NAVFAC SWDIV TRANSMITTAL LETTER]	SITE 00001, SITE 00002, SITE 00003, SITE 00004, SITE 00005, SITE 00006, SITE 00007, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014, SITE 00015, SITE 00016, SITE 00017, SITE 00018, SITE 00019, SITE 00020, SITE 00021, SITE 00022, SITE 00023, SITE 00024	CORRESPONDENCE	TETRA TECH EM, INC.
002388	4/22/2002	FINAL REMEDIAL INVESTIGATION REPORT, INVESTIGATION AREAS I (PARTIAL), AND J, AND THE WESTERN SUBMERGED LANDS, VOLUMES I AND II OF II (CD COPY ENCLOSED) [SEE RECORD # 2387 - WESTON, INC. TRANSMITTAL LETTER]	SITE 00005	REPORT	ROY F. WESTON, INC.
000138	7/1/2002	DRAFT CONSTRUCTION QUALITY CONTROL PLAN FOR REMEDIATION AGREEMENT SITES	SITE 00001, SITE 00002, SITE 00005, SITE 00006, SITE 00014, SITE 00016, SITE 00024	REPORT	ROY F. WESTON, INC.
000130	7/1/2002	DRAFT SITE-SPECIFIC HEALTH AND SAFETY PLAN FOR REMEDIATION AGREEMENT SITES	SITE 00001, SITE 00002, SITE 00005, SITE 00006, SITE 00016, SITE 00024	REPORT	ROY F. WESTON, INC.

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000129	7/1/2002	DRAFT QUALITY ASSURANCE PROJECT PLAN FOR REMEDIATION AGREEMENT SITES	SITE 00001, SITE 00002, SITE 00005, SITE 00006, SITE 00014, SITE 00016, SITE 00024	REPORT	ROY F. WESTON, INC.
000127	7/17/2002	DRAFT CONCEPTUAL SITE MODEL FOR THE SOUTHERN OFFSHORE ORDNANCE SITES	SITE 00005	REPORT	ENVIRONMENTAL CHEMICAL CORPORATION
002389	7/22/2002	TRANSMITTAL OF THE FINAL ONSHORE ECOLOGICAL RISK ASSESSMENT, REVISION 1 (ENCLOSURE IS RECORD # 144)	SITE 00001, SITE 00002, SITE 00005, SITE 00006, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014, SITE 00016, SITE 00017, SITE 00019, SITE 00021, SITE 00022, SITE 00023, SITE 00024	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
000144	7/23/2002	FINAL ONSHORE ECOLOGICAL RISK ASSESSMENT, REVISION 1, VOLUMES 1 THROUGH 3 (SEE RECORD # 2389 - NAVFAC SWDIV TRANSMITTAL LETTER)	SITE 00001, SITE 00002, SITE 00005, SITE 00006, SITE 00008, SITE 00009, SITE 00010, SITE 00011, SITE 00012, SITE 00013, SITE 00014, SITE 00016, SITE 00017, SITE 00019, SITE 00021, SITE 00022, SITE 00023, SITE 00024	REPORT	TETRA TECH EM, INC.
000153	8/1/2002	DRAFT SITE CONTROL PLAN - WESTERN EARLY TRANSFER PARCEL	SITE 00005	REPORT	ROY F. WESTON, INC.
000143	8/2/2002	REVISED FINAL OFFSHORE AREAS ECOLOGICAL RISK ASSESSMENT, VOLUMES 1 AND 2 (INCLUDES NAVFAC SWDIV TRANSMITTAL LETTER)	SITE 00001, SITE 00002, SITE 00003, SITE 00004, SITE 00005, SITE 00007, SITE 00009, SITE 00012, SITE 00015, SITE 00016, SITE 00018, SITE 00019, SITE 00020, SITE 00021	REPORT	TETRA TECH EM, INC.
000162	9/13/2002	DRAFT REMEDIAL INVESTIGATION REPORT FOR INVESTIGATION AREA (SOIL AND SURFACE WATER), THE FORMER ORDNANCE AND BURNING AREA, AND THE WESTERN MAGAZINE AREA, VOLUMES 1 THROUGH 6 OF 6	SITE 00005	REPORT	ROY F. WESTON, INC.
000173	9/20/2002	ATTACHMENT C - DRAFT SITE MANAGEMENT PLAN, FISCAL YEAR 2003 [INCLUDES NAVFAC SWDIV TRANSMITTAL LETTER FROM J. DUNAWAY]	SITE 00001, SITE 00002, SITE 00004, SITE 00005, SITE 00006, SITE 00014, SITE 00016, SITE 00017	REPORT	TETRA TECH EM, INC.
000160	9/24/2002	RESPONSES TO COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION REPORT	SITE 00005	CORRESPONDENCE	ROY F. WESTON, INC.
000175	10/1/2002	WETLAND HYDROLOGY EVALUATION WORK PLAN (WORK ORDER NO. 12826.001.001.0002.20)	SITE 00001, SITE 00002, SITE 00005, SITE 00006, SITE 00014, SITE 00016	REPORT	ROY F. WESTON, INC.
000179	10/3/2002	ATTACHMENT C - DRAFT FINAL SITE MANAGEMENT PLAN FOR FISCAL YEAR 2003 [INCLUDES NAVFAC SWDIV TRANSMITTAL LETTER]	SITE 00001, SITE 00002, SITE 00004, SITE 00005, SITE 00014, SITE 00016, SITE 00017	REPORT	TETRA TECH EM, INC.
000532	10/8/2002	REVIEW AND COMMENTS ON THE DRAFT CONCEPTUAL SITE MODEL FOR THE SOUTHERN OFFSHORE ORDNANCE SITES (SEE RECORD # 127 - DRAFT CONCEPTUAL SITE MODEL)	SITE 00005	CORRESPONDENCE	CRWQCB - SAN FRANCISCO, CA
000180	10/18/2002	ATTACHMENT C - FINAL SITE MANAGEMENT PLAN FOR FISCAL YEAR 2003 [INCLUDES NAVFAC SWDIV TRANSMITTAL LETTER FROM J. DUNAWAY]	SITE 00001, SITE 00002, SITE 00004, SITE 00005, SITE 00006, SITE 00014, SITE 00016, SITE 00017	REPORT	TETRA TECH EM, INC.
000188	11/1/2002	ATTACHMENT C - REVISED FINAL SITE MANAGEMENT PLAN FOR FISCAL YEAR 2003 [INCLUDES NAVFAC SWDIV TRANSMITTAL LETTER FROM J. DUNAWAY]	SITE 00001, SITE 00002, SITE 00004, SITE 00005, SITE 00006, SITE 00014, SITE 00016, SITE 00017	REPORT	TETRA TECH EM, INC.
000211	11/27/2002	DRAFT FINAL ENGINEERING EVALUATION/COST ANALYSIS/REMOVAL ACTION WORK PLAN - OPERATION OF MARE ISLAND ORDNANCE STORAGE AND TREATMENT FACILITIES [INCLUDES NAVFAC SWDIV TRANSMITTAL LETTER]	SITE 00005	REPORT	ROY F. WESTON, INC.
000210	12/2/2002	DRAFT WORK PLAN REMEDIAL INVESTIGATION GEOPHYSICAL SURVEY FOR THE SOUTHERN OFFSHORE SITES [INCLUDES NAVFAC SWDIV TRANSMITTAL LETTER]	SITE 00005	REPORT	ENVIRONMENTAL CHEMICAL CORPORATION
000610	12/20/2002	REVIEW AND COMMENTS ON THE WETLAND HYDROLOGY EVALUATION WORK PLAN (SEE RECORD # 175 - WETLAND HYDROLOGY EVALUATION WORK PLAN)	SITE 00005	CORRESPONDENCE	DTSC - BERKELEY, CA
000218	1/1/2003	DRAFT SITE CONTROL PLAN FOR NAVY RETAINED PROPERTY - INCLUDES TRANSMITTAL LETTER BY J. DUNAWAY	SITE 00004, SITE 00005	CORRESPONDENCE	NAVFAC - SOUTHWEST DIVISION
000569	1/8/2003	REVIEW AND COMMENTS ON THE DRAFT REMEDIAL INVESTIGATION REPORT FOR INVESTIGATION AREA (SOIL AND SURFACE WATER), THE FORMER ORDNANCE AND BURNING AREA, AND THE WESTERN MAGAZINE AREA [SEE RECORD # 162 - DRAFT REMEDIAL INVESTIGATION REPORT]	BASEWIDE	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
000669	12/1/2003	DRAFT ENGINEERING EVALUATION/COST ANALYSIS REMOVAL ACTION WORK PLAN FOR THE OPERATION OF MARE ISLAND ORDNANCE STORAGE AND TREATMENT FACILITIES (SEE RECORD # 1768 - SWDIV TRANSMITTAL LETTER)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
003481	4/1/2004	NON-CRITICAL REMOVAL ACTION, ACTION MEMORANDUM, OPERATION OF MARE ISLAND ORDNANCE STORAGE AND TREATMENT FACILITIES (DOCUMENT ALSO CONTAINS SENSITIVE STREET LEVEL MAPS) [SEE RECORD # 1921 - NAVFAC SWDIV TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.

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003482	4/1/2004	FINAL ENGINEERING EVALUATION/COST ANALYSIS/REMOVAL ACTION WORK PLAN OPERATION OF ORDNANCE STORAGE AND TREATMENT FACILITIES	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
003500	7/1/2004	RESPONSES TO COMMENTS ON THE DRAFT AND DRAFT FINAL REMEDIAL INVESTIGATION REPORTS FOR GROUNDWATER, SOIL, AND SURFACE WATER, WESTERN MAGAZINE AREA (SEE RECORD # 621 - COMMENTS)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
003533	2/3/2005	DRAFT MUNITIONS RESPONSE ACTION WORK PLAN (DOCUMENT ALSO CONTAINS SENSITIVE STREET LEVEL MAPS) [SEE RECORD # 1906 - WESTON SOLUTIONS TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001906	2/3/2005	TRANSMITTAL OF THE DRAFT MUNITIONS RESPONSE ACTION WORK PLAN (ENCLOSURE IS RECORD # 3533)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001905	2/3/2005	TRANSMITTAL OF THE DRAFT MUNITIONS RESPONSE ACTION WORK PLAN FOR THE WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 3534)	BASEWIDE	CORRESPONDENCE	WESTON SOLUTIONS, INC.
003534	2/3/2005	DRAFT MUNITIONS RESPONSE ACTION WORK PLAN FOR THE WESTERN MAGAZINE AREA (DOCUMENT ALSO CONTAINS SENSITIVE STREET LEVEL MAPS) [SEE RECORD # 1905 - WESTON SOLUTIONS TRANSMITTAL LETTER]	UST A-202	REPORT	WESTON SOLUTIONS, INC.
003605	4/14/2005	REVIEW AND COMMENTS ON THE DRAFT MUNITIONS RESPONSE ACTION WORK PLAN (SEE RECORD # 3533 - DRAFT MUNITIONS RESPONSE ACTION WORK PLAN)	SITE 00005	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
003611	4/14/2005	REVIEW AND COMMENTS ON THE DRAFT MUNITIONS RESPONSE ACTION WORK PLAN, WESTERN MAGAZINE AREA (SEE RECORD # 3533 - DRAFT MUNITIONS RESPONSE ACTION WORK PLAN)	BASEWIDE	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
001202	7/14/2005	REVIEW AND COMMENTS ON THE DRAFT FISCAL YEAR 2006 SITE MANAGEMENT PLAN WITH REVISED TABLES (SEE RECORD # 775 - DRAFT SITE MANAGEMENT PLAN, AND RECORD # 3615 - DRAFT FINAL SITE MANAGEMENT PLAN, WHICH INCLUDES REVISED TABLES)	SITE 00005, SITE 00014, SITE 00017, UST A-190, UST A-225, UST A-226, UST A-246E, UST A-71W	CORRESPONDENCE	DTSC - BERKELEY, CA
000721	8/4/2005	REVIEW AND COMMENTS ON THE DRAFT MUNITIONS RESPONSE ACTION WORK PLAN, WESTERN MAGAZINE AREA (SEE RECORD # 3533 - DRAFT MUNITIONS RESPONSE ACTION WORK PLAN)	BASEWIDE	CORRESPONDENCE	DTSC - BERKELEY, CA
003576	10/1/2005	DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, WESTERN MAGAZINE AREA (INCLUDES RESPONSES TO COMMENTS ON THE DRAFT WORK PLAN) [SEE RECORDS # 1827 - WESTON TRANSMITTAL LETTER; AND # 743 - REVISED DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN]	BASEWIDE	REPORT	WESTON SOLUTIONS, INC.
003575	10/13/2005	DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, DREDGE POND (INCLUDES RESPONSES TO COMMENTS ON THE DRAFT WORK PLAN)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001817	10/14/2005	TRANSMITTAL OF THE DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN (ENCLOSURE IS RECORD # 3575)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001827	10/14/2005	TRANSMITTAL OF THE DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 3576)	BASEWIDE	CORRESPONDENCE	WESTON SOLUTIONS, INC.
003593	11/1/2005	REVIEW AND COMMENTS ON THE DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, WESTERN MAGAZINE AREA / DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, SITE AND DREDGE POND (SEE RECORD # 3575 - DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN)	SITE 00005	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
000743	12/14/2005	REVISED DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, WESTERN MAGAZINE AREA (INCLUDES RESPONSE TO COMMENTS ON THE DRAFT FINAL WORK PLAN) [SEE RECORD # 1818 - WESTON SOLUTIONS TRANSMITTAL LETTER AND RECORD # 3576 - DRAFT FINAL WORK PLAN]	BASEWIDE	REPORT	WESTON SOLUTIONS, INC.
001818	12/15/2005	TRANSMITTAL OF THE REVISED DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 743)	BASEWIDE	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001821	1/31/2006	TRANSMITTAL OF THE REVISED DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN (ENCLOSURE IS RECORD # 774)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
000774	1/31/2006	REVISED DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, DREDGE POND (INCLUDES RESPONSES TO COMMENTS) [SEE RECORD # 1821 - WESTON TRANSMITTAL LETTER, AND RECORD # 3575 - DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.

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000817	2/2/2006	REVIEW AND NO FURTHER COMMENTS ON THE REVISED DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, WESTERN MAGAZINE AREA [SEE RECORD # 743 - REVISED DRAFT FINAL MUNITION RESPONSE ACTION WORK PLAN]	BASEWIDE	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
000793	2/14/2006	REVIEW AND NO FURTHER COMMENTS ON THE REVISED DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN (SEE RECORD # 774 - REVISED DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN)	SITE 00005	CORRESPONDENCE	DTSC - BERKELEY, CA
001103	2/22/2007	22 FEBRUARY 2007 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES	SITE 00005, SITE 00017, UST 0000742	MINUTES	CDM FEDERAL PROGRAMS CORP.
003650	3/1/2007	DRAFT CONCEPTUAL SITE MODEL, WESTERN MAGAZINE AREA (CD COPY ENCLOSED) [SEE RECORD # 1837 - WESTON TRANSMITTAL LETTER, AND RECORD # 1148 - REVISED DRAFT CONCEPTUAL SITE MODEL]	BASEWIDE	REPORT	WESTON SOLUTIONS, INC.
001837	3/16/2007	TRANSMITTAL OF THE DRAFT CONCEPTUAL SITE MODEL, WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 3650)	BASEWIDE	CORRESPONDENCE	WESTON SOLUTIONS, INC.
003681	5/1/2007	DRAFT ACTION MEMORANDUM/INTERIM REMEDIAL ACTION PLAN, CERCLA TIME CRITICAL REMOVAL ACTION FOR PAINT WASTE AREA, HORSE STABLES AREA, AND INSTALLATION RESTORATION SITES (CD COPY ENCLOSED)	SITE 00004, SITE 00005, UST IR05-2	REPORT	WESTON SOLUTIONS, INC.
003659	5/9/2007	DRAFT WORK PLAN, TIME-CRITICAL REMOVAL ACTION, PARCEL PAINT WASTE AREA, DEFENSE REUTILIZATION AND MARKETING OFFICE SHIPYARD, AND HORSE STABLES AREA (CD COPY ENCLOSED) [DOCUMENT ALSO CONTAINS SENSITIVE STREET LEVEL MAPS]	SITE 00004, SITE 00005	REPORT	WESTON SOLUTIONS, INC.
003658	5/14/2007	TRANSMITTAL OF THE DRAFT WORK PLAN, TIME-CRITICAL REMOVAL ACTION, PAINT WASTE AREA, DEFENSE REUTILIZATION AND MARKETING OFFICE SCRAPYARD, AND HOUSE STABLES AREA [ENCLOSURE IS RECORD # 3659]	SITE 00004, SITE 00005, SITE 00028, UXO 000013	CORRESPONDENCE	BRAC PMO WEST
001152	5/23/2007	REVIEW AND COMMENTS ON THE DRAFT WORK PLAN, TIME-CRITICAL REMOVAL ACTION, PAINT WASTE AREA, DEFENSE REUTILIZATION AND MARKETING OFFICE SHIPYARD AND HORSE STABLES AREA; DRAFT ACTION MEMORANDUM/INTERIM REMEDIAL ACTION PLAN (**SEE COMMENTS**)	SITE 00004, SITE 00005, SITE 00028	CORRESPONDENCE	DTSC - GLENDALE, CA
001187	5/25/2007	LETTER INFORMING OF THE NAVY'S INTENT TO PURSUE ADDITIONAL EXCAVATIONS OF THE IMPACTED GRIDS ADJOINING DUMP ROAD [SEE RECORD # 1188 - RESPONSE TO INTENT TO EXCAVATE]	SITE 00004, SITE 00005	CORRESPONDENCE	BRAC PMO WEST
003680	5/30/2007	TRANSMITTAL OF THE DRAFT ACTION MEMORANDUM/INTERIM REMEDIAL ACTION PLAN, CERCLA TIME CRITICAL REMOVAL ACTION FOR PAINT WASTE AREA, HORSE STABLES AREA, AND INSTALLATION RESTORATION SITES (ENCLOSURE IS RECORD # 3681)	SITE 00004, SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001120	5/31/2007	REVIEW AND COMMENTS ON THE DRAFT WORK PLAN TIME-CRITICAL REMOVAL ACTION, PAINT WASTE AREA, DEFENSE REUTILIZATION AND MARKETING OFFICE SCRAP YARD, AND HORSE STABLES AREA (SEE RECORD # 3659 - DRAFT WORK PLAN)	SITE 00004, SITE 00005, SITE 00028	CORRESPONDENCE	CRWQCB - OAKLAND, CA
001128	6/8/2007	REVIEW AND COMMENTS ON THE DRAFT ACTION MEMORANDUM/INTERIM REMEDIAL ACTION PLAN, TIME CRITICAL REMOVAL ACTION, PAINT WASTE AREA, HORSE STABLES AREA [SEE RECORD # 3681 - DRAFT ACTION MEMORANDUM/INTERIM REMEDIAL ACTION PLAN]	SITE 00004, SITE 00005	CORRESPONDENCE	DTSC - BERKELEY, CA
001126	6/12/2007	REVIEW AND COMMENTS ON THE DRAFT WORK PLAN TIME-CRITICAL REMOVAL ACTION, PAINT WASTE AREA, DEFENSE REUTILIZATION AND MARKETING OFFICE AND HORSE STABLES AREA (SEE RECORD # 3659 - DRAFT WORK PLAN)	SITE 00004, SITE 00005, SITE 00028	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
001127	6/19/2007	REVIEW AND COMMENTS ON THE DRAFT WORK PLAN TIME-CRITICAL REMOVAL ACTION, PAINT WASTE AREA, DEFENSE REUTILIZATION AND MARKETING OFFICE AND HORSE STABLES AREA [SEE RECORD # 3659 - DRAFT WORK PLAN]	SITE 00004, SITE 00005, SITE 00028	CORRESPONDENCE	CRWQCB - OAKLAND, CA
001118	7/2/2007	BIOLOGICAL EVALUATION FOR THE PAINT WASTE AREA AND TRANSMITTAL OF THE 1) RESPONSE ACTION AND APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS; 2) LETTER REGARDING ENDANGERED SPECIES ACT; AND 3) CD INSERT FOR THE FINAL DRAFT WORK PLAN	SITE 00004, SITE 00005	CORRESPONDENCE	BRAC PMO WEST

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001119	8/1/2007	FINAL DRAFT ACTION MEMORANDUM/INTERIM REMEDIAL ACTION PLAN, CERCLA TIME CRITICAL REMOVAL ACTION, PAINT WASTE AREA, HORSE STABLES AREA, AND INSTALLATION RESTORATION SITES	SITE 00004, SITE 00005	REPORT	WESTON SOLUTIONS, INC.
003686	8/13/2007	FINAL DRAFT WORK PLAN, TIME-CRITICAL REMOVAL ACTION, PAINT WASTE AREA AND HORSE STABLES AREA (CD COPY ENCLOSED) (INCLUDES FINAL DRAFT ADDENDUM 1 TO FINAL SAMPLING AND ANALYSIS PLAN DATED JUNE 2007) [DOCUMENT ALSO CONTAINS SENSITIVE STREET LEVEL MAPS]	SITE 00004, SITE 00005	REPORT	WESTON SOLUTIONS, INC.
003682	8/22/2007	REVISED PROJECT DESCRIPTION FOR BIOLOGICAL EVALUATION FOR THE PAINT WASTE AREA (W/ ENCLOSURES) [SEE RECORD # 1118 - BIOLOGICAL EVALUATION FOR THE PAINT WASTE AREA]	SITE 00004, SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001122	9/1/2007	DRAFT FINAL ACCIDENT PREVENTION PLAN TIME-CRITICAL REMOVAL ACTION, PAINT WASTE AREA AND HORSE STABLE AREA (CD COPY ENCLOSED) (INCLUDES RESPONSES TO COMMENTS ON THE INTERNAL DRAFT HEALTH AND SAFETY PLAN TIME-CRITICAL REMOVAL ACTION]	SITE 00004, SITE 00005	REPORT	WESTON SOLUTIONS, INC.
003685	9/1/2007	FINAL ACTION MEMORANDUM/INTERIM REMEDIAL ACTION PLAN CERCLA TIME CRITICAL REMOVAL ACTION PAINT WASTE AREA, HORSE STABLES AREA [CD COPY ENCLOSED] (SEE RECORD # 3683 - BRAC PMO WEST TRANSMITTAL LETTER, AND RECORD # 1356 - FINAL ACTION MEMORANDUM AMENDMENT)	SITE 00004, SITE 00005, UST IR05-2	REPORT	WESTON SOLUTIONS, INC.
001134	9/1/2007	DRAFT RADIOLOGICAL SURVEY PLAN WESTERN MAGAZINE AREA DREDGE OUTFALLS (SEE RECORD # 1826 - WESTON TRANSMITTAL LETTER)	BASEWIDE	REPORT	WESTON SOLUTIONS, INC.
001129	9/13/2007	REVIEW AND COMMENTS ON THE DRAFT GEOPHYSICAL INVESTIGATION, PRODUCTION MANUFACTURING AREA AND SOUTH SHORE AREA (SEE RECORD # 3657 - DRAFT GEOPHYSICAL INVESTIGATION)	SITE 00005	CORRESPONDENCE	DTSC - SACRAMENTO, CA
001826	9/21/2007	TRANSMITTAL OF THE DRAFT RADIOLOGICAL SURVEY PLAN WESTERN MAGAZINE AREA DREDGE OUTFALLS (ENCLOSURE IS RECORD # 1134)	BASEWIDE	CORRESPONDENCE	WESTON SOLUTIONS, INC.
003684	9/24/2007	FINAL WORK PLAN TIME-CRITICAL REMOVAL ACTION PAINT WASTE AREA HORSE STABLES AREA (CD COPY ENCLOSED) [DOCUMENT ALSO CONTAINS SENSITIVE STREET LEVEL MAPS]	SITE 00004, SITE 00005	REPORT	WESTON SOLUTIONS, INC.
003683	9/25/2007	TRANSMITTAL OF THE 1) FINAL WORK PLAN TIME CRITICAL REMOVAL ACTION, PAINT WASTE AREA, HORSE STABLE AREA; AND 2) FINAL ACTION MEMORANDUM/ INTERIM REMEDIAL ACTION PLAN, CERCLA TIME-CRITICAL REMOVAL ACTION, PAINT WASTE AREA, HORSE STABLE AREA	SITE 00004, SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001151	10/1/2007	DRAFT CONCEPTUAL SITE MODEL (CD COPY ENCLOSED)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001148	11/1/2007	REVISED DRAFT CONCEPTUAL SITE MODEL FOR WESTERN MAGAZINE AREA (CD COPY ENCLOSED) [SEE RECORD # 3650 - DRAFT CONCEPTUAL SITE MODEL]	BASEWIDE	REPORT	WESTON SOLUTIONS, INC.
001156	11/5/2007	REVIEW AND COMMENTS ON THE DRAFT RADIOLOGICAL SURVEY PLAN, WESTERN MAGAZINE AREA DREDGE OUTFALLS (INCLUDES COMMENTS BY CALIFORNIA DEPARTMENT OF PUBLIC HEALTH) [SEE RECORD # 1134 - DRAFT RADIOLOGICAL SURVEY PLAN]	BASEWIDE	CORRESPONDENCE	DTSC - BERKELEY, CA
001168	3/6/2008	REVIEW AND COMMENTS ON THE 1) DRAFT CONCEPTUAL SITE MODEL AND 2) DRAFT CONCEPTUAL SITE MODEL FOR WESTERN MAGAZINE AREA [SEE RECORDS # 1151 - DRAFT CONCEPTUAL SITE MODEL, AND # 3650 - DRAFT CONCEPTUAL SITE MODEL FOR WESTERN MAGAZINE AREA]	SITE 00005	CORRESPONDENCE	U.S. EPA - SAN FRANCISCO, CA
001169	3/7/2008	REVIEW AND COMMENTS ON THE 1) REVISED DRAFT CONCEPTUAL SITE MODEL FOR WESTERN MAGAZINE AREA, AND 2) DRAFT CONCEPTUAL SITE MODEL (INCLUDES DEPARTMENT OF FISH AND GAME COMMENTS DATED 04 MARCH 2008)	SITE 00005	CORRESPONDENCE	DTSC - SACRAMENTO, CA
001200	6/1/2008	DRAFT SITE MANAGEMENT PLAN ATTACHMENT C TO THE FEDERAL FACILITY SITE REMEDIATION AGREEMENT FISCAL YEAR 2009 (CD COPY ENCLOSED) [DOCUMENT ALSO CONTAINS SENSITIVE STREET LEVEL MAPS] (SEE RECORD # 1199 - BRAC PMO WEST TRANSMITTAL LETTER)	SITE 00004, SITE 00005, SITE 00017, UST 0000655, UST 0000993-4, UST A-195, UST A-225, UST A-266, UST A-267	REPORT	CHADUX - TT, JOINT VENTURE
001230	8/1/2008	DRAFT ADDENDUM 1 TIME-CRITICAL REMOVAL ACTION PAINT WASTE AREA MUNITIONS RESPONSE TO FINAL WORK PLAN TIME-CRITICAL REMOVAL ACTION PAINT WASTE AREA AND HORSE STABLES AREA (CD COPY ENCLOSED)	SITE 00004, SITE 00005	REPORT	WESTON SOLUTIONS, INC.

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001149	8/1/2008	DRAFT SUMMARY REPORT, RADIATION SURVEYS OF WESTERN MAGAZINE AREA, EAST AND WEST DREDGE OUTFALLS (CD COPY ENCLOSED)	BASEWIDE	REPORT	WESTON SOLUTIONS, INC.
001229	8/22/2008	TRANSMITTAL OF THE DRAFT ADDENDUM 1 TIME-CRITICAL REMOVAL ACTION PARCEL PAINT WASTE AREA MUNITIONS RESPONSE TO THE FINAL WORK PLAN TIME-CRITICAL REMOVAL ACTION PAINT WASTE AREA, HORSE STABLES AREA (ENCLOSURE IS RECORD # 1230)	SITE 00004, SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001248	9/23/2008	REQUEST FOR THE IDENTIFICATION OF STATE APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR THE TIME-CRITICAL REMOVAL ACTION AT PAINT WASTE AREA	SITE 00004, SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001250	10/1/2008	DRAFT FINAL SITE MANAGEMENT PLAN, ATTACHMENT C TO THE FEDERAL FACILITY SITE REMEDIATION AGREEMENT, FISCAL YEAR 2009 (INCLUDES RESPONSE TO COMMENTS ON THE DRAFT SITE MANAGEMENT (SEE COMMENTS)	SITE 00004, SITE 00005, SITE 00017, UST 0000655, UST 0000993-4, UST A-195, UST A-225, UST A-25, UST A-266, UST A-267, UST A-296, UST A-58	REPORT	CHADUX - TT, JOINT VENTURE
001244	10/8/2008	REVIEW AND COMMENTS ON THE DRAFT ADDENDUM 1 TIME-CRITICAL REMOVAL ACTION PAINT WASTE AREA MUNITIONS RESPONSE TO FINAL WORK PLAN TIME-CRITICAL REMOVAL ACTION PAINT WASTE AREA, HORSE STABLES AREA	SITE 00004, SITE 00005	CORRESPONDENCE	DTSC - BERKELEY, CA
001302	11/1/2008	FINAL SITE MANAGEMENT PLAN, ATTACHMENT C TO THE FEDERAL FACILITY SITE REMEDIATION AGREEMENT, FISCAL YEAR 2009 (INCLUDES RESPONSES TO COMMENTS ON THE DRAFT FINAL SAMPLING AND ANALYSIS PLAN, AND CD COPY) [SEE RECORD # 1301 - BRAC TRANSMITTAL LETTER]	SITE 00004, SITE 00005, SITE 00017, UST 0000505-2, UST 0000655, UST 0000993-4, UST A-16, UST A-194, UST A-195, UST A-225, UST A-25, UST A-266S, UST A-267, UST A-296, UST A-58	REPORT	CHADUX - TT, JOINT VENTURE
001284	12/1/2008	DRAFT CONCEPTUAL SITE MODEL, WESTERN MAGAZINE AREA (CD COPY ENCLOSED) [SEE RECORD # 1845 - WESTON TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001845	12/19/2008	TRANSMITTAL OF THE DRAFT CONCEPTUAL SITE MODEL, WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 1284)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001311	2/23/2009	REVIEW AND COMMENTS ON THE DRAFT CONCEPTUAL SITE MODEL, WESTERN MAGAZINE AREA	SITE 00005	CORRESPONDENCE	SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION - SAN FRANCISCO, CA
001322	3/1/2009	DRAFT MUNITIONS RESPONSE ACTION COMPLETION REPORT, WESTERN MAGAZINE AREA (CD COPY ENCLOSED)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001678	3/13/2009	TRANSMITTAL OF THE DRAFT MUNITIONS RESPONSE ACTION COMPLETION REPORT, WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 1322)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001393	6/1/2009	FINAL ADDENDUM 2 TO FINAL SAMPLING AND ANALYSIS PLAN (FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN) FOR TIME-CRITICAL REMOVAL ACTION PAINT WASTE AREA AND HORSE STABLES AREA (CD COPY ENCLOSED)	SITE 00004, SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001326	6/4/2009	DRAFT ACTION MEMORANDUM/INTERIM REMEDIAL ACTION PLAN AMENDMENT TO THE TIME-CRITICAL REMOVAL ACTION, PAINT WASTE AREA (CD COPY ENCLOSED)	SITE 00004, SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001345	6/9/2009	DRAFT SITE MANAGEMENT PLAN ATTACHMENT C TO THE FEDERAL FACILITY SITE REMEDIATION AGREEMENT FISCAL YEAR 2010 (CD COPY ENCLOSED) (DOCUMENT ALSO CONTAINS SENSITIVE STREET LEVEL MAPS)	SITE 00004, SITE 00005, SITE 00017, UST 0000993-4, UST A-16, UST A-194, UST A-195, UST A-225, UST A-25, UST A-266S, UST A-267, UST A-296, UST A-58	REPORT	CHADUX - TT, JOINT VENTURE
001392	6/25/2009	TRANSMITTAL OF THE 1) FINAL ADDENDUM 2 TO THE FINAL SAMPLING AND ANALYSIS PLAN (FIELD SAMPLING PLAN AND QUALITY ASSURANCE PROJECT PLAN) FOR TIME-CRITICAL REMOVAL ACTION, PAINT WASTE AREA AND HORSE STABLES AREA, AND (**SEE COMMENTS)	SITE 00004, SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001433	7/29/2009	REVIEW AND COMMENTS ON THE 1) FINAL WORK PLAN ADDENDUM 1 TIME-CRITICAL REMOVAL ACTION PAINT WASTE AREA MUNITIONS AND RADIOLOGICAL RESPONSE TO FINAL WORK PLAN TIME-CRITICAL REMOVAL ACTION, AND (**SEE COMMENTS)	SITE 00004, SITE 00005	CORRESPONDENCE	DTSC - BERKELEY, CA
001404	8/1/2009	FINAL WORK PLAN ADDENDUM 1 TIME-CRITICAL REMOVAL ACTION PAINT WASTE AREA MUNITIONS AND RADIOLOGICAL RESPONSE TO FINAL WORK PLAN TIME-CRITICAL REMOVAL ACTION (INCLUDES REPLACEMENT PAGES, DATED AUGUST 2009, REVISING THE DATE OF JUNE 2009 AND CD COPY)	SITE 00004, SITE 00005	REPORT	WESTON SOLUTIONS, INC.

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001405	8/10/2009	TRANSMITTAL OF THE REPLACEMENT PAGES REVISING THE DATE OF THE FINAL WORK PLAN ADDENDUM 1 TIME-CRITICAL REMOVAL ACTION PAINT WASTE AREA MUNITIONS AND RADIOLOGICAL RESPONSE TO FINAL WORK PLAN TIME-CRITICAL REMOVAL ACTION (ENCLOSURE IS RECORD # 1404)	SITE 00004, SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001569	8/11/2009	REVIEW AND COMMENTS ON THE 1) FINAL WORK PLAN ADDENDUM 1 TIME-CRITICAL REMOVAL ACTION PAINT WASTE AREA MUNITIONS AND RADIOLOGICAL RESPONSE TO FINAL WORK PLAN TIME-CRITICAL REMOVAL ACTION; 2) FINAL ACTION MEMORANDUM AMENDMENT TO THE CERCLA **SEE COMMENTS**	SITE 00004, SITE 00005	CORRESPONDENCE	DTSC - BERKELEY, CA
001485	9/1/2009	REVISED DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, REVISION 2 (CD COPY ENCLOSED) [SEE RECORD # 3575 - DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001424	9/24/2009	24 SEPTEMBER 2009 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES [CD COPY ENCLOSED]	SITE 00001, SITE 00003, SITE 00005, SITE 00015, SITE 00021, UST 0000693	MINUTES	CDM SMITH
001486	10/1/2009	REVISED DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, REVISION 3 (CD COPY ENCLOSED) [SEE RECORD # 3575 - DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN; AND RECORD # 1578 - WESTON SOLUTIONS TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001578	10/29/2009	TRANSMITTAL OF THE REVISED DRAFT FINAL MUNITIONS RESPONSE ACTION WORK PLAN, REVISION 3 (ENCLOSURE IS RECORD # 1486)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001440	1/20/2010	TRANSMITTAL OF THE REPLACEMENT PAGES CORRECTING THE EXPLOSIVES SAFETY SUBMISSION, MUNITIONS RESPONSE ACTION WESTERN MAGAZINE AREA, AMENDMENT 1, DATED JULY 2006 (W/ ENCLOSURE)	BASEWIDE	CORRESPONDENCE	BRAC PMO WEST
001504	2/25/2010	25 FEBRUARY 2010 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (CD COPY ENCLOSED)	SITE 00005	MINUTES	CDM SMITH
001607	4/5/2010	LETTER REPORT: VISUAL SURVEY FOR MUNITIONS AND EXPLOSIVES OF CONCERN AT WESTERN MAGAZINE AREA	BASEWIDE	REPORT	WESTON SOLUTIONS, INC.
001606	4/7/2010	TRANSMITTAL OF THE LETTER REPORT: VISUAL SURVEY FOR MUNITIONS AND EXPLOSIVES OF CONCERN AT WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 1607)	BASEWIDE	CORRESPONDENCE	BRAC PMO WEST
001501	4/30/2010	DESIGN MODIFICATION REPORT IN SUPPORT OF FIELD CHANGE REQUEST NO. 8 REMEDIAL DESIGN PLAN (CD COPY ENCLOSED)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
000405	5/6/2010	REVIEW AND CONCURRENCE WITH NO FURTHER ACTION ON THE LETTER REPORT: VISUAL SURVEY FOR MUNITIONS AND EXPLOSIVES OF CONCERN AT WESTERN MAGAZINE AREA (SEE RECORD # 1607 - LETTER REPORT: VISUAL SURVEY FOR MUNITIONS AND EXPLOSIVES OF CONCERN)	BASEWIDE	CORRESPONDENCE	DTSC - BERKELEY, CA
001511	6/10/2010	DEWATERING PLAN, THE PAINT WASTE AREA (CD COPY ENCLOSED)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001523	6/15/2010	DRAFT SITE MANAGEMENT PLAN ATTACHMENT C TO THE FEDERAL FACILITY SITE REMEDIATION AGREEMENT FISCAL YEAR 2011 (CD COPY ENCLOSED)	SITE 00004, SITE 00017, UXO 000003, UXO 000004, UXO 000006, UXO 000008, UXO 000010, UXO 000011, UXO 000012, UXO 000013	REPORT	CHADUX - TT, JOINT VENTURE
001536	7/1/2010	DRAFT FINAL MUNITIONS RESPONSE ACTION COMPLETION REPORT, WESTERN MAGAZINE AREA (CD COPY ENCLOSED)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001519	7/1/2010	DRAFT FINAL MUNITIONS AND EXPLOSIVES OF CONCERN CONCEPTUAL SITE MODEL, DREDGE POND 7S, AND WESTERN MAGAZINE AREA	SITE 00005, UST A-202, UST A-229, UST A-230, UST A-231	REPORT	WESTON SOLUTIONS, INC.
001536	7/1/2010	DRAFT FINAL MUNITIONS RESPONSE ACTION COMPLETION REPORT, WESTERN MAGAZINE AREA (CD COPY ENCLOSED)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001520	7/16/2010	TRANSMITTAL OF THE DRAFT FINAL MUNITIONS AND EXPLOSIVES OF CONCERN CONCEPTUAL SITE MODEL, DREDGE POND, AND WESTERN MAGAZINE AREA [ENCLOSURE IS RECORD # 1519]	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001535	7/28/2010	TRANSMITTAL OF THE DRAFT FINAL MUNITIONS RESPONSE ACTION COMPLETION REPORT, WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 1536)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001579	7/29/2010	29 JULY 2010 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (CD COPY ENCLOSED)	SITE 00005, SITE 00009, SITE 00012, SITE 00017	MINUTES	CDM SMITH

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001573	10/26/2010	REVIEW AND COMMENTS ON THE DRAFT NON-TIME CRITICAL REMOVAL ACTION WORK PLAN (SEE RECORD # 1467 - DRAFT NON-TIME CRITICAL REMOVAL ACTION WORK PLAN)	SITE 00005, SITE 00017	CORRESPONDENCE	CALIFORNIA DEPARTMENT OF FISH AND GAME - SACRAMENTO, CA
001596	11/16/2010	30 SEPTEMBER 2010 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (CD COPY ENCLOSED)	SITE 00005	REPORT	CDM SMITH
001622	12/1/2010	FINAL MUNITIONS RESPONSE ACTION COMPLETION REPORT, DREDGE POND, AND WESTERN MAGAZINE AREA (CD COPY ENCLOSED)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001621	12/1/2010	FINAL MUNITIONS AND EXPLOSIVES OF CONCERN CONCEPTUAL SITE MODEL, DREDGE POND 7S, AND WESTERN MAGAZINE AREA (CD COPY ENCLOSED)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001620	12/23/2010	TRANSMITTAL OF THE 1) FINAL MUNITIONS RESPONSE ACTION COMPLETION REPORT, DREDGE POND, AND WESTERN MAGAZINE AREA, AND 2) FINAL MUNITIONS AND EXPLOSIVES OF CONCERN CONCEPTUAL SITE MODEL, DREDGE POND, AND WESTERN MAGAZINE AREA	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001634	1/1/2011	DRAFT TIME-CRITICAL REMOVAL ACTION COMPLETION REPORT (CD COPY ENCLOSED)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001688	1/13/2011	RESPONSES TO COMMENTS ON THE DRAFT FINAL MUNITIONS RESPONSE ACTION COMPLETION REPORT (CD COPY ENCLOSED)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001633	1/31/2011	TRANSMITTAL OF THE DRAFT TIME-CRITICAL REMOVAL ACTION COMPLETION REPORT (ENCLOSURE IS RECORD # 1634)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001726	2/1/2011	DRAFT FINAL REMEDIAL INVESTIGATION REPORT, WESTERN MAGAZINE AREA (CD COPY ENCLOSED)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001725	2/4/2011	TRANSMITTAL OF THE DRAFT FINAL REMEDIAL INVESTIGATION REPORT, WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 1726)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001689	4/5/2011	POTHOLE SAMPLING REPORT (CD COPY ENCLOSED)	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001730	4/28/2011	28 APRIL 2011 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (CD COPY ENCLOSED)	SITE 00005, SITE 00015, SITE 00021	MINUTES	CDM SMITH
001690	5/9/2011	EXCAVATION AND SAMPLING LETTER FOR POTHOLE LOCATIONS (CD COPY ENCLOSED)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001731	5/9/2011	LETTER REQUESTING THE CALIFORNIA DEPARTMENT OF TOXIC SUBSTANCES CONTROL IDENTIFY POTENTIAL STATE CHEMICAL-SPECIFIC, LOCATION-SPECIFIC, AND ACTION-SPECIFIC APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS FOR THE POTENTIAL REMEDIAL ALTERNATIVES	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001682	5/23/2011	FINAL ACTION MEMORANDUM NON-TIME-CRITICAL REMOVAL ACTION, PRODUCTION MANUFACTURING AREA AND SOUTH SHORE AREA (CD COPY ENCLOSED) (DOCUMENT ALSO CONTAINS SENSITIVE STREET LEVEL MAPS) [SEE RECORD # 1681 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001691	6/20/2011	COMPLETION OF EXCAVATION AND CONFIRMATION SAMPLING LETTER FOR POTHOLE LOCATIONS (CD COPY ENCLOSED)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001692	6/24/2011	SAMPLING AND ANALYSIS LETTER FOR FIVE FORMER MUNITIONS AND EXPLOSIVE OF CONCERN OPERATIONS AREAS (CD COPY ENCLOSED)	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
001727	7/29/2011	REVIEW AND COMMENTS ON THE DRAFT FINAL REMEDIAL INVESTIGATION REPORT, WESTERN MAGAZINE AREA (INCLUDES COMMENTS BY EILEEN HUGHES, DTSC-BERKELEY; TAMI NAKAHARA, CDFG-SACRAMENTO; ERIC SCIULLO, DTSC-SACRAMENTO; JAMES POLISINI, DTSC-CHATSWORTH; AND CD COPY)	SITE 00005	CORRESPONDENCE	DTSC - BERKELEY, CA
001728	8/10/2011	TRANSMITTAL OF THE RESPONSES TO COMMENTS ON THE DRAFT FINAL REMEDIAL INVESTIGATION REPORT, WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 1729)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001729	8/12/2011	RESPONSES TO COMMENTS ON THE DRAFT FINAL REMEDIAL INVESTIGATION REPORT, WESTERN MAGAZINE AREA (W/ENCLOSURE) [CD COPY ENCLOSED]	SITE 00005	CORRESPONDENCE	WESTON SOLUTIONS, INC.
002327	8/18/2011	TRANSMITTAL OF THE DRAFT FINAL SITE MANAGEMENT PLAN, ATTACHMENT C TO THE FEDERAL FACILITY SITE REMEDIATION AGREEMENT, FISCAL YEAR 2012	SITE 00004, SITE 00005, SITE 00017, SITE 00028, SITE 00029, SITE 00030	CORRESPONDENCE	BRAC PMO WEST
001736	9/1/2011	DRAFT FINAL TIME-CRITICAL REMOVAL ACTION COMPLETION REPORT (CD COPY ENCLOSED) [SEE RECORD # 1735 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.

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001735	9/2/2011	TRANSMITTAL OF THE DRAFT FINAL TIME-CRITICAL REMOVAL ACTION COMPLETION REPORT (ENCLOSURE IS RECORD # 1736)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001809	9/30/2011	FINAL SITE MANAGEMENT PLAN, ATTACHMENT C TO THE FEDERAL FACILITY SITE REMEDIATION AGREEMENT FISCAL YEAR 2012 (CD COPY ENCLOSED) [SEE RECORD # 1808 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00004, SITE 00005, SITE 00017, SITE 00028, SITE 00029, SITE 00030, UXO 000002, UXO 000003, UXO 000004, UXO 000006, UXO 000007, UXO 000008, UXO 000010, UXO 000011, UXO 000012, UXO 000013	REPORT	CDM SMITH
001752	10/27/2011	REQUEST FOR CONCURRENCE WITH THE GROUNDWATER BENEFICIAL USE EXCEPTION FOR MUNICIPAL AND DOMESTIC SUPPLY FOR THE WESTERN MAGAZINE AREA (W/ ENCLOSURES) [CD COPY ENCLOSED]	BASEWIDE	CORRESPONDENCE	BRAC PMO WEST
001760	11/14/2011	DRAFT TECHNICAL MEMORANDUM ASSESSMENT OF DREDGE POND LEVEE AND OUTFALL INSPECTION RESULTS (CD COPY ENCLOSED) [SEE RECORD # 1759 - BRAC PMO WEST TRANSMITTAL LETTER]	BASEWIDE	REPORT	WESTON SOLUTIONS, INC.
001759	11/14/2011	DREDGE POND LEVEE AND OUTFALL INSPECTION RESULTS (ENCLOSURE IS RECORD # 1760)	BASEWIDE	CORRESPONDENCE	BRAC PMO WEST
001859	12/6/2011	POST-PROJECT BIOLOGICAL COMPLIANCE REPORT (CD COPY ENCLOSED) [SEE RECORD # 1858 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001846	12/9/2011	TRANSMITTAL OF THE FINAL TIME-CRITICAL REMOVAL ACTION COMPLETION REPORT (ENCLOSURE IS RECORD # 1847)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001847	12/9/2011	FINAL TIME-CRITICAL REMOVAL ACTION COMPLETION REPORT (CD COPY ENCLOSED) [SEE RECORD # 1846 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001858	12/28/2011	TRANSMITTAL OF THE POST-PROJECT BIOLOGICAL COMPLIANCE REPORT (ENCLOSURE IS RECORD # 1859)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
001865	1/1/2012	2012 (YEAR 1) ANNUAL MONITORING REPORT FOR THE WETLAND MITIGATION PROJECT (CD COPY ENCLOSED) [SEE RECORD # 1864 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.
001864	1/6/2012	TRANSMITTAL OF THE 2012 (YEAR 1) ANNUAL MONITORING REPORT FOR THE WETLAND MITIGATION PROJECT (ENCLOSURE IS RECORD # 1865)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
000655	1/26/2012	26 JANUARY 2012 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (CD COPY ENCLOSED)	SITE 00005	MINUTES	CDM SMITH
000638	4/1/2012	DRAFT FINAL TECHNICAL MEMORANDUM, ASSESSMENT OF DREDGE POND LEVEE AND OUTFALL INSPECTION RESULTS (CD COPY ENCLOSED) [SEE RECORD # 408 - BRAC PMO WEST TRANSMITTAL LETTER]	BASEWIDE	REPORT	WESTON SOLUTIONS, INC.
000408	4/16/2012	TRANSMITTAL OF THE DRAFT FINAL TECHNICAL MEMORANDUM, ASSESSMENT OF DREDGE POND LEVEE AND OUTFALL INSPECTION RESULTS (ENCLOSURE IS RECORD # 408)	BASEWIDE	CORRESPONDENCE	BRAC PMO WEST
001942	6/1/2012	FINAL TECHNICAL MEMORANDUM, ASSESSMENT OF DREDGE POND LEVEE AND OUTFALL INSPECTION RESULTS (CD COPY ENCLOSED) [SEE RECORD # 1941 - BRAC PMO WEST TRANSMITTAL LETTER]	BASEWIDE	REPORT	WESTON SOLUTIONS, INC.
001941	6/21/2012	TRANSMITTAL OF THE FINAL TECHNICAL MEMORANDUM, ASSESSMENT OF DREDGE POND LEVEE AND OUTFALL INSPECTION RESULTS (ENCLOSURE IS RECORD # 1942)	BASEWIDE	CORRESPONDENCE	BRAC PMO WEST
001979	7/26/2012	26 JULY 2013 FINAL RESTORATION ADVISORY BOARD (RAB) MEETING MINUTES (CD COPY ENCLOSED)	SITE 00005, UST 0000231-1, UST 0000231-2	MINUTES	CDM SMITH
001961	8/17/2012	DRAFT SITE MANAGEMENT PLAN ATTACHMENT C TO THE FEDERAL FACILITY SITE REMEDIATION AGREEMENT, FISCAL YEAR 2013 (CD COPY ENCLOSED) [SEE RECORD # 1960 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00004, SITE 00017, SITE 00028, SITE 00029, SITE 00030, UXO 000003, UXO 000004, UXO 000006, UXO 000007, UXO 000008, UXO 000010, UXO 000011, UXO 000012, UXO 000013	REPORT	CAPE ENVIRONMENTAL MANAGEMENT, INC.
002142	11/9/2012	TRANSMITTAL OF THE FINAL REMEDIAL INVESTIGATION REPORT, DREDGE POND AND WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 2143)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
002103	12/1/2012	2012 (YEAR 2) ANNUAL MONITORING REPORT FOR THE WETLAND MITIGATION PROJECT (CD COPY ENCLOSED) [SEE RECORD # 2102 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC.

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002102	12/19/2012	TRANSMITTAL OF THE 2012 (YEAR 2) ANNUAL MONITORING REPORT FOR THE WETLAND MITIGATION PROJECT (ENCLOSURE IS RECORD # 2103)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
002143	2/1/2013	REVISED FINAL REMEDIAL INVESTIGATION REPORT, DREDGE POND AND WESTERN MAGAZINE AREA (INCLUDES REPLACEMENT PAGES CONVERTING THE FINAL DATED NOVEMBER 2012 TO REVISED FINAL AND CD COPY) (SEE RECORDS # 2142 AND # 2144 - BRAC PMO WEST TRANSMITTAL LETTERS)	SITE 00005	REPORT	WESTON SOLUTIONS, INC
002144	2/6/2013	TRANSMITTAL OF THE REPLACEMENT PAGES CONVERTING THE FINAL REMEDIAL INVESTIGATION REPORT, DREDGE POND AND WESTERN MAGAZINE AREA TO REVISED FINAL (ENCLOSURE IS RECORD 2143)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
002149	6/14/2013	DRAFT SITE MANAGEMENT PLAN, ATTACHMENT C TO THE FEDERAL FACILITY SITE REMEDIATION AGREEMENT (FFSRA), FISCAL YEAR 2014 (CD COPY ENCLOSED)	IA K, SITE 00004, SITE 00017, SITE 00028, SITE 00029, SITE 00030, UXO 000003, UXO 000004, UXO 000007, UXO 000008, UXO 000013	REPORT	SULLIVAN - WESTON SERVICES, JOINT VENTURE
002147	8/7/2013	TRANSMITTAL OF THE DRAFT FEASIBILITY STUDY REPORT, DREDGE POND AND WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 2148)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
002148	8/7/2013	DRAFT FEASIBILITY STUDY REPORT, DREDGE POND AND WESTERN MAGAZINE AREA (CD COPY ENCLOSED) [SEE RECORD # 2147 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC
002208	11/1/2013	2013 (YEAR 3) ANNUAL MONITORING REPORT FOR THE WETLAND MITIGATION PROJECT (CD COPY ENCLOSED) [SEE RECORD # 2207 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC
002207	11/15/2013	TRANSMITTAL OF THE 2013 (YEAR 3) ANNUAL MONITORING REPORT FOR THE WETLAND MITIGATION PROJECT (ENCLOSURE IS RECORD # 2208)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
002220	12/4/2013	FINAL TIME CRITICAL REMOVAL ACTION COMPLETION REPORT PAINT WASTE AREA (CD COPY ENCLOSED) [SEE RECORD # 2219 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00004, SITE 00005	REPORT	WESTON SOLUTIONS, INC.
002231	12/20/2013	DRAFT REMOVAL ACTION COMPLETION REPORT FOR THE NON-TIME CRITICAL REMOVAL ACTION AT THE PRODUCTION MANUFACTURING AREA AND SOUTH SHORE AREA (CD COPY ENCLOSED) [SEE RECORD # 2230 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	BATTELLE
002232	12/20/2013	TRANSMITTAL OF THE DRAFT REMOVAL ACTION COMPLETION REPORT FOR THE NON-TIME CRITICAL REMOVAL ACTION FOR THE PRODUCTION MANUFACTURING AREA AND THE SOUTH SHORE AREA (ENCLOSURE IS RECORD # 2233)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
002233	12/20/2013	DRAFT REMOVAL ACTION COMPLETION REPORT FOR THE NON-TIME CRITICAL REMOVAL ACTION AT THE PRODUCTION MANUFACTURING AREA AND SOUTH SHORE AREA (CD COPY ENCLOSED) [SEE RECORD # 2232 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	INTEGRATED SOLUTIONS FOR REMEDIATION, JOINT VENTURE
002230	1/3/2014	TRANSMITTAL OF THE DRAFT REMOVAL ACTION COMPLETION REPORT FOR THE NON-TIME CRITICAL REMOVAL ACTION AT THE PRODUCTION MANUFACTURING AREA AND SOUTH SHORE AREA (ENCLOSURE IS RECORD # 2231)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST
002268	3/1/2014	DRAFT COMMUNITY INVOLVEMENT PLAN (CD COPY ENCLOSED) (DOCUMENT ALSO CONTAINS SENSITIVE STREET LEVEL MAPS) [SEE RECORD # 2267 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00004, SITE 00005, SITE 00017	REPORT	TRIECO - TETRA TECH EM, INC., JOINT VENTURE
002267	3/11/2014	TRANSMITTAL OF THE DRAFT COMMUNITY INVOLVEMENT PLAN (ENCLOSURE IS RECORD # 2268)	SITE 00004, SITE 00005, SITE 00017	CORRESPONDENCE	BRAC PMO WEST
002311	5/22/2014	DRAFT REMEDIAL INVESTIGATION WORK PLAN, SOUTH SHORE AREA (INCLUDES DRAFT SAMPLING AND ANALYSIS PLAN, DCN: NRS-4812-0000-0002; ACCIDENT PREVENTION PLAN/SITE SAFETY AND HEALTH PLAN, DCN: NRS-4812-0000-0005 AND CD COPY)	SITE 00005, SWMU 00091, SWMU 00093, SWMU 00101, SWMU 00106, SWMU 00125, UXO 000007	REPORT	NOREAS ENVIRONMENTAL ENGINEERING AND SCIENCE
002331	6/10/2014	FINAL FEASIBILITY STUDY, DREDGE POND AND WESTERN MAGAZINE AREA (CD COPY ENCLOSED) [SEE RECORD # 2330 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	WESTON SOLUTIONS, INC
002330	6/16/2014	TRANSMITTAL OF THE FINAL FEASIBILITY STUDY REPORT, DREDGE POND AND WESTERN MAGAZINE AREA (ENCLOSURE IS RECORD # 2331)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST

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Document Number	Date	Title	Sites	Doc Type	Author Affiliation
002370	9/23/2014	TRANSMITTAL OF THE DRAFT TECHNICAL MEMORANDUM APPROACH FOR DEVELOPING THE MUNITIONS RESPONSE PROGRAM REMEDIAL INVESTIGATION FOR THE PRODUCTION MANUFACTURING AREA (ENCLOSURE IS RECORD # 2371)	SITE 00005, SWMU 00093, SWMU 00106, SWMU 00125	CORRESPONDENCE	BRAC PMO WEST
002371	9/23/2014	DRAFT TECHNICAL MEMORANDUM APPROACH FOR DEVELOPING THE MUNITIONS RESPONSE PROGRAM REMEDIAL INVESTIGATION FOR THE PRODUCTION MANUFACTURING AREA (CD COPY ENCLOSED) [SEE RECORD # 2370 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005, SWMU 00093, SWMU 00106, SWMU 00125	REPORT	BATTELLE
002399	10/1/2014	FINAL COMMUNITY INVOLVEMENT PLAN (CD COPY ENCLOSED) [SEE RECORD # 2398 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00004, SITE 00005, SITE 00017	REPORT	TRIECO - TETRA TECH EM, INC., JOINT VENTURE
002398	10/2/2014	TRANSMITTAL OF THE FINAL COMMUNITY INVOLVEMENT PLAN (ENCLOSURE IS RECORD # 2399)	SITE 00004, SITE 00005, SITE 00017	CORRESPONDENCE	BRAC PMO WEST
002406	11/1/2014	2014 (YEAR 4) ANNUAL MONITORING REPORT FOR THE INSTALLATION RESTORATION SITE, WETLAND MITIGATION PROJECT (CD COPY ENCLOSED) [SEE RECORD # 2405 - BRAC PMO WEST TRANSMITTAL LETTER]	SITE 00005	REPORT	LSA ASSOCIATES, INC.
002405	11/13/2014	TRANSMITTAL OF THE 2014 (YEAR 4) ANNUAL MONITORING REPORT FOR THE INSTALLATION RESTORATION SITE, WETLAND MITIGATION PROJECT (ENCLOSURE IS RECORD # 2406)	SITE 00005	CORRESPONDENCE	BRAC PMO WEST

**ATTACHMENT 2
TABLE OF REFERENCES**

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1	Administrative Record Index	Section 1.0 Section 1.2	Attachment 1
2	Proposed Plan (PP)/Draft Remedial Action Plan (RAP)	Section 1.0 Section 1.1 Section 2.2 Section 2.8.2 Section 2.8.2.3 Section 2.9 Section 2.10	<i>Proposed Plan/Draft Remedial Action Plan, Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area, Former Mare Island Naval Shipyard, Vallejo, California.</i> U.S. Department of the Navy. March 18, 2015.
3	Feasibility Study (FS)	Section 1.1 Section 2.2 Section 2.8 Section 2.8.2	<u><i>Final Feasibility Study, Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area, Former Mare Island Naval Shipyard, Vallejo, California.</i></u> WESTON. June 2014.
4	EPA guidance documents	Section 1.1	<i>A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents.</i> U.S. Environmental Protection Agency (EPA). EPA 540-R-98-031. July 1999. <u>http://www.epa.gov/superfund/policy/remedy/rods/index.htm</u>
5	Mare Island Specific Plan	Section 2.4 Section 2.5.3 Section 2.9	<i>Mare Island Specific Plan.</i> City of Vallejo, California. June 2008.
6	Ammunition and Explosives Safety Ashore	Section 1.1	<i>Ammunition and Explosives Safety Ashore.</i> NAVSEA OP5 Volume 1, Seventh Revision, 0640-LP-108-5790 Change 9-1. Naval Sea Systems Command. July 2010.
7	open storage of munitions	Section 2.1.1	“Map of U.S. Navy Yard, Mare Island, California, Showing Conditions on June 30, 1947.” C-1718-8. U.S. Department of the Navy. June 30, 1947. “Map of Mare Island Naval Shipyard, Vallejo, California, Showing Conditions on June 30, 1949.” C-1718-11. DON. June 30, 1949.
8	ordnance burning, detonation, and disposal area	Section 2.1.1	“Map of Mare Island Naval Shipyard, Vallejo, California, Showing Conditions on June 30, 1953.” C-1718-15. DON. June 30, 1953.

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9	smokeless powder burn pads, high explosives burn pads, detonation pits, primer/tracer burning ovens, and pyrotechnic burn pits	Section 2.1.1	<p>“Map of Mare Island Naval Shipyard, Vallejo, California, Showing Conditions on June 30, 1951.” C-1718-22. DON. June 30, 1951.</p> <p><i>Initial Assessment Study of Naval Shipyard Mare Island, California. Prepared for the Naval Energy and Environmental Support Activity, Port Hueneme, California.</i> (NEESA 13-012). Ecology and Environment. 1983.</p> <p><i>Site Characterization Study for Mare Island Naval Shipyard.</i> Martin Marietta/IT Corporation, Oak Ridge, Tennessee. IT Corporation. January 1992.</p>
10	intentional disposal	Section 2.1.1 Section 2.1.3	<p><i>Final Munitions Response Action Completion Report Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area, Former Mare Island Naval Shipyard, Vallejo, California.</i> WESTON. December 2010.</p>
11	deposited with dredge spoils	Section 2.1.2 Section 2.1.3	<p><i>Final Munitions Response Action Completion Report Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area, Former Mare Island Naval Shipyard, Vallejo, California.</i> WESTON. December 2010.</p>
12	railroad lines were removed	Section 2.1.3	<p><i>Unexploded Ordnance Site Investigation of Mare Island Naval Shipyard, Vallejo, California, Final Summary Report.</i> SSPORTS. April 1997.</p>
13	aerial photographs from 1949	Section 2.1.3	<p><i>Final Munitions and Explosives of Concern Conceptual Site Model, Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area, Former Mare Island Naval Shipyard, Vallejo, California.</i> WESTON. December 2010.</p>
14	Horse Stables Area (HSA) TCRA	Section 2.1.3 Section 2.2	<p><i>Final Revision 1, Time-Critical Removal Action Completion Report Horse Stables Area, Former Mare Island Naval Shipyard, Vallejo, California.</i> WESTON. June 2010.</p>
15	Western Magazine Area (WMA) UXO Intrusive Investigation	Section 2.2	<p><i>Unexploded Ordnance Intrusive Investigation, Western Magazine Area, Mare Island, Final Summary Report.</i> SSPORTS. October 16, 1998.</p>
16	Initial Assessment Study (IAS)	Section 2.2	<p><i>Initial Assessment Study of Naval Shipyard Mare Island, California. Prepared for the Naval Energy and Environmental Support Activity, Port Hueneme, California.</i> (NEESA 13-012). Ecology and Environment. 1983.</p>
17	Verification Study Report	Section 2.2	<p><i>Verification Study Report, Mare Island Naval Shipyard, California.</i> Richesin and Associates and Stearn, Conrad, and Schmidt Consulting Engineers, Inc. January 1987.</p>

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18	Sampling, Cleaning and Inspection Plan for Storm Drains within the Concord Annex	Section 2.2	<i>Sampling, Cleaning and Inspection Plan for Storm Drains within the Concord Annex, Mare Island Naval Shipyard, Vallejo, California.</i> Martin Marietta/IT Corporation. Knoxville, Tennessee. IT Corporation October 1, 1988.
19	Site Characterization Study	Section 2.2	<i>Site Characterization Study for Mare Island Naval Shipyard.</i> Martin Marietta/IT Corporation, Oak Ridge, Tennessee. IT Corporation. January 1992.
20	Munitions Emergency Response Actions	Section 2.2	“Logbook of Explosives Safety Incident Reports, Mare Island Naval Shipyard Explosives Safety Manager.” Mare Island Naval Shipyard (MINS). 1996.
21	Basewide Quarterly Groundwater Sampling	Section 2.2	<i>Technical Memorandum: Examination of Groundwater at Mare Island Naval Shipyard for Municipal and Domestic Supply.</i> PRC Environmental Management, Inc. (PRC). April 20, 1995.
22	Remedial Investigation (RI) Phase II Geophysical Survey	Section 2.2	<i>Mare Island Phase II Remedial Investigation Field Sampling and Analysis Plan.</i> PRC. 1993. <i>Quality Assurance Project Plan Appendices for the Phase II Remedial Investigation of Mare Island Naval Shipyard.</i> PRC. 1994.
23	RI Phase II Geoprobe, Hand-Auger, and Sediment Sampling	Section 2.2	<i>Draft Remedial Investigation Report. Operable Unit Number 3. Mare Island, California.</i> PRC. December 24, 1996.
24	RI Phase II Cone Penetrometer Test Survey	Section 2.2	<i>Draft Remedial Investigation Report. Operable Unit Number 3. Mare Island, California.</i> PRC. December 24, 1996.
25	Installation Restoration Site 05 (IR05) Surface Sweep	Section 2.2	<i>Unexploded Ordnance Site Investigation of Mare Island Naval Shipyard, Vallejo, California, Final Summary Report.</i> Supervisor of Shipbuilding, Conversion and Repair, Portsmouth, Virginia Environmental Detachment, Vallejo, California (SSPORTS). April 1997.
26	RI Phase II Tidal Influence Study	Section 2.2	<i>Technical Memorandum: Tidal Influence Study, Mare Island, Vallejo, California.</i> PRC. November 11, 1996.
27	Ordnance Preliminary Assessment (PA)	Section 2.2	<i>Preliminary Assessment Final Summary Report, Ordnance Sites, Mare Island Naval Shipyard, Vallejo, California.</i> PRC. September 1995.

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28	UXO Site Investigation (SI)	Section 2.2	<i>Unexploded Ordnance Site Investigation of Mare Island Naval Shipyard, Vallejo, California, Final Summary Report.</i> SSPORTS. April 1997.
29	IR05 Unexploded Ordnance (UXO) Time-Critical Removal Action (TCRA)	Section 2.2	<i>Unexploded Ordnance Time Critical Removal Action, Installation Restoration Site 5, Mare Island, Vallejo California, Final Summary Report.</i> SSPORTS. May 22, 1998.
30	Onshore Ecological Risk Assessment	Section 2.2	<i>Final Onshore Ecological Risk Assessment, Mare Island, Vallejo, California.</i> Tetra Tech Environmental Management, Inc. (Tetra Tech). July 2002.
31	Draft RI Report Investigation Area (IA) I	Section 2.2	<i>Investigation Area I Remedial Investigation, Mare Island, Vallejo, California.</i> Tetra Tech. May 2000.
32	Underground Storage Tank (UST) Compliance Program	Section 2.2	<p>“Mare Island Naval Shipyard A202 (T0609592453) Case Number 48D9241.” Water Board. April 28, 2006.</p> <p>Letter from Bruce H. Wolfe, Executive Officer, Regional Water Board, to Jerry Dunaway, Department of the Navy BRAC Program Management Office West, “Subject: No Further Action, Suspect Underground Storage Tank Investigation, Parts I, II & III, Mare Island Naval Complex, Mare Island, Solano County.” Water Board. April 28, 2006.</p> <p>Letter from Bruce H. Wolfe, Executive Officer, Regional Water Board, to Mr. Antony Megliola, Department of the Navy BRAC Program Management Office, “Subject: Case Closure Letter for Underground Storage Tank A-230 (Water Board Case No. 48D9244), Access Road, NSY Mare Island, Solano County.” Regional Water Board. May 27, 2010.</p> <p>Letter from Bruce H. Wolfe, Executive Officer, Regional Water Board, to Janet Lear, Department of the Navy BRAC Program Management Office West, “Subject: No Further Action for UST IR5-2, NSY Mare Island, Solano County, Water Board Case No. 48D9312.” Regional Water Board. December 8, 2010.</p>
33	Basewide Quarterly Groundwater Sampling	Section 2.2	<i>June/July 1999 Interim Facility-Wide Groundwater Monitoring Program Quarterly Report, Mare Island, Vallejo, California.</i> Tetra Tech. March 2000.

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34	Dredge Spoils Ponds UXO Intrusive Investigation	Section 2.2	<i>Unexploded Ordnance Intrusive Investigation, Dredge Spoils Ponds, Mare Island, Vallejo, California, Final Summary Report.</i> Weston Solutions, Inc. (WESTON). December 2001.
35	Dredge Spoils Ponds Radiological Investigation	Section 2.2	<i>Final Summary Report, Radiological Investigation, Dredge Spoils Ponds, Mare Island, Vallejo, California, Draft Summary Report.</i> WESTON. December 4, 2001.
36	MRA	Section 2.2 Section 2.5.1 Section 2.8	<i>Final Munitions Response Action Completion Report Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area, Former Mare Island Naval Shipyard, Vallejo, California.</i> WESTON. December 2010.
37	Draft RI Report IA-H1, IR05, and WMA	Section 2.2	<i>Draft Remedial Investigation, Investigation Area H1 Soil, IR05, and Western Magazine Area, Mare Island, Vallejo, California.</i> WESTON. September 13, 2002.
38	Site Inspection of the Horse Stables Area (HSA)	Section 2.2	<i>Site Inspection of the Horse Stable Area, Mare Island, Vallejo, California, Draft Final.</i> Sullivan International Group and Tetra Tech. December 2005.
39	Data Gaps Sampling	Section 2.2	<i>Draft Data Gaps Sampling Plan, Investigation Area IR05 and WMA, Mare Island, Vallejo, California.</i> WESTON. December 2006.
40	Munitions Response Action (MRA) Digital Geophysical Mapping (DGM) and “Mag and Flag” Anomaly Excavations	Section 2.2	<i>Final Munitions Response Action Completion Report Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area, Former Mare Island Naval Shipyard, Vallejo, California.</i> WESTON. December 2010.
41	IR05 TCRA	Section 2.2	<i>Final Time-Critical Removal Action Completion Report Installation Restoration Site 05, Former Mare Island Naval Shipyard, Vallejo, California.</i> WESTON. December 2011.
42	2015 Annual Report	Section 2.2	<i>2015 (Year 5) Annual Monitoring Report for the Installation Restoration Site 05 Westland Mitigation Project, Former Mare Island Naval Shipyard, City of Vallejo, County of Solano, California.</i> WESTON. November 2015.

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43	Remedial Investigation (RI) Report	Section 2.2 Section 2.2.1 Section 2.5 Section 2.6	<u>Revised Final Remedial Investigation Report, Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area, Former Mare Island Naval Shipyard, Vallejo, California. WESTON. February 2013.</u>
44	Basewide Environmental Baseline Survey/Community Environmental Response Facilitation Act Report	Section 2.2.1	<i>Baseline Environmental Base Line Survey/Community Environmental Response Facilitation Act Report for Mare Island Naval Shipyard. Mare Island Naval Shipyard. December 1994.</i>
45	Preliminary Assessment/SI Final Summary Report	Section 2.2.1	<i>Preliminary Assessment/Site Inspection Final Summary Report for Non-Radiological Sites. PRC. May 1995.</i>
46	Hazardous Waste Facility Permit	Section 2.2.1	“Hazardous Waste Facility Permit, Class 1 Permit Modification, Mare Island Naval Shipyard, Vallejo, California, EPA ID# CA7 170 024 775.” California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). June 30, 2003.
47	Federal Facility Site Remediation Agreement	Section 2.2.1	“Federal Facility Site Remediation Agreement.” State of California and the DON. July 2002.
48	California Regional Water Quality Control Board San Francisco Bay Region (Regional Water Board)	Section 2.2.2 Section 2.4 Section 2.6	Letter from Terry Seward, P.E., Chief, Groundwater Protection and Waste Containment Division, Regional Water Board, to Janet Lear, Department of the Navy BRAC Program Management Office, “Subject: Concurrence with Request for Beneficial Use Exception for Municipal and Domestic Supply for Shallow Groundwater at the Western Magazine Area, Installation Restoration Site 05 and Dredge Pond 7S, Mare Island Naval Shipyard, Vallejo, Solano County.” Regional Water Board. December 12, 2011.
49	Tidal influence	Section 2.3.2	<i>Technical Memorandum: Tidal Influence Study, Mare Island, Vallejo, California. PRC. November 11, 1996.</i>

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50	Risk Assessment Guidance for Superfund Volume I, Human Health Evaluation Manual Part A	Section 2.5.1	<i>Risk Assessment Guidance for Superfund: Volume I Human Health Evaluation Manual</i> (Part A, Baseline Risk Assessment). EPA. 1989.
51	Risk Assessment Guidance for Superfund Volume I, Human Health Evaluation Manual Part D	Section 2.5.1	<i>Risk Assessment Guidance for Superfund: Volume I Human Health Evaluation Manual</i> (Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments). Final. EPA. December 2001.
52	EPA Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments	Section 2.5.2	<i>EPA Guidance for Superfund: Process for Designing and Conducting ERAs, Interim Final</i> . Washington, DC. EPA/540/R-97/006. EPA. June 1997.
53	Removal of MEC to the degree that allows unrestricted use	Section 2.8	<i>Munitions and Explosives of Concern Hazard Assessment Methodology, Interim</i> . EPA 505B08001. EPA. October 2008.
54	Memorandum of Agreement	Section 2.8.1	“Memorandum of Agreement Between the United States Department of the Navy and the California Department of Toxic Substances Control, Use of Model ‘Covenant to Restrict Use of Property’ at Installations Being Closed and Transferred by the United States Department of the Navy.” DON and DTSC. March 10, 2000.
55	Notice of Exemption	Section 2.8.2.3	<i>California Environmental Quality Act Notice of Exemption</i> . DTSC 2015.

**ATTACHMENT 3
APPLICABLE OR RELEVANT AND
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ABBREVIATIONS AND ACRONYMS

§	section
ARAR	applicable or relevant and appropriate requirements
bgs	below ground surface
Cal.	California
Cal. Civ. Code	California Civil Code
Cal. Code Regs.	California Code of Regulations
Cal. Pub. Res. Code	California Public Resources Code
CDFW	California Department of Fish and Wildlife
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
ch.	chapter
COC	chemical of concern
COEC	chemical of ecological concern
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
div.	division
DoD	Department of Defense
DON	Department of the Navy
DP7S	Dredge Pond 7S
DTSC	Department of Toxic Substances Control
DWBZ	deep water-bearing zone
E&E	Ecology and Environment, Inc.
ESA	Endangered Species Act
Fed. Reg.	Federal Register
FS	Feasibility Study
IR05	Installation Restoration Site 05
IT	International Technology Corporation
IWBZ	intermediate water-bearing zone
LUC	land-use control
MBTA	Migratory Bird Treaty Act
mg/L	milligram per liter
MINS	Mare Island Naval Shipyard

ABBREVIATIONS AND ACRONYMS (Continued)

NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NHPA	National Historic Preservation Act
OSPR	Office of Spill Prevention and Response
PRC	PRC Environmental Management, Inc.
RCRA	Resource Conservation and Recovery Act
Regional Water Board	Regional Water Quality Control Board, San Francisco Bay Region
RI	Remedial Investigation
Richesin/SCS	Richesin and Associates and Stearn, Conrad, and Schmidt Consulting Engineers, Inc.
ROD/RAP	Record of Decision/Remedial Action Plan
SMHM	salt marsh harvest mouse
SSPORTS	Supervisor of Shipbuilding, Conversion, and Repair, Portsmouth Virginia Environmental Detachment, Vallejo, California
STLC	soluble threshold limit concentration
SWBZ	shallow water-bearing zone
SWMU	solid waste management unit
SWRCB	California State Water Resources Control Board
TBC	to be considered
TCLP	toxicity characteristic leaching procedure
TCRA	time-critical removal action
tit.	title
TTLC	total threshold limit concentration
U.S.C.	United States Code
U.S. EPA	U.S. Environmental Protection Agency
UXO	unexploded ordnance
WDR	waste discharge requirement
WESTON	Weston Solutions, Inc.
WET	Waste Extraction Test
WMA	Western Magazine Area
WMU	waste management unit
WQCP	Water Quality Control Plan
WQO	water quality objective

1. INTRODUCTION

This appendix identifies and evaluates potential federal and State of California applicable or relevant and appropriate requirements (ARARs) from the universe of regulations, requirements, and guidance and sets forth the Department of the Navy (DON) determinations regarding those ARARs for the selected response action at the Installation Restoration Site 05 (IR05), Dredge Pond 7S (DP7S), and Western Magazine Area (WMA) sites.

This evaluation includes a determination of whether the potential ARARs actually qualify as ARARs and a comparison for stringency between the federal and state regulations to identify the controlling ARARs. The identification of ARARs is an iterative process which was initiated in the Feasibility Study (FS) Report (Weston Solutions, Inc. [WESTON], 2014). The final determination of ARARs (no longer “potential” ARARs) is provided in this attachment to the Record of Decision/Remedial Action Plan (ROD/RAP).

1.1 SUMMARY OF CERCLA AND NCP REQUIREMENTS

Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) 42 *United States Code* (42 U.S.C.) Section (§) 9621(d), as amended, states that remedial actions on CERCLA sites must attain (or the decision document must justify the waiver of) any federal or more stringent state environmental standards, requirements, criteria, or limitations that are determined to be legally applicable or relevant and appropriate.

Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address circumstances at a CERCLA site. The requirement is applicable if the jurisdictional prerequisites of the standard show a direct correspondence when objectively compared to the conditions at the site. An applicable federal requirement is an ARAR. An applicable state requirement is an ARAR only if it is more stringent than federal ARARs.

If the requirement is not legally applicable, then the requirement is evaluated to determine whether it is relevant and appropriate. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address

problems or situations similar to the circumstances of the proposed response action and are well suited to the conditions of the site (U.S. Environmental Protection Agency [U.S. EPA], 1988a). A requirement must be determined to be both relevant *and* appropriate to be considered an ARAR.

The criteria for determining relevance and appropriateness are listed in 40 *Code of Federal Regulations* (C.F.R.) § 300.400(g)(2) and include the following:

- the purpose of both the requirement and the CERCLA action
- the medium regulated or affected by the requirement and the medium contaminated or affected at the CERCLA site
- the substances regulated by the requirement and the substances found at the CERCLA site
- the actions or activities regulated by the requirement and the response action contemplated at the CERCLA site
- any variances, waivers, or exemptions of the requirement and their availability for the circumstances at the CERCLA site
- the type of place regulated and the type of place affected by the release or CERCLA action
- the type and size of structure or facility regulated and the type and size of structure or facility affected by the release or proposed in the CERCLA action
- any consideration of use or potential use of affected resources in the requirement and the use or potential use of the affected resources at the CERCLA site

According to CERCLA ARARs guidance (U.S. EPA, 1988a), a requirement may be “applicable” or “relevant and appropriate,” but not both. ARARs must be identified on a site-specific basis and involve a two-part analysis: first, a determination whether a given requirement is applicable; then, if it is not applicable, a determination whether it is both relevant and appropriate. It is important to explain that some regulations may be applicable or, if not applicable, may still be relevant and appropriate. When the analysis determines that a requirement is both relevant and appropriate, such a requirement must be complied with to the same degree as if it were applicable (U.S. EPA, 1988a).

Tables included in this attachment present each ARAR with a determination of ARAR status (i.e., applicable, relevant and appropriate, or not an ARAR). For the determination of relevance and appropriateness, the pertinent criteria were examined to determine whether the requirements addressed problems or situations sufficiently similar to the circumstances of the release or response action contemplated, and whether the requirement was well suited to the site. A negative determination of relevance and appropriateness indicates that the requirement did not meet the pertinent criteria. Negative determinations are documented in the tables and are discussed in the text for specific cases and where required to address the status of potential ARARs requested by the agencies.

To qualify as a state ARAR under CERCLA and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), a state requirement must be:

- a state law or regulation,
- an environmental or facility siting law or regulation,
- promulgated (of general applicability and legally enforceable),
- substantive (not procedural or administrative),
- more stringent than federal requirements,
- identified in a timely manner, and
- consistently applied.

To constitute an ARAR, a requirement must be substantive. Therefore, only the substantive provisions of requirements identified as ARARs in this analysis are considered to be ARARs. Permits are considered to be procedural or administrative requirements. Provisions of generally relevant federal and state statutes and regulations that were determined to be procedural or nonenvironmental, including permit requirements, are not considered to be ARARs. CERCLA Section 121(e)(1), 42 U.S.C. § 9621(e)(1), states, “No Federal, State, or local permit shall be required for the portion of any removal or remedial action conducted entirely on-site, where such remedial action is selected and carried out in compliance with this section.” The term *on-site* is defined for purposes of this ARARs discussion as “the areal extent of contamination and all suitable areas in very close proximity to the contamination necessary for implementation of the response action” (40 C.F.R. § 300.5).

Nonpromulgated advisories or guidance issued by federal or state governments are not legally binding and do not have the status of ARARs. Such requirements may, however, be useful and are “to be considered” (TBC). TBC requirements (40 C.F.R. § 300.400[g][3]) complement ARARs but do not override them. They are useful for guiding decisions regarding cleanup levels or methodologies when regulatory standards are not available.

Pursuant to U.S. EPA guidance (U.S. EPA, 1988a), ARARs are generally divided into three categories: chemical-, location-, and action-specific requirements. This classification was developed to aid in the identification of ARARs; some ARARs do not fall precisely into one group or another. ARARs are identified on a site-specific basis for remedial actions where CERCLA authority is the basis for cleanup.

As the lead federal agency, the DON has primary responsibility for identifying federal ARARs at the former Mare Island Naval Shipyard (MINS). Federal ARARs identified for the IR05, DP7S, and WMA sites are discussed in Section 1.2.2. Pursuant to the definition of the term *on-site* in 40 C.F.R. § 300.5, the on-station areas that are part of this action include the boundaries of IR05, DP7S, and WMA sites as shown on Figure 2 of the ROD/RAP. Based on the nature and extent of contamination and results of the human health and ecological risk assessments, remedial alternatives are required to address the potential for future human receptors to be exposed to buried munitions at the IR05, DP7S, and WMA sites and radiological items at the two historical outfall locations in the WMA (Weston Solutions, Inc. [WESTON], 2013). Although radiological hazards were recommended for assessment in the FS, additional remedial actions are not required for this hazard as discussed in the FS Report (WESTON, 2014). A groundwater beneficial use exception for municipal and domestic water supply was granted by the Regional Water Quality Control Board, San Francisco Bay Region (Regional Water Board) based on the high total dissolved solids values (Regional Water Board, 2011). There are no remedial alternatives for groundwater. Planned reuse for the sites includes recreational areas (public access) and wildlife preserve areas (limited public access) as detailed in the Mare Island Specific Plan (City of Vallejo, 2008). ARARs analysis in this appendix has been conducted in support of the selected remedial alternative, land-use controls (LUCs).

Identification of potential state ARARs was initiated through DON request to the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC) on 9 May 2011. This action is described in more detail in Section 1.2.3.

1.2 METHODOLOGY DESCRIPTION

The process of identifying and evaluating potential federal and state ARARs is described below.

1.2.1 General

As the lead federal agency, the DON has primary responsibility for identification of potential ARARs for the IR05, DP7S, and WMA sites. In preparing this ARARs analysis, the DON undertook the following measures, consistent with CERCLA and the NCP:

- Identified federal ARARs for each response action alternative addressed in the FS Report (WESTON, 2014), taking into account site-specific information for the IR05, DP7S, and WMA sites
- Reviewed potential ARARs identified by the state to determine whether they satisfy CERCLA and NCP criteria that must be met in order to constitute state ARARs
- Evaluated and compared federal ARARs and their state counterparts to determine whether state ARARs are more stringent than the federal ARARs or are in addition to the federally required actions
- Reached a conclusion as to which federal and state ARARs are the most stringent and/or “controlling” ARARs for each alternative

The remedial action objective for soil/sediment is to control direct exposure and protect future human receptors from the low residual risk posed by potential buried munitions. There is no remedial action objective for groundwater. The selected remedy for which ARARs analysis is presented in this attachment is LUCs.

1.2.2 Identifying and Evaluating Federal ARARs

The DON is responsible for identifying federal ARARs as the lead federal agency under CERCLA and the NCP. The federal government implements a number of federal environmental statutes that are the source of potential federal ARARs, either in the form of the statutes or

regulations promulgated thereunder. Examples include the Resource Conservation and Recovery Act (RCRA), the Clean Water Act (CWA), the Safe Drinking Water Act, the Toxic Substances Control Act, and their implementing regulations. See NCP preamble at 55 *Federal Register* (Fed. Reg.) 8764–8765 (1990) for a more complete listing.

The DON reviewed the proposed response action and alternatives against all potential federal ARARs, including but not limited to those set forth at 55 Fed. Reg. 8764–8765 (1990), in order to determine whether they were applicable or relevant and appropriate using the CERCLA and NCP criteria and procedures for ARARs identification by lead federal agencies.

1.2.3 Identifying and Evaluating State ARARs

The process of identifying and evaluating potential state ARARs by the state and the DON is described in this section.

1.2.3.1 Solicitation of State ARARs Under NCP

U.S. EPA guidance recommends that the lead federal agency consult with the state when identifying state ARARs for response actions (U.S. EPA, 1988b). In essence, the CERCLA/NCP requirements at 40 C.F.R. § 300.515 for response actions provide that the lead federal agency request that the state identify chemical- and location-specific state ARARs upon completion of site characterization. The requirements also provide that the lead federal agency request identification of all categories of state ARARs (chemical-, location-, and action-specific) upon completion of identification of remedial alternatives for detailed analysis. The state must respond within 30 days of receipt of the lead federal agency requests. The remainder of this section documents the DON's efforts to date to identify and evaluate state ARARs.

The DON followed the process set forth in 40 C.F.R. § 300.515 and Section 6.2 of the Federal Facility Site Remediation Agreement for remedial actions in seeking state assistance with identification of chemical-, location-, and action-specific state ARARs.

Chronology of Efforts to Identify State ARARs

The following chronology summarizes the DON's efforts to obtain state assistance with identification of state ARARs for the response action at the IR05, DP7S, and WMA sites.

Key correspondence between the DON and the state agencies relating to this effort has been included in the Administrative Record.

The DON formally requested state chemical-, location-, and action-specific ARARs for the IR05, DP7S, and WMA sites on 9 May 2011. The letter was addressed to the DTSC, with a copy to U.S. EPA and Regional Water Board, soliciting ARARs based on findings provided in the Final Remedial Investigation (RI) Report for IR05, DP7S, and WMA (WESTON, 2013). The DTSC was requested to coordinate responses from all state agencies.

The ARARs analysis addressed in this attachment includes the potential federal and state ARARs provided by DTSC from the following agencies and departments:

- Bay Conservation and Development Commission (correspondence to DTSC dated 9 June 2011)
- California Department of Public Health (correspondence to DTSC dated 20 June 2011)
- DTSC (correspondence to the DON dated 12 July 2011)

1.3 OTHER GENERAL ISSUES

General issues identified during the evaluation of ARARs for the IR05, DP7S, and WMA sites are discussed in the following sections.

1.3.1 General Approach to Requirements of the Federal Resource Conservation and Recovery Act

RCRA is a federal statute passed in 1976 to meet four goals: protection of human health and the environment, reduction of waste, conservation of energy and natural resources, and elimination of the generation of hazardous waste as expeditiously as possible. The Hazardous and Solid Waste Amendments of 1984 significantly expanded the scope of RCRA by adding new corrective action requirements, land disposal restrictions, and technical requirements. RCRA, as amended, contains several provisions that are potential ARARs for CERCLA sites.

Substantive RCRA requirements are applicable to response actions on CERCLA sites if the waste is a RCRA hazardous waste, and either:

- the waste was initially treated, stored, or disposed after the effective date of the particular RCRA requirement; or
- the activity at the CERCLA site constitutes treatment, storage, or disposal as defined by RCRA (U.S. EPA, 1988a).

The preamble to the NCP indicates that state regulations that are components of a federally authorized or delegated state program are generally considered federal requirements and potential federal ARARs for the purposes of ARARs analysis (55 Fed. Reg. 8666, 8742 [1990]). The State of California received approval for its base RCRA hazardous waste management program on 23 July 1992 (57 Fed. Reg. 32726 [1992]). The State of California “Environmental Health Standards for the Management of Hazardous Waste,” set forth in Title (tit.) 22 *California Code of Regulations* (Cal. Code Regs.), Division (div.) 4.5 (Cal. Code Regs. tit. 22, div. 4.5), were approved by U.S. EPA as a component of the federally authorized State of California RCRA program. On 26 September 2001, California received final authorization of its revised State Hazardous Waste Management Program from U.S. EPA (63 Fed. Reg. 49118 [2001]).

The regulations of Cal. Code Regs. tit. 22, div. 4.5 are therefore a source of potential federal ARARs for CERCLA response actions. The exception is when a state regulation is “broader in scope” than the corresponding federal RCRA regulations. In that case, such regulations are not considered part of the federally authorized program or potential federal ARARs. Instead, they are purely state law requirements and potential state ARARs.

The U.S. EPA notice of 23 July 1992, approving the State of California RCRA program (57 Fed. Reg. 32726 [1992]), specifically indicated that the state regulations addressed certain non-RCRA, state-regulated hazardous wastes that fell outside the scope of federal RCRA requirements. Cal. Code Regs. tit. 22, div. 4.5 requirements would be potential state ARARs for such non-RCRA, state-regulated wastes.

A key threshold question for the ARARs analysis is whether the contaminants at the IR05, DP7S, and WMA sites constitute federal hazardous waste as defined under RCRA and the state’s authorized program or qualify as non-RCRA, state-regulated hazardous waste. A discussion of waste characterization is included below.

1.4 WASTE CHARACTERIZATION

Selection of ARARs involves the characterization of wastes as described in the following sections.

1.4.1 RCRA Hazardous Waste Determination

Federal RCRA hazardous waste determination is necessary to determine whether a waste is subject to RCRA requirements at Cal. Code Regs. tit. 22, div. 4.5 and other state requirements at Cal. Code Regs. tit. 23, div. 3, Chapter (ch.) 15. The first step in the RCRA hazardous waste characterization process is to evaluate contaminated media at the site(s) and determine whether the contaminant constitutes a “listed” RCRA waste. The preamble to the NCP states that “. . . it is often necessary to know the origin of the waste to determine whether it is a listed waste and that, if such documentation is lacking, the lead agency may assume it is not a listed waste” (55 Fed. Reg. 8666, 8758 [1990]).

This approach is confirmed in U.S. EPA guidance for CERCLA compliance with other laws (U.S. EPA, 1988a) as follows.

To determine whether a waste is a listed waste under RCRA, it is often necessary to know the source. However, at many Superfund sites, no information exists on the source of wastes. The lead agency should use available site information, manifests, storage records, and vouchers in an effort to ascertain the nature of these contaminants. When this documentation is not available, the lead agency may assume that the wastes are not listed RCRA hazardous wastes, unless further analysis or information becomes available that allows the lead agency to determine that the wastes are listed RCRA hazardous wastes.

RCRA hazardous wastes that have been assigned U.S. EPA hazardous waste numbers (or codes) are listed in Cal. Code Regs. tit. 22, § 66261.30–66261.33. The lists include hazardous waste codes beginning with the letters “F,” “K,” “P,” and “U.”

Knowledge of the exact source of a waste is required for source-specific listed wastes (K waste codes). Some knowledge of the nature or source of the waste is required even for listed wastes from nonspecific sources, such as spent solvents (F waste codes) or commercial chemical products (P and U waste codes). These listed RCRA hazardous wastes are restricted to commercially pure chemicals used in particular processes such as degreasing.

P and U wastes cover only unused and unmixed commercial chemical products, particularly spilled or off-specification products (U.S. EPA, 1991a). Not every waste containing a P or U chemical is a hazardous waste. To determine whether a CERCLA investigation-derived waste contains a P or U waste, there must be direct evidence of product use. In particular, all the following criteria must be met. The chemicals must be:

- discarded (as described in 40 C.F.R. § 261.2[a][2]),
- either off-specification commercial products or a commercially sold grade,
- not used (i.e., soil contaminated with spilled unused wastes is a P or U waste), and
- the sole active ingredient in a formulation.

Available historical information, manifests, and storage records were reviewed during the RI indicating that portions of the IR05, DP7S, and WMA sites were considered Solid Waste Management Units (SWMUs), including 79, 80, 81, 101, and 125. On 27 June 2003 the DTSC re-named the SWMUs per Federal Facility Site Remediation Agreement under California Health and Safety Code Section 25187 and 25355.5, dated July 15, 2002, between the DTSC and DON and modified the permit (DTSC, 2003). Under this action SWMUs 79, 80, 81, and 101 were designated within IR05 and SWMU 125 was designated within the IR05, DP7S, and WMA sites as well as other areas on the south end of Mare Island. The IR05, DP7S, and WMA SWMU designations are shown on Figure 3 in the FS Report (WESTON, 2014) and described as follows:

- SWMU 79—Concord Annex Circle Pit (round pit disposal area)
- SWMU 80—Concord Annex Ordnance Disposal Area
- SWMU 81—Concord Annex Storm Sewers
- SWMU 101—Concord Annex Ordnance and Additional Sites
- SWMU 125—South End of Island

The Concord Annex Circle Pit or round pit disposal area (SWMU 79) was a known disposal area for construction debris and surplus ordnance beginning in the early 1950s. Investigations and remedial actions documented at SWMU 79 include the Initial Assessment Study (Ecology and Environment, Inc. [E&E], 1983), Verification Study (Richesin and Associates and Stearn, Conrad, and Schmidt Consulting Engineers, Inc. [Richesin/SCS], 1987), Phase I of the RI, Site Characterization Study (International Technology Corporation [IT], 1992), Phase II of the RI

(PRC Environmental Management, Inc. [PRC], 1996), Unexploded Ordnance (UXO) Time-Critical Removal Action (TCRA) (Supervisor of Shipbuilding, Conversion, and Repair, Portsmouth Virginia Environmental Detachment, Vallejo, California [SSPORTS], 1998), Data Gaps Sampling (WESTON, 2013), and IR05 TCRA (WESTON, 2011). Ordnance related material was removed from the round pit disposal area during the 1995-1997 UXO TCRA (SSPORTS, 1998a). An additional removal of soil to 6 feet below ground surface (bgs) was completed during the IR05 TCRA (WESTON, 2011).

The Concord Annex Ordnance Disposal Area (SWMU 80) was an unlined disposal area located in the southwest corner of IR05. Ordnance and related items were disposed from the 1950s through the 1980s in this area of IR05 (E&E, 1983). Investigations documented at SWMU 80 include the Initial Assessment Study (E&E, 1983), Verification Study (Richesin/SCS, 1987), Phase I of the RI, Site Characterization Study (IT, 1992), Phase II of the RI (PRC, 1996), and UXO TCRA (SSPORTS, 1998a). An excavation was completed to an average of 2 feet bgs in the Concord Annex Ordnance Disposal Area during the UXO TCRA (SSPORTS, 1998).

Concord Annex Storm Sewers (SWMU 81) includes the two former storm water pipelines located in the northern portion of IR05. Investigations documented at SWMU 81 include the Initial Assessment Study (E&E, 1983) and Verification Study (Richesin/SCS, 1987). As recommended during the Verification Study, an assessment and cleanup of the storm water pipelines was conducted and the pipeline sections were repaired in 1988. No further cleanup of the storm water pipeline was recommended (IT, 1988). Soil near the inactive storm water pipeline was further investigated during Phase II of the RI (PRC, 1996) and the Data Gaps Sampling (WESTON, 2013). Several areas on and adjacent to the former pipelines were excavated during the IR05 TCRA (WESTON, 2011).

Concord Annex Ordnance and Additional Sites (SWMU 101) was designated as a potential SWMU to address ordnance disposal at additional areas within IR05. This SWMU was not designated at a specific location in IR05 therefore all investigations documented at IR05, including the Initial Assessment Study (E&E, 1983), Verification Study (Richesin/SCS, 1987), Phase I of the RI, Site Characterization Study (IT, 1992), Phase II of the RI (PRC, 1996), and Data Gaps Sampling (WESTON, 2013) are potentially applicable to SWMU 101. Results from

these investigations have led to several excavated areas during the IR05 TCRA (WESTON, 2011) in the northern upland portion primarily used for munitions storage as well as the southern lowland areas which were used for ordnance burning, detonation, and disposal. Ordnance-related investigations and response actions at IR05 include the 1994 Surface Sweep and UXO SI (SSPORTS, 1997), UXO TCRA (SSPORTS, 1998a), and 2006-2010 Munitions Response Action (WESTON, 2010). Hundreds of munitions items have been recovered from IR05 during these actions.

The South End of Island (SWMU 125) was included as a potential SWMU to address potential contamination from ordnance disposal that may have occurred in the south end of the Mare Island. SWMU 125 encompasses the entire south end of the island, including the entire Investigation Area F1, Installation Restoration Site 04, the South Shore Area, IR05, DP7S, and WMA. Potential exposure routes, targets, and the likelihood of a release of contaminants associated with ordnance storage and disposal in the portion of SWMU 125 within the IR05, DP7S, and WMA sites were investigated during the Initial Assessment Study at IR05 (E&E, 1983); the IR05 Verification Study (Richesin/SCS, 1987); Phase I of the RI at IR05; Site Characterization Study (IT, 1992); Mare Island Ordnance Preliminary Assessment which included the WMA (PRC, 1995); Phase II of the RI at the IR05, DP7S and WMA sites (PRC, 1996); Dredge Spoils Ponds Radiological Investigation (WESTON, 2001a); Onshore Ecological Risk Assessment at the IR05 and WMA sites (Tetra Tech EM Inc., 2002); and Data Gaps Sampling at the IR05, DP7S, and WMA sites (WESTON, 2013) are potentially applicable to SWMU 125. Results from these investigations have led to several excavated areas during the IR05 TCRA (WESTON, 2011) in the northern upland portion primarily used for munitions storage as well as the southern lowland areas which were used for ordnance burning, detonation, and disposal. Ordnance-related investigations and response actions at the IR05, DP7S, and WMA sites include the 1990-1994 Emergency Response Actions at the WMA (MINS, 1996); 1994 Surface Sweep at IR05 (SSPORTS, 1997); 1995-1997 UXO SI at DP7S and the WMA (SSPORTS, 1997); 1995-1997 UXO TCRA at IR05 (SSPORTS, 1998a); 1997-1998 UXO Intrusive Investigation at the WMA (SSPORTS, 1998b); 1998-2001 Dredge Spoils Ponds UXO Intrusive Investigation which included DP7S (WESTON, 2001b); and 2006-2010 Munitions Response Action (WESTON, 2010). Hundreds of munitions items have been recovered from the IR05, DP7S, and WMA sites during these actions.

Given the response actions documented at each of the SWMUs, the historical presence of these areas should not classify IR05, DP7S, or WMA soil or groundwater as RCRA-listed hazardous wastes.

The second step in the RCRA hazardous waste characterization process is to evaluate potential hazardous characteristics of the waste. The evaluation of characteristic waste is described in U.S. EPA guidance as follows (U.S. EPA, 1988a).

Under certain circumstances, although no historical information exists about the waste, it may be possible to identify the waste as RCRA characteristic waste. This is important in the event that (1) remedial alternatives under consideration at the site involve on-site treatment, storage, or disposal, in which case RCRA may be triggered as discussed in this section; or (2) a remedial alternative involves off-site shipment. Since the generator (in this case, the agency or responsible party conducting the Superfund action) is responsible for determining whether the wastes exhibit any of these characteristics (defined in 40 C.F.R. § 261.21–261.24), testing may be required. The lead agency must use best professional judgment to determine, on a site-specific basis, if testing for hazardous characteristics is necessary.

In determining whether to test for the toxicity characteristic using the extraction procedure toxicity test, it may be possible to assume that certain low concentrations of waste are not toxic. For example, if the total waste concentration in soil is 20 times or less the extraction procedure toxicity concentration, the waste cannot be characteristic hazardous waste. In such a case, RCRA requirements would not be applicable. In other instances, where it appears that the substances may be characteristic hazardous waste (ignitable, corrosive, reactive, or extraction procedure toxic), testing should be performed.

Hazardous waste characteristics, as defined in 40 C.F.R. § 261.21–261.24, are commonly referred to as ignitability, corrosivity, reactivity, and toxicity. California environmental health standards for the management of hazardous waste set forth in Cal. Code Regs. tit. 22, div. 4.5 were approved by U.S. EPA as a component of the federally authorized California RCRA program. Therefore, the characterization of RCRA waste is based on the state requirements.

The characteristics of ignitability, corrosivity, reactivity, and toxicity are defined in Cal. Code Regs. tit. 22, § 66261.21–66261.24. According to Cal. Code Regs. tit. 22, § 66261.24(a)(1)(A), “A waste that exhibits the characteristic of toxicity pursuant to subsection (a)(1) of this section has the U.S. EPA Hazardous Waste Number specified in Table I of this section which corresponds to the toxic contaminant causing it to be hazardous.” Table I assigns hazardous waste codes beginning with the letter “D” to wastes that exhibit the characteristic of toxicity; D waste codes are limited to “characteristic” hazardous wastes.

According to Cal. Code Regs. tit. 22, § 66261.10, waste characteristics can be measured by an available standardized test method or be reasonably classified by generators of waste based on their knowledge of the waste, provided that the waste has already been reliably tested or there is documentation of chemicals used.

The requirements at Cal. Code Regs. tit. 22, § 66261.24 list the toxic contaminant concentrations that determine the characteristic of toxicity. The concentration limits are in milligrams per liter (mg/L). These units are directly comparable to total concentrations in waste groundwater and surface water. For waste soils, these concentrations apply to the extract or leachate produced by the toxicity characteristic leaching procedure (TCLP).

A waste is considered hazardous if the contaminants in the wastewater or in the soil TCLP extract equal or exceed the TCLP limits. TCLP testing is required only if total contaminant concentrations in soil equal or exceed 20 times the TCLP limits because TCLP uses a 20-to-1 dilution for the extract (U.S. EPA, 1988a).

Military munitions have been recovered from the IR05, DP7S, and WMA sites. An unused military munition is considered a solid waste when abandoned, removed from storage for treatment and/or disposal or is deteriorated or damaged to the point that it is not serviceable. Military munitions recovered to date from the IR05, DP7S, and WMA sites have been classified as discarded military munitions, meaning they were either abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. Because these types of military munitions are considered RCRA hazardous waste, requirements at Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 are considered applicable if munitions are encountered at the sites.

1.4.2 California-Regulated, Non-RCRA Hazardous Waste

A waste determined not to be a RCRA hazardous waste may still be considered a California-regulated non-RCRA hazardous waste. The state's RCRA program is broader in scope in its hazardous waste determination. Cal. Code Regs. tit. 22, § 66261.24(a)(2) lists the total threshold limit concentrations (TTLCs) and the soluble threshold limit concentrations (STLCs) for non-RCRA hazardous waste. The state applies its own leaching procedure, the Waste Extraction Test

(WET), which uses a different acid reagent and has a different dilution factor (tenfold). There are other state requirements that may be broader in scope than federal ARARs for identifying non-RCRA wastes regulated by the state. These may be potential ARARs for wastes not covered under federal ARARs. See additional subsections of Cal. Code Regs. tit. 22, § 66261.24. A waste is considered hazardous if its total concentrations exceed the TTLCs or if the extract concentrations from the WET exceed the STLCs. A WET is required when the total concentrations exceed the STLC but are less than the TTLCs (Cal. Code Regs. tit. 22, div. 4.5, ch. 11, Appendix [app.] II [b]).

Remedial alternatives considered at the IR05, DP7S, and WMA sites do not include removal or treatment of any media, thereby limiting the potential for waste generation to unearthed munitions items. As described above recovered military munitions from the sites are considered a RCRA hazardous waste to be managed under federal ARARs. California-regulated non-RCRA hazardous waste requirements are not applicable.

1.4.3 Other California Waste Classifications

For waste discharged after 18 July 1997, solid waste classifications at Cal. Code Regs. tit. 27, §§ 20210, 20220, and 20230 are used to determine applicability of waste management requirements. These are summarized below.

A “designated waste” under Cal. Code Regs. tit. 27, § 20210 is defined at Cal. Water Code § 13173. Under Cal. Water Code § 13173, designated waste is hazardous waste that has been granted a variance from hazardous waste management requirements or nonhazardous waste that consists of or contains pollutants that, under ambient environmental conditions at a waste management unit, could be released in concentrations exceeding applicable water quality objectives (WQOs) or that could reasonably be expected to affect beneficial uses of the waters of the state.

A “nonhazardous solid waste” under Cal. Code Regs. tit. 27, § 20220 is all putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, manure, vegetable or animal solid and

semisolid wastes, and other discarded waste (whether of solid or semisolid consistency), provided that such wastes do not contain wastes that must be managed as hazardous wastes or wastes that contain soluble pollutants in concentrations that exceed applicable WQOs or could cause degradation of waters of the state.

Under Cal. Code Regs. tit. 27, § 20230, inert waste is that subset of solid waste that does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable WQOs and does not contain significant quantities of decomposable waste.

The selected remedy at the IR05, DP7S, and WMA sites is LUCs. LUCs do not include removal or treatment of any media, thereby limiting the potential for waste generation to recovered munitions. As described above recovered military munitions from the sites are considered a RCRA hazardous waste to be managed under federal ARARs. California “designated waste”, “nonhazardous solid waste”, and inert waste requirements are not applicable.

2. CHEMICAL-SPECIFIC ARARS

Chemical-specific ARARs are generally health- or risk-based numerical values or methodologies applied to site-specific conditions that result in the establishment of a cleanup level. Many potential ARARs associated with particular response alternatives (such as closure or discharge) can be characterized as action-specific but include numerical values or methodologies to establish them; therefore, they fit into both categories (chemical- and action-specific). To simplify the comparison of numerical values, most action-specific requirements that include numerical values are included in this chemical-specific section and, if repeated in the action-specific section, the discussion refers back to this section.

Results from the RI human health risk assessment and ecological risk assessment from all media indicate there are no human health risks from chemicals of potential concern or significant or immediate “incremental site-related” risk identified for the ecological receptors from chemicals of potential ecological concern. However, there remains the possibility of exposure to buried munitions at the IR05, DP7S, and WMA sites. A groundwater beneficial use exception for municipal and domestic water supply was granted by the Regional Water Board based on the high total dissolved solids values (Regional Water Board, 2011). There is no RAO for groundwater. This section presents the ARARs determination conclusions that address numerical values for groundwater, soil/sediment and a summary of the potential ARARs followed by a more detailed discussion of the ARARs for groundwater and soil/sediment. Potential federal and state chemical-specific ARARs are summarized in Table 1.

2.1 SUMMARY OF ARARS CONCLUSIONS BY MEDIUM

Remedial alternatives are required to protect future human receptors from the low residual risk posed by potential buried munitions; thereby limiting remedial alternatives to LUCs. Because there are no chemicals of concern (COCs) or chemicals of ecological concern (COECs), the selected remedy does not include removal or treatment of any media. Although there are no COCs or COECs or environmental media potentially affected by the remedial alternatives, there are groundwater and soil/sediment chemical-specific ARARs as discussed below.

2.1.1 Groundwater ARARs Conclusions

There are no groundwater COCs. The substantive provisions of the following requirements are the most stringent of the potential federal and state chemical-specific ARARs for groundwater at the IR05, DP7S, and WMA sites.

- State Water Resources Control Board (SWRCB) Res. 88-63 (SWRCB, 1988) establishing criteria to help Regional Water Boards identify potential sources of drinking water
- Water Quality Control Plan (WCQP) for the San Francisco Bay Region (Regional Water Board, 2010) establishing WQOs, beneficial uses, and waste discharge limitations

2.1.2 Soil/Sediment ARARs Conclusions

Because discarded military munitions have been recovered and may remain buried at the IR05, DP7S, and WMA sites, the following requirements for soil/sediment are the most stringent of the potential federal and state chemical-specific ARARs:

- Definition of RCRA hazardous waste found at Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100
- Identification of hazardous waste munitions and treatment and storage requirements for hazardous waste munitions found at 40 C.F.R. part 266, subpart M

2.2 DETAILED DISCUSSION OF ARARS BY MEDIUM

The following sections provide a detailed discussion of federal and state ARARs by medium.

2.2.1 Groundwater ARARs

Typically, three water-bearing zones have been identified at Mare Island. These include the shallow water-bearing zone (SWBZ), intermediate water-bearing zone (IWBZ), and the deep water-bearing zone (DWBZ). The SWBZ includes both artificial fill and naturally deposited materials that intersect the water table. The IWBZ and DWBZ correlate to the intermediate and lower sands, respectively, and are separated by a silty clay layer when both are present.

The SWBZ at IR05 includes both coarse-grained fill materials and fine-grained fill and native materials at IR05. The directional flow components have varied from one season to the next; however, the SWBZ generally flows from DP7S through IR05 toward the Carquinez Strait in an easterly direction. Groundwater within the WMA has not been measured, however it is assumed that groundwater from the upland area located to the east of the low lying tidal mudflats to the west and eventually the San Pablo Bay. Results of tidal studies indicate there is minimal tidal influence to the groundwater at IR05. The IWBZ is comprised of Late Pleistocene alluvium and is not present in IR05 and presumably not DP7S but pinches out into the WMA on the north east side. The DWBZ has not been directly measured at any of the sites. Information from cone penetrometer testing at IR05 indicates that the DWBZ was encountered approximately 50 to 55 feet bgs. The DWBZ flows consistently in a west to northwesterly direction in areas surrounding the IR05, DP7S, and WMA sites. Therefore, it is assumed that groundwater in the DWBZ within the sites shares the same flow direction. Several chlorinated compound concentrations in the SWBZ were identified as potential risk drivers at IR05; however, using the most recent sample results from 2008, the calculations were below the risk levels. Manganese was identified as a potential risk driver in monitoring wells in IR05 as well as south of the WMA; however, during the last round of groundwater sampling in 2008 manganese was below the ambient level in all but one well.

Based on the high total dissolved solids and hydraulic conductivity values, as well as limited yields from the SWBZ and IWBZ, the DON requested a groundwater beneficial use exception for municipal and domestic supply at the IR05, DP7S, and WMA sites on 27 October 2011 (DON, 2011). Concurrence with the request was received from the Water Board on 12 December 2011 (Regional Water Board, 2011). The following discussion is provided to describe the potential federal groundwater ARARs as well as the status of both federal and state potential groundwater ARARs identified by the agencies.

2.2.1.1 Federal

Under the Safe Drinking Water Act and RCRA, a significant issue in identifying ARARs for groundwater is whether the groundwater at the site can be classified as a source of drinking water. The U.S. EPA groundwater policy is set forth in the preamble to the NCP (55 Fed. Reg. 8666, 8752–8756 [1990]). This policy uses the protocols in the U.S. EPA Guidelines for

Groundwater Classification Under the U.S. EPA Groundwater Protection Strategy (U.S. EPA, 1986). Under this policy, groundwater is classified in one of three categories (Class I, II, or III), on the basis of ecological importance, its ability to be replaced, and vulnerability. Class I groundwater is irreplaceable groundwater currently used by a substantial population or groundwater that supports a vital habitat. Class II consists of groundwater currently used or that might be used as a source of drinking water in the future. Class III groundwater is groundwater that cannot be used for drinking water because of its poor quality (e.g., high salinity or widespread, naturally occurring contamination) or insufficient quantity. The U.S. EPA guidelines define Class III groundwater as groundwater with total dissolved solids concentrations over 10,000 mg/L and a yield of less than 150 gallons per day (U.S. EPA, 1986). Class III groundwater can also be classified based on economic or technological treatability tests as well as quality or quantity.

Based on an overall average total dissolved solids concentration of 23,140 mg/L as well as the limited extent and yield of the SWBZ where encountered at the IR05, DP7S, and WMA sites, the SWBZ has been determined to be Class III. As discussed above, the Regional Water Board has concurred with the municipal and domestic water supply beneficial use exception for the SWBZ and IWBZ at the IR05, DP7S, and WMA sites (Regional Water Board, 2011).

RCRA Hazardous Waste

The federal RCRA requirements at 40 C.F.R. pt. 261 do not apply in California because the state RCRA program is authorized. The authorized state RCRA requirements are therefore considered potential federal ARARs (Section 1.3.1). The applicability of RCRA requirements depends on whether the waste is a RCRA hazardous waste; whether the waste was initially treated, stored, or disposed after the effective date of the particular RCRA requirement; and whether the activity at the site constitutes treatment, storage, or disposal as defined by RCRA. However, RCRA requirements may be relevant and appropriate even if they are not applicable. Examples include activities that are similar to those defined as RCRA treatment, storage, or disposal for waste that is similar to RCRA hazardous waste.

The determination of whether a waste is a RCRA hazardous waste can be made by comparing the site waste to the definition of RCRA hazardous waste. The RCRA requirements at Cal. Code

Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 are potential ARARs because they define RCRA hazardous waste. A waste can meet the definition of hazardous waste if it has the toxicity characteristic of hazardous waste. This determination is made by using the TCLP. The maximum concentrations allowable for the TCLP listed in Cal. Code Regs. tit. 22, § 66261.24(a)(1)(B) are potential federal ARARs for determining whether the site has hazardous waste. If the site waste has concentrations exceeding these values, it is determined to be a characteristic RCRA hazardous waste (Section 1.4.1).

Because the selected remedy does not include groundwater cleanup, the substantive requirements at Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 are not potential ARARs for groundwater at the IR05, DP7S, and WMA sites.

Water Quality Standards

On 22 December 1992, U.S. EPA promulgated federal water quality standards under the authority of the federal CWA Section 303(c)(2)(B), 33 U.S.C. ch. 26, § 1313(c)(2)(B), in order to establish water quality standards required by the CWA where the State of California and other states had failed to do so (57 Fed. Reg. 60848 [1992]). These standards have been amended over the years in the *Federal Register* including amendments of the National Toxics Rule (60 Fed. Reg. 22228 [1995]). These water quality standards, as amended, are codified at 40 C.F.R. § 131.36.

U.S. EPA promulgated a rule on 18 May 2000 to fill a gap in California's water quality standards. The gap was created in 1994 when a state court overturned the state's WQCPs that contained water quality criteria for priority toxic pollutants. The rule, commonly called the California Toxics Rule, is codified at 40 C.F.R. § 131.38. These federal criteria are legally applicable in the State of California for inland surface waters and enclosed bays and estuaries for all purposes and programs under the CWA.

The water quality standards contained in 40 C.F.R. § 131.36 and 131.38 are potential applicable federal ARARs for groundwater cleanup response actions that discharge to surface water. Because the selected remedy does not include groundwater cleanup, the substantive requirements at 40 C.F.R. § 131.36, 131.37, and 131.38 are therefore not potential ARARs for the IR05, DP7S, and WMA sites.

2.2.1.2 State

Although the state has identified potential ARARs for groundwater cleanup at the site, the selected remedy at the IR05, DP7S, and WMA sites does not include groundwater cleanup. The following discussion is provided to describe the status of the following state ARARs identified by the agencies.

SWRCB Res. 88-63, Adoption of Policy Entitled “Sources of Drinking Water”

SWRCB Res. 88-63 establishes criteria to help Regional Water Boards identify potential sources of drinking water (SWRCB, 1988). According to this resolution, all groundwater in California is considered suitable or potentially suitable for domestic or municipal freshwater supply except in cases where any one of the following water quality and production criteria is met.

- TDS exceed 3,000 mg/L (or electrical conductivity is greater than 5,000 micromhos per centimeter) and the Regional Water Board does not reasonably expect the groundwater to supply a public drinking water system.
- Groundwater is contaminated, either by natural processes or by human activity unrelated to a specific pollution incident, and cannot reasonably be treated for domestic use either by best management practices or best economically available treatment practices.
- The groundwater does not provide sufficient water to supply a single well capable of producing an average sustained yield of 200 gallons per day.

As discussed in Section 2.2.1, the Regional Water Board has concurred with the exception to the municipal and domestic water supply beneficial use of the SWBZ and IWBZ at the IR05, DP7S, and WMA sites (Regional Water Board, 2011).

Comprehensive Water Quality Control Plan for San Francisco Bay Region (Basin Plan)

The DON accepts the substantive provisions in Chapters 2 through 4 of the Basin Plan for the San Francisco Bay Region (Regional Water Board, 2010) including beneficial use, WQOs, and waste discharge requirements (WDRs) as relevant and appropriate.

The Basin Plan for the San Francisco Bay was prepared and implemented by the Regional Water Board to protect and enhance the quality of the waters in the San Francisco Bay. The Basin Plan establishes location-specific beneficial uses and WQOs for the surface water and groundwater of the region and is the basis of the Regional Water Board's regulatory programs. The Basin Plan includes both numeric and narrative WQOs for specific groundwater subbasins. The WQOs are intended to protect the beneficial uses of the waters of the region and to prevent nuisance.

Beneficial use and reuse of water are key aspects of the Basin Plan for the San Francisco Bay Region. The former MINS is located in the San Pablo Basin. The San Pablo Basin has the following existing potential beneficial use designations (Regional Water Board, 2010):

- Ocean, commercial, and sport fishing
- Estuarine habitat
- Industrial service supply
- Fish migration
- Navigation
- Preservation of rare and endangered species
- Water contact recreation
- Noncontact water recreation
- Shellfish harvesting
- Fish spawning
- Wildlife habitat

Groundwater at the sites is considered to have low potential value as an industrial service supply because of low well yields and limited sustainable resources. Based on total dissolved solids measurements of adjacent surface water bodies to the former MINS, they can be classified as saline or brackish and not freshwater. In addition, groundwater at the sites does not provide a beneficial use as a freshwater replenishment source (WESTON, 2012).

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) became Division 7 of the *California Water Code* in 1969. The Porter-Cologne Act requires each regional board to formulate and adopt basin plans for all areas within the region (Cal. Water Code § 13240). It also

requires each regional board to establish WQOs that will protect the beneficial uses of the water basin (Cal. Water Code § 13241) and to prescribe WDRs that would implement the basin plan for any discharge of waste to the waters of the state (Cal. Water Code § 13263[a]).

Other sections of the Porter-Cologne Act include Cal. Water Code § 13243, which allows regional boards to specify conditions or areas where waste discharge is not permitted. Cal. Water Code § 13269 provides the boards' authority for waivers for reports or compliance with requirements as long as it is not against the public interest. Cal. Water Code § 13360 specifies circumstances for regional boards to order compliance in a specific manner.

Substantive provisions of Cal Water Code §§ 13241, 13243, 13263(a), 13269, and 13360 of the Porter-Cologne Act as enabling legislation as implemented through the beneficial uses, WQOs, WDRs, promulgated policies of the WQCP for the San Francisco Bay Region, and SWRCB Res. 68-16 are not relevant and appropriate for groundwater which has no beneficial use and does not require remediation. LUCs will serve to further protect from any unauthorized intrusive actions affecting media at the IR05, DP7S, and the WMA sites.

Cal. Water Code § 13304 sets forth enforcement authority and an enforcement process (orders issued by the state) and is procedural in nature. It does not constitute an ARAR because it does not itself establish or contain substantive environmental “standards, requirements, criteria, or limitations” (CERCLA Section 121 [42 U.S.C. § 9621]) and is not in itself directive in intent. Through its enforcement authority and procedures, substantive state environmental standards set forth in other statutes, regulations, plans, and orders are enforced. In addition, Cal. Water Code § 13304 is no more stringent than the substantive requirements of the potential state ARARs identified in the above paragraphs or potential federal ARARs for groundwater which does not require remediation.

SWRCB Res. 92-49 and 68-16

SWRCB Res. 92-49 (as amended on 21 April 1994 and 02 October 1996) is titled Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Cal. Water Code § 13304. This resolution contains policies and procedures for the regional boards that apply to all investigations and cleanup and abatement activities for all types of discharges subject to Cal. Water Code § 13304.

SWRCB Res. 68-16, Statement of Policy With Respect to Maintaining High Quality of Waters in California, establishes the policy that high-quality waters of the state “shall be maintained to the maximum extent possible” consistent with the “maximum benefit to the people of the state.” It provides that whenever the existing quality of water is better than the required applicable water quality policies, such existing high-quality water will be maintained until it has been demonstrated to the state that any change will be consistent with maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial use of such water, and will not result in water quality less than that prescribed in the policies. It also states that any activity that produces or may produce a waste or increased volume or concentration of waste and that discharges or proposes to discharge to existing high-quality waters will be required to meet waste discharge requirements that will result in the best practicable treatment or control of the discharge necessary to assure that a) pollution or a nuisance will not occur and b) the highest water quality consistent with maximum benefit to the people of the state will be maintained (SWRCB, 1968).

Cleanup to below background water quality conditions is not required by the SWRCB under the Porter-Cologne Act. SWRCB Res. 92-49 II.F.1 (SWRCB, 1992) provides that regional boards may require cleanup and abatement to “conform to the provisions of the Resolution No. 68-16 of the State Water Board, and the Water Quality Control Plans of the State and Regional Water Quality Control Boards, provided that under no circumstances shall these provisions be interpreted to require cleanup and abatement which achieves water quality conditions that are better than background conditions.”

DON’s Position Regarding SWRCB Res. 92-49 and 68-16—The DON recognizes that the key substantive requirements of Cal. Code Regs. tit. 22, § 66264.94 (and the identical requirements of Cal. Code Regs. tit. 23, § 2550.4 and Section III.G of SWRCB Res. 92-49) require cleanup to background levels of constituents unless such restoration proves to be technologically or economically infeasible and an alternative cleanup level of constituents will not pose a substantial present or potential hazard to human health or the environment. In addition, the DON recognizes that these provisions are more stringent than corresponding provisions of 40 C.F.R. § 264.94 and, although they are federally enforceable via the RCRA program authorization, they

are also independently based on state law to the extent that they are more stringent than the federal regulations.

The DON has also determined that SWRCB Res. 68-16 is not a chemical-specific ARAR for determining response action goals. However, SWRCB Res. 68-16 is a potential action-specific ARAR for regulating new discharges, such as treated groundwater, into the aquifer. The DON has determined that further migration of groundwater or surface water is not a discharge governed by the language in Res. 68-16. More specifically, the language of SWRCB Res. 68-16 indicates that it is prospective in intent, applying to new discharges in order to maintain existing high-quality waters. It is not intended to apply to restoration of waters that are already degraded.

The DON's position is that SWRCB Res. 92-49 and 68-16 and Cal. Code Regs. tit. 23, § 2550.4 do not constitute chemical-specific ARARs for this selected remedy because they are state requirements and are not more stringent than federal ARAR provisions of Cal. Code Regs. tit. 22, § 66264.94. The NCP set forth in 40 C.F.R. § 300.400(g)(4) provides that only state standards more stringent than federal standards may be ARARs (see also CERCLA Section 121(d)(2)(A)(ii) [42 U.S.C. § 9621(d)(2)(A)(ii)]).

State of California's Position Regarding SWRCB Res. 92-49 and 68-16—The state does not agree with the DON determination that SWRCB Res. 92-49 and 68-16 and certain provisions at Cal. Code Regs. tit. 23, div. 3, ch. 15 are not ARARs for this response action. Whereas the DON and the State of California have not agreed on whether SWRCB Res. 92-49 and 68-16 and Cal. Code Regs. tit. 23, § 2550.4 are ARARs for this selected remedy, the FS Report documents each party's position on the resolutions but does not attempt to resolve the issue (WESTON, 2014).

Cal. Code Regs. tit. 27, div. 2, subdiv. 1, §§ 20380(a), 20400(a), (c), (d), (e), and (g)

The DON has reviewed the provisions of Cal. Code Regs. tit. 27, §§ 20380(a) and 20400(a), (c), (d), (e), and (g). These sections address the concentration limits for monitoring at waste management units (WMUs) for other than hazardous wastes. The DON has determined that these provisions are identical to those found in Cal. Code Regs. tit. 22, § 66264.94(d)(1), (2), and (4), and (e)(1) and (2). As discussed in Section 1.4.1, SWMUs previously identified at the IR05, DP7S, and WMA sites have been addressed during previous investigations and removal actions;

therefore, requirements at Cal. Code Regs. tit. 27, §§ 20380(a), 20400(a), (c), (d), (e) and (g); and Cal. Code Regs. tit. 22, § 66264.94(d)(1), (2), and (4), and (e)(1) and (2) are not applicable.

Cal. Code Regs. tit. 23, div. 3, ch. 15, § 2550(a), 2550.4(d), (e), and (f)

The Cal. Code Regs. tit. 23, div. 3, ch. 15 regulations address hazardous waste discharges to land. Other waste classifications are addressed under Cal. Code Regs. tit. 27, div. 2, subdiv. 1. Cal. Code Regs. tit. 23, § 2550(a) addresses the general applicability of other technical standards in Chapter 15 and it does not contain standards itself. Therefore, Cal. Code Regs. tit. 23, § 2550(a) is not an ARAR. Cal. Code Regs. tit. 23, § 2550.4(d), (e), and (f) address concentration limits for monitoring and cleanup programs at hazardous WMUs. The DON has determined that the requirements contained in these sections are identical to those found in Cal. Code Regs. tit. 22, § 66264.94(d)(1), (2), and (4), and (e)(1) and (2). As discussed in Section 1.4.1, SWMUs previously identified at the IR05, DP7S, and WMA sites have been addressed during previous investigations and removal actions; therefore, requirements at Cal. Code Regs. tit. 23, div. 3, ch. 15 § 2550(a), 2550.4(d), (e), and (f); and Cal. Code Regs. tit. 22, § 66264.94(d)(1), (2), and (4), and (e)(1) and (2) are not applicable.

Safe Drinking Water and Toxic Enforcement Act of 1986

The DON has performed a thorough evaluation of the Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) and the regulations implementing it (Cal. Code Regs. tit. 22, §§ 12000–14000) and has determined that the act is not an ARAR for the IR05, DP7S, and WMA sites for the following reasons.

This statute is expressly not directly applicable to the federal government. The definition of covered “person” in Cal. Health & Safety Code § 25249.11(a) does not include governmental entities, including the federal government. See also the definition of “person in the course of doing business” at Cal. Health & Safety Code § 25249.11(b).

Setting aside the lack of direct applicability noted above, Cal. Code Regs. tit. 22, § 12701(a) clearly allows the DON to use discharge standards other than those presented in the regulation. This paragraph states, “Nothing in this Article shall preclude a person from using evidence, standards, risk assessment methodologies, principles, assumptions or levels not described in this

Article to establish that a level of exposure to a listed chemical poses no significant risk.” The DON has performed a risk assessment meeting the requirements of Cal. Code Regs. tit. 22, § 12721, and has determined that neither removal nor treatment alternatives are required for any media.

The DON identification of an alternative standard is also supported by Proposition 65 regulations at Cal. Code Regs. tit. 22, § 12703(b) that state:

For chemicals assessed in accordance with this section, the risk level which represents no significant risk shall be one which is calculated to result in one excess case of cancer in an exposed population of 100,000, assuming lifetime exposure at the level in question, *except where sound considerations of public health support an alternative level, as for example, where a clean-up and resulting discharge ordered and supervised by an appropriate governmental agency or court of competent jurisdiction* [emphasis added].

As the lead agency for the site, the DON clearly can select health-based standards using other standards and considerations that are protective of human health and the environment.

RCRA Requirements

State RCRA requirements included within the U.S. EPA-authorized RCRA program for California are considered to be potential federal ARARs and are discussed in the previous section. The exception is when a state regulation is “broader in scope” than the corresponding federal RCRA regulations. In that case, such regulations are not considered part of the federally authorized program or potential federal ARARs. Instead, they are purely state law requirements and potential state ARARs.

State requirements such as the non-RCRA, state-regulated hazardous waste requirements may be potential state ARARs because they are not within the scope of the federal ARARs (57 Fed. Reg. 60848). The Cal. Code Regs. tit. 22, div. 4.5 requirements that are part of the state-approved RCRA program would be potential state ARARs for non-RCRA, state-regulated hazardous wastes. Remedial alternatives do not include the remediation of groundwater therefore the non-RCRA, state-regulated hazardous waste requirements are not considered potential state ARARs.

Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater

Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater (Regional Water Board, 2008) provides lookup tables of conservative Environmental Screening Levels for chemicals commonly found at sites with contaminated soil and groundwater, including a description of how they were developed. Nonpromulgated advisories or guidance issued by federal or state governments are not legally binding and do not have the status of ARARs. Results of the ecological risk assessment indicate there are no COECs in soil. In addition, the potential pathway for ecological receptors to groundwater is incomplete.

Compilation of Water Quality Goals

The Compilation of Water Quality Goals includes an extensive compendium of numeric water quality thresholds from the literature for over 860 chemical constituents and water quality parameters. Nonpromulgated advisories or guidance issued by federal or state governments are not legally binding and do not have the status of ARARs. As discussed in Section 2.2.1, the Regional Water Board has concurred with the municipal and domestic water supply beneficial use exception for the SWBZ and IWBZ at the IR05, DP7S, and WMA site (Regional Water Board, 2011).

2.2.2 Soil/Sediment ARARs

The key threshold question for soil ARARs is whether the wastes located at the IR05, DP7S, and WMA sites would be classified as hazardous waste. The soil/sediment may be classified as federal hazardous waste as defined by RCRA and the state-authorized program or as non-RCRA, state-regulated hazardous waste. As discussed in Section 1.4.1, military munitions have been recovered from the sites. An unused military munition is considered a solid waste when abandoned, removed from storage for treatment and/or disposal or is deteriorated or damaged to the point that it is not serviceable. Military munitions recovered to date from the IR05, DP7S, and WMA sites have been classified as discarded military munitions, meaning they were either abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. Because military munitions from the sites are considered a RCRA hazardous waste, federal hazardous waste requirements will apply.

2.2.2.1 Federal

Federal requirements evaluated as potential ARARs for soil/sediment are discussed below.

RCRA Hazardous Waste and Groundwater Protection Standards

The federal RCRA requirements at 40 C.F.R. pt. 261 do not apply in California because the state RCRA program is authorized. The authorized state RCRA requirements are therefore considered potential federal ARARs (Section 1.3.1). The applicability of RCRA requirements depends on whether the waste is a RCRA hazardous waste; whether the waste was initially treated, stored, or disposed after the effective date of the particular RCRA requirement; and whether the activity at the site constitutes treatment, storage, or disposal as defined by RCRA. However, RCRA requirements may be relevant and appropriate even if they are not applicable. Examples include activities that are similar to the definition of RCRA treatment, storage, or disposal for waste that is similar to RCRA hazardous waste.

Determination of whether a waste is a RCRA hazardous waste can be made by comparing site waste to the definition of RCRA hazardous waste. RCRA requirements at Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 are potential ARARs because they define RCRA hazardous waste. A waste can meet the definition of hazardous waste if it has the toxicity characteristic of hazardous waste. This determination is made by using the TCLP. The maximum concentrations allowable for the TCLP listed in § 66261.24(a)(1)(B) are potential federal ARARs for determining whether hazardous waste is present at the site. If the site waste has concentrations exceeding these values, it is determined to be a characteristic RCRA hazardous waste (Section 1.4.1). As discussed above recovered military munitions are considered RCRA hazardous waste. Because military munitions have been recovered from the IR05, DP7S, and WMA sites, RCRA requirements at Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 are ARARs because they define hazardous waste.

The requirements at Cal. Code Regs. tit. 22, § 66264.94(a)(1), (a)(3), (c), (d), and (e) are potential federal ARARs for contamination in the vadose zone (i.e., the unsaturated zone). These sections set concentration limits for the unsaturated zone as well as for groundwater and surface water. These requirements are considered to be potential federal ARARs because they

are part of the approved state RCRA program. However, as discussed in Section 1.4.1, SWMUs identified at the IR05, DP7S, and WMA sites have been addressed during previous investigations and removal actions; therefore requirements at Cal. Code Regs. tit. 22, § 66264.94(a)(1), (a)(3), (c), (d), and (e) are not ARARs.

2.2.2.2 State

State requirements evaluated as potential ARARs for soil/sediment are discussed below.

RCRA Requirements

State RCRA requirements included within the U.S. EPA-authorized RCRA program for California are considered to be potential federal ARARs and are discussed in Section 2.2.1. The exception is when a state regulation is broader in scope than the corresponding federal RCRA regulations. In that case, such regulations are not considered part of the federally authorized program or potential federal ARARs. Instead, they are purely state law requirements and potential state ARARs.

State requirements such as the non-RCRA, state-regulated hazardous waste requirements may be potential state ARARs because they are not within the scope of the federal ARARs (57 Fed. Reg. 60848). The Cal. Code Regs. tit. 22, div. 4.5 requirements that are part of the state-approved RCRA program would be potential state ARARs for non-RCRA, state-regulated hazardous wastes. The selected remedy for the IR05, DP7S, and WMA sites does not include the removal or treatment of any media thereby limiting the potential for waste generation to unearthed munitions items which are managed as RCRA hazardous waste under federal requirements.

SWRCB Res. 92-49

State Water Resources Control Board Res. 92-49 (as amended on 21 April 1994 and 02 October 1996) is titled Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Cal. Water Code § 13304. This resolution contains policies and procedures for the regional boards that apply to all investigations and cleanup and abatement activities for all types of discharges subject to Cal. Water Code § 13304.

As discussed in Section 2.2.1.2, the state does not agree with the DON as to the ARAR status. Because the selected remedy for the IR05, DP7S, and WMA sites does not include removal or treatment of any media, policies and procedures for discharges are not applicable.

Cal. Code Regs. tit. 23, div. 3, ch. 15

The requirements at this section define a hazardous waste that is covered by the Chapter 15 requirements. These are not more stringent than federal or state RCRA ARARs for identifying hazardous waste. The selected remedy for the IR05, DP7S, and WMA sites does not include the removal or treatment of any media thereby limiting the potential for waste generation to unearthed munitions items which are managed as RCRA hazardous waste under federal requirements.

Section 2550.4 of Chapter 15 has also been identified by the state as a potential ARAR for soil cleanup levels for hazardous waste. This section is essentially the same as federal ARARs identified at Cal. Code Regs. tit. 22, § 66264.94(a)(1)(3), (c), (d), and (e) which is not applicable for the IR05, DP7S, and WMA sites as discussed in Section 2.2.2.1 above.

Cal. Code Regs. tit. 27, div. 2, subdiv. 1

Former Cal. Code Regs. tit. 23, div. 3, ch. 15 requirements that were repealed went into effect under Cal. Code Regs. tit. 27 on 18 July 1997. The following Cal. Code Regs. tit. 27 sections define waste characteristics for discharge of waste to land. These requirements may be applicable for soil left in place that was discharged after the effective date of the requirements. They are not potentially applicable to discharges before that date but may be relevant and appropriate. IR05 was used as an inert munitions storage and disposal area between 1947 and 1975. By 1953, the southeastern portion was established as an ordnance burning, detonation, and disposal area. These areas of IR05 originally identified as SWMUs (Section 1.4.1) were addressed during previous investigations and removal actions. Although the potential to encounter buried munitions exists at the site, military munitions from the sites are considered a RCRA hazardous waste and managed under federal requirements.

Cal. Code Regs. tit. 27, § 20230(a) defines inert waste as waste “that does not contain hazardous waste or soluble pollutants at concentrations in excess of applicable water quality objectives, and

does not contain significant quantities of decomposable waste.” Cal. Code Regs. tit. 27, § 20230(b) states, “inert wastes do not need to be discharged at classified waste management units.” Cal. Code Regs. tit. 27, § 20230(a) and (b) may be potential state ARARs for soil that meets the definition of inert waste. The selected remedy for the IR05, DP7S, and WMA sites does not include the removal or treatment of any media thereby limiting the potential for waste generation to unearthed munitions items from the sites which are managed as RCRA hazardous waste under federal requirements.

Cal. Code Regs. tit. 27, §§ 20210 and 20220 are state definitions for designated waste and nonhazardous waste, respectively. These may be potential ARARs for soil that meets the definitions. These soil classifications determine state classification and siting requirements for discharging waste to land. The selected remedy for the IR05, DP7S, and WMA sites does not include the removal or treatment of any media thereby limiting the potential for waste generation to unearthed munitions items from the sites which are managed as RCRA hazardous waste under federal requirements.

Standards for Protection Against Radiation

Standards for Protection Against Radiation includes regulations found at 10 C.F.R. Part 20 § 20.1001 through 20.402 and Appendices A through G by reference. The regulations in this part establish standards for protection against ionizing radiation resulting from activities conducted under licenses issued by the Nuclear Regulatory Commission. The IR05, DP7S, and WMA are not licensed sites, the requirements provided in Standards for Protection Against Radiation are not applicable.

Cal. Code Regs. tit. 17 § 30256 describes the California Department of Public Health process for decommissioning installations which may have been contaminated with radioactive material. It is not “applicable” because the regulation by its express terms applies to facilities licensed by the state of California that are undergoing a license termination process. The regulation describes the process by which CDPH makes its decisions to terminate a specific license and is thus procedural rather than substantive. It is also not more stringent than risk-based cleanup levels because the standard requiring “reasonable effort to eliminate residual radioactive contamination” is by its terms flexible and cannot be assumed to require a more stringent

cleanup than the selected CERCLA remedial action. Cal. Code Regs. tit. 17 § 30256(k) neither contains a numerical standard nor describes a narrative standard which would answer the question of whether (or what quantity of) radiological material can remain at a site. Without an identified objective standard, there can be no basis for asserting that the requirement is more stringent than CERCLA risk-based standards.

In summary, the Navy has determined that the provisions of Cal. Code Regs. tit. 17 § 30256 do not constitute an ARAR because: (1) they are not substantive requirements, (2) they are neither “applicable” nor “relevant and appropriate,” and (3) they have not been demonstrated by the State to be more stringent than risk-based cleanup levels. A State law or regulation must satisfy all of these criteria in order to meet CERCLA and NCP requirements for State ARARs and does not qualify as a State ARAR if any one of them is not satisfied.

2.2.3 Unexploded Ordnance and Munitions ARARs

Neither military munitions nor UXO is, as a class, designated as CERCLA hazardous substances. However, the DON has addressed munitions at the IR05, DP7S, and WMA sites through the CERCLA framework, which is consistent with the Department of Defense (DoD) policy. DoD’s Defense Environmental Restoration Program provides for cleanup of ordnance items formerly used at defense sites following the CERCLA process. Although it is not possible to ascertain that 100 percent of the munitions items have been recovered from the IR05, DP7S, and WMA sites, results of the 2006 through 2010 munitions response action indicate the probability of coming into contact with munitions items at the site is extremely low. Munitions are not expected to be present on the surface because 100 percent of the accessible areas were visually inspected. Potential exposure to any remaining buried munitions would require intrusive activities.

2.2.3.1 Federal

Military Munitions Rule

Ammunition products produced or owned by the DoD are regulated under the Military Munitions Rule (62 Fed. Reg. 6621, 12 February 1997). The Military Munitions Rule identifies when conventional and chemical military munitions become a hazardous waste under RCRA. It also provides for safe storage and transport of such waste. Munitions are defined under

40 C.F.R. § 260.10, and the definition includes items such as explosive rounds and small arms rounds. A military munition is classified as hazardous waste if it is either a listed waste or exhibits a hazardous characteristic. The DoD has tested small arms ammunition (less than .50 caliber) and these items were found to not exhibit a reactive characteristic with respect to 40 C.F.R. § 261.23(a)(6). See Office of Solid Waste and Emergency Response Directives 9442.1994 (06) (03 November 1994), 9443.1998 (07) (06 June 1988), and 9443.1984 (10) (30 November 1984). Munitions rounds of .50 caliber or greater may be reactive and the individual items may constitute a hazardous waste due to reactivity. Hazardous waste classification analysis of military munitions must also consider other hazardous waste characteristics such as toxicity and ignitability.

The definition of solid waste in regards to OEW is further defined in 40 C.F.R. § 266.202. A military munition is not a solid waste when it is used for its intended purpose. An unused military munition is a solid waste when abandoned, removed from storage for treatment and/or disposal, or is deteriorated or damaged to the point that it is not serviceable. A used or fired military munition is a solid waste when transported off-site for disposal or if collected and disposed by burying or landfilling. A used or fired military munition is a solid waste if it lands off-range and is promptly rendered safe or retrieved. Military munitions recovered to date from the IR05, DP7S, and WMA sites have been classified as discarded military munitions, meaning they were either abandoned without proper disposal or removed from storage in a military magazine or other storage area for the purpose of disposal. Because these types of military munitions are considered RCRA hazardous waste, requirements at Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100 are considered applicable for waste management if munitions are encountered the sites.

The requirements for military munitions have been consolidated into 40 C.F.R. pt. 266, subpt. M with appropriate references to other requirements (such as treatment and disposal). These requirements are applicable because munitions recovered from the IR05, DP7S, and WMA sites are considered RCRA hazardous waste. The state has not yet adopted the federal RCRA Military Munitions Rule and continues to regulate ordnance items that meet the definition of “hazardous waste” under Cal. Code Regs. tit. 22 hazardous waste regulations.

2.2.3.2 State

RCRA Requirements

State RCRA requirements included within the U.S. EPA-authorized RCRA program for California are considered to be potential federal ARARs and are discussed in the previous section. The exception is when a state regulation is “broader in scope” than the corresponding federal RCRA regulations. In that case, such regulations are not considered part of the federally authorized program or potential federal ARARs. Instead, they are purely state law requirements and potential state ARARs.

State requirements such as the non-RCRA, state-regulated hazardous waste requirements may be potential state ARARs because they are not within the scope of the federal ARARs (57 Fed. Reg. 60848). The Cal. Code Regs. tit. 22, div. 4.5 requirements that are part of the state-approved RCRA program would be potential state ARARs for non-RCRA, state-regulated hazardous wastes. Because military munitions from the sites are considered a RCRA hazardous waste federal requirements are applicable to their recovery.

3. LOCATION-SPECIFIC ARARS

Potential location-specific ARARs are identified and discussed in this section. The discussions are presented based on various attributes of the site location, such as whether it is within a floodplain.

3.1 SUMMARY OF LOCATION-SPECIFIC ARARS

Cultural resources, wetlands protection, biological resources, and coastal resources are the resource categories relating to location-specific requirements potentially affected by the IR05, DP7S, and WMA remedial alternatives. The conclusions for ARARs pertaining to these resources are presented in the following sections.

3.1.1 Cultural Resources ARARs Conclusions

In 1960, Mare Island was officially declared California Historic Landmark No. 751 based on its long history as a Naval installation. In 1963, a historic site survey was conducted and submitted for its consideration as a National Park Service National Historic Landmark. The National Historic Landmark status was subsequently approved by the Secretary of the Interior in 1975 under the Historic Sites Act of 1935, and the former MINS was added to the National Register of Historic Landmarks (#75002103). The Navy updated the Historic Site Survey in 1984 and, pursuant to the update, a comprehensive historical analysis and report were prepared (Cardwell Survey) and submitted to the Office of National Register Programs, Western Region, National Parks Service. In March 1986, Cardwell updated his report to modify the historic boundaries originally defined in the 1963 Historic Site Survey. In 1997, the Mare Island Historic District boundary was increased and the National Register of Historic Places assigned it a new number (#96001058). This boundary includes a portion of the WMA as shown on Figure 8 of the FS Report (WESTON, 2014). There are no known areas of historic significance within the IR05 and DP7S sites. The 21 buildings, including partial buildings, which served as storage magazines within the WMA were recognized as historical contributing buildings.

Pursuant to Sections 106 and 110(f) of the National Historic Preservation Act (NHPA) (16 U.S.C. § 470–470x-6, and its implementing regulations [36 C.F.R. pt. 800]) as amended, CERCLA remedial actions are required to take into account the effects of remedial activities on

any historic properties included on or eligible for inclusion on the National Register of Historic Places (National Register).

The purpose of the Historic Sites, Buildings, and Antiquities Act (16 U.S.C. §§ 461–467) is to encourage the long-term preservation of nationally significant properties that illustrate or commemorate the history and prehistory of the United States, including historic landmarks (36 C.F.R. pt. 65) and natural landmarks (36 C.F.R. pt. 62). Properties designated as “National Historic Landmarks” in California are listed in the National Register. The former MINS is in the National Register of Historic Places.

Because the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to cultural resources; therefore no cultural resources ARARs.

3.1.2 Wetlands Protection and Floodplain Management Conclusions

Wetland habitats at the IR05, DP7S, and WMA sites consist of tidal and non-tidal areas, which support coastal salt marsh vegetation and rotationally provide open water, mudflat, and pickleweed marsh habitat.

Exec. Order No. 11990 requires that federal agencies minimize the destruction, loss, or degradation of wetlands; preserve and enhance the natural and beneficial value of wetlands; and avoid support of new construction in wetlands if a practicable alternative exists. Results of the ecological risk assessment indicate there is no significant or immediate “incremental site-related” risk identified for ecological receptors.

Section 404 of the CWA of 1977 governs the discharge of dredged and fill material into waters of the United States, including adjacent wetlands.

Because the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to wetlands or floodplains; therefore no wetlands or floodplains ARARs.

3.1.3 Biological Resources Conclusions

As discussed above wetland habitats at the IR05, DP7S, and WMA sites consist of tidal and non-tidal areas, which support coastal salt marsh vegetation and rotationally provide open water,

mudflat, and pickleweed marsh habitat. The tidal marsh areas on Mare Island provide habitat for the salt marsh harvest mouse (SMHM) and the Ridgeways Rail, both listed as federal and state endangered species. The California Black Rail known to exist in the tidal marshes at IR05 and DP7S is listed as a state threatened species. The California Black Rail, Salt Marsh Common Yellowthroat and Suisun Shrew, are all candidate species for federal listing as threatened or endangered. They are also known to occur in the tidal and non-tidal areas of DP7S. The SMHM is a known inhabitant of the tidal wetlands within the WMA.

The Endangered Species Act (ESA) of 1973 (16 U.S.C. §§ 1531–1543) provides a means for conserving various species of fish, wildlife, and plants that are threatened with extinction. The ESA defines endangered and threatened species and provides for the designation of critical habitats. Results of the ecological risk assessment indicate there is no significant or immediate “incremental site-related” risk identified for ecological receptors.

Migratory birds are present at the IR05, DP7S, and WMA sites. The Migratory Bird Treaty Act (MBTA) (16 U.S.C. §§ 703–712) protects migratory bird species. The MBTA also prohibits the possession, sale, export, and import of any migratory bird or any part of a migratory bird, as well as nests and eggs.

Cal. Fish & Game Code § 1908 states, “No person shall import into this state, or take, possess, or sell within this state, except as incident to the possession or sale of the real property on which the plant is growing, any native plant, or any part or product thereof, that the commission determines to be an endangered native plant or rare native plant.” California rare or endangered native plants potentially present at the sites include Suisan Aster, Soft Bird’s Beak, Suisun Thistle, Diablo Rose-Rock, Mason’s Lilaeopsis, Delta Tule-Pea, Contra Costa Goldfields, and Rayless Ragwort.

The California Endangered Species Act is set forth in the Cal. Fish & Game Code §§ 2050–2116. The substantive provisions in Cal. Fish & Game Code § 2080 prohibit the “take” of California endangered or threatened species. “Take” is defined in Cal. Fish & Game Code § 86 as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.” California threatened and endangered species potentially present at the sites include California Black Rail, Ridgeways Rail, and SMHM.

Cal. Fish & Game Code § 3511 states that fully protected birds or parts thereof may not be taken or possessed at any time. The list of fully protected birds includes: American Peregrine Falcon, California Brown Pelican, California Black Rail, Ridgeway's Rail, California Condor, California Least Tern, Golden Eagle, Greater Sandhill Crane, Light-footed Clapper Rail, Southern Bald Eagle, Trumpeter Swan, White-tailed Kite, and Yuma Clapper Rail.

Cal. Fish & Game Code § 4700 states that fully protected mammals or parts thereof may not be taken or possessed at any time. Fully protected mammals include: Morro Bay Kangaroo Rat; Bighorn Sheep, except Nelson Bighorn Sheep; Northern Elephant Seal; Guadalupe Fur Seal; Ring-tailed Cat; Pacific Right Whale; SMHM; Southern Sea Otter, and Wolverine.

Cal. Fish & Game Code § 3503.5 prohibits the take, possession, or destruction of any birds in the orders of Falconiformes or Strigiformes (birds-of-prey) or to take, possess or destroy the nests or eggs of such birds.

Cal. Fish & Game Code § 3005(a) states that it is unlawful to take birds or mammals with any net, pound, cage, trap, set line or wire, or poisonous substance, or to possess birds or mammals so taken, whether taken within or without this state. Results of the ecological risk assessment indicate there is no significant or immediate "incremental site-related" risk identified for ecological receptors.

Cal. Fish & Game Code § 3503 states it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Results of the ecological risk assessment indicate there is no significant or immediate "incremental site-related" risk identified for ecological receptors.

Cal. Code Regs. Tit. 14 § 460 states that fisher, marten, river otter, desert kit fox, and red fox may not be taken at any time. Results of the ecological risk assessment indicate there is no significant or immediate "incremental site-related" risk identified for ecological receptors.

Cal. Fish & Game Code § 5650(a), (b) and (c) prohibits depositing or placing, where it can pass into waters of the state, any petroleum products, factory refuse, sawdust, shavings, slabs or edgings, and any substance deleterious to fish, plant life, or bird life.

Because there is no significant or immediate “incremental site-related” risk identified for ecological receptors and the selected remedy does not include removal or treatment of any media, there are no impacts anticipated to biological resources; therefore no biological resources ARARs.

3.1.4 Coastal Resources Conclusions

The IR05, DP7S, and WMA sites are located on or adjacent to the coast. The Coastal Zone Management Act (CZMA) (16 U.S.C. §§ 1451–1464) specifically excludes federal lands from the coastal zone (16 U.S.C. § 1453[1]). Section 1456(c)(1)(A) requires each federal agency activity within or outside the coastal zone that affects any land or water use or natural resource to conduct its activities in a manner that is consistent to the maximum extent practicable with enforceable policies of approved state management policies. A state coastal zone management program is developed under state law guided by the CZMA and its accompanying implementing regulations in 15 C.F.R. pt. 930.

The California Coastal Act codified at Public Resources Code (Cal. Pub. Res. Code) §§ 30000–30900 and Cal. Code Regs. tit. 14, §§ 13001–13666.4 regulates activities associated with development to control direct significant impacts on coastal waters and to protect state and national interests in California coastal resources.

The State of California’s approved coastal management program includes the McAteer-Petris Act, the authorizing legislation for the *San Francisco Bay Plan*, developed by the Bay Conservation and Development Commission. The McAteer-Petris Act at California Government Code tit. 7.2, §§ 66600-66661 and the San Francisco Bay Plan at Cal. Code Regs. tit. 14 §§ 10110 through 11990 regulates activities that affect the San Francisco Bay. *Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline* assesses the vulnerability of San Francisco Bay and its shoreline. Where feasible, those strategies are incorporated into recommended findings and policy revisions to the *San Francisco Bay Plan*.

Because the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to coastal resources; therefore no coastal resources ARARs.

3.2 DETAILED DISCUSSION OF ARARS

The following sections provide a detailed discussion of federal and state ARARs by location-specific resources. Pertinent and substantive provisions of the potential ARARs listed and described below were reviewed to determine whether they are potential federal or state ARARs for the IR05, DP7S, and WMA sites FS Report (WESTON, 2014).

Requirements that are determined to be ARARs or TBCs are identified in Table 2. ARARs determinations are presented in the column with the heading “ARAR Determination.” Determinations of status for location-specific ARARs were generally based on maps or lists included in the regulation or prepared by the administering agency. References to the document or agency consulted are provided in the “Comments” column and may be provided in footnotes to the table. Specific issues concerning some of the requirements are discussed in the following sections.

3.2.1 Cultural Resources ARARs

The former MINS was the first permanent installation on the Pacific Coast. The first U.S. warship (1859) and first drydock (1872-91) on the West Coast were built at the former MINS. Cultural resources include the historical areas and structures at the WMA. The following potential ARARs were evaluated for the sites:

- National Historic and Preservation Act of 1966, as amended (16 U.S.C. § 470–470x-6, 36 C.F.R. pt. 800, and 40 C.F.R. § 6.301[b])
- Historic Sites, Buildings, and Antiquities Act of 1935 (16 U.S.C. §§ 461-467 and 40 C.F.R. § 6.301[a])

3.2.1.1 National Historic Preservation Act of 1966, As Amended

Pursuant to Sections 106 and 110(f) of the NHPA (16 U.S.C. § 470–470x-6, and its implementing regulations [36 C.F.R. pt. 800]) as amended, CERCLA remedial actions are required to take into account the effects of remedial activities on any historic properties included on or eligible for inclusion on the National Register of Historic Places (National Register). The National Register is a list of districts, sites, buildings, structures, and objects that are

significant in American history, architecture, archaeology, engineering, and culture. Section 110(f) of the NHPA of 1966 as amended, requires that before approval of any federal undertaking that may directly and adversely affect any National Historic Landmark, the head of the responsible federal agency will, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to the landmark, and will afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the undertaking.

In 1960, Mare Island was officially declared California Historic Landmark No. 751 based on its long history as a Naval installation. In 1963, a historic site survey was conducted and submitted for its consideration as a National Park Service National Historic Landmark. The National Historic Landmark status was subsequently approved by the Secretary of the Interior in 1975 under the Historic Sites Act of 1935, and the former MINS was added to the National Register of Historic Landmarks (#75002103). The Navy updated the Historic Site Survey in 1984 and, pursuant to the update, a comprehensive historical analysis and report were prepared (Cardwell Survey) and submitted to the Office of National Register Programs, Western Region, National Parks Service. In March 1986, Cardwell updated his report to modify the historic boundaries originally defined in the 1963 Historic Site Survey. In 1997, the Mare Island Historic District boundary was increased and the National Register of Historic Places assigned it a new number (#96001058). This boundary includes a portion of the WMA as shown on Figure 8 of the FS Report (WESTON, 2014). There are no known areas of historic significance within the IR05 and DP7S sites. The 21 buildings, including partial buildings, which served as storage magazines within the WMA were recognized as historical contributing buildings.

Because the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to cultural resources; therefore the NHPA is not an ARAR.

3.2.1.2 Historic Sites, Buildings, and Antiquities Act of 1935

The purpose of the Historic Sites, Buildings, and Antiquities Act (16 U.S.C. §§ 461–467) is to encourage the long-term preservation of nationally significant properties that illustrate or commemorate the history and prehistory of the United States, including historic landmarks (36 C.F.R. pt. 65) and natural landmarks (36 C.F.R. pt. 62). Properties designated as “National Historic Landmarks” in California are listed in the National Register. Natural landmarks are

nationally significant examples of a full range of ecological and geological features that constitute the nation's natural heritage. In conducting an environmental review of a proposed action, the responsible official shall consider the existence and location of natural landmarks using information provided by the National Park Service pursuant to 36 C.F.R. § 62.6(d) to avoid undesirable impacts on such landmarks. These requirements are not substantive and are not potential ARARs. However as discussed above, the former MINS is in the National Register of Historic Places.

Because the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to cultural resources; therefore the Historic Sites, Buildings, and Antiquities Act is not an ARAR.

3.2.2 Wetlands Protection and Floodplain Management ARARs

Wetland habitats at the IR05, DP7S, and WMA sites consist of tidal and non-tidal areas, which support coastal salt marsh vegetation and rotationally provide open water, mudflat, and pickleweed marsh habitat. The following potential federal ARARs were evaluated for the sites:

- Exec. Order No. 11990, Protection of Wetlands
- CWA Section 404, 33 U.S.C. § 1344

3.2.2.1 Federal

Federal requirements evaluated as potential ARARs for wetlands protection and floodplains management are discussed in the following sections.

Protection of Wetlands, Exec. Order No. 11990

Exec. Order No. 11990 requires that federal agencies minimize the destruction, loss, or degradation of wetlands; preserve and enhance the natural and beneficial value of wetlands; and avoid support of new construction in wetlands if a practicable alternative exists.

Wetland habitats at the IR05, DP7S, and WMA sites consist of tidal and non-tidal areas, which support coastal salt marsh vegetation and rotationally provide open water, mudflat, and pickleweed marsh habitat. The tidal marsh areas on Mare Island provide habitat for the SMHM (*Reithrodontomys raviventris*) and the Ridgeway's Rail (*Rallus obsoletus*), both listed as federal

and state endangered species. The California Black Rail (*Laterallus jamaicensis coturniculus*) known to exist in the tidal marshes at IR05 is listed as a state threatened species. The California Black Rail, Salt Marsh Common Yellowthroat (*Geothlypis trichas sinuosa*) and Suisun Shrew (*Sorex ornatus sinuosus*), are all candidate species for federal listing as threatened or endangered. They are also known to occur in the tidal and non-tidal areas of DP7S. The SMHM is a known inhabitant of the tidal wetlands within the WMA.

Results of the ecological risk assessment indicate there is no significant or immediate “incremental site-related” risk identified for ecological receptors. Because the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to wetlands or floodplains; therefore Exec. Order No. 11990 is not an ARAR.

Clean Water Act (33 U.S.C. § 1344)

Section 404 of the CWA of 1977 governs the discharge of dredged and fill material into waters of the United States, including adjacent wetlands. Wetlands are areas that are inundated by water frequently enough to support vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas. Adjacent wetlands are wetlands that border, are contiguous to, or neighbor wetlands and include wetlands separated by man-made dikes or barriers, natural river berms, beach dunes, and the like. Both U.S. EPA and USACE have jurisdiction over wetlands. U.S. EPA’s Section 404 guidelines are promulgated in 40 C.F.R. pt. 230, and the USACE’s guidelines are promulgated in 33 C.F.R. pt. 320.

Because the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to waters of the United States or adjacent wetlands; therefore Section 404 of the CWA is not an ARAR.

3.2.3 Biological Resources ARARs

Wetland habitats at the IR05, DP7S, and WMA sites consist of tidal and non-tidal areas, which support coastal salt marsh vegetation and rotationally provide open water, mudflat, and pickleweed marsh habitat. The tidal marsh areas on Mare Island provide habitat for the SMHM and the Ridgeway’s Rail, both listed as federal and state endangered species. The California Black Rail known to exist in the tidal marshes at IR05 and DP7S is listed as a state threatened

species. The California Black Rail, Salt Marsh Common Yellowthroat and Suisun Shrew, are all candidate species for federal listing as threatened or endangered. They are also known to occur in the tidal and non-tidal areas of DP7S. The SMHM is a known inhabitant of the tidal wetlands within the WMA.

The following potential federal ARARs were evaluated for the sites:

- Endangered Species Act of 1973 (substantive provisions of 16 U.S.C. §§ 1531-1543)
- Migratory Bird Treaty Act of 1972 (substantive provisions 16 U.S.C. §§ 703-712)

3.2.3.1 Federal

Federal requirements evaluated as potential ARARs for biological resources are discussed below.

Endangered Species Act of 1973

The ESA of 1973 (16 U.S.C. §§ 1531–1543) provides a means for conserving various species of fish, wildlife, and plants that are threatened with extinction. The ESA defines endangered and threatened species and provides for the designation of critical habitats. Critical habitat is a specific geographical area that is deemed essential for the conservation of a listed species, as designated by the Secretary of Interior or Secretary of Commerce under the ESA. Under Section 7(a) of the ESA (16 U.S.C., ch. 35, § 1536[a][2]), Federal agencies shall carry out conservation programs for threatened and endangered species. Federal agencies may not fund, authorize, or carry out any action that is likely to jeopardize the continued existence of any listed species or cause the destruction or adverse modification of critical habitat. Also, it is unlawful under Section 9 of the ESA for any person, including federal agencies, to “take” any listed fish or wildlife species (16 U.S.C. § 1538[a][1][B]) or remove, maliciously damage, or destroy any listed plant species (16 U.S.C. § 1538[a][2][B]). “Take” is defined broadly and includes, but is not limited to, harassing, harming, or killing (16 U.S.C. § 1532[19]). Incidental take may be authorized for the limited circumstances outlined in 16 USC 1536(b)(4) and only when not associated with a finding of jeopardy or adverse modification. The Endangered Species Committee may grant an exemption for agency action when there are no reasonable and prudent alternatives to agency action and reasonable mitigation and enhancement measures such as propagation, transplantation, and habitat acquisition and improvement are not sufficient to avoid

a finding of jeopardy or adverse modification (16 U.S.C. § 1536[h]). The substantive requirements at 16 U.S.C. §§ 1531–1543 are potentially ARARs for CERCLA sites that have listed species or designated critical habitats. The administrative requirements of ESA, including the Section 7 consultation process and the associated production of Biological Assessment and Biological Opinion documents and the Section 10 permit requirements, are not ARARs. See CERCLA Compliance with Other Laws Manual, part II, page 4-12, U.S. EPA, 1989 (providing guidance that ESA consultation is not a requirement for CERCLA actions conducted entirely on-site). See general preamble to NCP final rule, 55 Fed. Reg. 8756, 8757 (1990) (explaining distinction between substantive and administrative requirements). Compliance with the substantive requirements of ESA requires the DON to determine whether listed species and designated critical habitat are present at the CERCLA site and to identify reasonable and prudent mitigation measures to avoid “takes” of listed species and allow the response action to be undertaken without jeopardizing the continued existence of a listed species or resulting in the destruction or adverse modification of designated critical habitat. If the DON determines that endangered species or critical habitat are not present or will clearly not be affected by the proposed response actions (without having to implement mitigation measures), then no further action is required.

Because there is no significant or immediate “incremental site-related” risk identified for ecological receptors and the selected remedy does not include the removal or treatment of any media, there are no anticipated impacts to endangered species or critical habitat; therefore the ESA is not an ARAR.

Migratory Bird Treaty Act of 1972

The MBTA (16 U.S.C. §§ 703–712) protects migratory bird species. The substantive provisions at 16 U.S.C. § 703 prohibit at any time, using any means or manner, the pursuit, hunting, capturing, and killing or the attempt to take, capture, or kill any migratory bird. The MBTA also prohibits the possession, sale, export, and import of any migratory bird or any part of a migratory bird, as well as nests and eggs. A list of migratory birds for which this requirement applies is found at 50 C.F.R. § 10.13. It is the DON’s position that this act is not legally applicable to DON actions; however, the DoD recently signed (July 2006) a Memorandum of Understanding (MOU)

with the United States Fish and Wildlife Service. The MBTA will continue to be evaluated as a potentially relevant and appropriate requirement for DON CERCLA response actions.

Because there is no significant or immediate “incremental site-related” risk identified for ecological receptors and the selected remedy does not include the removal or treatment of any media, there are no anticipated impacts to migratory bird species; therefore the MBTA is not an ARAR.

3.2.3.2 State

Regulations listing endangered, threatened, and rare species are at Cal. Code Regs. tit. 14, §§ 670.2 and 670.5. Fully protected species are listed within the requirements at Cal. Fish & Game Code. The listing of procedures and species are not potential ARARs themselves, but are considered when determining whether a species is specially protected and whether requirements protecting such a species are potentially relevant and appropriate. A listing of special status species known or potentially occurring on Mare Island is provided in Table 3.

The following Cal. Fish and Game Codes and Cal. Code Regs. have been identified by the state as potential ARARs:

- Cal. Fish and Game Code § 1908
- Cal. Fish and Game Code § 2080
- Cal. Fish and Game Code § 3511
- Cal. Fish and Game Code § 4700
- Cal. Fish and Game Code § 3503.5
- Cal. Fish and Game Code § 3005
- Cal. Fish and Game Code § 3503
- Cal. Code Regs. tit. 14, § 460
- Cal. Fish and Game Code § 5650(a), (b) and (c)

These individual requirements are discussed below.

Endangered or Rare Native Plants

Cal. Fish & Game Code § 1908 states, “No person shall import into this state, or take, possess, or sell within this state, except as incident to the possession or sale of the real property on which the plant is growing, any native plant, or any part or product thereof, that the commission determines to be an endangered native plant or rare native plant.” Cal. Fish & Game Code § 1901 defines “native plant” as a plant growing in a wild uncultivated state that is normally found native to the plant life of this state. A species, subspecies, or variety is endangered when its prospects of survival and reproduction are in immediate jeopardy from one or more causes. A species, subspecies, or variety is rare when, although not presently threatened with extinction, it is in such small numbers throughout its range that it may become endangered if its present environment worsens.

Cal. Fish & Game Code § 1908 is not applicable because the United States of America has not waived sovereign immunity in the federal Endangered Species Act for this State of California requirement. California rare or endangered native plants potentially present at the sites include Suisan Aster, Soft Bird’s Beak, Suisun Thistle, Diablo Rose-Rock, Mason’s Lilaeopsis, Delta Tule-Pea, Contra Costa Goldfields, and Rayless Ragwort. These plants are protected under Cal. Fish & Game Code § 1908. Because there is no significant or immediate “incremental site-related” risk identified for ecological receptors and the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to California rare or endangered native plants; therefore Cal. Fish & Game Code § 1908 is not an ARAR.

California Endangered Species Act

The California Endangered Species Act is set forth in the Cal. Fish & Game Code §§ 2050–2116. The substantive provisions in Cal. Fish & Game Code § 2080 prohibit the “take” of California endangered or threatened species. “Take” is defined in Cal. Fish & Game Code § 86 as “hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.”

Cal. Fish & Game Code § 2080 is not applicable because the United States of America has not waived sovereign immunity in the federal Endangered Species Act for this State of California requirement. California threatened and endangered species potentially present at the sites include California Black Rail, Ridgeway’s Rail, and SMHM. These species are protected under Cal. Fish

& Game Code § 2080. Because there is no significant or immediate “incremental site-related” risk identified for ecological receptors and the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to California endangered or threatened species; therefore Cal. Fish & Game Code § 2080 is not an ARAR.

Fully Protected Species

Cal. Fish & Game Code § 3511 states that fully protected birds or parts thereof may not be taken or possessed at any time. The list of fully protected birds includes: American Peregrine Falcon (*Falco peregrinus anatum*), California Brown Pelican, California Black Rail (*Laterallus jamaicensis coturniculus*), Ridgeway’s Rail (*Rallus obsoletus*), California Condor (*Gymnogyps californianus*), California Least Tern (*Sterna albifrons browni*), Golden Eagle, Greater Sandhill Crane (*Grus canadensis tabida*), Light-footed Clapper Rail (*Rallus longirostris levipes*), Southern Bald Eagle (*Haliaeetus leucocephalus leucocephalus*), Trumpeter Swan (*Cygnus buccinator*), White-tailed Kite (*Elanus leucurus*), and Yuma Clapper Rail (*Rallus longirostris yumanensis*).

Cal. Fish & Game Code § 3511 is not applicable because the United States of America has not waived sovereign immunity in the federal Endangered Species Act for this State of California requirement. California fully protected birds potentially present at the sites include American Peregrine Falcon, California Black Rail, California Brown Pelican, and Ridgeway’s Rail. These birds are protected under Cal. Fish & Game Code § 3511. Because there is no significant or immediate “incremental site-related” risk identified for ecological receptors and the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to fully protected birds; therefore Cal. Fish & Game Code § 3511 is not an ARAR.

Cal. Fish & Game Code § 4700 states that fully protected mammals or parts thereof may not be taken or possessed at any time. Fully protected mammals include: Morro Bay Kangaroo Rat (*Dipodomys heermanni morroensis*); Bighorn Sheep (*Ovis canadensis*), except Nelson Bighorn Sheep (ss. *Ovis canadensis nelsoni*); Northern Elephant Seal (*Mirounga angustirostris*); Guadalupe Fur Seal (*Arctocephalus townsendi*); Ring-tailed Cat (genus *Bassariscus*); Pacific Right Whale (*Eubalaena sieboldi*); SMHM (*Reithrodontomys raviventris*); Southern Sea Otter (*Enhydra lutris nereis*); and Wolverine (*Gulo luscus*).

Cal. Fish & Game Code § 4700 is not applicable because the United States of America has not waived sovereign immunity in the federal Endangered Species Act for this State of California requirement. The SMHM, a California fully protected mammal, is present at the sites is therefore protected under Cal. Fish & Game Code § 4700. Because there is no significant or immediate “incremental site-related” risk identified for ecological receptors and the selected remedy does not include removal or treatment of any media, there are no potential impacts to fully protected mammals; therefore Cal. Fish & Game Code § 4700 is not an ARAR.

Cal. Fish & Game Code § 3503.5

The state has identified Cal. Fish & Game Code § 3503.5 as a potential State ARAR. This section prohibits the take, possession, or destruction of any birds in the orders of Falconiformes or Strigiformes (birds-of-prey) or to take, possess or destroy the nests or eggs of such birds.

Because there is no significant or immediate “incremental site-related” risk identified for ecological receptors and the selected remedy does not include the removal or treatment of any media, there are no anticipated impacts to birds-of prey; therefore Cal. Fish & Game Code § 3503.5 is not an ARAR.

Cal. Fish & Game Code § 3005

It is unlawful to take birds or mammals with any net, pound, cage, trap, set line or wire, or poisonous substance, or to possess birds or mammals so taken, whether taken within or without this state.

The DON has determined that Cal. Fish & Game Code § 3005(a) is not a state ARAR because it is not applicable or relevant and appropriate. The State of California, through the California Department of Fish and Wildlife (CDFW) Office of Spill Prevention and Response (OSPR), asserts that Cal. Fish & Game Code § 3005(a) is a state ARAR because it is relevant and appropriate. Whereas, the DON and the State have not agreed upon whether Cal. Fish & Game Code § 3005(a) is an ARAR, this FS Report documents each party’s position on the statute but does not attempt to resolve the issue (WESTON, 2014). Because there is no significant or immediate “incremental site-related” risk identified for ecological receptors and the selected

remedy does not include removal or treatment of any media, there are no anticipated impacts to birds or mammals. The IR05, DP7S, and WMA sites therefore substantively comply with the requirement and provide an acceptable level of protectiveness, and the State does not intend to dispute the ARAR determination.

Cal Fish & Game Code § 3503

It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.

The DON has determined that Cal. Fish & Game Code § 3503 is not a state ARAR because it is not applicable or relevant and appropriate. The State of California, through CDFW OSPR, asserts that Section 3503 is a state ARAR because it is relevant and appropriate. Whereas, the DON and the State have not agreed upon whether Cal. Fish & Game Code § 3503 is an ARAR, this FS Report documents each party's position on the statute but does not attempt to resolve the issue (WESTON, 2014). Because there is no significant or immediate "incremental site-related" risk identified for ecological receptors and the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to nest or eggs of any bird. The State will not dispute the selected remedy for failure to identify Cal. Fish & Game Code § 3503 as an ARAR because remedial actions are not proposed.

Cal. Code Regs. Tit. 14 § 460

Fisher, marten, river otter, desert kit fox, and red fox may not be taken at any time.

The DON has determined that Cal. Code Regs. tit. 14 § 460 is not a state ARAR because it is not applicable or relevant and appropriate. The State of California, through CDFW OSPR, asserts that Cal. Code Regs. tit. 14 § 460 is a state ARAR because it is relevant and appropriate. Whereas, the DON and the State have not agreed upon whether Cal. Code Regs. tit. 14 § 460 is an ARAR, this FS Report documents each party's position on the statute but does not attempt to resolve the issue (WESTON, 2014). Because there is no significant or immediate "incremental site-related" risk identified for ecological receptors and the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to these animals. The State will not dispute the selected remedy for failure to identify Cal. Code Regs. tit. 14 § 460 as an

ARAR because remedial alternatives considered do not include the removal or treatment of any media.

Cal. Fish & Game Code § 5650(a), (b) and (c)

Cal. Fish & Game Code § 5650(a), (b) and (c) prohibits depositing or placing, where it can pass into waters of the state, any petroleum products, factory refuse, sawdust, shavings, slabs or edgings, and any substance deleterious to fish, plant life, or bird life. Section 5650(b) of the Cal. Fish & Game Code states that this section does not apply to a discharge or a release that is expressly authorized pursuant to, and in compliance with, the terms and conditions of a waste discharge requirement pursuant to Cal. Water Code § 13263 or a waiver issued pursuant to Cal. Water Code § 13269, subdiv. (a), issued by the SWRCB or Regional Water Board after a public hearing, or that is expressly authorized pursuant to, and in compliance with, the terms and conditions of a federal permit for which the SWRCB or Regional Water Board has, after a public hearing, issued a water quality certification pursuant to Cal. Water Code § 13160. Because the selected remedy does not include the removal or treatment of any media, Cal. Fish & Game Code § 5650 is not an ARAR.

3.2.4 Coastal Resources ARARs

The IR05, DP7S, and WMA sites are located on or adjacent to the coast. The potential federal and state ARARs were evaluated as appropriate for the sites:

3.2.4.1 Federal

Federal requirements evaluated as potential ARARs for coastal resources are discussed below.

Coastal Zone Management Act

The CZMA (16 U.S.C. §§ 1451–1464) specifically excludes federal lands from the coastal zone (16 U.S.C. § 1453[1]). Therefore, the CZMA is not potentially applicable to the IR05, DP7S, and WMA sites. The CZMA will be evaluated as a potentially relevant and appropriate requirement. Section 1456(c)(1)(A) requires each federal agency activity within or outside the coastal zone that affects any land or water use or natural resource to conduct its activities in a manner that is consistent to the maximum extent practicable with enforceable policies of approved state

management policies. A state coastal zone management program is developed under state law guided by the CZMA and its accompanying implementing regulations in 15 C.F.R. pt. 930. A state program sets forth objectives, policies, and standards to guide public and private uses of lands and water in the coastal zone. See Section 3.2.4.2 for the state coastal zone management program. Because the selected remedy does not include removal or treatment of any media, 16 U.S.C. § 1456 and 15 C.F.R. § 930 are not ARARs.

3.2.4.2 State

State requirements evaluated as potential ARARs for coastal resources are discussed below.

California Coastal Act of 1976

The California Coastal Act is codified at California Public Resources Code (Cal. Pub. Res. Code) §§ 30000–30900 and Cal. Code Regs. tit. 14, §§ 13001–13666.4. These sections regulate activities associated with development to control direct significant impacts on coastal waters and to protect state and national interests in California coastal resources. Because federal lands are specifically excluded from the definition of coastal zone, the California Coastal Act is not potentially applicable to the IR05, DP7S, and WMA sites, but is evaluated further as a potentially relevant and appropriate requirement. The California Coastal Act policies set forth in the act constitute the standards used by the California Coastal Commission in its coastal development permit decisions and for the review of local coastal programs. These policies contain the following substantive requirements: protection and expansion of public access to the shoreline and recreation opportunities (Cal. Pub. Res. Code §§ 30210–30224); protection, enhancement, and restoration of environmentally sensitive habitats including intertidal and nearshore waters, wetlands, bays and estuaries, riparian habitat, grasslands, streams, lakes, and habitat for rare or endangered plants or animals (Cal. Pub. Res. Code §§ 30230–30240); protection of productive agricultural lands, commercial fisheries, and archaeological resources (Cal. Pub. Res. Code §§ 30234, 30241–30244); protection of the scenic beauty of coastal landscapes (Cal. Pub. Res. Code § 30251); and provisions for expansion, in an environmentally sound manner, of existing industrial ports and electricity-generating power plants (Cal. Pub. Res. Code § 30264).

The IR05, DP7S, and WMA sites are coastal areas. Because the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to coastal resources; therefore Cal. Pub. Res. Code §§ 30000–30900 and Cal. Code Regs. tit. 14, §§ 13001–13666.4 are not ARARs.

McAteer-Petris Act and the San Francisco Bay Plan

The State of California’s approved coastal management program includes the McAteer-Petris Act, the authorizing legislation for the *San Francisco Bay Plan*, developed by the Bay Conservation and Development Commission. The McAteer-Petris Act at California Government Code tit. 7.2, §§ 66600-66661 and *the San Francisco Bay Plan* at Cal. Code Regs. tit. 14 §§ 10110 through 11990 regulates activities that affect the San Francisco Bay. The CZMA was evaluated and substantive provisions were determined not potentially relevant and appropriate. Coastal Zone Management Act at 16 USC § 1456(c)(1)(A) and CFR § 930 requires each federal agency activity within or outside the coastal zone that affects any land or water use or natural resource to conduct its activities in a manner that is consistent to the maximum extent practicable with enforceable policies of approved state management policies.

Because the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to coastal resources; therefore California Government Code tit. 7.2, §§ 66600-66661 and Cal. Code Regs. tit. 14 §§ 10110 through 11990 are not ARARs.

Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline

Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline assesses the vulnerability of San Francisco Bay and its shoreline to the impacts of climate change, identifies information needs for future vulnerability assessments, and suggests near-term and long-term strategies to address climate change impacts. Where feasible, those strategies are incorporated into recommended findings and policy revisions to the *San Francisco Bay Plan*. Certain substantive provisions of the *San Francisco Bay Plan* were determined potentially relevant and appropriate for the development of institutional controls within the coastal zone. However, nonpromulgated advisories or guidance issued by federal or state governments are not legally binding and do not have the status of ARARs.

4. ACTION-SPECIFIC ARARS

The FS Report evaluated remedial action alternatives for the IR05, DP7S, and WMA sites. The ARARs analysis was based on two alternatives for each site. Alternative 1 is no action and Alternative 2 is LUCs. Detailed descriptions of the remedial alternatives are provided in the main text of the FS Report (WESTON, 2014).

Table 4 presents and evaluates the potential action-specific ARARs for the sites. A discussion of the requirements determined to be pertinent to the selected remedy, LUCs, is presented in this section. A discussion of how LUCs complies with each identified ARAR is also provided.

4.1 ALTERNATIVE 2 — LAND-USE CONTROLS

The IR05, DP7S, and WMA sites are planned to be transferred to the City of Vallejo. The U.S. EPA and DON have developed guidance pertaining to LUCs. There are potential state ARARs for sites being transferred to nonfederal entities which are likely to be controlling. They can be found in the substantive provisions of California Civil Code (Cal. Civ. Code) § 1471 and the California Health and Safety Code. The potential action-specific ARARs associated with the transfer of these sites to the City of Vallejo are discussed below.

The substantive provisions of SWRCB Res. 88-63 (SWRCB, 1988) establishes criteria to help Regional Water Boards identify potential sources of drinking water. As discussed in Section 2.2.1, the Water Board has concurred with the exception to the municipal and domestic supply beneficial use of the SWBZ and IWBZ at the IR05, DP7S, and WMA sites (Regional Water Board, 2011).

The selected remedy does not include removal or treatment of any media; therefore, potential action-specific ARARs related to construction activities are not ARARs. In addition, there have been no discharges of waste at the sites after 27 November 1984.

4.1.1 Institutional Controls for Sites Transferring to Nonfederal Entities

Institutional controls are required to prevent exposure to potential buried munitions. Such institutional controls would consist of land-use restrictions designed to control future land reuse options.

State statutes that have been accepted by the DON as ARARs for implementing institutional controls and entering into a Covenant to Restrict the Use of Property with DTSC include substantive provisions of Cal. Civ. Code § 1471 and Cal. Health and Safety Code §§ 25202.5, 25221, 25223, 25224, and 25355.5. DTSC promulgated a regulation on 19 April 2003 regarding “Requirements of Land Use Covenants” at Cal. Code Regs. tit. 22, § 67391.1. The substantive provisions of this regulation have been determined to be “relevant and appropriate” state ARARs by the DON.

The substantive provisions of Cal. Civ. Code § 1471 are the following general narrative standard: “. . . to do or refrain from doing some act on his or her land . . . where (c) Each such act relates to the use of land and each such act is reasonably necessary to protect present or future human health or safety or the environment as a result of the presence on the land of hazardous materials, as defined in Section 25260 of the Health and Safety Code.” This narrative standard would be implemented through incorporation of restrictive environment covenants in the deed at the time of transfer. These covenants would be recorded with the Covenant to Restrict the Use of Property and run with the land.

The substantive provisions of Cal. Health & Safety Code § 25202.5 are the general narrative standard to restrict “present and future uses of all or part of the land on which the . . . facility . . . is located” These substantive provisions will be implemented by incorporation of restrictive environmental covenants in the Covenant to Restrict the Use of Property at the time of transfer for purposes of protecting present and future public health and safety.

Cal. Health & Safety Code §§ 25221 and 25355.5(a)(1)(C) provide the authority for the state to enter into voluntary agreements to establish land-use covenants with the owner of property. The substantive requirements of the following Cal. Health & Safety Code § 25221 provisions are “relevant and appropriate”: (1) the general narrative standard: “restricting specified uses of the

property, . . .” and (2) “. . . the agreement is irrevocable, and shall be recorded by the owner, . . . as a hazardous waste easement, covenant, restriction or servitude, or any combination of those servitude, as appropriate, upon the present and future uses of the land.” The substantive requirements of the following Cal. Health & Safety Code § 25355.5(a)(1)(C) provisions are “relevant and appropriate”: “. . . execution and recording of a written instrument that imposes an easement, covenant, restriction, or servitude, or combination thereof, as appropriate, upon the present and future uses of the site.” The DON will comply with the substantive requirements of Cal. Health & Safety Code §§ 25221 and 25355.5(a)(1)(C) by incorporating the CERCLA use restrictions into the DON’s deed of conveyance in the form of restrictive covenants under the authority of Cal. Civ. Code § 1471 and into the Covenant to Restrict the Use of Property. The substantive provisions of Cal. Health & Safety Code §§ 25221 and 25355.5(a)(1)(C) may be interpreted in a manner that is consistent with the substantive provisions of Cal. Civ. Code § 1471. The covenants would be recorded with the deed and run with the land.

Cal. Health & Safety Code § 25223 sets forth “relevant and appropriate” substantive criteria for granting variances from prohibited uses based upon specified environmental and health criteria. Cal. Health & Safety Code § 25224 sets forth the following “relevant and appropriate” substantive criteria for the removal of a land-use restriction on the grounds that “. . . the waste no longer creates a significant existing or potential hazard to present or future public health or safety.”

In addition to being implemented through the Covenant to Restrict the Use of Property between the DON and DTSC, the appropriate and relevant portions of Cal. Health & Safety Code §§ 25202.5, 25221, 25223, 25224, and 25355.5(a)(1)(C) and Cal. Civ. Code § 1471 shall also be implemented through the deed between the DON and the transferee.

5. SUMMARY

Remedial alternatives are required to protect future human receptors from potential buried munitions; thereby limiting remedial alternatives to LUCs; further protecting the current environment. Controlling ARARs have been identified in the text of this attachment for each medium, location, and selected response action. The ARARs evaluated are listed in Tables 1, 2, and 4. The applicable, relevant and appropriate, and TBC ARARs are summarized below.

5.1 CHEMICAL-SPECIFIC ARARS

There are no groundwater COCs. The substantive provisions of the following requirements are the most stringent of the potential federal and state chemical-specific ARARs for groundwater at the IR05, DP7S, and WMA sites:

- SWRCB Res. 88-63 (SWRCB, 1988) establishing criteria to help Regional Water Boards identify potential sources of drinking water
- WCQP for the San Francisco Bay Region (Regional Water Board, 2010) establishing WQOs, beneficial uses, and waste discharge limitations

Because discarded military munitions have been recovered and may remain buried at the IR05, DP7S, and WMA sites, the following requirements for soil/sediment are the most stringent of the potential federal and state chemical-specific ARARs:

- Definition of RCRA hazardous waste found at Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100
- Identification of hazardous waste munitions and treatment and storage requirements for hazardous waste munitions found at 40 C.F.R. part 266, subpart M

5.2 LOCATION-SPECIFIC ARARS

In 1960, Mare Island was officially declared California Historic Landmark No. 751 based on its long history as a Naval installation. In 1997, the Mare Island Historic District boundary was finalized and assigned as number 96001058 in the National Register of Historic Places. This boundary includes a portion of the WMA as shown on Figure 8 of the FS Report

(WESTON, 2014). There are no known areas of historic significance within the IR05 and DP7S sites. The 21 buildings, including partial buildings, which served as storage magazines within the WMA were recognized as historical contributing buildings. Potential ARARs associated with these cultural resources were reviewed; however, because the selected remedy does not include removal or treatment of any media, there are no anticipated impacts to cultural resources, therefore no cultural resources ARARs.

The IR05, DP7S, and WMA sites are located on or adjacent to the coast. Wetland habitats at the sites consist of tidal and non-tidal areas, which support coastal salt marsh vegetation and rotationally provide open water, mudflat, and pickleweed marsh habitat. The tidal marsh areas on Mare Island provide habitat for the SMHM and the Ridgeway's Rail, both listed as federal and state endangered species. The California Black Rail known to exist in the tidal marshes at IR05 and DP7S is listed as a state threatened species. The California Black Rail, Salt Marsh Common Yellowthroat and Suisun Shrew, are all candidate species for federal listing as threatened or endangered. They are also known to occur in the tidal and non-tidal areas of DP7S. The SMHM is a known inhabitant of the tidal wetlands within the WMA. Potential ARARs associated with these biological resources were reviewed; however, because the selected response does not include removal or treatment of any media, there are no anticipated impacts to biological resources, therefore no biological resources ARARs.

5.3 ACTION-SPECIFIC ARARS

The IR05, DP7S, and WMA sites are planned to be transferred to the City of Vallejo. LUCs are required to prevent exposure to potential buried munitions. Such institutional controls would consist of land-use restrictions designed to control future land reuse options. The substantive requirements of the following are considered ARARs for sites being transferred to nonfederal entities:

- Cal. Code Regs. tit. 22 § 67391.1
- Cal. Civ. Code § 1471
- Cal. Health and Safety Code §§ 25202.5, 25221, 25223, 25224, and 25355.5
- SWRCB Res. 88-63

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TABLES

Table 1
Chemical-Specific^a ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^b	ARAR Determination	Comments
FEDERAL				
GROUNDWATER				
Resource Conservation and Recovery Act (42 U.S.C., chapter 82, §§ 6901–6991(i))^c				
Defines RCRA hazardous waste A waste is characterized as toxic, based on the TCLP, if the waste exceeds the TCLP maximum concentrations.	Waste	Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100	Not an ARAR	Actions will not generate waste.
Clean Water Act, as Amended (33 U.S.C., chapter 26, §§ 1251–1387)^c				
Water quality standards National Toxics Rule (NTR) and California Toxics Rule (CTR)	Discharges to waters of the United States	40 C.F.R. § 131.36(b) and 131.38	Not an ARAR	Actions will not discharge to waters of the United States.
FEDERAL				
SOIL/SEDIMENT				
Resource Conservation and Recovery Act (42 U.S.C., chapter 82, §§ 6901–6991(i))^c				
Defines RCRA hazardous waste A solid waste is characterized as toxic, based on the TCLP, if the waste exceeds the TCLP maximum concentrations.	Waste	Cal. Code Regs. tit. 22, § 66261.21, 66261.22(a)(1), 66261.23, 66261.24(a)(1), and 66261.100	Applicable	Military munitions may be encountered. Land use controls will be applied to manage future use, limiting potential contact with buried munitions at the IR05, DP7S, and WMA sites

Table 1
Chemical-Specific^a ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^b	ARAR Determination	Comments
Groundwater Protection Standards: requirements to ensure that hazardous constituents entering the groundwater from a regulated unit do not exceed the concentration limits for contaminants of concern in the uppermost aquifer underlying the waste management area of concern at the point of compliance.	A regulated unit that receives or has received hazardous waste before 26 July 1982 or regulated units that ceased receiving hazardous waste prior to 26 July 1982 where constituents in or derived from the waste may pose a threat to human health or the environment.	Cal. Code Regs. tit. 22, § 66264.94(a)(1) and (3), (c), (d), and (e)	Not an ARAR	There are no regulated units at the IR05, DP7S, or WMA sites. The human health and ecological risk assessments have concluded that all potential risk drivers in soil are at or below ambient concentrations.
Military Munitions Rule (40 C.F.R. Part 266, subpart M)^c				
Identification of hazardous waste munitions and treatment and storage requirements for hazardous waste munitions.	Storage of military munitions	40 C.F.R. part 266, subpart M	Applicable	Land use controls will be applied to manage future use, limiting potential contact with buried munitions at the IR05, DP7S, and WMA sites.

Table 1
Chemical-Specific^a ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^b	ARAR Determination	Comments
STATE				
GROUNDWATER, SOIL/SEDIMENT				
Cal/EPA Department of Toxic Substances Control^c				
Definition of “non-RCRA hazardous waste.”	Waste	Cal. Code Regs. tit. 22, § 66261.3(a)(2)(C) or 66261.3(a)(2)(F), 66261.22(a)(3) and (4), 66261.24(a)(2)–(a)(8), 66261.101(a)(1) and (a)(2)	Not an ARAR	Actions will not generate waste.
State and Regional Water Quality Control Boards^c				
Authorizes the SWRCB and RWQCB to establish in water quality control plans beneficial uses and numerical and narrative standards to protect both surface water and groundwater quality. Authorizes regional water boards to issue permits for discharges to land or surface or groundwater that could affect water quality, including NPDES permits, and to take enforcement action to protect water quality.		Cal. Water Code, div. 7, §§ 13241, 13243, 13263(a), 13269, and 13360 (Porter-Cologne Act)	Not an ARAR	Remedial actions that involve discharges to land, surface water, or groundwater are not proposed for any media.
		Cal. Water Code, div. 7, § 13304	Not an ARAR	Remedial actions that involve discharges to land, surface water, or groundwater are not proposed for any media.

Table 1
Chemical-Specific^a ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^b	ARAR Determination	Comments
Describes the water basins in the San Francisco Bay Region, establishes beneficial uses of groundwater and surface water, establishes WQOs, including narrative and numerical standards, establishes implementation plans to meet WQOs and protect beneficial uses, and incorporates statewide water quality control plans and policies.		Comprehensive Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) (Cal. Water Code § 13240)	Not an ARAR	Substantive requirements pertaining to beneficial uses, WQOs, and certain statewide water quality control plans are potential State ARARs for remedial actions that involve a surface water or groundwater component; however, the remedy for the IR05, DP7S, and WMA sites does not involve surface water or groundwater. The preferred remedial alternative for the IR05, DP7S, and WMA sites is to establish land use controls to limit potential contact with buried munitions.
If the RWQCB finds the property is not suitable for unrestricted land use and that a land use restriction is necessary for the protection of public health, safety, or the environment, then the RWQCB may not issue a closure letter, or make a determination that no further action is required with respect to a site that is subject to a cleanup or abatement order pursuant to § 13304 and that is not an underground storage tank site, unless a land use restriction is recorded or required to be recorded pursuant to § 1471 of the Civil Code.		Porter-Cologne Water Quality Act (Cal. Water Code § 13307.1(c); Civil Code 1471	Civil Code 1471 is an ARAR; Navy and State disagree on whether Water Code §13307.1 is an ARAR.	The Navy recognizes that Civil Code 1471 governs covenants to restrict the use of land. Land use controls will be applied to manage future use, limiting potential contact with buried munitions at the IR05, DP7S, and WMA sites. The Navy disagrees that Water Code 13307.1 is an ARAR; however, while they are not linked to a remedial action objective, the Navy and Regional Water Board agree that a deed restriction is required to prohibit installation of groundwater production wells for any purpose.

Table 1
Chemical-Specific^a ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.

Location/Requirement	Prerequisite	Citation ^b	ARAR Determination	Comments
<p>Establishes the policy that high-quality waters of the state “shall be maintained to the maximum extent possible” consistent with the “maximum benefit to the people of the State.” It provides that whenever the existing quality of water is better than that required by applicable water quality policies, such existing high-quality water will be maintained until it has been demonstrated to the state that any change will be consistent with maximum benefit to the people of the state, will not unreasonably affect present and anticipated beneficial use of such water, and will not result in water quality less than that prescribed in the policies. It also states that any activity that produces or may produce a waste or increased volume or concentration of waste and that discharges or proposes to discharge to existing high-quality waters will be required to meet waste-discharge requirements that will result in the best practicable treatment or control of the discharge.</p>		<p>Statement of policy with respect to maintaining high quality of waters in California, SWRCB Res. 68-16</p>	<p>Navy and State disagree on whether Resolution 68-16 is a potential ARAR.</p>	<p>The preferred remedial alternative for the IR05, DP7S, and WMA sites is to establish land use controls to limit potential contact with buried munitions. The remedy does not involve discharges to land, surface water, or groundwater occurring as a result of a CERCLA response action.</p>

Table 1
Chemical-Specific^a ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^b	ARAR Determination	Comments
Describes requirements for RWQCB oversight of investigation and cleanup and abatement activities resulting from discharges of hazardous substances. RWQCB may decide on cleanup and abatement goals and objectives for the protection of water quality and beneficial uses of water within each region. Establishes criteria for “containment zones” where cleanup to established water-quality goals is not economically or technically practicable.	Discharge	Policies and procedures for investigation and cleanup and abatement of discharges under Cal. Water Code § 13304, SWRCB Res. 92-49	Navy and State disagree on whether 13304 and Resolution 92-49 is a potential ARAR.	The preferred remedial alternative for the IR05, DP7S, and WMA sites is to establish land use controls to limit potential contact with buried munitions – it does not address the groundwater. The CERCLA remedy does not involve containment zones or discharges to land, surface water, or groundwater.
Incorporated into all regional board basin plans. Designates all groundwater and surface waters of the state as drinking water except where the TDS is greater than 3,000 ppm, the well yield is less than 200 gpd from a single well, the water is a geothermal resource or in a water conveyance facility, or the water cannot reasonably be treated for domestic use using either best management practices or best economically achievable treatment practices.	Drinking water source	SWRCB Res. 88-63 (Sources of Drinking Water Policy)	Applicable	The Water Board has concurred with the Navy determination that an exception to SWRCB Res. 88-63 applies, and has reflected this concurrence in a letter dated December 12, 2011.
Establishes concentration limits for cleanup actions, including groundwater, surface water, and the unsaturated zones for other than hazardous waste at background. Allows a higher cleanup limit (but not to exceed MCLs) if background is not technically or economically achievable.		Cal. Code Regs. tit. 27, §§ 20380(a); 20400(a), (c), (d), (e), and (g)	Not an ARAR	Remedial actions are not proposed for any media.

Table 1
Chemical-Specific^a ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^b	ARAR Determination	Comments
Establishes concentration limits for cleanup actions, including groundwater, surface water, and the unsaturated zones for hazardous waste at background. Allows a higher cleanup limit (but not to exceed MCLs) if background is not technically or economically achievable.		Cal. Code Regs. tit. 23, §§ 2550(a); 2550.4(d), (e), and (f)	Not an ARAR	Remedial actions are not proposed for any media.
Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)		Cal. Code Regs. tit. 22 §§ 12000-14000	Not an ARAR	Not directly applicable to the federal government.
Definitions of designated waste, nonhazardous waste, and inert waste.	Waste	Cal. Code Regs. tit. 27, §§ 20210, 20220, and 20230	Not an ARAR	Actions will not generate waste.
<i>Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater</i> (Interim Final – May 2008) The document presents lookup tables of conservative Environmental Screening Levels for chemicals commonly found at sites with contaminated soil and groundwater, a description of how they were developed, and provides lookup tables.			Not an ARAR or TBC	Nonpromulgated advisories or guidance issued by federal or state governments are not legally binding and do not have the status of ARARs. The preferred remedial alternative for the IR05, DP7S, and WMA sites is to establish land use controls for potential buried munitions; numerical values for cleanup and discharge limits related to groundwater are not applicable as they are not related to the CERCLA remedy.
<i>A Compilation of Water Quality Goals</i> An extensive compendium of numerical water quality limits from the literature for chemical constituents and water quality parameters.			Not an ARAR or TBC	Nonpromulgated advisories or guidance issued by federal or state governments are not legally binding and do not have the status of ARARs.

Table 1
Chemical-Specific^a ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^b	ARAR Determination	Comments
California Department of Health Services^c				
Standards for Protection Against Radiation This regulation incorporates 10 C.F.R. Part 20, §§ 20.1001 through 20.2402 and Appendices A through G by reference.	Not exempt under Cal. Code Regs. tit 17, §§ 30180, 30257, or other section of Cal. Code Regs. tit. 17.	Cal. Code Regs. tit. 17, § 30253	Not an ARAR	The IR05, DP7S and WMA are not licensed sites.
Describes the process for decommissioning installations which may have been contaminated with radioactive material.		Cal. Code Regs. tit. 17 § 30256	Not an ARAR	Regulation is not applicable because it is procedural rather than substantive. It is not more stringent than risk-based cleanup levels because it does not identify objective standards for radiological material that can remain at a site.

Notes:

- a Many potential action-specific ARARs contain chemical-specific limitations and are addressed in the action-specific ARAR table.
- b Only the substantive provisions of the requirements cited in this table are potential ARARs.
- c Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader. Listing the statutes and policies does not indicate that the Department of the Navy accepts the entire statutes or policies as potential ARARs; specific potential ARARs are addressed in the table below each general heading; only substantive requirements of the specific citations are considered potential ARARs.

Table 1
Chemical-Specific^a ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Acronyms/Abbreviations:

§	Section
§§	Sections
ARAR	applicable or relevant and appropriate requirement
Cal. Code Regs.	California Code of Regulations
Cal. EPA	California Environmental Protection Agency
Cal. Water Code	California Water Code
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
CTR	California Toxics Rule
div.	division
DON	U.S. Department of the Navy
DP7S	Dredge Pond 7S
gpd	gallons per day
IR05	Installation Restoration Site 05
MCL	Maximum Contaminant Level
NPDES	National Pollutant Discharge Elimination System
NTR	National Toxics Rule
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board, San Francisco Bay Region
SWRCB	(California) State Water Resources Control Board
TCLP	Toxicity Characteristic Leaching Procedure
TDS	total dissolved solids
tit.	title
U.S.C.	United States Code
WMA	Western Magazine Area
WQO	water quality objective

Table 2
Location-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
FEDERAL				
National Historic Preservation Act of 1966, as Amended (16 U.S.C. § 470-470x-6)^b				
Historic property owned or controlled by federal agency Action to preserve historic properties; planning of action to minimize harm to properties listed on or eligible for listing on the National Register of Historic Places.	Property included in or eligible for the National Register of Historic Places	16 U.S.C. § 470-470x-6 36 C.F.R. pt. 800 40 C.F.R. § 6.301(b)	Not an ARAR	Remedial alternatives do not include removal or treatment of any media so there is no likelihood that the protected resources will be affected by the selected remedial action.
Historic Sites, Buildings, and Antiquities Act of 1935 (16 U.S.C. §§ 461–467)^b				
Historic sites Avoid undesirable impacts on landmarks.	Areas designated as historic sites	16 U.S.C. § 461–467 40 C.F.R. § 6.301(a)	Not an ARAR	Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
Exec. Order No. 11990, Protection of Wetlands^b				
Wetland Avoid, to the extent possible, the adverse impacts associated with the destruction or loss of wetlands and avoid support of new construction in wetlands if practicable alternatives exist.	Wetland meeting definition of Section 7(c) of the Exec. Order No. 11990	Exec. Order No. 11990	Not an ARAR	Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
Clean Water Act of 1977, as Amended, Section 404 (33 U.S.C. § 1344)^b				
Wetland Action to prohibit discharge of dredged or fill material into wetland without permit.	Wetland as defined by Exec. Order No. 11990 Section 7.	33 U.S.C. § 1344	Not an ARAR	Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.

Table 2
Location-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Endangered Species Act of 1973 (16 U.S.C. §§ 1531–1543)^b				
Location where endangered or threatened species are present or location designated as critical habitat. Federal agencies may not jeopardize the continued existence of any listed species or cause the destruction or adverse modification of critical habitat.	Presence of endangered species, listed species, or critical habitat	16 U.S.C. §§ 1531-1543	Not an ARAR	Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
Migratory Bird Treaty Act of 1972 (16 U.S.C. §§ 703–712)^b				
Migratory bird area Protects almost all species of native migratory birds in the U.S. from unregulated “take,” which can include poisoning at hazardous waste sites.	Presence of migratory birds	16 U.S.C. §§ 703-712	Not an ARAR	Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
Coastal Zone Management Act (16 U.S.C. §§ 1451–1464)^b				
Within coastal zone Conduct activities in a manner consistent with approved state management programs.	Activities affecting the coastal zone including lands thereunder and adjacent shore land	16 U.S.C. § 1456(c) 15 C.F.R. pt. 930	Not an ARAR	Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.

Table 2
Location-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
STATE				
California Endangered Species Act (Cal. Fish & Game Code §§ 2050-2116)^b				
Area used by endangered or threatened species No person shall take any endangered or threatened species.	Threatened or endangered species are present	Cal. Fish & Game Code § 2080	Not an ARAR	California threatened and endangered species potentially present at the IR05, DP7S, and WMA sites include California Black Rail, Ridgeway's Rail, and Salt Marsh Harvest Mouse (SMHM); however remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
California Fish & Game Code^b				
Area with rare or endangered native plants No person shall take, possess, or sell within this state, except as incident to the possession or sale of the real property on which the plant is growing, any native plant, or any part or product thereof, which the commission determines to be an endangered native plant or rare native plant.	Endangered or rare native plant species must be present at site	Cal. Fish & Game Code § 1908	Not an ARAR	California rare or endangered native plants potentially present at the IR05, DP7S, and WMA sites include Suisun Aster, Soft Bird's Beak, Suisun Thistle, Diablo Rose-Rock, Mason's Lilaepsis, Delta Tule-Pea, Contra Costa Goldfields, and Rayless Ragwort; however remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
Area used by fully protected mammals Fully protected mammals may not be taken at any time.	A fully protected species must be potentially affected	Cal. Fish & Game Code § 4700	Not an ARAR	The SMHM is a California fully protected mammal present at the IR05, DP7S, and WMA sites; however remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.

Table 2
Location-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Area used by fully protected birds Fully protected birds may not be taken at any time.	A fully protected species must be potentially affected.	Cal. Fish & Game Code § 3511	Not an ARAR	California fully protected birds potentially present at the IR05, DP7S, and WMA sites include American Peregrine Falcon, California Black Rail, California Brown Pelican, and Ridgeway's Rail; however remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
Area with fisher, marten, river otter, desert kit fox, and red fox Fisher, marten, river otter, desert kit fox, and red fox may not be taken at any time.	A fisher, marten, river otter, desert kit fox, and red fox must be potentially harmed	Cal. Code Regs. tit. 14, § 460	Not an ARAR	There are no COECs at the sites. Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
Area with birds or mammals It is unlawful to take birds or mammals with any net, pound, cage, trap, set line or wire, or poisonous substance, or to possess birds or mammals so taken, whether taken within or without this state.	Birds or mammals	Cal. Fish & Game Code § 3005	Not an ARAR	There are no COECs at the sites. Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
Area with bird nest or eggs It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.	Bird nests or eggs on-site	Cal. Fish & Game Code § 3503	Not an ARAR	There are no COECs at the sites. Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
Area with Falconiformes or Strigiformes It is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds-of-prey) or to take, possess, or destroy the nest or eggs of any such bird.	Falconiformes or Strigiformes birds on-site	Cal. Fish & Game Code § 3503.5	Not an ARAR	Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.

Table 2
Location-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Waters of the state Prohibits the passage of enumerated substances or materials into waters of the state deleterious to fish, plant life, or birds.	Discharge not authorized under Cal. Water Code § 13263 or a waiver issued pursuant to subdivision (a) of § 13269 of the Water Code	Cal. Fish & Game Code § 5650(a), (b), & (c)	Not an ARAR	Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
California Coastal Act of 1976^b				
Coast Regulates activities associated with development to control direct significant impacts on coastal waters and to protect state and national interests in California coastal resources.	Any activity which could impact coastal waters and resources	Cal. Pub. Res. Code §§ 30000–30900; Cal. Code Regs. tit. 14, §§ 13001–13666.4	Not an ARAR	The IR05, DP7S, and WMA sites are coastal areas; however remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.
McAteer-Petris Act (California Governmental Code Title 7.2)^b				
San Francisco Bay Coast Regulates activities associated with fill and dredged material in San Francisco Bay, maintain marshes and mudflats to the fullest extent possible to conserve wildlife, abate pollution, and protect the beneficial uses of the bay.	Activities affecting San Francisco Bay and 100 feet of the shoreline	San Francisco Bay Plan at Cal. Code Regs. tit. 14 §§ 10110 through 11990	Not an ARAR	Remedial alternatives do not include removal or treatment of any media; therefore the protected resources will not be affected by the selected remedial action.

Table 2
Location-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Location/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
San Francisco Bay Conservation and Development Commission^b				
Living with a Rising Bay: Vulnerability and Adaptation in San Francisco Bay and on its Shoreline. Approved on October 6, 2011. Report assesses the vulnerability of San Francisco Bay and its shoreline to the impacts of climate change, identifies information needs for future vulnerability assessments, and suggests strategies to address climate change impacts.			Not an ARAR	Nonpromulgated advisories or guidance issued by federal or state governments are not legally binding and do not have the status of ARARs.

Notes:

- a Only the substantive provisions of the requirements cited in this table are potential ARARs.
- b Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader. Listing the statutes and policies does not indicate that the Department of the Navy accepts the entire statutes or policies as potential ARARs; specific ARARs are addressed in the table below each general heading; only substantive requirements of the specific citations are considered ARARs.

Table 2
Location-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Acronyms/Abbreviations:

§	Section
§§	Sections
ARAR	applicable or relevant and appropriate requirement
C.F.R.	Code of Federal Regulations
Cal.	California
Cal. Code Regs.	California Code of Regulations
Cal. Pub. Res. Code	California Public Resources Code
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DFG-OSPR	Department of Fish and Game-Office of Spill Prevention and Response
DON	U.S. Department of the Navy
DP7S	Dredge Pond 7S
Exec.	Executive
FESA	Federal Endangered Species Act
IR05	Installation Restoration Site 05
MBTA	Migratory Bird Treaty Act
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
No.	number
pt.	part
tit.	title
U.S.	United States
U.S.C.	United States Code
WMA	Western Magazine Area

Table 3
Special Status Species Known or Potentially Occurring on Mare Island
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Species	Listing Status Federal/State/Other	Occurrence on Mare Island	Habitat/Nearest Location to Mare Island
Birds			
American Peregrine Falcon <i>Falco peregrinus anatum</i>	CFP	Known	Occasionally forages on island
California Black Rail <i>Laterallus jamaicensis coturniculus</i>	C2/CFP/ST	Known	Salt marsh on southwest edge of Mare Island
California Brown Pelican <i>Pelecanus occidentalis californicus</i>	CFP	Known	Occasional resident in tidelands and marshes
Ridgeway's Rail <i>Rallus obsoletus</i>	FE/SE/CFP	Known	Salt marsh on southwest edge of Mare Island
Salt Marsh Common Yellowthroat <i>Geothlypis trichas sinuosa</i>	C2/CSC	Known	Napa River above Mare Island Strait, mouth of Dutchman Slough, near Highway 37 Bridge
San Pablo Song Sparrow <i>Melospiza melodia samuelis</i>	FSC/CSC	Known	Tidal marshes
Long-Billed Curlew <i>Numenius americanus</i>	FSC/CSC	Known	Tidal marsh at Mare Island is an area of high use
Western Burrowing Owl <i>Athene cunicularia hypugaea</i>	FSC/CSC	Known	On top of dredge pipe at the northeast corner of Pond 4M
Western Snowy Plover <i>Charadrius alexandrinus nivosus</i>	FT/CSC	Known	Transient species at the Mare Island tidal flats and salt ponds of San Pablo Bay
Great Blue Heron <i>Ardea herodias</i>	CSC	Known	Historically nested in trees around the saltwater reservoir on Mare Island; nests exist on two light fixtures toward the north end of Pier 34
Osprey <i>Pandion haliaetus</i>	CSC	Known	Light fixture at the south end of Pier 34 and on a light pole at the west end of Pier 35
Mammals			
Salt Marsh Harvest Mouse <i>Reithrodontomys raviventris</i>	FE/SE/CFP	Known	Most habitats located on west shore; two small areas remain on the east side
Saltmarsh Wandering Shrew <i>Sorex vagrans halicoetes</i>	C1/CSC	Potential	Tidal salt marsh; Giant Marsh near Point Pinole
Suisan Ornate Shrew <i>Sorex ornatus sinuosus</i>	C1/CSC	Known	At the mouth of Carquinez Strait, Non-Tidal Areas
San Pablo Vole <i>Microtus californicus sanpabloensis</i>	CSC	Known	Closely associated with wetland and feeds on pickleweed
Townsend's Big-Eared Bat <i>Plecotus townsendii</i>	C2/CSC	Potential	Roosts in abandoned buildings
Western Mastiff-Bat <i>Eumops perotis californicus</i>	C2/CSC	Potential	Roosts in abandoned buildings

Table 3
Special Status Species Known or Potentially Occurring on Mare Island
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Species	Listing Status Federal/State/Other	Occurrence on Mare Island	Habitat/Nearest Location to Mare Island
Plants			
Suisan Aster <i>Aster lentus</i>	C2/1B	Suspected	Northeast of Fagan Slough, Fagan Marsh
Marsh Gumplant <i>Grindelia stricta</i>	G4	Known	Observed throughout the brackish marshes on the eastern and southern shores, the salt marsh in the southwestern corner of the island, and in scattered location in the dredge pond areas
Soft Bird's Beak <i>Cordylanthus mollis</i> ssp. <i>mollis</i>	FE/SR/1B	Known	Salt marsh tides
Suisun Thistle <i>Cirsium hydrophilum</i> var. <i>hydrophilum</i>	FE/1B	Potential	Saltwater and brackish marshes
Diablo Rose-Rock <i>Helianthella castanea</i>	C2/1B	Potential	Chaparral and coastal scrub habitats
Pacific Cordgrass <i>Spartina foliosa</i>	FSC	Known	Observed along the shoreline of Carquinez Strait, predominately between Piers 34 and 35
Mason's Lilaepsis <i>Lilaepsis masonii</i>	C2/SR/1B	Known	Observed along shoreline east of Pier 35 and along the southern side of Murphy Lane; Shoreline between Dike 14 and Pier 34
Delta Tule-Pea <i>Lathyrus jepsonii</i> var. <i>jepsonii</i>	C2/1B	Known	Coon Island on the Napa River
Marin Knotweed <i>Polygonum marinense</i>	FSC	Potential	Coastal salt marshes
Contra Costa Goldfields <i>Lasthenia conjugens</i>	FE/1B	Potential	Coastal salt marshes
Rayless Ragwort <i>Senecio aphanactis</i>	2	Potential	Coastal salt marshes

Notes:

- 1B California Rare Plant Rank 1B (Rare, threatened, or endangered in California and elsewhere)
- 2 California Rare Plant Rank 2 (Rare, threatened, or endangered in California, but more common elsewhere)
- C1 Category 1 Candidate for Federal Listing (Enough data on file to support listing)
- C2 Category 2 Candidate for Federal Listing
- CFP California Department of Fish and Game "Fully Protected"
- CSC California Department of Fish and Game "Species of Special Concern"
- FE Listed as Endangered by the Federal Government
- FSC Federal "Species of Special Concern"
- FT Listed as Threatened by the Federal Government
- G4 Global Ranking G4 (Apparently Secure-Uncommon but not rare)
- SE Listed as Endangered by the State of California
- ST Listed as Threatened by the State of California
- SR Listed as Rare by the State of California

Table 4
Action-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
FEDERAL				
Resource Conservation and Recovery Act (42 U.S.C. §§ 6901–6991(i))^b				
Onsite waste generation Person who generates waste shall determine if that waste is a hazardous waste.	Generator of waste	Cal. Code Regs. tit. 22 § 66262.10(a), 66262.11	Not an ARAR	Remedial alternatives considered will not generate waste.
Onsite waste generation Requirements for analyzing waste for determining whether waste is hazardous.	Generator of waste	Cal. Code Regs. tit. 22, § 66264.13(a) and (b)	Not an ARAR	Remedial alternatives considered will not generate waste.
Hazardous waste accumulation On-site hazardous waste accumulation is allowed for up to 90 days as long as the waste is stored in containers in accordance with § 66262.171–178 or in tanks, on drip pads, inside buildings, is labeled and dated, etc.	Accumulate hazardous waste	Cal. Code Regs. tit. 22 § 66262.34	Not an ARAR	Remedial alternatives considered will not generate waste.
Placement of waste in land disposal units Movement of excavated materials to new location and placement in or on land will trigger LDRs for the excavated waste or closure requirements for the unit in which the waste is being placed.	Materials containing RCRA hazardous wastes subject to LDRs are placed in another unit.	Cal. Code Regs. tit. 22, § 66268.40	Not an ARAR	Remedial alternatives considered will not generate waste.

Table 4
Action-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
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Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Placement of waste in land disposal units Treatment of waste subject to ban on land disposal must attain levels achievable by BDAT for each hazardous constituent in each listed waste, if residual is to be land disposed.	Placement of RCRA hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, or underground mine or cave.	Cal. Code Regs. tit. 22, § 66268.42	Not an ARAR	Remedial alternatives considered will not generate waste.
CAMU An area at a RCRA facility may be designated as a CAMU. Placement of remediation wastes into or within a CAMU does not constitute land disposal of hazardous wastes nor creation of a unit subject to minimum technology requirements or LDRs.	RCRA CAMU	Cal. Code Regs. tit. 22, § 66264.552(c) and (e) (40 C.F.R. §264.552[c] and [e])	Not an ARAR	Remedial alternatives considered will not involve creation of a CAMU.
Monitoring constituents of concern Constituents of concern are the waste constituents, reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the regulated unit.	Hazardous waste treatment, storage, or disposal facility.	Cal. Code Regs. tit. 22, § 66264.93	Not an ARAR	Essentially the same as state requirements at Cal. Code Regs. tit. 23, § 2550.3 and tit. 27, § 20395. Remedial alternatives considered do not include waste in a regulated unit.

Table 4
Action-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
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Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Clean Water Act, as Amended (33 U.S.C., chapter 26, §§ 1251-1387)^b				
Discharge to surface waters, including storm water Owners and operators of construction activities must be in compliance with discharge standards, including substantive provisions of the general requirements for storm water plans and BMPs.		CWA Section 402 (33 U.S.C. ch. 26, § 1342) and 40 C.F.R. § 122.44(k)(2) and (4)	Not an ARAR	Remedial alternatives considered do not involve construction activities; therefore, BMPs are not applicable.
Discharge of dredged material Guidelines for specification of disposal sites for dredged material. The discharge must represent the least damaging, practicable alternative. The discharge of dredged material must not result in significant degradation of the aquatic ecosystem. All practicable means must be utilized to minimize adverse environmental impacts.	Discharge of dredged material to waters of the United States	40 C.F.R. § 230.10(a), (c), and (d)	Not an ARAR	Remedial alternatives considered will not involve dredged material.
Clean Air Act (42 U.S.C. §§ 7401-7671)^b				
Discharge to air A person shall not emit from any source for a period or periods aggregating more than 3 minutes in any hour a visible emission which is as dark as or darker than No. 1 on the Ringelmann Chart or of such opacity as to obscure an observer's view to an equivalent or greater degree.		BAAQMD Regulation 6-301	Not an ARAR	Remedial alternatives considered will not generate particulate matter or visible emissions.

Table 4
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Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Air stripping or soil vapor extraction A person shall not aerate contaminated soil except as provided in Regulations 8-40-304 through 306.	More than 1 cubic yard of soil contaminated with 50 ppm _w organic content from other than a known chemical with less than 302 °F initial boiling point. More than 8 cubic yards if less than 500 ppm _w . Does not apply to accidental spills of 5 gallons or less.	BAAQMD Regulation 8-40-301	Not an ARAR	Remedial alternatives considered will not involve contaminated soil.
Air stripping or soil vapor extraction Storage pile requirements		BAAQMD Regulation 8-40	Not an ARAR	Remedial alternatives considered will not involve storage piles.

Table 4
Action-Specific ARARs
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Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
STATE				
State Water Resources Control Board and Regional Water Quality Control Board^b				
Discharges to high-quality waters Incorporated into all Regional Board basin plans. Requires that quality of waters of the state that is better than needed to protect all beneficial uses be maintained unless certain findings are made. Discharges to high quality waters must be treated using best practicable treatment or control necessary to prevent pollution or nuisance and to maintain the highest quality water. Requires cleanup to background water quality or to lowest concentrations technically and economically feasible to achieve. Beneficial uses must, at least, be protected.		SWRCB Res. 68-16 (Policy With Respect to Maintaining High Quality of Waters in California) (Cal. Water Code § 13140, CWA regulations 40 C.F.R. § 131.12)	Not an ARAR	On December 12, 2011, the RWQCB concurred with the groundwater beneficial use exception request for municipal and domestic water supply at the IR05, DP7S, and WMA sites. Actions will not involve discharges.
Actions affecting water quality Provides water quality criteria for classifying the beneficial use of groundwater as municipal/domestic. Criteria outlined as follows: total dissolved solids ≤ 3,000 mg/L or yielding 200 gallons per day or serving as a public water system.	Applies in determining beneficial uses for waters that may be affected by discharges of waste.	SWRCB Res. 88-63 (“Sources of Drinking Water Policy”) (as contained in the Basin Plans)	Applicable	On December 12, 2011, the RWQCB concurred with the groundwater beneficial use exception request for municipal and domestic water supply at the IR05, DP7S, and WMA sites. Remedial alternatives considered will not involve discharges.

Table 4
Action-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Actions affecting water quality Establishes policies and procedures for the oversight of investigations and cleanup and abatement activities resulting from discharges of waste that affect or threaten water quality. Requires cleanup of all waste discharged and restoration of affected water to background conditions. Requires actions for cleanup and abatement to conform to Res. 68-16 and applicable provisions of Cal. Code Regs. tit. 23, div. 3, ch. 15 as feasible.	Cleanup and discharge of groundwater to groundwater or surface water and establishment of containment zones.	SWRCB Res. 92-49 (Policies and Procedures for Investigation and Cleanup and Abatement of Discharges Under Cal. Water Code § 13304) (Cal. Water Code § 13307) (02 October 1996)	Not an ARAR	Remedial alternatives considered will not involve cleanup and discharge of groundwater.
Construction and land disturbance Most nonstorm water discharges are prohibited. Requires BMPs, developing and implementing a stormwater pollution prevention plan, and monitoring of stormwater discharges. Contains numeric effluent limits and action levels.	Construction site that disturbs one or more acres of soil.	SWRCB Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ (General Construction Activity Storm Water Permit)	Not an ARAR	Remedial alternatives considered will not involve land disturbance on an acre of soil or discharges.
State Water Resources Control Board^b				
Monitoring Persons responsible for discharges at units that were closed, abandoned, or inactive on or before 27 November 1984 may be required to develop and implement a monitoring program in accordance with subdiv. 1, subch. 3, art. 1, (Cal. Code Regs. tit 27, §§ 20380–20435).	Closed, inactive, or abandoned waste management unit before 27 November 1984.	Cal. Code Regs. tit. 27, § 20080(g)	Not an ARAR	The IR05, DP7S, and WMA sites do not involve a closed, active, or inactive unit.

Table 4
Action-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
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Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Disposal of waste Requires that designated waste as defined at Cal. Water Code § 13173 be discharged to Class I or Class II waste management units.	Discharges of designated waste after 18 July 1997 (nonhazardous waste that could cause degradation of surface or ground waters) to land for treatment, storage, or disposal.	Cal. Code Regs. tit. 27, § 20210	Not an ARAR	Remedial alternatives considered will not generate waste.
Disposal of waste Requires that nonhazardous solid waste as defined at § 20220(a) be discharged to a classified waste management unit.	Discharge of nonhazardous solid waste after 18 July 1997 to land for treatment, storage, or disposal	Cal. Code Regs. tit. 27, § 20220(b), (c), and (d)	Not an ARAR	Remedial alternatives considered will not generate waste.
Disposal of waste Inert waste as defined at Cal. Code Regs. tit. 27 § 20230(a) need not be discharged at a classified unit.	Applies to discharges of inert waste to land after 18 July 1997 for treatment, storage, or disposal	Cal. Code Regs. tit. 27, § 20230(b)	Not an ARAR	Remedial alternatives considered will not generate waste.
Siting criteria All new landfills, waste piles, and surface impoundments shall be sited, designed, constructed, and operated to ensure that wastes will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater. Existing landfills, waste piles, and surface impoundments shall be operated to ensure that wastes will be a minimum of 5 feet above the highest anticipated elevation of underlying groundwater.	Applies to discharges of waste to land after 18 July 1997 for treatment, storage, or disposal.	Cal. Code Regs. tit. 27, § 20240(c)	Not an ARAR	Remedial alternatives considered will not generate waste.

Table 4
Action-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
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Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Closure of a waste management unit General closure and postclosure maintenance standards.	Waste discharged after 18 July 1997	Cal. Code Regs. tit. 27, § 20950(a), (d), and (e)	Not an ARAR	The IR05, DP7S, and WMA sites do not include waste management units. Wastes have not been discharged after 18 July 1997.
Monitoring Requires detection monitoring. Once a significant release has occurred, evaluation or corrective action monitoring is required.	Discharge of waste to land after 18 July 1997.	Cal. Code Regs. tit. 27, § 20385(a)(1) and (a)(2)	Not an ARAR	Wastes have not been discharged after 18 July 1997.
Groundwater cleanup Requires identification of the point of compliance, hydraulically downgradient from the area where waste was discharged to land.	Discharge of waste to land after 18 July 1997.	Cal. Code Regs. tit. 27, § 20405	Not an ARAR	Wastes have not been discharged after 18 July 1997.
Monitoring Requires monitoring for compliance with remedial action objectives for 3 years from the date of achieving cleanup levels.	Discharge of waste to land after 18 July 1997.	Cal. Code Regs. tit. 27, § 20410	Not an ARAR	Wastes have not been discharged after 18 July 1997.
Monitoring Requires general soil, surface water, and groundwater monitoring.	Discharge of waste to land after 18 July 1997.	Cal. Code Regs. tit. 27, § 20415	Not an ARAR	Wastes have not been discharged after 18 July 1997.
Groundwater monitoring Provides minimum requirements for a groundwater detection monitoring program.	Discharge of waste to land after 18 July 1997.	Cal. Code Regs. tit. 27, § 20420	Not an ARAR	Wastes have not been discharged after 18 July 1997.
Groundwater monitoring Requires evaluation monitoring once a significant release is detected.	Discharge of waste to land after 18 July 1997.	Cal. Code Regs. tit. 27, § 20425	Not an ARAR	Wastes have not been discharged after 18 July 1997.

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Action-Specific ARARs
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Action/Requirement	Prerequisite	Citation ^a	ARAR Determination	Comments
Corrective action Requires implementation of corrective action measures that ensure that cleanup levels are achieved throughout the zone affected by the release by removing the waste constituents or treating them in place. Source control may be required. Also requires monitoring to determine the effectiveness of the corrective actions.	Discharge of waste to land after 18 July 1997.	Cal. Code Regs. tit. 27, § 20430	Not an ARAR	Wastes have not been discharged after 18 July 1997.

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Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Clean closure When the discharger has successfully completed clean closure, the landfill shall no longer be subject to the SWRCB-promulgated requirements of this title; otherwise, the discharger shall close the landfill and carry out postclosure maintenance as though the discharger had not attempted clean closure. For the purpose of this paragraph, the discharger shall have successfully clean-closed a landfill only if all waste materials, contaminated components of the containment system, and affected geologic materials— including soils and rock beneath and surrounding the unit and groundwater polluted by a release from the unit—are either removed and discharged to an appropriate unit or treated to the extent that they no longer pose a threat to water quality; and all remaining containment features are inspected for contamination and, if contaminated, discharged in accordance with paragraph (f)(1).		Cal. Code Regs. tit. 27, § 21090(f)	Not an ARAR	Remedial alternatives considered do not include clean closure.
Monitoring Detection monitoring program may be required at CAI sites before the effective date of these requirements.	CAI site before 27 November 1984.	Cal. Code Regs. tit. 23, § 2510(g)	Not an ARAR	The IR05, DP7S, and WMA are not CAI sites.

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Action-Specific ARARs
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Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Detection monitoring Detection monitoring program.	Cal. Code Regs. tit. 23 requirements are only applicable to waste discharges to land after 27 November 1984.	Cal. Code Regs. tit. 23, § 2550.8	Not an ARAR	Wastes have not been discharged after 27 November 1984.
Evaluation monitoring Evaluation monitoring program	Cal. Code Regs. tit. 23 requirements are only applicable to waste discharges to land after 27 November 1984.	Cal. Code Regs. tit. 23, § 2550.9	Not an ARAR	Wastes have not been discharged after 27 November 1984.
Monitoring Corrective action monitoring.	Cal. Code Regs. tit. 23 requirements are only applicable to waste discharges to land after 27 November 1984	Cal. Code Regs. tit. 23, § 2550.10	Not an ARAR	Wastes have not been discharged after 27 November 1984.
Groundwater cleanup Point of compliance	Cal. Code Regs. tit. 23 requirements are only applicable to waste discharges to land after 27 November 1984.	Cal. Code Regs. tit. 23, § 2550.5	Not an ARAR	Wastes have not been discharged after 27 November 1984.

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Remedial alternatives for the IR05, DP7S, and WMA sites include (1) no action and (2) land-use controls.				
Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
Cal/EPA Department of Toxic Substances Control^b				
Land-use covenants A land-use covenant imposing appropriate limitations on land use shall be executed and recorded when facility closure, corrective action, remedial or removal action, or other response actions are undertaken, and hazardous materials, hazardous wastes or constituents, or hazardous substances will remain at the property at levels that are not suitable for unrestricted use of the land.	Property transfer by federal government to nonfederal entity.	Cal. Code Regs. tit. 22, § 67391.1	Relevant and Appropriate	Cal. Code Regs. tit. 22, § 67391.1 provides for a land-use covenant to be executed and recorded when remedial actions are taken and hazardous substances will remain at the property at concentrations that are unsuitable for unrestricted use of the land. The substantive provisions of this regulation have been determined to be “relevant and appropriate” state ARARs by the DON. See Section 4.2.1 for DTSC and U.S. EPA positions.

Table 4
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Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
California Civil Code^b				
Land-use controls Provides conditions under which land-use restrictions will apply to successive owners of land.	Transfer property from the DON to a nonfederal agency.	Cal. Civ. Code § 1471	Applicable	Generally, Cal. Civ. Code § 1471 allows an owner of land to make a covenant to restrict the use of land for the benefit of a covenantee. The covenant runs with the land to bind successive owners, and the restrictions must be reasonably necessary to protect present or future human health or safety or the environment as a result of the presence on the land of hazardous materials, as defined in Cal. Health & Safety Code § 25260. Substantive provisions are the following general narrative standard: “to do or refrain from doing some act on his or her own land . . . where (c) Each such act relates to the use of land and each such act is reasonably necessary to protect present or future human health or safety or the environment as a result of the presence of hazardous materials, as defined in Section 25260 of the California Health and Safety Code.” This narrative standard would be implemented through incorporation of restrictive covenants in the deed and Environmental Restriction and Covenant Agreement at the time of transfer. See Section 4.2.1 for DTSC and U.S. EPA positions.

Table 4
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Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
California Health and Safety Code^b				
Land-use controls Allows DTSC to enter into an agreement with the owner of a hazardous waste facility to restrict present and future land uses.	Transfer property from the DON to a nonfederal agency.	Cal. Health & Safety Code § 25202.5	Applicable	The substantive provisions of Cal. Health & Safety Code § 25202.5 are the general narrative standards to restrict “present and future uses of all or part of the land on which the . . . facility . . . is located . . .” See Section 4.2.1 for DTSC and U.S. EPA positions.

Table 4
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Action/Requirement	Prerequisite	Citation ^a	ARAR Determination	Comments
<p>Land-use controls Provides a streamlined process to be used to enter into an agreement to restrict specific use of property in order to implement the substantive use restrictions of Cal. Health & Safety Code § 25232(b)(1)(A)–(E).</p>	<p>Transfer property from the DON to a nonfederal agency.</p>	<p>Cal. Health & Safety Code §§ 25221 and 25355.5(a)(1)(C)</p>	<p>Relevant and Appropriate</p>	<p>Generally, Cal. Health & Safety Code §§ 25221 and 25355.5(a)(1)(C) provide the authority for the DTSC to enter into voluntary agreements with land owners to restrict the use of property. The agreements run with the land restricting present and future uses of the land. The substantive requirements of the following Cal. Health & Safety Code § 25221 provisions are “relevant and appropriate”: (1) the general narrative standard: “restricting specified uses of the property...” and (2) “...the agreement is irrevocable, and shall be recorded by the owner, ...as a hazardous waste easement, covenant, restriction or servitude, or any combination thereof, as appropriate, upon the present and future uses of the land.” The substantive requirements of the following Cal. Health & Safety Code § 25355.5(a)(1)(C) provisions are “relevant and appropriate”: “...execution and recording of a written instrument that imposes an easement, covenant, restriction, or servitude, or combination thereof , as appropriate, upon the present and future uses of the land.” See Section 4.2.1 for the DTSC and U.S. EPA positions.</p>

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Action/Requirement	Prerequisite	Citation ^a	ARAR Determination	Comments
<p>Land-use controls Provides processes and criteria for obtaining written variances from a land-use restriction and for removal of the land use restrictions.</p>	<p>Transfer property from the DON to a nonfederal agency.</p>	<p>Cal. Health & Safety Code §§ 25223 and 25224</p>	<p>Relevant and Appropriate</p>	<p>Cal. Health & Safety Code § 25223 sets forth “relevant and appropriate” substantive criteria for granting variances based upon specified environmental and health criteria. Cal. Health & Safety Code § 25224 sets forth the following “relevant and appropriate” substantive criteria for the removal of a land-use restriction on the grounds that “...the waste no longer creates a significant existing or potential hazard to present or future public health or safety.” See Section 4.2.1 for DTSC and U.S. EPA positions.</p>

Table 4
Action-Specific ARARs
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Action/Requirement	Prerequisite	Citation ^a	ARAR Determination	Comments
<p>Stockpiling Stockpiled at the site for up to 90 days without satisfying all substantive requirements of a hazardous waste facility storage permit provided certain conditions are met with regard to storage, inspections, and management. These conditions include: the waste is non-RCRA contaminated soil; the hazardous waste being accumulated does not contain free liquids; the hazardous waste is accumulated on an impermeable surface, such as high-density polyethylene, of at least 20 mils that is supported by a foundation, or high-density polyethylene of at least 60 mils that is not supported by a foundation; the generator provides controls for windblown dispersion and precipitation runoff and run-on, and complies with any stormwater permit requirements issued by an RWQCB; the generator has the accumulation site inspected weekly and after storms to assure that the controls for windblown dispersion and precipitation runoff and run-on are functioning properly; the generator, after final off-site transportation, inspects the accumulation site for contamination and remediates as necessary; the site is certified by a registered engineer for compliance with the standards specified herein.</p>	<p>Non-RCRA hazardous waste intended for on-site treatment and disposal.</p>	<p>Cal. Health & Safety Code § 25123.3</p>	<p>Not an ARAR</p>	<p>Remedial alternatives considered will not involve stockpiling.</p>

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Action/Requirement	Prerequisite	Citation^a	ARAR Determination	Comments
CAMU Specifies performance standards for CAMUs.	CAMU	Cal. Health & Safety Code §§ 25187, 25200, 25200.10 and 25316	Not an ARAR	Remedial alternatives considered will not generate waste or involve creation of a CAMU.
Financial Assurance Requirements If operation and maintenance activities are required as part of the selected remedy, financial assurance must be provided throughout the time necessary to complete all required operation and maintenance activities. This is applicable if the property is sold or transferred in the future to a nonfederal agency.	Transfer of property from the DON to a nonfederal agency	Cal. Health & Safety Code § 25355.2	Not an ARAR	The statute is not applicable to the federal government. It is not relevant and appropriate because it is not an environmental "standard, requirement, criteria, or limitation" and thus does not meet the threshold requirement for an ARAR under CERCLA Section 121(d)(2)(A)(ii). In addition, this is a procedural requirement rather than a substantive environmental standard and ARARs must be substantive. There are no material Operation & Maintenance costs associated with the remedial alternatives under consideration (land-use controls with annual inspections); therefore the statute does not address problems or situations similar to the circumstances of the proposed response actions.
Exclusion from hazardous waste permitting requirements Excludes onsite work from certain permitting requirements if the work is being conducted pursuant to a removal action work plan or remedial action plan and the cleanup complies with all applicable laws, rules, regulations, standards and requirements.	Permitting requirements	Cal. Health & Safety Code § 25358.9	Not an ARAR	Remedial alternatives considered will not generate waste.

Table 4
Action-Specific ARARs
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California

Notes:

- a Only the substantive provisions of the requirements cited in this table are potential ARARs.
- b Statutes and policies, and their citations, are provided as headings to identify general categories of potential ARARs for the convenience of the reader. Listing the statutes and policies does not indicate that the Department of the Navy accepts the entire statutes or policies as potential ARARs; specific ARARs are addressed in the table below each general heading; only substantive requirements of the specific citations are considered ARARs.

Acronyms/Abbreviations:

°F	degrees Fahrenheit	DP7S	Dredge Pond 7S
§	Section	DTSC	Department of Toxic Substances Control
§§	Sections	EPA	U.S. Environmental Protection Agency
ARAR	applicable or relevant and appropriate requirement	IR05	Installation Restoration Site 05
BAAQMD	Bay Area Air Quality Management District	LDR	land disposal restriction
BDAT	best demonstrated available technology	MEC	munition and explosive of concern
BMP	best management practice	mg/L	milligrams per liter
CAI	closed, abandoned, or inactive	NAVSEA	Naval Sea Systems Command
Cal.	California	NRC	U.S. Nuclear Regulatory Commission
Cal. Civ. Code	California Civil Code	ppm _w	parts per million by weight
Cal. Code Regs.	California Code of Regulations	RCRA	Resource Conservation and Recovery Act
Cal. Health and Safety Code	California Health and Safety Code	RWQCB	Regional Water Quality Control Board, San Francisco Bay Region
CAMU	corrective action management unit	subpt.	subpart
ch.	chapter	SWRCB	(California) State Water Resources Control Board
C.F.R.	Code of Federal Regulations	tit.	title
CWA	Clean Water Act	U.S.C.	United States Code
div.	division	WMA	Western Magazine Area
DON	U.S. Department of the Navy		

**ATTACHMENT 4
PUBLIC MEETING TRANSCRIPT**

MARE ISLAND NAVAL STATION
RESTORATION ADVISORY BOARD

TRANSCRIPT OF PROCEEDINGS

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MARE ISLAND CONFERENCE CENTER
375 G STREET
VALLEJO, CALIFORNIA

THURSDAY, MARCH 26, 2015

7:05 P.M.

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A P P E A R A N C E S

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JANET LEAR (Navy Co-Chair)
ALLAN FONE
DWIGHT GEMAR
ERIN HANFORD
PATRICK HSIEH
JANET NAITO
SHEILA ROEBUCK
ELIZABETH WELLS
HEATHER WOCHNICK

COMMUNITY MEMBERS, GUESTS & INTERESTED PARTIES:

PAM JESPERSEN
LARRY MAGGINI
JIM PORTERFIELD

SULLIVAN SUPPORT STAFF:

JESSICA COOPER
WALLY NEVILLE

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March 26, 2015

7:05 P.M.

P R O C E E D I N G S

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CO-CHAIR LEAR: Welcome, everyone, to the Mare Island Restoration Advisory Board meeting.

We start the meeting with introductions. My name is Janet Lear, I'm the Navy co-chair.

CO-CHAIR HAYES: And I'm Myrna Hayes, the community co-chair. And since we won't be meeting on April 14, just make an early announcement that this will be my 21st year and Paula's 21st year serving on the Mare Island Restoration Advisory Board.

MR. RASMUSSEN: My name is Chris Rasmussen. I am a resident of Mare Island.

MS. HANFORD: Oh, I have one here. I'm a little new to this. Hi, I'm Erin Hanford, and I'm from the city of Vallejo in the Economic Development Group.

MS. ROEBUCK: Sheila Roebuck with Lennar Mare Island.

MS. WELLS: Elizabeth Wells with the Water Board.

MR. HSIEH: Patrick Hsieh with DTSC.

MS. NAITO: And for Myrna that's Department of Toxic Substances Control.

Janet Naito with the same.

MR. FORE: Alex Fone with the Department of Toxic Substances Control.

MS. WOCHNICK: I'm Heather Wochnik, Navy BRAC.

CO-CHAIR HAYES: Which is?

MR. PORTERFIELD: Jim Porterfield, ex-Mare Islander.

MS. JESPERSEN: Pam Jespersen, I'm with Weston.

MR. MAGGINI: Larry Maggini with Weston.

MR. GEMAR: Dwight Gemar with Weston.

CO-CHAIR LEAR: How come you're not sitting with me anymore?

MR. GEMAR: No.

MS. NAITO: It's been so long since he's been here.

MR. GEMAR: I'll come by and join you after my presentation.

CO-CHAIR LEAR: Please do. So tonight our RAB meeting is also a proposed plan public meeting. And I will give DTSC an opportunity to say a few words before we begin that part of our presentation.

MS. NAITO: Okay. Thank you, everybody, for coming out.

We're here today to talk about a Proposed Plan slash Draft Remedial Action Plan for Installation

Restoration Site 05, Dredge Pond 7S and the Western Magazine Area.

The proposed -- Dwight is going to give presentation on the proposed plan tonight, it should be short. Let's give him our undivided attention.

CO-CHAIR LEAR: And to follow up on that, there are copies of the proposed plan on the table. This would have been mailed out to quite an extensive mailing list at the beginning of our public review period which runs from March 18th through April 17th.

In the Proposed Plan there is information on who comments can be sent to, either by fax, e-mail or Postal Service, as well as comments on the Proposed Plan can be provided tonight verbally. And all of the responses to all the comments, questions will be part of the responsiveness summary in the next document which is the Record of Decision.

At this point I'll turn it over to Dwight to give our presentation, and then we can talk about any comments or questions.

MR. GEMAR: Okay. Well, thanks, everyone, for being here for the public meeting for the Proposed Plan and Draft Remedial Action Plan for Installation Restoration Site 05, the Western Magazine Area, and Dredge Pond 7 South.

All right. I'm going to briefly lay out the agenda for tonight. First I'd like to go through the Comprehensive Environmental Response, Compensation, and Liability Act process which the Proposed Plan is part of.

And once we dispense with that we'll get into site location and history of these three sites.

And then go through the previous investigations and removal actions which have occurred over the last two decades and more.

And then also provide a brief summary of contaminants and hazards of concern that have been encountered during those investigations and removal actions. What happens -- let's see if I can make this happen. Hang on. Technical difficulties.

(Thereupon there was a discussion off the record.)

CO-CHAIR HAYES: The early Mare Island photo.

MS. NAITO: That was very early.

MR. GEMAR: Okay. Now we have buttons working.

So we're also going to talk about a summary of site risks.

And the -- and based on those remaining site risks, a review of the remedial action objective for these sites.

And then I'd like to briefly describe the remedial alternatives; the criteria that was used to evaluate those alternatives; a summary of what the Navy is proposing as the preferred alternative; and then our next steps and schedule.

All right. And I'm going to grab a handout myself so I don't have to keep looking at the screen. All right.

The step in the process that we're here to discuss tonight is the Proposed Plan. Again, this is a step in the CERCLA process. And as I mentioned, it provides an opportunity for the Navy to present their preferred alternative for the -- for the sites based on the current conditions. And then it gives an opportunity for the public to provide comments, either here at this meeting verbally or later in writing if you prefer.

And then the next step would be to respond to the public comments and, in a form of a responsiveness summary that's then documented in the next step of the process which is the Record of Decision.

Under the statutes in California this step that we're discussing tonight, the Proposed Plan, also serves as the function for a Draft Remedial Action Plan for sites that are under state lead, which is the case here

on Mare Island. So that's why this presentation is referred to as a Proposed Plan slash Draft Remedial Action Plan.

So here's a brief flow sheet of the CERCLA process that's used for cleanup of sites such as the three sites we're discussing tonight.

The initial work is -- consists of inspections and interim removal actions. And as I mentioned, there's been over two decades of inspections and removal actions performed on these sites.

And that information is then prepared -- is then consolidated into a remedial investigation report which is used to evaluate the extent and nature of contamination and the associated risk.

That report has been completed, as well as a evaluation of remedial action alternatives to address those residual risks which is the feasibility study.

The next step in the process is the Proposed Plan -- again, that's the step that we're at currently -- which will summarize for you the results of the remedial investigation in the feasibility study and explain the preferred alternative for the final site cleanup.

And that will be documented then in a Record of Decision in a remedial action plan which will take into

account the comments received either tonight or in writing from the public during the public comment period.

And we will then finalize the selected alternative for these three sites.

And then depending on that selected alternative, other activities may occur such as a remedial design or a remedial action step which could include land use controls and then also monitoring. And ultimately leading to a response complete for the sites, including any future deed restrictions.

So that's the process in terms of the CERCLA documentation. So I'd like to kind of get into the specifics of these three sites. Again, we're -- well, maybe hit one more light, that's not very bright on the screen.

CO-CHAIR HAYES: It's just not a very bright image.

MR. GEMAR: One more. Well, you'll have to be on your honor to stay awake for this particular slide anyway, we can probably flash the lights up later.

But this is the Western Magazine Area. This is on the southwestern portion of Mare Island, and it's bounded to the south by Installation Restoration Site 05 and Dredge Pond 7 South.

I'm going to point out a couple of areas on these maps because I'm going to mention them later on in the presentation.

In the northern part of the WMA here and here, represented by these two black dots, there is a historical outfall, and for the veterans on the RAB, of which we have many -- hey, Paula -- you recall that outfalls are where dredge sediments are pumped from Mare Island Strait to the dredge ponds on Mare Island. And we found on those outfall areas metal debris, including munitions and radiological items. So that's a useful piece of information to recall that there are two outfalls here and here.

Also I'm going to be referring to a horse stable area and that's in the central part of Mare Island. And as the name implies, that was a former horse stable. And there's an existing barn in this area.

And then at the south end of the sites, Dredge Pond 7 South consists of a levee surrounding former tidal marsh area that was used for disposal of dredge sediments.

And there was a suspected outfall on the northeastern corner of this site.

And then over here is the IR-04 -- excuse me --

IR-05 site which is bounded by dike twelve which is this area here that forms the boundary with, with the Carquinez Strait.

So I just wanted to point out a few site features because I'll be referring to some of these in the future in the rest of the presentation.

And I think we can probably get at least one set of lights back on. There we go.

So here's a brief summary of the site description and history of installation Restoration Site 05. This is an area again that's at the very south end of Mare Island. It's bounded by the Carquinez Strait. It's about 35 acres. And this was generally created by some natural accretion of sediments behind dike twelve, but also fill from the hillsides at the south end of Mare Island. And then later during the restoration work some dredge spoils were also placed in this area.

This area was used for munitions storage and disposal from late forties through 1975.

In the northern part of the site, which you can see a little better on your handout, the -- there's evidence based on photographic history that a lot of munitions-related containers were placed or stored in the north part of the site. And again in your photograph, which you can see better in your handout, in

this area you can see a lot of containers there.

The southern part of the site, southeastern part was used for disposal of munitions, usually by burning or detonation. And you can actually see from this 1949 photo what appears to be burning of probably propellant or other munitions constituents in that area on a burn pit -- or a burn pad, I should say.

On the -- again better seen on your handout, there is a pipeline that carries dredge sediment past or through IR-05 into the dredge pond 7, 7 South complex over in this area off the screen. And that -- however, there are no known outfalls within the IR-05 boundary.

Dredge Pond 7 South, as I mentioned is a -- is bounded by a levee. And again, it was used for disposal of dredged sediments.

Up until the 1970s when the Dredge Pond 7 and the adjacent 7 South were divided with a levee, and then the discharge sediment into Dredge Pond 7 South was discontinued. So those used to be one large levee or one large dredge pond, and then they were subdivided and then Dredge Pond 7 South was no longer used.

And as I mentioned in the photograph, there is a suspected outfall in the northeast corner of Dredge Pond 7 South.

CO-CHAIR HAYES: Dwight, could I ask questions

now or wait?

MR. GEMAR: It's up to you.

CO-CHAIR HAYES: But also I'm just trying to follow the public meeting format. All right.

When you say suspected, you never found one? You looked for one? You didn't look for one?

MR. GEMAR: There was debris type outfall, you know, found in that area. Although if my memory serves me correctly, there was no outfall mass, per se, found.

CO-CHAIR HAYES: Okay.

MR. GEMAR: But there was certainly evidence of the type of debris that we'd find.

CO-CHAIR HAYES: Okay.

MR. GEMAR: And then the Western Magazine Area -- and this is, again, better seen on your photograph. And this is one of my favorite pictures of the Western Magazine Area --

CO-CHAIR HAYES: I think mine too.

MR. GEMAR: -- that I think Mr. Larry Maggini took which was taken on a cold winter morning with frost on the ground, the sun coming up shining on the magazines, the fog burning off behind it in the Carquinez Strait, and it was a really cool photograph.

CO-CHAIR HAYES: Yep.

MR. GEMAR: The Western Magazine area is 105 -- or excuse me -- 106 acres, about 60 percent land, 40 percent wetlands.

They contain 21 former munitions storage magazines as you, some of which you see here. Some of these are free-standing on piers like these are. Some were cut into the original hillside of Mare Island.

During subsequent investigation we determined that there were two historic outfall locations in the northern part of the WMA. During some of the early investigations that was not known, but it became known later through one of the investigations that I'll, or removal actions that I'll describe later.

And also we, you know, based on some historical photographic evidence it kind of led us to believe and then later confirm that there were two outfalls at the north end of the WMA.

And again, as I mentioned earlier, there is a former horse stable area that is in the center, central location of the WMA.

So now we kind of transition to what's been investigated at the site or how those investigations have proceeded over the years. And as early as 1982 and 1987 there were some initial studies done, but the investigations really picked up steam in the 1980s.

For example, the storm drains, which was kind of a site-wide effort, were inspected and cleaned and sampled at IR-05 as well as throughout the shipyard.

In addition, there was some initial efforts at a Remedial Investigation report for this site. But based on its long history and known history as munitions storage and/or disposal areas, of course ordnance-related assessments and investigations were conducted in the nineties.

As well as then later in the nineties some chemical sampling of the soil and sediment in these areas was performed to further, you know, define and try to delineate potential hazards associated with the past uses of these sites.

Also, in the late nineties, early 2000 time frame there was, again, a push to investigate former or suspected underground storage locations of which a few were located in the IR site 05 and Western Magazine Area.

And then following that there was additional groundwater sampling efforts, additional soil characterization efforts.

There was also a site inspection of the horse stable area in 2003, four time frame.

There was further sampling of what were

considered data gaps based on input from the regulators performed in 2007, 2008 time frame.

As well as a digital geophysical mapping survey which is basically a metal detector type approach to investigate the subsurface for buried metal. That was performed in 2006.

And then later, after certain removal actions were taken -- which I'll describe in a moment -- the Remedial Investigation report was prepared which, again, describes the nature and extent of contamination and summary of hazards, residual hazards for human health and to ecological receptors.

And then finally a Feasibility Study was completed last year to evaluate remedial action objectives and potential response actions.

So a long history of investigations, again, dating back to the eighties. As an outshoot of those investigations there were a number of removal actions that were recommended and performed.

Initially it consisted of only emergency actions when some munitions items were encountered during utility work in the Western Magazine area, and that was again just emergency response, but it did alert folks to the presence of munitions buried in the Western Magazine area.

And at about roughly the same time frame a surface sweep of the Installation Restoration Site 05 was conducted, again to determine whether a surface or near surface munitions were present. And no surprise that they were, in fact, detected during that sweep based on, again, the history of the site. It was probably already a foregone conclusion.

And that, in turn, led to a time critical removal action for munitions removal. And that resulted in the removal of, as it's listed here, over 300 munitions items. And I'm kind of referring to MEC as munitions, but MEC stands for munitions and explosives of concern which can -- generally consists of discarded military munitions on Mare Island, but it also can refer to munitions constituents in the soil.

There was also some chemical contamination related to battery disposal. That was removed as well as some other contaminated soil.

And quite a bit of scrap metal, over twenty tons of scrap metal removed during that effort.

And then moving on into the late nineties. There was also a similar munitions investigation called an intrusive investigation, but basically resulting in the removal of, as indicated here, over 170 items, again from the area that was later determined to be a historic

outfall location in the northern part of the Western Magazine area.

And also some munitions items detected further south between buildings 148 and 169.

And listed here also are a laundry list of other items that were removed during that effort.

And then following that, based on the revelation that outfalls at the dredge ponds contained not only metal debris but munitions and/or radiological items, which were the luminescent deck marker type items that were discarded and later found in the dredge ponds at the outfalls; a UXO or unexploded ordnance inspection was done of the -- all the dredge ponds on Mare Island. And again, that resulted in 122 items being recovered from the historical outfall location at Dredge Pond 7 South that I mentioned was in the northeast corner of that area.

And then, in addition, there was a radiological investigation of the dredge ponds primarily in the vicinity of the outfalls. That was an area -- and Dredge Pond 7 South was inspected, but no radiological items were recovered or encountered there.

And -- however, at the time the outfall locations at the Western Magazine Area were not identified, and so there was no radiological inspection

during this 2000 to 2001 effort. But those areas were later inspected as I'll mention in a moment.

Following the digital geophysical mapping survey in 2006, a removal action was then performed. And over 300 items from the Investigation Restoration Site 05, dredge Pond 7 South area, and over -- well, almost 800 items from the Western Magazine Area were recovered. And that was an extensive effort with -- on the neighborhood of 16,000 anomaly locations investigated.

And again, a large number of inert items were removed, as well as 34 radiological items from these two historical outfall locations where -- which at that point were known based on the photographic evidence that we had, and the geophysical survey which kind of collaborated the presence of those outfalls.

In addition, based on the previous investigation of the horse stable area, it was found that green sand, which is abrasive blast material that, again, many of you remember is waste product from the blasting of hulls of ships prior to being painted and whatnot which contain high levels of metals, typically nickel and zinc, I believe. But they typically often used that for bedding material and utilities and, amazingly enough, for kind of the horse stable area.

Perhaps because it just was nice, sandy material, and they thought it was a good way to utilize that otherwise excess material.

But because of past or the previous sampling, we've known that material's known to contain elevated metals, so that was removed as well, because it was underneath the floorboards of this one building, Building A-155, that that building was demolished so that the soil underneath could be removed containing the abrasive blast material.

And then another extensive soil removal activity occurred in Installation Restoration Site 05, again, based on the previous sampling that was completed in the mid-2000 time frame. And that resulted in over 33,000 cubic yards of soil being removed. And as part of that effort and to help restore the southern part of the site, 4.7 acres of new wetlands were created.

So this next slide shows in the upper right photograph the removal of building A-155 which is the horse stable barn, or area I should say.

And then on the lower right is the soil removal from Installation Restoration Site 05. You can see the bridge there behind the excavator.

CO-CHAIR HAYES: I just want to make a brief comment. I just had a visitor this Friday from Alaska,

a resident of Alaska now, who kept her horse there. And she's very, very sad to hear that the barn was gone.

MR. GEMAR: Well, the barn is still there but the stables are gone.

CO-CHAIR HAYES: Well, the stables.

MR. GEMAR: Actually it's vice versa, the barn is gone, the stables are still there.

CO-CHAIR HAYES: The stables are still there. And I didn't have the heart to tell her about the environmental cleanup or the detail to say you were riding around in this stuff.

But apparently there is a Facebook page with over 300 members who are also former Mare Island riders and who had their horses there.

MR. GEMAR: Very cool.

CO-CHAIR HAYES: Employees of the Navy's children and families.

MR. GEMAR: And the areas shown in purple are the general areas of the soil, where soil removal occurred during that large time critical removal action at those two sites.

So based on the long history of investigations at these sites, the chemicals of potential concern that were encountered, either in the soil groundwater or surface water included this list as shown here. In

addition to metals in the soil, primarily there was some low levels of dioxins/furans from the burning that was performed at, especially at IR-05. And, not surprisingly, explosives were detected as well as several other type of organic compounds as listed here.

However, because of the extensive removal actions that have been performed since the nineties and on through into the 2010-11 time frame, the risks associated with these chemicals of concern have been removed as I'll kind of mention here in the next couple of slides.

So as part of the Remedial Investigation report, the current conditions after all of the removal actions had been performed was evaluated for human health, and that was in the soil surface water and shallow groundwater.

And the evaluation indicated no unacceptable -- no unacceptable cancer or non-cancer risks from these chemicals based on the remaining site conditions were determined for either the current or for future use, which is recreational users and construction workers. So that indicated that, you know, the past removal actions were effective at removing those previous hazards.

However, as again the veterans on this

Restoration Advisory Board know, the technology is not sufficient for guaranteeing a hundred percent removal of all munitions items beneath the ground surface; and, therefore, a potential risk of encountering those type of items still would, you know, may exist. We believe it's extremely remote at this point based on the previous removal actions, but it can't be discounted or eliminated.

However, in addition to the human health risk results, the results for ecological risk to animals or birds was also performed during the remedial investigation. And, again, they determined or it was determined that the current site conditions are not a hazard to those receptors.

And finally, on groundwater, the Regional Water Quality Control Board did grant an exemption to the groundwater policy because of the elevated -- elevated -- elevated -- easy for me to say -- salinity makes the water not potable and, therefore, not a viable source for drinking water.

And in addition to removal of the chemical specific hazards, as I mentioned, over 16,000 anomaly locations from the geophysical mapping and/or handheld magnetometer surveys were performed and excavated. And, you know, we believe that at this point there is a very

low probability of coming into contact with munitions at this point.

Also, based on the extensive investigation at the historic dredge pond, dredge outfall locations at the Western Magazine area, we do not believe that there are any further radiological items at that location, nor have any radiological items been recovered from Dredge Pond 7 south.

And, again, there was no outfall locations at IR-05. And so, again, don't expect any radiological items to be present there. And also based on the fact that all of the 16,000 plus anomaly locations were also monitored for radiological levels, and no radiological items were found at any of those 16,000 locations.

So in regard to future site use. Again, this is a picture that looks a lot better on your handouts that actually shows the newly created wetland area which shows a very nice, healthy crop of pickleweed which hopefully the salt marsh harvest mouse are enjoying as we speak.

These sites are planned, the three sites that we're discussing tonight are planned for transfer to the California State Lands Commission and/or city of Vallejo for recreational and/or wetland use. Basically open space.

And based on that future use and the current conditions of the site post remedial investigation, the Feasibility Study evaluated remedial action objectives, and at this point the primary objective is to control and protect future humans from -- or humans from the low risk of potentially buried munitions.

So in order to accomplish that objective, basically two alternatives were evaluated in the Feasibility Study.

One is required under the CERCLA process, and that's alternative one which is no further action, and that's used as a baseline to evaluate other alternatives.

Because there are no residual risks to humans or ecological receptors for the chemicals at the site, the only known residual hazard is the potential for munitions. And alternative two is presented for controlling that low risk based through the use of land use controls, which can consist of either and/or engineering controls or institutional controls.

Again, alternative one is the, essentially the do nothing alternative which is required under CERCLA. And, as I mentioned, there would be no actions performed under alternative one.

Alternative two would consist of institutional

controls for these three sites. This would include prohibiting sensitive uses such as those listed here, residences, hospitals, schools, and daycare facilities.

Also the institutional controls would restrict or would include a provision in the deeds to restrict soil disturbance without appropriate approvals.

And then again these institutional controls would be verified through annual inspections and through the five year review process which is required under the CERCLA regulations.

And these restrictions would run with the land and be enforceable by the Department of Toxic Substances Control, which I did not abbreviate.

CO-CHAIR HAYES: Thank you.

MR. GEMAR: The two alternatives are evaluated by a series of these nine criteria. In the upper left there, these two criteria here are called threshold criteria which means that they must be met.

And the no action would result obviously in a lower overall protection of human health and the environment than alternative two.

And alternative two would be in compliance with applicable or relevant and appropriate requirements.

Moving onto the five balancing criteria; obviously either no action or institutional controls are

easily implemented and certainly at reasonable or no cost.

And then the two modifying criteria on the right-hand side of the screen relate to state acceptance from regulators, and also community acceptance through a forums such as this public meeting and subsequent or current public review process.

So based on overall analysis of the existing site conditions and the remedial action objective, the Navy is proposing to prefer alternative two consisting of institutional controls for these sites.

Again, these institutional controls would prohibit sensitive uses and also soil disturbance activities without Navy and DTSC approval with appropriate oversight by personnel trained to observe for and/or handle munitions if they are encountered.

And this certainly achieves a higher level of protectiveness than the no action alternative, and can be, you know, performed at a reasonable cost.

So the Navy is requesting public comment, either verbal comments tonight that are going to be recorded in the transcript, or if you prefer you can send written comments by letter or e-mail to one or all three of the individuals shown on this slide.

In terms of the next steps. The public comment

period that is currently running will be finished on April 17th. And after that point the Navy will prepare a responsiveness summary to address public comments, and review those with the regulators in order to determine the appropriate selected alternative, which will be documented, as well as the responsiveness summary in the Record of Decision Remedial Action Plan which is the document that will come next.

And depending again on if alternative two is the selected remedy, land use control document would be prepared in order to determine and implement the institutional controls that are recommended, as well as -- and then require annual compliance monitoring in addition to the five year reviews.

And so, lastly, this is an overall summary of the next path or the path forward. Again, the public comment period will run through April 17th.

We are obviously having our public meeting today.

And the Draft Record of Decision and Remedial Action Plan will be prepared in the summer of this year.

And the final version of that decision document will be prepared in, by winter of this year.

And on the very last slide is a list of those evil acronyms that hopefully I didn't use or overuse too

much, but it's provided for your use later on.

So at this point I'll turn it back over to Janet and be happy to accept verbal comments at this point.

CO-CHAIR LEAR: All right. So now is the opportunity for anyone to provide comments or ask questions about the Proposed Plan document. Do you have any comments?

Yes, Paula.

MS. TYGIELSKI: In the past I have been very hesitant to agree to institutional controls, but at this site with the very low risk possibilities I think institutional controls will be adequate.

MR. GEMAR: Okay. Thank you.

CO-CHAIR LEAR: Any other comments? Questions?

MR. RASMUSSEN: I have a question, if I may?

CO-CHAIR LEAR: Sure.

MR. RASMUSSEN: Dwight, what's the expected -- when these sites are transferred either to the State Lands Commission or to the city or a combination, however that's done, is there an expectation that there will be much, if any, human activity out there in those areas? Will this sort of be secured just because of the nature of the land and the intended use of it, or is it known yet?

MR. GEMAR: Well that, again, based on public comments, that would be evaluated. But currently there are no engineering controls other than signage that are being considered. And also based on the Mare Island specific plan, reuse area twelve, which includes this area which is planned to be part of a, you know, the regional park complex. So yeah, I think the expectation is that there would be access to the public.

MR. RASMUSSEN: Okay.

CO-CHAIR HAYES: I'm just going to go through some comments I've written as you've spoken. I want to know in the areas between the magazines the Navy had an agreement with the U.S. Fish and Wildlife Service Endangered Species Unit for development of -- which they completed, I believe what the agreement was in 1987 -- the development of and protection of the salt marsh harvest mouse habitat in those waterways between the mags. And I believe there was a conservation easement associated with that.

Can you or Janet comment on the status of that agreement and how that will be -- will go forward as a conservation easement?

CO-CHAIR LEAR: The conservation areas are laid out during the property transfer process. There is an agreement. There is a certain amount of acreage set

aside as conservation areas through the agreement you're talking about with the Fish and Wildlife Service.

But the specific details of that, as far as exactly where they are and how much they are, that's part of the agreement, but the actual creation of those areas takes place later in the process during the property transfer.

CO-CHAIR HAYES: Will that be identified as a component of the finding of suitability for transfer? Where will it be in the process? Where will it be documented in the public process?

CO-CHAIR LEAR: I believe it's just documented in the deed, but I'm going to ask Heather if she remembers anymore details. Is it called that in the FOST?

MS. WOCHNICK: We did in A-2.

CO-CHAIR LEAR: Okay.

CO-CHAIR HAYES: Okay. So we can expect that it will probably also -- you'll follow that similar?

CO-CHAIR LEAR: Yes.

CO-CHAIR HAYES: Okay. Good. Okay. Lucky you guys, page after page of no comments, huh? Okay.

On page seventeen you indicate a summary of site risks, accessible areas, making the probability of coming into contact with MEC low.

While I'm going to agree with my fellow community member for the last 21 years next week, Paula Tygielski, that I generally am not real keen on land use controls, covenants, or whatever those are all called, for ensuring -- I'd rather see everything pristine and clean; but the fact is, that's not possible. And so we have gone along with various institutional, for instance, at the landfill area. And that seems to be working pretty well.

One thing that I -- in managing the Mare Island Shoreline Heritage Preserve for the last now almost eight years, I can assure you that -- well, we believe that there, as managers of that property, that there is an ongoing need for public education, and the Navy has supplied, as contractors have supplied, pretty simple but effective written material that we have distributed -- I've kind of lost track, but well over 2,000 informational handouts that we have handed out through our visitors center.

We have a -- we meet up with a lot of very eager amateur metal detectors. And they aren't always the swiftest people in the world, I mean, in terms of sophistication about what they might discover in a former ammunition depot.

I think that it's interesting to workers, and

it also gets pretty labor, you know, tedious when you're picking up absolutely tens of thousands, hundreds of thousands of bits and pieces of scrap metal, some of which are, have been donated to our visitors center to show kind of some interesting things that got found along with munition-related items or components and some munition items.

So by -- by suggesting to people that they shouldn't metal detect in former munition area, that sometimes can kind of backfire. And they think that it's going to be even more interesting than it might be to be searching for \$5 gold pieces or silver pieces in gold country.

So I -- while I understand your desire to and your belief that you can use institutional controls to manage this property, and while I do agree with you that there is a pretty low risk of exposure, I also am quite amazed at, you know, the people I meet and what they're up to, having been a manager of this adjacent property for the last going on eight years.

So I would really encourage you to think about education in a more -- in the most robust way. I don't think that has to be cost prohibitive or, you know, a great cost, but I know I've nattered and nagged and pled and cajoled and every other word in the dictionary

related to that, I have asked in a very nice way, in kind of a firm and maybe irritating way for a video, for action, for interviews, for something other than, "I hope to God you meet Myrna Hayes and she gives you a compelling reason, you know, not to go mess around." So I don't think it would be very costly.

It could be used, using the Internet now it can be pretty simple, but I just I really would like to see -- this is going to be the first property -- significant piece of property brought into the recreational area regional park preserve that doesn't have any -- that does have deed restrictions. And not that we've had a lot of people digging, you know, they don't seem to do that, especially if you have some nice rattlesnake warning signs.

But similar to the trail where -- along the -- at the landfill where we urge people to stay on the trail, you know, to stay clear of ticks, that seems to be another, you know, sort of terribly terrifying thing to people. So I'd like to see us utilize all the tools we have.

MS. TYGIELSKI: Some signage would be a good idea. "Do not grow garden here."

CO-CHAIR HAYES: Yeah. Because we do envision a very robust use, we have been working with the Navy

and we're so proud of -- another few months now of negotiated with the Navy for public access to the -- to these locations. And we've been doing that for now almost twenty years on a monthly basis, first with the Sierra Club and the San Francisco Bay Flyway Festival, and now through the Mare Island Heritage Trust. And I certainly would like to see that, you know, become even more robust, and I know that the community would as well.

So, I know I've gone on and on, but I hope I can make the point that we are going to need public education. And I will agree with you in the criteria under cost that I think it is reasonable and not too costly to be able to adequately make that education possible.

And that, you know, one thing that we know, Tierrasanta is the only reason why DTSC is as hypersensitive as they are to munition issues; that education over time is what is critical, not to drop the ball, or drop the bomb, that -- that that's when children were killed at Tierrasanta. That was a different situation, that was a maneuver range, training range, had only been surface cleared to two feet. This is a different set of circumstances.

But I would hope that if you need my help in

helping you develop an effective land use control that can be effectively implemented and that can have a circle back around, not just for those five years, but for 25 years and 45 years, I hope that you would, you know, work with me and others who throughout the nation are implementing these kinds of restrictions, and aligned with public recreation on most of those sites -- as many as, I think the number's in the 1,600 different sites in the U.S. I might be up or down on that -- where public access is envisioned or is currently taking place on, and primarily recreational uses, on former munition operation, areas with munition operations.

So I just want to -- I think I just want to go on and on about that, please, but I'll try to stop as long as you think you got the picture.

And then let's just go on to -- I'm just -- I think that you might have a little typo here. Does the final ROD/RAP really take place in winter of 2015 which we just passed a couple days ago, or would it be this the winter of 2016?

MR. GEMAR: 2015/2016.

CO-CHAIR HAYES: Okay. A few days of winter in 2015?

MR. GEMAR: Yeah, right.

CO-CHAIR HAYES: And then at what point

following that ROD/RAP does the FOST and the transfer itself usually take place? What kind of timeline do you usually look at?

MS. WOCHNICK: In this case we are still going to prepare the land use control remedial design document.

CO-CHAIR HAYES: Okay.

MS. WOCHNICK: So with reviews of the regulators, I don't know, hopefully another year and a half.

CO-CHAIR HAYES: Following the ROD?

MS. WOCHNICK: Yeah.

CO-CHAIR HAYES: A year and a half, all right. And let me see. Okay.

Well, then that gives us some time to finally -- to follow up with Chris' question, this is just, you know, my experience it has, it was certainly not in any kind of formal or official response, but these areas were and have been envisioned from the point of the reuse plan in '94, the development of the reuse plan, and then the development in the -- beyond that of two specific plans that I can think of, and they're probably looking at yet another update of a specific plan for Mare Island.

But in all of those documents the property that

over; when you don't have a complete master plan and you don't have every square inch of that property, you know, identified for what its ultimate use is going to be, you usually have interim uses that are temporary and considered, you know, not permanent or not the ultimate use.

For example, you haven't seen any development of, you know, like state or federal funded trail systems in our preserve. We have some mowing that connects to some existing roadways, some sort of informal, but other than the paved road we have a policy, I do as a preserve manager, of "Do no harm before you do good."

So in the case of this property we wouldn't just envision, you know, we would work with the city like we have, but we wouldn't just envision that because it is still wedged in among two parcels that -- I mean, other parcels that aren't transferable, we wouldn't envision just opening the gates one day and anybody and everybody getting to pop into the property; partly because of sensitive endangered species habitat, and partly because of these restrictions, and partly because of the land in the adjacent properties.

So I hope that isn't too vague and is specific enough that it lays out at least the way my understanding would be of how the property might come to

be used. But, as Heather said, that's some ways off yet it sounds like, another maybe as much as two years.

CO-CHAIR LEAR: Any other comments? Question?

CO-CHAIR HAYES: So I should say in the meantime we'll continue to provide public access through the Navy license agreement to those properties on a monthly basis.

CO-CHAIR LEAR: Okay. So if there are no more public comments or questions on the Proposed Plan, I will turn it over to Heather Wochnick with the Navy.

She's going to give a presentation on the Munitions Response Site Prioritization Protocol. This is PP, that's our way of saying that.

MS. NAITO: That sounds bad.

CO-CHAIR LEAR: I know, sorry. And this is on the open burning, open detonation range.

CO-CHAIR HAYES: Not bad, it's cute.

CO-CHAIR LEAR: Thank you.

CO-CHAIR HAYES: I have a space by me, I'll move my purse too so you can move around.

MS. WOCHNICK: Well, I'm very glad that Dwight went first because he broke the news that the DOD uses munitions, so that will make my job a little bit easier. So I'm here to tell you about the MRSPP, the Munitions Response Site Prioritization Site Protocol. The

particular site that I'm going to go over after I talk to you about the protocol itself is the Open Burning/Open Detonation site on Mare Island.

So luckily Dwight also did a fantastic introduction for why you might not have heard about this protocol in the past. Mare Island was identified as having munitions very early on, I think we are ahead of the game, ahead of a lot of active sites and a lot of other closed sites.

We did our preliminary assessment of our ordnance sites in 1995. And then Dwight gave us a litany of history of all of the unexploded ordnance investigations, time critical removal actions that we've done along the way.

Sometime in the mid-2000's the Navy and DOD decided, well, we actually need some guidance for some of the active sites that weren't as far along as Mare Island was. So they provided some guidance. And Congress went ahead and directed the DOD to actually identify and prioritize munitions sites in 2005.

The actual policy came out in 2006. So the reason why you might not have heard about the actual protocol in the past is because we've already been doing all of this for so long, since 1995.

So the protocol itself provides a way for the

DOD to identify what sites need funding now. It assigns relative priorities to different unexploded ordnance sites, munitions response sites, and identifies munitions constituents, which are the chemical constituents of munitions items. If they're in high enough concentrations they will pose -- they could pose an explosive hazard or additional health issues to humans or ecological receptors.

For an active base this protocol is a little bit more important than maybe for a BRAC base. For an active base there are so many munitions sites that they were trying to figure out a way of how to fund the cleanup for the active sites.

For a closed site like Mare Island we go along with what is the basic protocol for redevelopment. So unless there's an immediate human health or environmental issue, threat to the environment, for the BRAC office we have gone along and prioritized based on what the redevelopment needs are, what the city needs are, what is the most important for moving forward with the city's plans.

So part of the protocol is to allow public input in the site priorities. And it seems a little late in the game obviously that we are introducing you to our newest and latest site, and we've pretty much

prioritized every munitions site on Mare Island for funding, but it is part of the protocol and so we are presenting that.

The protocol applies to every single munitions site in the DOD inventory, even if cleanup has already been started. So back in 2006 someone had to go in and take all of the sites and all the data that we had to date for all of our munitions sites and go through all of these very laborious tables. And I will go through some of them, an example of what the tables are. But they had to go in and code for every single site, and come up with a prioritization number for every site.

Every year during our budgeting season we also have the ability to come and update the prioritization. If we know more information, we've collected additional data, whether it's chemical, or we've done a time critical removal action, we go and update the sites. Eventually our goal is to have "No longer be required." That's when site cleanup is either complete, fully funded.

So in some of the western early transfer sites, they've already been fully funded, so some of them are no longer required. Or when institutionals have been implemented. So I'll show you an example of some of our sites that have already met that no longer required.

So as I explained a little bit earlier, the protocol is risk-based. It considers how explosive an item is or if the chemical constituents, the munitions constituents pose a risk to human health or the environment. Those different risks help prioritize the funding for the sites and, and how if there's an immediate response action needed, that would show if you have a very high number score on your protocol.

So the MRSPP includes three different modules. One is an explosive hazard module which actually talks about what sort of -- I kind of like this acronym so I might, you know, work it a little bit.

So the explosive hazard evaluation module talks about exactly what kinds of bombs, bullets you found at the site.

There's a Chemical Warfare Materiel Hazard Evaluation. And I will just point out that this E-L is not a misspelling, for some reason in the guidance that's how it's spelled, so it's not a typo. Luckily for Mare Island there were no chemical warfare materials used, so for all of our protocol sites this is a not required.

It also goes through a Health Hazard Evaluation Module where it -- and some of the questions that you look at are how close are residences, how many occupied

buildings are near the area. And it will categorize based on occupation or hazard to your site what the priority would be.

So all of those mixed together in a magic black box, and it spits out a priority. And based on the priority, allegedly at least on the active bases, it puts you in line for a funding sequence.

Again, at BRAC that's not exactly how we fund our sites, we do it based on redevelopment or city needs or what is most easily funded at the time based on what we have money for.

Okay. So for the Explosive Hazard Module there's a couple different factors that go in it. The specific explosive hazard factor.

The accessibility factor. Again, I kind of indicated accessibility, population, is there fencing? These are all questions.

I think the fencing question might be in the receptors. It talks about are there residences nearby, is it -- do you have access to the site from the shore, is it fully fenced?

These tables are very long. Originally the idea would be -- and I have an example, I have a few examples, actually three if you guys want to really dig into this, because I know it's so exciting, so I

actually have an example of all of the tables that go into this.

And just for the health, or the explosive module itself, I think there's about nine tables. Yes, there are nine, ten tables that go into just prioritizing that one module.

So this whole package is quite thick. There's lots of questions to answer. And when it finally spits out its answer the DOD thinks that this is great. So, but the idea is you put it out to the public and the public says, "Oh, no, I really want the SSA done first because it's so exciting and I want it as my regional park." So on an active base you might have a little bit more input on that. Here maybe not so much.

CO-CHAIR HAYES: Yeah, I would confirm.

MS. WOCHNICK: Okay. So here is a breakdown a little bit more. It gives you a little bit more information about how the modules are set up and the types of -- the types of questions that are in here.

So for the Explosive Hazard Module itself there's obviously an explosive hazard where you talk about what kind of munition and what the source of the hazard was.

So, for instance, for the munitions type, you pick every single type of munition that was ever found

at that base, and then you take the highest score, and that's what ends up spitting out as your score.

For the accessibility, this is another big part of what goes into the scoring where it talks about the location of the munitions, is it on the surface, is it buried, how accessible is it to a person, ease of access? Some of these questions are about fencing again, shoreline access.

Status of the property; is it transferred, is it not transferred, is it out of DOD hands? This is actually kind of a big deal in the scoring.

And then it talks about the receptor. It actually worries about bugs and bunnies here, so Myrna, don't worry about your mouse, he's counted for right in this little receptor guy.

CO-CHAIR HAYES: Okay.

MS. WOCHNICK: Again, the chemical warfare, luckily we don't have to worry about that.

And then the Human Health Module, what you put in the human health is the actual chemicals of concern. So for Dwight's site on Installation Restoration Site 05 we actually went in, and every single chemical that he ever found and the concentrations go into this contaminant hazard, and you figure out if it's significant, moderate, minimal. At the end of the day,

since he's done so much cleanup there, his site went from probably a moderate hazard to now it's minimal.

So because it's an evolving prioritization, as you go out and clean up the site and annually update this, your score will change.

This is an example of table one. This is actually probably one of the most important tables that you can find because it talks about what the classification of your munition is. Is it sensitive? Is it high explosive? Is it pyrotechnic, propellant -- we have a lot of that. Practice rounds, riot controls, small arms -- we have a lot of that -- or no evidence of munitions. And so the no evidence of munitions -- I know you can't see -- is a zero.

Unfortunately, most of ours are in the twenty to fifteen range for our sites. We didn't have any, as Dwight said, luckily we don't have any actual unexploded items, most of ours are DMM -- help me out, Dwight.

MR. GEMAR: Yep, DMM.

MS. WOCHNICK: DMM, discarded military munitions -- I had a brain fart, I'm sorry.

So let's talk about our new site itself and how it fits into the protocol. So you normally start your protocol after you have a preliminary assessment or a site inspection. You need some sort of data to be able

to characterize your site. What was found? Where is it located? What sort of site and fencing? Do you have any chemicals of concern there? The more data you have the better the scoring can be rated.

So Mare Island's newest winner is unexploded ordnance site UXO 14, it's the open burning, open detonation range. Luckily for us, this was given a munitions site priority score of five. So just to let you know what a score of five is, it's one of the lower priorities, there's no immediate threat to human health or the environment. A score of one would be bad, but you would only get that if you had a chemical warfare site. Luckily we don't have any of those. So most of our sites are either a three, four, or five or a no longer required.

Okay. So you can see this figure a little bit better in your handout. And again, thank you -- wow, it's dark in here -- so thank you, Dwight, for introducing this. This is IR-05, Dredge Pond 7 South, Western Magazine area, and my nice little open burning/open detonation range is right here in the middle of Dredge Pond 7. So this is still active. This dredge pond has been transferred. And then all these surrounding areas were the subject of tonight's fabulous talk. Thank you.

CO-CHAIR HAYES: You're so excited.

MS. WOCHNICK: I don't get to talk much. Okay. So this site, I'm unsure why it was actually not an official site because it was originally identified in our Federal Facility Site Remediation Agreement. As you guys know, this is the agreement that the Navy set up with the Department of Toxic Substances Control to make sure that we did our job and clean up all of our sites. It's a little 2.15 acre parcel adjacent to Installation Restoration 05, Dredge Pond 7S, and right in the middle of Dredge Pond 7.

Currently we have a document that lets us use this disposal range for our active remediation sites. So I think Dwight probably has shown you some videos of us blowing stuff up and some figures and some photos; well, that was all done at our open burning/open detonation range. So we have proper CERCLA documentation that lets us use this, and this is actually going to be the last site that we clean up on Mare Island just because we're still using it to make sure that all of our other munitions sites are clean, and we we have a place to dispose of, do the open burn/open detonation at this range.

So this is the exciting table I was telling you about. So based on the explosive hazard rating itself,

it had a priority of five which pretty much drove the score on this particular table.

The chemical warfare says no known or suspected chemical warfare hazards.

The health and safety rating, because we don't have any actual chemical data at this site, this exact module can't be filled out. So right now it has a priority of five. Again, based on our CERCLA needs for this site, it's going to be the last.

So I'm going to click over this slide real fast and go to the ugly acronyms slide in case I really messed things up. So there's a couple slides around thirteen and fourteen if you are looking up things.

And I just wanted to let you nice know that I had mentioned that all of our UXO sites have had this prioritization protocol performed. Just to let you know, we don't actually have a UXO site one, I don't know why.

UXO 9 is actually the dredge ponds that have already been transferred. Thank you, Dwight.

MR. GEMAR: Yeah.

MS. WOCHNICK: And so it is not on this list. And if you guys get really excited, you can go through all the rest of the tables.

So what I did want to point out though is the

sites that Dwight was describing tonight, because it's fully funded, doesn't apply for the protocol. So its prioritization is no longer required because it was an early transfer, early funded site. So it's been removed.

This is the dredge pond 3E. Not a bad hazard evaluation, but it will be upcoming.

Marine Corps Firing Range, you've also seen a Proposed Plan over the last few months, probably longer than I remember. It also has a no longer required because all of the remediation activities are already complete. And it's going to have its institutional controls. And we are at the finding of suitability to transfer for that site. So it is also no longer required.

So if you guys get really bored during Sheila's presentation, feel free to go through the rest of those. And if you get really really, really bored or you have insomnia, feel free to take this nice little package and see all the exciting questions that one could answer while doing this.

Okay. Are there any questions?

CO-CHAIR HAYES: Thank you, MRSPP.

MS. WOCHNICK: Wow, you guys are going to let me off easy, I like it.

CO-CHAIR HAYES: Yep. We'll invite you back too, you're funny.

MS. NAITO: I think she just came up with that acronym so she we wouldn't actually ask questions.

CO-CHAIR LEAR: And now Sheila is going to give a presentation, and we aren't going to get bored and not ask questions because we --

CO-CHAIR HAYES: Can't be rude.

CO-CHAIR LEAR: -- can't be rude, and we want to learn all these lessons applied from the past applied to the future for the land use covenants. Okay.

MS. ROEBUCK: All right. So this presentation is regarding land use covenants. And no one really likes land use covenants, we'd all like everything to be cleaned up to unrestricted use. Unfortunately, that's not always possible because there is not an unlimited amount of money and time to clean everything up. So our goal is to provide a safe and usable property. So land use covenants become a part of that equation.

So what I'm going to talk about include land use covenants on the Eastern Early Transfer Parcel. I'm not going to talk about them with the Navy's terminology or what the city is doing, I'm just talking about what we have experienced on the Eastern Early Transfer Parcel; the types of LUC's and how they're used; how we

operate and maintain them once they're in place; how we let people know that they exist when we sell a property or we lease it so that they can be aware and comply with the requirements.

And then just a little bit about what we've learned. Some of the things that we expected when we began this process are a little different in practice. And so as we go forward in the future we just think some of that information will be helpful.

A little bit of history. When the Eastern Early Transfer Parcel went through the early transfer, the entire area had what we called a pre-decision land use covenant which meant that there was a requirement throughout the entire area for no sensitive uses. And Dwight talked about those before, and we'll see it again here, but that's no hospitals, no schools for children under eighteen, no daycare centers, and no residences.

Prior to the early transfer, really when land use covenants were put in place it was kind of the honor system. There wasn't specific oversight requirements that were imposed by regulators, but over time more structure has come into it. And the reason for that was because in certain areas throughout the country sometimes the land use covenants weren't maintained and so they became less effective over time. So I think the

regulators are trying to ensure effectiveness with the oversight.

Again, when we can't achieve full remediation to unrestricted standards, the land use covenants allow for the controls that we need to assure protection of human health and the environment.

There are two kinds, at least in our parlance of land use covenants; institutional controls which are controls on use, as I said the sensitive uses. And I have a couple of other examples.

The engineering controls are really physical, physical controls. So again, the institutional controls, the four that I mentioned previously, others would be, for PCB sites, low occupancy. So someone can't be there for -- in an area where the land use covenant exists more than 6.7 hours a week. So there's not too much exposure.

Some areas we have institutional controls that say that there should be no groundwater use. In practice groundwater hasn't been used on Mare Island for 150 years, so this just emphasizes that.

There are also areas in the commercial parts of the island where the land use controls say you can't grow vegetables or fruit for human consumption.

The engineering controls, the kinds that we use

on the Eastern Early Transfer Parcel are really caps. And sometimes that's a soil cap like we have on the crane test area, which is a three foot soil cap that prevents exposure to the contaminants below. Sometimes it's an encapsulated surface, which would be like an epoxy coating on a floor that would be two colors. So if there's wear and you see the second color below, you know you need to maintain or upgrade that encapsulant.

Sometimes active transformers are in place, and because of the way the electrical systems work on Mare Island, they have to remain in place. And so they serve to prevent exposure to PCBs that may exist below.

As I mentioned, the -- one of the components of land use covenants is that they do require regular monitoring and maintenance. Those responsibilities are -- rest with the property owner.

As I said, the regulators do provide oversight. And all of the LUC's that we enter into we enter into with the Department of Toxic Substances Control. The PCB specific LUC's also include U.S. Environmental Protection Agency as a third party beneficiary.

As Dwight mentioned, all of the land use covenants require annual monitoring and five year reviews.

The engineering controls require that, but they

also require that we look at them in response to specific events, like a high rainfall event where we're concerned there may be erosion of a soil cap for example, we have to inspect them to make sure that's not a concern in response to seismic events. For example, when the earthquake occurred last year we had to go out and inspect the caps to make sure there weren't cracks or other ways for exposure to occur.

MS. TYGIELSKI: Make sure the transformers don't get knocked off into the PCB puddles underneath?

MS. ROEBUCK: Right. The operation and maintenance responsibilities are described in operation and maintenance plans. And for Lennar Mare Island, we have many land use covenants throughout the property. About twenty of them have been recorded already, but we expect more.

And so we wanted to find a way to be as efficient as possible with that planning process, and so what we did was we developed an operation and maintenance plan that covers the entire Eastern Early Transfer Parcel. And those restrictions that are common to all LUC's are covered in that document that won't change.

So, for example, no hospitals, no sensitive uses, the requirements for annual reviews; all of those

things are common to all LUC's and they are in the EETP-wide plan that was approved in 2011. But we didn't want to have to republish that document every time we had an engineering control that required specific maintenance; for example, to make sure there aren't cracks in a cap.

And so what we do is whenever we have a engineering control land use covenant that is approved, and we've just had the first one of those in the last couple of months with the crane test area, what we'll do is the engineering control specific requirements will be placed into an appendix that would be appended to that EETP-wide O&M plan. So all of those requirements would then be there in one document.

Another requirement of the property owner is that we provide financial assurance. And what that means is we have to assure that the property can be properly maintained over time, and that DTSC's costs for overseeing that program are paid.

And there are -- in the DTSC's accepted ways to do that, there are five. And they're listed here; a bond, a trust, letter of credit, corporate guarantee, or insurance.

LMI is using a bond. And what we have is a bond in place for the crane test area where we've

established that engineering control. There's also a standby trust. If the bond was ever called and all that money had to be paid out, it would go into a standby -- into a trust, it's a standby trust now, but it would be active then, so that that money is segregated and kept just for that site, so it doesn't go into a larger fund where it might be get lost.

As I mentioned, DTSC and U.S. EPA have to review and approve the plans and agreements, the LUC's that we have. DTSC has a group that looks at the cost estimates for financial assurance and has to approve those estimates as well as the financial assurance mechanism that we propose.

And then the other component that is important is that the planning and permitting agencies, as someone buys a property, if they want to, you know, dig a swimming pool or, you know, do some other work -- actually digging a swimming pool is not a really good example unless it's in a commercial area where they wouldn't be allowed to dig.

But all of the requirements associated with the land use covenants would, they run with the deed. So anytime someone wants to do work on a certain parcel and they need a permit to do that, those requirements would come up in the planning process and the county or city

people that would be reviewing them.

CO-CHAIR HAYES: I just have to -- I have some notes I've been making for other questions, but at this point this is one that has always stuck in my craw because I don't know what your magic is here, but I know that there was a lot of resistance to a very simple form format that would have made this information broadly accessible to the public through a Web portal to staff. I want to know how staff, how this is triggered right now with staff at permitting. How does staff know that these parcels, as they come up, that they need to go and circle around and make sure that it, that the plan conforms with the LUC?

MS. ROEBUCK: I will say that as far as I know, and that is something that would happen with the city, and at the time that we began to talk about that, probably 2005 or six, the city did commission Tetra Tech to come up with a description of a database program that they could use internally to track the land use covenants and how those requirements would be associated with a given parcel. I am not sure how -- what happened with that honestly.

And to date it has not come up because the only parcels that we have sold have either been residential with no land use covenants or were sold early on in the

process before things got as formal as they are now. Or in the case of Touro where there are a couple of land use covenants, that is also -- and I think that it comes up in a future slide -- but we as the property owner at property sale or lease have an obligation to make those requirements known to the purchaser or the lessee. So we let them know.

And the city, in their permitting process, you know, whenever you ask for a permit, all of the requirements associated with that parcel are reviewed by the planner. I mean that's been my experience when, for example, I built a house with my husband. When we wanted to do that, every easement associated with that parcel came up. And anything that was of concern had to be explained.

And I expect the same thing will happen with the planners at the city of Vallejo, but I -- I would ask you to ask them specifically because it's not something that LMI controls.

The next slide just shows the locations of the recorded LUC's. And I just wanted you to see sort of spatially where they are. And they are limited to the investigation areas, not including Investigation Area C-1 and C-2 that don't yet have any of those land use covenants recorded. The other investigation areas, with

the exception of the residential areas, have some LUC's.

One type is, you know, the sensitive use restriction in a commercial area would cover an entire investigation area that just says basically it's a commercial area, you can't have schools, hospitals, residences, daycare centers.

CO-CHAIR HAYES: How is that handled -- DTSC, this question would be for you -- when commercial operation proposes a daycare center in its own program, in its own facility? You must have that come up a lot. I can't believe that that hasn't even been envisioned here.

MS. NAITO: It has come up, but very infrequently. Most businesses do not have an on-site daycare center. When it does come up we evaluate the situation on a case-by-case basis as is required by the land use covenant. They have to show that the use is safe; if it is safe, we agree to the variance.

CO-CHAIR HAYES: Okay.

MS. ROEBUCK: Annual inspections for the land use covenants that have been recorded began in 2007. The first land use covenants were recorded for investigation area D1.2 in 2006. That area has had one five-year review which occurred in 2011. The next one will occur in 2016.

And as I mentioned, we have twenty recorded LUC's on property that LMI owns on Mare Island.

Now, the next few slides just show a couple of areas where we've just had the annual inspection done, the report hasn't even gone to DTSC yet. But with each one there is a standard form that we fill out that describes the restrictions. And our inspector goes to each of site and makes sure that all of those requirements are evaluated. And part of that is taking some photographs so you can see. And so I just was going to go through those.

This is building 605. It has a land use covenant that includes encapsulation of the floor in two areas. One was a former telephone switching room and the other was a heating and ventilating room that had a transformer. And both of those rooms have been encapsulated with epoxy paint and have required signage, as you can see here.

The other one, as I've mentioned, was the crane test area. That area has a three foot thick soil cap to prevent exposure to the materials below it. And this is an example where when we began this process we had thought all of that contaminated material below could be excavated and removed, but what we found is it was much more extensive than was originally thought at the time

the property was transferred, and it would have cost, you know, several tens of millions of dollars to remove it. And so not all of it could be removed, it just wasn't financially feasible to do that. So this cap has been placed on the property. And the future use of this area, per the specific plan, was for a commercial property likely with a, you know, an office building or an industrial building of some kind.

And a couple of things that we look for are, as I mentioned a couple of times in response to rain events or seismic events, erosion issues. And all these two photographs show is there's a mat that is put down to reduce the potential for erosion on the edges of the cap. And you can see that the vegetation is growing pretty healthy there. We seeded that area after the cap was put in place to promote that growth and to reduce the potential for erosion.

As I mentioned, anytime a property is transferred the new owner has to be informed of all of the LUC-related obligations and operation and maintenance. They have to accept those. They have to, you know, physically sign documentation that say that, that says that they are taking over those obligations. And they have to, in the case of engineering controls, work with DTSC to make sure that the financial assurance

requirements are met.

So what have we learned? We -- when we began this process with the early transfer, as I said, it was sort of on the honor system, and we didn't expect that we would have significant expense and time associated with establishing land use covenants. And they are, therefore, more extensive and time intensive than we had planned.

But what we've also found is that because we found efficient ways to monitor the land use covenants that are put in place, that that -- those costs can be minimized compared to what we had expected. So if we use established protocols and forms and experienced inspectors, that ends up being less intense than we had expected.

We've also found when we've transferred property that once we explain to the purchaser, and especially commercial properties that we've transferred to date have been with people that understood and were willing to accept those land use covenant-related obligations.

And as a result, we think that in the commercial areas they seem to be working pretty well. By and large we're talking about sensitive use restrictions where there are more significant

requirements like caps, for example, that people that are using those properties have to be informed and we have to monitor their work, at least annually if not more. So -- but it seems to be working given that we do those things.

CO-CHAIR HAYES: That was for leases?

MS. ROEBUCK: Both leases and purchases.

CO-CHAIR HAYES: So you continue to oversight purchased properties?

MS. ROEBUCK: No, we don't. If I implied that, I misspoke.

CO-CHAIR HAYES: All right.

MS. ROEBUCK: Draft land use covenants; it takes time to prepare them, and sometimes if it takes a long time to get through the process of having them recorded, things change. Templates from the DTSC can change, you know. For example, the parcel number changed on the Eastern Early Transfer Parcel, so all of the legal descriptions had to change in response to that. So things change, but the drafts are really important because it's the time where all the obligations get written down and everybody has to agree. And so they're very important to do early on. So it's a little bit of a push pull whether you want to do it early and potentially take the risk of things changing

or wait. And for us, we have chosen to try to do them early.

And as I mentioned earlier, we think that if we are efficient we can decrease our costs in overseeing the land use covenants.

The financial assurance that we provide has been a very big challenge for us. And we have not yet transferred a piece of property where that's been required of a new owner, so we don't have experience to share with you on that.

But for us, one of the challenges was trying to establish something that would work for all of the land use covenants that we thought we'd have to provide financial assurance for. So it took us a while but we've done that now, and so we think we'll be more efficient going forward. So --

CO-CHAIR HAYES: Would this financial assurance that you're providing in an overall package be -- and maybe DTSC has to answer this question since you haven't had this case come up yet. But it sounds like it's a pretty challenging package to put together. I mean, is this something where an individual buyer finds it pretty straightforward to come up with a financial assurance that meets DTSC's requirements for an individual parcel or multiple parcels? Or is this a deal stopper? And

does the city of Vallejo, for example, need to somehow help with the -- or the current landowner, as the master developer, help more robustly develop an incentive program or something?

MS. NAITO: Those are certainly options. DTSC's financial assurance requirements have been out there. We have many people who have managed to meet those financial assurance requirements. There are waivers for local governments and for some small businesses as well.

CO-CHAIR HAYES: Then who takes that burden, that responsibility in those waiver programs? Who --

MS. NAITO: That just means that we're waiving --

CO-CHAIR HAYES: The fees?

MS. NAITO: No, we're waiving the requirement for somebody to set aside the money today. That doesn't mean they get a waiver -- that doesn't mean they don't have to do the work or fund the work, you know, as it comes up, it just means that they don't have to set aside thirty years of financial assurance up-front.

MS. ROEBUCK: And what we also find is that the monitoring of sensitive use controls through annual inspections saying, yeah, really, there isn't a hospital here or, you know, we haven't built a home, no one's

living here; the costs to do that, especially with these forms that we've established, are pretty low.

And so the bigger costs come in where there's an engineering control and you have to ask yourself, okay, you know, every two years, every fifteen years are we going to have to do some significant maintenance?

And so I think for the vast majority of the land use covenants that we will have, the costs will be relatively low. It's for those engineering controls. And a big example would be building 680 which has a big concrete floor, it's a huge building. So that would be something where there would be significant costs and a much bigger financial assurance package.

CO-CHAIR HAYES: And to the extent that you were only the RP for a time, the responsible party for a time, and the responsible party ultimately is, reverts back to the Navy, then how do you put together those financial assurances over those long-term projects like an engineering control -- covenant -- control for a covenant?

MS. ROEBUCK: Can you ask that again? I'm not exactly sure I understand your question.

CO-CHAIR HAYES: Well, it's my understanding that Lennar Mare Island slash the city of Vallejo are responsible parties for the environmental cleanup in the

Eastern Early Transfer Parcel for a period of time or for a cost. And that you've already renegotiated, apparently, or negotiated additional costs added that cleanup site.

So when you're envisioning, as you just said, these possibly more expensive maintenance costs, are those yours or are they the Navy's --

MS. ROEBUCK: We expect --

CO-CHAIR HAYES: -- if it's twenty years from now?

MS. ROEBUCK: For Lennar Mare Island, when we transfer property we have every expectation that the purchaser will take on the obligations. So they will take over the obligations for maintenance and the obligations for financial assurance. If they can't do that, they can't buy the property. They could lease it, but they couldn't buy it. Because for us, part of the sale is to transfer those requirements.

The Navy remains responsible for the remedies if no one else is around to comply with the obligations. But that I -- and the Navy can speak to this better than I can -- but my understanding is that's why they've tracked them too because they want to be comfortable that they are appropriate for the areas where they're being applied, and that the regular monitoring shows

that they're continuing to be effective.

CO-CHAIR HAYES: Well, you know, I mean maybe you've already talked about this in all your quiet meetings together, but I've never had this topic brought up that I'm aware of publicly, and I think that this is somewhat of a time bomb, I mean a ticking something or other because if people at city hall and Congress and at DOD, wherever else it is that you have these conversations, the Restoration Advisory Board, aren't talking about how you would approach that, and you're just simply going to talk the -- a new landowner into, "Here's a great deal you can't pass it up, and here's something you gotta do forever, and if you renege on it, well, then maybe you shouldn't buy it, maybe there's somebody better." This doesn't sound like a very scientific business, it sounds a lot like capitalism to me. And it doesn't sound like accountability that we expect our governments to have and to assure us of.

So I'm just saying, as they say now, I'm just saying that maybe this conversation ought to be being had in Erin's department -- and maybe it is, but it's the first time that I recall that it's ever been put on the table here at the Restoration Advisory Board.

So I'm not, I'm not being disrespectful I hope, I hope that you see that while I tend to think that

these retrospective presentations are a little bit wearisome because I think that there's such an urgency for the RAB members to have a voice in the future cleanup, and we've had these conversations on the phone, this particular topic has suddenly caught my interest, because I would hate to think that people were being discouraged to buy land, or that you were continuing to sit on land as a master developer, which isn't very good business practice, I don't think, because of some type of a long-term blossoming burgeoning potential cost that, and/or that they would be duped into buying a parcel that they didn't have any legal remedy to come back to the governments and the original responsible party for.

MS. ROEBUCK: Well, I guess I want to leave you with the impression that I have that this is actually working pretty well. Transferring property that is going to have significant financial assurance costs -- for example, something like building 680 -- this is not going to be a mom and pop operation, this is going to be a sophisticated big company with the infrastructure to handle this and the financial ability to do it. If they don't, they shouldn't have that property.

And if there's a smaller company that wants, you know, a smaller building, like a building 605 that

has an epoxy coating, that's a much less expensive proposition, and the monitoring itself is not a huge expensive problem.

So I think that it actually is working pretty well. And clearly as we go forward we will learn more. But I -- I wanted to talk to you about this because it is a component of the remedies, and we were concerned about it at the beginning, and we don't want to have land use covenants even today where they're not needed, because it is an encumbrance.

But when they exist and are properly managed, and notifications are made, and the property transfer agreements are executed appropriately, including the disclosures and the financial assurance, then it can really work. So it's a necessary and not, you know, not something any of us would want if we didn't have to have it, but given that we have to have it, I think it can work and I think it is working.

CO-CHAIR LEAR: Have you seen any problems? Have you encountered any problems transferring the property in these situations?

MS. ROEBUCK: We haven't. It certainly generates discussion at the time of property transfer. In monitoring we have found that there have been engineering controls that have had to be fixed.

For example, in building 605 someone painted the floor another color, and they painted it a color that was similar to the color that was supposed to be underneath. And so we had to come back and paint it again so that we had that dual color protection.

But those things have happened, we have noticed them, and we have responded to them, and so I think that's a good thing.

CO-CHAIR HAYES: But that's just -- that's a lease, that's a leased property?

MS. ROEBUCK: It's not even used yet, it's vacant right now. But LMI is using it. There is --

CO-CHAIR HAYES: You said there wasn't any large purchases yet. And I guess I still -- I resent the idea that having sat here for 21 years, and having the U.S. Navy on the hook, what our understanding is for, in perpetuity for environmental cleanup issues; that you would now sit here and say well, if a company doesn't have deep enough pockets and isn't, you know a corporate giant enough to take on a piece of property and take on the risk and the financial risk, then they have no business being at the table. That's BS in my opinion.

MS. ROEBUCK: But Myrna --

CO-CHAIR HAYES: I think the agency that made

the mess -- that's the way the law reads as far as I know. And if you want to show me something different that's based on a new form of capitalism that the rich companies can take the properties because they can afford the risk, the liability, the financial, then there's something going on here.

I mean, yeah, Google could pick up every building at Moffett Field because Google is Google and they don't even have to tell the communities that this property is in what they're going to do with the property because they got a 99 year lease agreement with the federal government in a quiet deal. But it's unlikely, I guess, I think that Google is going to come here and play.

And so I still think that that puts our community at an economic disadvantage if we have to depend on courting someone who can, in perpetuity, or who is considered by whoever they're negotiating with as the landowner a suitable, you know, deep pocket enough organization.

And I'm not singling LMI out. I'm looking at my regulators, I'm looking at my master developer/owner agency, I'm looking at the Navy, the original responsible party.

And if this topic is -- is not -- that we can't

finish this topic up tonight, then I want to agendaize it and I want to see, you know, what real other issues are going on in other parts of the country and other parts of the Bay Area with this agency, throughout the state, what is actually happening? Because this is sort of a radical idea that you would have the responsibility long-term passed on, at least it is to me.

MS. ROEBUCK: Myrna, the long-term responsibility in the final analysis remains with the Navy, absolutely.

But what we are trying to have in place is a system that it doesn't have to revert to the Navy because it's properly managed and maintained by the property user.

And so, for example, a building like 680, it's now leased by Blue Homes, they build their product there. And they pay an expensive lease. It's a five acre building, you couldn't lease that as a small company. So the fact that they're big doesn't make them evil, I mean they provide jobs for people in the community --

CO-CHAIR HAYES: I didn't imply that they were evil, okay, that is not fair to say. This is on the record, and I want to be clear, I didn't say big companies are evil, and I don't use that word or imply

that.

MS. ROEBUCK: Well, I apologize.

CO-CHAIR HAYES: I implied -- I specifically meant to say that I don't believe Blue Homes is a big company, by the way; they aren't, as far as I know, in terms of whatever big means.

I'm talking about why should a business have to come to Vallejo, and have to come to Mare Island with yet another additional burden to try to make us competitive when it really isn't their responsibility? It wasn't.

And if you took it on, LMI, city of Vallejo, as the Eastern Early Transfer Parcel, and you thought, your plan was all along that by doing that you would be able to pass the buck onto your end user, I am not happy about that. Because we supported the Eastern Early Transfer Parcel because DTSC lobbied us heavily to say that it was gonna be good, it was gonna be good for cleanup, and it was gonna work for this community. I'm just saying.

MS. ROEBUCK: Yeah, the fact that it was early transferred isn't why the land use covenants are in place. I mean, clearly institutional controls are being used on property that the Navy intends to close. So it's a necessary component of some site closures.

CO-CHAIR HAYES: Please don't patronize me.

MS. ROEBUCK: I don't mean to.

CO-CHAIR HAYES: I think I know what land use covenants are for by now.

MS. ROEBUCK: But I don't think that we're trying to pass the buck, I think that we're using land use covenants where we have to.

Yes, Paula.

MS. TYGIELSKI: Okay. I'm going to bring up history from a lot of years ago now. How did the land use control with Touro fall apart? And it fell apart quickly.

MS. ROEBUCK: I don't know exactly what you're saying "fell apart." I don't --

MS. TYGIELSKI: Touro wanted to use some of the buildings on Mare Island as student housing. And they were said, yeah, that would work as student, and they were given a land use control. Student housing but nobody under eighteen.

CO-CHAIR HAYES: No babies. No babies.

MS. TYGIELSKI: And they ended up with married student housing and lots of very small children.

MS. ROEBUCK: Initially with Touro, that educational civic use, there was a misunderstanding in the agreements about whether that was going to be a

commercial cleanup or an unrestricted cleanup.

We worked through that, and that area is unrestricted. So if they wanted to have homes there, they could, there's no restriction against that.

There are some land use covenants on Touro. For example, there's a transformer room that's locked that people can't go into unless they're doing maintenance.

But as to the vast majority of the acreage owned by Touro, that's unrestricted use. If they wanted to have homes there, they could.

CO-CHAIR HAYES: Paula's not talking about the Touro property, she's talking about land -- homes --

MS. TYGIELSKI: Other housing that is nearby.

CO-CHAIR HAYES: Other housing that was nearby on another part of the island.

MS. TYGIELSKI: There was other housing nearby, and they asked if they could use it for student housing and they were told yes, but here's a use control.

MS. ROEBUCK: And I'm not familiar with that, I don't have the history.

MR. GEMAR: I think Paula is referring to the quarters there on Azuar. I forget -- Larry, what are those --

MS. ROEBUCK: The Q quarters? Oh, those are

unrestricted. There are people that are leasing those now.

CO-CHAIR HAYES: No, sorry, we can go on all night, paula's got a point, and it happened, and we can call Chip Gribble on the phone if you want, but it happened. It was --

MS. TYGIELSKI: They were told student housing is okay but no student under the age of 18.

CO-CHAIR LEAR: What Paula's saying is it fell apart.

MS. TYGIELSKI: Instead it became married student housing, and the married students had lots of little kids, even babies.

MS. ROEBUCK: And that's not -- that's not how that's closed today. I'm not sure what happened there. I don't dispute what you're saying. I'm just saying today when we close an area that allows residential there are no restrictions.

MS. NAITO: Hey, Paula, that's also probably why we now require annual reports.

MS. ROEBUCK: So that concludes my presentation. Does anyone else have any questions?

CO-CHAIR LEAR: Okay. So we have a public comment period if there's any other comments? No?

(NO RESPONSE.)

CO-CHAIR LEAR: Okay. So it sounds like we want to continue this discussion at a -- at a later RAB meeting. All right.

So we'll take a ten minute break or less cause we're running late.

MS. TYGIELSKI: It's already 9:12.

MS. NAITO: Why don't we just grab a snack and come back.

CO-CHAIR LEAR: Okay. Run, grab a snack.

MS. WOCHNICK: And come back.

CO-CHAIR LEAR: And come back.

(Thereupon there was discussion off the record.)

CO-CHAIR LEAR: So while everyone is getting their snacks, I just wanted to remind everyone on the meeting minutes, if you have any comments or changes, please get those to myself or Myrna. And that just took five minutes off the rest of our agenda, so yay.

I also just wanted to go through, we're going to do focus group reports next, but we do not have a community group report or a natural resources group report. So when we get back to the table we'll start with technical.

Do you have anything to say?

MS. TYGIELSKI: No.

CO-CHAIR LEAR: So Paula has indicated there will be no technical report tonight either. So when we start back up we will be at the city report.

(Thereupon there was a brief recess.)

CO-CHAIR LEAR: All right. So we are actually at the city report. Erin, if you have anything you wanted to share with the RAB?

MS. HANFORD: I'm here to take questions. I don't really have any updates from the north Mare Island situation. I know the city's just working out which direction we want to go in with which developer. So as soon as I -- you'll probably know before me even. But if anyone has any questions, please --

MR. RASMUSSEN: Is there something you can share with us about the causeway? I heard there's something going on with the causeway.

MS. HANFORD: There's -- you know, and I printed it out and I left it on the printer. But if you want me to bring it to the next meeting, or I can give you my card and I'll email it to you.

But there is a causeway project going on, they're just working on this side of the bridge doing some repairs. And I don't want to misspeak on the deadlines in terms of how long the project is, but it's definitely happening very soon. It's not going to be a

terribly long project, but if anybody wants it I can e-mail that information.

CO-CHAIR LEAR: It's in proposal phase right now; isn't that correct?

MS. HANFORD: I might be confusing it with the, there's also the painting of the bridge and there's that project. So again, I think the best thing would be for me to just --

MR. RASMUSSEN: There's a contract let, and what I think I heard was that it was, and I don't remember if they even said exactly when, but the construction will actually begin early this summer --

MS. HANFORD: Yeah, I'm almost sure you're correct on that.

MR. RASMUSSEN: -- for the causeway.

CO-CHAIR HAYES: I think probably the biggest issue that could even, I guess, impact our environmental cleanup fieldwork would be, I know that I haven't learned whether you're going to be closing the causeway for that work or one lane-ing it; that was the two choices that I recall, so I --

MS. HANFORD: I don't know that but I can find that out.

MR. RASMUSSEN: The last thing I remember about it at the presentations was that it was going to be

necessary to close it entirely for some period of time when they were driving piles.

MS. HANFORD: Which would make the most sense, but --

MR. RASMUSSEN: Other than that they might be able to --

CO-CHAIR LEAR: I did speak to some engineering company about whether they need to assume geotechnical work in the sediment that is owned by the Navy. So there is some discussion with them. So they will, if they're driving piles or if they're driving piles and doing any work in the Navy property, they need to come to the Navy for a license to do so.

MS. HANFORD: Okay.

CO-CHAIR LEAR: So I didn't -- it was a geotechnical firm, they were just going to do borings to get that kind of information, the technical information.

MS. HANFORD: Are you sure that wasn't having to do with the line --

CO-CHAIR LEAR: Oh, you're right, yeah, yeah, it was.

MS. HANFORD: That was the project entirely, and that is in the RFP stage.

CO-CHAIR LEAR: Okay. Yeah, that's right.

MS. HANFORD: That's not the causeway project.

CO-CHAIR LEAR: But any -- as long as they're outside the Navy property, but if they're on Navy property they have to come through the Navy.

MS. HANFORD: That's the flood, the other district --

CO-CHAIR HAYES: Sanitation and Flood Control District.

MS. HANFORD: Right.

CO-CHAIR LEAR: Okay. So Lennar update then.

MS. ROEBUCK: Well, I think that most of the -- most of the people here are used to seeing this, and Neal normally goes through it. I guess the things that I would -- the main thing I'd point out is that there is going to be some upcoming fieldwork, most of that I think is going to begin in May. So there will be some fieldwork and, then in the summer. All of that is in investigation areas C-1 and C-2, and those are also investigation areas where we're trying to complete the remedial action plan documentation so that we can move that to closure.

The investigation areas that are shown in green, B.2-2 and H-2 we hope are going to get to closure this year, so we're working on those documents.

CO-CHAIR LEAR: Okay. Weston update.

MR. GEMAR: I have a very short update which is a good thing because now you can clearly see IR-05, and pretty soon you'll be able to see Dredge Pond 7, so that's my plan.

But we talked about the Proposed Plan draft remedial action plan obviously tonight. And as soon as the public comment period is over we'll be working with the Navy on the response to comments, and then the remedial, or the Record of Decision and Final Remedial Action Plan.

And then a couple other things that are circling. I'm not sure if the annual report for the WETP was actually, we got an okay on that or -- or if we will be getting an okay on that? I guess, I don't know, I kind of lost track of that one.

MS. NAITO: You'll be getting an okay.

MR. GEMAR: But anyway, it's at DTSC for review. And then also the area H-1 annual remedy status report was submitted on March 1st for review.

Other than that, you know, obviously we continue to watch the grass grow and collect a little bit of groundwater and leachate. And completed our semiannual sampling, groundwater sampling event in March. So we'll be good to go until the probably

September time frame, and then we'll go out there and do another sampling round.

That's it.

CO-CHAIR LEAR: Very good. Regulatory update.

MS. WELLS: Well, once again Dwight provides a nice segueway into the regulatory update, thank you, Dwight.

I wanted to say something about an order that starts, the Water Board in 1987 and the seventies and other parts of the eighties went sort of hog wild in writing orders to the Navy asking them to do things, and so we --

CO-CHAIR HAYES: Well intended.

MS. WELLS: So we've been successful in rescinding some of those orders because the Navy completed the work that was done or things have been superseded, sites or other orders have superseded them or that kind of thing.

But there's this one order from 1987 that we've been working on for a while, and it covers eighteen sites out at Mare Island, including the H-1 landfill. And it requires everything from writing reports to destroying wells to probably what kind of clothing you're supposed to wear when you're doing the inspections.

So what we're doing is we're actually working on rescinding that order, and it's in the review phase, internal review phase. And the basis for the rescission is that we have other documents -- well, first of all, the majority of the sites were closed. And for the sites that are open, we have other documents under which the Navy or Lennar are required to do the environmental cleanup.

So, for instance, the Federal Facility Site Remediation Agreement that Heather mentioned, and then there's a consent agreement between the agency and DTSC, the Department of Toxic Substances Control, and Lennar. And then we have an order from 2002.

So we have this order that's been sitting around for a really long time that is not applicable anymore. And the reason it's important to all of you is that there's going to be a thirty day public comment period. So what we will do is we will mail it out to the RAB members, e-mail it, or we can hard mail it if you'd like that instead, and you'll have thirty days to review it and comment on it, and then it will go before our Board. We'll respond to any comments that we get, and then it will go before our Board, hopefully uncontested.

That's all I have. Any questions?

MS. NAITO: Okay. For the Department of Toxic Substances Control, as I reported out last month, or last RAB meeting, Restoration Advisory Board meeting, I took a promotion so now that -- I'm the branch chief in the Berkeley Cleanup Operations Branch, which is why I've brought Patrick and Allan here today to introduce to sort of see how the Restoration Advisory Board works and to also introduce you all to them.

Patrick Hsieh will be taking over as project manager for the Mare Island Naval Shipyard portion of Mare Island.

And Allan Fone will be taking over the Lennar Mare Island portion.

I'm sorry, Patrick also has the Western Early Transfer Parcel.

So these are going to be the new faces you're going to be seeing at the Restoration Advisory Board; please make them welcome, don't scare them. And in most cases you will only see one or the other, there may be a few times when it's appropriate for both of them to attend.

That's all the news I have.

CO-CHAIR HAYES: Well, we'll miss you, but congratulations.

MS. NAITO: Thank you.

MS. WOCHNICK: We'll miss your snacks.

MS. NAITO: Yeah, you're just going to miss our snacks.

CO-CHAIR HAYES: And welcome, gentlemen.

CO-CHAIR LEAR: So we're at Co-Chairs' report. Do you want to go first?

CO-CHAIR HAYES: You can go first.

CO-CHAIR LEAR: Okay. So we have our Navy monthly progress report, you can pick it up at the table.

We did not have any fieldwork in March, but there were a few documents that we sent out.

There was a field investigation completion report for solid waste management unit 78.

We sent out a non-time critical removal action report for Building 742, former degreasing plant.

And then the Proposed Plan Remedial Action Plan for site seventeen also went out to regulatory review.

And, let's see. We did receive comments from the agencies on two documents.

And no further action from the Water Board on petroleum fuel releases at the Defense Reutilization Marketing Office.

And that's all I have to report. So Myrna, it's over to you.

CO-CHAIR HAYES: I just want to let the public know that the preserve, the Mare Island Shoreline Heritage Preserve beginning tomorrow morning at 10:00 o'clock will be open daily, daily for the next two weeks through Sunday April 11. That's for the, following the Vallejo spring break which is two weeks. So we're normally just open Friday, Saturday, Sunday, so that's a big ramp-up, but I've committed to it for the last few years.

April 11 is our next, that Saturday, April 11 is our next historic south shore hike with a Navy escort under Navy agreement with the Mare Island Heritage Trust at 10:00 a.m., leaving from the visitors center and returning by noon. And you'll have an opportunity to see osprey on their nests and great blue heron, and for the first time ever recorded on Mare Island, a great egret on its nest. Pretty cool.

And April 11, that Saturday also marks the seventh year of our opening the preserve to regular public access, so we have a weekend of activities planned to celebrate that. It will actually be the eighth year this year of public access to the preserve beginning in February and August of 2007 with 150th at the ammunition depot celebrations.

April 14 again marks the 21st year of the --

since the establishment of the first meeting of the Mare Island Naval Shipyard Restoration Advisory Board. And that would be Paula and I have served that entire time, and I have served as the co-chair since May of that year.

And San Francisco Bay Osprey Days is coming up June 26th through 28th, our third annual event headquartered at the Mare Island Shoreline Heritage Preserve. And will again be in cooperation with the Golden Gate Raptor Observatory, Golden Gate Audubon Society, U.S. Navy, and the Napa-Solano Audubon Society. So look forward to that, three days of osprey. You'll be getting sick of osprey and fish tacos.

So again, thank you to everyone who helped make the San Francisco Bay Flyway Festival such a great event this year again.

CO-CHAIR LEAR: All right. So we are wrapped up for the evening. Thanks, everyone, for coming, and drive safe.

We'll see you May 28th.

(Thereupon the proceedings ended at 9:34 p.m.)

CERTIFICATE OF CERTIFIED SHORTHAND REPORTER

I, DORIS M. BAILEY, a Certified Shorthand Reporter and Registered Professional Reporter, in and for the State of California, do hereby certify that I am a disinterested person herein; that I reported the foregoing proceedings in shorthand writing; and thereafter caused my shorthand writing to be transcribed by computer.

I further certify that I am not of counsel or attorney for any of the parties to said proceedings, nor in any way interested in the outcome of said proceedings.

IN WITNESS WHEREOF, I have hereunto subscribed my name as a Certified Shorthand Reporter and Registered Professional Reporter in Solano County on the 2nd day of April, 2015.

DORIS M. BAILEY, CSR, RPR, CRR
Certified Shorthand Reporter
License Number 8751

**ATTACHMENT 5
RESPONSES TO THE REGULATORY AGENCY
COMMENTS ON THE DRAFT ROD/RAP**

Response to Regulatory Agency Comments
Draft Final Record of Decision/Final Remedial Action Plan
Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area
Former Mare Island Naval Shipyard, Vallejo, California
dated December 2015

Comment No.	Comment Location	Comment	Response
	Reference		
<i>Comments from Elizabeth Wells, P.E., San Francisco Bay Regional Water Quality Control Board, dated November 6, 2015</i>			
1	Section 1.1	a. Revise item 1 of the restrictions to read, “Ground disturbance of existing soils, including drilling of wells, will be prohibited, unless authorized in writing by the DTSC...”	a. The BRAC Cleanup Team (BCT) has agreed to address unauthorized use of groundwater by including a restriction in appropriate real property transfer documents that will prohibit groundwater production well installation. Since this deed restriction does not address a remedial action objective (RAO), Record of Decision (ROD) sections that describe the selected remedy will remain unchanged. Instead the following agreed-upon language has been added to Sections 2.2.2 and 2.8.2.3 of the ROD/RAP: “In addition, while not addressing a remedial action objective (RAO), the DON will include a restriction in appropriate real property transfer documents that will prohibit the installation of groundwater production wells for any purpose.”

Comment No.	Comment Location	Comment	Response
	Reference		
1 (continued)	Section 1.1 (3 rd paragraph)	b. Delete the sentence that reads “The FS also included an RAO to prevent unauthorized groundwater use; however, there are no beneficial uses of groundwater” This is an incorrect statement. Beneficial uses of groundwater are designated in the Basin Plan. The only way to de-designate a beneficial use is for the Regional Water Board to adopt a Basin Plan amendment, which it has not done. The concurrence letter in which the Regional Water Board concurs that the shallow groundwater beneath the site is high in total dissolved solids (TDS) and not likely to be used as a source of drinking water is not a Basin Plan amendment and does not have the effect of removing the beneficial uses of groundwater. While it is unlikely that a person would choose to drink the water because it is salty, it is not clear that the water could not be used for irrigation or that a utility worker could not come into contact with contaminated shallow groundwater. A deed restriction is necessary to protect against these kinds of contacts with chemicals of concern present at concentrations greater than the maximum contaminant levels (MCLs).	b. The last sentence in the third paragraph has been deleted as requested.
	Section 1.1 (7 th paragraph)	c. Add “and groundwater” after “...to ensure the selected remedy for soil.” Add “and COCs in groundwater” after “...exposure to buried MEC”.	c. Please refer to response to comment 1a. The referenced text has not been revised.

Comment No.	Comment Location	Comment	Response
	Reference		
2	Table 2	<p>a. For the 2002 “Draft RI Report,” add the list of chemicals of concern for soil and sediment that exceeded the screening levels.</p> <p>b. For the 2014 “FS,” revise the text as follows: “The RAO for groundwater was to prevent any unauthorized use; a deed restriction will ensure no contact with COCs remaining in groundwater. To meet the soil/sediment RAO...” and delete “however, once the water Board concurred with the DON’s request for an exception to drinking water policy for ...there was no longer a need for a groundwater RAO in the Proposed Plan/Draft RAP.”</p>	<p>a. The ‘Investigation and Removal Action Activities’ column for the Draft RI Report has been revised to include the following: “At IR05, the human health risk drivers included arsenic in soil; and 1,2-dichloroethene, trichloroethene, and vinyl chloride in groundwater. The ecological risk drivers at IR05 included lead and zinc. At the WMA, the human health risk driver was arsenic in surface water. There were no ecological risk drivers at the WMA.</p> <p>The IR05, DP7S, and WMA sites RI Report⁽⁴³⁾ was finalized in 2013, following several removal actions to address soil contamination identified in the IR05 and WMA areas. These removal actions are presented in the following rows.”</p> <p>b. The fifth sentence in the “Investigation and Removal Action Activities’ column for the FS has been revised to read as follows: “The RAO for groundwater was to prevent any unauthorized use. In lieu of a remedial action, a restriction to prohibit the installation of groundwater wells for any purpose will be included in appropriate real property transfer documents.”</p> <p>As noted in response to comment 1a the BCT has agreed that the DON will include a restriction in appropriate real property transfer documents that will prohibit the installation of groundwater production wells for any purpose.</p>
3	Section 2.2.2	<p>a. Revise the section heading to either “Shallow Groundwater Use” or “Exception to Sources of Drinking Water Policy.”</p>	<p>a. The header of Section 2.2.2 has been revised to “Exception to Sources of Drinking Water Policy.”</p>

Comment No.	Comment Location	Comment	Response
	Reference		
3 (continued)	Section 2.2.2	b. Revise the text to read: “State Water Resources Control Board Resolution 88-63 (Sources of Drinking Water Policy) establishes that, with a few exceptions, all groundwater is considered suitable or potentially suitable for municipal or domestic supply. In 2011, the Water Board concurred with the DON’s conclusion that the shallow groundwater beneath the IR05, DP7S and WMA sites, at a depth of 40 feet bgs, meets an exception to the Sources of Drinking Water Policy. Based upon this concurrence letter, the DON was not required to clean up COCs in shallow groundwater to levels below maximum contaminant levels, but ICs will be imposed to prevent any risks associated with potential contact with contaminated groundwater.”	b. Section 2.2.2 has been revised to read as follows: “State Water Resources Control Board Resolution 88-63 (Sources of Drinking Water Policy) establishes that, with a few exceptions, all groundwater is considered suitable or potentially suitable for municipal or domestic supply. In 2011, the Regional Water Board ⁽⁴⁸⁾ concurred with the DON’s conclusion that the shallow groundwater (within the shallow water bearing zone [SWBZ] and intermediate water bearing zone [IWBZ]) beneath the IR05, DP7S and WMA sites, at a depth of approximately 1 to 40 feet bgs, meets an exception to the Sources of Drinking Water Policy. Based on this concurrence letter, the DON is not required to clean up COCs in shallow groundwater to levels below maximum contaminant levels. In addition, while not addressing an RAO, the DON will include a restriction in appropriate real property transfer documents that will prohibit the installation of groundwater production wells for any purpose.”

Comment No.	Comment Location	Comment	Response
	Reference		
4	Section 2.4	Delete the text that reads “Because of high TDS, shallow and intermediate groundwater beneath the sites does not meet the state of California’s minimum water quality criteria for a domestic or municipal freshwater supply. On this basis, in 2011 the Water Board granted concurred [sic] with the DON’s request for an exception to drinking water policy for municipal and domestic supply for the shallow and intermediate water bearing zones groundwater at the IR05, DP7S, and WMA sites under State Water Resources Control Board Resolution 88-63.” This text can be replaced with the text included in Comment 3b, above, if desired.	The last two sentences in Section 2.4 have been revised to read as follows: “State Water Resources Control Board Resolution 88-63 (Sources of Drinking Water Policy) establishes that, with a few exceptions, all groundwater is considered suitable or potentially suitable for municipal or domestic supply. In 2011, the Regional Water Board ⁽⁴⁸⁾ concurred with the DON’s conclusion that the shallow groundwater (within the SWBZ and IWBZ) beneath the IR05, DP7S and WMA sites, at a depth of approximately 1 to 40 feet bgs, meets an exception to the Sources of Drinking Water Policy. Based on this concurrence letter, the DON was not required to cleanup COCs in the shallow groundwater to concentrations below the maximum contaminant levels. In addition, while not addressing an RAO, the DON will address concerns with unauthorized use of groundwater by including a restriction in appropriate real property transfer documents that will prohibit the installation of groundwater production wells for any purpose.”
5	Section 2.5.1	Revise the penultimate sentence of the text to read “Based on these facts, the Water Board concurrence letter, and the IC prohibiting ground disturbance or well drilling, VOCs and manganese are no longer considered risk drivers for groundwater.”	The penultimate sentence in Section 2.5.1 has been revised to read as follows: “Based on these facts, VOCs and manganese are no longer considered risk drivers in groundwater.”
6	Section 2.6	<ul style="list-style-type: none"> a. Delete the first three sentences and replace them with the text included in Comment 3b, above. b. In the penultimate sentence, delete “Regardless” and change the text to read, “No use of groundwater is anticipated...” c. Add a sentence at the end of the paragraph that reads “Institutional controls prohibiting land disturbance or drilling of wells will protect human health and the environment.” 	<ul style="list-style-type: none"> a. The second paragraph of Section 2.6 has been removed. The information provided is included in Section 2.2.2. b. See response to comment 6a, above. c. See response to comment 6a, above.

Comment No.	Comment Location	Comment	Response
	Reference		
7	Section 2.8.1	<p>a. Revise the text to read “...potential buried MEC or contaminated groundwater.”</p> <p>b. Revise the text to read “Soil/sediment disturbing activities or well drilling without the approval of DTSC...”</p> <p>c. Revise the text to read “...to ensure that the selected remedy for soil and groundwater continues...”</p>	<p>a. As previously stated, the BCT has agreed that although not addressing an RAO, a deed restriction will be added to the appropriate real property transfer documents to prohibit the installation of groundwater production wells as a means to prevent unauthorized use of groundwater. The remedy has not been modified. The referenced text has therefore not been revised.</p> <p>b. Please refer to response to comment 7a, above. The referenced text will not be revised.</p> <p>c. Please refer to response to comment 7a, above. The referenced text will not be revised.</p>
8	Section 2.8.2.3	Revise the sentence to read “...IR05, DP7S, and WMA sites as stated in the PP/Draft RAP, and modified to incorporate ICs eliminating the potential for contact with contaminated groundwater.”	The following text has been added at the end of Section 2.8.2.3: “In addition, while not addressing a RAO, the DON will include a restriction in appropriate real property transfer documents that will prohibit the installation of groundwater production wells for any purpose.”
9	Section 2.9	<p>a. Revise the text to read “The PP/Draft RAP identified Alternative 2 – LUCs, as modified herein, as the preferred alternative...”</p> <p>b. Revise the text to read “LUCs will restrict disturbance of soil and contact with contaminated groundwater by prohibiting excavation, removal, or movement of soil at/from the site, and the drilling of groundwater wells without prior approval of DTSC...”</p>	<p>a. As previously stated, the BCT has agreed that although not addressing an RAO, a deed restriction will be added to the appropriate real property transfer documents to prohibit the installation of groundwater production wells as a means to prevent unauthorized use of groundwater. The remedy has not been modified. The referenced text will not be revised.</p> <p>b. Please refer to response to comment 9a. The text will not be revised.</p>

Comment No.	Comment Location	Comment	Response
	Reference		
9 (continued)	Section 2.9	<p>c. Revise the text to read “ICs remain in place until site conditions are changed or it can be demonstrated to the satisfaction of the DON and the State that potential buried MEC or contaminated groundwater no longer poses an unacceptable risk to human health or safety.”</p> <p>d. Revise the text to read “The IC objectives will be achieved through land use prohibitions and activity restraints to restrict disturbance of soil by preventing excavation, removal or movement of soil, and drilling of groundwater wells at the IR05, DP7S, and WMA sites without prior approval as described in the remedy.”</p>	<p>c. Please refer to response to comment 9a. The text will not be revised.</p> <p>d. Please refer to response to comment 9a. The referenced text will not be revised.</p>
10	Section 2.9.2	Revise the text to read “The selected remedy is intended, through enforcement of LUCs, to protect human health by restricting disturbances to soil or contact with groundwater.”	Please refer to response to comment 9a. The text in this section will not be revised.
11	Section 2.9.3	<p>a. Revise the text to read ...in the areas requiring LUCs that may lead to potential contact with buried MEC or groundwater.”</p> <p>b. Revise the text to read “The selected ICs will provide a permanent solution through monitored control of access to potential buried MEC or contaminated groundwater.”</p> <p>c. Add a statement regarding the state of groundwater contamination at the site (e.g., if the plume or concentrations are stable, decreasing, etc.).</p>	<p>a. Please refer to response to comment 9a. The text in this section will not be revised. .</p> <p>b. Please refer to response to comment 9a. The text in this section will not be revised.</p> <p>c. Please refer to response to comment 9a. The text in this section will not be revised.</p>

Comment No.	Comment Location	Comment	Response
	Reference		
12	Attachment 3 Table 1	Modify the text in the table as indicated in the attachment to the letter from Elizabeth Wells of the San Francisco Bay Regional Water Quality Control Board to Janet Lear of the Department of the Navy with Subject: "Comments on Draft Final Record of Decision/Final Remedial Action Plan, Installation Restoration Site 05, Dredge Pond 7S, and Western Magazine Area, Former Mare Island Naval Shipyard, Solano County." Dated November 6, 2015.	The DON has reviewed the modifications to the table and has provided subsequent modifications in response. The table revisions are included in the attachment to the Response to the Regulatory Agency Comments.
<i>Comments from Patrick Hsieh, Department of Toxic Substances Control, dated November 25, 2015</i>			
1	Response to Comment 2 on Draft ROD/RAP	Please clarify if there is potential for the remaining contaminants/MEC at these sites to pose a risk to individual animals of protected species (i.e., one salt marsh harvest mouse, one California Clapper Rail, one California Black Rail, one bird protected by the Migratory Bird Treaty Act). The Navy does not have to conduct a remedial action (i.e., excavation) for these ARARs to be relevant and appropriate. If the final remedy leaves behind contaminants/MEC that may result in "take" of an individual of a protected species for as long as the LUCs are in effect, then the ARARs should be included in the ROD.	The remaining contaminants /MEC at these sites do not pose a risk to individual animals of a protected species and therefore Federal and State natural resource ARARs do not need to be included in the ROD. Conclusions of the ecological risk assessment indicated that chemicals of potential ecological concern do not pose a significant or immediate total and "incremental site-related" risk to ecological receptors at the site. Previous anomaly excavations included over 16,200 locations at the IR05, DP7S, and WMA sites and 100 percent of accessible areas were visually inspected and cleared of munitions.

Comment No.	Comment Location	Comment	Response
	Reference		
<i>Comments from Elizabeth Wells, P.E., San Francisco Bay Regional Water Quality Control Board, dated April 8, 2016</i>			
1	Section 2.2.2	Exception to Sources of Drinking Water Policy, and Section 2.4, Current and Potential Future Land and Resources Use: Revise the maximum depth of the shallow groundwater for which the exception applies to 40 feet bgs or provide justification for the 45-foot depth for the exception. According to the October 27, 2011, letter from the Navy to the Regional Water Board requesting concurrence with the exception, the “intermediate water-bearing zone (IWBZ) is defined as an intermediate sand layer of Late Pleistocene alluvium approximately 20 to 40 feet bgs, but may also exist at these depths in confined layers of the lower portion of the Young Bay Mud.” No mention of 45 feet bgs is included in the Navy’s letter or the Regional Water Board staff December 12, 2011, concurrence letter.	The second sentence in Section 2.2.2 has been revised to read as follows: “In 2011, the Regional Water Board ⁽⁴⁸⁾ concurred with the DON’s conclusion that the shallow groundwater (within the shallow water-bearing zone [SWBZ] and intermediate water-bearing zone (IWBZ) beneath the IR05, DP7S and WMA sites, at a depth of approximately 1 to 40 feet bgs, meets an exception to the Sources of Drinking Water Policy.” In addition, response to Regional Water Board comments 3 and 4 above have been revised to correct the quoted text revision.
2	Attachment 3	<p>a. Porter-Cologne Water Quality Act (Cal. Water Code §13307.1(c); Civil Code 1471: The State does not agree with the Navy’s determination that §13307.1 is not an ARAR. Therefore, revise the ARAR Determination to read “Civil Code 1471 is an ARAR; Navy and State disagree on whether Water Code §13307.1 is an ARAR.”</p> <p>b. SWRCB Res. 88-63 (Sources of Drinking Water Policy): It is the State’s position that this resolution is an ARAR. Therefore, revise the ARAR Determination to read “Applicable.”</p>	<p>a. The “agree to disagree” language related to SWRCB Res. 92-49 (Cal Water Code § 13307) is on page 2-10 of Section 2.2.1 and Table 1 of Attachment 3. Table 1 has been revised to delete the ARAR determination for Civil Code 1471 which is an action-specific ARAR listed on Table 4.</p> <p>b. Tables 1 and 4 of Attachment 3 have been revised to list SWRCB Res. 88-63 as an applicable ARAR.</p>