MOFFETT FEDERAL AIRFIELD
FINAL OPERABLE UNIT 2-EAST
RECORD OF DECISION

(Pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act)

October 28, 1994

Issued By:

U.S. Department of the Navy - Western Division
Naval Facilities Engineering Command

and

U.S. Environmental Protection Agency
Region 9 - San Francisco, California

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December 28, 1994

Mr.Stephen Chao/Mr. Hubert Chan
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CLEAN Contract Number N62474-88-D-5086
Contract Task Order 0236

Subject: Final (signed) Operable Unit 2 - East Record of Decision

Dear Messrs. Chao and Chan:

Enclosed please find one original signature copy and three additional copies of the above referenced report prepared by PRC Environmental Management, Inc. (PRC). Four original signature copies of the report were returned to PRC for copying, binding, and distribution. The enclosed original signature copy is for the administrative record; the remaining three original signature copies have been returned to the appropriate signatories.

If you have any questions or comments, please call us at (303) 295-1101.

Sincerely,

Brian Werle
Project Engineer

Michael N. Young
Project Manager

Enclosures

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FINAL (signed) OPERABLE UNIT 2 - EAST
RECORD OF DECISION

MOFFETT FEDERAL AIRFIELD

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Site Name and Location

Moffett Federal Airfield
Mountain View, California

This federal facility is on the National Priorities List (NPL). Moffett Federal Airfield (Moffett Field) has been closed as an active military facility under the Base Realignment and Closure (BRAC) program. The facility is currently operated by the National Aeronautics and Space Administration (NASA).

Statement of Basis and Purpose

This decision document presents the selected remedial action (no action) for Operable Unit 2-East (OU2-East) at Moffett Field in Mountain View, California, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and to the extent practicable the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This no-action decision is supported by information contained in the administrative record for the sites. The U.S. Environmental Protection Agency (EPA) and the State of California also concurred with the decision.

Assessment of Site

There are seven sites within OU2-East. The identified contaminants of concern at these sites do not present any current or potential human health risks and, therefore, no action is necessary. A station-wide ecological assessment is being conducted and the results of it will be considered in the station-wide ROD. The station-wide ROD will be the final ROD for the entire base.

Description of the Selected Remedy

A no action site is a site where remedial action is not necessary to protect human health and the environment. No action (that is, no treatment, engineering controls, or institutional controls such as groundwater monitoring) would be warranted under the following general sets of circumstances applicable to sites found in OU2-East:

- Where the baseline risk assessment concluded that conditions at the site pose no unacceptable risks to human health and the environment
- Where a release involved only petroleum product that is exempt from remedial action under CERCLA Section 101
- Where a previous response eliminated existing and potential risks to human health and the environment such that no further action is necessary

U.S. Department of the Navy, the EPA, Region 9, and the California Environmental Protection Agency (Cal EPA) have selected no action for the following sites in OU2-East:

- Site 3 - Marriage Road Ditch
- Site 4 - Former Wastewater Holding Pond
- Site 6 - Runway Apron
- Site 7 - Hangars 2 and 3
- Site 10 (eastern portion only) - Runways
- Site 11 - Engine Test Stand Area
- Site 13 - Equipment Parking Area (Building 142)

Selection of the remedy for OU2-East is consistent with overall remedial investigation/feasibility study (RI/FS) activities at Moffett Field. Other Moffett Field sites where RI/FS activities are being conducted include OU1 (soil and groundwater at landfill Sites 1 and 2), OU5 (east side aquifers), OU6 (wetland areas), and station-wide. Additionally, similar activities are being conducted through source control measures for the west side aquifers and soils and through corrective measures for the Installation Restoration Program petroleum sites. Many of these activities are concurrent. Therefore, the Navy is coordinating all investigations, remedial designs, and schedules to provide an overall basewide management strategy.

Declaration Statement

Based on the evaluation of analytical data and other information, the Navy, EPA Region 9, and CAL EPA have determined that no remedial action is necessary to ensure protection of human health (risks to ecological receptors are being evaluated under the station-wide ecological assessment) at the following sites at Moffett Field:

- Site 3 - Marriage Road Ditch
- Site 4 - Former Wastewater Holding Pond

- Site 6 - Runway Apron
- Site 7 - Hangars 2 and 3
- Site 10 (eastern portion only) - Runway
- Site 11 - Engine Test Stand Area
- Site 13 - Equipment Parking Area (Building 142)

Soils from these sites were evaluated for potential impacts to groundwater and none were found to exist. Aquifers located beneath soils on the eastern side of Moffett Field are being addressed as part of OU5.

Although hazardous substances remain at these sites, they pose no risk to human health and no remedial action will be implemented. One of these substances, beryllium, is outside the acceptable risk range; however, it does not pose a risk to human health based on the results of a statistical analysis that determined beryllium was naturally occurring. A 5-year review, therefore, is not required for OU2-East.

Stephen G. Chao
BRAC Environmental Coordinator
Navy EFA-West

11/14/94
Date

John Wise
Deputy Regional Administrator
EPA Region 9

12.22.94
Date

Anthony J. Landis
Chief of Operations, Office of Military Facilities
Department of Toxic Substances Control, California EPA

11-30-94
Date

Steven Richie
Executive Officer
San Francisco Bay Regional Water Quality Control Board

11/22/94
Date

1.0 DECISION SUMMARY FOR OPERABLE UNIT 2-EAST

Provided below is information regarding site description and history, community participation, scope and role of Operable Unit 2-East (OU2-East), site characteristics and risks, and explanation of significant changes.

1.1 SITE NAME, LOCATION, AND DESCRIPTION

Moffett Federal Airfield (Moffett Field) is located near the southwestern edge of San Francisco Bay in Santa Clara County, California (Figure 1). The address of the facility is:

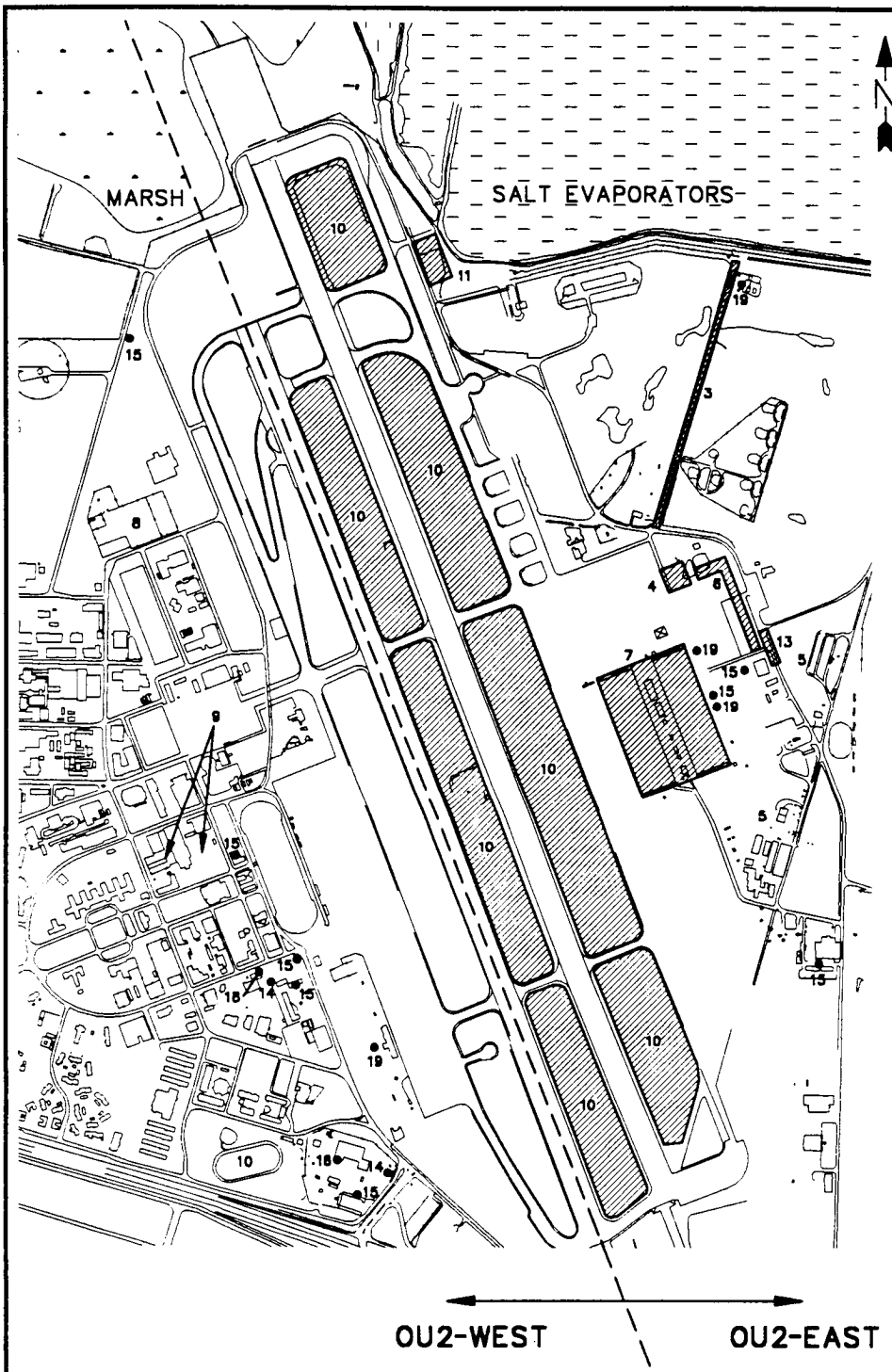
Moffett Federal Airfield
Moffett Field, California 94035

Moffett Field is bounded by salt evaporation ponds to the north, Stevens Creek to the west, U.S. Highway 101 to the south, and Lockheed Missile and Space Company's Lockheed Aerospace Center (Lockheed) to the east.

Moffett Field also borders the cities of Mountain View and Sunnyvale, California. The City of Sunnyvale is located east of Mountain View and both are adjacent to the southern portion of Moffett Field. Lockheed is the eastern neighbor and the National Aeronautics and Space Administration (NASA) Ames Research Center is located to the west and north of Moffett Field.

Ground surface elevations at Moffett Field range from approximately 36 feet above mean sea level (msl) to 2 feet below msl. A sizable portion of Moffett Field is situated on previously submerged land or marshlands that have been filled to their existing elevations with backfill material.

Wetlands located along the northern portion of Moffett Field are the only natural surface water features at the station. The wetlands on Moffett Field are approximately 40 acres in size; all of the wetland area is below sea level. An area of wetlands consisting of approximately 80 acres lies between Moffett Field and Stevens Creek. About half of this area is below sea level. The portion above sea level is a critical habitat for a variety of mammals and birds. Approximately 1 mile beyond the northern boundary of Moffett Field is the San Francisco Bay. Coyote Creek and Guadalupe Slough drain into San Francisco Bay to the east of Moffett Field, and Stevens Creek drains into the San Francisco Bay to the west.



SITE	TYPE OF WASTE
3	MARRIAGE ROAD DITCH SOLVENTS, FUELS, AND PAINT
4	FORMER INDUSTRIAL WASTEWATER SURFACE IMPOUNDMENTS SOLVENTS, FUELS, AND OILS
5	FUEL FARM FRENCH DRAINS VOLATILE ORGANIC COMPOUNDS
6	RUNWAY APRON SOLVENTS, OILS, FUELS, PAINTS
7	UNPAVED AREAS SURROUNDING HANGARS 2 AND 3 PAINTS, OILS, SOLVENTS, FUELS
8	WASTE OIL TRANSFER AREA TRANSFORMER OIL, AND SOLVENTS
9	OLD FUEL FARM PAINTS, OILS, SOLVENTS
10	RUNWAY (AND CHASE PARK AREA) OILS, FUELS, SOLVENTS
11	ENGINE TEST STAND AREA OILS, METALS
13	EQUIPMENT PARKING AREA (B-142) FUELS, OILS, SOLVENTS
14	ABANDONED TANKS (NOS. 19, 20, 67 AND 68) TANKS 19, 20, AND 67 HAVE ALREADY BEEN REMOVED
15	NINE SUMPS AND OIL/WATER SEPARATORS OILS, NEUTRALIZED BATTERY ACID
16	PW STEAM RACK SUMP NO. 60 PETROLEUM HYDROCARBONS (REMOVED)
17	PAINT SHOP SUMP NO. 61 PAINTS, SOLVENTS (REMOVED)
18	DRY CLEANERS SUMP NO. 66 SOLVENTS (REMOVED)
19	LEAKING TANKS NOS. 2, 14, 43, AND 53 (ALL REMOVED) FUELS, SOLVENTS, OILS, PAINT, BATTERY ACID

LEGEND

OU2-EAST SITES
(SITES 3, 4, 6, 7, 10 [RUNWAYS], 11 AND 13)

FILE NAME: D:\MOFFETT\BW-OU2.DWG PLOT VIEW V1
DATE: 06/17/94 BCM DN

FIGURE 1
NAS MOFFETT FIELD
OU2 SITES

San Francisco Bay is California's largest estuary. Historically, tidal salt marsh and mud flats covered extensive areas of the southern portion of the bay; however, most of these wetlands have been eliminated or greatly altered. The large area to the north and northeast of Moffett Field was diked and is now used as commercial salt evaporation ponds. There are no streams on Moffett Field, although several streams are present to the east and west. No other surface water features are present at Moffett Field, with the exceptions of several small ponds maintained on the Moffett Field golf course as water hazards, stormwater drainage ditches, standing water after floodings or rainfall, and the wetlands described above.

The northern Santa Clara Valley groundwater basin is part of the down-dropped structural trough lying between the San Andreas and Hayward Faults. The erosion of the uplifted Santa Cruz Mountains has contributed sediment that has been transported by northward-flowing streams. Moffett Field lies on the San Jose alluvial plain near the toe of alluvial fans emanating from the Santa Cruz Mountains. On a regional scale, the overall sediment grain size becomes finer northward away from the mountains. On a local scale, alluvial processes have juxtaposed clay, silt, sand, and gravel in adjacent depositional environments.

The hydrogeologic setting at Moffett Field consists of alluvial sand aquifers or sand and gravel aquifers separated by low permeability silt and clay aquitards. In the interior part of the Santa Clara Valley, the numerous aquifers have been divided into two broad zones or sequences: the upper-aquifer sequence (A and B aquifers) and the lower-aquifer sequence (C aquifer) (PRC 1992). The distinction between the two aquifer sequences is that the upper-aquifer sequence is generally unconfined, although in places it is semiconfined. The lower-aquifer sequence is confined under a laterally extensive clay aquitard at depths of 140 to 200 feet below land surface (bls). Aquifers in the upper zone are generally thin and discontinuous. Aquifer materials range from silty to fine sand to coarse gravel. The A and B aquifers are not presently used. The C aquifer, however, is used as a source of municipal drinking water for the nearby communities of Mountain View and Sunnyvale.

The water table at Moffett Field is not a static boundary, but fluctuates in response to changes in evaporation, precipitation, and groundwater pumping. The water table at Moffett Field ranges from approximately 5 to 15 feet bls. Tidal influence on the water table elevation is thought to be negligible.

Current and potential beneficial uses applicable to the main groundwater basins in the San Francisco Bay region are outlined in the San Francisco Bay Region Water Quality Control Plan (basin plan) and include municipal supply, industrial service, industrial process water supply, and agricultural supply. With the exception of the northern portion of the A aquifer, the aquifers at Moffett Field (A, B, and C) meet the state standards for yield (200 gallons per day) and total dissolved solids (less than 3,000 milligrams per liter). Therefore, the A, B, and C aquifers are considered potential drinking water sources. Surface water replenishment, provided by the upper aquifers, helps maintain wildlife habitats associated with the nearby wetlands.

1.2 SITE HISTORY AND ENFORCEMENT ACTIVITIES

Moffett Field has been continuously operated by the U.S. military since it was commissioned in 1933 to support the West Coast dirigibles (blimps) of the lighter-than-air (LTA) program. In 1935, the station was transferred to the U.S. Army Air Corps, which used it for training purposes. In 1939, a permit was granted to Ames Aeronautical Laboratory to use part of the station.

In 1942, the station was returned to Navy control and was named Moffett Field. In late 1942, the heavier-than-air (HTA) program was initiated and began to take precedence over the LTA program. In 1945, the HTA program was moved to Half Moon Bay Field and Moffett Field was used as a major overhaul and repair base. The LTA program was discontinued at Moffett Field in 1947. In 1949, the station became home to the Military Air Transport Service Squadron.

By 1950, Moffett Field was the largest naval air transport base on the West Coast and became the first all-weather naval air station. In 1953, the station became home to all Navy fixed-wing, land-based antisubmarine efforts. A weapons department was formed on the base in 1954, and in February 1966 the base activated its high-speed refueling facilities. During the station reorganization in 1973, it became the headquarters of the Commander Patrol Wings, U.S. Pacific Fleet.

During the 1980s and early 1990s, the mission of Moffett Field was to support antisubmarine warfare training and patrol squadrons. The station supported more than 70 tenant units, including the Commander Patrol Wings, U.S. Pacific Fleet, and the California Air National Guard. Moffett Field was the largest P-3 Orion patrol aircraft base in the world, with nearly 100 aircraft. These aircraft were assigned to nine squadrons supported by 5,500 military, 1,500 civilian, and 1,000 reservist personnel. No heavy manufacturing or major aircraft maintenance was conducted at Moffett Field, but a significant amount of unit- and intermediate-level maintenance occurred.

In April 1991, Moffett Field was designated for closure as an active military base under the Department of Defense Base Realignment and Closure (BRAC) program. On July 1, 1994, Moffett Field was closed and control of the base was transferred to NASA, which operates the Ames Research Center on the northwestern side of Moffett Field. The Navy, however, will continue with environmental restoration activities and remain responsible for remediating Navy contaminant sources.

Wastes have been generated at Moffett Field through maintenance operations, fuel management, and fire training since the early 1930s. Chemicals of potential concern (COPCs) include waste oils and jet fuels; solvents and cleaners; washing compounds; and lesser amounts of gasoline, hydraulic fluids, asbestos, paints, pesticides, battery acid, and polychlorinated biphenyls (PCBs). Wastes were disposed of in unlined landfills, drained through drainage ditches and unpaved areas, and stored temporarily in unlined wastewater ponds. In addition, some underground storage tanks (USTs) and sumps (many of them now removed) were found to have leaked petroleum hydrocarbons and fuels, and lesser amounts of waste oils and solvents.

Environmental studies were initiated at Moffett Field in 1984. The Navy began conducting these environmental restoration activities as part of the Installation Restoration Program (IRP). The Navy conducted an initial assessment study (IAS) in 1984 to gather data on the past use and disposal of hazardous materials at Moffett Field (NEESA 1984). Nineteen sites were identified as potential sources of wastes, including nine sites identified in the IAS and 10 sites added during subsequent investigations (ESA and AR 1986a, 1986b; ERM 1987; ESA and JMM 1986). The U.S. Environmental Protection Agency (EPA) proposed Moffett Field as a National Priorities List (NPL) site in June 1986 and placed it on the NPL in 1987. Placement on the NPL initiated the remedial investigation/feasibility study (RI/FS) process under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Data collected during the initial studies were used to plan the RI/FS. The RI/FS work is coordinated through the August 1990 federal facilities agreement (FFA) with EPA and the California Environmental Protection Agency (Cal EPA) (including the Department of Toxic Substances Control and the Regional Water Quality Control Board).

The RI was implemented in two phases. During Phase I, the types and concentrations of chemical contaminants at 19 sites were identified. The Phase I characterization was completed in August 1990. The Phase II investigations were initiated in 1990 to provide more detailed, site-specific data. Phase II investigations revealed a need to organize the RI/FS process into separate OU studies. Subsequently, Moffett Field was divided into the six OUs listed below to help expedite the RI/FS process.

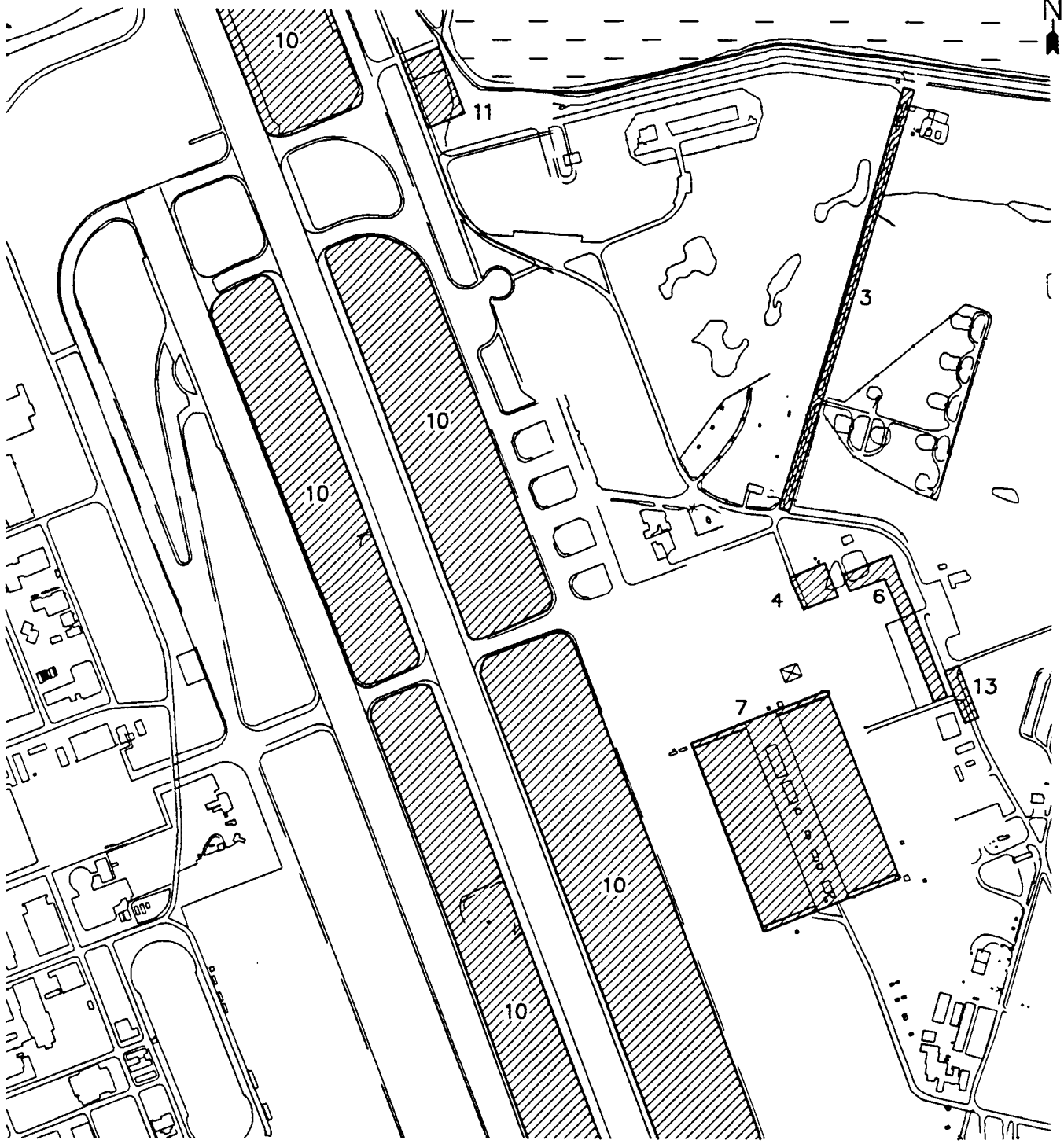
OU1	-	Soils at Sites 1 and 2 landfills
OU2	-	Soils at Sites 3 through 11, 13, 14, and 16 through 19
OU3	-	Soils at Sites 12 and 15
OU4	-	Aquifers on the western side of Moffett Field
OU5	-	Aquifers on the eastern side of Moffett Field
OU6	-	Wetland areas

In October 1992, however, EPA determined that the aquifers on the western side of Moffett Field were affected by a regional volatile organic compound (VOC) plume emanating from the Middlefield-Ellis-Whisman (MEW) Superfund site south of Moffett Field. EPA determined that these aquifers were subject to the 1989 record of decision (ROD) already written for the MEW site. Consequently, OU4 was deleted and OU5 was modified to include all aquifers not part of the regional VOC plume. OU2 was separated into OU2-West (Sites 8, 16, 17, 18, and the western portion of Site 10, which overlie the regional VOC plume) and OU2-East (Sites 3, 4, 6, 7, 11, 13, and the eastern portion of Site 10, which do not overlie the regional VOC plume). OU2-East is the focus of this ROD.

In February 1993, the Navy recommended to the regulatory agencies that all sites containing petroleum and petroleum constituents be removed from the CERCLA process (CERCLA contains an exclusion for petroleum and petroleum constituents). The Navy also recommended that these sites be addressed in a manner consistent with the Resource Conservation and Recovery Act (RCRA) Subtitle I and appropriate state regulations for underground storage tanks. The agencies agreed to the modification and corrective actions at petroleum sites are underway. Therefore, OU3 (which contained petroleum contaminated Sites 12 and 15) was removed, and Sites 5, 9, 14, and 19, which also contain petroleum-contamination, have been deferred to the IRP petroleum sites program and will not be addressed through RODs.

The following text contains site-specific histories for the sites included in OU2-East (IT 1993). Figure 2 depicts the locations of the OU2-East sites at Moffett Field. The medium of concern at all OU2-East sites is unsaturated soils.

Marriage Road Ditch (Site 3): Marriage Road Ditch extends for approximately 2,000 feet along the eastern side of Marriage Road and is 5 to 6 feet below msl. The ditch discharges to the Navy Channel. Portions of the ditch are lined with concrete. Storm drains in and around Hangars 2 and 3 (Site 7) discharge wastes into the ditch. An estimated 150,000 to



400' 0 400' 800'

SCALE: 1" = 800'

LEGEND

OU2-EAST SITES
(SITES 3, 4, 6, 7, 10 [RUNWAYS], 11 AND 13)

FIGURE 2
NAS MOFFETT FIELD
OU2-EAST SITES

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750,000 gallons of mixed wastes containing waste oils, solvents, fuels, detergents, paints, paint strippers, and hydraulic fluids were discharged into the storm drains from the 1940s to the 1970s.

Former Wastewater Holding Pond (Site 4): The former wastewater holding pond was removed, closed, and replaced by the existing holding ponds. Most of the information regarding the former pond was lost in a facility fire during the late 1970s. The former pond was unlined and received approximately 15 million gallons of wastewater from aircraft washing, equipment maintenance, and operations in Hangars 2 and 3 (Site 7) from 1968 to 1978. The wastewater was held in the pond, treated, and discharged to the sanitary sewer. As much as 35,000 gallons of waste materials, including toluene, methyl ethyl ketone (MEK), dry cleaning solvents, paint sludge, paint strippers, Freon 113, trichloroethene (TCE), trichloroethane (TCA), carbon remover, ethylene glycol, fuel, and oil were discharged to the pond either directly or as components of wastewater.

Runway Apron (Site 6): The runway apron disposal site consists of a gravel area that was paved in 1979 and is now used mainly for car parking. An estimated 120,000 to 600,000 gallons of wastes from aircraft maintenance, including solvents, oils, fuels, paints, and paint strippers, may have been disposed of in liquid form at this site from the 1940s to 1970s.

Hangars 2 and 3 (Site 7): Site 7 consists of Hangars 2 and 3 and the paved and unpaved areas surrounding the hangars. Unpaved areas at each corner of the hangars were used to dispose of an estimated 120,000 to 600,000 gallons of paint, paint strippers, oils, solvents, fuels, hydraulic fluids, and other wastes. At a power plant shop in the northeastern corner of Hangar 3, chlorinated solvents, including TCE, were disposed of in barrels, through deck drains, and on unpaved areas around Hangar 3. The hangars were constructed in 1942, and until 1978 wastes that accumulated in barrels on the unpaved area surrounding the hangars may have flowed into the Marriage Road Ditch (Site 3).

Runways (Site 10 - Eastern Portion Only): OU2-East includes only the runway portion of Site 10 (Figure 1). Site 10 also includes Chase Park, which is located between U.S. Highway 101 and Girard Road near the southern end of Moffett Field. The Chase Park area of Site 10 is included in OU2-West and is not part of this ROD. A primary source of potential soil contamination at the runway is precipitation runoff that may have carried spilled fuels and lubricants to adjacent drains and ditches.

Engine Test Stand Area (Site 11): This area was used to test aircraft engines under power. The site is fenced and covered by concrete and asphalt and comprises an approximately 200- by 200-foot square pad. A small drainage depression drains waste oils, hydraulic fluids, and fuels to the southern edge of the pad. A stain south of the pad suggests that fluids may have run onto the adjacent soils. The stained area is approximately 45 by 75 feet.

Equipment Parking Area; Building 142 (Site 13): The equipment parking area, which is a concrete and asphalt vehicle parking lot, covers approximately 7,500 square feet east of Building 142. Industrial wastewater from spills, leaks, and equipment washing were flushed into the surface drainage ditch adjacent to the concrete/asphalt parking area. The ditch flows to the main storm sewer.

1.3 HIGHLIGHTS OF COMMUNITY PARTICIPATION

In May 1989, the Navy developed a Moffett Field community relations plan (CRP). The CRP outlined specific activities based on concerns voiced by the community. Since 1993, the EPA provided a technical assistance grant (TAG) to the Silicon Valley Toxics Coalition, a local concerned environmental group. The TAG allowed the coalition to hire a consultant to assist in reviewing Moffett Field environmental documents. In addition, the Navy formed a technical review committee (TRC), which has been meeting quarterly to discuss environmental progress at the site. The Navy is currently forming a restoration advisory board (RAB), which will take the place of the TRC. The RAB will be made up of members of the TRC and community and will hold regular public meetings to discuss environmental progress at Moffett Field.

The OU2 RI report (including all the OU2-East sites) was released in May 1993 (IT 1993). The proposed plan for the no-action sites at OU2-East was released to the public in May 1994. The proposed plan and RI report were made available to the public through both the administrative record and the information repository. The notice of availability for the proposed plan and related documents was published in the *San Jose Mercury News* and *San Francisco Chronicle* on May 9, 1994. A public comment period was held from May 4, 1994, through June 22, 1994. A public meeting was held on Tuesday, May 24, 1994. At this meeting, representatives from the Navy, EPA, and the State of California answered questions about OU2-East and supplied the basis for proposing no action for each of the individual sites. A response to the comments received during the public meeting and the public comment period is included in the responsiveness summary, which is in this ROD. These community participation activities fulfill the requirements of Sections 113(k)(2)(B)(i-v) and 117(a)(2) of CERCLA.

1.4 SCOPE AND ROLE OF NO ACTION

The scope of the no action process is to address categories of sites where remedial action is not necessary to protect human health and the environment, or CERCLA does not provide the appropriate authority to take any remedial action at the site.

Moffett Field is a large federal facility containing numerous potential sources of contamination. To date, 23 sites at Moffett Field have been identified and are in some phase of the assessment process. However, several of these sites have been removed from the Moffett Field CERCLA process, as discussed in the previous section. Sites 5, 9, 12, 14, 15, and 19 contain petroleum contamination and are, therefore, excluded from CERCLA actions. Operable unit 3 (OU3) originally included Sites 12 and 15, but is not longer considered a separate OU. These sites, however, are undergoing corrective action under the State of California's underground storage tank (UST) program. Source control activities for Sites 9, 12, and 14 are currently underway. Sites 16, 17, 18, and the western portion of Site 10 are located on the western portion of Moffett Field and are included with the MEW ROD. Groundwater beneath the western portion of Moffett Field, formerly OU4, also is covered by the MEW ROD. The remaining sites planned to be addressed by RODs, therefore, are as follows:

OU Designation	OU Description	ROD Schedule
OU1	Soil and Groundwater at Landfill Sites 1 and 2	September 5, 1995
OU2-East	Soil at Sites 3, 4, 6, 7, 11 13, and the runway portion of Site 10	October 14, 1994
OU5	East Side Aquifers	June 1, 1995
OU6	Wetland Areas	will be covered by station-wide ROD
Station-wide	Station-wide	September 15, 1996

Risks to ecological receptors located within OU2-East are being evaluated under the station-wide ecological assessment. If ecological risks are identified at OU2-East, they will be addressed through the station-wide RI/FS and ROD. This ROD will not need to be amended based on the results of the ecological assessment.

The installation management strategy is to accelerate actions at the OUs while identifying and closing out assessment activities at sites not requiring action. This strategy, which utilizes the use of no action RODs, allows resources to be concentrated on the OUs requiring action and meets the President's goal of quickly identifying parcels of property that can be transferred to the community or other agencies under the BRAC program.

The unsaturated soils at the OU2-East sites is the only medium included in this no-action ROD. The groundwater under these sites is being addressed under separate OUs and actions.

1.5 SITE CHARACTERISTICS

Interpretation of the nature and extent of soil contamination at the Moffett Field OU2-East sites is based on the phase I and phase II data compiled and presented in the OU2 RI report (IT 1993). Phase I and II OU2 RI soil samples were generally collected at 1, 3, and 5 feet bls in each soil boring. A fourth sample was collected at either a 10-foot depth or just above the water table (when the water table was encountered at less than 10 feet bls). The soil samples collected during the phase I and II investigations were analyzed for VOCs, semivolatile organic compounds (SVOCs), PCBs, total petroleum hydrocarbons (TPH), and inorganic constituents. Additional information, sampling methods, and chemical analysis procedures followed during the phase I and II sampling events are described in the OU2 RI report.

Results of the phase I and II soil contamination data contained in the OU2 RI report indicate that the categories of compounds detected in soils at the OU2-East sites include VOCs, SVOCs, TPH as diesel, TPH as gasoline, TPH as JP-5, and TPH as oil and grease. Most of these chemicals of interest are organic compounds. However, some inorganic chemicals were identified at the sites, but were eliminated from the list of hazardous site-related chemicals based on background concentrations or negligible risks. Additionally, no sources for inorganic chemicals were identified.

Table 1 contains information on the primary compounds detected at each site. A complete list of all compounds detected at each site and a comprehensive discussion of the nature and extent of contamination appears in the OU2 RI report (IT 1993). The quality of data for the sampling and analysis at this site was considered in the selection of remedies for OU2-East in accordance with the quality assurance plan in the Moffett Field Final Work Plan for Remedial Investigations (IT 1988).

TABLE 1

MOFFETT FEDERAL AIRFIELD
OU2-EAST RECORD OF DECISION
CHEMICALS OF CONCERN
CONCENTRATIONS IN SOIL

Chemical	Frequency of Detection	Concentration Range (µg/kg)	Mean Concentration[c]	Upper 95% Confidence Limit[c]
Site 3				
Organics (µg/kg)				
2-Butanone	3/53	3 - 6	5	5
Acetone	10/53	5 - 72	9	13
Bis(2-ethylhexyl)phthalate	18/53	53 - 41,000	1,242	2,835
Butylbenzlphthalate	3/53	165 - 850	190	223
Diethylphthalate	3/53	64 - 510	169	183
Aroclor-1260	4/53	80 - 630	102	128
Tetrachloroethene	3/53	1 - 4	2	3
Toluene	14/53	1 - 8	3	3
Inorganics (mg/kg)				
Antimony	17/53	3 - 9	4	5
Beryllium	50/53	0.25 - 6.5	2	2
Manganese	53/53	26.5 - 1,470	512	571
Nickel	53/53	32.9 - 107	66	70
Silver	19/53	0.5 - 4.8	1	1
Site 4				
Organics (µg/kg)				
1,2-Dichlorobenzene	3/42	120 - 230,000	5,912	17,230
2-Butanone	7/42	2 - 52	7	10
2-Methylnaphthalene	6/42	165 - 22,000	1,868	3,540
Acetone	11/42	4 - 140	19	29
Bis(2-ethylhexyl)phthalate	15/42	38 - 6,000	492	827
Diethylphthalate	5/42	47 - 290	164	175
Naphthalene	6/42	165 - 36,000	1,880	3,821
Phenanthrene	6/42	68 - 330	170	183
Tetrachloroethene	4/42	2 - 5	3	3
Toluene	13/42	1 - 380	12	31
Total Xylenes	5/42	2.5 - 1,300	36	98

TABLE 1 (Continued)

MOFFETT FEDERAL AIRFIELD
OU2-EAST RECORD OF DECISION
CHEMICALS OF CONCERN
CONCENTRATIONS IN SOIL

Chemical	Frequency of Detection	Concentration Range (µg/kg)	Mean Concentration[c]	Upper 95% Confidence Limit[c]
Inorganics (mg/kg)				
Antimony	18/40	3 - 57.2	10	15
Beryllium	37/40	0.23 - 2.5	1	1
Copper	40/40	25.9 - 96	44	49
Manganese	40/40	302 - 725	501	536
Nickel	40/40	43.2 - 82	66	69
Silver	19/40	0.5 - 4.8	1	2
Site 6				
Organics µg/kg				
1,2-Dichloroethene (Total)	1/8	1 - 2.5	2	3
2-Butanone	1/8	5 - 27	8	14
2-Methylnaphthalene	2/8	93 - 960	255	488
4-Methylphenol	2/8	165 - 2,000	431	955
Acetone	8/8	14 - 150	64	103
Bis(2-ethylhexyl)phthalate	3/8	90 - 1,000	256	502
Diethylphthalate	4/8	61 - 250	144	193
Ethylbenzene	2/8	2.5 - 29	8	16
Fluorene	1/8	130 - 165	161	171
Naphthalene	1/8	165 - 560	214	328
Phenanthrene	2/8	40 - 260	161	210
Toluene	8/8	2 - 90	20	45
Total Xylenes	2/8	2.5 - 290	59	149
Inorganics (mg/kg)				
Antimony	2/8	3 - 9.9	4	6
Nickel	8/8	55.1 - 81.1	65	72
Silver	8/8	1.3 - 2.4	2	2

TABLE 1 (Continued)

MOFFETT FEDERAL AIRFIELD
OU2-EAST RECORD OF DECISION
CHEMICALS OF CONCERN
CONCENTRATIONS IN SOIL

Chemical	Frequency of Detection	Concentration Range (µg/kg)	Mean Concentration[c]	Upper 95% Confidence Limit[c]
Site 7				
Organics (µg/kg)				
2-Butanone	7/26	2 - 11	5	6
Acetone	5/26	3 - 72	12	20
Bis(2-ethylhexyl)phthalate	21/26	64 - 2,000	422	624
Ethylbenzene	2/26	2 - 3	3	3
Toluene	8/26	2 - 7	3	3
Total Xylenes	2/26	2.5 - 16	3	5
Inorganics (mg/kg)				
Antimony	7/26	3 - 24	5	7
Beryllium	15/26	0.25 - 3.4	1	2
Copper	26/26	19.8 - 20,500	831	2,448
Manganese	26/26	250 - 1,010	490	550
Nickel	26/26	34.4 - 85.7	62	67
Silver	10/26	0.5 - 12.4	2	3
Thallium	4/26	0.42 - 0.57	1	1
Zinc	26/26	44.1 - 8,660	393	1,073
Site 10				
Organics (µg/kg)				
Acetone	2/6	5 - 13	7	10
Bis(2-ethylhexyl)phthalate	3/6	110 - 730	254	489
Inorganics (mg/kg)				
Antimony	3/6	3 - 7	5	7
Beryllium	6/6	0.68 - 1.6	1	1
Copper	6/6	26.9 - 67	45	63
Manganese	6/6	299 - 546	410	506
Nickel	6/6	41.5 - 64.3	53	62
Silver	3/6	0.5 - 1.6	1	2
Thallium	3/6	0.41 - .64	1	1

TABLE 1 (Continued)

MOFFETT FEDERAL AIRFIELD
OU2-EAST RECORD OF DECISION
CHEMICALS OF CONCERN
CONCENTRATIONS IN SOIL

Chemical	Frequency of Detection	Concentration Range (µg/kg)	Mean Concentration[c]	Upper 95% Confidence Limit[c]
Site 11				
Organics (µg/kg)				
1,1,1-Trichloroethane	7/21	1 - 16	3	4
Acetone	5/21	5 - 200	34	61
Bis(2-ethylhexyl)phthalate	24/49	49 - 4,500	313	499
Carbon disulfide	2/21	2.5 - 5	3	3
Di-n-butylphthalate	5/49	33 - 840	170	199
N-Nitrosodiphenylamine	3/48	84 - 165	162	166
Inorganics (mg/kg)				
Antimony	18/49	3 - 21	6	7
Copper	49/49	29.9 - 109	48	53
Manganese	49/49	315 - 957	536	571
Nickel	49/49	36.3 - 90.9	68	72
Silver	17/49	0.5 - 3.2	1	1
Site 13				
Organics (µg/kg)				
Bis(2-ethylhexyl)phthalate	8/8	84 - 650	258	416
Di-n-butylphthalate	2/8	40 - 165	137	180
Toluene	5/8	2 - 3	2	3
Inorganics (mg/kg)				
Antimony	5/8	3 - 9	6	8
Cadmium	5/8	0.25 - 6.8	3	5
Copper	8/8	33 - 55.8	42	49
Lead	8/8	11 - 462	123	258
Manganese	8/8	416 - 700	577	653
Nickel	8/8	70.7 - 92.2	79	85
Silver	3/8	0.5 - 1.6	1	1
Zinc	8/8	57.6 - 198	107	145

Notes:

[c] Arithmetic mean and upper 95 percent confidence limit using 1/2 the detection limit for nondetects (rounded).

1.6 SUMMARY OF SITE RISKS

As part of the OU2 RI, the Navy prepared a baseline human health risk assessment (BRA) for the unsaturated soils at the OU2-East sites. The OU2-East BRA evaluated the potential effects to human health as a result of exposure to the chemicals identified at the sites. The BRA evaluated the COPCs, exposure pathways, potential human receptors, and the risks of exposure to the COPCs. Risks to ecological receptors are being reviewed in the station-wide ecological assessment.

Moffett Field has been decommissioned and transferred to NASA. NASA is expected to continue using the facility for flight, industrial, and commercial operations. Accordingly, future receptors were identified with the understanding that the facility will continue to be operated as an industrial facility, and, therefore, future receptors will most likely be the same as current receptors. However, in the event that Moffett Field is considered for residential development in the future, residential scenarios were considered in the BRA for the OU2-East sites. Table 2 includes the receptors and potential exposure pathways evaluated for the OU2-East sites.

The overall screening criterion for a no action site is an acceptable level of protection for human health and the environment. This acceptable level of protection requires that the reasonable maximum risk of exposure for a person to site-related chemicals results in an estimated additional risk of developing cancer of less than one-in-one million, and is without appreciable risk of deleterious noncancer health effects. This is in accordance with the National Oil and Hazardous Substances Contingency Plan (NCP) and CERCLA guidance.

As a means of estimating the human health risks caused by exposure to site contaminants, EPA has established an acceptable range of risk levels, which are presented as incremental lifetime cancer risks (ILCRs) for carcinogens and hazard indices (HIs) for noncarcinogens. EPA generally considers an ILCR greater than 1×10^{-4} to be unacceptable. If concentrations of chemicals at a site are within this risk range, no action would need to be taken to protect human health and the environment. Risk management decisions are considered for an ILCR range of 1×10^{-6} to 1×10^{-4}. However, the project team can use discretion, within bounds, when making risk management decisions on how to proceed to a ROD at a particular site.

Table 2 summarizes the overall sites risks for each OU2-East site from the BRA. The results of the OU2-East BRA indicate that all current and future risks at the OU2-East sites are within EPA's acceptable risk range, with the exception of risks caused by beryllium, a metal. The OU2-East RI

TABLE 2

MOFFETT FEDERAL AIRFIELD
OU2-EAST RECORD OF DECISION
SUMMARY OF SITE RISKS

			Total Site Risks - All Pathways			
Site	Exposure Scenario	Exposure Pathways	ILCR[1] (Mean)	ILCR[1] (RME)	HI[2] (Mean)	HI[2] (RME)
3	Recreational (Current)	Soil ingestion Dermal contact	5.09×10^{-6}	1.28×10^{-5}	0.008	0.026
	Occupational (Current)	Soil ingestion Dermal contact Inhalation of volatiles	3.26×10^{-6}	3.98×10^{-6}	0.020	0.023
	Residential (Future)	Soil ingestion Dermal contact Inhalation of volatiles Ingestion of homegrown vegetables Domestic water use	1.34×10^{-3}	5.40×10^{-3}	1.69	2.36
4	Occupational (Current)	Soil ingestion Dermal contact Inhalation of dust Inhalation of volatiles	3.87×10^{-4}	6.20×10^{-4}	0.385	0.460
	Residential (Future)	Soil ingestion Dermal contact Inhalation of volatiles Ingestion of homegrown vegetables Domestic water use	6.82×10^{-4}	2.74×10^{-3}	2.54	4.33
6	Occupational (Current)	Soil ingestion Dermal contact Inhalation of volatiles	1.50×10^{-10}	2.95×10^{-10}	0.007	0.010
	Residential (Future)	Soil ingestion Dermal contact Inhalation of volatiles Ingestion of homegrown vegetables Domestic water use	6.96×10^{-8}	4.75×10^{-7}	0.894	1.61

TABLE 2 (Continued)

MOFFETT FEDERAL AIRFIELD
OU2-EAST RECORD OF DECISION
SUMMARY OF SITE RISKS

			Total Site Risks - All Pathways			
Site	Exposure Scenario	Exposure Pathways	ILCR[1] (Mean)	ILCR[1] (RME)	HI[2] (Mean)	HI[2] (RME)
7	Occupational (Current)	Soil ingestion Dermal contact Inhalation of volatiles	1.89×10^{-6}	2.57×10^{-6}	0.030	0.055
	Residential (Future)	Soil ingestion Dermal contact Inhalation of volatiles Ingestion of homegrown vegetables Domestic water use	7.74×10^{-4}	3.49×10^{-3}	8.06	29.1
10	Occupational (Current)	Soil ingestion Dermal contact Inhalation of dust Inhalation of volatiles	3.98×10^{-4}	6.92×10^{-4}	0.326	0.432
	Residential (Future)	Soil ingestion Dermal contact Inhalation of volatiles Ingestion of homegrown vegetables Domestic water use	7.02×10^{-4}	3.05×10^{-3}	1.78	2.99
11	Occupational (Current)	Soil ingestion Dermal contact Inhalation of volatiles	5.11×10^{-8}	9.86×10^{-8}	0.028	0.047
	Residential (Future)	Soil ingestion Dermal contact Inhalation of volatiles Ingestion of homegrown vegetables (No drinking water source - groundwater is not potable at this site)	1.93×10^{-7}	9.72×10^{-7}	1.74	2.69

TABLE 2 (Continued)

MOFFETT FEDERAL AIRFIELD
OU2-EAST RECORD OF DECISION
SUMMARY OF SITE RISKS

Site	Exposure Scenario	Exposure Pathways	Total Site Risks - All Pathways			
			ILCR[1] (Mean)	ILCR[1] (RME)	HI[2] (Mean)	HI[2] (RME)
13	Occupational (Current)	Soil ingestion Dermal contact Inhalation of dust Inhalation of volatiles	2.03×10^{-6}	3.64×10^{-6}	0.360	0.436
	Residential (Future)	Soil ingestion Dermal contact Inhalation of volatiles Ingestion of homegrown vegetables Domestic water use	7.02×10^{-8}	3.93×10^{-7}	2.59	4.81

Notes:

[1] ILCRs exceeding 1.0×10^{-4} are background risks attributed to naturally occurring beryllium. There are no site risks exceeding 1.0×10^{-4}.
[2] HIs exceeding 1.0 are due to the intake of naturally occurring metals (such as beryllium, copper, zinc, antimony, manganese, and nickel) through ingestion of homegrown vegetables.

ILCR Incremental lifetime cancer risk
HI Hazard index
RME Reasonable maximum exposure

Total site risks are from the OU2 RI baseline risk assessment (IT 1993).

Residential ILCRs and HIs represent the sum of juvenile and adult residential exposure values.

report identified elevated levels of beryllium in the soils. EPA and the Navy conducted an analysis to evaluate beryllium concentrations and potential sources. This analysis indicated that beryllium concentrations are distributed evenly, both laterally and vertically, within the OU2-East soils (PRC and IT 1994). Additionally, no past uses of beryllium have been identified at Moffett Field and likewise, beryllium concentrations measured in soils reflect naturally occurring levels. Furthermore, the beryllium found in OU2-East soils is present as part of the soil grains and not in the free-metal form that can be toxic to humans. Therefore, the risks identified at OU2-East are background risks and not site-related risks. Additionally, the OU2 RI report evaluated the potential for chemicals in soils to affect groundwater quality. A fate and transport screening model was used to evaluate the potential for existing chemical concentrations to leach from the soils and affect groundwater quality. The evaluation concluded that the OU2-East contaminants will not affect groundwater quality.

Based on the above RI results, the Navy, EPA, and CAL EPA have determined that the OU2-East sites do not pose a threat to human health. Risks to ecological receptors will be evaluated in a station-wide ecological assessment. Therefore, no feasibility study was conducted and no remedial alternatives are discussed in this ROD.

1.7 EXPLANATION OF SIGNIFICANT CHANGES

The proposed plan for the subject sites was released for public comment in May 1994. The proposed plan identified no action as the preferred alternative for the sites. The Navy and EPA reviewed all written and verbal public comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the remedy, as it was originally identified in the proposed plan, were necessary.

2.0 RESPONSIVENESS SUMMARY

This responsiveness summary has been prepared by the Navy to document public comments and questions regarding the proposed no-action decision for OU2-East at Moffett Field. The responsiveness summary contains comments received during the public comment period (May 4, 1994, through June 22, 1994) for the OU2-East proposed plan. However, the only comments received on the proposed plan were submitted during the OU2-East public meeting held on May 24, 1994 at Moffett Field. No comments were received by mail, or other means.

A written transcript of the public meeting was used to prepare the responsiveness summary. The Navy summarized the appropriate comments or questions from the transcript and provided written responses. The comments and questions from the transcript have been edited to provide a better understanding of each specific issue.

Summary of Public Comments

Comment 1: A member of the public asked if beryllium was the only element or compound present at OU2-East that was above EPA acceptable health risk levels.

Response: *Based on the results of the OU2 RI BRA for human health, beryllium was the only chemical of concern (COC) at the OU2-East sites that was found to be present at levels above the EPA risk level threshold of 1 x 10^{-4}. However, the Navy conducted a spatial analysis of the beryllium data to determine if beryllium was naturally occurring or if it was derived from an undiscovered source. The results of this analysis indicated that beryllium was naturally occurring since no localized high concentrations were found. In other words, the distribution of beryllium concentrations in soils both laterally and vertically does not vary significantly.*

Comment 2: A member of the public asked what chemicals were detected at Marriage Road Ditch (Site 3).

Response: *According the OU2 RI BRA, the COCs at Marriage Road Ditch (Site 3) include acetone, polychlorinated biphenyls (PCBs) (arochlor 1260), bis(2-ethylhexyl)phthalate, 2-butanone, butylbenzylphthalate, diethylphthalate, tetrachloroethene, toluene, antimony, beryllium, cobalt, manganese, nickel, and silver. The BRA concluded that, with the exception of beryllium, concentrations associated with these constituents are low and do not exceed EPA acceptable human health risk levels. Specific concentrations associated with these constituents are presented in the OU2 RI report.*

Comment 3: A consultant for the Silicon Valley Toxics Coalition (SVTC) noted that the OU2-East no-action decision was based only on risks to human health and that risks to ecological receptors were not considered.

Response: *The Navy acknowledges that risks to ecological receptors were not considered in the OU2-East no-action decision. Risks to ecological receptors are currently being evaluated in a SWEA. Unfortunately, the schedule for completion of the SWEA did not coincide with the OU2-East schedule. However, should the SWEA conclude that any of the OU2-East sites require remediation to protect ecological receptors, remediation will occur through the station-wide RI/FS process.*

Comment 4: A consultant for the SVTC asked why all of the OU2-East sites were considered for a residential risk scenario, with the exception of Sites 5 and 19.

Response: *Site 5 consists of the USTs at the active fuel farm at Moffett Field, and Site 19 consists of four former USTs on both the eastern and western sides of Moffett Field. The OU2 BRA evaluated the risks from these sites under an industrial scenario. The rationale was that these are UST sites in industrial areas, and it is unlikely that they could be developed for residential use. The results of the BRA indicated that, under this scenario, risks to human health are within EPA acceptable levels.*

Furthermore, most of the USTs at these sites either contain or contained petroleum products. Petroleum products (and any contamination resulting from them) are excluded from actions under CERCLA. Petroleum products and the cleanup of petroleum contamination, however, are regulated by the Cal EPA under its UST program. The Navy and DTSC have recently negotiated cleanup levels for petroleum sites based on (1) total petroleum hydrocarbon levels that are protective of human health and groundwater quality, (2) groundwater maximum contaminant levels, and (3) EPA preliminary remediation goals for industrial scenarios.

Comment 5: A consultant for the SVTC asked for clarification regarding the detections of beryllium in the OU2-East soils and if the detections are related to operations at the Lockheed Aerospace facility located directly east of Moffett Field.

Response: *As discussed in the response to comment 1, the Navy conducted a spatial analysis of the beryllium detections to evaluate if they were at naturally occurring levels or if they were related to unknown sources. The beryllium analysis considered approximately 100 samples taken throughout Moffett Field, including some from the wetlands area.*

The results indicated that there was no statistically significant variation in the beryllium concentrations, either vertically or laterally. This lack of variation indicates that the beryllium concentrations are naturally occurring. Therefore, it is unlikely that beryllium was released from the Lockheed Aerospace facility onto Moffett Field.

3.0 REFERENCES

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