

STATE OF CALIFORNIA
CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

STAFF SUMMARY REPORT – Alec Naugle and David Elias
MEETING DATE: September 11, 2013

ITEM: 9

SUBJECT: **Cleanup Program for Departments of Defense and Energy Facilities –
Accomplishments and Status** – Information Item

CHRONOLOGY: The last update to the Board on this subject was in 2010.

DISCUSSION: This informational item provides a status and accomplishments update for the Department of Defense (DoD) and Department of Energy (DoE) cleanup programs. The item describes how we provide oversight of DoD and DoE facilities, the goals and accomplishments of the programs, and selected highlights of the cleanup of various military bases around our region through the work of two sections and twelve staff within the Board's Groundwater Protection and Waste Containment Division.

DoD Facilities

There are 36 facilities in this region's DoD cleanup program. Many are former Navy, Army, and Air Force bases that were closed as a result of the congressionally-mandated Base Realignment and Closure Program first instituted in 1991. Some are *Formerly Used Defense Sites* (FUDS), which are facilities such as missile silos, gun batteries, listening posts, and radar stations that were owned, operated, or leased by the DoD. Six DoD facilities continue to operate today: Travis Air Force Base, Air National Guard stations at Moffett Field and Hayward, the Army's military terminal in Concord, and the Army Reserve Forces Training Area at Camp Parks in Dublin.

Portions of many DoD facilities have been transferred to civilian entities for redevelopment or to other federal entities for reuse. We refer to transferred DoD facilities undergoing redevelopment as *privatized military facilities*, and any required cleanup of such facilities, post-transfer, is overseen by the Board's DoD staff under our Site Cleanup Program.

The DoD cleanup program operates under the Defense-States Memorandum of Agreement (DSMOA). The DSMOA defines the funding sources for regulatory oversight costs and a dispute resolution process. In California, the Department of Toxic Substances Control (DTSC) manages the agreement, including the grant funds to pay DTSC and Board oversight costs of cleanup-related activities.

DoE Facilities

There are four facilities in this region's DoE cleanup program (Lawrence Livermore National Lab, Sandia National Lab, Lawrence Berkeley National Lab, and the Stanford Linear Accelerator Center). The DoE cleanup program utilizes a grant to pay our regulatory oversight costs; dispute resolution is accomplished through individual federal facilities agreements with each DoE facility.

Water Board Oversight

While Board staff in the DoD and DoE programs predominately oversee the cleanup of groundwater and soil polluted by historic releases, most DoD facilities are like small industrial cities spanning a gamut of pollution sources (e.g., landfills, gas stations, storage tanks, storm drains, pipelines, wash racks, dry

cleaners) and Board regulatory programs (waste containment, stormwater management, soil and groundwater cleanup, Brownfield redevelopment, wastewater discharge, dredging, and wetland restoration). Because many DoD facilities (particularly Navy bases) are located adjacent to San Francisco, San Pablo, and Suisun bays, in addition to remediating groundwater pollution, facilities must also be cleaned up to protect surface water quality and marshland habitat.

Although there are currently 40 DoD and DoE facilities in these cleanup programs, many are complex and divided into numerous subareas, parcels, operable units, and investigation areas to better address the facilities' individual sources of pollution. In all, the 40 DoD and DoE facilities equate to about 330 active "sites" requiring investigation and cleanup. Furthermore, because many former military facilities are planned for conversion to civilian use, human health protection associated with both commercial and residential redevelopment is an important cleanup driver, including direct contact exposure to contaminated soil, and potential threats from volatile contaminants that can affect indoor air. To accomplish our regulatory oversight, we work cooperatively with other State and federal agencies, such as DTSC, in both lead and support roles.

Table 1 summarizes our DoD and DoE programmatic funding for FY 2013-14:

Table 1: Program Facilities, Sites, and FY 13-14 Funding

DoD / DoE Program Categories	# of Facilities	# of Active Cleanup Sites	Annual R2 Staffing Budget (in thousands \$)
Navy	8	224	1,100
Army	5	21	
Air Force	4	17	
FUDS ¹	15	19	
Privatized Military Facilities	4	42	150
DoE	4	7	50
TOTAL	40	330	1,300

¹ FUDS = Formerly Used Defense Sites

Goals and Priorities

The major goals of the DoD and DoE programs include:

- Protect water quality, human health, safety, and the environment;
- Allow for the continued safe use of operating DoD and DoE facilities; and
- Allow for conversion of closed military bases and other DoD/DoE facilities to civilian use in a safe and timely manner.

To accomplish these goals, the Board's DoD and DoE program staff focus on the following priorities:

- Stop groundwater plumes or releases discharging to surface water;
- Restore and/or mitigate impacted wetlands or other waterbodies;
- Clean up soil and groundwater pollution to appropriate reuse standards;
- Approve records of decision for cleanup plans and issue post-transfer cleanup directives (e.g., orders, 13267 letters) to facilitate property reuse; and

- Close sites in a timely manner once cleanup is complete.

Performance Measures

Beginning in 2008, the State Board established annual performance measures for the number of site closures and the number of sites in remediation within the DoD cleanup program.

Site Closures

As noted above, there are currently 330 active cleanup sites in the DoD and DoE programs. 630 sites have been closed since 1999 when we began tracking site status using the State Board's GeoTracker database. For FY 2012-13 we closed 44 sites, surpassing our annual goal of 40 sites closed per year.

Sites in Remediation

Of the 330 active cleanup sites today, about 120 are in remediation or undergoing post-remediation monitoring. The remaining sites continue under investigation. For FY 2012-13, 11 sites moved into remediation, surpassing our annual goal of 10 sites per year.

Accomplishments

Broader and longer-term accomplishments for both the DoD and DoE cleanup programs are summarized below for roughly the past 14-year period for the following areas:

- Land transfer and reuse
- Wetland restoration
- Groundwater cleanup
- Permits and enforcement
- Database management / public information systems.

Land Transfer and Reuse

Land transfers are often made to the nearest city, which in turn may transfer the land to a private developer. We estimate that about 40% of the transferred land is planned for residential/commercial reuse. The remainder is for wetland restoration, open space or park land, and/or use by another federal entity (e.g., NASA Ames at Moffett Field) or branch of the DoD.

The amount of military base land that has been transferred or otherwise made ready for public reuse correlates with environmental cleanup, since most property transfers occur after cleanup is complete. However, there are some notable exceptions typically referred to as *early transfers*. This occurs when all parties (the DoD, the city, the developer(s), and the regulatory agencies) agree that a transfer can move forward *prior* to complete cleanup. In such cases, cleanup continues post-transfer either by the DoD (under a special transfer agreement), by the city, or by the developer. In all cases, the regulatory agencies continue their oversight pursuant to various regulatory mechanisms and cost-recovery agreements. Under the early transfer concept, sites must be fully investigated and a Record of Decision (ROD) defining the still-needed cleanup actions must be approved before the transfer. For early transfer properties where cleanup liability is transferred from the DoD to a city or to a future land owner, we typically prepare a cleanup order or similar directive to all parties to ensure that approved cleanup plans are implemented.

There are a total of 42,000 acres of military base land within this region. Currently, about 22,000 acres have been transferred or made ready for reuse. Another 8,000 acres are expected to transfer within the next few years. Some military facilities (or portions thereof) undergoing cleanup are not planned for transfer

because they will continue to operate as military bases for the foreseeable future (e.g., Travis Air Force Base) or because the DoD plans to retain ownership in perpetuity. Table 2 below summarizes the DoD land that has transferred to date or is planned for transfer in the next few years. No DoE land has been or is currently planned for transfer, as all DoE facilities will remain in operation.

Table 2: Current and Planned DoD Land Transfers

DoD Facilities Transferred for Redevelopment/Reuse	Transferee	Acreage	Date
Moffett Field Naval Air Station	NASA	2,200	1994
Presidio of San Francisco	National Parks Service	1,491	1994
Hamilton Army Air Field	State Lands Commission	929	1995
Benicia Arsenal	City of Benicia	200	2000
Hunters Point Shipyard	City of San Francisco	88	2000
Mare Island Naval Shipyard	State Lands Commission; City of Vallejo	2,824 651	2002
Treasure Island Naval Station	City of San Francisco	21	2003
Concord Naval Weapons Station	U.S. Army; U.S. Coast Guard	7,800	2005
Oakland Army Base	City of Oakland	366	2005
Point Molate Naval Fuel Depot	City of Richmond	373 / 40	2003 / 2010
Skaggs Island Naval Security Post	US Fish and Wildlife Service	3,310	2011
Alameda Naval Air Station (Alameda Point)	City of Alameda	455 / 1,480	2000 / 2013
TOTAL		22,228	

PLANNED DoD TRANSFERS	Transferee	Acreage	Date
Parks Army Reserve Force Training Area	City of Dublin	187	2014
Hunters Point Naval Shipyard	City of San Francisco	90 / 758	2015 / 2017+
Concord Naval Weapons Station	City of Concord	5,000	2015-16
Treasure Island Naval Station	City of San Francisco	425	2015-16
Mare Island Naval Shipyard	City of Vallejo	1302	2016+
TOTAL		7,762	

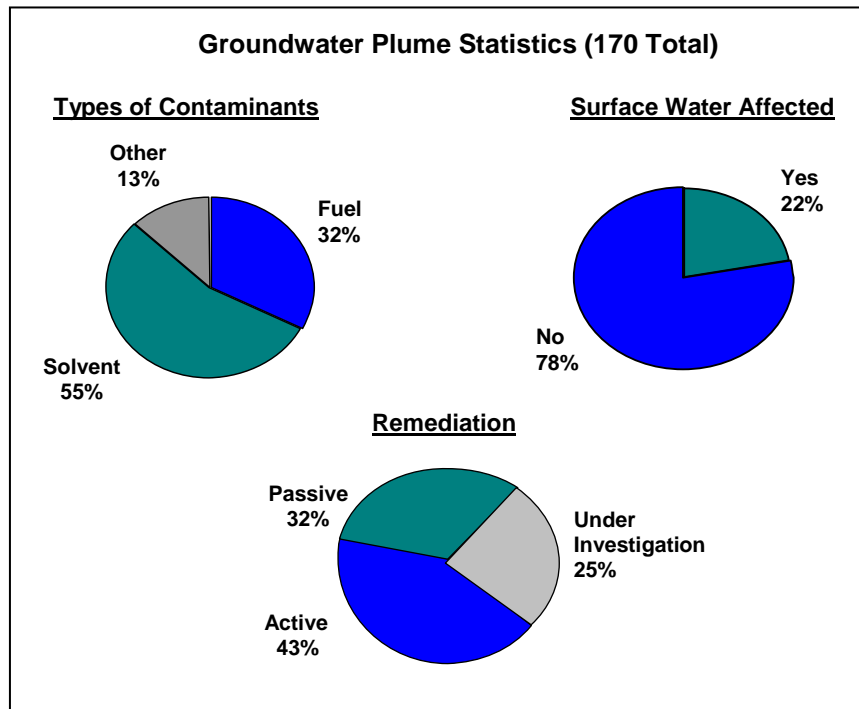
Wetland Restoration

We estimate that several hundred acres of wetlands have been affected by pollution from DoD facilities in our region. To date about 650 acres of wetlands are in the process of being created or restored. The congressionally-authorized Hamilton Wetland Restoration Project at the former Hamilton Army Air Field in Marin County is one of the largest wetland restoration projects in the Bay Area and includes planned restoration of 2,600 acres of tidal wetlands. Since 2005, restoration of about 600 acres (of the total 650 acres mentioned above) has been implemented at the Hamilton Army Air Field with a levee breach planned for this winter.

Groundwater Cleanup

As detailed in the figure below, there are currently 170 contaminated groundwater plumes at DoD and DoE facilities in this region. We estimate that 37 of those plumes (22%) have also impacted or threaten to impact surface water quality or shoreline habitat. Although none have affected drinking water supplies (as most are located along the margins of San Francisco or San Pablo bays or the Delta, where groundwater is generally brackish and not being used for drinking water), groundwater plumes can both threaten ecological receptors via groundwater discharges to the Bay or other surface waters and threaten human health through volatilization of contaminants into occupied buildings.

The majority of groundwater plumes are due to chlorinated solvent (55%) and petroleum fuel (32%) spills. 75% of the plumes are in remediation by active or passive methods. Active plume remediation methods include injection of chemical reactants into soil and groundwater to stimulate biodegradation or chemical oxidation or reduction. Passive plume remediation methods generally include low-energy methods such as monitored natural attenuation, which must demonstrate contaminant breakdown by naturally-occurring microbes.



Permits and Enforcement

For cleanup performed pursuant to the federal Superfund cleanup law (*Comprehensive Environmental Response, Compensation, and Liability Act* or *CERCLA*), federal entities are not required to obtain state permits, but are required to follow "substantive" state requirements. For example, as part of cleanup at the Hunters Point Shipyard, the Navy is not required to file a Notice of Intent for coverage under the statewide Construction Storm Water General Permit. Nonetheless, the Navy is required to follow substantive permit requirements, including development of a stormwater pollution prevention plan and implementation of best management practices.

The Board has adopted site cleanup requirement orders for eight DoD/DoE facilities, generally as a tool to facilitate post-transfer site cleanup. The Board has also adopted waste discharge requirements to regulate containment of waste within landfills at two DoD facilities (Hamilton Army Airfield and Mare Island Naval Shipyard) and to regulate the deposition of dredged material at the Hamilton Wetland Restoration Project.

Formal enforcement actions can be taken against federal entities but only if a time schedule order (TSO) is issued pursuant to Water Code section 13308 specifying monetary penalties for specific violations. The Board has adopted TSOs for the Point Molate Naval Fuel Depot (1997), the Hamilton Army Airfield (2001), and the Stanford Linear Accelerator Center (2009).

Due to the nature of our cooperative agreements with the DoD and the dispute process built into it, there have been no administrative civil liability complaints issued against the DoD.

Database Management / Public Information Systems

We currently maintain data on our DoD and DoE cleanup sites in GeoTracker to facilitate public access, State Board queries, and performance tracking. GeoTracker is publicly accessible at the following location: <https://geotracker.waterboards.ca.gov/>.

Highlights of Cleanup Activities at Specific DoD Facilities

Record breaking property transfer at Alameda Point

In June 2013, the Navy completed the largest federal-to-non-federal entity property transfer to date when it transferred 1,480 acres to the City of Alameda for mixed use redevelopment. To facilitate the transfer, Board staff reviewed all transfer documents, which included those for over 160 open petroleum sites that were transferred with the property. Board staff continue to work with the Navy and City to ensure these sites are fully remediated.

Landfill closure and wetland restoration at Alameda Point

This year the Navy broke ground on a 110-acre landfill closure and wetland enhancement project at an area located on the southeastern tip of Alameda Island. The final disposition of the project will be open space that will provide high quality wetland habitat. The property is slated to be transferred to the Veterans Administration in the near future. The Board is the lead state permitting agency for wetland preservation and creation, and Board staff played a significant role in bringing this project to fruition.

Radiologically-contaminated sediment dredging and restoration at Seaplane Lagoon, Alameda Point

This year the Navy completed a monumental sediment cleanup project at Seaplane Lagoon in Alameda. The project included the dredging and processing of 137,000 cubic yards of sediment, which resulted in the restoration of 10 acres within Seaplane Lagoon. A number of Board staff have worked on this large project, as it took many years to plan and complete, especially with the special care that was needed to manage the radiological risk associated with the removed sediment.

Complete site closure at Alameda Naval Operational Support Center

Periodically, we have the opportunity to approve a complete regulatory closure of a DOD facility. On May 13, 2013, Board staff approved the last of the “No Further Action” requests at the Naval Operational Support Center in Alameda, which marked the completion of all of this facility’s site investigations and corrective actions.

Planned tidal levee breach at the former Hamilton Army Airfield

Cleanup of this facility was completed in 2005. Since then, the Army Corps has placed 4.8 million cubic yards of dredged material at the facility, primarily from the Port of Oakland, pursuant to the Board’s waste discharge requirements. Breach of the tidal levee surrounding the area where dredged material has been placed is anticipated in February 2014 at which time tidal action will be restored to 600 acres of the 2600-acre Hamilton Wetland Restoration Project.

Cleanup and planned wetland restoration at the Hamilton North Antenna Field

A “Time Critical Removal Action” was completed in December 2012 for removal of soils contaminated with lead and other contaminants of concern. We anticipate the completion of a

Feasibility Study and a ROD in the next year. Once cleanup is completed, this 270-acre site is anticipated to be restored to tidal wetlands as part of the Hamilton Wetland Restoration Project.

Civilian reuse and wetlands mitigation at Hunters Point Shipyard

We have signed 6 RODs since 2009 that document the cleanup approach for 8 of 12 parcels at the 936-acre former shipyard. This work has included closing over 40 petroleum sites to help pave the way for transfer of about 90 acres to the City of San Francisco beginning in 2015. The City's plans for reuse include open space, mixed commercial and residential, research and development, and educational/cultural. The Navy has also committed to mitigation of 5 acres of tidal and seasonal wetlands adjacent to Yosemite Slough that are currently impacted with PCBs, metals, VOCs, and petroleum fuels.

Tidal wetland restoration at Yosemite Slough

In 2011, Cal Parks completed phase one of its Yosemite Slough tidal wetland restoration, adjacent to the Hunters Point Shipyard. The work, done pursuant to waste discharge requirements adopted by the Board in 2007, includes 7 acres of wetlands and a bird-nesting island. The remaining phases, which are funding dependent, include an additional 3 acres of tidally-influenced wetlands, a second bird-nesting island, a K-12 environmental science education center, a new link in the Bay Trail, and a recreation area for the Bayview-Hunters Point neighborhood.

Recycling of the Suisun Bay Reserve Fleet and the reopening of Mare Island dry docks

The expedited recycling of the Suisun Bay Reserve Fleet, commonly known as the Mothball Fleet, due to the Board-initiated 2010 federal consent decree provided an opportunity for the refurbishing and reopening of the World War II-era dry docks at Mare Island. The dry docks were reopened in 2011 subject to a Board-issued NPDES permit and have since been used in the breaking and recycling of the Mothball Fleet. Board staff played a significant role in permitting a large dredging operation that was needed before the dry docks' gates could be opened for the first time in nearly 20 years.

Hangar 1 decontamination for future reuse at Moffett Field

In 2011-12, the Navy removed the contaminated siding materials from the iconic Hangar 1 at Moffett Field Naval Air Station rather than completely demolish the hangar. The hangar's steel framework was sealed with an epoxy to preserve the hangar for future residing and reuse as part of the NASA Ames Research Center. Hangar 1, which covers the equivalent of ten football fields and is 200 feet tall, was constructed in 1932 to house the giant airship U.S.S. Macon.

Sediment cleanup at Moffett Field

Since 1953, stormwater from the western portion of Moffett Field has been collected and managed in a 230-acre area now known as "Site 25." Sediment in Site 25 was found to be contaminated with PCBs, metals, and DDT. Although no CERCLA action was deemed necessary for protection of human health, the Navy remediated Site 25 for the protection of the environment and ecological health. Sediment removal was conducted between May and December 2012, and site restoration monitoring is currently underway.

Unexploded ordinance removal from Suisun Bay at MOTCO

In 1944, a 4,606-ton munitions explosion at the Military Ocean Terminal, Concord (MOTCO) destroyed the town of Port Chicago, killed 390 people, and scattered munitions and metal debris into Suisun Bay. In August 2013, under Board staff oversight, the Army embarked on an effort to locate and remove all munitions from Suisun Bay using a high-tech barge, crane, and high-powered magnet.

Wetland cleanup at MOTCO

The Army is implementing a sediment cleanup within a 307-acre tidal wetland area of MOTCO. This area, within the Lost Slough and Nichols Creek watershed, is one of the largest relatively untouched wetlands in our region. The cleanup involves capping contaminated sediments by helicoptering in bags of bay mud for hand placement in the sloughs. This complex and sensitive restoration project has required years of Board staff oversight and analysis to come to a final remedy.

Wetland restoration at the Presidio

From 1994 to 2000, the Army's former Crissy Field landing strip at the Presidio of San Francisco was converted to park land within the Golden Gate National Recreation Area. This 100-acre area includes 18 acres of restored tidal wetlands. The Presidio Trust is planning to restore an additional 5 acres of a brackish-freshwater marsh complex at the outfall of Tennessee Hollow Creek at the Crissy Field Marsh and 1 acre of freshwater marsh at Mountain Lake. In addition, a culvert will be day-lighted to restore a reach of Tennessee Hollow Creek along with its riparian corridor and create 1.76 acres of wetlands.

Mountain Lake sediment cleanup at the Presidio

In May 2013, the Presidio Trust began dredging the 4-acre groundwater-fed Mountain Lake to remove sediment contaminated with lead and motor oil from Highway 1 stormwater runoff. Over 15,000 cubic yards of sediment will be removed to depths of 2.5 to 6.5 feet to ensure chemical concentrations protective of aquatic life.

Planned wetlands restoration at Skaggs Island

In 2011, the former Naval Security Group Activity - Skaggs Island facility was transferred to the U.S. Fish and Wildlife Service for inclusion in the San Pablo Bay National Wildlife Refuge after cleanup of the facility was complete. The intended future use of the 3,310-acre property is for wildlife conservation including the restoration of large acreages to tidal wetlands.

Transfer and civilian reuse at Treasure Island

In 2010 the Navy reached agreement with the City of San Francisco to transfer the 450 acres of this former naval station, which includes portions of Yerba Buena Island, to the City for \$55 million and a profit sharing percentage from future redevelopment. The City's plans include housing for 19,000 residents, open space, recreation, a new ferry terminal, and an expanded marina. To facilitate the transfer, Board staff approved implementation of a multi-year anaerobic in-situ bioremediation project involving groundwater circulation (alternating injection and extraction) to cleanup groundwater contaminated with chlorinated solvents from an on-base drycleaner.

Lead shot removal at Treasure Island's Clipper Cove marina

Last month the Navy began dredging the upper 1 to 2 feet of a 1-acre area of the Clipper Cove marina at Treasure Island. The area, all within 75 feet of the shoreline, contains lead shot from the Navy's former firing range, which poses a risk to diving ducks. The Navy is transporting the contaminated sediment by barge to dewatering pads constructed at Alameda Point. The sediment (10,000 cubic yards) is planned for reuse as foundation material to construct a cover for closure of the Navy's landfill at Alameda Point.

RECOMMENDATION: This is an information item only and no action is necessary.